HALEY ALDRICH

www.haleyaldrich.com

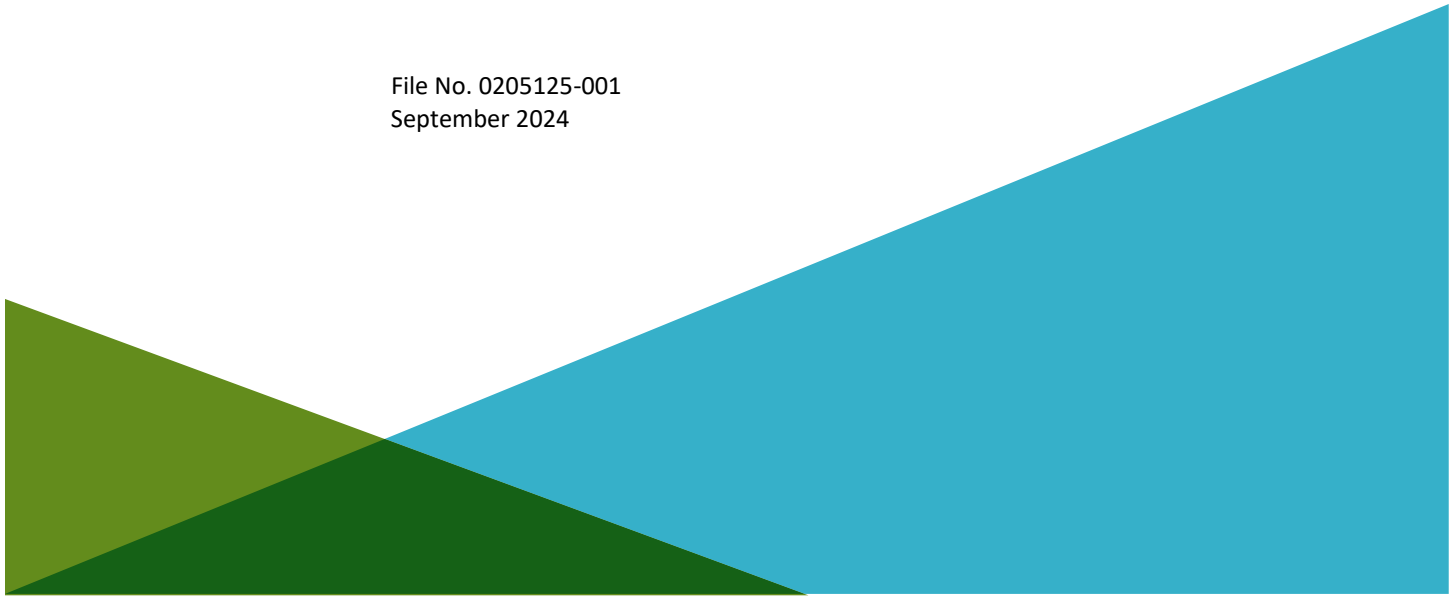
REPORT ON

SITE MANAGEMENT PLAN
1885 ATLANTIC AVENUE REDEVELOPMENT SITE
BROOKLYN, KINGS COUNTY, NEW YORK
NYSDEC SITE NUMBER: C224347

Prepared by
H & A of New York Engineering and Geology, LLP
New York, New York

Prepared for
1885 Atlantic Realty LLC
Hauppauge, New York

File No. 0205125-001
September 2024



Revisions to Final Approved Site Management Plan:

Revision No.	Date Submitted	Summary of Revision	NYSDEC Approval Date

H & A OF NEW YORK ENGINEERING
AND GEOLOGY, LLP
213 W. 35th Street
7th Floor
New York, NY 10001
646.277.5685

SIGNATURE PAGE FOR

REPORT ON

SITE MANAGEMENT PLAN
1885 ATLANTIC AVENUE REDEVELOPMENT SITE
BROOKLYN, KINGS COUNTY, NEW YORK
NYSDEC SITE NUMBER: C224347

PREPARED FOR

1885 ATLANTIC REALTY LLC
HAUPPAUGE, NEW YORK

PREPARED BY:

Matthew Forshay, P.E.
Assistant Project Manager
H & A of New York Engineering and Geology, LLP

REVIEWED AND APPROVED BY:

Matthew Levy
Project Manager
H & A of New York Engineering and Geology, LLP

Scott Underhill, P.E.
Principal Consultant
H & A of New York Engineering and Geology, LLP

James Bellew
Principal
H & A of New York Engineering and Geology, LLP

Certification Statement

I, Scott Underhill, certify that I am currently a NYS-registered professional engineer 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).

NYS Professional Engineer No. 075332

September 24, 2024
Date

Table of Contents **Page**

List of Tables

List of Figures

List of Appendices

List of Acronyms and Abbreviations

13C2-6:2 FTS	1H,1H,2H,2H-perfluoro[1,2-13C2]octanesulfonic acid
µg/L	micrograms per liter
µg/m^3	micrograms per cubic meter
AWQS	Ambient Water Quality Standards
BCA	Brownfield Cleanup Agreement
BCP	Brownfield Cleanup Program
BTEX	benzene, toluene, ethylbenzene, and xylenes
cfm	cubic feet per minute
COC	Certificate of Completion
Department	New York State Department of Environmental Conservation
DER	Division of Environmental Remediation
EC	Engineering Control
ft	feet
ft bgs	feet below ground surface
GAC	granular activated carbon
GES	Groundwater Environmental Services, Inc.
Haley & Aldrich of New York	H & A of New York Engineering and Geology, LLP
HVAC	heating, ventilation, and air conditioning
IC	Institutional Control
IRM	Interim Remedial Measure
ISCO	in-situ chemical oxidation
IWC	inches of water column
L/min	liters per minute
mg/kg	milligrams per kilogram
MP	monitoring point
NY-MCL	New York Maximum Concentration Limit
NYC	New York City
NYS	New York State
NYSDEC	New York State Department of Environmental Conservation
NYSDOH	New York State Department of Health
NYCRR	New York Codes, Rules, and Regulations

List of Acronyms and Abbreviations continued

P.E. or PE	Professional Engineer
PAH	polycyclic aromatic hydrocarbon
PCB	polychlorinated biphenyl
PCE	tetrachloroethene
PFAS	per- and polyfluoroalkyl substances
PFBS	perfluorobutanesulfonic acid
PGWSCO	Protection of Groundwater Soil Cleanup Objective
PID	photoionization detector
ppm	parts per million
PRR	Periodic Review Report
PVC	polyvinyl chloride
QAPP	Quality Assurance Project Plan
RAO	Remedial Action Objective
RAWP	Remedial Action Work Plan
RI	Remedial Investigation
ROD	Record of Decision
ROI	radius of influence
RRSCO	Restricted Residential Soil Cleanup Objective
RSO	Remedial System Optimization
Site	1885 Atlantic Avenue Redevelopment Site, Brooklyn, New York
SMP	Site Management Plan
SOE	support of excavation
SRI	Supplemental Remedial Investigation
SSDS	sub-slab depressurization system
SVE	soil vapor extraction
SVOC	semi-volatile organic compound
SVI	Soil Vapor Intrusion
TCLP	Toxicity Characteristic Leaching Procedure
TOGs	Technical and Operational Guidance Series
TPH	total petroleum hydrocarbons
USEPA	United States Environmental Protection Agency

List of Acronyms and Abbreviations continued

UUSCO	Unrestricted Use Soil Cleanup Objective
UST	underground storage tank
VOC	volatile organic compound

Executive Summary

1885 Atlantic Realty LLC (the Volunteer) has remediated a 0.249-acre (±10,800-square-foot) property known as 1885 Atlantic Avenue Redevelopment, designated under Brownfield Cleanup Program (BCP) Site No. C224347. The 1885 Atlantic Avenue Redevelopment site (hereafter referred to as "the Site") is situated at 1885 Atlantic Avenue in Kings County, New York on Lot 30, Block 1714 of the New York City Tax Map. Initial soil removal activities were carried out per the February 2022 approved *Interim Remedial Measures Work Plan* which included the removal of underground storage tanks and associated impacted materials from the Site. Subsequent remediation, addressing both soil and groundwater, was conducted per the August 2023 approved *Remedial Action Work Plan* and Decision Document which included the removal of all impacted materials above restricted residential soil cleanup objectives from the Site to a depth of 15 feet below ground surface (ft bgs), installation of a soil vapor extraction (SVE) system to treat soils in the vadose zone (i.e., down to 60 ft bgs), installation of an active sub-slab depressurization system (SSDS), and the injection of alkaline-activated persulfate in the groundwater through temporary injection points.

The following provides a brief summary of the controls implemented for the Site, as well as the inspections, monitoring, maintenance, and reporting activities required by this *Site Management Plan* (SMP):

Site Identification:	BCP Site #: C224347 1885 Atlantic Avenue Redevelopment Site 1885 Atlantic Avenue Brooklyn, New York 11233	
Institutional Controls:	1. The property may be used for restricted residential, commercial, and industrial use pending results of the Soil Vapor Intrusion (SVI) evaluation and groundwater monitoring.	
	2. Institutional Controls include an Environmental Easement and this SMP.	
	3. All Engineering Controls must be inspected at a frequency and in a manner defined in the SMP.	
Engineering Controls:	1. SVE System	
	2. Active SSDS	
	3. Monitoring Wells	
Inspections:		Frequency:
1. SVE System Inspection		Monthly
2. SSDS Inspection		Bi-annual
Monitoring:		
1. Groundwater Monitoring Wells MW-6 through MW-8		Quarterly
2. SVE System Monitoring		Quarterly
3. SVI evaluation for new building, which will include sub-slab soil vapor sampling of vapor monitoring points (MP-1 through MP-4), as well as co-located indoor air samples and ambient air samples		During upcoming 2024 heating season, after completion of building envelope
Maintenance:		
1. SVE System		As needed

Site Identification:	BCP Site #: C224347 1885 Atlantic Avenue Redevelopment Site 1885 Atlantic Avenue Brooklyn, New York 11233
2. SSDS	As needed
Reporting:	
1. Groundwater Data	Quarterly
2. SVE System Data	Quarterly
3. SVI Evaluation Report	After completion of SVI evaluation
4. Periodic Review Report	16 Months after the Certificate of Completion is issued; annually thereafter.

Further descriptions of the above requirements are provided in detail in the latter sections of this SMP.

1. Introduction

1.1 GENERAL

This Site Management Plan (SMP) is a required element of the remedial program for the 1885 Atlantic Avenue Redevelopment Site located in Brooklyn, New York (hereinafter referred to as the "Site"). The Site is currently in the New York State (NYS) Brownfield Cleanup Program (BCP), Site No. C224347, which is administered by the New York State Department of Environmental Conservation (NYSDEC or Department) and is located at 1885 Atlantic Avenue, Brooklyn, New York, identified on the New York City (NYC) Tax Map as Brooklyn borough Tax Block 1714, Lot 30.

1885 Atlantic Realty LLC entered into a Brownfield Cleanup Agreement (BCA) (BCA Index No. C224347-02-22) on 16 February 2022 with the NYSDEC to remediate the Site as a volunteer. A BCA Amendment was issued on 30 August 2023, which documented the transfer of ownership of the Site from Speedway LLC to 1885 Atlantic Avenue LLC. A Site location map is provided on Figure 1. A figure showing the Site location and boundaries of this Site is provided on 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 A.

After completion of the remedial work, some contamination was left at the Site, which is hereafter referred to as "remaining contamination." Institutional Controls (ICs), by way of post-remedial groundwater and soil vapor monitoring, 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 Kings County Clerk, requires compliance with this SMP and all Engineering Controls (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 the Environmental Conservation Law 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 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, 6 Ney York Codes, Rules, and Regulations (NYCRR) Part 375 and the BCA (Index # C224347-02-22; Site # C224347) for the Site, and is 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 NYS. A list of contacts for persons involved with the Site is provided in Tables I and II under Section 1.3 of this SMP.

This SMP was prepared by H & A of New York Engineering and Geology, LLP (Haley & Aldrich of New York), on behalf of 1885 Atlantic Realty LLC, in accordance with the requirements of the NYSDEC's Division of Environmental Remediation (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 ECs that are required by the Environmental Easement for the Site.

1.2 REVISIONS AND ALTERATIONS

Revisions and alterations to this plan will be proposed in writing to the NYSDEC's project manager. The NYSDEC can also make changes to the SMP or request revisions from the remedial party. Revisions will be necessary upon, but not limited to, the following occurring: a change in media monitoring requirements; upgrades to or shutdown of a remedial system; post-remedial removal of contaminated sediment or soil; or other significant change to the Site conditions. All approved alterations must conform with Article 145 Section 7209 of the Education Law regarding the application of professional seals and alterations. For example, any changes to as-built drawings must be stamped by a NYS Professional Engineer (P.E.). In accordance with the Environmental Easement for the Site, the NYSDEC project manager 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:

- A 60-day advance notice of any proposed changes in Site use that are required under the terms of the BCA, 6 NYCRR Part 375 and/or Environmental Conservation Law.
- A 7-day advance notice of any field activity associated with the remedial program.
- A 15-day advance notice of any proposed ground-intrusive activity pursuant to the Excavation Work Plan. If the ground-intrusive activity qualifies as a change of use as defined in 6 NYCRR Part 375, the above-mentioned 60-day advance notice is also required.
- A 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.
- A notice within 48 hours of any non-routine maintenance activities.
- A 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.
- A follow-up status report 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 BCA, 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 I below includes contact information for the above notifications. 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 Table II. A full listing of Site-related and adjacent property owner contact information is provided in Appendix B.

Table I: NYSDEC/NYSDOH Notifications*

Regulator	Contact Name	Contact Title	Required Notification**	Contact Number	Contact Email
NYSDEC	Sadique Ahmed	Project Manager	All Notifications	518.402.9656	Sadie.Ahmed@dec.ny.gov
	William Bennett	Section Chief	All Notifications	518.402.9659	William.Bennett@dec.ny.gov
	Kelly Lewandowski	Chief, Site Control	Notifications 1 and 8	518.402.9569	Kelly.Lewandowski@dec.ny.gov
NYSDOH	Sarita Wagh	Project Manager	Notifications 4, 6, and 7	518.402.7817	Sarita.Wagh@health.ny.gov

Notes:
** Notifications are subject to change and will be updated as necessary.*
*** Numbers in this column reference the numbered bullets in the notification list in this section.*

Table II: Site Contact List

Company	Contract Name	Title	Contact Number	Contact Email
Haley & Aldrich of New York	James Bellew	Principal	646.277.5686	jbellew@haleyaldrich.com
	Scott Underhill, P.E.	Remedial Engineer	518.396.7638	sunderhill@haleyaldrich.com
	Matthew Levy	Project Manager	646.893.4733	mlevy@haleyaldrich.com
	Matthew Forshay	Field Lead	862.377.3587	mforshay@haleyaldrich.com
1885 Atlantic Realty LLC	Jacob Kohn	Member	718.963.0536	kohnjacob@gmail.com
Sive, Paget & Riesel PC	Christine Leas	Attorney	646.378.7267	cleas@sprlaw.com

2. Summary of Previous Investigations and Remedial Actions

2.1 SITE LOCATION AND DESCRIPTION

The Site is located in Brooklyn, Kings County, New York, and is identified as Section 3, Block 1714 and Lot 30 on the NYC Tax Map. The Site is an approximately 0.249-acre area and is bounded by a parking lot followed by a vacant vegetated lot to the north, Atlantic Avenue and the Long Island Railroad Tracks followed by commercial buildings, including an auto repair facility, to the south, Ralph Avenue followed by mixed-use commercial and residential buildings to the east, and a commercial building occupied by a McDonalds fast food restaurant to the west (see Figure 2). The boundaries of the Site are more fully described in Appendix A. The owner of the Site parcel at the time of issuance of this SMP is 1885 Atlantic Realty LLC.

2.2 PHYSICAL SETTING

2.2.1 Land Use

The Site consists of a nine-story mixed-use commercial and residential building (under construction) and a full cellar. The building encompasses the entire lot footprint and extends approximately 10 feet below ground surface (ft bgs). According to the NYC Planning Commission Zoning Map 17a, the Site is located within a residential and manufacturing zoning district (M1-1 and R7D) with a Special Mixed-Use District (MX-10), and the intended use of the building under construction is mixed-use residential/ commercial. When completed, the residential portion of the building will contain approximately 78 dwelling units, of which about 16 units will be designated as affordable housing. The cellar level will be utilized as a ventilated parking garage, bicycle storage, compactor space, and mechanical rooms. The first floor will be occupied by parking with a garage entry, two commercial spaces, bicycle storage, a residential lobby, and laundry room. The second through ninth floors will be residential apartments. The roof will include mechanical, utility, and recreational spaces. The Site use is consistent with existing zoning for the property.

The properties adjoining and surrounding the Site primarily include mixed-use commercial and residential properties. The Site is bounded by a parking lot followed by a vacant vegetated lot to the north, Atlantic Avenue and the Long Island Railroad Tracks followed by commercial buildings, including an auto repair facility, to the south, Ralph Avenue followed by mixed-use commercial and residential buildings to the east, and a commercial building occupied by a McDonalds fast food restaurant to the west.

2.2.2 Geology

Based on field observations during the Remedial Investigation (RI) and Supplemental Remedial Investigation (SRI), the Site is underlain by a layer of fill material consisting of light to dark brown, fine to medium sand with varying amounts of silt, clay, and gravel with brick, concrete, slag/ash, glass, ceramic, and asphalt fragments. Fill remains on Site between 14 and 15 ft bgs, except in areas represented by endpoint samples EP-7, EP-12, and EP-13 in Haley & Aldrich of New York's *Final Engineering Report*

(September 2024). Brown to orange fine to medium sand with varying amounts of silt, gravel, and intermittent clay lenses underly the fill layer and extends to at least 60 ft bgs.

2.2.3 Hydrogeology

Based on Site-specific groundwater measurements, groundwater beneath the Site ranges from approximately 60 to 64 ft bgs. Groundwater flow beneath the Site is generally from the northeast to southwest. A groundwater contour map with the March 2022 and March 2024 data is provided on Figure 3. Groundwater elevation data is provided in Table III and groundwater monitoring well construction logs are provided in Appendix C.

2.3 INVESTIGATION AND REMEDIAL HISTORY

The following narrative provides a remedial history timeline and a brief summary of the available project records to document key investigative and remedial milestones for the Site. Full titles for each of the reports referenced below are provided in the Reference section.

The following reports were prepared for the Site:

1. Site Investigation Report (Groundwater & Environmental Services, Inc., April 1993)
2. Site Investigation Report Underground Storage Tank Closure (Groundwater & Environmental Services, Inc., June 1994)
3. Site Assessment Report (Groundwater & Environmental Services, Inc., November 1994)
4. Remedial Investigation Report (Groundwater & Environmental Services, Inc., June 1998)
5. Spill Closure Report (EnviroTrac, Ltd., December 2002)
6. Limited Phase II Environmental Site Assessment (Haley & Aldrich of New York, November 2021)
7. Remedial Investigation Report (Haley & Aldrich of New York, October 2022)
8. Interim Remedial Measures Construction Completion Report (Haley & Aldrich of New York, January 2023)
9. Supplemental Remedial Investigation Report (Haley & Aldrich of New York, March 2023)
10. Remedial Action Work Plan (Haley & Aldrich of New York, August 2023)
11. Decision Document (NYSDEC, September 2023)

A summary of environmental findings of these investigations is provided below.

2.3.1 Site Investigation Report (Groundwater & Environmental Services, Inc., April 1993)

A Site Investigation was conducted by Groundwater & Environmental Services, Inc. (GES) after a 4,000-gallon gasoline tank failed a pressure integrity test and was assigned Spill Case #92-09626. A total of five soil borings were advanced to 25 ft bgs and a total of five soil samples were collected. Borings were advanced on 23 March 1993, each located within 15 ft of the tank field. Samples were collected generally

from around 11 to 16 ft bgs. Soil samples were analyzed for total petroleum hydrocarbons (TPH) with concentrations ranging from 53.6 to 114 parts per million (ppm). Based on the results of the investigation, GES recommended no further action.

2.3.2 Site Investigation Report Underground Storage Tank Closure (GES, June 1994)

GES oversaw and documented the removal of 19 underground storage tanks (USTs) including: 1) four 4,000-gallon and two 2,000-gallon gasoline USTs; 2) one 550-gallon and one 2,000-gallon wastewater USTs; and 3) 11 550-gallon gasoline USTs (one of which was abandoned-in-place with concrete slurry). All tanks were found in a previously unknown tank field, and five dispenser islands were found at the Ralph Gasoline Station. Spill Case # 93-03355 was assigned following a tank tightness test failure determined during tank removal in June 1993. The excavated tanks were replaced with five 4,000-gallon, double-walled, fiberglass gasoline USTs and one 550-gallon, double-walled, fiberglass wastewater UST.

On 15 June 1993, three soil samples were collected beneath the former dispenser islands. TPH concentrations ranged from 143 to 164 ppm. Toluene and xylenes were detected at low concentrations. Additionally, the four 4,000-gallon and two 2,000-gallon gasoline USTs were removed. Some corrosion was visible on the tanks, product was visible in the excavation, and petroleum odors and elevated photoionization detector (PID) readings were recorded in the excavation. The maximum TPH concentration was 428 ppm.

On 22 June 1993, the 550-gallon and 2,000-gallon wastewater USTs were removed, and post-excavation soil samples were collected. TPH concentrations ranged from 4,960 to 24,200 ppm. This area contained the highest TPH concentrations.

On 28 June 1993, 10 550-gallon gasoline USTs were removed as part of an unknown tank grave, and post-excavation soil samples were collected. An eleventh 550-gallon gasoline UST was abandoned-in-place with concrete slurry due to its close proximity to a structural footing. Petroleum odors, separate-phase product, and elevated PID readings were documented during the excavation. Analytical results indicated that TPH concentrations ranged from 44.8 to 882 ppm.

A total of 980 tons of petroleum-impacted soil was excavated and properly disposed of at Posillico Brothers Asphalt Company of Farmingdale, New York. Soils with PID readings less than 100 ppm were left on Site, and soil with readings above 100 ppm was properly removed. Post-excavation samples were collected in each tank removal area and analyzed for TPH, benzene, toluene, ethylbenzene, and xylenes (BTEX). The greatest concentration of TPH was located in the former wastewater UST excavation area with a maximum concentration of 24,200 ppm.

GES concluded that no further action was necessary at the time since petroleum-impacted soils were removed from the Site and replaced with clean fill. The NYSDEC also closed Spill Case #92-09626 based on review of the *Site Investigation Report*.

2.3.3 Site Assessment Report (GES, November 1994)

The purpose of this Site assessment was to determine if subsurface soils and groundwater had been impacted from the use of the USTs previously removed in June 1993. Monitoring wells were intended to be installed; however, groundwater was not encountered during drilling of the first boring, which was advanced to 55 ft bgs. Therefore, no groundwater monitoring wells were installed.

On 14 October 1993 and 21 to 22 March 1994, a total of 19 subsurface soil samples were collected from nine soil borings advanced at locations around the area of the former UST fields. Analytical results indicated total BTEX concentrations ranging from non-detect to 142,300 parts per billion, with non-detect benzene concentrations in all samples. The greatest concentrations of petroleum-related compounds were found in soil boring SB-1 in the northwestern portion of the Site and exceed the Toxicity Characteristic Leaching Procedure (TCLP) Alternative Guidance Values.

GES concluded that since the groundwater table is greater than 53 ft bgs, the Site was not considered a threat to potable groundwater and no further action was recommended.

2.3.4 Remedial Investigation Report (GES, June 1998)

A RI was performed by GES in March 1995 which included the installation of four soil borings and four soil vapor extraction (SVE) points in order to delineate subsurface soils and perform a SVE pilot test. Soil borings were advanced to a maximum depth of 42 ft. Groundwater was not encountered during this RI; however, GES reported that it was expected to be at around 65 ft bgs. A total of five soil samples were collected, and total BTEX concentrations ranged from non-detect to 532 micrograms per kilogram. Additionally, of the four vapor extraction points, one soil vapor extraction test was performed achieving a maximum radius of influence of approximately 40 ft, and a total of 0.014 pounds of benzene were removed during the test. The results of the SVE test indicated that petroleum hydrocarbon-impacted soils were present up to depths of 22 ft bgs.

GES recommended installation of two monitoring wells to determine if groundwater had been impacted by contamination: one in the impacted soil area of the former tank field, and one in the downgradient (southern) portion of the Site.

GES reported that based on available information and Site observations, no groundwater monitoring wells had been installed on the Site; thus, no groundwater monitoring had been conducted at the Site.

2.3.5 Spill Closure Report (EnviroTrac, Ltd., December 2002)

Based on previous Site investigations, it was concluded that limited volatile organic compound (VOC) contamination existed at the Site. A clean soil horizon was established from 22 to 55 ft bgs. In August 2002, after reviewing available Site data, NYSDEC determined that the Site was a candidate for spill closure. The Amerada Hess Corp. requested closure of Spill Case #93-03355 (assigned in 2000) and #00-00590 and #01-05801 (assigned in 2001), with the cause of spill noted as “unknown.” Subsequently, EnviroTrac Ltd. conducted a Site visit to determine potential areas of concern, any sensitive receptors in the area, and reviewed appropriate environmental databases. Documentation of the Spill Closure was not

included in this report; however, the three spill cases listed above are registered as closed in the NYSDEC Spill Incident Database, with closure dates ranging from 2003 through 2005.

It is noted that according to NYSDEC spill reports, spill cases 0000590, 0105801, 0611614, 0612533, 0907189, and 9303355 are closed; however, spill report details note that standards were not met.

2.3.6 Limited Phase II Environmental Site Investigation (Haley & Aldrich of New York, November 2021)

Haley & Aldrich of New York completed a Limited Phase II Environmental Site Investigation at the Site in October 2021. Fill was encountered up to 6 ft bgs. Petroleum-like odors and elevated PID readings were observed in soil boring SB-1 from up to 250 ppm at 0 to 2 ft bgs and in SB-3 up to 300 ppm at 3 to 4 ft bgs. Groundwater was not encountered during the investigation. Eight soil samples were collected from the surface down to 6 ft bgs and two soil vapor samples were collected at the Site.

No VOCs were detected in soil samples at concentrations exceeding Unrestricted Use Soil Cleanup Objectives (UUSCOs) or Restricted Residential Soil Cleanup Objectives (RRSCOs). Three semi-volatile organic compounds (SVOCs), specifically polycyclic aromatic hydrocarbons (PAHs), were identified at concentrations above UUSCOs and RRSCOs in multiple soil samples. Metals, including lead, mercury, copper, and zinc, were detected above UUSCOs and/or RRSCOs in multiple shallow soil samples.

Soil vapor samples contained elevated concentrations of n-hexane, benzene, cyclohexane, 2,2,4-trimethylpentane, and heptane. Total VOC concentrations in soil vapor samples ranged from 141.46 micrograms per cubic meter ($\mu g/m^3$) in sample SV-1 to 20,711.6 $\mu g/m^3$ in sample SV-2. Total BTEX concentrations ranged from 23.4 $\mu g/m^3$ in SV-1 to 767.8 $\mu g/m^3$ in SV-2. The high total VOC soil vapor concentrations are indicative of source material contamination that had not been identified at the limited sample locations analyzed to that point.

It was noted that elevated method detection limits were reported for soil vapor sample SV-2. This is likely due to the fact that SV-2 was diluted in the laboratory by a factor of 60 to accommodate for the elevated concentration of a non-target compound that was detected in this soil vapor sample (i.e., a compound outside of the TO-15 compound list). Based on the analytical data provided, it can be stated that concentrations of TO-15 compounds do not exist at or above the method detection limits reported; however, concentrations may be present below this reported value.

2.3.7 Remedial Investigation Report (Haley & Aldrich of New York, October 2022)

A summary of environmental findings of the RI includes the following:

- Depth to groundwater ranged from 60.73 to 63.60 ft bgs, with groundwater elevation ranging from 8.06 to 8.20 ft.
- Groundwater flow beneath the Site is estimated to be from the northeast to the southwest. A groundwater contour map is provided on Figure 3.

- Soil analytical results were compared to 6 NYCRR Part 375 UUSCOs, Protection of Groundwater Soil Cleanup Objective (SCOs) (PGWSCOs), and RRSCOs. Results are summarized on Figure 4 and include the following:
  - One VOC, 1,2,4-trimethylbenzene, was detected above the RRSCO, UUSCO, and PGWSCO at a concentration of 61.5 milligrams per kilogram (mg/kg) in soil sample SB-7 (0 to 0.5 ft). Several other VOCs were detected above UUSCOs and/or PGWSCOs, including acetone (maximum concentration 0.132 mg/kg in soil sample SB-3 (0 to 0.5')), ethylbenzene (maximum concentration 5.64 mg/kg in soil sample SB-8 [15 to 20 ft]), toluene (maximum concentration 14.6 mg/kg in soil sample SB-8 [15 to 20 ft]), and total xylenes (maximum concentration 26 mg/kg in soil sample SB-8 [15 to 20 ft]). No other VOCs were detected above the respective standards in any soil sample.
  - Two SVOCs, benzo(b)fluoranthene (1.24 mg/kg) and indeno(1,2,3-cd)pyrene (0.537 mg/kg) were detected in soil sample SB-6 (0 to 0.5 ft) above RRSCOs and UUSCOs, but not above PGWSCOs. No other SVOCs were detected above the respective standards in any soil sample.
  - Metals, including copper (107 mg/kg) and zinc (297 mg/kg), were detected above UUSCOs in one soil sample SB-6 (0 to 0.5 ft). Lead was detected in multiple soil samples above UUSCOs and/or PGWSCOs and RRSCOs at a maximum concentration of 597 mg/kg in soil sample SB-7 (0 to 0.5 ft). Mercury was detected in multiple soil samples above UUSCOs and/or PGWSCOs at a maximum concentration of 0.79 mg/kg in soil sample SB-6 (0 to 0.5 ft). No other metals were detected above the respective standards in any soil sample.
  - Polychlorinated biphenyls (PCBs) were not detected above RRSCOs, UUSCOs, and PGWSCOs in any soil sample.
  - 1,4-dioxane was not detected above laboratory detection limits in any soil samples collected at the Site. Detected per- and polyfluoroalkyl substance (PFAS) included 1H,1H,2H,2H-perfluoro[1,2-13C2]octanesulfonic acid (13C2-6:2 FTS) and perfluorobutanesulfonic acid (PFBS) in one or more soil samples collected as part of the RI above laboratory detection limits at estimated or reportable concentrations. Total PFAS ranged from non-detect to a maximum estimated concentration of 0.0034 mg/kg in soil sample SB-2 (15 to 20 ft).
- Groundwater analytical results were compared to 6 NYCRR Part 703.5 Class GA ambient water quality standards (AWQS) and NYSDEC guidance set forth in Technical and Operational Guidance Series (TOGs) 1.1.1 (specifically, "June 1998 NYSDEC Division of Water Technical and Operational Guidance Series 1.1.1 Ambient Water Quality Standards [AWQS] and Guidance Values, Class GA for the protection of a source of drinking water modified per the April 2000 addendum") (TOGs 1.1.1).
  - Several VOCs were detected in multiple groundwater samples above the AWQS, including 1,2,4-trimethylbenzene (maximum concentration of 41.4 micrograms per liter [µg/L] in MW-1-20220408), benzene (maximum concentration of 569 µg/L in MW-5 20220412), chloroform (maximum concentration of 42.5 µg/L in MW-5-2022-0412), m,p-xylenes (maximum concentration of 61.2 µg/L in MW-1-20220408), o-xylene (maximum concentration of 36.9 µg/L in MW-1-20220408), toluene (maximum concentration of 20.5 µg/L in MW-5-20220412), and total xylenes (maximum concentration of 98.1 µg/L in MW-

1-20220408). Additionally, several VOCs were detected above the AWQS in MW-1-20220408 only, including 1,3,5-trimethylbenzene (16 µg/L), sec-butylbenzene (16.8 µg/L), ethylbenzene (32 µg/L), isopropylbenzene (5.6 µg/L), and n-propylbenzene (9.5 µg/L). Lastly, tetrachloroethene (PCE) was detected in MW-4-20220330 at a concentration of 18 µg/L. No other VOCs were detected above the AWQS in any groundwater sample.

- Two SVOCs were detected in MW-1-20220408 above the AWQS including bis(2-ethylhexyl)phthalate (6.1 µg/L) and diethyl phthalate (448 µg/L). No other SVOCs were detected above the AWQS in any groundwater sample.
- PCBs were not detected above laboratory detection limits in any groundwater sample.
- Several metals were detected in multiple groundwater samples above the AWQS, including total iron (maximum concentration of 6,340 µg/L in MW-5-20220412), total manganese (maximum concentration of 1,640 µg/L in MW-2-20220329), and total sodium (maximum concentration 173,000 of µg/L in MW-4-20220330). Additionally, total magnesium was detected above the AWQS in one groundwater sample (MW-4-20220330) at a concentration of 61,700 µg/L. No other metals were detected above the AWQS in any groundwater sample.
- Emerging contaminants 1,4-dioxane and PFAS were compared to the New York Maximum Concentration Limit (NY-MCL) for drinking water, adopted by the NYS Department of Health (NYSDOH) in July 2020. The compound 1,4-dioxane was not detected in any groundwater samples above laboratory detection limits. PFAS were detected above the NY-MCL for drinking water of 0.01 µg/L in three of the five groundwater samples collected at the Site. Elevated PFAS compounds include 13C2-6:2 FTS, PFBS, perfluorobutanoic acid, perfluoroheptanoic acid, perfluorohexanesulfonic acid, perfluorohexanoic acid, perfluorooctanesulfonic acid, perfluorooctanoic acid, and perfluoropentanoic acid. The total concentration of PFAS ranged from non-detect to a maximum concentration of 0.63 µg/L in MW-2-20220329.

Several petroleum-related VOCs were detected at elevated concentrations in soil vapor samples, including benzene (maximum concentration of 1,190,000 µg/m^3 in SG-5) and toluene (maximum concentration of 240,000 µg/m^3 in SG-5). Several other VOCs were detected in multiple soil vapor samples collected at the Site, including 1,3-butadiene (maximum concentration of 2,460 µg/m^3 in SG-4), 2,2,4-trimethlypentane (maximum concentration of 4,260,000 µg/m^3 in SG-1), 2-butanone (maximum concentration of 1,100 µg/m^3 in SG-4), cyclohexane (maximum concentration of 606,000 µg/m^3 in SG-5), heptane (maximum concentration of 672,000 µg/m^3 in SG-5), and n-hexane (maximum concentration of 7,190,000 µg/m^3 in SG-5). Total BTEX concentrations ranged from non-detect in SG-2 and SG-1 to a maximum of 1,430,000 µg/m^3 in sample SG-5. Total VOC concentrations ranged from 1,348.13 µg/m^3 in SG-3 to 10,846,000 µg/m^3 in sample SG-5.

2.3.8 Supplemental Remedial Investigation Report (Haley & Aldrich of New York, March 2023)

- Soil analytical results were compared to 6 NYCRR Part 375 UUSCOs, PGWSCOs, and RRSCOs. Results include the following:
  - Six VOCs were detected in multiple soil samples above the UUSCOs, RRSCOs, and PGWSCOs, including 1,2,4-trimethylbenzene (maximum concentration of 300 mg/kg in

SB-3_36-37), 1,3,5-trimethylbenzene (maximum concentration of 110 mg/kg in SB-3_36-37), benzene (maximum concentration of 62 mg/kg in SB-3_W_41-42), ethylbenzene (maximum concentration of 130 mg/kg in SB-3_36-37), toluene (maximum concentration of 370 mg/kg in SB-3_W_41-42), and total xylenes (maximum concentration of 640 mg/kg in SB-3_36-37). Four additional VOCs were detected in one or more soil samples above the UUSCOs, and PGWSCOs, but below RRSCOs, including, acetone (maximum concentration of 0.56 mg/kg in SB-3_43-44), naphthalene (maximum concentration of 41 mg/kg in SB-3_36-37), n-butylbenzene (concentration of 20 mg/kg in SB-3_36-37), and n-propylbenzene (maximum concentration of 62 mg/kg in SB-3_36-37). No other VOCs were detected in the remaining soil samples above the UUSCOs, RRSCOs or PGWSCOs.

  - One pesticide, 4,4'-DDT (0.00451 mg/kg), was detected in soil sample SB-10_0-0.5 above the UUSCO but not RRSCO or PGWSCO. No other pesticides were detected in remaining soil samples above UUSCOs, RRSCOs, or PGWSCOs.

- Results include the following:
  - Five soil vapor probes were installed to approximately 45 ft bgs, the approximate midpoint between the groundwater table and base of anticipated excavation. Several petroleum-related VOCs were detected at elevated concentrations in soil vapor samples, including benzene (maximum concentration 202,000 µg/m^3 in SG-11), ethylbenzene (maximum concentration of 37,600 µg/m^3 in SG-11), p/m-xylene (maximum concentration of 35,600 µg/m^3 in SG-10), o-xylene (maximum concentration of 14,100 µg/m^3 in SG-10), and toluene (maximum concentration of 55,800 µg/m^3 in SG-10).
  - Several other VOCs were detected in one or more soil vapor samples collected at the Site, including 1,2,4-trimethylbenzene (maximum concentration of 8,460 µg/m^3 in SG-10), 1,3,5-trimetylbenzene (maximum concentration of 3,550 µg/m^3 in SG-10), 1,3-butadiene (maximum concentration of 1,720 µg/m^3 in SG-9), 2,2,4-trimethlypentane (maximum concentration of 1,770,000 µg/m^3 in SG-10), 4-ethyltoluene (maximum concentration of 2,210 µg/m^3 in SG-10), cyclohexane (maximum concentration of 173,000 µg/m^3 in SG-11), ethanol (maximum concentration of 1,680 µg/m^3 in SG-7), hexane (maximum concentration of 585,000 µg/m^3 in SG-11), isopropanol (maximum concentration of 21 µg/m^3 in SG-8), and n-heptane (maximum concentration of 155,000 µg/m^3 in SG-11).

Total BTEX concentrations ranged from 16.2 µg/m^3 in SG-8 to a maximum of 330,640 µg/m^3 in sample SG-11. Total VOC concentrations ranged from 1,348.13 µg/m^3 in SG-3 to 10,846,000 µg/m^3 in sample SG-5.

2.3.9 Interim Remedial Measures

An Interim Remedial Measure (IRM) was completed at the Site in accordance with the *Interim Remedial Measures Work Plan* dated February 2022 and approved by NYSDEC on 25 February 2022. The IRM activities were documented in a Construction Completion Report prepared by Haley & Aldrich of New York and approved by NYSDEC on 25 January 2023.

Selective demolition was completed to remove kiosks, canopies, storage sheds, product dispensers, and pump islands. The UST field measured approximately 20 by 50 feet and was excavated to approximately 12 ft bgs. Additionally, an approximately 1,000-square-foot area surrounding the UST field was excavated

to 12 ft bgs as part of a support-of-excavation (SOE) measure. A total of approximately 222 tons of soil were generated from the IRM excavation. Soil was transported off-Site by NYSDEC Part 364-permitted vehicles and disposed of at the Clean Earth Carteret facility in Carteret, New Jersey. Five USTs were cut open, cleaned, and removed by Eastern Environmental Solutions, Inc. The NYSDEC petroleum bulk storage database was updated to indicate that the USTs have been closed and removed. The IRM excavation area was backfilled to surface grade with clean imported quarry stone from Bound Brook Quarry of Bridgewater Township, New Jersey.

A total of two confirmation samples were collected from the bottom of the IRM excavation area at 12 ft bgs. Confirmation samples were analyzed for NYSDEC Part 375 VOCs, SVOCs, PCBs, pesticides, metals (including hexavalent chromium), and TCLP metals. Confirmation samples were compared to the Part 375 UUSCOs, and Hazardous Waste Toxicity Characteristic Limits as defined by United States Environmental Protection Agency (USEPA) in 40 CFR 261.24. No VOCs, SVOCs, PCBs, pesticides, or metals were detected above the UUSCOs in both confirmation samples. No TCLP metals were detected above the USEPA Hazardous Waste Toxicity Characteristic Limit in either confirmation sample.

2.4 REMEDIAL ACTION OBJECTIVES

The Remedial Action Objectives (RAOs) for the Site based on results of the RI and established in the Remedial Action Work Plan (RAWP) are as follows:

2.4.1 Groundwater

RAOs for Public Health Protection:

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

RAOs for Environmental Protection:

- Remove source of groundwater or surface contamination.

2.4.2 Soil

RAOs for Public Health Protection:

- Prevent ingestion/direct contact with contaminated soil.
- Prevent inhalation of, or exposure to, contaminants volatilizing from contaminated soil or contaminated soil in particulate form.

RAOs for Environmental Protection:

- Prevent migration of contaminants that would result in groundwater or surface water contamination.

2.4.3 Soil Vapor

RAOs for Public Health Protection:

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

2.5 SUMMARY OF REMEDIAL ACTIONS

Remedial actions were performed at the Site in accordance with the NYSDEC-approved RAWP dated 1 August 2023, the Decision Document dated 14 September 2023, and all applicable federal, state, and local rules and regulations. Remedial activities were completed on 18 July 2024.

The Remedial Actions performed at the Site included:

- Implementation of a *Construction Health and Safety Plan* and *Community Air Monitoring Plan* for the protection of on-Site workers, community/residents, and the environment during remediation and construction activities.
- Construction of an SOE system to facilitate excavation of soil exceeding RRSCOs to a depth of 14 ft bgs Site-wide.
- Implementation of soil erosion, pollution, and sediment control measures in compliance with applicable laws and regulations.
- Removal of the existing pavement and miscellaneous debris from the Site.
- Decommissioning of on-Site monitoring wells, as necessary, in accordance with NYSDEC CP-43 Policy.
- Excavation, stockpiling, off-site transport, and disposal of approximately 3,200 cubic yards of historical fill and solid waste that exceeds RRSCOs. Excavation extended up to 14 ft bgs Site-wide.
- Removal of four USTs and/or associated appurtenances (e.g., fill lines, vent lines, and electrical conduits), as well as decommissioning and off-Site disposal during redevelopment in accordance with DER-10, 6 NYCRR Part 613.9, NYSDEC CP-51, and other applicable NYSDEC UST closure requirements.
- Screening for indications of contamination (by visual means, odor, and monitoring PIDs) of excavated material during intrusive Site work.
- Appropriate off-Site disposal of material removed from the Site in accordance with federal, state, and local rules and regulations for handling, transport, and disposal.
- Installation of a SVE system to remediate concentrations of petroleum-related VOCs above the PGWSCOs in the vadose zone in the northeastern portion of the Site. The SVE system was installed to remediate petroleum-impacted soils in the northeastern portion of the Site deeper than 20 ft bgs, down to the groundwater table, located at approximately 60 ft bgs.

- Implementation of in-situ chemical oxidation (ISCO) by temporary injection points utilizing alkaline-activated persulfate to reduce elevated concentration of VOCs, including petroleum-related VOCs and chlorinated VOCs in groundwater.
- Backfill the Site as needed by the development with certified-clean fill/soil (i.e., meeting the Allowable Constituent Levels for Imported Fill or Soil as per restricted residential use defined in DER-10 Appendix 5), recycled concrete aggregate, or virgin, native crushed stone.
- Collection and analysis of confirmation soil samples at the proposed remediation depth in accordance with DER-10 to confirm a Track 2 remedy was achieved. All confirmation soil samples were analyzed for the Part 375 list of VOCs, SVOCs, pesticides, PCBs, metals, PFAS, and 1,4-dioxane. Over-excavation and additional endpoint sampling were performed to ensure all impacted materials above RRSCOs were removed from the Site above 14 ft bgs.
- Installation of an active sub-slab depressurization system (SSDS) to mitigate potential exposures related to SVI.
- Installation of new permanent groundwater monitoring wells in the location of RI monitoring wells MW-4, MW-5, and MW-6.
- Completion of a SVI evaluation in accordance with DER-10 and NYSDOH *Final Guidance on Soil Vapor Intrusion* following remedial activities, the completion of the building envelope, and prior to occupancy.

2.6 REMAINING CONTAMINATION

The achieved remedy is a Track 2 cleanup; therefore, groundwater monitoring is required to confirm that the groundwater meets the AWQS. Additionally, VOC-impacted soil beneath the building is present and currently being treated with an SVE system. Remaining soil contamination from the RI is included on Figure 4. Remaining groundwater contamination from the RI is included on Figure 5. The March 2024 and July 2024 post-remedial sampling event is included on Figure 6 and Table IV.

2.6.1 Soil

Soil was characterized during investigations prior to entering the BCP and during the RI conducted as part of the BCP. During the RI, soil beneath the Site was found to have concentrations of VOCs, SVOCs, and metals above the RRSCOs; therefore, soil excavation and disposal were included as a component of the Decision Document. Excavation was completed at the Site to reduce petroleum-based VOC and PAH concentrations in soil down to 14 ft bgs. However, deeper VOC contamination above the PGWSCOs is present beneath the building down to 60 ft bgs and is currently being treated by an SVE system.
Figure 4 summarizes the results of all soil samples collected that exceed the PGWSCOs at the Site after completion of remedial action.

2.6.2 Groundwater

Groundwater quality was characterized during investigations prior to entering the BCP and during the RI conducted as part of the BCP (provided on Figure 5). During the RI, groundwater beneath the Site was found to have concentrations of VOCs, SVOCs, and metals above the AWQS; therefore, groundwater

treatment was included as a component of the Decision Document. A groundwater treatment program was completed at the Site to reduce petroleum-based VOC and PAH concentrations in groundwater. Quarterly groundwater monitoring will be conducted and compared to groundwater data from the RI to confirm the efficacy of the groundwater treatment. RI data was collected from five wells (MW-1 through MW-5) that were abandoned prior remediation; three new monitoring wells (MW-6 through MW-8) were installed post-remediation (i.e., excavation and chemical injections) and will be sampled on a quarterly basis (see Section 4.4.1) to monitor remediation efforts. Post-remedy groundwater sampling was conducted in March 2024 and July 2024. Analytical results are provided in Table IV with all AWQS exceedances shown on Figure 6. Petroleum-related VOCs in the groundwater are below the AWQS; PCE detected in the groundwater above the AWQS during the post-remedial groundwater sampling is upgradient from and at higher concentrations than the concentrations detected during the RI, indicating that the PCE concentrations on-site are from an off-Site source.

Groundwater use at the Site is also subject to the ICs documented within the Environmental Easement and is restricted for use as a source of potable or process water without necessary water quality treatment as determined by NYSDOH.

2.6.3 Sub-Slab Soil Vapor and Indoor Air

Sub-slab soil vapor and indoor air quality were characterized during previous investigations. Soil vapor and indoor air analytical results from the RI and SRI identified VOCs as a contaminant of concern for the Site. Remedial activities at the Site were conducted in accordance with the RAWP. Soil at the Site was removed, at a minimum, to a depth of 14 ft bgs. However, previous investigations have demonstrated elevated VOCs in soil and soil vapor between 45 and 60 ft bgs. An SVE system was installed to mitigate the deeper soil vapor contaminants associated with deeper soil contamination. A sub-slab soil vapor and indoor air sampling event will be conducted to evaluate the potential for SVI in the new on-Site building. The Site is also subject to the ICs documented within the EE.

3. Institutional and Engineering Control Plan

3.1 GENERAL

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

This plan provides:

- a description of all IC and ECs on the Site;
- the basic implementation and intended role of each IC and 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 and ECs, such as the implementation of the *Excavation Work Plan* (as provided in Appendix D) 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 and ECs required by the Site remedy, as determined by the NYSDEC project manager.

3.2 INSTITUTIONAL CONTROLS

A series of ICs is required by the Decision Document to: 1) implement, maintain and monitor EC systems; 2) prevent future exposure to remaining contamination, and; 3) limit the use and development of the Site to restricted residential, commercial, and industrial 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 IC boundaries are shown on Figure 2. These ICs are:

- The property may be used for: restricted residential; commercial or industrial use, pending the first year of quarterly groundwater monitoring and SVE system operation;
- 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 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;
- Operations, 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 NYS 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 on Figure 2, and any potential impacts that are identified must be monitored or mitigated;
- Vegetable gardens and farming on the Site are prohibited; and
- An evaluation shall be performed to determine the need for further investigation and remediation should large-scale redevelopment occur, if any of the existing structures are demolished, or if the subsurface is otherwise made accessible.

3.3 ENGINEERING CONTROLS

The Controlled Property (the Site) includes three primary ECs: an active SSDS, an SVE system, and groundwater monitoring wells.

3.3.1 Active Sub-Slab Depressurization System

An active SSDS was installed to mitigate the potential for soil vapor intrusion by providing a pathway for soil vapor to vent to the atmosphere. The major components of the active SSDS include:

- One continuous perforated 4-inch polyvinyl chloride (PVC) horizontal pipe with 13 termini, embedded within a permeable layer (3/4-inch stone) under the foundation slab;
- A cover system consisting of a continuous StegoWrap® 20-mil vapor barrier and a variable thickness concrete slab;
- Four sub-slab vapor monitoring points throughout the building slab;
- A blower located in the basement equipped with an exhaust stack consisting of 4-inch-diameter cast iron riser pipe extending through the roof and terminating with a rain cap, at least 12 inches above the highest roof surface and at least 10 ft away from any adjacent building or at least 3 ft above any heating, ventilation, and air conditioning (HVAC) intakes.

The layout of the active SSDS and piping is provided on Figures 7 and 9, respectively. The blower and vapor barrier specifications are provided in Appendix E. The operations, maintenance, and monitoring requirements for the SSDS consists of initial startup testing, routine maintenance and monitoring

activities, and non-routine maintenance activities. Procedures for operating and maintaining the SSDS are documented in the Operations and Maintenance Plan (Section 5.0 of this SMP).

3.3.2 Soil Vapor Extraction System

A SVE system was installed in the northeastern portion of the Site to treat VOC contamination exceeding UUSCOs in the vadose zone soils between 20 ft and the groundwater table, located approximately 60 ft bgs. The soil vapor extracted by the SVE system undergoes treatment with granular activated carbon (GAC) before being discharged to the atmosphere through an exhaust stack consisting of 4-inch-diameter cast iron riser pipe extending through the roof and terminating with a rain cap, at least 12 inches above the highest roof surface and at least 10 ft away from any adjacent building or at least 3 ft above any HVAC intakes.

The SVE system is comprised of a total of nine SVE locations, with each SVE location containing two co-located SVE wells, for a total of 18 SVE wells. Among the 18 SVE wells, five SVE wells are screened from 20 to 30 ft bgs, four from 30 to 40 ft bgs, five from 40 to 50 ft bgs, and four from 50 to 60 ft bgs. Each SVE well is constructed with 1.5-inch-diameter, schedule 40 PVC pipes with a 10-ft screen. The SVE wells are installed under the concrete slab with a horizontal section that penetrates the concrete slab at the treatment trailer. The 1.5-inch-diameter wells have a dedicated sample port and valve prior to manifolding into a 4-inch header pipe. The header pipe is connected to the air-water separator, SVE blower, GAC drums, and discharge stack. A schematic of the system is shown on Figure 8 and 9.

Monitoring points (MPs) will be used to measure the SVE system influence. There are two MP locations, each with four co-located MPs, for a total of eight MPs, installed within the treatment area. The MPs consist of 12-inch stainless-steel screens, connected to the surface with Teflon® tubing. These 12-inch-long MPs have been installed at the midpoint of each treatment interval (i.e., 25, 35, 45, and 55 ft bgs).

A pilot test was conducted to determine the estimated SVE well radius of influence (ROI) and vacuum required to achieve a flow rate to remove at least four pore volumes per day. Based on the pilot test findings, a blower capable of 140 cubic feet per minute (cfm) (i.e., 7.8 cfm from each SVE well) at a vacuum of 80 inches of water column (IWC) could achieve an ROI of 14 ft and remove four soil vapor pore volumes per day.

Procedures for operating and maintaining the SVE system are documented in the Operation and Maintenance Plan (Section 5.0 of this SMP). As-built drawings, signed and sealed by a P.E. who is licensed and registered in NYS, are included in Appendix F (Operations and Maintenance Manual). The as-built of the SVE system is provided on Figure 8.

3.3.3 Media Monitoring Program

As part of the Track 2 remedy, groundwater monitoring will be conducted quarterly for one year. The Site includes three monitoring wells as shown on Figure 6. Future groundwater monitoring will be performed on a frequency approved by NYSDEC and NYSDOH to assess the performance of the remedy. The locations of groundwater monitoring wells selected for inclusion at the start of Site management include upgradient, downgradient, and cross-gradient locations to confirm groundwater conditions at the Site.

Groundwater monitoring will continue as determined in consultation with NYSDEC and NYSDOH until residual groundwater concentrations are found to be below NYSDEC standards or have become asymptotic over an extended period. The groundwater monitoring program will include gauging from all accessible monitoring wells on a quarterly basis to confirm groundwater flow elevations and inferred groundwater flow direction. Groundwater samples will be analyzed for VOCs and will be compared to AWQS. Sampling will be conducted as detailed in the Quality Assurance Project Plan (QAPP) included in Appendix G.

Sub-slab soil vapor and indoor air monitoring will be conducted after completion of the building envelope, during the 2024 to 2025 heating season, to demonstrate the effectiveness of the remedy. The SSDS includes a network of four sub-slab MPs as shown on Figure 7. These MP are where the sub-slab soil vapor and co-located indoor air samples will be taken. The locations of the sub-slab MPs were selected to be representative of conditions across the Site.

After the initial sampling event, sub-slab soil vapor and indoor air monitoring will continue as determined in consultation with NYSDEC and the NYSDOH Soil Vapor/Indoor Air Decision Matrices. The sub-slab soil vapor and indoor air monitoring program will include the collection of sub-slab soil vapor samples from below the cellar slab as well as co-located indoor air samples from the cellar level. Soil vapor and indoor air samples will be analyzed for VOCs, including BTEX, and will be compared to NYSDOH Soil Vapor/Indoor Air Decision Matrices as outlined in the *Guidance for Evaluating Soil Vapor Intrusion in the State of New York* (October 2006; last updated February 2024). Sampling will be conducted as detailed in the QAPP provided in Appendix G.

3.3.4 Criteria for Completion of Remediation/Termination of Remedial Systems

Generally, remedial processes are considered completed when monitoring indicates that the remedy has achieved the RAOs identified by the Decision Document. The framework for determining when remedial processes are complete is provided in Section 6.4 of NYSDEC DER-10. Unless waived by the NYSDEC, confirmation samples of applicable environmental media are required before terminating any remedial actions at the Site. Confirmation samples require Category B deliverables and a Data Usability Summary Report.

As discussed below, the NYSDEC may approve termination of a groundwater monitoring program. When a remedial party receives this approval, the remedial party will decommission all Site-related monitoring, injection, and recovery wells as per the NYSDEC CP-43 policy.

The remedial party will also conduct any needed Site restoration activities, such as asphalt patching and decommissioning treatment system equipment.

3.3.4.1 Active Sub-Slab Depressurization System

Monitoring and maintaining the active SSDS will not be discontinued unless prior written approval is granted by the NYSDEC and the NYSDOH project managers. Conditions that may warrant discontinuing the SSDS include contaminant concentrations in soil and groundwater that reach levels that are below

RRSCOs and AWQS, respectively. If monitoring data indicates that the SSDS may no longer be required, a proposal to discontinue the SSDS will be submitted by the remedial party to the NYSDEC and NYSDOH project managers.

3.3.4.2 Soil Vapor Extraction System

The SVE system will not be discontinued unless prior written approval is granted by the NYSDEC project manager. If monitoring data indicates that the SVE system may no longer be required, a proposal to discontinue the system will be submitted by the remedial party to the NYSDEC project manager. Conditions that may warrant discontinuing the SVE system include contaminant concentrations in soil that: 1) reach levels that are below UUSCOs; or 2) the NYSDEC has determined that the SVE system has reached the limit of its effectiveness. This assessment will be based in part on soil vapor contaminant levels entering the SVE system. Systems will remain in place and operational until permission to discontinue their use is granted in writing by the NYSDEC project manager.

3.3.4.3 Sub-Slab Monitoring Points and Indoor Air Monitoring

Sub-slab soil vapor and indoor air monitoring activities will be used to assess the potential for SVI. If monitoring data indicate a recommendation of no further action, a proposal to discontinue the EC and all ICs will be submitted by the remedial party. Monitoring will continue until permission to discontinue is granted in writing by the NYSDEC project manager.

3.3.4.4 Monitoring Wells Associated with In-Situ Chemical Oxidation

Groundwater monitoring activities to assess ISCO will continue, as determined by the NYSDEC project manager in consultation with NYSDOH project manager, until residual groundwater concentrations are found to be consistently below AWQS or have become asymptotic at an acceptable level over an extended period. If monitoring data indicates that monitoring may no longer be required, a proposal to discontinue the remedy will be submitted by the remedial party. Monitoring will continue until permission to discontinue is granted in writing by the NYSDEC project manager. If groundwater contaminant levels become asymptotic at a level that is not acceptable to the NYSDEC, additional injections, source removal, treatment, and/or control measures will be evaluated.

4. 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 project manager. 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 QAPP provided in Appendix G.

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

- Sampling and analysis of all appropriate media (e.g., groundwater, indoor air, soil vapor, and soils);
- Assessing compliance with applicable NYSDEC Standards, Criteria, and Guidance, particularly groundwater standards and Part 375 Soil Cleanup Objectives 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;
- 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 of this SMP.

4.2 SITE – WIDE INSPECTION

Site-wide inspections will be performed at a minimum of once per year. These periodic inspections must be conducted when the ground surface is visible (e.g., no snow cover). Site-wide inspections will be performed by a qualified person who directly reports to a P.E. who is licensed and registered in NYS. Modification to the frequency or duration of the inspections will require approval from the NYSDEC project manager. Site-wide inspections will also be performed after all severe weather conditions that may affect ECs or monitoring devices. Inspection forms for the SVE system and SSDS will be used for Site-wide inspections. During these inspections, inspection forms will be completed as provided in Appendix H (Site Management Forms). 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 (PRR). 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;
- if compliant with requirements of this SMP and the Environmental Easement;
- achievement of remedial performance criteria; and
- if Site records are complete and up to date.

Reporting requirements are outlined in Section 7 of this SMP.

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 project manager must be given by noon of the following day. In addition, an inspection of the Site will be conducted within five days of the event to verify the effectiveness of the IC and ECs implemented at the Site by a qualified environmental professional, as defined in 6 NYCCR Part 375. Written confirmation must be provided to the NYSDEC project manager within seven 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. The remedial party will submit follow-up status reports to the NYSDEC within 45 days of the event on actions taken to respond to any emergency event requiring ongoing responsive action, describing and documenting actions taken to restore the effectiveness of the ECs (Appendix I).

4.3 TREATMENT SYSTEM MONITORING AND SAMPLING

4.3.1 Remedial System Monitoring

Monitoring of the SVE system and SSDS will be performed on a routine basis, as identified in Table V (see below). The monitoring of remedial systems must be conducted by a qualified person who directly reports to a P.E. who is licensed and registered in NYS. Modification to the frequency or sampling requirements will require approval from the NYSDEC project manager. 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 SVE system and/or SSDS has been reported or an emergency occurs that is deemed likely to affect the operation of the systems. SVE system and/or SSDS components to be monitored include, but are not limited to, the components included in Table V below.

Table V: Remedial System Monitoring Requirements and Schedule			
Remedial System Component	**Monitoring Parameter**	**Operating Range**	**Monitoring Schedule**
SVE System	SVE-1S/D through SVE-9S/D	5-10 cfm each	Monthly
	SVE/SSDS Blower	120-160 cfm	Monthly
	GAC Drum 1 and 2	Not to exceed 10 psi	Monthly
	MP 1 and 2	>0.1 IW	Monthly
Active SSDS	Vacuum Monitoring Points	>0.004 IW	Bi-annually
	SVE/SSDS Blower	120-160 cfm	Bi-annually
Notes: *psi = pounds per square inch*			

A complete list of components to be inspected is provided in the Inspection Checklist (Appendix H). 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 SVE system on a routine basis. Sampling locations, required analytical parameters, and schedule are provided in Table VI (see below). Modification to the frequency or sampling requirements will require approval from the NYSDEC project manager.

Table VI: Remedial System Sampling Requirements and Schedule			
Sampling Location	**Analytical Parameters**		**Schedule**
	VOCs (USEPA Method TO-15)	**Photoionization Detector (PID)**	
SVE Combined Influent	X	X	Quarterly
SVE Effluent (after treatment with two GAC vessels connected in series and before discharging)	X	X	Quarterly
Individual SVE wells (SVE-1S/D through SVE-9S/D)	-	X	Quarterly

Detailed sample collection and analytical procedures and protocols are provided in Appendix G.

The remedial party will properly dispose of all wastes generated by the remedial system at off-Site disposal facilities according to local, state, and federal laws and regulations. Wastes will be tested before disposal to comply with the permit conditions of the disposal facility. Wastes generated at this Site include spent activated carbon.

4.4 POST-REMEDIATION MEDIA MONITORING AND SAMPLING

Samples shall be collected from the groundwater monitoring wells on a routine basis and indoor air samples shall be collected during the heating season after the completion of the building envelope. Additionally, samples shall be collected from the four sub-slab MPs with co-located indoor air samples after completion of the building envelope in order to fulfill the Soil Vapor Intrusion evaluation requirements. Sampling locations, required analytical parameters, and the schedule are provided in Table VII below. Modification to the frequency or sampling requirements will require approval from the NYSDEC project manager.

Table VII: Post-Remediation Sampling Requirements and Schedule

Sampling Location	Analytical Parameters	Schedule
	VOCs (USEPA Method 8260B)	VOCs (USEPA Method TO-15)
Monitoring Wells 6 through 8	X	Quarterly
MP-1 through MP-4	X	One sampling event, during heating season, upon completion of Building Envelope
Four Co-located Indoor and One Ambient Air Samples	X	One sampling event, during heating season, upon completion of Building Envelope

Detailed sample collection and analytical procedures and protocols are provided in Appendix G.

4.4.1 Groundwater Sampling

Groundwater monitoring will be performed quarterly to assess the performance of the remedy. Modification to the frequency or sampling requirements will require approval from the NYSDEC project manager.

Table VIII: Monitoring Well Construction Details

Monitoring Well ID	Well Purpose / Location	Coordinates (longitude/ latitude)	Well Diameter (inches)	Elevation (above mean sea level) – approximate until installed and surveyed			
				Casing Elevation	Screen Length	Screen Top (ft bgs)	Screen Bottom (ft bgs)
MW-6	Upgradient	73°55’19.11”/ 40°40’38.26”	2	63.87	15	~55	~70
MW-7	Cross-Gradient	73°55’19.12”/ 40°40’37.72”	2	63.88	15	~55	~70
MW-8	Downgradient	73°55’19.92”/ 40°40’37.84”	2	63.91	15	~55	~70

Table VIII (see above) summarizes the identification numbers, as well as the purpose, location, depths, diameters, and screened intervals of the wells. As part of the groundwater monitoring, one upgradient

well, one cross-gradient well, and one downgradient well are sampled to evaluate the effectiveness of the ISCO treatment. The remedial party will measure depth to the water table for each monitoring well in the network before sampling. Monitoring well construction logs are included in Appendix C.

If biofouling or silt accumulation occurs in the on-Site monitoring wells, the wells will be physically agitated/surged and redeveloped. Additionally, monitoring wells will be properly decommissioned and replaced 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 project manager will be notified prior to any repair or decommissioning of any monitoring well for the purpose of replacement, and the repair or decommissioning and replacement process will be documented in the subsequent PRR. Well decommissioning without replacement will be performed only with the prior approval of the NYSDEC project manager. Well abandonment will be performed in accordance with NYSDEC's guidance entitled "CP-43: Groundwater Monitoring Well Decommissioning Procedures." Monitoring wells that are decommissioned because they have been rendered unusable will be replaced in kind in the nearest available location, unless otherwise approved by the NYSDEC project manager.

4.4.2 Soil Vapor Intrusion Sampling

Soil vapor intrusion sampling will be performed after the completion of the building envelope, during the heating season, after the SSDS has been active for at least 30 days, to assess the performance of the remedy. Modification to the frequency or sampling requirements will require approval from the NYSDEC project manager.

The network of on-site SVI sample locations has been designed to be representative of conditions at the Site. Sub-slab soil vapor samples will be collected beneath the cellar slab via sub-slab MPs and co-located indoor air samples will be collected from the cellar level. An ambient air sample will be collected during the indoor air sampling.

A post mitigation pressure field extension test was conducted to confirm a negative pressure gradient.

Location	Vacuum in inches of water
Riser	7.001
MP-01	0.053
MP-02	0.034
MP-03	0.069
MP-04	0.045
MP-05	0.004
MP-06	0.054

The locations of the sub-slab MPs are shown on Figure 7. Analytical parameters to be analyzed are provided in Table 1 of the QAPP, included in Appendix G.

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

Deliverables for the SVI sampling program are specified in Section 7 of this SMP.

4.4.2.1 Sub-Slab Soil Vapor Sampling Plan

Prior to sampling, ambient air will be purged from the sub-slab MPs by attaching a tube to the MP and attaching the surface end of the tube to an air valve and then to a vacuum pump. The flow rate for both purging and sample collection will not exceed 0.2 liter per minute (L/min). The sub-slab soil vapor samples will first be screened for organic vapors using a PID. A sample log sheet will be maintained summarizing sample identification, date and time of sample collection, sampling depth, purge volumes, volume of the soil vapor extracted, vacuum of canisters before and after the samples are collected, apparent moisture content of the sampling zone, and chain of custody. A sample log sheet will be maintained summarizing sample identification, date and time of sample collection, sampling depth, purge volumes, volume of the soil vapor extracted, vacuum of canisters before and after the samples are collected, apparent moisture content of the sampling zone, and chain of custody.

4.4.2.2 Indoor/Ambient Air Sampling Plan

All indoor air samples will be co-located with a sub-slab soil vapor sample. The indoor and ambient air samples will be collected from breathing height (3 to 5 ft above the floor) from within the Site building and outside the Site building, respectively. The sampling flow rate will not exceed 0.2 L/min. Sampling will occur for 24 hours in residential spaces and eight hours in commercial spaces. Indoor air samples will be collected in laboratory-supplied 2- or 6-liter SUMMA® canisters using 24-hour regulators. All indoor air sample containers will be appropriately labeled and closed. Chain of custody documents will be completed before shipment. All indoor air samples will be analyzed for VOCs by USEPA Method TO-15 and sent to an Environmental Laboratory Accreditation Program-certified laboratory.

4.4.3 Monitoring and Sampling Protocol

All sampling activities will be recorded in a field book and associated sampling log as provided in Appendix H (Site Management Forms). Other observations (e.g., groundwater monitoring well integrity) will be noted on the sampling log. The sampling log will serve as the inspection form for the monitoring network. Additional details regarding monitoring and sampling protocols are provided in the QAPP included in Appendix G.

5. Operations and Maintenance Plan

5.1 GENERAL

This Operations 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 SVE system and SSDS; and
- updates to reflect changes in Site conditions or the manner in which the SVE system and SSDS are operated and maintained.

Further detail regarding the Operation and Maintenance of the SVE system and SSDS is provided in Appendix F (Operations and Maintenance Manual.) A copy of this Operations and Maintenance Manual, along with the complete SMP, is to be maintained at the Site. This Operations 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

The minimum operating requirements of the SVE system are provided in Table IX. The expected operating requirements were based on the results of the pilot test. An effective ROI of approximately 14 ft was estimated at an applied vacuum of 80 IWC and a flow rate of 7.8 cfm for each extraction point.

Table IX: SVE System Minimum Operating Requirements

SVE System Component	Parameter	Expected Operating Requirement
Extraction Well	Flow Rate	7.8 CFM
Blower	Flow Rate Capacity	140 CFM
Blower	Pressure	80 IWC
Carbon Treatment for Vapors	VOC Removal Efficiency	99 percent removal at the stack
Vapor Monitoring Points	Induced Vacuum	0.1 IWC

Two 300-pound GAC vessels are used for vapor treatment. Using the soil vapor concentration obtained during the remedial investigation, a 20 percent factor of safety, and the proposed flow rate, the anticipated contaminant loading rate during the proposed operation mode is approximately 0.006 pounds per hour. If the system runs continuously (365 days per year, 24 hours per day), the anticipated total VOCs annual removal rate will be approximately 51 pounds. Considering a rule-of-thumb for GAC adsorption rate is 1:10 (1 pound contaminant to 10 pounds GAC), the annual GAC consumption rate is estimated at approximately 510 pounds. Using two 300-pound GAC vessels in series, the system would require one complete GAC change-out event per year. GAC vessels shall be operated in a lead/lag configuration. Carbon in the lead vessel will be changed out when sampling indicates breakthrough in the second GAC vessel or saturation of the lead GAC unit (out PID reading within 10 percent of inlet reading). The spent carbon will be profiled and shipped off-Site for disposal and regeneration.

In addition to the SVE system, an active SSDS was installed at the Site to prevent the potential for vapor intrusion into the building as-built drawings for the SSDS are included on Figure 7. Details pertaining to the performance monitoring of the SSDS is outlined in Section 5.4.

5.3 SVE SYSTEM OPERATIONS AND MAINTENANCE

The following sections provide a description of the operations and maintenance of the SVE system. Cut-sheets and as-built drawings for SVE system are provided in Appendix F (Operations and Maintenance Manual).

5.3.1 System Start-Up and Testing

Before restarting the system, complete Table 1 of the Operations and Maintenance Manual (Appendix F): SVE System Startup Checklist and Commissioning Plan. When starting up the system, the following procedures should be:

- Connecting the GAC vessels to the blower and all the SVE wells to the header line.
- Opening the valves of each SVE well header line.
- Setting the SVE blower HOA switch to AUTO and allow the flow to stabilize for 15 minutes. Note: The SVE blower switch can also be set to HAND. HAND should only be used while troubleshooting and while an operator is present. The system running in HAND mode will not shut down due to high-temperature alarms.
- Setting each SVE well to slope towards the well screen and allow water to drain back into the formation. However, if water is suspected to be present in the header lines, it can be removed by closing off flow to the other header legs using the ball valves on the header legs inside the system enclosure. Increasing vacuum to the leg containing water will pull the water through the header leg into the system to be collected by the air-water separator. Remove water from one header leg at a time and return the valves to their normal position when complete.

This system testing protocol was performed when the system was installed. The system testing described above will be conducted if, in the course of the SVE 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

The SVE system includes three primary components: SVE blower, air-water separator, and the GAC vessels. Each component will require routine maintenance.

The blower will be maintained as per the owner's manual. SVE blowers create excessive noise when in operation. When the blower is operating, all personnel must wear hearing protection at all times when inside the system trailer.

The air-water separator will remove moisture from the air stream before entering the blower. The liquid collected from the system operations will be drummed and characterized for off-Site disposal.

Granular activated carbon vessels will be operated in a lead/lag configuration. Carbon in the second (lead) vessel will be changed out when sampling indicates breakthrough in the second GAC vessel (outlet PID reading within 10 percent of the inlet reading). The order of the vessels will be rearranged by reconfiguring the hose connections to put the first vessel in the lead and the second vessel in the lag position.

During each monitoring event, the system monitoring components (pressures and vacuum gauges) will be checked to ensure they continue to function properly and accurately. The condition of the SVE system components will be checked monthly for any damage, rusting, degradation, missing parts, and/or signs of malfunction. Condition of SVE connections, valves, manifold legs, GAC plumbing, flow meter(s), vacuum gauges, vapor probes, air-water separator tank, and vacuum blower will be observed.

5.3.3 Non-Routine Operation and Maintenance

The air-water separator is equipped with a high-water level alarm system. The system will shut down if the alarm conditions are triggered. If triggered, the air-water separator will be inspected, and the necessary troubleshooting steps will be implemented. Damaged components/parts will be repaired or replaced.

5.3.4 System Monitoring Devices and Alarms

The air-water separator is equipped with an alarm to shut down the system in case of condensate buildup in the system. If the alarm is triggered, applicable maintenance and repairs will be conducted as specified in the Operations and Maintenance Plan, and the SVE system will be restarted. Operational problems will be noted in the PRR to be prepared for that reporting period.

5.3.5 Fire Safety

The remedial party will conduct an annual facility walk with the appropriate building personnel, if requested by local authorities. The Site walk will allow for the addition of the facility to any local preplanning efforts. The NYSDEC project manager will be provided with the local fire chief's/fire suppression team's recommendations as soon as they become available. Following review, the NYSDEC project manager may direct the remedial party to implement the recommendations and/or revise the SMP.

5.4 ACTIVE SSDS OPERATION AND MAINTENANCE

The following sections provide a description of the operations and maintenance of the SSDS. Specifications, an Operation and Maintenance Manual, and an as-built drawing for the SSDS are provided in Appendix E, Appendix F, and Figure 7, respectively.

5.4.1 SSDS Startup and Testing

This subsection outlines the procedures for confirming the effectiveness and proper installation of the SSDS prior to building occupancy and complies with the post-mitigation/confirmation testing requirements of NYSDOH's Final Guidance for Evaluating Soil Vapor Intrusion in the State of New York,

dated October 2006 and is consistent with the NYSDEC-approved RAWP. The following actions will be performed following startup of the SSDS:

1. Negative Pressure of the sub-slab area relative to indoor air will be measured at each monitoring point utilizing an appropriate hand-held instrument. A negative differential pressure of 0.004 IWC will be confirmed between the indoor and the sub-slab vapor spaces.
2. The operation of the alarm device for low or no vacuum will be confirmed.

The system testing described above will be conducted if, in the course of the SSDS lifetime, significant changes are made to the system, and the system must be restarted. Additionally, startup testing will be required if there is a change in building use or occupancy. NYSDEC and NYSDOH must be notified of any changes in the building use or occupancy. Subsequent to the initial startup testing, bi-annual inspection and monitoring of the SSDS will be performed, as described below.

5.4.2 Routine System Operations and Maintenance

Routine operation involves the effective distribution of soil vapor from the subsurface, through the SSDS conduits, and out from the riser outlets. Routine inspection will be conducted by a qualified engineer or building personnel to ensure that components of the SSDS are operating properly and will continue until NYSDEC and NYSDOH have determined there is no need for such a system. The operation of the SSDSs will not be discontinued without written approval from the NYSDEC.

Personnel will continue routine maintenance on the SSDS bi-annually and will include, at a minimum:

- conducting a visual inspection of the complete system;
- identifying and repairing of damage;
- inspecting the discharge location of the vent pipe to ensure that no new air intake or operable window is located nearby;
- inspecting the floor slab and foundation walls for evidence of cracks and/or holes, and repair of cracks and/or holes, if required; and
- inspecting of sealing around any monitoring wells and floor cleanout covers.

Appendix H contains a routine maintenance SSDS checklist.

The SSDS blower requires routine and preventative maintenance for efficient operation. This maintenance shall be performed by qualified personnel as required. NYSDOH and NYSDEC must be notified of any maintenance required as a result of the routine inspections. Appendix E and Appendix H contain a manual for the blower and a routine maintenance SSDS checklist, respectively.

5.4.3 Non-Routine Operation and Maintenance

Non-routine maintenance would typically occur when the warning device indicates that the SSDS is not working properly, or the system becomes damaged. The scope of non-routine maintenance will vary

depending upon the situation and the severity of the condition. A severe condition is defined as a condition where the system cannot be repaired by qualified building personnel.

If an emergency occurs, such as a natural disaster or an unforeseen failure of the ECs, which results in a severe condition, an inspection of the Site will be conducted by qualified building personnel immediately following the event and reported to NYSDEC and NYSDOH by noon the following day. If a severe condition is observed during a routine inspection, the NYSDEC and NYSDOH will be notified within 48 hours of the inspection. NYSDOH and NYSDEC must be notified of any maintenance required as a result of the routine inspections.

5.4.4 System Monitoring Devices and Alarms

The air-water separator is equipped with an alarm to shut down the system in case of condensate buildup in the system. If the alarm is triggered, applicable maintenance and repairs will be conducted, as specified in the Operations and Maintenance Plan, and the SSDS will be restarted. Operational problems will be noted in the PRR to be prepared for that reporting period.

6. 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.

A vulnerability assessment will be conducted for the Site during periodic assessments to ensure resilience of the ECs to severe storms/weather events and associated flooding.

6.2 GREEN REMEDIATION EVALUATION

NYSDEC's DER-31 Green Remediation requires that the 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 PRR.

During the SVI evaluation at the Site, the environmental footprint can be attempted to be minimized by taking public transportation to Site and reducing waste generated during the SVI evaluation investigation. Matrices that will be evaluated for the environmental footprint analysis in the eventual SVI evaluation report will include transportation to the Site and on-Site grid electricity usage.

6.2.1 Timing of Green Remediation Evaluations

For major remedial system components, green remediation evaluations and corresponding modifications will be undertaken as part of a formal Remedial System Optimization (RSO), or at any time that the NYSDEC project manager feels appropriate; e.g., during significant maintenance events or in conjunction with storm recovery activities.

Modifications resulting from green remediation evaluations will be routinely implemented and scheduled to occur during planned/routine operation and maintenance activities. Reporting of these modifications will be presented in the PRR.

6.2.2 Remedial Systems

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.

6.2.3 Building Operations

Structures including buildings and sheds will be operated and maintained to provide for the most efficient operation of the remedy, while minimizing energy, waste generation, and water consumption.

6.2.4 Frequency of System Checks, Sampling, and Other Periodic Activities

Transportation to and from the Site, use of consumables in relation to visiting the Site in order to conduct system checks and/or collect samples, and shipping samples to a laboratory for analyses have direct and/or inherent energy costs. The schedule and/or means of these periodic activities has been prepared so that these tasks can be accomplished in a manner that does not impact remedy protectiveness but reduces the expenditure of energy or resources.

6.2.5 Metrics and Reporting

As discussed in Section 7 and as shown in Appendix H (Site Management Forms), information on energy usage, solid waste generation, transportation and shipping, water usage and land use, and ecosystems will be recorded to facilitate and document consistent implementation of green remediation during Site management and to identify corresponding benefits.

6.3 REMEDIAL SYSTEM OPTIMIZATION

A Remedial System Optimization (RSO) study will be conducted any time that the NYSDEC project manager 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 exceed the estimated costs.
- The remedial system is not performing as expected or as designed.
- A previously unidentified source material may be suspected.
- A plume shift has potentially occurred.
- The 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.
- A new and applicable remedial technology becomes available.

An RSO will provide a critique of a Site's conceptual model, summarize 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 focus 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. 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 H. These forms are subject to NYSDEC revision. All Site management inspection, maintenance, and monitoring events will be conducted by a qualified person who directly reports to a P.E. who is licensed and registered in NYS.

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 X (see below) and summarized in the PRR.

A copy of the contractor's health and safety plan is provided in Appendix J.

Table X: Schedule of Interim Monitoring/Inspection Reports

Task/Report	Reporting Frequency*
Soil Vapor Intrusion Evaluation	Soil vapor intrusion sampling and reporting in the immediate heating season, upon the completion of the building.
SVE Monitoring	Quarterly, for at least one year
Groundwater Monitoring	Quarterly, for at least one year
First PRR	16 Months after Certificate of Completion is issued
Follow-on PRRs	Annually

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

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, and/or outdoor air);
- Copies of all field forms completed (e.g., well sampling logs and chain of custody documentation);
- 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™ database in accordance with the requirements found at this link http://www.dec.ny.gov/chemical/62440.html.

7.2 PERIODIC REVIEW REPORT

A PRR will be submitted to the NYSDEC project manager beginning 16 months after COC is issued. After submittal of the initial PRR, the next PRR shall be submitted annually to the NYSDEC project manager or at another frequency as may be required by the NYSDEC project manager. In the event that the Site is subdivided into separate parcels with different ownership, a single PRR will be prepared that addresses the Site described in Appendix A (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 PRR. 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, fire inspections, and severe condition inspections, if applicable.

- Description of any change of use, import of materials, or excavation that occurred during the certifying period.
- 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.
- Identification of any wastes generated during the reporting period, along with waste characterization data, manifests, and disposal documentation.
- 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 tables and figures will include a presentation of past data as part of an evaluation of contaminant concentration trends, including but not limited to:
  - Trend monitoring graphs that present groundwater contaminant levels from before the start of the remedy implementation to the most current sampling data;
  - Trend monitoring graphs depicting system influent analytical data on a per event and cumulative basis;
  - Operation and Maintenance data summary tables;
  - A current plume map for sites with remaining groundwater contamination; and
  - A groundwater elevation contour map for each gauging event.
- 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, Record of Decision (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;
  - An evaluation of trends in contaminant levels in the affected media to determine if the remedy continues to be effective in achieving remedial goals as specified by the RAWP, ROD, or Decision Document; and
  - 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 average, high, and low flows per day;
  - The contaminant mass removed and the cost per pound of mass removed during the certification period and during the life of the treatment system;
  - A description of breakdowns and/or repairs along with an explanation for any significant downtime;
  - A description of the resolution of performance problems;
  - Alarm conditions;
  - Trends in equipment failure;
  - A summary of the performance, effluent and/or effectiveness monitoring; and
  - Comments, conclusions, and recommendations based on data evaluation. Recommendations must address how receptors would be impacted. Recommendations can include:
    - Proposals to address efficiency and costs such as: instituting remote operation, system changes to decrease maintenance costs and downtime, and system changes to decrease energy use; and
    - Proposals to modify or shut down a treatment system due to remediation completion, system performance, or changed conditions. System shutdowns are addressed in Section 6.4 of DER-10.

7.2.1 Certification of Institutional and Engineering Controls

Following the last inspection of the reporting period, a P.E. licensed to practice and registered in NYS will prepare, and include in the PRR, 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 generally accepted engineering practices;
- 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] for the Site."

"I certify that the New York State Education Department has granted a Certificate of Authorization to provide Professional Engineering services to the firm that prepared this Periodic Review Report."

- No new information has come to my attention, including groundwater monitoring data from wells located at the Site boundary, if any, to indicate that the assumptions made in the qualitative exposure assessment of off-Site contamination are no longer valid; and
- The assumptions made in the qualitative exposure assessment remain valid.

The signed certification will be included in the PRR.

The PRR will be submitted, in electronic format, to the NYSDEC project manager and the NYSDOH project manager. The PRR may also need to be submitted in hard-copy format if 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 or failure to conduct Site management activities, a Corrective Measures Work Plan will be submitted to the NYSDEC project manager 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 project manager.

7.4 REMEDIAL SYSTEM OPTIMIZATION REPORT

If an RSO is to be performed (see Section 6.3), upon completion of an RSO, an RSO report must be submitted to the NYSDEC project manager 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, Health and Safety Plans, 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 project manager and the NYSDOH project manager.

References

1. EnviroTrac, Ltd., 2002. Spill Closure Report. December.
2. Groundwater & Environmental Services, Inc., 1993. Site Investigation Report. April.
3. Groundwater & Environmental Services, Inc., 1994a. Site Investigation Report Underground Storage Tank Closure. June.
4. Groundwater & Environmental Services, Inc., 1994b. Site Assessment Report. November.
5. Groundwater & Environmental Services, Inc., 1998. Remedial Investigation. June.
6. Limited Phase II Environmental Site Assessment (Haley & Aldrich of New York, November 2021)
7. Haley & Aldrich of New York, 2022. Remedial Investigation Report. October.
8. Haley & Aldrich of New York, 2023a. Interim Remedial Measures Construction Completion Report. January.
9. Haley & Aldrich of New York, 2023b. Supplemental Remedial Investigation Report. March.
10. Haley & Aldrich of New York, 2023c. Remedial Action Work Plan. August.
11. H & A of New York Engineering and Geology, LLP. Final Engineering Report (August 2024).
12. New York State Department of Environmental Conservation. NYSDEC DER-10 – "Technical Guidance for Site Investigation and Remediation."
13. New York State Department of Environmental Conservation, 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 (April 2000 addendum).
14. New York State Department of Environmental Conservation, 2006. 6 NYCRR Part 375, Environmental Remediation Programs. 14 December.
15. New York State Department of Environmental Conservation, 2023. Decision Document. September.

\\haleyaldrich.com\share\CF\Projects\0205125\Deliverables\19. SMP\2024-0826-HANY-1885 Atlantic Ave SMP_F.docx

TABLES

TABLE III

GROUNDWATER ELEVATION DATA

1885 ATLANTIC AVENUE REDEVELOPMENT SITE

BROOKLYN, KINGS COUNTY, NEW YORK

Monitoring Well	Top of Casing Elevation (ft)	March 2024 Groundwater Elevation (ft)
MW-6	63.87	11.37
MW-7	63.88	11.16
MW-8	63.91	11.29

Notes:

ft: feet

Elevations are derived from Elevation datum North American Vertical Datum 1988

TABLE IV
POST-REMEDY GROUNDWATER RESULTS
1885 ATLANTIC AVENUE REDEVELOPMENT SITE
BROOKLYN, KINGS COUNTY, NEW YORK

	Action Level	Wells							
Location Name	New York TOGS	MW-06	MW-06	MW-06	MW-07	MW-07	MW-07	MW-08	MW-08
Sample Name	111 Ambient	MW-06_20240314	DUP-01_20240314	MW-6_20240719	MW-07_20240314	MW-7_20240719	DUP-01_20240719	MW-08_20240314	MW-8_20240719
Sample Date	Water Quality	03/14/2024	03/14/2024	07/19/2024	03/14/2024	07/19/2024	07/19/2024	03/14/2024	07/19/2024
Lab Sample ID	Standards	460-300167-1	460-300167-6	460-308013-3	460-300167-2	460-308013-2	460-308013-4	460-300167-3	460-308013-1
Volatile Organic Compounds (ug/L)									
1,1,1-Trichloroethane	5	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)
1,1,2,2-Tetrachloroethane	5	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)
1,1,2-Trichloroethane	1	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)
1,1-Dichloroethane	5	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)
1,1-Dichloroethene	5	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)
1,2,3-Trichlorobenzene	5	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)
1,2,4-Trichlorobenzene	5	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)
1,2,4-Trimethylbenzene	5	2.3	2.7	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)
1,2-Dibromo-3-chloropropane (DBCP)	0.04	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)
1,2-Dibromoethane (Ethylene Dibromide)	0.0006	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)
1,2-Dichlorobenzene	3	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)
1,2-Dichloroethane	0.6	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)
1,2-Dichloropropane	1	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)
1,3,5-Trimethylbenzene	5	1	1.1	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)
1,3-Dichlorobenzene	3	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)
1,4-Dichlorobenzene	3	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)
2-Butanone (Methyl Ethyl Ketone)	50	ND (5)	ND (5)	ND (5)	ND (5)	ND (5)	ND (5)	ND (5)	ND (5)
2-Hexanone (Methyl Butyl Ketone)	50	ND (5)	ND (5)	ND (5)	ND (5)	ND (5)	ND (5)	ND (5)	ND (5)
2-Phenylbutane (sec-Butylbenzene)	5	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)
4-Methyl-2-Pentanone (Methyl Isobutyl Ketone)	NA	ND (5)	ND (5)	ND (5)	ND (5)	ND (5)	ND (5)	ND (5)	ND (5)
Acetone	50	ND (5)	ND (5)	ND (5)	ND (5)	ND (5)	ND (5)	ND (5)	ND (5)
Benzene	1	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)
Bromodichloromethane	50	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)
Bromoform	50	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)
Bromomethane (Methyl Bromide)	5	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)
Carbon disulfide	60	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)
Carbon tetrachloride	5	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)
Chlorobenzene	5	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)
Chlorobromomethane	5	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)
Chloroethane	5	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)
Chloroform (Trichloromethane)	7	0.54 J	0.55 J	0.79 J	0.87 J	0.75 J	0.73 J	ND (1)	ND (1)
Chloromethane (Methyl Chloride)	5	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)
cis-1,2-Dichloroethene	5	0.45 J	0.35 J	0.27 J	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)
cis-1,3-Dichloropropene	0.4	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)
Cyclohexane	NA	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)
Dibromochloromethane	50	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)
Dichlorodifluoromethane (CFC-12)	5	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)
Ethylbenzene	5	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)
Isopropylbenzene (Cumene)	5	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)
m,p-Xylenes	5	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)
Methyl acetate	NA	ND (5)	ND (5)	ND (5)	ND (5)	ND (5)	ND (5)	ND (5)	ND (5)
Methyl Tert Butyl Ether (MTBE)	10	ND (1)	ND (1)	ND (1)	0.82 J	ND (1)	ND (1)	ND (1)	ND (1)
Methylcyclohexane	NA	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)
Methylene chloride (Dichloromethane)	5	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)
n-Butylbenzene	5	0.57 J	0.82 J	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)
n-Propylbenzene	5	0.52 J	0.56 J	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)
o-Xylene	5	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)
Styrene	5	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)
tert-Butylbenzene	5	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)
Tetrachloroethene	5	**52**	**57**	**77**	**26**	**46**	**42**	**8.2**	1.8
Toluene	5	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)
trans-1,2-Dichloroethene	5	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)
trans-1,3-Dichloropropene	0.4	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)
Trichloroethene	5	0.88 J	0.93 J	0.64 J	ND (1)	0.39 J	0.42 J	ND (1)	ND (1)
Trichlorofluoromethane (CFC-11)	5	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)
Trifluorotrichloroethane (Freon 113)	5	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)
Vinyl chloride	2	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)
Xylene (Total)	5	ND (2)	ND (2)	ND (2)	ND (2)	ND (2)	ND (2)	ND (2)	ND (2)

Notes:

µg/L: micrograms per liter

**: LCS or LCSD is outside acceptance limits.*

-: Not Analyzed

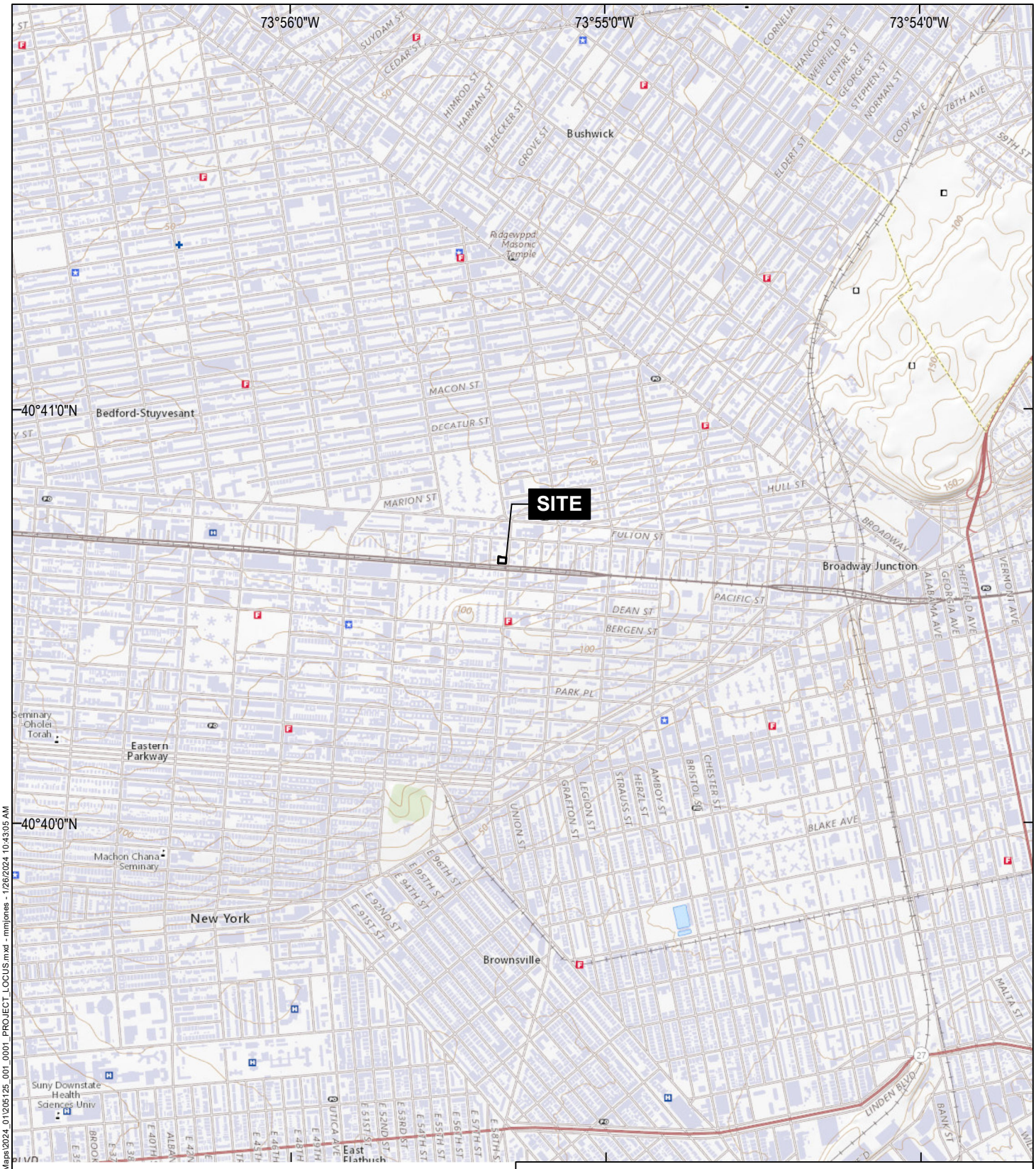
NA: Not Applicable

ND (2.5): Not detected, number in parentheses is the laboratory reporting limit

- For test methods used, see the laboratory data sheets.

- Bold and gray values indicate an exceedance of the AWQS criteria.

FIGURES



HALEY ALDRICH

1885 ATLANTIC AVENUE REDEVELOPMENT SITE
BROOKLYN, KINGS COUNTY, NEW YORK

PROJECT LOCUS

MAP SOURCE: USGS
SITE COORDINATES: 40°40'38"N, 73°55'19"W

APPROXIMATE SCALE: 1 IN = 2000 FT
AUGUST 2024

FIGURE 1

GIS: \\haleyaldrich\share\CF\Projects\0205125\GIS\Maps\2024_01\205125_001_0001_PROJECT_LOCUS.mxd - mmjones - 1/26/2024 10:43:05 AM

LEGEND

- COMMUTER RAIL LINE
- SITE BOUNDARY
- PARCEL BOUNDARY

NOTES

1. ALL LOCATIONS AND DIMENSIONS ARE APPROXIMATE.
2. ASSESSOR PARCEL DATA SOURCE: KINGS COUNTY
3. AERIAL IMAGERY SOURCE: NEARMAP, 5 SEPTEMBER 2023

N

0 40 80

SCALE IN FEET

HALEY ALDRICH

1885 ATLANTIC AVENUE REDEVELOPMENT SITE
BROOKLYN, KINGS COUNTY, NEW YORK

SITE PLAN

AUGUST 2024

FIGURE 2

GIS: \\haleyaldrich\share\CF\Projects\0205125\GIS\Mxds\2024_0112\05125_001_0002_SITE_PLAN.mxd - mmjones - 1/12/2024 1:30:21 PM

LEGEND

- POST-REMEDY MONITORING WELL WITH **GROUNDWATER ELEVATION** IN FEET
- PRE-REMEDY MONITORING WELL WITH **GROUNDWATER ELEVATION** IN FEET
- APPROXIMATE GROUNDWATER ELEVATION CONTOUR, 0.5-FT INTERVAL, DASHED WHERE INFERRED
- INFERRED GROUNDWATER FLOW DIRECTION
- COMMUTER RAIL LINE
- SITE BOUNDARY
- PARCEL BOUNDARY

NOTES

1. ALL LOCATIONS AND DIMENSIONS ARE APPROXIMATE.
2. POST-REMEDY GROUNDWATER ELEVATIONS WERE MEASURED ON 26 MARCH 2024.
3. PRE-REMEDY GROUNDATER ELEVATIONS WERE MEASURED ON 22 APRIL 2022.
4. ASSESSOR PARCEL DATA SOURCE: KINGS COUNTY
5. AERIAL IMAGERY SOURCE: NEARMAP, 5 SEPTEMBER 2023

N

0 20 40
SCALE IN FEET

HALEY ALDRICH

1885 ATLANTIC AVENUE REDEVELOPMENT SITE
1885 ATLANTIC AVENUE
BROOKLYN, NEW YORK

GROUNDWATER CONTOUR

AUGUST 2024

FIGURE 3

GIS: \\haleyaldrich.com\share\CF\Projects\0205125\GIS\Maps\2024_04\205125_000_0010_GW_CONTOURS_MARCH2024.mxd - mmjones - 8/23/2024 4:22:13 PM

SB-3_N	01/17/2023 L2302792-18 SB-3_N_39-40 39 - 40 (ft)	01/17/2023 L2302792-19 SB-3_N_44-45 44 - 45 (ft)	01/17/2023 L2302792-20 SB-3_N_49-50 49 - 50 (ft)	01/17/2023 L2302792-21 SB-3_N_54-55 54 - 55 (ft)	01/17/2023 L2302792-22 SB-3_N_59-60 59 - 60 (ft)
VOCs					
1,2,4-Trimethylbenzene	0.021	*12*	0.0091	3.3	*140*
1,3,5-Trimethylbenzene	0.0057	3.5	0.0025	0.94	*38*
Benzene	*0.11*	*0.49*	*0.095*	*0.11*	*3.5*
Ethylbenzene	0.036	*3*	0.03	0.94	*44*
Naphthalene	0.012	2.3	0.0051	0.38	*16*
n-Propylbenzene	0.006	2.1	0.0056	0.58	*24*
Toluene	0.02	*5.3*	0.013	*1.4*	*120*
Xylene (Total)	0.036	*17*	0.02	*4.8*	*240*

SB-3_E	01/18/2023 L2303035-14 SB-3_E_37-38 37 - 38 (ft)	01/18/2023 L2303035-19 DUP-4-20230118 37 (ft)	01/18/2023 L2303035-15 SB-3_E_44-45 44 - 45 (ft)	01/18/2023 L2303035-20 DUP-5-20230118 44 (ft)	01/18/2023 L2303035-16 SB-3_E_48-49 48 - 49 (ft)	01/18/2023 L2303035-17 SB-3_E_52-53 52 - 53 (ft)	01/18/2023 L2303035-18 SB-3_E_59-60 59 - 60 (ft)
VOCs							
1,2,4-Trimethylbenzene	0.0015 J	0.0017 J	0.25 J	0.1 J	0.26	0.19	*88*
1,3,5-Trimethylbenzene	0.00057 J	0.00077 J	0.16 J	0.17	0.061 J	0.17	*19*
Benzene	*0.096 J*	*0.14*	0.0059 J	0.0069	*0.1*	0.012	*0.41*
Ethylbenzene	0.065	0.1	0.21 J	0.19	0.2	0.064	*14*
n-Propylbenzene	0.0085 J	0.013	0.16 J	0.13	0.038 J	0.071	*11*
Toluene	0.00066 J	0.00085 J	0.037 J	0.072 J	*1.3*	0.019	*4.3*
Xylene (Total)	0.0045	0.006	0.37	0.56	1.1	0.31	*72*

SB-3_E1	01/18/2023 L2303035-09 SB-3_E1_37-38 37 - 38 (ft)	01/18/2023 L2303035-10 SB-3_E1_42-43 42 - 43 (ft)	01/18/2023 L2303035-12 SB-3_E1_54-55 45 - 55 (ft)	01/18/2023 L2303035-11 SB-3_E1_49-50 49 - 50 (ft)	01/18/2023 L2303035-13 SB-3_E1_59-60 59 - 60 (ft)
VOCs					
1,2,4-Trimethylbenzene	0.24	0.016	0.05	*42*	0.0023
1,3,5-Trimethylbenzene	0.058	0.0042	0.014	*12*	0.00046 J
Acetone	ND (0.0088)	0.035	*0.1*	ND (0.51)	0.014
Ethylbenzene	0.2	0.0055	0.007	*9.4*	0.00065 J
n-Propylbenzene	0.035	0.0022	0.0088	*8.2*	0.00036 J
Xylene (Total)	0.4	0.026	0.034	*28*	0.0029 J

SB-3	10/20/2022 L2258781-01 SB-3_36-37 36 - 37 (ft)	01/17/2023 L2302792-13 SB-3_38-39 38 - 39 (ft)	01/17/2023 L2302792-14 SB-3_43-44 43 - 44 (ft)	01/17/2023 L2302792-15 SB-3_49-50 49 - 50 (ft)	01/17/2023 L2302792-16 SB-3_50-51 50 - 51 (ft)	01/17/2023 L2302792-17 SB-3_58-59 58 - 59 (ft)
VOCs						
1,2,4-Trimethylbenzene	*300*	0.087	0.096	*44*	*26*	*16*
1,3,5-Trimethylbenzene	*110*	0.021	0.028	*12*	7.1	4.6
Acetone	ND (7.9)	ND (0.0097)	*0.056*	ND (0.5)	ND (0.52)	ND (0.56)
Benzene	*33*	*1.5*	0.038	*3.2*	*2.3*	*0.24*
Ethylbenzene	*130*	0.087	0.02	*15*	*8.1*	*3.2*
Naphthalene	*41*	0.036	0.024	5.1	3.3	2.5
n-Butylbenzene	*20*	0.002	0.0058	2.4	1.4	1.2
n-Propylbenzene	*62*	0.012	0.012	*7.6*	*4.4*	2.6
Toluene	*310*	*1.4*	0.062	*28*	*9.6*	*1.7*
Xylene (Total)	*640*	0.45	0.098	*82*	*41*	*15*

SB-3_E2	01/18/2023 L2303035-01 SB-3_E2_39-40 39 - 40 (ft)	01/18/2023 L2303035-02 SB-3_E2_42-43 42 - 43 (ft)	01/18/2023 L2303035-03 SB-3_E2_49-50 49 - 50 (ft)	01/18/2023 L2303035-04 SB-3_E2_52-53 52 - 53 (ft)	01/18/2023 L2303035-05 SB-3_E2_58-59 58 - 59 (ft)
VOCs					
1,2,4-Trimethylbenzene	*15*	*30*	*120*	*11*	0.022
1,3,5-Trimethylbenzene	7.6	*9.4*	*32*	3.1	0.0053
Ethylbenzene	0.34	*1.7*	*9.7*	0.87	0.0058
Naphthalene	1.2	2.9	*13*	1.2	0.0067
n-Propylbenzene	*5.5*	*5.8*	*19*	1.8	0.003
Xylene (Total)	*4.6*	*23*	*83*	*10*	0.033

SB-3_W2	01/16/2023 L2302554-13 SB-3_W2_38-39 38 - 39 (ft)	01/16/2023 L2302554-07 SB-3_W2_40-41 40 - 41 (ft)	01/16/2023 L2302554-01 SB-3_W2_45-46 45 - 46 (ft)	01/16/2023 L2302554-09 SB-3_W2_50-51 50 - 51 (ft)	01/16/2023 L2302554-12 SB-3_W2_57-58 57 - 58 (ft)
VOCs					
1,2,4-Trimethylbenzene	*5.8*	2.9	*16*	*8.2*	*15*
Acetone	ND (0.56)	ND (0.51)	ND (0.61)	ND (0.48)	*0.22 J*
Benzene	0.048	ND (0.026)	*0.2*	0.012 J	0.031
Ethylbenzene	*1.6*	0.39	*4.2*	*1.2*	*2.6*
n-Propylbenzene	1.6	0.54	*4*	1.6	2.7
Toluene	*1.1*	0.36	*7.9*	*1*	*2.6*
Xylene (Total)	*8.1*	*2.4*	*23*	*7.6*	*16*

SB-3_W1	01/17/2023 L2302792-01 SB-3_W1_37-38 37 - 38 (ft)	01/17/2023 L2302792-02 SB-3_W1_42-43 42 - 43 (ft)	01/17/2023 L2302792-03 SB-3_W1_48-49 48 - 49 (ft)	01/17/2023 L2302792-04 SB-3_W1_54-55 54 - 55 (ft)	01/17/2023 L2302792-05 SB-3_W1_59-60 59 - 60 (ft)
VOCs					
1,2,4-Trimethylbenzene	*67*	*150*	0.18	0.0038	0.0092
1,3,5-Trimethylbenzene	*19*	*37*	0.048	0.0011 J	0.0026
Benzene	*6.1*	*6.5*	0.02	0.0022	0.0013
Ethylbenzene	*26*	*44*	0.072	0.0028	0.0036
Naphthalene	7.9	*17*	0.094	0.0022 J	0.0035 J
n-Propylbenzene	*13*	*22*	0.041	0.001 J	0.0018
Toluene	*47*	*58*	0.066	0.0042	0.0049
Xylene (Total)	*120*	*250*	0.29	0.0085	0.016

SB-3_S	10/20/2022 L2258781-02 SB-3_S_35-36 35 - 36 (ft)	10/20/2022 L2258781-03 SB-3_S_43-44 43 - 44 (ft)	10/20/2022 L2258781-04 SB-3_S_46-47 46 - 47 (ft)	10/20/2022 L2261815-01 SB-3_S_53-54 53 - 54 (ft)	10/20/2022 L2261815-02 SB-3_S_55-56 55 - 56 (ft)
VOCs					
1,2,4-Trimethylbenzene	*210*	*130*	*100*	*81*	0.48
1,3,5-Trimethylbenzene	*49*	*37*	*29*	*21*	0.12
Benzene	*13*	*4.7*	*1.2*	*3*	*0.14 J-*
Ethylbenzene	*60*	*27*	*13*	*19*	0.072
Naphthalene	*24*	*17*	*13*	9.9	0.14
n-Propylbenzene	*28*	*21*	*14*	*12*	0.067
Toluene	*250*	*57*	*1.5*	*33*	0.093
Xylene (Total)	*350*	*150*	*56*	*100*	0.32

SB-3_W	01/16/2023 L2302554-10 SB-3_W_38-39 38 - 39 (ft)	01/16/2023 L2302554-03 SB-3_W_41-42 41 - 42 (ft)	01/16/2023 L2302554-15 SB-3_W_48-49 48 - 49 (ft)	01/16/2023 L2302554-02 SB-3_W_51-52 51 - 52 (ft)	01/16/2023 L2302554-06 SB-3_W_57-58 57 - 58 (ft)
VOCs					
1,2,4-Trimethylbenzene	*160*	*220*	*160*	*6*	0.088 J+
1,3,5-Trimethylbenzene	*40*	*63*	*41*	1.7	0.027 J+
Acetone	ND (2.4)	ND (8.9)	ND (5)	ND (0.52)	*0.21*
Benzene	*14*	*62*	*29*	*1.5*	0.0026
Ethylbenzene	*47*	*86*	*51*	*1.9*	0.014
Methyl Tert Butyl Ether (MTBE)	*0.97*	*4.6*	*2.5*	0.25	0.0039
Naphthalene	*17*	*23*	*16*	0.72	0.016 J+
n-Propylbenzene	*28*	*41*	*25*	1.1	0.015 J+
Toluene	*120*	*370*	*200*	*7.3*	0.017
Xylene (Total)	*270*	*460*	*310*	*10*	0.076

SB-3_S2	01/16/2023 L2302554-14 SB-3_S2_37-38 37 - 38 (ft)	01/16/2023 L2302554-08 SB-3_S2_43-44 43 - 44 (ft)	01/16/2023 L2302554-11 SB-3_S2_48-49 48 - 49 (ft)	01/16/2023 L2302554-05 SB-3_S2_51-52 51 - 52 (ft)	01/16/2023 L2302554-04 SB-3_S2_59-60 59 - 60 (ft)
VOCs					
1,2,4-Trimethylbenzene	0.024	2.7	*19*	0.0031	0.0014 J
Benzene	*0.076*	0.013 J	*0.19*	0.0047	0.0019
Ethylbenzene	0.017	0.27	*4.5*	0.0014	0.00055 J
Toluene	0.14	0.31	*7.7*	0.011	0.0042
Xylene (Total)	0.12	*1.9*	*26*	0.011	0.0044

SB-3_S1	01/17/2023 L2302792-06 SB-3_S1_38-39 38 - 39 (ft)	01/17/2023 L2302792-07 DUP-2-20230117 38 (ft)	01/17/2023 L2302792-08 SB-3_S1_42-43 42 - 43 (ft)	01/17/2023 L2302792-09 DUP-3-20230117 42 (ft)	01/17/2023 L2302792-10 SB-3_S1_48-49 48 - 49 (ft)	01/17/2023 L2302792-11 SB-3_S1_54-55 54 - 55 (ft)	01/17/2023 L2302792-12 SB-3_S1_58-59 58 - 59 (ft)
VOCs							
1,2,4-Trimethylbenzene	0.18 J	0.085 J	*4 J*	*3.8*	0.0025	*20*	0.0062
Acetone	ND (0.0093)	ND (0.0087)	*0.27 J*	ND (0.53)	0.016	ND (0.51)	0.019
Benzene	*0.23 J*	*0.53 J*	*0.73 J*	*0.33 J*	0.0075	*0.89*	0.00068
Ethylbenzene	0.082 J	0.092	*1.4*	*1.2*	0.00019 J	*6.6*	0.0014
Toluene	*0.9 J*	*1.6 J*	*6*	*3.9*	0.0021	*19*	0.0054
Xylene (Total)	0.47	0.5	*9.1*	*7.2*	0.016	*39*	0.011

SB-9 SB-3_N SB-3_W2 SB-3_W1 SB-3_W SB-3 SB-3_S SB-3_E SB-3_E1 SB-3_E2 SB-10 SB-3_S1 SB-3_S2 SB-12 SB-11

RALPH AVE

ATLANTIC AVE

LEGEND

- SOIL BORING FOR PESTICIDE SAMPLE
- SOIL BORING FOR VOC SAMPLE
- COMMUTER RAIL LINE
- SITE BOUNDARY
- PARCEL BOUNDARY

Analyte	Unit	*NY-PGW*
Volatile Organic Compounds (VOCs)		
1,2,4-Trimethylbenzene	mg/kg	3.6
1,3,5-Trimethylbenzene	mg/kg	8.4
Acetone	mg/kg	0.05
Benzene	mg/kg	0.06
Ethylbenzene	mg/kg	1
Methyl Tert Butyl Ether (MTBE)	mg/kg	0.93
Naphthalene	mg/kg	12
n-Butylbenzene	mg/kg	12
n-Propylbenzene	mg/kg	3.9
Toluene	mg/kg	0.7
Xylene (Total)	mg/kg	1.6

NOTES

1. ALL LOCATIONS AND DIMENSIONS ARE APPROXIMATE.

2. RESULTS ARE DISPLAYED IN MILLIGRAMS PER KILOGRAM (mg/kg)

3. SOIL SAMPLE ANALYTICAL RESULTS ARE COMPARED TO THE NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION (NYSDEC) TITLE 6 OF THE OFFICIAL COMPILATION OF NEW YORK CODES, RULES, AND REGULATIONS (NYCRR) PART 375 PROTECTION OF GROUNDWATER CRITERIA.

4. DEFINITIONS:
NY-PGW = NYDEC PART 375 PROTECTION OF GROUNDWATER CRITERIA
J = ESTIMATED RESULT
J- = BIASED LOW RESULT
J+ = BIASED HIGH RESULT
ND = NON-DETECT

5. EXCEEDANCES OF THE NY-PGW ARE SHOWN IN BLACK TEXT AND IN ITALICS.

6. ASSESSOR PARCEL DATA SOURCE: KINGS COUNTY

7. AERIAL IMAGERY SOURCE: NEARMAP, 5 SEPTEMBER 2023

N

0 20 40

SCALE IN FEET

HALEY ALDRICH

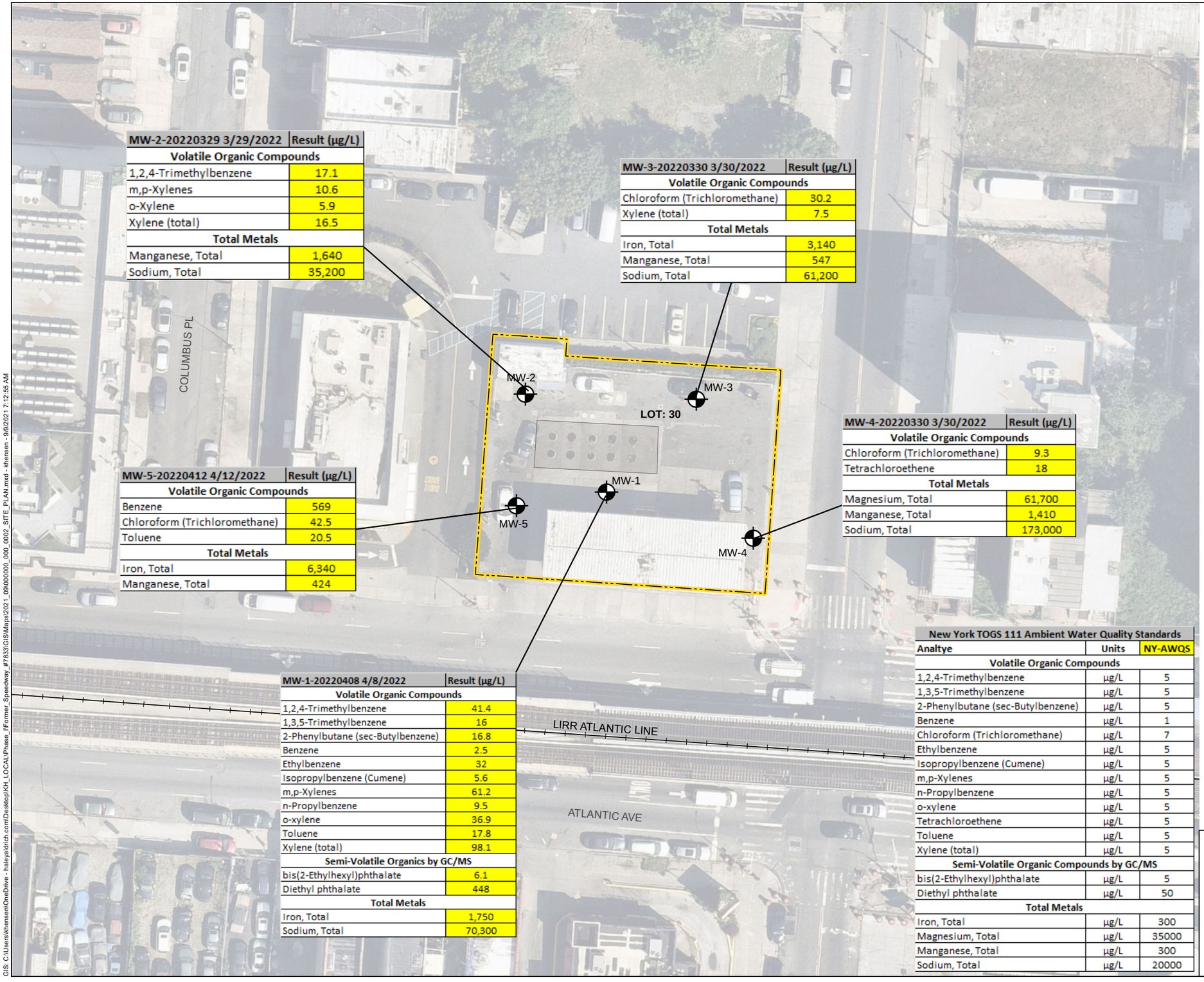
1885 ATLANTIC AVENUE REDEVELOPMENT SITE
BROOKLYN, KINGS COUNTY, NEW YORK

SOIL RESULTS EXCEEDANCE MAP

AUGUST 2024

FIGURE 4

GIS: \\haleyaldrich\share\CF\Projects\0205125\GIS\Maps\2024_08\205125_000_0004_SOIL_EXCEEDANCES.mxd - mmjones - 8/8/2024 10:57:43 AM



MW-2-20220329 3/29/2022	Result (µg/L)
Volatile Organic Compounds	
1,2,4-Trimethylbenzene	17.1
m,p-Xylenes	10.6
o-Xylene	5.9
Xylene (total)	16.5
Total Metals	
Manganese, Total	1,640
Sodium, Total	35,200

MW-3-20220330 3/30/2022	Result (µg/L)
Volatile Organic Compounds	
Chloroform (Trichloromethane)	30.2
Xylene (total)	7.5
Total Metals	
Iron, Total	3,140
Manganese, Total	547
Sodium, Total	61,200

MW-4-20220330 3/30/2022	Result (µg/L)
Volatile Organic Compounds	
Chloroform (Trichloromethane)	9.3
Tetrachloroethene	18
Total Metals	
Magnesium, Total	61,700
Manganese, Total	1,410
Sodium, Total	173,000

MW-5-20220412 4/12/2022	Result (µg/L)
Volatile Organic Compounds	
Benzene	569
Chloroform (Trichloromethane)	42.5
Toluene	20.5
Total Metals	
Iron, Total	6,340
Manganese, Total	424

MW-1-20220408 4/8/2022	Result (µg/L)
Volatile Organic Compounds	
1,2,4-Trimethylbenzene	41.4
1,3,5-Trimethylbenzene	16
2-Phenylbutane (sec-Butylbenzene)	16.8
Benzene	2.5
Ethylbenzene	32
Isopropylbenzene (Cumene)	5.6
m,p-Xylenes	61.2
n-Propylbenzene	9.5
o-xylene	36.9
Toluene	17.8
Xylene (total)	98.1
Semi-Volatile Organics by GC/MS	
bis(2-Ethylhexyl)phthalate	6.1
Diethyl phthalate	448
Total Metals	
Iron, Total	1,750
Sodium, Total	70,300

LEGEND

- COMMUTER RAIL LINE BLOCK 1714
- SITE BOUNDARY
- APPROXIMATE LOCATION OF UNDERGROUND STORAGE TANKS
- SOIL BORING/ PERMANENT GROUNDWATER MONITORING WELL LOCATION

NOTES

1. ALL LOCATIONS AND DIMENSIONS ARE APPROXIMATE.
2. ASSESSOR PARCEL DATA SOURCE: KINGS COUNTY
3. AERIAL IMAGERY SOURCE: NEARMAP, 12 AUGUST 2021
4. NY-AWQS- NEW YORK TOGS 111 AMBIENT WATER QUALITY STANDARDS
5. EXCEEDANCES OF AWQS ARE SHADED YELLOW

New York TOGS 111 Ambient Water Quality Standards		
Analtye	**Units**	**NY-AWQS**
Volatile Organic Compounds		
1,2,4-Trimethylbenzene	µg/L	5
1,3,5-Trimethylbenzene	µg/L	5
2-Phenylbutane (sec-Butylbenzene)	µg/L	5
Benzene	µg/L	1
Chloroform (Trichloromethane)	µg/L	7
Ethylbenzene	µg/L	5
Isopropylbenzene (Cumene)	µg/L	5
m,p-Xylenes	µg/L	5
n-Propylbenzene	µg/L	5
o-xylene	µg/L	5
Tetrachloroethene	µg/L	5
Toluene	µg/L	5
Xylene (total)	µg/L	5
Semi-Volatile Organic Compounds by GC/MS		
bis(2-Ethylhexyl)phthalate	µg/L	5
Diethyl phthalate	µg/L	50
Total Metals		
Iron, Total	µg/L	300
Magnesium, Total	µg/L	35000
Manganese, Total	µg/L	300
Sodium, Total	µg/L	20000

N

0 40 80

SCALE IN FEET

HALEY ALDRICH

1885 ATLANTIC AVENUE REDEVELOPMENT SITE
BROOKLYN, KINGS COUNTY, NEW YORK

PRE-REMEDY GROUNDWATER EXCEEDANCES

AUGUST 2024

FIGURE 5

GIS: C:\Users\khensen\OneDrive - haleyaldrich.com\Desktop\KH_LOCAL\Phase_I\Former_Speedway_#7833\GIS\Maps\2021_09\000000_000_0002_SITE_PLAN.mxd - khensen - 9/9/2021 7:12:55 AM

LEGEND

- MONITORING WELL
- COMMUTER RAIL LINE
- SITE BOUNDARY
- PARCEL BOUNDARY

Analyte	Units	AWQS
Volatile Organic Compounds (VOCs)		
Tetrachloroethene	µg/L	5

NOTES

1. ALL LOCATIONS AND DIMENSIONS ARE APPROXIMATE.
2. GROUNDWATER SAMPLE ANALYTICAL RESULTS ARE COMPARED TO THE NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION (NYSDEC) TECHINCAL AND OPERATION GUIDANCE SERIES (TOGS) 1.1.1 AMBIENT WATER QUALITY STANDARDS (AWQS).
3. ONLY ANALYTES THAT EXCEED CRITERIA ARE SHOWN ON FIGURE.
4. RESULTS SHADED GRAY EXCEED THE NYSDEC AWQS.
5. RESULTS ARE DISPLAYED IN MICROGRAMS PER LITER (µg/L).
6. ASSESSOR PARCEL DATA SOURCE: KINGS COUNTY
7. AERIAL IMAGERY SOURCE: NEARMAP, 5 SEPTEMBER 2023

N

0 20 40

SCALE IN FEET

HALEY ALDRICH

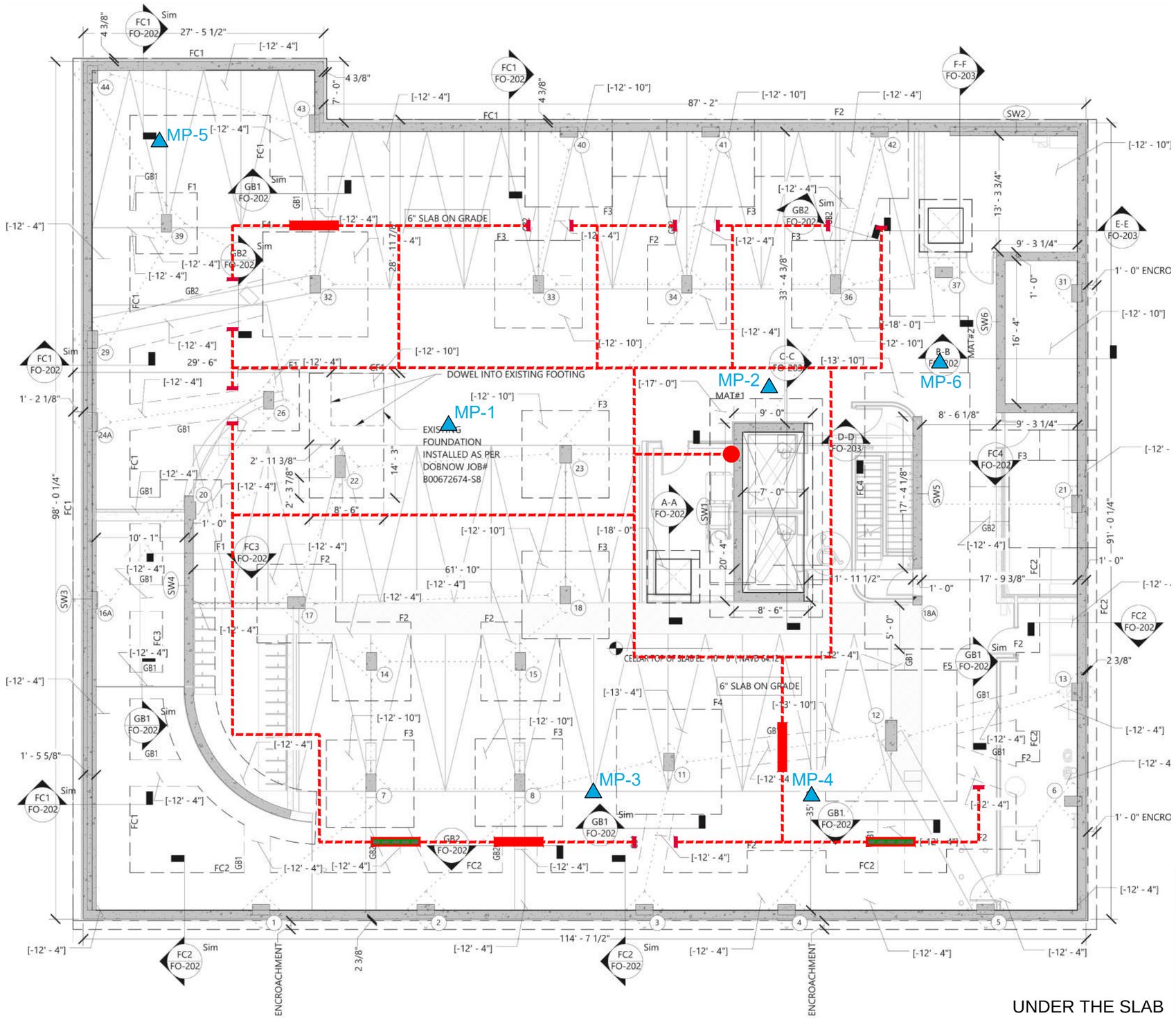
1885 ATLANTIC AVENUE REDEVELOPMENT SITE
BROOKLYN, KINGS COUNTY, NEW YORK

POST-REMEDY GROUNDWATER EXCEEDANCES

AUGUST 2024

FIGURE 6

GIS: \\haleyaldrich.com\share\CF\Projects\020512\5\GIS\Maps\2024_08\205125_000_0008_GW_MONWELLS.mxd - mmjones - 8/7/2024 1:18:39 PM



LEGEND

- MP-1 ▲ SUB-SLAB MONITORING POINT
- 4" PERFORATED PVC PIPE
- 4" SOLID PVC END CAP
- 4" CAST IRON VERTICAL RISER PIPE
- PIPE SLEEVES THROUGH GRADE BEAM
- PIPE SLEEVES UNDER GRADE BEAM

NOTES

1. ALL LOCATIONS ARE APPROXIMATE.
2. BASEMENT LAYOUT FROM FOUNDATION/CELLAR FLOOR PLAN, DRAWING FO-101.00, DATED 2 AUGUST 2023 BY J FRANKL ARCHITECTS.

STATE OF NEW YORK
SCOTT ANDREW UNGERHILL
075332
LICENSED PROFESSIONAL ENGINEER

N

0 12 24
SCALE IN FEET

UNDER THE SLAB

HALEY ALDRICH

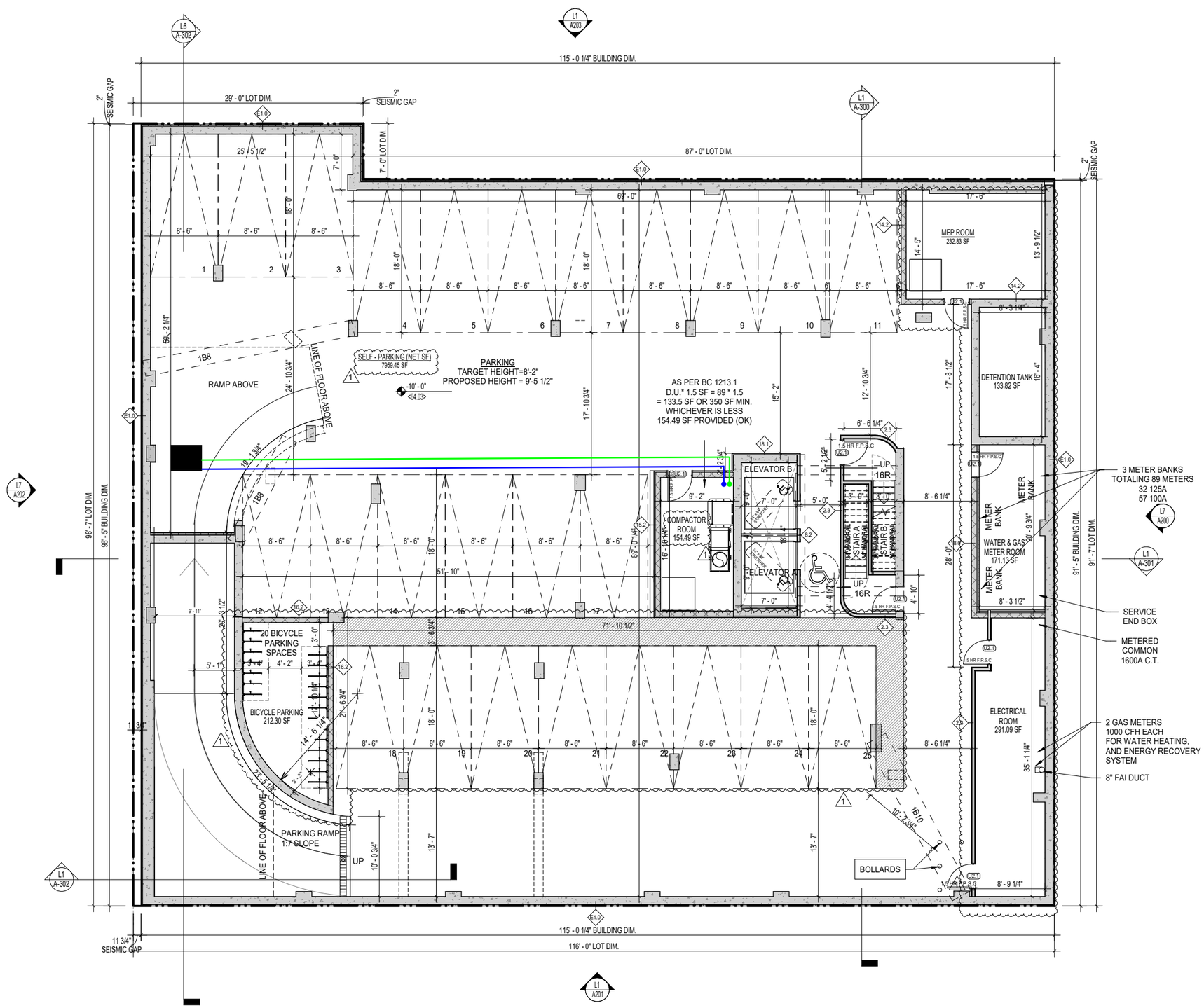
1885 ATLANTIC AVENUE REDEVELOPMENT SITE
BROOKLYN, KINGS COUNTY, NEW YORK

SUB-SLAB DEPRESSURIZATION SYSTEM AS-BUILT

SCALE: AS SHOWN
SEPTEMBER 2024

FIGURE 7A

Saved by: KPOSTOLOWSKI Printed: 1/29/2024 10:10 AM Sheet: SSDS-FIG 11
\\HALEYALDRICH.COM\SHARE\CF\PROJECTS\0205125\CAD\0205125_000_0008_SSDS_SYSTEM_AS-BUILT PLANS.DWG



LEGEND

- SSDS/SVE BLOWER
- HORIZONTAL RISER ABOVE GRADE TO THE BLOWER
- HORIZONTAL RISER RETURNING FROM THE BLOWER TO VERTICAL RISER
- VERTICAL RISER PENETRATING SUB-SLAB
- VERTICAL RISER TERMINATING ON THE BUILDING BULKHEAD

NOTES

1. ALL LOCATIONS ARE APPROXIMATE.
2. BASEMENT LAYOUT FROM FOUNDATION/CELLAR FLOOR PLAN, DRAWING FO-101.00, DATED 2 AUGUST 2023 BY J FRANKL ARCHITECTS.

STATE OF NEW YORK
SCOTT ANDREW UNDERHILL
075332
LICENSED PROFESSIONAL ENGINEER

0 12 24
SCALE IN FEET

HALEY ALDRICH

1885 ATLANTIC AVENUE REDEVELOPMENT SITE
1885 ATLANTIC AVENUE
BROOKLYN, NEW YORK

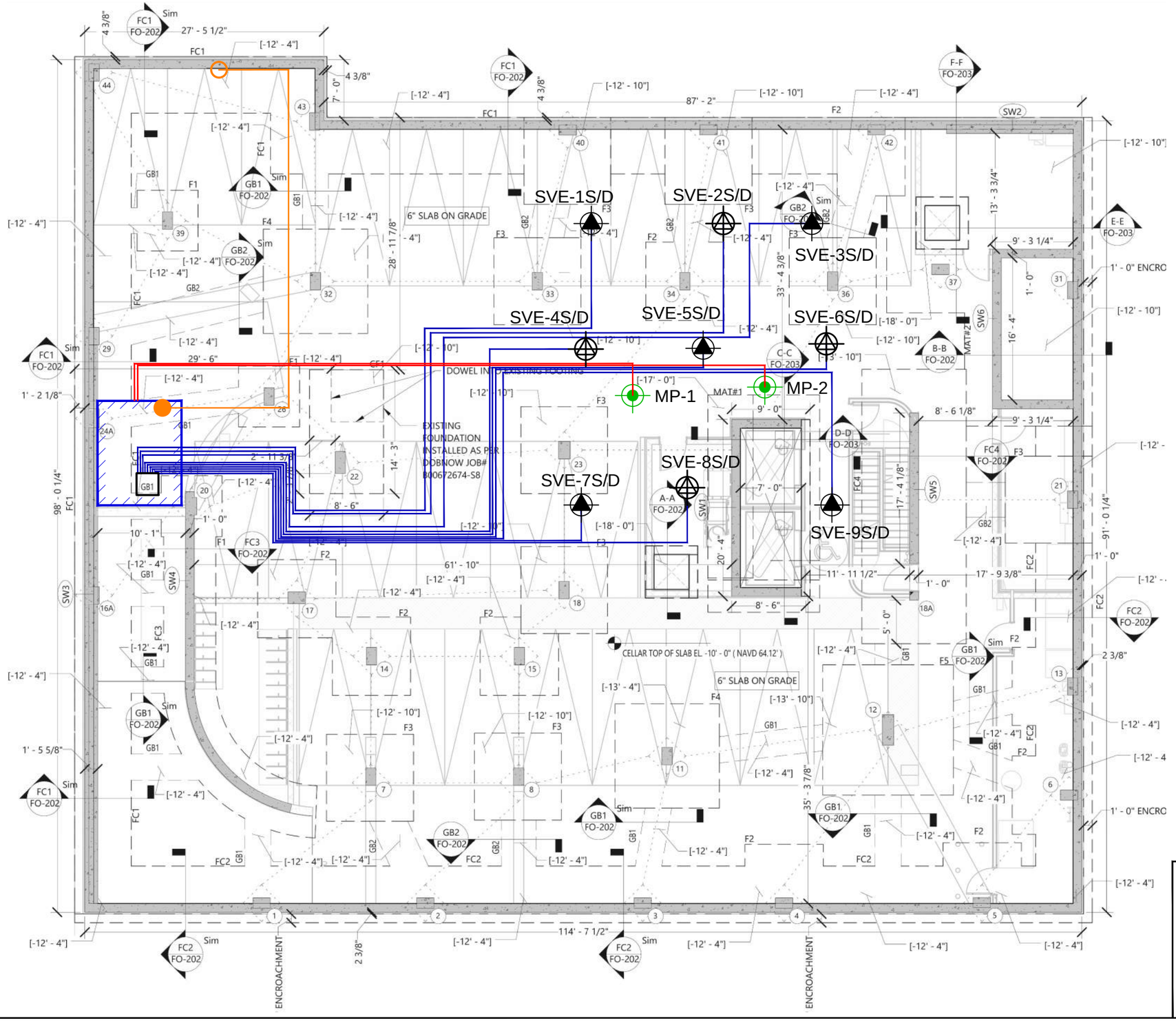
SUB-SLAB
DEPRESSURIZATION SYSTEM
AS-BUILT

SCALE: AS SHOWN
SEPTEMBER 2024

FIGURE 7B

CELLAR LEVEL

Saved by: KPOSTOLOWSKI Printed: 1/29/2024 10:10 AM Sheet: SSDS-FIG 11
\\HALEYALDRICH.COM\SHARE\CP\PROJECTS\02051\25\CAD\02051\25_000_0008_SSDS_SYSTEM_AS-BUILT PLANS.DWG



LEGEND

- SEALED WELL/FLOOR PENETRATION
- SVE 1.5-INCH SCH 40 PVC PIPE (INDICATES 2 DEDICATED SVE LINES)
- 4 X 1/4-INCH TUBING INSIDE 2-INCH PVC PIPE
- SVE TREATMENT SYSTEM SHED LOCATION
- SVE LOCATION SCREENED FROM 20-30 FT BGS AND 40-50 FT BGS (2 CO-LOCATED VAPOR EXTRACTION WELLS)
- SVE LOCATION SCREENED FROM 30-40 FT BGS AND 50-60 FT BGS (2 CO-LOCATED VAPOR EXTRACTION WELLS)
- SVE MONITORING LOCATION (4 CO-LOCATED MONITORING POINTS AT 25 FT, 35 FT, 45 FT, AND 55 FT BGS)
- SVE 4-INCH SCH 40 PVC MANIFOLD PIPED FROM SHED TO BASEMENT CEILING
- SVE 4-INCH SCH 40 PVC MANIFOLD PIPED ALONG CEILING
- CEILING PENETRATION

NOTES

1. ALL LOCATIONS ARE APPROXIMATE.
2. BASEMENT LAYOUT FROM FOUNDATION/CELLAR FLOOR PLAN, DRAWING FO-101.00, DATED 2 AUGUST 2023 BY J FRANKL ARCHITECTS.
3. SVE = SOIL VAPOR EXTRACTION
4. FT BGS = FEET BELOW GROUND SURFACE

0 12 24
SCALE IN FEET

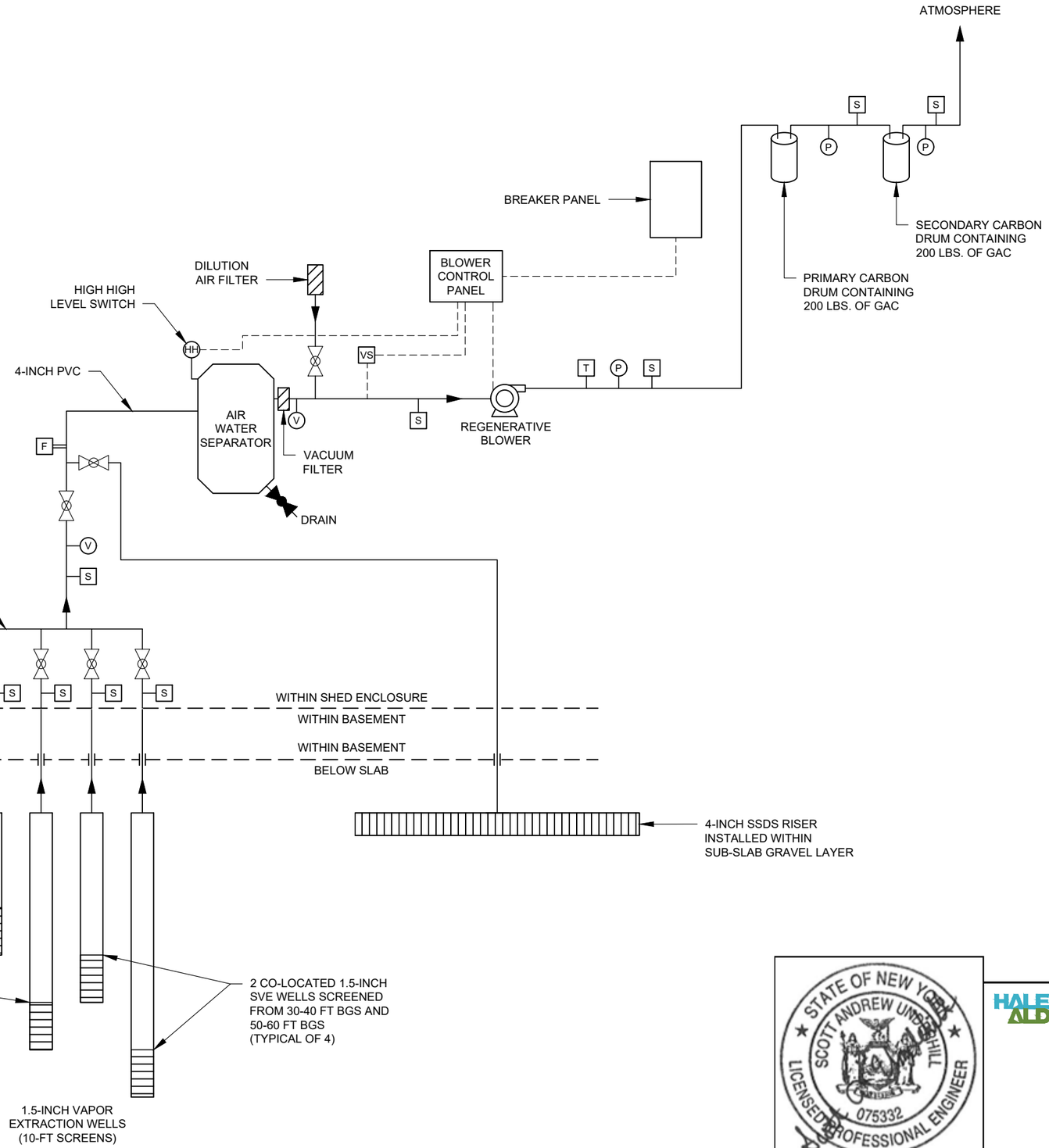
HALEY ALDRICH

1885 ATLANTIC AVENUE REDEVELOPMENT SITE
BROOKLYN, KINGS COUNTY, NEW YORK

SOIL VAPOR EXTRACTION SYSTEM AS-BUILT

SCALE: AS SHOWN
AUGUST 2024

FIGURE 8



LEGEND

T	TEMPERATURE SWITCH/GAGE
VS	VACUUM SWITCH
F	AIRFLOW/PILOT TUBE
⋈	BALL VALVE
S	SAMPLE PORT
V	VACUUM GAGE
P	PRESSURE GAGE

HALEY ALDRICH
1885 ATLANTIC AVENUE
BROOKLYN, NEW YORK

PIPING AND INSTRUMENTATION DESIGN

SCALE: NTS
AUGUST 2024

FIGURE 9

Saved by: KPOSTOLOWSKI Printed: 8/23/2024 4:16 PM Sheet: FIG 9
Z:\CF\PROJECTS\0205125\CAD\0205125_000_0010_SVE PID_SSDS.DWG

APPENDIX A
Environmental Easement and Site Survey

NYC DEPARTMENT OF FINANCE
OFFICE OF THE CITY REGISTER

This page is part of the instrument. The City Register will rely on the information provided by you on this page for purposes of indexing this instrument.The information on this page will control for indexing purposes in the event of any conflict with the rest of the document.

2024030501085001001E5D49

RECORDING AND ENDORSEMENT COVER PAGE **PAGE 1 OF 10**

Document ID: 2024030501085001 Document Date: 02-20-2024 Preparation Date: 03-05-2024
Document Type: EASEMENT
Document Page Count: 9

PRESENTER:
SIVE PAGET & RIESEL, P.C.
560 LEXINGTON AVENUE, 15TH FLOOR
NEW YORK, NY 10022
212-421-2150
NDUNCAN@SPRLAW.COM

RETURN TO:
SIVE PAGET & RIESEL, P.C.
560 LEXINGTON AVENUE, 15TH FLOOR
NEW YORK, NY 10022
212-421-2150
NDUNCAN@SPRLAW.COM

PROPERTY DATA

Borough	Block	Lot	Unit	Address
BROOKLYN	1714	30	Entire Lot	1885 ATLANTIC AVENUE

Property Type: RESIDENTIAL VACANT LAND Easement

CROSS REFERENCE DATA

CRFN_____ *or* DocumentID_____ *or* _____ Year_____ Reel____ Page_____ *or* File Number_____

PARTIES

GRANTOR/SELLER:
1885 ATLANTIC REALTY LLC
40 OSER AVE., SUITE 4
HAUPPAUGE, NY 11788

GRANTEE/BUYER:
PEOPLE OF NEW YORK BY DEPT. ENVIRONMENTAL CONSERVA
625 BROADWAY
ALBANY, NY 12233

FEES AND TAXES

Mortgage :

Mortgage Amount:	$	0.00
Taxable Mortgage Amount:	$	0.00
Exemption:		
TAXES: County (Basic):	$	0.00
City (Additional):	$	0.00
Spec (Additional):	$	0.00
TASF:	$	0.00
MTA:	$	0.00
NYCTA:	$	0.00
Additional MRT:	$	0.00
TOTAL:	$	0.00
Recording Fee:	$	82.00
Affidavit Fee:	$	0.00

Filing Fee: $ 100.00

NYC Real Property Transfer Tax: $ 0.00

NYS Real Estate Transfer Tax: $ 0.00

RECORDED OR FILED IN THE OFFICE OF THE CITY REGISTER OF THE CITY OF NEW YORK
Recorded/Filed 03-06-2024 12:09
City Register File No.(CRFN): **2024000057343**

City Register Official Signature

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

THIS INDENTURE made this 20th day of February, 2024, between Owner, 1885 Atlantic Realty LLC, having an office at 40 Oser Avenue, Suite 4, Hauppauge, New York 11788 (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 1885 Atlantic Avenue in the City of New York, County of Kings and State of New York, known and designated on the tax map of the New York City Department of Finance as tax map parcel number: Block 1714 Lot 30, being the same as that property conveyed to Grantor by deed dated March 16, 2022 and recorded in the City Register of the City of New York as CRFN #2022000136883. The property subject to this Environmental Easement (the "Controlled Property") comprises approximately .249 +/- acres, and is hereinafter more fully described in the Land Title Survey dated December 22, 2021, updated April 12, 2023, and revised May 9, 2023 prepared by Ramzan Alli, 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 Brownfield Cleanup Agreement Index Number: C224347-02-22, 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:

Restricted Residential as described in 6 NYCRR Part 375-1.8(g)(2)(ii), 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 New York City Department of Health and Mental Hygiene 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 ensure compliance with the restrictions identified by this Environmental Easement.

B. The Controlled Property shall not be used for Residential purposes as defined in 6NYCRR 375-1.8(g)(2)(i) and raising livestock or producing animal products for human consumption, 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 ensure 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: C224347
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.

11. Consistency with the SMP. To the extent there is any conflict or inconsistency between the terms of this Environmental Easement and the SMP, regarding matters specifically addressed by the SMP, the terms of the SMP will control.

Remainder of Page Intentionally Left Blank

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

1885 Atlantic Realty LLC:

By: Jacob Kohn

Print Name: Jacob Kohn

Title: Authorized Signer Date: 02/14/2024

Grantor's Acknowledgment

STATE OF ~~NEW YORK~~ Florida)
) ss:
COUNTY OF Broward)

KELSEY PROPER
Notary Public - State of Florida
Commission # HH415727
Expires on June 28, 2027

On the 14th day of February, in the year 20 24, before me, the undersigned, personally appeared Jacob Kohn, 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.

Kelsey Proper
Notary Public - State of ~~New York~~ Florida

Notarized remotely online using communication technology via Proof.
Driver's License used for ID.

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: _____
Andrew O. Guglielmi, Director
Division of Environmental Remediation

Grantee's Acknowledgment

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

On the 20th day of February in the year 2024 before me, the undersigned, personally appeared Andrew O. Guglielmi, 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

Cheryl A. Salem
Notary Public State of New York
Registration No. 01SA0002177
Qualified in Albany County
My Commission Expires March 3, 2027

SCHEDULE "A" PROPERTY DESCRIPTION

LEGAL DESCRIPTION
DEED AND ENVIRONMENTAL EASEMENT

All that certain plot, piece or parcel of land, with the buildings and improvements thereon erected, situate, lying and being in the Borough of Brooklyn, County of Kings, City and State of New York, bounded and described as follows:

BEGINNING at the corner formed by the intersection of the Westerly side of Ralph Avenue with the Northerly side of Atlantic Avenue;

RUNNING thence Westerly along the Northerly side of Atlantic Avenue, a distance of 116 feet 0 inches;

THENCE Northerly parallel with Ralph Avenue, a distance of 98 feet 7 inches;

THENCE Easterly parallel with Atlantic Avenue, a distance of 29 feet 0 inches;

THENCE Southerly parallel with Ralph Avenue, a distance of 7 feet 0 inches;

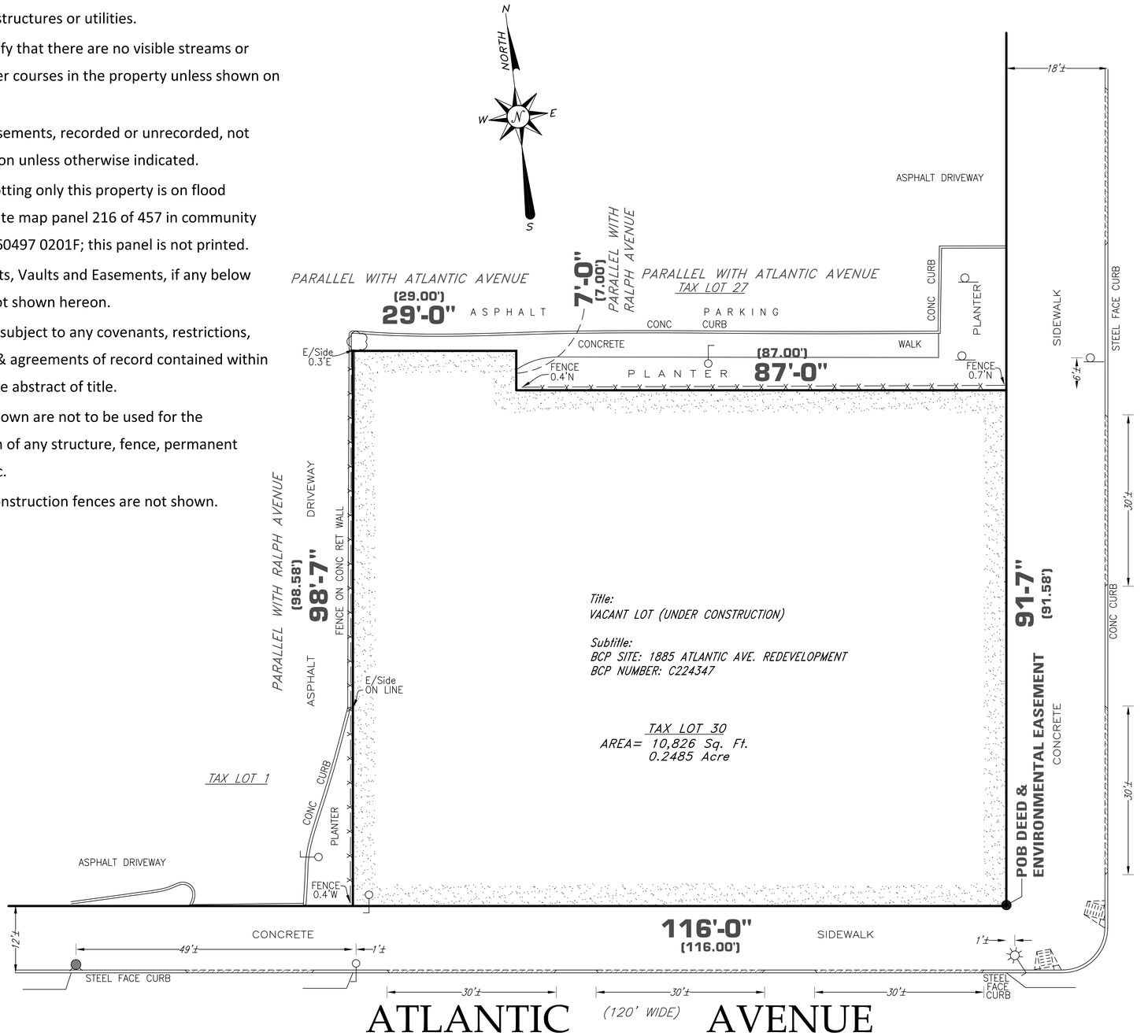
THENCE Easterly parallel with Atlantic Avenue, a distance of 87 feet 0 inches to the Westerly side of Ralph Avenue;

THENCE Southerly along the Westerly side of Ralph Avenue, a distance of 91 feet 7 inches to the Northerly side of Atlantic Avenue at the point or place of BEGINNING;

The above described property having an area of 10,826 Square Feet or 0.2485 Acre more or less.

NOTES:

1. No investigation has been made with respect to subsurface structures or utilities.
2. This is to certify that there are no visible streams or natural water courses in the property unless shown on this survey.
3. Nonvisible easements, recorded or unrecorded, not shown hereon unless otherwise indicated.
4. By graphic plotting only this property is on flood insurance rate map panel 216 of 457 in community panel No. 360497 0201F; this panel is not printed.
5. Encroachments, Vaults and Easements, if any below surface is not shown hereon.
6. This survey is subject to any covenants, restrictions, easements & agreements of record contained within an up to date abstract of title.
7. The offsets shown are not to be used for the construction of any structure, fence, permanent addition, etc.
8. Temporary construction fences are not shown.



Title:
VACANT LOT (UNDER CONSTRUCTION)

Subtitle:
BCP SITE: 1885 ATLANTIC AVE. REDEVELOPMENT
BCP NUMBER: C224347

TAX LOT 30
AREA= 10,826 Sq. Ft.
0.2485 Acre

Limits of Environmental Easement denoted thus:

RECORD DESCRIPTION & ENVIRONMENTAL EASEMENT DESCRIPTION

AS DESCRIBED IN CRFN 2022000136883

All that Certain Plot, Piece or parcel of land, with the buildings and improvements thereon erected, situate, lying and being in the Borough of Brooklyn, County of Kings, City and State of New York, bounded and described as follows:

BEGINNING at the corner formed by the intersection of the Westerly side of Ralph Avenue with the Northerly side of Atlantic Avenue;

RUNNING thence Westerly along the Northerly side of Atlantic Avenue, a distance of 116 feet 0 inches;

THENCE Northerly parallel with Ralph Avenue, a distance of 98 feet 7 inches;

THENCE Easterly parallel with Atlantic Avenue, a distance of 29 feet 0 inches;

THENCE Southerly parallel with Ralph Avenue, a distance of 7 feet 0 inches;

THENCE Easterly parallel with Atlantic Avenue, a distance of 87 feet 0 inches to the Westerly side of Ralph Avenue;

THENCE Southerly along the Westerly side of Ralph Avenue, a distance of 91 feet 7 inches to the Northerly side of Atlantic Avenue at the point or place of BEGINNING;

The above described property having an area of 10,826 Square Feet or 0.2485 Acre more or less.

NOTE:

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.

LEGEND

- LIGHT POLE
- STREET SIGN
- HYDRANT
- CURB CUT
- PEDESTRIAN RAMP
- TREE
- TRAFFIC LIGHT
- CHAIN LINK FENCE
- PROPERTY LINE
- METAL POST
- POB - POINT OF BEGINNING

Tax Block: 1714
Tax Lot: 30

PROPERTY SITUATED AT
1885 ATLANTIC AVENUE
BOROUGH OF BROOKLYN
COUNTY OF KINGS
CITY & STATE OF NEW YORK

SCALE 1" = 10'
(IN METERS AND FEET)

STATE OF NEW YORK
RAMZAN ALLI
050457
LICENSED LAND SURVEYOR

ZDK714

DATE	DESCRIPTION
May 9, 2023	Map Revised
April 12, 2023	Survey Updated & Environmental Easement Added
December 22, 2021	Date of Survey

Ramzan Alli License No. 050457

NY Land Surveyor P.C.
77-16 164 Street, Suite 301 Fresh Meadows, NY 11366
Tel: 718-591-6600 Tel: 212-732-1575
www.nylandsurveyor.com
nylandsurveyor@gmail.com
EARL B.LOVELL-S.P.BELCHER, INC. & *JACK ALLISON HALL*

APPENDIX B
List of Site Contacts

Company	Contact Name	Title	Contact Number	Contact Email
H & A of New York Engineering and Geology, LLP	James Bellew	Principal	646.277.5686	jbellew@haleyaldrich.com
	Scott Underhill, P.E.	Remediation Engineer	518.396.7638	sunderhill@haleyaldrich.com
	Matthew Levy	Project Manager	646.893.4733	mlevy@haleyaldrich.com
	Matthew Forshay	Field Lead	862.377.3587	mforshay@haleyaldrich.com
1885 Atlantic Realty LLC	Jacob Kohn	Member	718.963.0536	kohnjacob@gmail.com
Sive, Paget & Riesel PC	Christine Leas	Remedial Party's Attorney	646.378.7267	cleas@sprlaw.com
McDonald's Corporation	1883 Atlantic Avenue	Adjacent Property Owner	Unknown	Unknown
Shri Realty 1 of Brooklyn LLC	342 Ralph Avenue	Adjacent Property Owner	Unknown	Unknown

APPENDIX C
Monitoring Well Boring and Construction Logs

OBSERVATION WELL INSTALLATION REPORT

HALEY ALDRICH

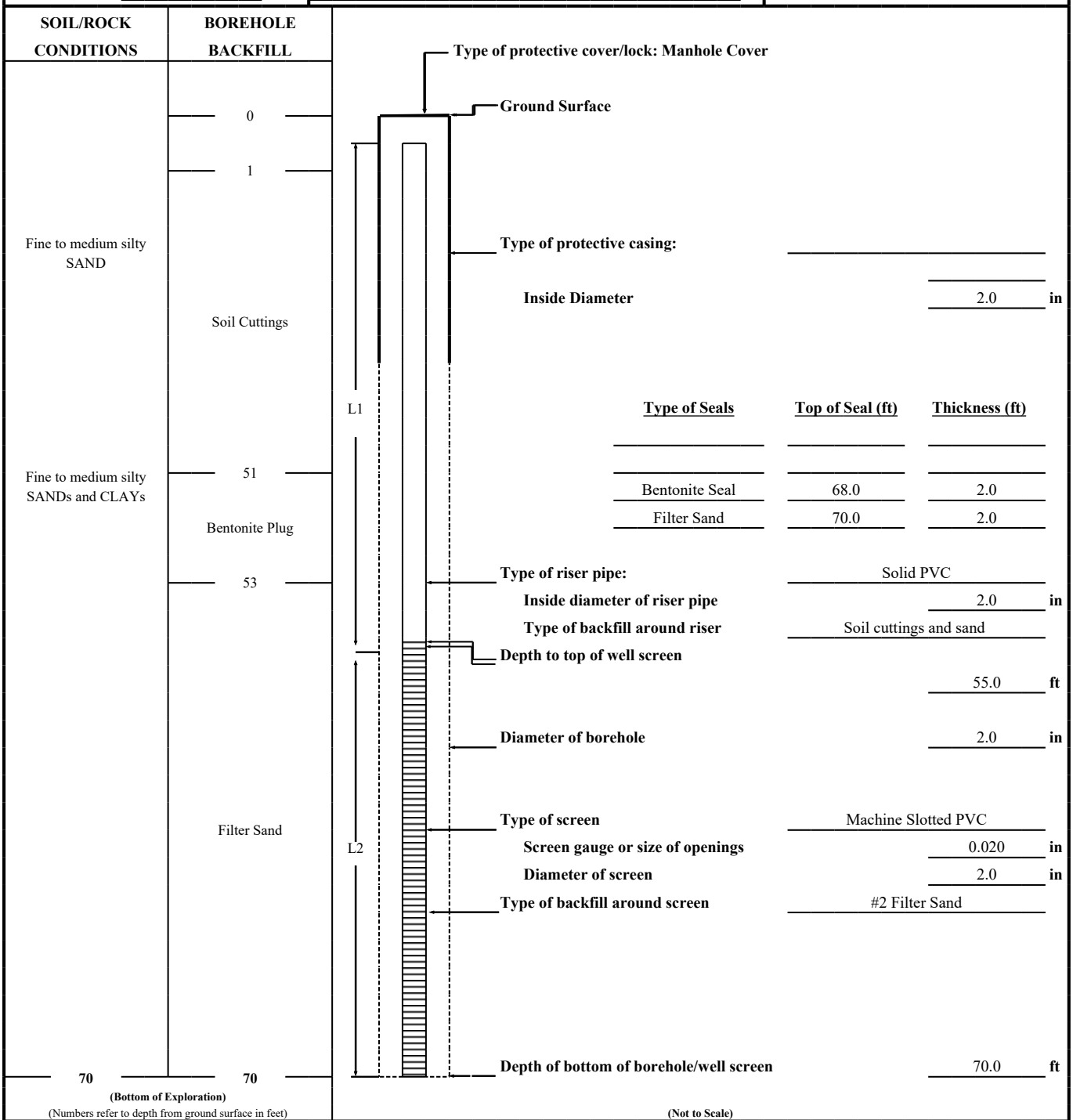
Well No. MW-6
Boring No.

PROJECT	Remedial Investigation - 1885 Atlantic Avenue	**H&A FILE NO.**	0205125
LOCATION	1885 Atlantic Avenue, Brooklyn, NY	**PROJECT MGR.**	M, Levy
CLIENT	1885 Atlantic Realty LLC	**FIELD REP.**	R. Freeman
CONTRACTOR	Eastern Environmental Solutions	**DATE INSTALLED**	12/12/2023
DRILLER	P. Slavin	**WATER LEVEL**	

TOC El. _____ ft
El. Datum _____

Location See Plan

☐ **Guard Pipe**
☑ **Roadway Box**



55 ft	+	15 ft	+	0 ft	=	70 ft
Riser Pay Length (L1)		Length of screen (L2)		Length of silt trap (L3)		Pay length

COMMENTS:

Form 2007

OBSERVATION WELL INSTALLATION REPORT

HALEY ALDRICH

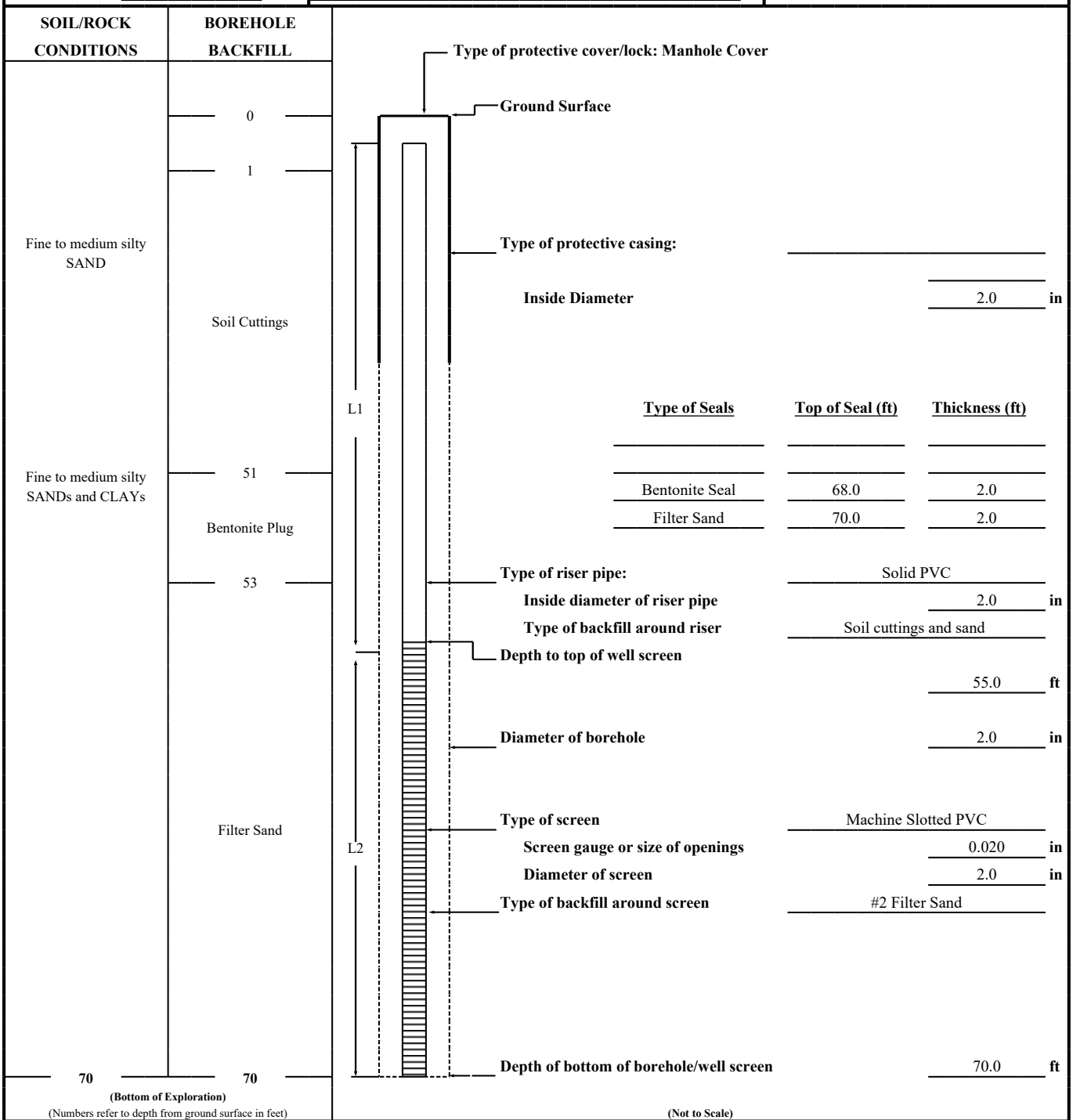
Well No. MW-7
Boring No.

PROJECT	Remedial Investigation - 1885 Atlantic Avenue	**H&A FILE NO.**	0205125
LOCATION	1885 Atlantic Avenue, Brooklyn, NY	**PROJECT MGR.**	M, Levy
CLIENT	1885 Atlantic Realty LLC	**FIELD REP.**	R. Freeman
CONTRACTOR	Eastern Environmental Solutions	**DATE INSTALLED**	12/11/2023
DRILLER	P. Slavin	**WATER LEVEL**	

TOC El. _____ ft
El. Datum _____

Location See Plan

☐ **Guard Pipe**
☑ **Roadway Box**



55 ft	+	15 ft	+	0 ft	=	70 ft
Riser Pay Length (L1)		Length of screen (L2)		Length of silt trap (L3)		Pay length

COMMENTS:

Form 2007

OBSERVATION WELL INSTALLATION REPORT

HALEY ALDRICH

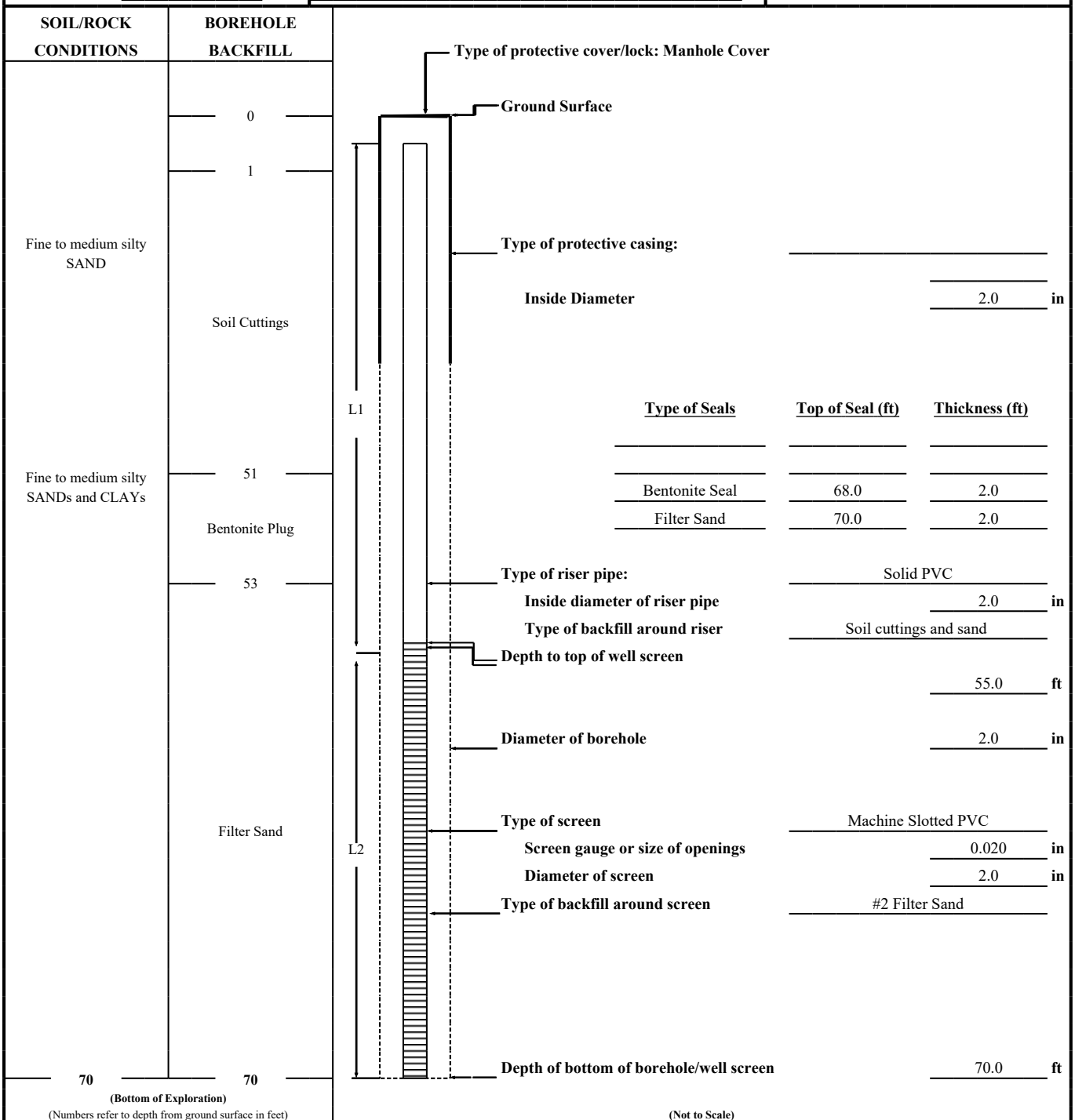
Well No. MW-8
Boring No.

PROJECT	Remedial Investigation - 1885 Atlantic Avenue	**H&A FILE NO.**	0205125
LOCATION	1885 Atlantic Avenue, Brooklyn, NY	**PROJECT MGR.**	M, Levy
CLIENT	1885 Atlantic Realty LLC	**FIELD REP.**	R. Freeman
CONTRACTOR	Costal	**DATE INSTALLED**	12/12/2023
DRILLER		**WATER LEVEL**	

TOC El. _____ ft
El. Datum _____

Location See Plan

☐ **Guard Pipe**
☑ **Roadway Box**



55 ft	+	15 ft	+	0 ft	=	70 ft
Riser Pay Length (L1)		Length of screen (L2)		Length of silt trap (L3)		Pay length

COMMENTS:

Form 2007

APPENDIX D
Excavation Work Plan

APPENDIX D – EXCAVATION WORK PLAN (EWP)

D-1 Notification

At least 15 days prior to the start of any activity that is anticipated to encounter remaining contamination or breach or alter the Site's cover system, the Site owner or their representative will notify the NYSDEC contacts listed in the table below. Table I 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 Table II of this SMP.

Table I: Notifications*

Name	Contact Information
Sadique Ahmed, NYSDEC Project Manager	518.402.9656, Sadique.ahmed@dec.ny.gov
William Bennett, NYSDEC Supervisor	518.402.9659, William.bennett@dec.ny.gov
Jane O'Connell, NYSDEC Site Control	718.482.4599, Jane.Oconnell@dec.ny.gov

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

This notification will include:

- A detailed description of the work to be performed, including the location and areal extent of excavation, plans/drawings for Site re-grading, intrusive elements or utilities to be installed below the soil cover, estimated volumes of contaminated soil to be excavated, any modifications of truck routes, and any work that may impact an engineering control;
- A summary of environmental conditions anticipated to be encountered 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 and submittals (e.g., reports) to the NYSDEC documenting the completed intrusive work;
- A summary of the applicable components of this EWP;
- A statement that the work will be performed in compliance with this EWP, 29 CFR 1910.120 and 29 CFR 1926 Subpart P;
- A copy of the contractor's health and safety plan (HASP), in electronic format, if it differs from the HASP provided in Appendix J of this SMP;
- Identification of disposal facilities for potential waste streams; and
- Identification of sources of any anticipated backfill, along with the required request to import form and all supporting documentation including, but not limited to, chemical testing results.

The NYSDEC project manager will review the notification and may impose additional requirements for the excavation that are not listed in this EWP. The alteration, restoration, and modification of engineering controls must conform with Article 145 Section 7209 of the Education Law regarding the application of professional seals and alterations.

D-2 Soil Screening Methods

Visual, olfactory, and instrument-based (e.g., photoionization detector [PID]) soil screening will be performed during all excavations into known or potentially contaminated material (remaining contamination) or a breach of the cover system. A qualified environmental professional as defined in 6 NYCRR Part 375, a P.E. who is licensed and registered in New York State, or a qualified person who directly reports to a P.E. who is licensed and registered in New York State will perform the screening. Soil screening will be performed when invasive work is done and will include all excavation and invasive work performed during development, such as excavations for foundations and utility work, after issuance of the COC.

Soils will be segregated based on previous environmental data and screening results into material that requires off-site disposal and material that requires testing to determine if the material can be reused on-site as soil beneath a cover or if the material can be used as cover soil. Further discussion of off-Site disposal of materials and on-Site reuse is provided in Section D-5 of this Appendix.

D-3 Soil Staging Methods

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 the NYSDEC.

D-4 Materials Excavation and Load-Out

A qualified environmental professional as defined in 6 NYCRR Part 375, a P.E. who is licensed and registered in New York State, or a qualified person who directly reports to a P.E. who is licensed and registered in New York State will oversee all invasive work and the excavation and load-out of all excavated material.

The owner of the property and remedial party (if applicable) and its contractors are 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. A Site utility stakeout will be completed for all utilities prior to any ground intrusive activities at 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). Trucks transporting contaminated soil must have either tight-fitting opaque covers that are secured on the sides and/or back, or opaque covers that are locked on all sides.

A truck wash will be operated on-site, as appropriate. 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. Truck wash waters will be collected and disposed of off-site in an appropriate manner.

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. Material accumulated from the street cleaning and egress cleaning activities will be disposed off Site at a permitted landfill facility in accordance with all applicable local, state, and federal regulations.

D-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 opaque covers that are secured on the sides and/or back, or opaque covers that are locked on all sides. Loose-fitting canvas-type truck covers will be prohibited. If loads contain wet material capable of producing free liquid, truck liners will be used.

Truck transport routes are as follows: Trucks will enter the Site from the east side on Ralph Avenue and exit by turning right onto Ralph Avenue from the designated point of egress along the eastern boundary of the Site. All trucks loaded with Site materials will exit the vicinity of the Site using only these approved truck routes. This is the most appropriate route and takes 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. A figure depicting the approved truck route is provided in this EWP.

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 in order to minimize off-Site disturbance. Off-Site queuing will be prohibited.

D-6 Materials Disposal Off Site

All material excavated and removed from the Site will be treated as contaminated and regulated material and will be transported and disposed off-site in a permitted facility in accordance with all local, state, and federal regulations. If disposal of material 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 project manager. Unregulated off-Site management of materials from this Site will not occur without formal NYSDEC project manager 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, (e.g., hazardous waste disposal facility, solid waste landfill, petroleum treatment facility, and/or C&D debris recovery facility). Actual disposal quantities and associated documentation will be reported to the NYSDEC in the Periodic Review Report. This documentation will include, but will not be limited to: 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 consistent with 6 NYCRR Parts 360, 361, 362, 363, 364, and 365. Material that does not meet Unrestricted SCOs is prohibited from being taken to a New York State C&D debris recovery facility (6 NYCRR Subpart 360-15 registered or permitted facility).

D-7 Materials Reuse On Site

The qualified environmental professional as defined in 6 NYCRR part 375 will ensure that procedures defined for materials reuse in this SMP are followed and that unacceptable material (i.e., contaminated) does not remain on Site. Contaminated on-Site material, including historical fill and contaminated soil, that is acceptable for reuse on-site will be placed below the demarcation layer or impervious surface, and will not be reused within the cover system or within landscaping berms. Contaminated on-Site material may only be used beneath the Site cover as backfill for subsurface utility lines with prior approval from the NYSDEC project manager.

Proposed materials for reuse on Site must be sampled for full suite analytical parameters, including per- and polyfluoroalkyl substances (PFAS) and 1,4-dioxane. The sampling frequency will be in accordance with DER-10 Table 5.4(e)10 unless prior approval is obtained from the NYSDEC project manager for modification of the sampling frequency. The analytical results of soil/fill material testing must meet the Site use criteria presented in NYSDEC DER-10 Appendix 5 – Allowable Constituent Levels for Imported Fill or Soil for all constituents listed, and the NYSDEC Sampling, Analysis, and Assessment of Per- and Polyfluoroalkyl Substances April 2023 guidance values. Approvals for modifications to the analytical parameters must be obtained from the NYSDEC project manager prior to the sampling event.

Soil/fill material for reuse on Site will be segregated and staged as described in Sections D-2 and D-3 of this EWP. The anticipated size and location of stockpiles will be provided in the 15-day notification to the NYSDEC project manager. Stockpile locations will be based on the location of Site excavation activities and proximity to nearby Site features. Material reuse on Site will comply with requirements of NYSDEC DER-10 Section 5.4(e)4. Any modifications to the requirements of DER-10 Section 5.4(e)4 must be approved by the NYSDEC project manager.

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.

D-8 Fluids Management

All liquids to be removed from the Site, including but not limited to, excavation dewatering, decontamination waters and groundwater monitoring well purge and development waters, will be handled, transported, and disposed off-Site at a permitted facility 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, and will be managed off Site, unless prior approval is obtained from NYSDEC.

Discharge of water generated during large-scale construction activities to surface waters (i.e., a local pond, stream, or river) will be performed under an SPDES permit.

D-9 Backfill from Off-Site Sources

All materials proposed for import onto the Site will be approved by the qualified environmental professional, as defined in 6 NYCRR Part 375, and will be in compliance with provisions in this SMP prior to receipt at the Site. A Request to Import/Reuse Fill or Soil form, which can be found at http://www.dec.ny.gov/regulations/67386.html, will be prepared and submitted to the NYSDEC project manager allowing a minimum of 5 business days for review. A copy of the form is presented in Appendix H.

Material from industrial sites, spill sites, 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) and DER-10 Appendix 5 for restricted residential use. Based on an evaluation of the land use, protection of groundwater and protection of ecological resources criteria, the resulting soil quality standards meet Track 2 Restricted Residential Use Soil Cleanup Objectives. Soils that meet “general” fill requirements under 6 NYCRR Part 360.13, but do not meet backfill or cover soil objectives for this Site, will not be imported onto the Site without prior approval by NYSDEC project manager. Soil material will be sampled for the full suite of analytical parameters, including PFAS and 1,4-dioxane. 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.

D-10 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 the 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.

D-11 Excavation 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. The NYSDEC project manager will be promptly notified of the discovery.

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 [including 1,4-dioxane], TCL pesticides and PCBs, and PFAS), unless the Site history and previous sampling results provide sufficient justification to limit the list of analytes. In this case, a reduced list of analytes will be proposed to the NYSDEC project manager for approval prior to sampling. Any tanks will be closed as per NYSDEC regulations and guidance.

Identification of unknown or unexpected contaminated media identified by screening during invasive Site work will be promptly communicated by phone within two hours 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 Review Report.

D-12 Community Air Monitoring Plan

A figure showing the location of air sampling stations based on generally prevailing wind conditions is provided in this EWP. 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.

Exceedances of action levels listed in the CAMP will be reported to NYSDEC and NYSDOH Project Managers.

D-12A: Special Requirements for Work Within 20 Feet of Potentially Exposed Individuals or Structures

When work areas are within 20 feet of potentially exposed populations or occupied structures, the continuous monitoring locations for VOCs and particulates must reflect the nearest potentially exposed individuals and the location of ventilation system intakes for nearby structures. The use of engineering controls, such as vapor/dust barriers, temporary negative-pressure enclosures, or special ventilation

devices, should be considered to prevent exposures related to the work activities and to control dust and odors. Consideration should be given to implementing the planned activities when potentially exposed populations are at a minimum, such as during weekends or evening hours in non-residential settings.

- If total VOC concentrations opposite the walls of occupied structures or next to intake vents exceed 1 ppm, monitoring should occur within the occupied structure(s). Depending upon the nature of contamination, chemical-specific colorimetric tubes of sufficient sensitivity may be necessary for comparing the exposure point concentrations with appropriate pre-determined response levels (response actions should also be pre-determined). Background readings in the occupied spaces must be taken prior to commencement of the planned work. Any unusual background readings should be discussed with NYSDOH prior to commencement of the work.
- If total particulate concentrations opposite the walls of occupied structures or next to intake vents exceed 150 micrograms per cubic meter, work activities should be suspended until controls are implemented and are successful in reducing the total particulate concentration to 150 micrograms per cubic meter or less at the monitoring point.
- Depending upon the nature of contamination and remedial activities, other parameters (e.g., explosivity, oxygen, hydrogen sulfide, carbon monoxide) may also need to be monitored. Response levels and actions should be pre-determined, as necessary, for each site.

D-12B Special Requirements for Indoor Work with Co-Located Residences or Facilities

Unless a self-contained, negative-pressure enclosure with proper emission controls will encompass the work area, all individuals not directly involved with the planned work must be absent from the room in which the work will occur. Monitoring requirements shall be as stated above under “Special Requirements for Work Within 20 Feet of Potentially Exposed Individuals or Structures” except that in this instance “nearby/occupied structures” would be adjacent occupied rooms. Additionally, the location of all exhaust vents in the room and their discharge points, as well as potential vapor pathways (openings, conduits, etc.) relative to adjoining rooms, should be understood and the monitoring locations established accordingly. In these situations, it is strongly recommended that exhaust fans or other engineering controls be used to create negative air pressure within the work area during remedial activities. Additionally, it is strongly recommended that the planned work be implemented during hours (e.g. weekends or evenings) when building occupancy is at a minimum.

D-13 Odor Control Plan

This odor control plan is capable of controlling emissions of nuisance odors on and off Site. 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 remedial party’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.

D-14 Dust Control Plan

Particulate monitoring must be conducted according to the Community Air Monitoring Plan (CAMP) provided in Section D-12. If particulate levels at the Site exceed the thresholds listed in the CAMP or if airborne dust is observed on the Site or leaving the Site, the dust suppression techniques listed below will be employed. The remedial party will also take measures listed below to prevent dust production on the site.

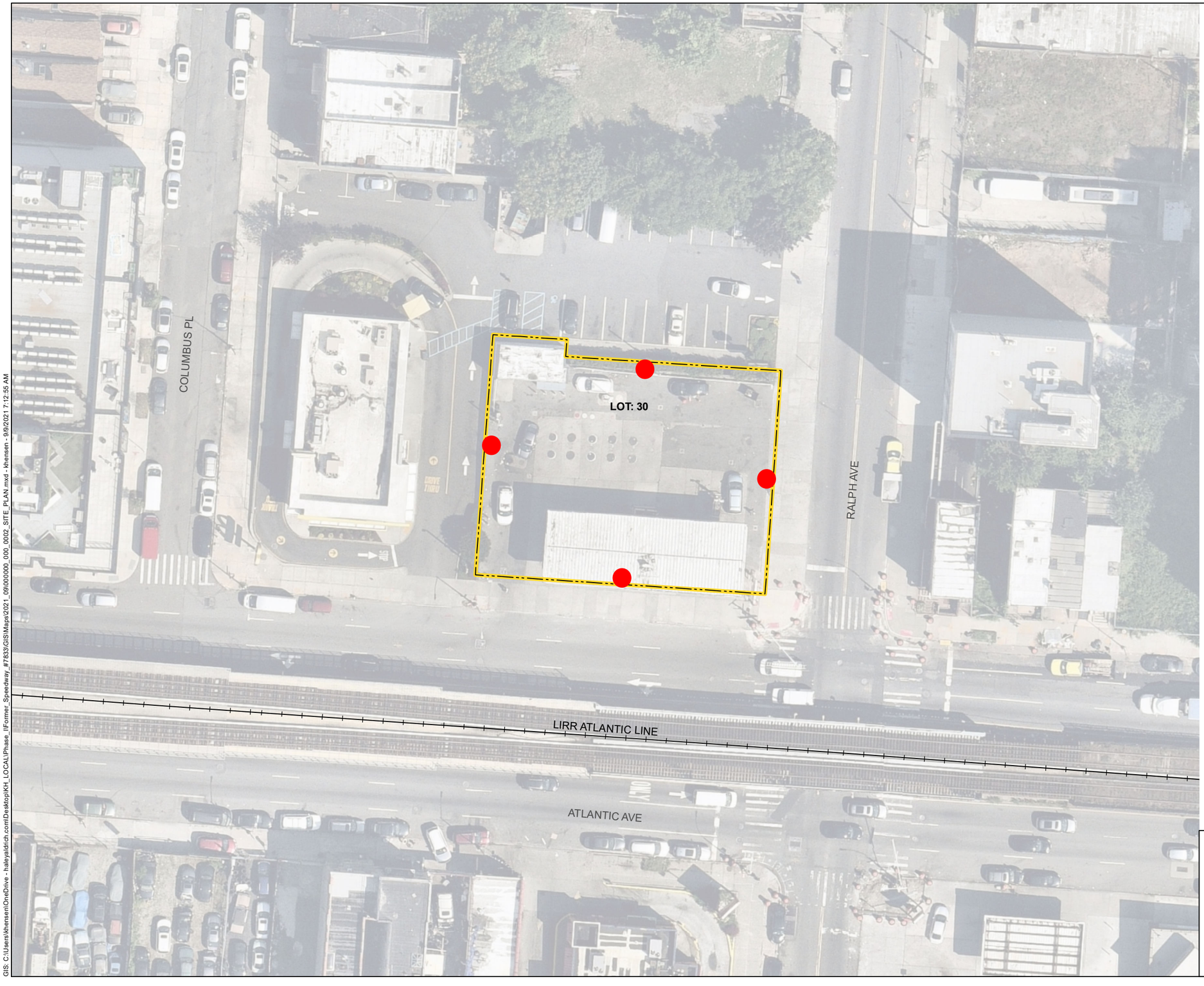
A dust suppression plan that addresses dust management during invasive on-Site work will include, at a minimum, the items listed below:

- Dust suppression will be achieved using a 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.

D-15 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.

A plan will be developed and utilized by the contractor for all remedial work to ensure compliance with local noise control ordinances.



LEGEND

- COMMUTER RAIL LINE BLOCK 1714
- SITE BOUNDARY
- COMMUNITY AIR MONITORING STATION LOCATION

NOTES

1. ALL LOCATIONS AND DIMENSIONS ARE APPROXIMATE.
2. ASSESSOR PARCEL DATA SOURCE: KINGS COUNTY
3. AERIAL IMAGERY SOURCE: NEARMAP, 12 AUGUST 2021

N

0 40 80

SCALE IN FEET

HALEY ALDRICH

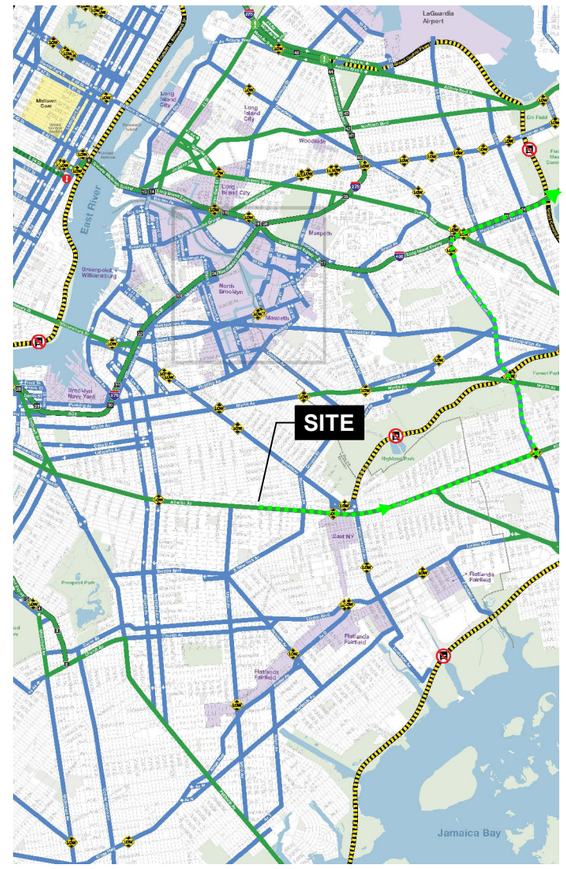
1885 ATLANTIC AVENUE REDEVELOPMENT SITE
1885 ATLANTIC AVENUE
BROOKLYN, NY

CAMP LOCATIONS

JANUARY 2024

APPENDIX D

GIS: C:\Users\khensen\OneDrive - haleyaldrich.com\Desktop\KH_LOCAL\Phase_I\Former_Speedway_#7833\GIS\Maps\2021_09\000000_000_0002_SITE_PLAN.mxd - khensen - 9/6/2021 7:12:55 AM



Legend

Truck Routes

Local Truck Route
Trucks with an origin or destination for the purpose of delivery, loading or servicing within the respective Borough, shall only operate on designated local routes, except that an operator may operate on a non-designated street for the purpose of arriving at their destination. This shall be accomplished by leaving a designated truck route at the intersection that is nearest to their destination, proceeding by the most direct route, and then returning to the nearest designated truck route by the most direct route. If the operator has additional destinations in the same general area, they may proceed by the most direct route to their next destination without returning to a designated truck route, provided that the operator's next destination does not require that they cross a designated truck route.

Through Truck Route
Trucks having neither an origin nor a destination within the respective Borough shall restrict the operation of such vehicles to those street segments designated as Through Truck Routes.

Through Truck Route on Expressway

53 FT Trailer Exception

Connecting Road Outside NYC

Restricted Routes

No Commercial Vehicles

Hazards

Alert: see additional information

Low Vertical Clearance (14 feet and under)

Navigation / Landmarks

Highway Exit

Major Highway

Industrial Business Zone

Parks and Open Spaces

Limited Truck Zone

LEGEND

- TRUCK EGRESS
- TRUCK INGRESS
- SITE BOUNDARY
- PARCEL BOUNDARY
- CONSTRUCTION ENTRANCE
- TRUCK ROUTE

NOTES

1. ALL LOCATIONS AND DIMENSIONS ARE APPROXIMATE.
2. TRUCK ROUTE MAP SOURCE: NEW YORK DEPARTMENT OF TRANSPORTATION, 2022
3. ASSESSOR PARCEL DATA SOURCE: NYC DEPARTMENT OF CITY PLANNING
4. AERIAL IMAGERY SOURCE: NEARMAP, 19 JULY 20

N

0 20 40

SCALE IN FEET

HALEY ALDRICH

1885 ATLANTIC AVENUE REDEVELOPMENT SITE
1885 ATLANTIC AVENUE
BROOKLYN, NY

TRUCK ROUTE MAP

JANUARY 2024

APPENDIX D

GIS: \\haleyaldrich.com\share\CF\Groups\nyc\GIS\Maps\2022_09_20\125206125_001_0016_TRUCK_ROUTE_MAP.mxd - hwachholz - 9/13/2022 12:17:16 AM

APPENDIX E
Blower and Vapor Barrier Manufacturer's Specifications

ENVIRO-EQUIPMENT, INC.
10120 Industrial Drive
PINEVILLE, NC 28134
704-556-7723 - Phone
704-556-7228 - Fax
www.enviroequipment.com

SYSTEM MANUAL

6093 SVE System

Enviro-Equipment, Inc.

ENVIRO-EQUIPMENT, INC.
10120 Industrial Drive
PINEVILLE, NC 28134
704-556-7723 - Phone
704-556-7228 - Fax
www.enviroequipment.com

Table of Contents

Enviro-Equipment, Inc.

SVE 6093

Enviro-Equipment Inc.
10120 Industrial Drive
Pineville NC 28134
704-556-7723

QUCIK REFERENCE MAINTENANCE PARTS AND INTERVALS

DESCRIPTION	MFG.	PART#	Frequency
Dilution Intake Filter Element	Solberg	31P	Annually or as needed
SVE Blower Intake Filter Element	Solberg	239P	Annually or as needed

ALL MAINTENANCE PARTS ARE AVAILABLE FROM ENVIRO-EQUIPMENT. PLEASE CALL US AT 704-556-7723 OR EMAIL US AT REMEDIATION@ENVIROEQUIPMENT.COM TO ORDER MAINTENANCE PARTS!

Enviro-Equipment Inc. SVE #6093 Equipment List

SVE Equipment				
Item	**Manufacturer**	**Model Number**	**Serial Number**	**Notes**
SVE Blower	Rotron	EN808BA72MXL	26JAN24 000076	New Rotron Blower
KO Tank	ESD	AWS60-3	N/A	Used KO Tank AWS60-3 with new single level float
Relief Valve	American Vacuum	AW-1035	N/A	2” Vacuum Relief Valve
SVE Filter	Solberg	CSL-239-300C	N/A	Used 3” Solberg Housing with NEW 239 Element
SVE Silencer	Solberg	SLCR300	N/A	3” Solberg Exhaust Silencer
SVE Dilution Filter	Solberg	FS-31P-200	N/A	2” Dilution Filter with Brass Gate Valve
SVE Vacuum Gauge	EEI	100inWCVAC	N/A	0-100” Water Column Vacuum Gauge
SVE Flow Meter	Dwyer	DS-300-3 and 2010	N/A	DS-300-3 Pitot Tube with 0-10” WC Mag Gauge
SVE Temp Gauge	Midwest Control	TGB30-550P25	N/A	0-550F Temp Gauge
SVE Pressure Gauge	EEI	60inWCP	N/A	60” WC Pressure Gauge

Control Panel and Electrical				
Item	**Manufacturer**	**Model Number**	**Serial Number**	**Notes**
Main Control Panel	EEI	N/A	EEI-6093	New Relay Logic Control Panel. Control Panel Component Sheet for Details.

EEI JOB 6093 - Operation and Maintenance Manual

General

- FIRST - Review all manufacturer documentation.
- Perform and document routine maintenance at manufacturer recommended intervals. Documentation of routine maintenance performed at manufacturer recommended intervals must be provided when making a warranty claim. Failure to perform and document routine maintenance at manufacturer recommended intervals will void any warranty claims.
- Only qualified individuals should connect, start up, operate, maintain and decommission this system.

System Control Panel

- FIRST – Review all control panel documentation.
- A licensed electrician should bring power from the electrical service into the main system control panel.
- Check all wiring connections for proper tightness and torque before powering the system. Verify proper grounding at the control panel. Verify all selector switches are in the OFF position. Verify all valve settings on each system component are set properly for startup.
- Verify proper voltage at the top of disconnect or main terminal block in the main system control panel enclosure.
- If the system has a phase monitor, adjust the phase monitor for proper input voltage, then turn the power on. Check for steady green light on phase monitor, if incorrect, turn off all power then switch L1 and L3.
- Close and secure the enclosure then turn power on to the system.
- Turn all HOA switches to the auto position. Operating in hand mode is for testing purposes only. Damage to the system may result from continuously operating in hand mode which will void the warranty.

Alarm Descriptions

Control Device	Result Condition	Control Panel Indication
Moisture Separator High Level Alarm	Shuts down SVE Blower	Moisture Separator High Level Alarm Light Illuminates

Alarm Troubleshooting

Component	Problem	Possible Cause	Solution
All System Components	Will Not Turn On	Ambient Temperature Exceeds 104F	Contact Enviro-Equipment
Any Pump or Blower Motor	Will not run in hand	Tripped overload or Faulty Component	Check to see if overload if tripped, if not tripped, contact EEI about faulty component
SVE Blower	Blower will run in hand but not in auto	Any High Liquid Level Alarm	Drain below High Level Alarm then Reset Alarm

Soil Vapor Extraction Blower

- FIRST - Review all Soil Vapor Extraction blower documentation.
- Ensure valves are open in vacuum lines. If the system has a dilution air valve open it completely. Start the blower up under as little vacuum as possible and increase the vacuum gradually as needed once started up.
- Ensure rotation is correct by "bumping" the blower on in hand mode and then off. Check rotation against rotation arrows or see if there is suction at the vacuum connections and pressure at the exhaust outlet. If rotation is backwards, have an electrician exchange two of the power leads. Be sure to lock out and tag the main incoming power. Verify that there is not power with a multimeter. If the system has a phase monitor the rotation should already be correct and this process may not be necessary.
- Do not operate beyond maximum vacuum capacity of the blower. Vacuum relief valve should be set at maximum vacuum threshold to protect blower.
- Check air filters per manufacturer's recommendation or at least once a month. Clean and replace as necessary.

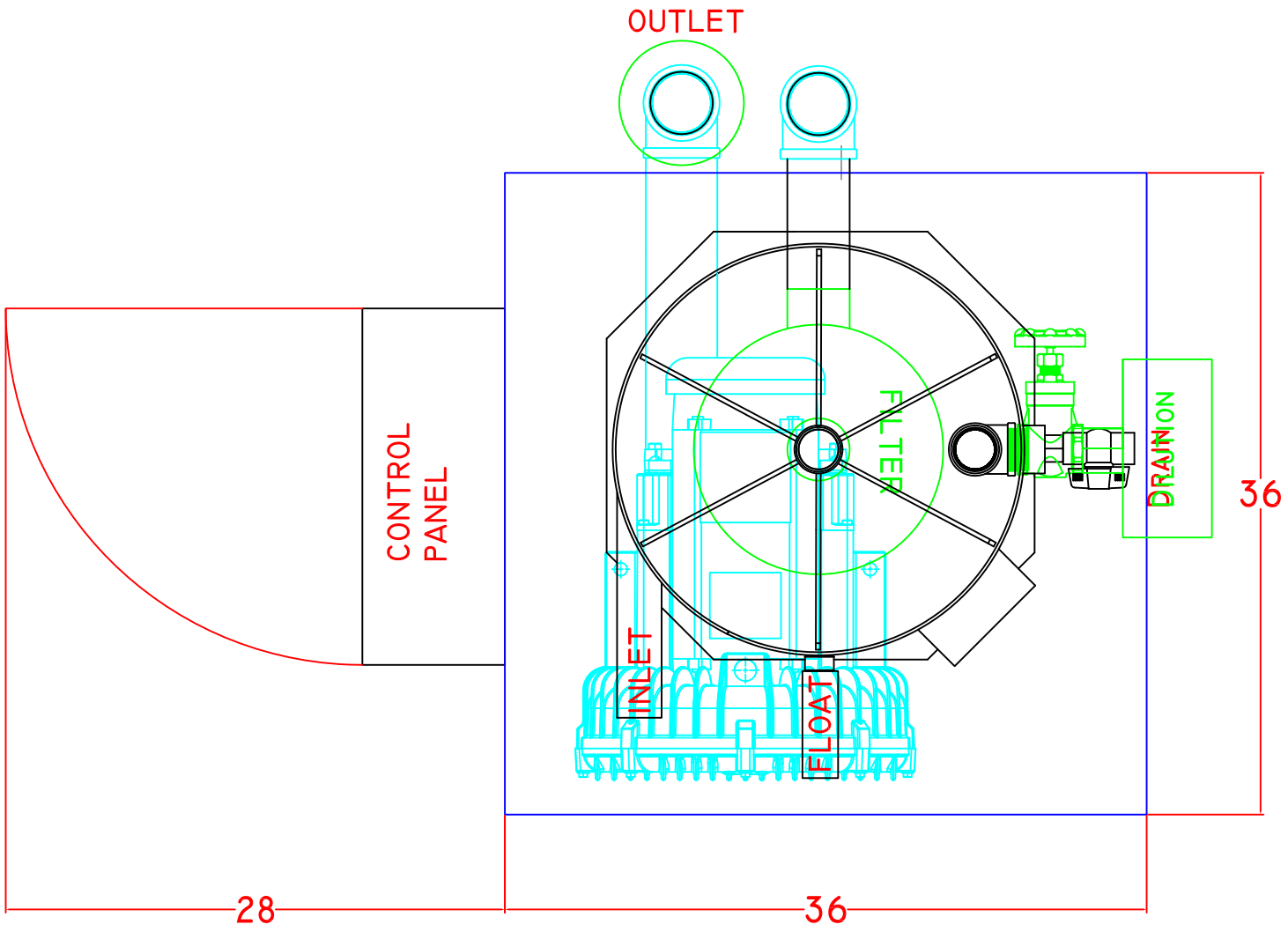
Moisture Separator

- FIRST - Review all moisture separator documentation.
- If the moisture separator has a clear PVC sight glass, it should be removed and cleaned at least once a month or as necessary so the liquid level can be clearly read.
- If the moisture separator has a clean out port, the inside of the moisture separator should be flushed with clean water at least once a month or as necessary to remove any dirt or debris.
- The moisture separator high level alarm float (if any) is installed so the moisture separator does not flood and allow liquid to be sucked into the vacuum blower. Dirt and debris can cause this float to not operate properly so it should be gently flushed with clean water at least once a month or as necessary.
- Upon shut down, ensure all sources of water are disabled. Drain completely.

Carbon Vessels

- FIRST – Review all Carbon Vessel documentation.
- Do not exceed maximum flow rate or maximum pressure rating for the vessel.
- Note the pressure before and after the vessel. An increase in differential pressure is a sign the carbon media is spent or the vessel is plugged.
- Take regular samples before and after each carbon vessel. An increase in effluent concentration is a sign the carbon media is spent.
- Remove and properly dispose of spent carbon media and replace with new carbon media as needed.

TOP DOWN VIEW



DATE	REVISION	BY	CH'D

ENVIRO-EQUIPMENT, INC.
10120 Industrial Drive
Pineville, N.C. 28134
PHONE 704-556-7723
FAX 704-556-7728

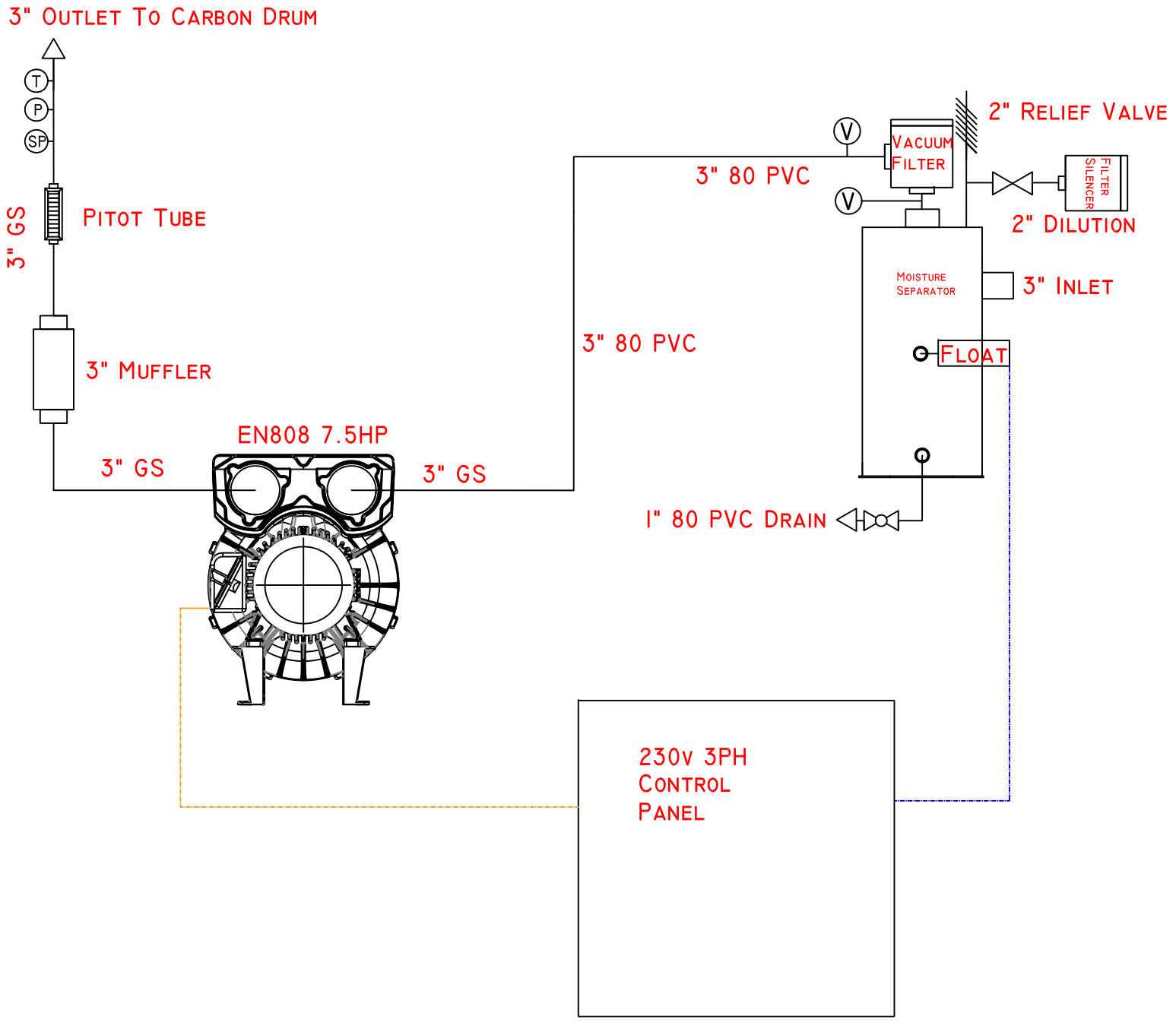
TOLERANCES (UNLESS OTHERWISE SPECIFIED)

CUSTOMER: Coastal Env.

TITLE: 6093 SVE SKID

SCALE:	DRAWN BY:	CHECKED BY:	APP'D BY:
1"	EC	EC	EC

DATE:	SHEET	OF SHEETS	DRAWING NO.
4-30-24	1	1	6093



SYMBOL	DESCRIPTION
SP	SAMPLE PORT
VS	VACUUM SWITCH
V	VACUUM GAUGE
TS	TEMPERATURE SWITCH
PS	PRESSURE SWITCH
P	PRESSURE GAUGE
T	TEMPERATURE GAUGE
	RELIEF VALVE
SV	SOLENOID VALVE
	WYE STRAINER
	CHECK VALVE
	GATE VALVE
	BALL VALVE
VACUUM FILTER	VACUUM FILTER
FILTER SILENCER	FILTER SILENCER
	EXHAUST MUFFLER
	FLOW METER
	TRANSFER PUMP
	VACUUM BLOWER
	AIR COMPRESSOR
	MOISTURE SEPARATOR
	HEAT EXCHANGER
	XP POWER WIRING
	INTRINSIC WIRING

DATE	REVISION	BY	CH'D

ENVIRO-EQUIPMENT, INC.
10120 Industrial Drive
Pineville, N.C. 28134
PHONE 704-556-7723
FAX 704-556-7728

TOLERANCES (UNLESS OTHERWISE SPECIFIED)

CUSTOMER: Coastal Env.

TITLE: P&ID SVE SKID

SCALE:	DRAWN BY:	CHECKED BY:	APP'D BY:
NTS	Evan Chew	EC	EC

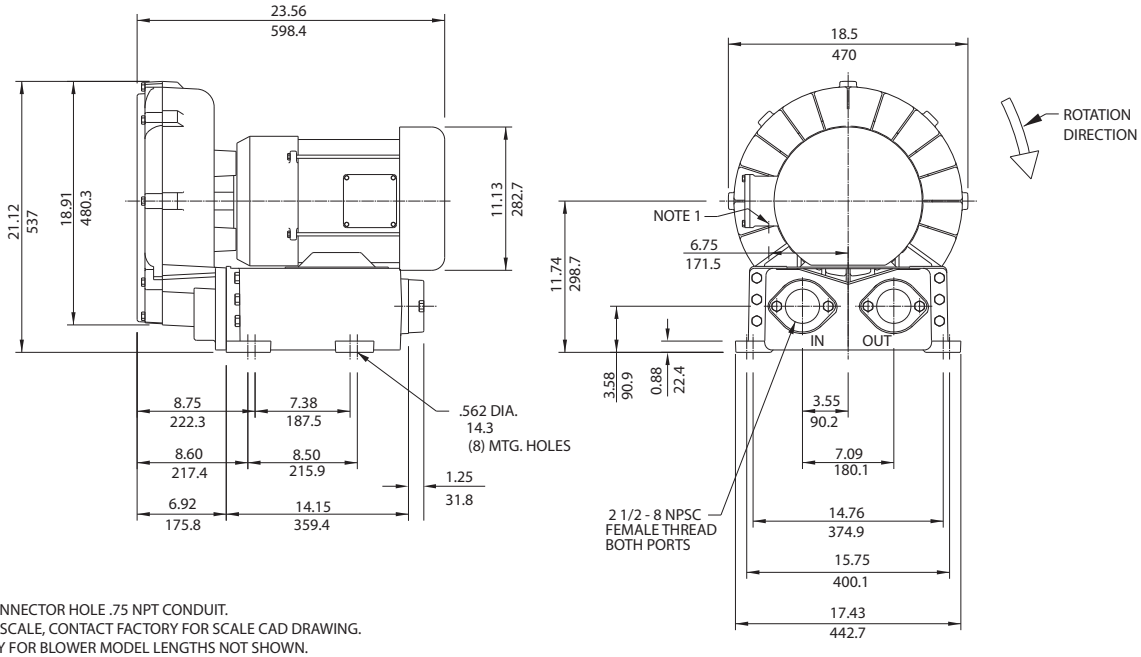
DATE:	SHEET	OF SHEETS	DRAWING NO.
4-30-24	1	1	6093

Environmental / Chemical Processing Blowers

ROTRON®

EN 808 & CP 808 Three-Phase

Sealed Regenerative Blower w/Explosion-proof Motor



IN
MM

NOTES
1. TERMINAL BOX CONNECTOR HOLE .75 NPT CONDUIT.
2. DRAWING NOT TO SCALE, CONTACT FACTORY FOR SCALE CAD DRAWING.
3. CONTACT FACTORY FOR BLOWER MODEL LENGTHS NOT SHOWN.

		Part/ Model Number		
		EN808BA72MXL	EN808BA86MXL	CP808FY72MXLR
Specification	Units	081229	081230	081234
Motor Enclosure - Shaft Mtl.	-	Explosion-proof-CS	Explosion-proof-CS	Chem XP-SS
Horsepower	-	7.5	7.5	7.5
Phase - Frequency	-	Three-60 hz	Three-60 hz	Three-60 hz
Voltage	AC	230/460	575	230/460
Motor Nameplate Amps	Amps (A)	18.6/9.3	7.4	18.6/9.3
Max. Blower Amps	Amps (A)	22.0/11.0	8.1	22.0/11.0
Inrush Amps	Amps (A)	126/63	56	126/63
Service Factor	-	1.0	1.0	1.0
Starter Size	-	1/1	1	1/1
Thermal Protection	-	Class B - Pilot Duty	Class B - Pilot Duty	Class B - Pilot Duty
XP Motor Class - Group	-	I-D, II-F&G	I-D, II-F&G	I-D, II-F&G
Shipping Weight	Lbs	287	287	287
	Kg	130.2	130.2	130.2

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

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

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

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

AMETEK TECHNICAL & INDUSTRIAL PRODUCTS
75 North Street, Saugerties, NY 12477
USA: +1 215-256-6601 - Europe: +44 (0) 845 366 9664 - Asia: +86 21 5763 1258
Customer Service Fax: +1 215.256.1338
www.ametektip.com

AMETEK®
TECHNICAL & INDUSTRIAL PRODUCTS

Environmental / Chemical Processing Blowers

EN 808 & CP 808 Three-Phase

ROTRON®

Sealed Regenerative Blower w/Explosion-proof Motor

FEATURES

- Manufactured in the USA - ISO 9001 and NAFTA compliant
- Maximum flow: 360 SCFM
- Maximum pressure: 85 IWG
- Maximum vacuum: 90 IWG
- Standard motor: 7.5 HP, explosion-proof
- Cast aluminum blower housing, impeller , cover & manifold; cast iron flanges (threaded); teflon® lip seal
- UL & CSA approved motor with permanently sealed ball bearings for explosive gas atmospheres Class I Group D minimum
- Sealed blower assembly
- Quiet operation within OSHA standards

MOTOR OPTIONS

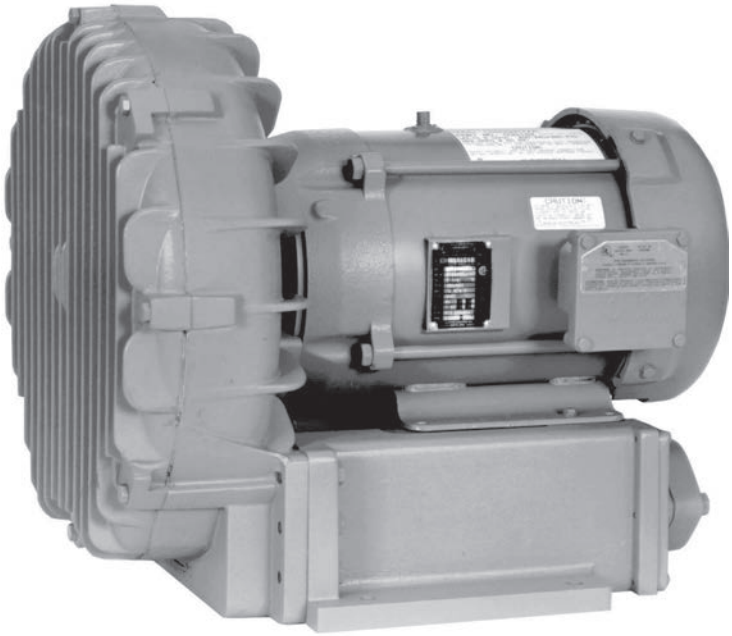
- International voltage & frequency (Hz)
- Chemical duty, high efficiency, inverter duty or industry-specific designs
- Various horsepowers for application-specific needs

BLOWER OPTIONS

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

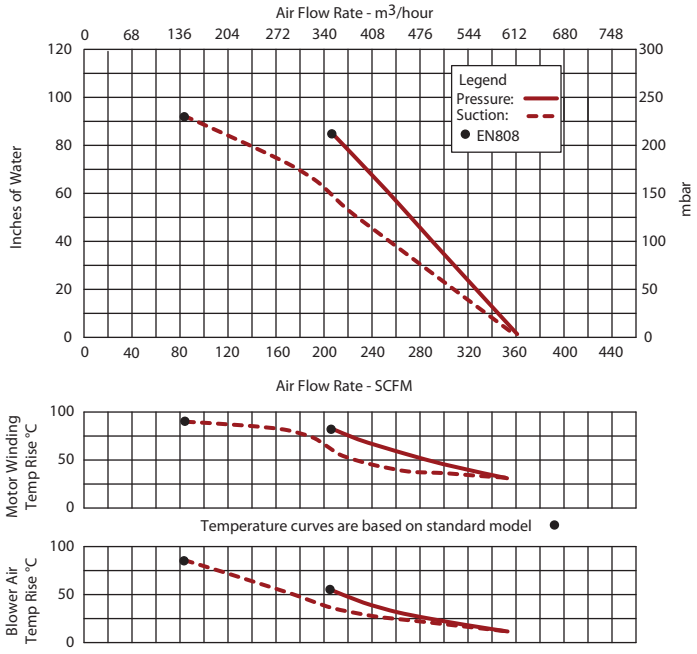
ACCESSORIES

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

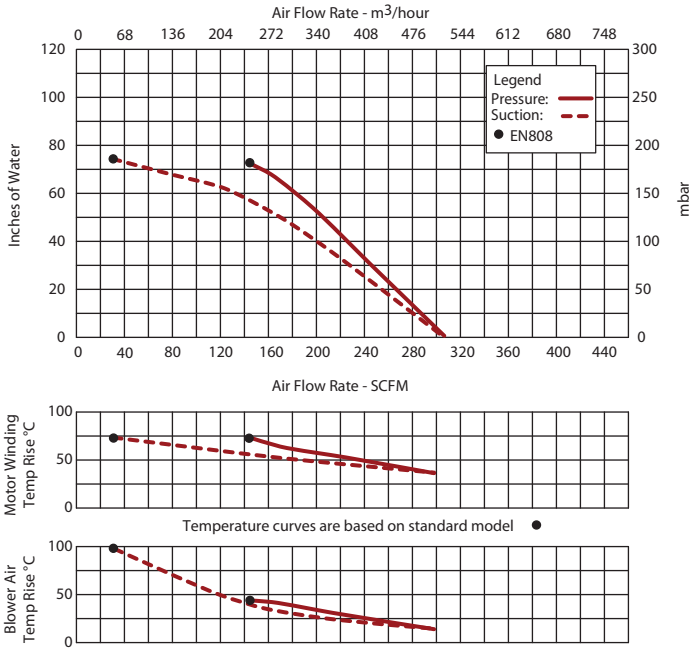


Blower Performance at Standard Conditions

60 Hz



50 Hz



AMETEK TECHNICAL & INDUSTRIAL PRODUCTS
75 North Street, Saugerties, NY 12477
USA: +1 215-256-6601 - Europe: +44 (0) 845 366 9664 - Asia: +86 21 5763 1258
Customer Service Fax: +1 215.256.1338
www.ametektip.com

AMETEK® TECHNICAL & INDUSTRIAL PRODUCTS

SERVICE AND PARTS MANUAL FOR BLOWER MODEL

EN707 – EN808 THREE PHASE

Technical & Industrial Products
627 Lake Street, Kent, Ohio 44240 U.S.A.
Telephone: 330-673-3452 Fax: 330-677-3306
e-mail: rotronindustrial@ametek.com
internet: www.ametektip.com

Your Choice. Our Commitment.™

WARRANTY, INSTALLATION, MAINTENANCE AND TROUBLESHOOTING INSTRUCTIONS

TECHNICAL AND INDUSTRIAL PRODUCTS
627 Lake Street, Kent, Ohio 44240 USA
Telephone: 330-673-3452 Fax: 330-677-3306
e-mail: rotronindustrial@ametek.com web site: www.ametektip.com

1. AMETEK Rotron DR, EN and HiE regenerative direct drive blowers are guaranteed for one full year from the date of installation (limited to 18 months from the date of shipment) to the original purchaser only. Should the blower fail we will evaluate the failure If failure is determined to be workmanship or material defect related, we will at our option repair or replace the blower.

2. AMETEK Rotron Minispiral, Revaflow, Multiflow, Nautilair, remote drive blowers, moisture separators, packaged units, CP blowers, Nasty Gas™ models and special built (EO) products are guaranteed for one full year from date of shipment for workmanship and material defect to the original purchaser only. Should the blower fail, If failure is determined to be workmanship or material defect related, we will at our option repair or replace the blower.

3. **Parts Policy** - AMETEK Rotron spare parts and accessories are guaranteed for three months from date of shipment for workmanship and material defect to the original purchaser only. If failure is determined to be workmanship or material defect related we will at our option repair or replace the part.

Corrective Action - A written report will be provided indicating reason(s) for failure, with suggestions for corrective action. Subsequent customer failures due to abuse, misuse, misapplication or repeat offense will not be covered. AMETEK Rotron will then notify you of your options. Any failed unit that is tampered with by attempting repair or diagnosis will void the warranty, unless authorized by the factory.

Terms and Conditions - Our warranty covers repairs or replacement of regenerative blowers only, and will not cover labor for installation, outbound and inbound shipping costs, accessories or other items not considered integral blower parts. Charges may be incurred on products returned for reasons other than failures covered by their appropriate warranty. Out-of-warranty product and in warranty product returned for failures determined to be caused by abuse, misuse, or repeat offense will be subject to an evaluation charge. Maximum liability will in no case exceed the value of the product purchased. Damage resulting from mishandling during shipment is not covered by this warranty. It is the responsibility of the purchaser to file claims with the carrier. Other terms and conditions of sale are stated on the back of the order acknowledgement.

Installation Instructions for SL, DR, EN, CP, and HiE Series Blowers

1. **Bolt It Down** - Any blower must be secured against movement prior to starting or testing to prevent injury or damage. The blower does not vibrate much more than a standard electric motor.

2. **Filtration** - All blowers should be filtered prior to starting. Care must be taken so that no foreign material enters the blower. If foreign material does enter the blower, it could cause internal damage or may exit at extremely high velocity.

   Should excessive amounts of material pass through the blower, it is suggested that the cover(s) and impeller(s) be removed periodically and cleaned to avoid impeller imbalance. Impeller

imbalance greatly speeds bearing wear, thus reducing blower life. Disassembling the blower will void warranty, so contact the factory for cleaning authorization.

3. **Support the Piping** - The blower flanges and nozzles are designed as connection points only and are not designed to be support members.

   Caution: Plastic piping should not be used on blowers larger than 1 HP that are operating near their maximum pressure or suction point. Blower housing and nearby piping temperatures can exceed 200°F. Access by personnel to the blower or nearby piping should be limited, guarded, or marked, to prevent danger of burns.

4. **Wiring** - Blowers must be wired and protected/fused in accordance with local and national electrical codes. All blowers must be grounded to prevent electrical shock. Slo-Blo or time delay fuses should be used to bypass the first second of start-up amperage.

5. **Pressure/Suction Maximums** - The maximum pressure and/or suction listed on the model label should not be exceeded. This can be monitored by means of a pressure or suction gage (available from Rotron), installed in the piping at the blower outlet or inlet. Also, if problems do arise, the Rotron Field representative will need to know the operating pressure/suction to properly diagnose the problem.

6. **Excess Air** - Bleed excess air off. DO NOT throttle to reduce flow. When bleeding off excess air, the blower draws less power and runs cooler.

   Note: Remote Drive (Motorless) Blowers - Properly designed and installed guards should be used on all belts, pulleys, couplings, etc. Observe maximum remote drive speed allowable. Due to the range of uses, drive guards are the responsibility of the customer or user. Belts should be tensioned using belt gauge.

Maintenance Procedure

When properly piped, filtered, and applied, little or no routine maintenance is required. Keep the filter clean. Also, all standard models in the DR, EN, CP, and HiE series have sealed bearings that require no maintenance. Bearing should be changed after 15,000 to 20,000 hours, on average. Replacement bearing information is specified on the chart below.

Bearing Part Number	Size	Seal Material	Grease	Heat Stabilized
510217 510218 510219	205 206 207	Polyacrylic	Nye Rheotemp 500 30% +/- 5% Fill	Yes – 325 F
510449 516440 516648	203 202 307	Buna N	Exxon Polyrex Grease	NO
516840 516841 516842 516843 516844 516845 516846 516847	206 207 208 210 309 310 311 313	Buna N	Exxon Polyrex Grease	NO

Troubleshooting

		POSSIBLE CAUSE	OUT OF WARRANTY REMEDY ***
IMPELLER DOES NOT TURN	Humming Sound	1. * One phase of power 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. Rewind or buy new motor 3. Change bearings 4. Clean and add filter 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. Rewind or buy new motor
IMPELLER TURNS	Blown Fuse	1. Insufficient fuse capacity 2. Short circuit	1. Use time delay fuse of proper rating 2. Repair
	Motor Overheated Or Protector Trips	1. High or low voltage 2. * Operating in single phase condition 3. Bearings 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. Check bearings 4. Adjust 5. Clean and add filter 6. Reduce system pressure/vacuum 7. Change capacitor 8. Rewind or buy new motor
	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 and add filter 3. Change bearings
	Performance Below Standard	1. Leak in piping 2. Piping and air passages clogged 3. Impeller rotation reversed 4. Leak in blower 5. Low voltage	1. Tighten 2. Clean 3. Check wiring 4. Tighten cover, flange 5. Check input voltage

* 3 phase units

** 1 phase units

*** Disassembly and repair of new blowers or motors will void the Rotron warranty. Factory should be contacted prior to any attempt to field repair an in-warranty unit.

Blower Disassembly:

WARNING: Attempting to repair or diagnose a blower may void Rotron's warranty. It may also be difficult to successfully disassemble and reassemble the unit.

1) Disconnect the power leads. **CAUTION:** Be sure the power is disconnected before doing any work whatsoever on the unit.

2) Remove or separate piping and/or mufflers and filters from the unit.

3) Remove the cover bolts and then the cover. **NOTE:** Some units are equipped with seals. It is mandatory that these seals be replaced once the unit has been opened.

4) Remove the impeller bolt and washers and then remove the impeller. **NOTE:** Never pry on the edges of the impeller. Use a puller as necessary.

5) Carefully note the number and location of the shims. Remove and set them aside. NOTE: If the disassembly was for inspection and cleaning the unit may now be reassembled by reversing the above steps. If motor servicing or replacement and/or impeller replacement is required the same shims may not be used. It will be necessary to re-shim the impeller according to the procedure explained under assembly.

6) Remove the housing bolts and remove the motor assembly (arbor/.housing on remote drive models).

7) Arbor disassembly (Applicable on remote drive models only):
   a) Slide the bearing retraining sleeve off the shaft at the blower end.
   b) Remove the four (4) screws and the bearing retaining plate from the blower end.
   c) Lift the shaft assembly far enough out of the arbor to allow removal of the blower end snap ring.
   d) Remove the shaft assembly from the arbor.
   e) If necessary, remove the shaft dust seal from the pulley end of the arbor.

Muffler Material Replacement:

1) Remove the manifold cover bolts and them manifold cover.

2) The muffler material can now be removed and replaced if necessary. On blowers with fiberglass acoustical wrap the tubular retaining screens with the fiberglass matting before sliding the muffler pads over the screens.

3) Reassemble by reversing the procedure.

NOTE: On DR068 models with tubular mufflers it is necessary to remove the cover and impeller accessing the muffler material from the housing cavity.

Blower Reassembly:

1) Place the assembled motor (assembled arbor assembly for remote drive models) against the rear of the housing and fasten with the bolts and washer.

2) To ensure the impeller is centered within the housing cavity re-shim the impeller according to the procedure outlined below.

3) If blower had a seal replace the seal with a new one.

4) Place the impeller onto the shaft making sure the shaft key is in place and fasten with the bolt, washer and spacer as applicable. Torque the impeller bolt per the table below. Once fastened carefully rotate the impeller to be sure it turns freely.

5) Replace the cover and fasten with bolts.

6) Reconnect the power leads to the motor per the motor nameplate.

Bolt Size	Torque Pound-Force-Foot
1/4-20	6.25 +/- 0.25
5/16-18	11.5 +/- 0.25
3/8-16	20.0 +/- 0.5
½-13	49.0 +/- 1
5/8 –11	90.0 +/- 2

Impeller Shimming Procedure:

WARNING: This unit may be difficult to shim. Extreme care may be exercised.

Tools Needed: Machinist's Parallel Bar
Vernier Caliper with depth measuring capability
Feeler gauges or depth gauge

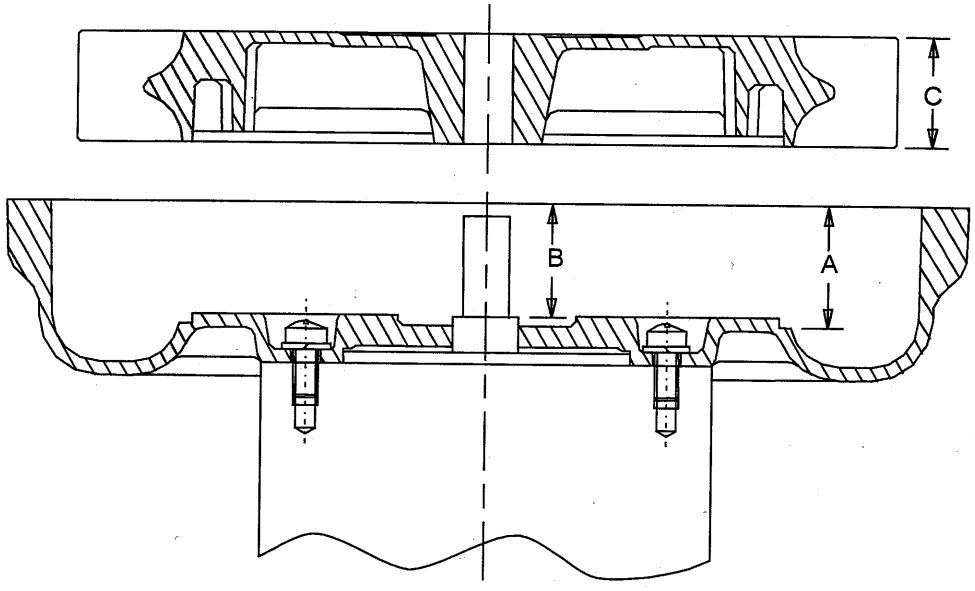
Measure the Following:

Distance from the flange face to the housing (A)
Distance from the flange face to the motor shaft shoulder (B)
Impeller Thickness (C)

Measurements (A) and (B) are made by laying the parallel bar across the housing flange face and measuring to the proper points. Each measurement should be made at three points, and the average of the readings should be used.

Shim Thickness = B – (A+C)/2

After the impeller installation (step #4 above) the impeller/cover clearance can be checked with feeler gauges, laying the parallel bar across the housing flange face. This clearance should nominally be (A-C)/2.



AMETEK®
ROTRON TECHNICAL MOTOR DIVISION
REGENERATIVE BLOWER GROUP

75 North Street
Saugerties, New York 12477
Phone: (845) 246-3401
Fax: (845) 246-3802

EXPLOSION-PROOF BLOWERS

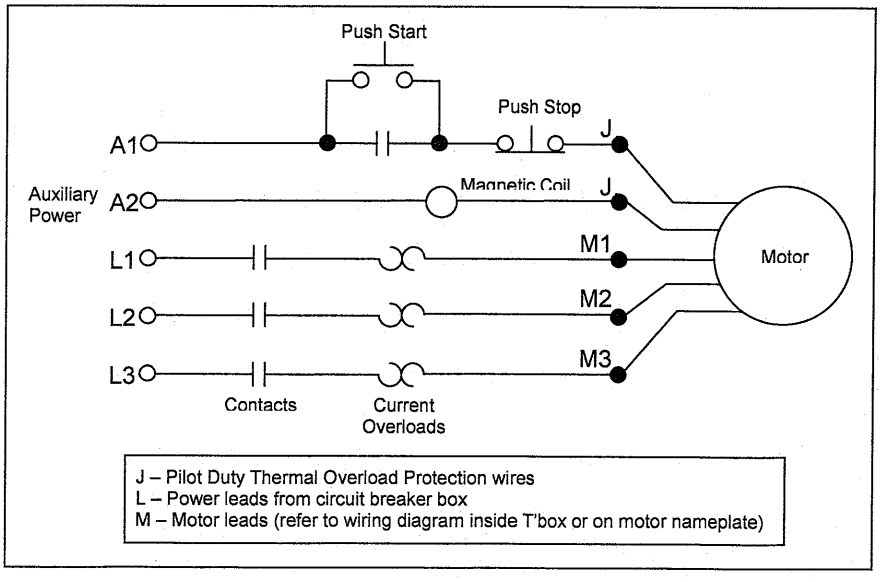
IMPORTANT: Read before wiring this Explosion-proof Blower

This AMETEK Rotron Explosion-proof Regenerative Blower may be equipped with Pilot Duty Thermal Overload (PDTO) or Automatic Thermal Overload (ATO) protection. When properly wired to a motor starter, this protection limits the motor winding temperature rise per the National Electric Code (NEC) article 500. Failure to properly wire this blower is an NEC violation and could cause an explosion. AMETEK Rotron assumes no responsibilities for damages incurred by negligent use of this product, and will not warranty a blower on which the PDTO is not properly connected. Some blowers 1 HP and under do not require PDTO and have built in ATO. Consult the factory if verification of wiring connections is required.

In all cases, follow the motor controller manufacturer's instructions. The following schematic is for conceptual understanding only, and may not apply to all motor/controller combinations.

The manufacturer's wiring diagram found on the motor takes precedent over reference diagrams supplied by AMETEK Rotron Technical Motor Division.

Schematic



The schematic is shown for a three phase motor. For a single phase motor disregard L3 and M3. Pushing the START button completes the auxiliary control circuit, allowing current to flow through the magnetic coil. The contacts are magnetically closed, starting the motor and latching the auxiliary circuit. The motor will continue to run until the STOP push button is depressed, the motor reaches the overload temperature, or the current sensing overloads trip out.

If you have any questions, contact AMETEK Rotron at 914-246-3401 for the location of your area representative.

POLICY REGARDING INSTALLATION OF AMETEK ROTRON REGENERATIVE BLOWERS IN HAZARDOUS LOCATIONS

AMETEK Rotron will not knowingly specify, design or build any regenerative blower for installation in a hazardous, explosive location without the proper NEMA motor enclosure. AMETEK Rotron does not recognize sealed blowers as a substitute for explosion-proof motors. Sealed units with standard TEFC motors should never be utilized where local, state, and/or federal codes specify the use of explosion-proof equipment.

AMETEK Rotron has a complete line of regenerative blowers with explosion-proof motors. Division 1 & 2, Class I, Group D; Class II, Groups F & G requirements are met with these standard explosion-proof blowers.

AMETEK Rotron will not knowingly specify, design or build any regenerative blower for installation in a hazardous, corrosive environment without the proper surface treatment and sealing options.

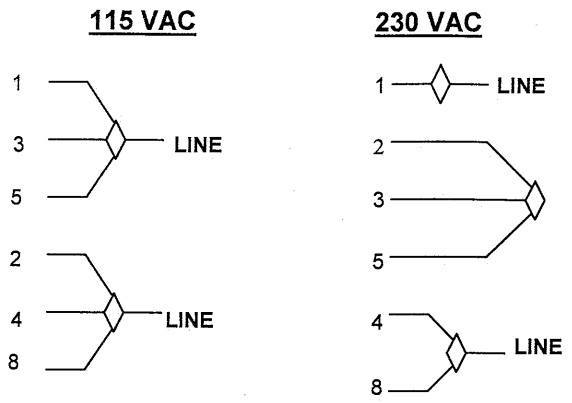
AMETEK Rotron has a complete line of Chemical Processing and Nasty Gas™ regenerative blowers with Chem-Tough™, stainless steel parts, and seals.

AMETEK Rotron offers general application guidance; however, suitability of the particular blower selection is ultimately the responsibility of the purchaser, not the manufacturer of the blower.

FS2 Rev B 3/10/98

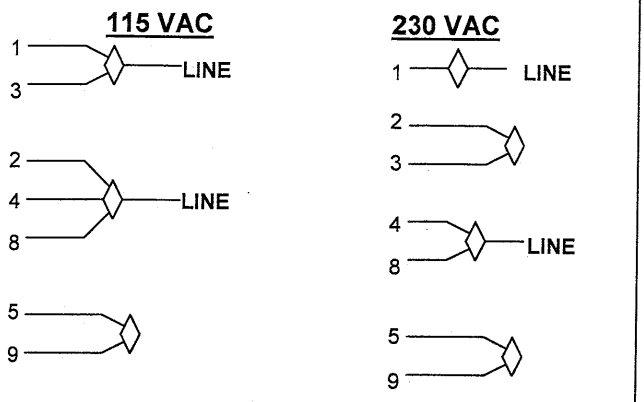
WIRING DIAGRAMS, XP MOTORS

H. 1∅, 6 WIRE



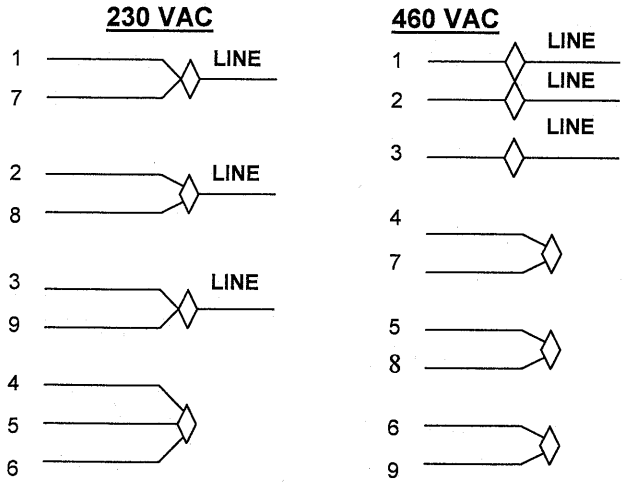
INTERCHANGE LEADWIRES 5 & 8 to REVERSE ROTATION

I. 1∅, 7 WIRE



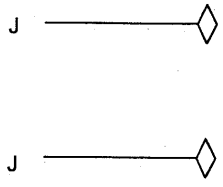
INTERCHANGE LEADWIRES 5 & 8 to REVERSE ROTATION

K. 3∅, 9 WIRE



INTERCHANGE ANY TWO LEAD LINES TO REVERSE ROTATION

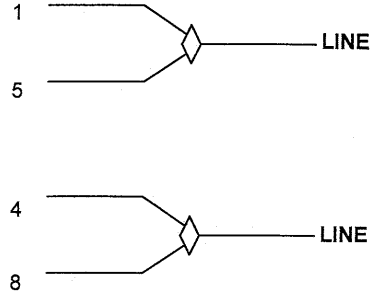
L. PILOT DUTY THERMAL OVERLOADS



HOOK J LEADS TO CONTROL CIRCUITRY

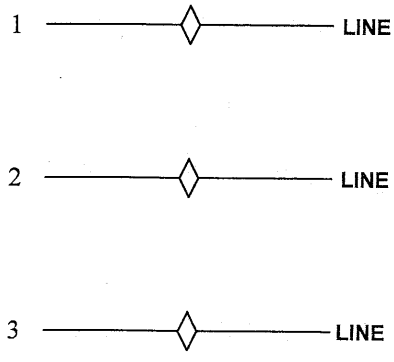
M. 1∅ 230 VAC

SINGLE VOLTAGE



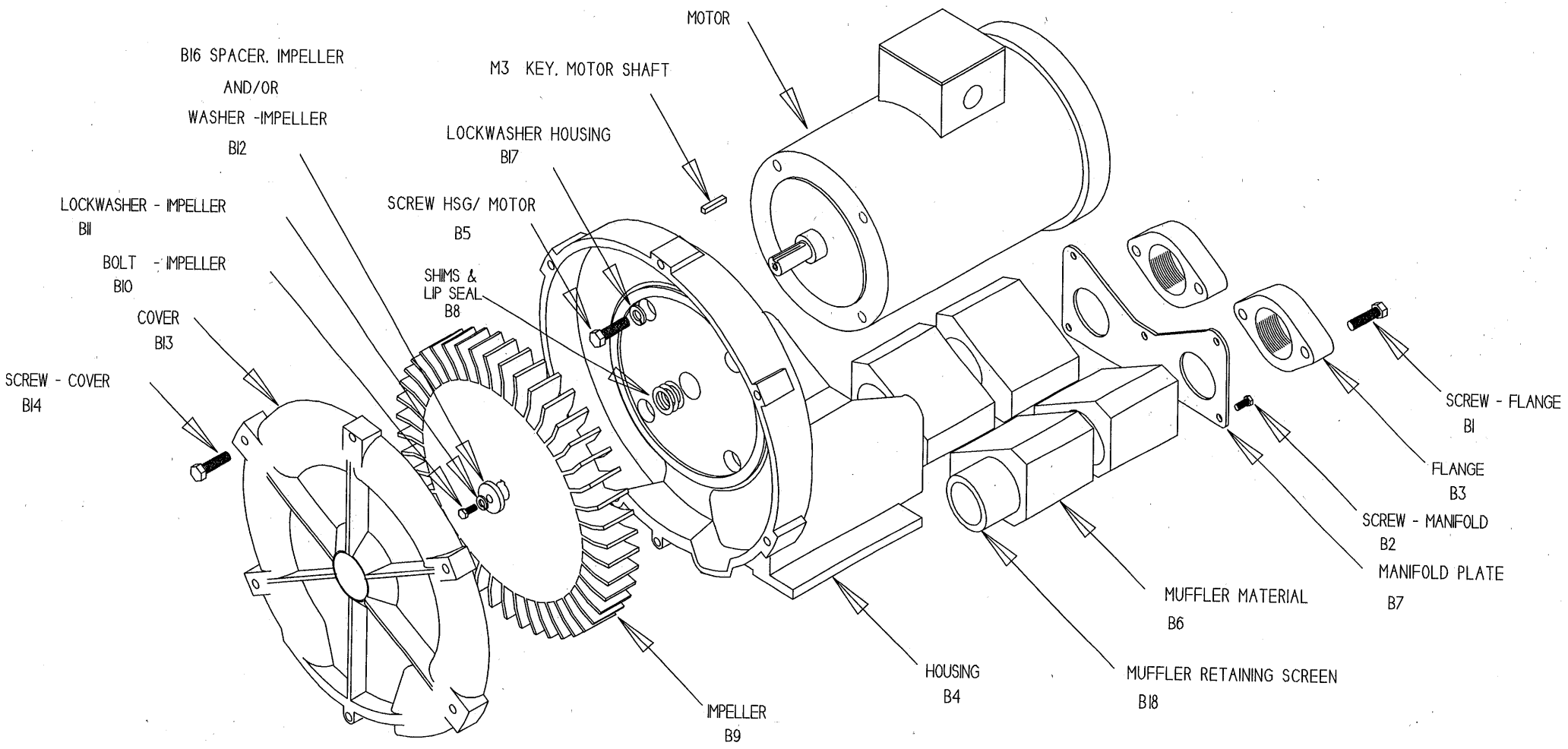
INTERCHANGE LEADWIRES 5 & 8 TO REVERSE ROTATION

N. 3∅ 575 VAC



INTERCHAGE ANY TWO LEAD LINES TO REVERSE ROTATION

ASSEMBLY DIAGRAM
DR/EN/CP/HiE X0X



EN 707/808 3 Phase
Service and Parts Manual

Parts Breakdown

		EN707	EN808	EN707F_MXL	EN757	EN757	EN808BA_MXL	EN808BA__MXL
	Model:			038710	081176	081174	*038729*	081229
	Part No.:	*038181*	*038182*					
		038439	*038440*	038711	081177		*038731*	081230
		OBSOLETE	***OBSOLETE***				***OBSOLETE***	

Item No.	Qty. Req'd	Description							
M3	1	Key Motor Shaft	510212	511532	510212	510629	510212	511532	511532
B1	4	Screw, Flange	155095	155025	155067	155067	155067	155067	155067
B2		Screw, Manifold	(13 pcs) 120214	120214	Not Used	Not Used	Not Used	Not Used	Not Used
B3	2	Flange	511480	511614	511614	511614	511614	511614	511614
		Screen, Flange Guard	Not Used	Not Used	Not Used	Not Used	Not Used	Not Used	Not Used
B4	1	Housing	516752	516758	516752	552021	552037	550081	516764
B5	4	Screw, Hsg /Motor	251792	140014	251792	251791	251792	140014	155034
B6	36	Muffler Material (Gray)	(40 pcs) 515493	515405	(7) 551720 14 pcs) 552044		14 pcs) 552044	551736	551736
	1	Muffler Material (White)	Not Used	Not Used	551721 (2 pcs) 552045		(2 pcs) 552045	(2) 551737	(2) 551737
B7		Manifold Plate	551264	523432	Not Used	Not Used	Not Used	Not Used	Not Used
B8	*	Shim .002"	272703	511547	272703	510356	272703	511547	511547
	*	Shim .005"	272704	511548	272704	510357	272704	511548	511548
	*	Shim .010"	272705	511549	272705	510358	272705	511549	511549
	*	Shim .020"	272706	511550	272706	510359	272706	511550	511550
	*	Shim .030"	Not Used	Not Used	Not Used	Not Used	Not Used	Not Used	Not Used
B9	1	Impeller	515461	516452	515461	552035	552036	550071	552062
B10	1	Bolt, Impeller	251791	155068	251791	120215	120007	155068	120210
B11	1	Lockwasher, Impeller	251787	251788	251787	120203	251787	251788	251788
B12		Washer, Impeller	Not Used	Not Used	Not Used	Not Used	Not Used	Not Used	511529
B13	1	Cover	515462	516447	515462	552023	552023	516447	552061
B14	7	Screw, Cover	(7 pcs) 120215	140016	155236 (9 pcs)		155236 (9 pcs)	155236	(8 pcs) 140016
B15		Eye Bolt	Not Used	Not Used	Not Used	Not Used	Not Used	Not Used	Not Used
B16	1	Spacer, Impeller Bolt	478336	511529	478336	510355	478336	511529	515555
B17		Lockwasher, Housing	Not Used	Not Used	Not Used	Not Used	Not Used	Not Used	Not Used
B18	1	Screen, Muffler Retaining, Right (**)	515492	515408	551723	552046	552046	551723	551723
	1	Screen, Muffler Retaining, Left (**)	515491	515407	551723	552046	552046	551723	551723
B19	6	Bolt, Muffler Hsg/Hsg	120251	155025	120251	120007	120007	155025	155025
B19A	4	Bolt, Muffler Hsg/Hsg	Not Used	Not Used	Not Used	Not Used	Not Used	Not Used	120214
B20	1	Muffler Housing	515480	515370	550023	552017	552017	550017	550017
		Muffler Discrete	Not Used	Not Used	Not Used	Not Used	Not Used	Not Used	Not Used
	2	Bolt, Motor/Muffler	Not Used	120325	Not Used	Not Used	Not Used	Not Used	Not Used
	2	Lockwasher, Motor/Muffler	Not Used	120203	Not Used	Not Used	Not Used	Not Used	Not Used
	2	Washer, Motor/Muffler	Not Used	155029	Not Used	Not Used	Not Used	Not Used	Not Used
B25		Nut, Rail	Not Used	Not Used	Not Used	Not Used	Not Used	Not Used	Not Used
B26		Rail Mounting	Not Used	Not Used	Not Used	Not Used	Not Used	Not Used	Not Used
	1	Lip Seal	516691	516693	516691	516587	516693	516693	516693

*As needed **Viewed looking at inlet/outlet ports

Model	Part No.	Motor	Wiring Diagram	Specific Parts	Bearing, Rear (M1)	Bearing, Impeller End (M2)
EN707F72MXL	038710	515552	K + L		510217	510218
EN707F86MXL	038711	529633	N + L			
EN757M72XL	081176	516687	K + L		510449	510217
EN757M86XL	081177	529630	N + L			
EN757F72XL	081174	515552	K + L		510217	510218
EN808BA86MXL	081230	529626	N + L		516840	516844
EN808BA72MXL	081229	515558	K + L			
Discontinued						
EN707F72XL	038181	515552	K + L		510217	510218
EN707F86XL	038439	529633	N + L			
EN808BA72XL	038182	515558	K + L		510840	516844
EN808BA86XL	038440	529626	N + L		Call Factory	Call Factory
EN808BA86MXL	038731	529626	N + L		516840	516844
EN808BA72MXL	038729	515558	K + L			

*As needed **Viewed looking at inlet/outlet ports

Enviro-Equipment Inc.
Remediation Division
10120 Industrial Drive
Pineville NC 28134
704 556 7723

EEI ALUMINUM AIR WATER SEPARATORS

STANDARD AWS SPECIFCATION

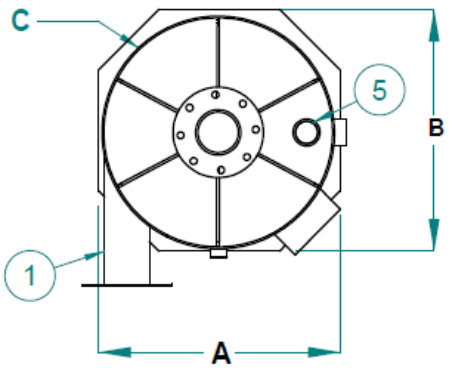
TYPE	WORKING VOLUME @(LSH)	AVAILABLE CONNECTION TYPE																CLEAN OUT PIPE	A	B	C (DIA.)	D	E	F	G	H	J
		FLANGE						MNPT					FNPT														
		2"	3"	4"	6"	8"	10"	2"	3"	4"	6"	8"	2"	3"	4"	6"	8"										
AWS30	12 GAL	X	X	X	-	-	-	X	X	X	-	-	X	X	X	-	-	6"	-	-	16 1/4"	25"	2"	19"	30"	33 1/2"	6"
AWS60	24 GAL	X	X	X	X	-	-	X	X	X	X	-	X	X	X	-	-	6"	24"	24"	23"	25"	2"	23"	30"	36 1/2"	6"
AWS80	47 GAL	X	X	X	X	-	-	X	X	X	X	-	X	X	X	-	-	8"	24"	24"	23"	39"	2"	39"	48"	54 3/4"	12"
AWS120	50 GAL	X	X	X	X	X	-	X	X	X	X	-	X	X	X	-	-	8"	24"	24"	23"	49"	2"	49"	60"	66 3/4"	12"
AWS220	107 GAL	-	X	X	X	X	X	X	X	X	X	-	X	X	X	-	-	8"	34"	34"	33 1/2"	49"	2"	49"	60"	66 3/4"	12"

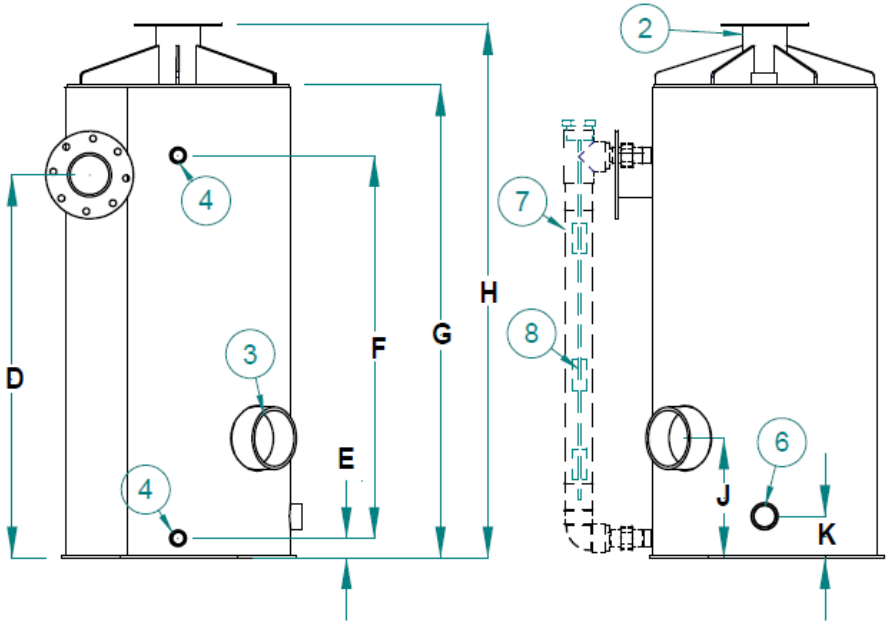
NOTES:

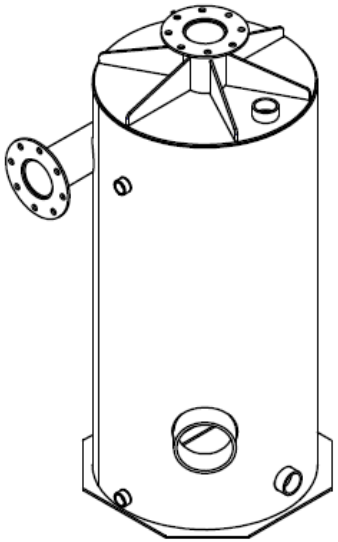
1. MATERIAL : 1/8" & 3/16" ALUMINUM SHT 5052
2. PROBE (SIGHT TUBE) : 2" CLEAR PVC
3. CUSTOM SIZES AVAILABLE

Enviro-Equipment Inc.
Remediation Division
10120 Industrial Drive
Pineville NC 28134
704 556 7723

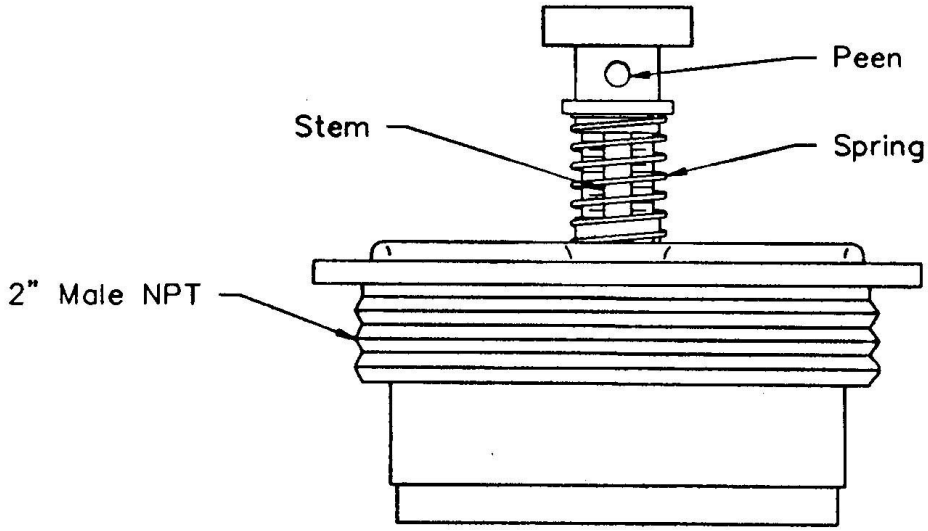
ITEM #	DESCRIPTION
1	INLET PIPE (SEE TABLE FOR AVAILABLE SIZE AND CONNECTION TYPE)
2	OUTLET PIPE (SEE TABLE FOR AVAILABLE SIZE AND CONNECTION TYPE)
3	CLEAN OUT
4	1" FNPT (MULTI LEVEL PROBE)
5	2" FNPT
6	2" FNPT
7	SIGHT TUBE 2" CLEAR PVC
8	MULTI LEVEL PROBE







Arco Wand
Brass Relief Valve
#AW-1035



Specifications

Height - 4-1/4"
Width - 2-7/8"
Weight - 1.5 Lbs.
Thread Size - 2" MPT

Features

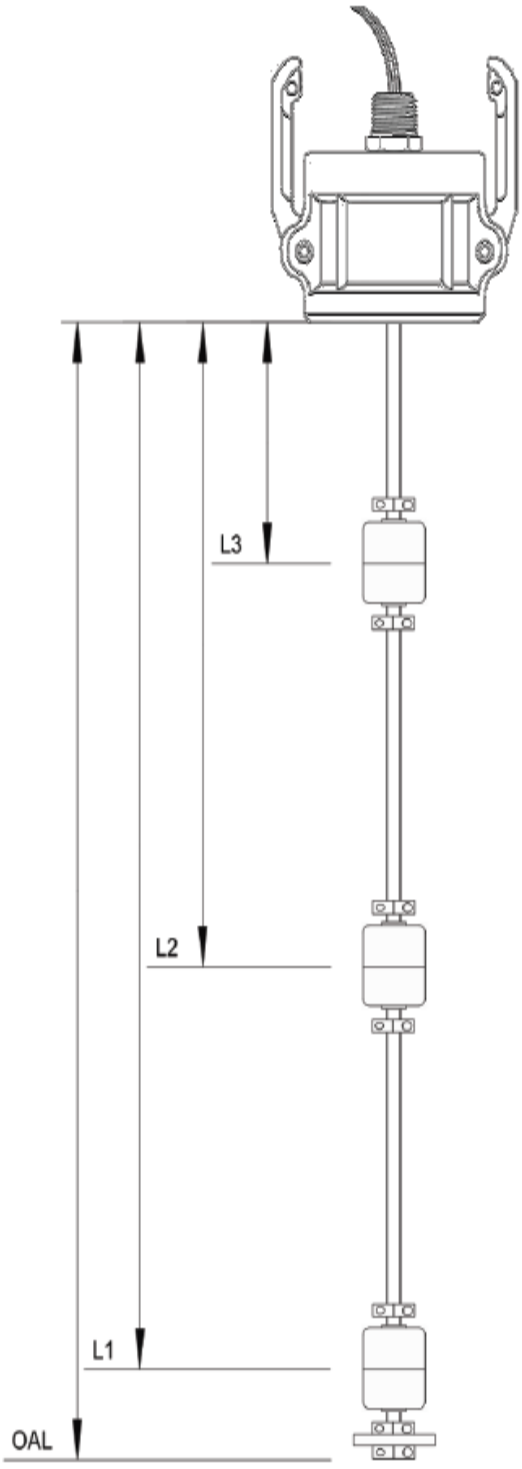
- ***Brass Construction***
- ***Adjustable in the field***
- ***4" to 14" Hg. Range***
- ***Up to 200 CFM***

American Vacuum Company
7301 N. Monticello Ave.
Skokie, IL 60076

PHONE: 800-321-2849 **FAX: 847-674-0214**

Enviro-Equipment Inc.
10120 Industrial Drive
Pineville NC 28134

AWS60 Multi Level Probe



Description: Stainless Steel Multi Level Float Tree, 2" Poly Camlock, S1010.6 Float, Set Collars, 50W SPST, 360" Cable, 1.5" PVC Centering Disc

Mounting Fitting: 2" Poly Camlock Coupler DC

Conduit Connection: ½" MNPT

Stem: 5/16" Stainless Steel

Actuation:

Level	Actuation	Operation	Float	SG	Stops
L3	16"	NO	SS 1010	.60	Set Collar
L2	18"	NO	SS 1010	.60	Set Collar
L1	22"	NO	SS 1010	.60	Set Collar
OAL	24"				

Cable: 360" PVC 22 AWG / 6
Wiring: Individual

Level	Type	Reed Switch	Wire Colors
L3	SPST	50W-265V-1A	Blue / Brown
L2	SPST	50W-265V-1A	Green / White
L1	SPST	50W-265V-1A	Red / Black

Centering Disc: 1.5" PVC
Maximum Operating Temperature: 180 F
Maximum Operating Pressure: 300 PSI

Mechanical Gripper & Grip Plug
Safety & Instruction Manual

Bouchon mécanique de tuyau et bouchon préhenseur
Manuel de sécurité et d'instructions

Tapón mecánico de tubería y mordaza
Manual de instrucciones y seguridad

Notice: Before using this equipment, carefully read SAFETY PRECAUTIONS contained in this manual. Keep this manual for future reference. Additional free copies of this manual can be obtained by contacting Cherne Industries. Contact Cherne Industries at 1-800-843-7584 or Oatey.com/Cherne for questions or recommendations.

Avis : Avant d'utiliser cet équipement, lisez attentivement les MISES EN GARDE de ce manuel. Gardez ce manuel pour référence future. Vous pouvez obtenir des copies supplémentaires gratuites de ce manuel en contactant Cherne Industries. Contactez Cherne Industries au 1-800-843-7584 ou visitez Oatey.com/Cherne pour les questions ou recommandations.

Aviso: Antes de utilizar este aparato, es importante leer las PRECAUCIONES DE SEGURIDAD contenidas en este manual. Guarde este manual para referencia futura. Se pueden obtener copias gratuitas adicionales de este manual a través de Cherne Industries. Contáctese con Cherne Industries al 1-800-843-7584 o visite Oatey.com/Cherne por preguntas o recomendaciones.

Cherne Industries Incorporated | 2300 Vierling Drive West | Shakopee, MN 55379
Phone: 1-800-843-7584 | Fax: 1-800-843-7585 | Email: Info@Cherneind.com | Oatey.com/Cherne
Cherne Industries Incorporated is part of the Oatey family of brands

Table of Contents

Table des matières

Tabla de Contenido

Safety Precautions

⚠DANGER Bodily injury and/or property damage could result if plug fails for any reason. Unsafe practices can also result in death or severe injury.

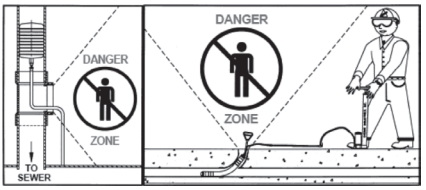
The following information provided under "General Information," "Preparation Before Use," "Operation," and "Maintenance" must always be followed. Pay careful attention to safety information highlighted by this symbol: ⚠

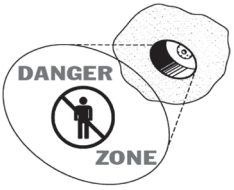
General Information

Follow all safety instructions contained in OSHA, federal, state, and local regulations. Do not use the plug if any conditions exist that could jeopardize the safety of personnel or property.

Confined Space Entry: Follow Federal, State, local and/or company requirements.

⚠ Danger Zone: When a plug is in use, a danger zone exists that expands outwardly in a cone shape. NEVER enter the danger zone when a plug is in use.





Preparation Before Use

1. **Plug Selection:** Select the proper plug and related equipment. Every pipe plug has performance specs listed on the plug and/or in the literature. Contact Cherne Industries or dealer for recommendations.

2. **Back Pressure Determination:** Determine maximum back pressure the plug must withstand. Back pressure is the pressure (air or liquid) in front or back of the plug that it must restrain. **⚠ Never exceed the plug's back pressure rating. Maximum back pressure ratings listed are for plugs installed in clean, dry pipe of nominal size. Usage of plugs in pipeline that varies from these conditions could reduce maximum allowable back pressure.**

3. **Cleaning and Inspection:** Plugs must be clean and inspected before and after every use. **⚠ Do not use a plug if it has or shows any signs of wear or deterioration.**

   The inspection should include but not be limited to looking for:
   1. Cuts
   2. Abrasions
   3. Cracks
   4. Corrosion
   5. Loose or damaged fittings & components
   6. Leaks

4. **Clean Pipe:** Clean any debris or foreign substances before placing plug. An unclean pipe could reduce plug's back pressure holding capability and could damage plug during placement or upon inflation.

Operation

⚠ Restrained Media Restrictions: Use of plugs with chemicals including hydrocarbons may cause severe damage to the plug. Plugs made of natural rubber are designed to hold air,

water or sewage. Plug failure could result in death, serious bodily injury and/or property damage.

To Install:

1. Place the plug into the pipe or cleanout tee. You may need to loosen (do not remove) the nut, wingnut, or handle first.
2. Hand-tighten the nut, wingnut, or handle.

To Remove:

⚠ Always remove backpresure before loosening or removing the plug.

1. Loosen and do not remove the nut, wingnut, or handle.
2. Remove the plug from the pipe or cleanout tee.

Maintenance

The plug may be cleaned with mild soap and water (other cleaning agents may cause damage).

⚠ Plug should not be used if it shows any signs of cut, wear or deterioration. A damaged plug is unsafe and should not be used again.

Storage

Store the plug in dry place away from sunlight or other sources of ultra-violet light and ozone. Plugs must be stored below 110°F and can be stored suspended vertically or placed horizontally.

Mesures de sécurité

⚠ AVERTISSEMENT Des blessures corporelles et/ou des dégâts matériels peuvent s'ensuivre si le bouchon échoue pour une raison quelconque. De mauvaises pratiques peuvent également entraîner la mort ou des blessures graves.

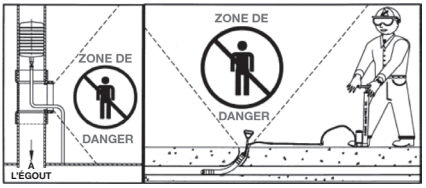
Les informations suivantes fournies sous « Informations générales », « Préparation avant l'utilisation », « Fonctionnement » et « Entretien » doivent toujours être respectées. Prêtez une attention particulière aux informations sur la sécurité mises en évidence par ce symbole : ⚠

Informations générales

Suivez toutes les consignes de sécurité faisant partie des règlements de l'OSHA, règlements fédéraux, provinciaux/Étatiques et municipaux. N'utilisez pas le bouchon s'il existe des conditions qui pourraient compromettre la sécurité du personnel ou des biens.

Application dans un espace restreint : Suivez toutes les exigences fédérales, provinciales/Étatiques, municipales et/ou de l'entreprise.

⚠ Zone de danger : Lorsqu'un bouchon est utilisé, il existe une zone de danger qui se prolonge vers l'extérieur en forme conique. N'entrez JAMAIS dans une zone de danger lorsque le bouchon est en usage.



Préparation avant l'utilisation

1. **Sélection du bouchon :** Sélectionnez le bouchon approprié et le matériel connexe. Chaque bouchon de tuyau comporte des spécifications fonctionnelles indiquées sur le bouchon et/ou dans la documentation. Contactez Cherne Industries ou le commerçant pour obtenir les recommandations.

2. **Détermination de la surpression:** Déterminez la surpression maximale à laquelle le bouchon doit résister. La surpression est la pression (air ou liquide) devant être retenue à l'avant ou à l'arrière du bouchon. **⚠ N'excédez jamais la cote de surpression du bouchon. Les cotes de surpression maximales indiquées s'appliquent aux bouchons installés dans un tuyau propre et sec de taille nominale. L'utilisation de bouchons dans une canalisation qui varie des ces conditions pourrait réduire la surpression maximale permise.**

3. **Nettoyage et inspection :** Les bouchons doivent être propres et inspectés avant et après chaque utilisation. **⚠ N'utilisez pas un bouchon s'il présente des signes d'usure ou de détérioration.**

   L'inspection doit inclure, sans toutefois s'y restreindre:
   1. Coupures
   2. Abrasion
   3. Fissures
   4. Corrosion
   5. Raccords et composants desserrés ou abîmés
   6. Fuites

4. **Nettoyage du tuyau :** Nettoyez tous les débris ou toutes les substances étrangères avant de poser le bouchon. Un tuyau qui n'est pas propre pourrait réduire la capacité de surpression du bouchon et abîmer le bouchon durant la pose ou le gonflage.

Fonctionnement

⚠ Restrictions des substances de retenue : L'utilisation de bouchons avec des produits chimiques, incluant les hydrocarbures, peut abîmer gravement le bouchon. Les bouchons fabriqués en caoutchouc naturel sont conçus pour retenir l'air, l'eau ou les eaux usées. L'échec du bouchon pourrait causer la mort, de graves blessures corporelles et/ou des dégâts matériels.

Installation :

1. Insérez le bouchon dans le tuyau ou le raccord en T du regard de nettoyage. Vous devrez peut-être d'abord desserrer (sans enlever) l'écrou, l'écrou à oreilles ou la poignée.
2. Serrez à la main l'écrou, l'écrou à oreilles ou la poignée.

Enlèvement :

⚠ Enlevez toujours la surpression avant de desserrer ou de retirer le bouchon.

1. Desserrez, mais ne retirez pas l'écrou, l'écrou à oreilles ou la poignée.
2. Retirez le bouchon du tuyau ou du raccord en T du regard de nettoyage.

Entretien

Le bouchon peut être nettoyé avec un savon doux et de l'eau (d'autres produits nettoyants risquent de l'abîmer).

⚠ Le bouchon ne doit pas être utilisé s'il présente des signes de coupure, d'usure ou de détérioration. Un bouchon endommagé est dangereux et ne doit pas être utilisé à nouveau.

Entreposage

Entreposez le bouchon dans un lieu sec, loin de la lumière du soleil ou d'autres sources de lumière ultraviolette et d'ozone. Les bouchons doivent être entreposés à une température inférieure à 110 °F (43,3 °C) et peuvent être entreposés en les suspendant verticalement ou ils peuvent reposer horizontalement.

Precauciones de Seguridad

⚠ ADVERTENCIA Una falla por cualquier motivo en el tapón de seguridad puede causar lesiones o daños materiales. Procedimientos inseguros pueden ser causa de muerte o lesiones graves.

Siempre se deben seguir las instrucciones provistas en "Información General", "Preparación Antes del Uso", "Operación" y "Mantenimiento". Preste mucha atención a la información de seguridad destacada con el símbolo : ⚠

Información General

Cumpla con todas las instrucciones de seguridad contenidas en OSHA y los reglamentos federales, estatales y locales. No utilizar el tapón si existen condiciones que arriesguen la seguridad del personal o la propiedad.

Ingreso a espacios limitados: Cumpla con todos los reglamentos Federales, Estatales, Locales y/o de la empresa.

⚠ Zona de Peligro: Cuando se utiliza el tapón, existe una zona de peligro que se expande hacia afuera en forma cónica. NUNCA se debe ingresar a la zona de peligro cuando el tapón está en uso.

Preparación Antes del Uso

1. **Selección del Tapón:** Seleccione el tapón adecuado y el equipo correspondiente. Todos los tapones de tuberías tienen especificaciones de actuación descriptas en el tapón y/o en la literatura. Comuníquese con Cherne Industries o el distribuidor para obtener las recomendaciones

2. **Determinación de la Contrapresión:** Determine cuál es la contrapresión máxima que deberá resistir el tapón. Contrapresión es la presión delantera o trasera (aire o líquido) que deberá resistir el tapón. ⚠ **Nunca exceda la contrapresión de diseño. La contrapresión de diseño máxima descripta es para tapones**

instalados en tuberías limpias y secas de tamaño nominal. La utilización de tapones en tuberías que varían de estas condiciones puede reducir la contrapresión máxima permitida.

3. **Limpieza e Inspección:** Los tapones deberán estar limpios e inspeccionados antes y después de cada uso. ⚠ **No utilizar tapones con muestras de desgaste o deterioro.**

   La inspección deberá incluir, pero no deberá estar limitada a signos de:
   1. Cortes
   2. Abrasiones
   3. Rajaduras
   4. Corrosión
   5. Componentes sueltos o dañados
   6. Pérdidas

4. **Limpieza de la Tubería:** Limpie toda basura o substancia extraña antes de colocar el tapón. Una tubería sucia puede reducir la capacidad del tapón de soportar contrapresión y puede dañar al tapón durante su colocación o inflado.

Operación

⚠ **Restricciones de las Sustancias a Refrenar: Utilizar del tapón con productos químicos que contengan hidrocarburos puede dañar seriamente al tapón. Tapones confeccionados con goma natural son diseñados para refrenar agua, aire o residuos cloacales. Una falla en el tapón puede ocasionar muerte, lesiones graves o daños materiales.**

Para Instalar:
⚠ **Siempre saque la contrapresión antes de aflojar o sacar el tapón.**

1. Coloque el tapón en la tubería o en el T de la boca de limpieza. Es posible que primero deba aflojar (no las saque) la tuerca, la tuerca mariposa o el mango.
2. Apriete la tuerca, la tuerca mariposa o el mango a mano.

Para Retirar:

1. Afloje y no saque la tuerca, la tuerca mariposa ni el mango.
2. Saque el tapón de la tubería o del T de la boca de limpieza.

Mantenimiento

El tapón se debe limpiar con agua y detergente suave (otros agentes limpiadores pueden causar daño).

⚠ **El tapón no debe utilizarse si muestra alguna señal de corte, desgaste o deterioro. Un tapón dañado es inseguro y no debe utilizarse nuevamente.**

Almacenamiento

Almacene el tapón en un sitio seco, alejado de la luz solar y de otras fuentes de ozono o luz ultravioleta. Los tapones deben almacenarse por debajo de los 110ºF (43,5ºC) y puede almacenarse suspendidos verticalmente o en posición horizontal.

Cherne Industries Incorporated | 2300 Vierling Drive West | Shakopee, MN 55379
Phone: 1-800-843-7584 | Fax: 1-800-843-7585 | Email: Info@Cherneind.com | Oatey.com/Cherne

#7007639B 2/21

Small Compact Inlet Vacuum Filters

"CSL" Series 3/8" - 3" FPT

APPLICATIONS & EQUIPMENT

- Vacuum Pumps & Systems – P.D., Side Channel, Rotary Vane, Screw, Piston
- Vacuum Packaging Equipment
- Vacuum Lifters
- Blowers - Side Channel & P.D.
- Intake Suction Filters
- Pneumatic Conveying Systems
- Soil Venting/Remediation
- Remote Installations for Piston & Screw Compressors
- Printing Industry
- Factory Automation Equip
- Leak Detection Systems
- Woodworking
- Medical Industry

FEATURES & SPECIFICATIONS

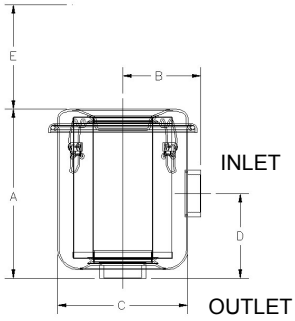
- **Vacuum level**: Typically $1x10^{-3}$ mmHg ($1.3x10^{-3}$ mbar)
- Polyester: 99%+ removal efficiency standard to 5 micron
- Paper: 99%+ removal efficiency standard to 2 micron
- Brazed fittings for **High** vacuum duty
- Stainless steel torsion clips for durability
- Low pressure drop
- Positive engagement O-ring seal system
- Seamless drawn housings
- **Large** dirt holding capacity and **Easy** field cleaning, especially when mounted horizontally or inverted
- Rugged all steel construction w/baked enamel finish
- Various media
- Temp (continuous): min -15°F (-26°C) max 220°F (104°C)
- Filter change out differential: 10" - 15" H_2O over initial delta P
- Pressure drop graphs available upon request

OPTIONS (Inquiries Encouraged)

- Vacuum gauge available
- Dome hood for high holding capacity
- Available in ***Stainless Steel***
- Epoxy coated housings
- Activated carbon prefilter for odor
- Support brackets
- Alternate top-to-canister fastening system for low pressure or pulsating systems

CONFIGURATION

DRAWING



Dimension tolerance ± 1/4"

I = Industrial Duty S = Severe Duty

	with Polyester Element	with Paper Element	FPT Inlet & Outlet	DIMENSIONS - inches A	B	C	D	E	Rated Flow SCFM Nominal Rating	Element Rating	Approx. Wt. lbs
I	CSL-825-039HC	CSL-824-039HC	3/8"	3 5/8	2 1/4	3 3/4	1 7/8	3	18	25	0.88
I	CSL-825-050HC	CSL-824-050HC	1/2"	3 5/8	2 1/4	3 3/4	1 7/8	3	18	25	0.88
I	CSL-843-050HC	CSL-842-050HC	1/2"	4 3/8	3	5 7/8	2 1/2	3 1/4	20	55	3
I	CSL-825-075HC	CSL-824-075HC	3/4"	3 3/4	2 1/4	3 3/4	1 7/8	3	24	25	0.88
S	CSL-843-075HC	CSL-842-075HC	3/4"	4 3/8	3	5 7/8	2 1/2	3 1/4	25	55	3
I	CSL-843-100HC	CSL-842-100HC	1"	4 3/8	3 1/4	5 7/8	2 5/8	3 1/4	35	55	3
S	CSL-849-100HC	CSL-848-100HC	1"	6 3/4	4 1/8	7 5/16	4 1/2	5 1/4	40	115	5
I	CSL-843-125HC	CSL-842-125HC	1 1/4"	4 3/8	3 1/4	5 7/8	2 5/8	3 1/4	55	55	3
S	CSL-849-125HC	CSL-848-125HC	1 1/4"	6 3/4	4 1/8	7 5/16	4 1/2	5 1/4	60	115	5
I	CSL-849-150HC	CSL-848-150HC	1 1/2"	6 3/4	4 1/8	7 5/16	4 1/2	5 1/4	80	115	5
I	CSL-851-200HC	CSL-850-200HC	2"	10 1/4	4 9/16	8 3/4	5	9 1/4	175	290	15
I	CSL-851-250HC	CSL-850-250HC	2 1/2"	10 1/2	5 1/8	8 3/4	5 1/2	9 1/4	210	290	15
I	CSL-239-300C*	CSL-238-300C*	3"	15 3/4	8 7/8	13 1/4	8 3/4	11	300	570	33

*1/4" taps standard on inlet and outlet

Note: Model offerings and design parameters may change without notice.

1151 Ardmore Ave. • Itasca, IL 60143 USA
Sales/Service: 630.773.1363 • Fax: 630.773.0727
E-mail: sales@solbergmfg.com • Web Site: www.solbergmfg.com

Small Compact Filter Silencers
w/ Standard Filter Design
"FS" Series 1/2" - 3" MPT

APPLICATIONS & EQUIPMENT

- Industrial & Severe Duty
- Piston Compressors
- Screw Compressors
- Blowers - Side Channel & P.D.
- Hydraulic Breathers – fine filtration
- Engines
- Construction\Contractor Industry
- Workshop
- Medical\Dental Industry
- Pneumatic Conveying
- Waste Water Aeration
- Nailers and Staplers
- Vacuum Vent Breathers

FEATURES & SPECIFICATIONS

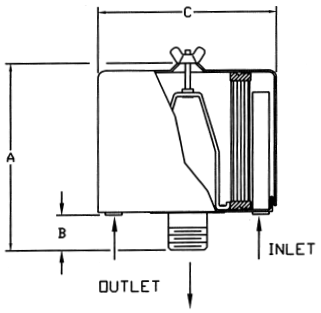
- Polyester: 99%+ removal efficiency standard to 5 micron
- Paper: 99%+ removal efficiency standard to 2 micron
- Fully drawn weatherhood - no welds to rust or vibrate apart
- Tubular silencing design - tube is positioned to maximize attenuation and air flow while minimizing pressure drop
- Durable carbon steel construction with baked enamel finish and powder coated weatherhood
- Interchangeable media: Polyester, Paper, HEPA
- Several element sizes available per given connection (safety factor)
- Temp (continuous): min -15°F (-26°C) max 220°F (104°C)
- Filter change out differential: 10"-15" H_2O over initial delta P
- Pressure drop graphs available upon request

OPTIONS (Inquiries Encouraged)

- 1/8" tap holes
- Pressure Drop Indicator
- Available in ***Stainless Steel***
- Epoxy coated housings
- Various media available
- Special connections, BSPT

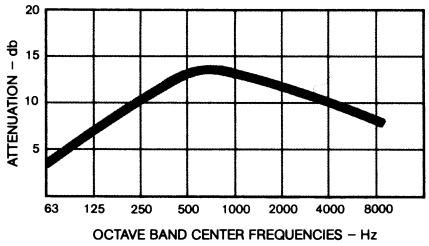
CONFIGURATION

DRAWING



Dimension tolerance ± 1/4"

TYPICAL NOISE ATTENUATION – FS SERIES



- Noise attenuation may vary due to the wide range of applications and machines

I = Industrial Duty S = Severe Duty

	with Polyester Element	with Paper Element	MPT Outlet	DIMENSIONS - inches A	B	C	Rated Flow SCFM Piston	Screw, Blower, Fan	Element Rating	No. of Silencing Tubes	Approx. Wt. lbs
I	FS-15-050	FS-14-050	1/2"	4	1 1/2	6	10	10	35	1	2
I	FS-15-075	FS-14-075	3/4"	4	1 1/2	6	20	25	35	2	2
I	FS-15-100	FS-14-100	1"	4	1 1/2	6	25	35	35	3	2
S	FS-19P-100	FS-18P-100	1"	6 5/8	1 5/8	6	35	55	100	3	3
I	FS-19P-125	FS-18P-125	1 1/4"	6 5/8	1 5/8	6	55	70	100	5	3
I	FS-19P-150	FS-18P-150	1 1/2"	6 5/8	1 5/8	6	70	85	100	5	4
I	FS-31P-200	FS-30P-200	2"	7 1/4	2 1/4	10	85	135	195	5	8
S	FS-231P-200	FS-230P-200	2"	12 1/4	2 1/4	10	135	135	300	5	14
S	FS-231P-250	FS-230P-250	2 1/2"	12 1/2	2 1/2	10	195	195	300	9	15
I	FS-231P-300	FS-230P-300	3"	13	3	10	200	300	300	9	15

Note: Model offerings and design parameters may change without notice.

1151 Ardmore Ave. • Itasca, IL 60143 USA
Sales/Service: 630.773.1363 • Fax: 630.773.0727
E-mail: sales@solbergmfg.com • Web Site: www.solbergmfg.com

Absorptive Silencers

Air Intake and Discharge

"SLCR" Series 1/2" - 4" MPT, FPT

APPLICATIONS & EQUIPMENT

- Small Air Compressors
- Centrifugal Blowers
- Regenerative Blowers
- Vacuum Pumps & Systems
- Vacuum Packaging Equipment
- Vacuum Lifters
- Small Low Pressure Vents
- Blowers - Side Channel

FEATURES & SPECIFICATIONS

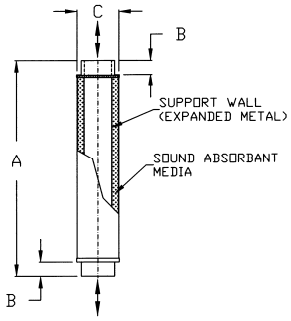
- Layered sound absorbent media
- **Minimal** pressure drop because it does not rely on internal baffles, tubes or other restrictive devices
- Reduces high frequency noise up to 30 decibels (Due to the wide range of applications and machines these units are used on, please inquire for your specific application.)
- **Inlet or Discharge** silencing applications with maximum temperature of 212°F (100°C)
- Durable inline carbon steel construction with baked enamel finish
- For inline air service

OPTIONS (Inquiries Encouraged)

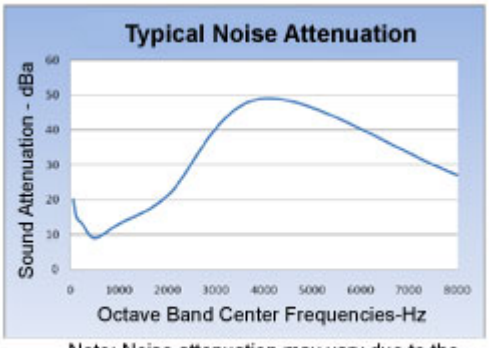
- Flange Adapters
- Larger sizes available

CONFIGURATION

DRAWING



Dimension tolerance ± 1/4"

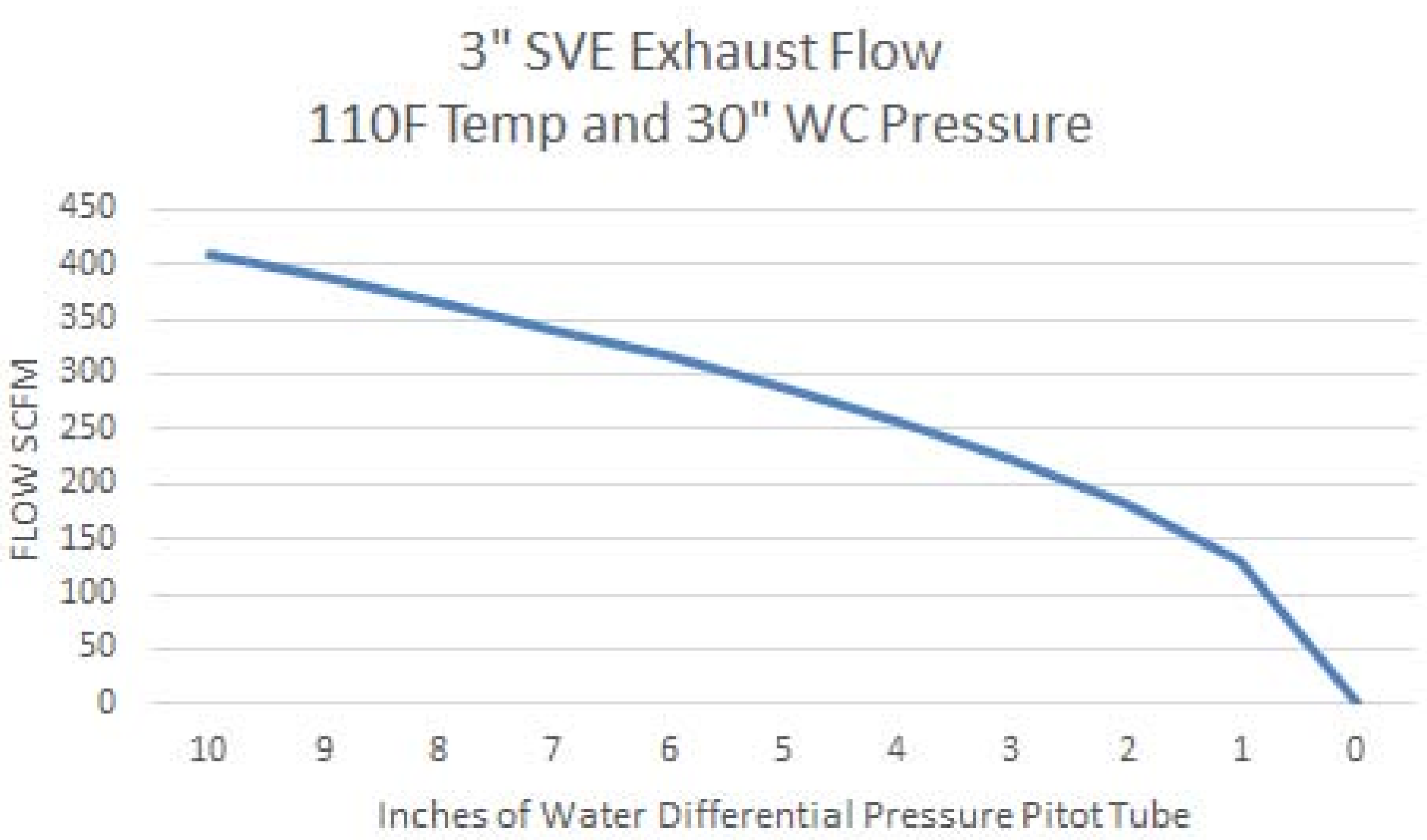


Note: Noise attenuation may vary due to the wide range of applications and equipment.

Model No.	Inlet & Outlet	Connection Style	DIMENSIONS - inches A	B	C	Rated Flow SCFM	Approx. Wt. Lbs
SLCR100	1"	FPT	12	11/16	2 1/2	42	2
SLCR125	1 1/4"	FPT	12	11/16	2 1/2	55	2
SLCR150	1 1/2"	FPT	12	11/16	3 1/8	155	3
SLCR200	2"	FPT	15 3/4	11/16	3 5/8	270	4
SLCR250	2 1/2"	FPT	21	1 1/2	4 5/8	385	8
SLCR300	3"	FPT	26	1 9/16	5 1/8	575	10
SLCR400	4"	FPT	23 7/8	1 11/16	10	575	26
SLCRT050	1/2"	MPT	14 1/2	2	2 1/2	25	2
SLCRT075	3/4"	MPT	14 1/2	2	2 1/2	35	2
SLCRT100	1"	MPT	14 1/2	2	2 1/2	42	2
SLCRT125	1 1/4"	MPT	14 1/2	2	2 1/2	55	2
SLCRT150	1 1/2"	MPT	14	1 3/4	3 1/8	155	3
SLCRT200	2"	MPT	18 1/2	2 1/8	3 5/8	270	4
SLCRT250	2 1/2"	MPT	23 11/16	2 5/8	4 5/8	385	8
SLCRT300	3"	MPT	28	2 5/8	5 1/8	575	10
SLCRT400	4"	MPT	29 5/16	4	10	575	26

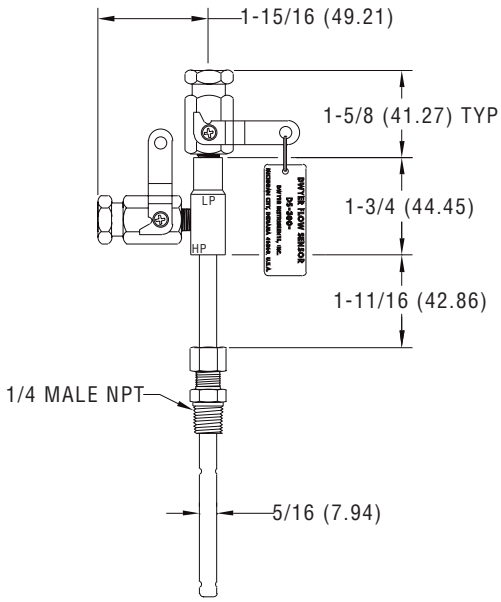
Note: Model offerings and design parameters may change without notice.

1151 Ardmore Ave. • Itasca, IL 60143 USA
Sales/Service: 630.773.1363 • Fax: 630.773.0727
E-mail: sales@solbergmfg.com • Web Site: www.solbergmfg.com


3" SVE Exhaust Flow
110F Temp and 30" WC Pressure
FLOW SCFM
450
400
350
300
250
200
150
100
50
0
10
9
8
7
6
5
4
3
2
1
0
Inches of Water Differential Pressure Pitot Tube

Series DS-300 Flow Sensors

Installation and Operating Instructions Flow Calculations



Series DS-300 Flow Sensors are averaging pitot tubes that provide accurate, convenient flow rate sensing. When purchased with a Dwyer Capsuhelic® for liquid flow or Magnehelic® for air flow, differential pressure gage of appropriate range, the result is a flow-indicating system delivered off the shelf at an economical price. Series DS-300 Flow Sensors are designed to be inserted in the pipeline through a compression fitting and are furnished with instrument shut-off valves on both pressure connections. Valves are fitted with 1/8″ female NPT connections. Accessories include adapters with 1/4″ SAE 45° flared ends compatible with hoses supplied with the Model A-471 Portable Capsuhelic® kit. Standard valves are rated at 200°F (93.3°C). Where valves are not required, they can be omitted at reduced cost. Series DS-300 Flow Sensors are available for pipe sizes from 1″ to 10″.

INSPECTION

Inspect sensor upon receipt of shipment to be certain it is as ordered and not damaged. If damaged, contact carrier.

INSTALLATION

General - The sensing ports of the flow sensor must be correctly positioned for measurement accuracy. The instrument connections on the sensor indicate correct positioning. The side connection is for total or high pressure and should be pointed upstream. The top connection is for static or low pressure.

Location - The sensor should be installed in the flowing line with as much straight run of pipe upstream as possible. A rule of thumb is to allow 10 - 15 pipe diameters upstream and 5 downstream. The table below lists recommended up and down piping.

PRESSURE AND TEMPERATURE

Maximum: 200 psig (13.78 bar) at 200°F (93.3°C).

Upstream and Downstream Dimensions in Terms of Internal Diameter of Pipe*

Upstream Condition	Minimum Diameter of Straight Pipe		
	Upstream		Downstream
	In-Plane	Out of Plane	
One Elbow or Tee	7	9	5
Two 90° Bends in Same Plane	8	12	5
Two 90° Bends in Different Plane	18	24	5
Reducers or Expanders	8	8	5
All Valves**	24	24	5

* Values shown are recommended spacing, in terms of internal diameter for normal industrial metering requirements. For laboratory or high accuracy work, add 25% to values.

** Includes gate, globe, plug and other throttling valves that are only partially opened. If valve is to be fully open, use values for pipe size change. **CONTROL VALVES SHOULD BE LOCATED AFTER THE FLOW SENSOR.**

DWYER INSTRUMENTS, INC.
P.O. BOX 373 • MICHIGAN CITY, INDIANA 46361, U.S.A.
Phone: 219/879-8000 **www.dwyer-inst.com**
Fax: 219/872-9057 **e-mail: info@dwyer-inst.com**

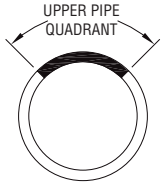
POSITION

Be certain there is sufficient clearance between the mounting position and other pipes, walls, structures, etc, so that the sensor can be inserted through the mounting unit once the mounting unit has been installed onto the pipe.

Flow sensors should be positioned to keep air out of the instrument connecting lines on liquid flows and condensate out of the lines on gas flows. The easiest way to assure this is to install the sensor into the pipe so that air will bleed into, or condensate will drain back to, the pipe.

For Air or Gas Flow

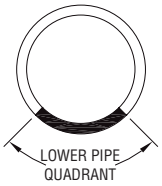
Install in upper quadrant of pipe



Condensate drains back to pipe

For Liquid or Steam Flow

Install in lower quadrant of pipe



Air bleeds back to pipe

INSTALLATION

1. When using an A-160 thred-o-let, weld it to the pipe wall. If replacing a DS-200 unit, an A-161 bushing (1/4˝ x 3/8˝) will be needed.

2. Drill through center of the thred-o-let into the pipe with a drill that is slightly larger than the flow sensor diameter.

3. Install the packing gland using proper pipe sealant. If the packing gland is disassembled, note that the tapered end of the ferrule goes into the fitting body.

4. Insert sensor until it bottoms against opposite wall of the pipe, then withdraw 1/16˝ to allow for thermal expansion.

5. Tighten packing gland nut finger tight. Then tighten nut with a wrench an additional 1-1/4 turns. Be sure to hold the sensor body with a second wrench to prevent the sensor from turning.

INSTRUMENT CONNECTION

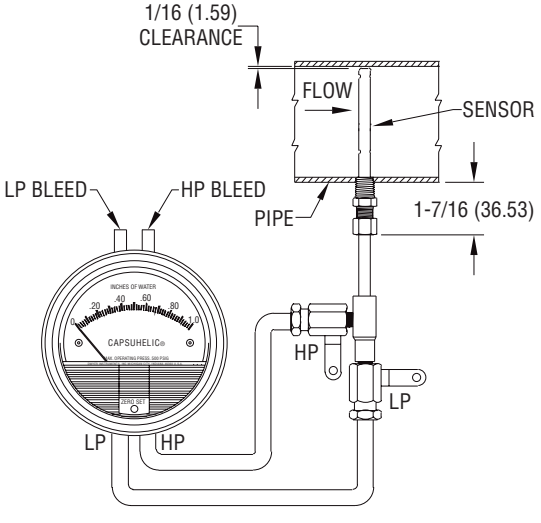
Connect the slide pressure tap to the high pressure port of the Magnehelic® (air only) or Capsuhelic® gage or transmitting instrument and the top connection to the low pressure port.

See the connection schematics below.

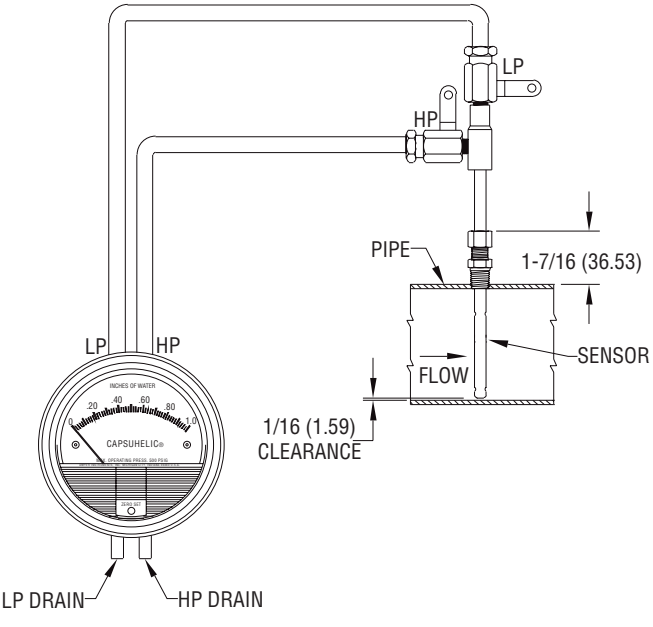
Bleed air from instrument piping on liquid flows. Drain any condensate from the instrument piping on air and gas flows.

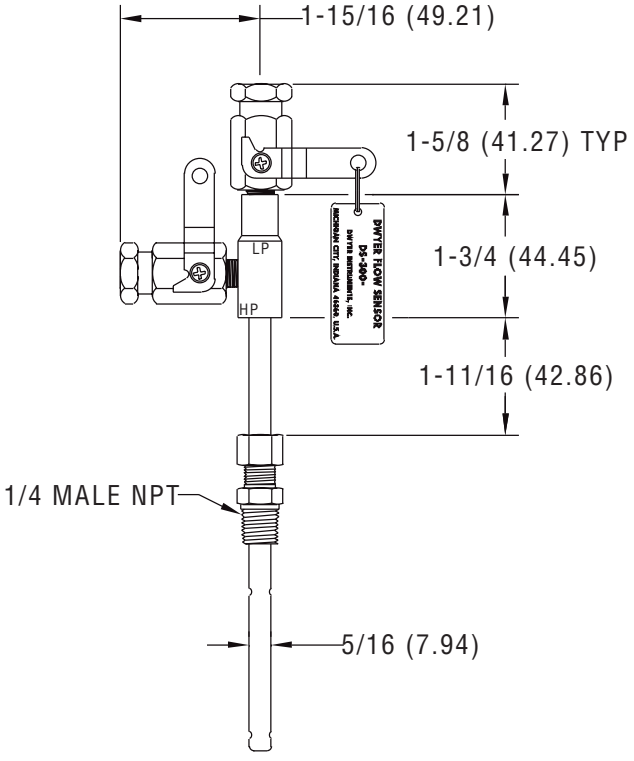
Open valves to instrument to place flow meter into service. For permanent installations, a 3-valve manifold is recommended to allow the gage to be zero checked without interrupting the flow. The Dwyer A-471 Portable Test Kit includes such a device.

Water Flow



Air or Gas Flow





Flow Calculations and Charts

The following information contains tables and equations for determining the differential pressure developed by the DS-300 Flow Sensor for various flow rates of water, steam, air or other gases in different pipe sizes.

This information can be used to prepare conversion charts to translate the differential pressure readings being sensed into the equivalent flow rate. When direct readout of flow is required, use this information to calculate the full flow differential pressure in order to specify the exact range of Dwyer Magnehelic® or Capsuhelic® gage required. Special ranges and calculations are available for these gages at minimal extra cost. See bulletins A-30 and F-41 for additional information on Magnehelic® and Capsuhelic® gages and DS-300 flow sensors.

For additional useful information on making flow calculations, the following service is recommended: Crane Valve Co. Technical Paper No. 410 "Flow of Fluids Through Valves, Fittings and Pipe." It is available from Crane Valve Company, www.cranevalve.com.

Using the appropriate differential pressure equation from Page 4 of this bulletin,calculate the differential pressure generated by the sensor under normal operating conditions of the system. Check the chart below to determine if this value is within the recommended operating range for the sensor. Note that the data in this chart is limited to standard conditions of air at 60°F (15.6°C) and 14.7 psia static line pressure or water at 70°F (21.1°C). To determine recommended operating ranges of other gases, liquids an/or operating conditions, consult factory.

Note: the column on the right side of the chart which defines velocity ranges to avoid. Continuous operation within these ranges can result in damage to the flow sensor caused by excess vibration.

Pipe Size (Schedule 40)	Flow Coefficient "K"	Operating Ranges Air @ 60°F & 14.7 psia (D/P in. W.C.)	Operating Ranges Water @ 70°F (D/P in. W.C.)	Velocity Ranges Not Recommended (Feet per Second)
1	0.52	1.10 to 186	4.00 to 675	146 to 220
1-1/4	0.58	1.15 to 157	4.18 to 568	113 to 170
1-1/2	0.58	0.38 to 115	1.36 to 417	96 to 144
2	0.64	0.75 to 75	2.72 to 271	71 to 108
2-1/2	0.62	1.72 to 53	6.22 to 193	56 to 85
3	0.67	0.39 to 35	1.43 to 127	42 to 64
4	0.67	0.28 to 34	1.02 to 123	28 to 43
6	0.71	0.64 to 11	2.31 to 40	15 to 23
8	0.67	0.10 to 10	0.37 to 37	9.5 to 15
10	0.70	0.17 to 22	0.60 to 79	6.4 to 10

FLOW EQUATIONS

1. Any Liquid

$$Q\ (GPM) = 5.668 \times K \times D^2 \times \sqrt{\Delta P / S_f}$$

2. Steam or Any Gas

$$Q\ (lb/Hr) = 359.1 \times K \times D^2 \times \sqrt{p \times \Delta P}$$

3. Any Gas

$$Q\ (SCFM) = 128.8 \times K \times D^2 \times \sqrt{\frac{P \times \Delta P}{(T + 460) \times S_s}}$$

DIFFERENTIAL PRESSURE EQUATIONS

1. Any Liquid

$$\Delta P\ (in.\ WC) = \frac{Q^2 \times S_f}{K^2 \times D^4 \times 32.14}$$

2. Steam or Any Gas

$$\Delta P\ (in.\ WC) = \frac{Q^2}{K^2 \times D^4 \times p \times 128{,}900}$$

3. Any Gas

$$\Delta P\ (in.\ WC) = \frac{Q^2 \times S_s \times (T + 460)}{K^2 \times D^4 \times P \times 16{,}590}$$

Technical Notations

The following notations apply:

ΔP = Differential pressure expressed in inches of water column
Q = Flow expressed in GPM, SCFM, or PPH as shown in equation
K = Flow coefficient— See values tabulated on Pg. 3.
D = Inside diameter of line size expressed in inches.

For square or rectangular ducts, use: $D = \sqrt{\frac{4 \times \text{Height} \times \text{Width}}{\pi}}$

P = Static Line pressure (psia)
T = Temperature in degrees Fahrenheit (plus 460 = °Rankine)
p = Density of medium in pounds per square foot
S_f = Sp Gr at flowing conditions
S_s = Sp Gr at 60°F (15.6°C)

SCFM TO ACFM EQUATION

$$SCFM = ACFM \times \left(\frac{14.7 + PSIG}{14.7}\right) \left(\frac{520^*}{460 + °F}\right)$$

$$ACFM = SCFM \times \left(\frac{14.7}{14.7 + PSIG}\right) \left(\frac{460 + °F}{520}\right)$$

$$\text{POUNDS PER CUBIC FOOT STD.} = \text{POUNDS PER CUBIC FOOT ACT.} \times \left(\frac{14.7}{14.7 + PSIG}\right) \left(\frac{460 + °F}{520^*}\right)$$

$$\text{POUNDS PER CUBIC FOOT ACT.} = \text{POUNDS PER CUBIC FOOT STD.} \times \left(\frac{14.7 + PSIG}{14.7}\right) \left(\frac{520^*}{460 + °F}\right)$$

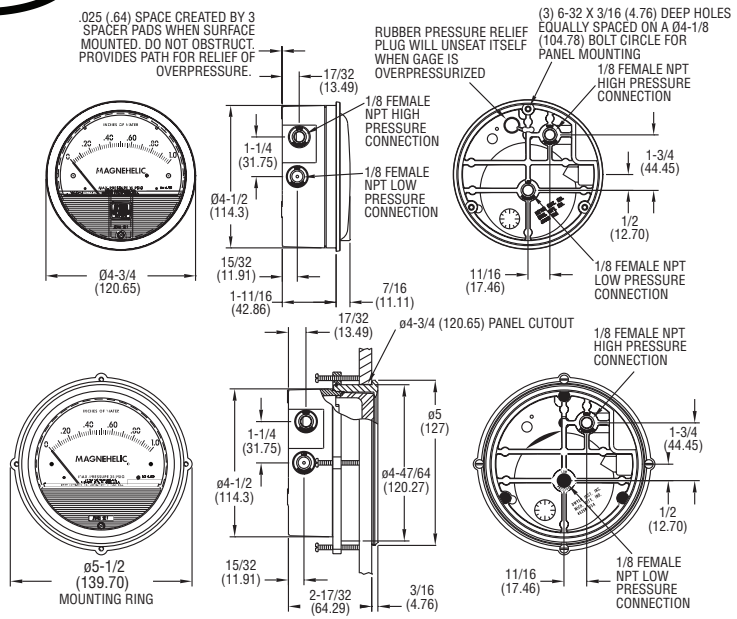
1 Cubic foot of air = 0.076 pounds per cubic foot at 60° F (15.6°C) and 14.7 psia.
* (520°= 460 + 60°) Std. Temp. Rankine

Printed in U.S.A. 7/04 FR# 72-440451-01 Rev. 2

DWYER INSTRUMENTS, INC.
P.O. BOX 373 • MICHIGAN CITY, INDIANA 46361, U.S.A.
Phone: 219/879-8000 www.dwyer-inst.com
Fax: 219/872-9057 e-mail: info@dwyer-inst.com

Bulletin A-27

Magnehelic® Differential Pressure Gage



**The blowout plug is not used on models above 180 inches of water pressure, medium or high pressure models, or on gages which require an elastomer other than silicone for the diaphragm.*

STANDARD GAGE ACCESSORIES: Two 1/8″ NPT plugs for duplicate pressure taps, two 1/8″ pipe thread to rubber tubing adapters and three flush mounting adapters with screws.

MP AND HP GAGE ACCESSORIES: Mounting ring and snap ring retainer substituted for 3 adaptors, 1/4" compression fittings replace 1/8" pipe thread to rubber tubing adaptors.

OVERPRESSURE PROTECTION: Standard Magnehelic® Differential Pressure Gages are rated for a maximum pressure of 15 psig and should not be used where that limit could be exceeded. Models employ a rubber plug on the rear which functions as a relief valve by unseating and venting the gage interior when over pressure reaches approximately 25 psig (excludes MP and HP models). To provide a free path for pressure relief, there are four spacer pads which maintain .023″ clearance when gage is surface mounted. Do not obstruct the gap created by these pads.

SPECIFICATIONS

Service: Air and non-combustible, compatible gases. (Natural Gas option available.)
Wetted Materials: Consult factory.
Housing: Die cast aluminum case and bezel, with acrylic cover. (MP model has polycarbonate cover).
Accuracy: ±2% of full scale (±3% on - 0, -100 Pa, -125 Pa, 10MM and ±4% on -00, - 00N, -60 Pa, -6MM ranges), throughout range at 70°F (21.1°C).
Pressure Limits: -20″ Hg to 15 psig.† (-0.677 bar to 1.034 bar); MP option: 35 psig (2.41 bar), HP option: 80 psig (5.52 bar).
Overpressure: Relief plug opens at approximately 25 psig (1.72 bar), standard gages only. The blowout plug is not used on models above 180 inches of water pressure, medium or high pressure models, or on gages which require an elastomer other than silicone for the diaphragm.
Temperature Limits: 20 to 140°F (-6.67 to 60°C). *Low temperature models available as special option.
Size: 4″ (101.6 mm) diameter dial face.
Mounting Orientation: Diaphragm in vertical position. Consult factory for other position orientations.
Process Connections: 1/8″ female NPT duplicate high and low pressure taps - one pair side and one pair back.
Weight: 1 lb 2 oz (510 g), MP & HP 2 lb 2 oz (963 g).
Agency Approvals: RoHS.

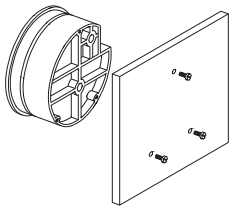
†For applications with high cycle rate within gage total pressure rating, next higher rating is recommended. See Medium and High pressure options.

Note: May be used with hydrogen when ordering Buna-N diaphragm. Pressure must be less than 35 psi.

INSTALLATION

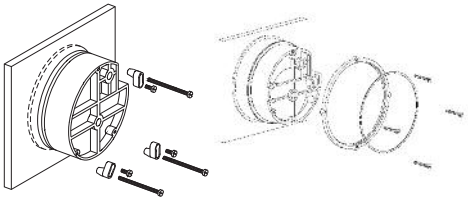
Select a location free from excessive vibration and where the ambient temperature will not exceed 140°F (60°C). Also, avoid direct sunlight which accelerates discoloration of the clear plastic cover. Sensing lines may be run any necessary distance. Long tubing lengths will not affect accuracy but will increase response time slightly. Do not restrict lines. If pulsating pressures or vibration cause excessive pointer oscillation, consult the factory for ways to provide additional damping.
All standard Magnehelic® Differential Pressure Gages are calibrated with the diaphragm vertical and should be used in that position for maximum accuracy. If gages are to be used in other than vertical position, this should be specified on the order. Many higher range gages will perform within tolerance in other positions with only rezeroing. Low range models of 0.5" w.c. plus 0.25" w.c. and metric equivalents must be used in the vertical position only.

SURFACE MOUNTING



Locate mounting holes, 120° apart on a 4-1/8" dia. circle. Use No. 6-32 machine screws of appropriate length.

FLUSH MOUNTING



Provide a 4-9/16" dia. (116 mm) opening in panel. Provide a 4-3/4" dia. (120 mm) opening for MP and HP models. Insert gage and secure in place with No. 6-32 machine screws of appropriate length, with adapters, firmly secured in place.

PIPE MOUNTING

To mount gage on 1-1/4" - 2" pipe, order optional A-610 pipe mounting kit.

TO ZERO GAGE AFTER INSTALLATION

Set the indicating pointer exactly on the zero mark, using the external zero adjust screw on the cover at the bottom. Note that the zero check or adjustment can only be made with the high and low pressure taps both open to atmosphere.

OPERATION

Positive Pressure: Connect tubing from source of pressure to either of the two high pressure ports. Plug the port not used. Vent one or both low pressure ports to atmosphere.
Negative Pressure: Connect tubing from source of vacuum or negative pressure to either of the two low pressure ports. Plug the port not used. Vent one or both high pressure ports to atmosphere.
Differential Pressure: Connect tubing from the greater of two pressure sources to either high pressure port and the lower to either low pressure port. Plug both unused ports.
When one side of the gage is vented in dirty, dusty atmosphere, we suggest an A-331 Filter Vent Plug be installed in the open port to keep inside of gage clean.

A. For portable use of temporary installation use 1/8" pipe thread to rubber tubing adapter and connect to source of pressure with flexible rubber or vinyl tubing.
B. For permanent installation, 1/4" O.D., or larger, copper or aluminum tubing is recommended.

MAINTENANCE

No lubrication or periodic servicing is required. Keep case exterior and cover clean. Occasionally disconnect pressure lines to vent both sides of gage to atmosphere and re-zero. Optional vent valves should be used in permanent installations. The Series 2000 is not field serviceable and should be returned if repair is needed (field repair should not be attempted and may void warranty). Be sure to include a brief description of the problem plus any relevant application notes. Contact customer service to receive a return goods authorization number before shipping.

WARNING

Attempted field repair may void your warranty. Recalibration or repair by the user is not recommended.

TROUBLE SHOOTING TIPS

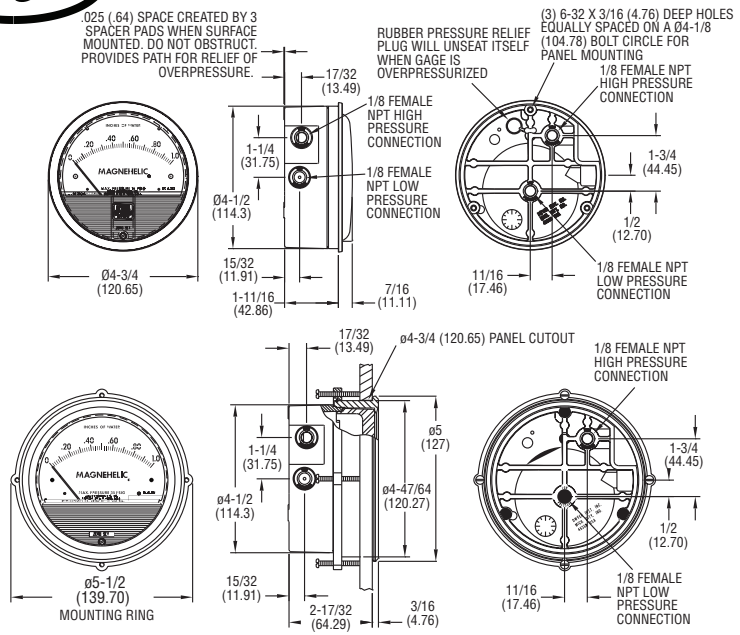
Gage won't indicate or is sluggish.

1. Duplicate pressure port not plugged.
2. Diaphragm ruptured due to overpressure.
3. Fittings or sensing lines blocked, pinched, or leaking.
4. Cover loose or "O"ring damaged, missing.
5. Pressure sensor, (static tips, Pitot tube, etc.) improperly located.
6. Ambient temperature too low. For operation below 20°F (-7°C), order gage with low temperature, (LT) option.

DWYER INSTRUMENTS, INC.
P.O. BOX 373 • MICHIGAN CITY, INDIANA 46360 U.S.A.
Phone: 219/879-8000 Fax: 219/872-9057
www.dwyer-inst.com e-mail: info@dwyer-inst.com

DWYER INSTRUMENTS, INC.
P.O. BOX 373 • MICHIGAN CITY, INDIANA 46360 U.S.A.
Phone: 219/879-8000 Fax: 219/872-9057
www.dwyer-inst.com e-mail: info@dwyer-inst.com

Magnehelic® Differential Pressure Gage
INSTRUCCIONES Y LISTA DE PARTES



(El tapón de goma no es usado en los modelos sobre 180 pulgadas de presión de agua, modelos de presión media o alta, o en instrumentos que requieren un elastizado en cualquier otro material que no sea silicona para el diafragma.)

Accesorios: Tapones 1/8" NPT para las conexiones duplicadas, dos adaptadores de rosca 1/8" NPT a tubo de goma; y tres adaptadores para montaje al ras y tornillos.

Accesorios para Los Modelos MP y HP: El anillo de montaje y el retensor del anillo de presión son substituidos por 3 adaptadores, accesorios de compresión de 1/4" remplazan a los adaptadores de rosca 1/8" a tubo de goma.

Protección Para Sobrepresión: Los Manómetros Diferenciales Magnehelic Estándar están clasificados para una presión máxima de 15 psi y no se deberían de usar donde el límite puede excederse. Los modelos emplean un tapón de goma en el trasero que funciona como una válvula de alivio desmontándose y ventilando el interior del instrumento cuando la sobrepresión alcanza aproximadamente 25 psig. (Los modelos MP y HP son excluidos) Para proveer un camino libre para el alivio de presión, el instrumento viene con rodilleras que mantienen un espacio de .023" cuando el instrumento es montado en superficie. No bloque el espacio creado por estas rodilleras.

† Para aplicaciones con alto ciclo de velocidad dentro de la clasificación de presión total del instrumento, la próxima clasificación mas alta es recomendada. Vea las opciones de media y alta presión.

El instrumento puede ser usado con hidrogeno cuando se ordena con diafragma de Buna-N. La presion tiene que ser menos de 35 psi.

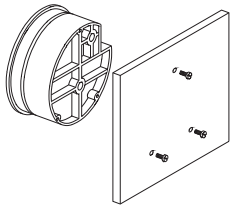
ESPECIFICACIONES

Servicio: aire y gases no combustibles, gases compatibles. (ópcion disponible para uso con gas natural).
Materiales Mojados: Consulte con la fábrica.
Carcasa: Caja y anillo de retención de aluminio fundido a presión con tapadera de acrílico. (El modelo MP tiene la tapadera de policarbonato.)
Exactitud: ±2% de fondo de escala a 21 °C
Mod. 2000-0 ±3%; Mod. 2000-00 ±4%
Límite de Presión: -20 Hg. a 15 psig. † (-0.677 bar a 1,034 bar); opción MP: 35 psig (2.41 bar), opción HP: 80 psig (5.52 bar).
Sobrepresión: El tapón de alivio se abre aproximadamente a los 25 psig, modelos estandard únicamente. El tapón de goma no es usado en los modelos sobre 180 pulgadas de presión de agua, modelos de presión media o alta, o en instrumentos que requieren un elastizado en cualquier otro material que no sea silicio para el diafragma.
Límite de Temperatura: -6.67 a 60ºC. * Modelos de baja temperatura disponibles como opción especial.
Dimensiones: diám. 120,65 mm x 55,6 prof.
Orientación de Montaje: El diafragma debe ser usado solo en posición vertical. Consulte con la fábrica para otras orientaciones de posición.
Conexiones: 1/8" NPT para alta y baja presión, duplicadas (atrás, a los lados).
Peso: 510 g, MP y HP 963 g.
Aprobación de la agencia: RoHS.

Instalacion

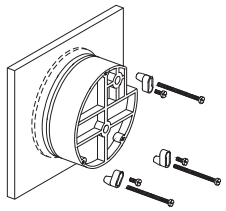
Seleccione un lugar libe de exceso de vibraciones, y donde la temperatura ambiente no supere los 60°C. Evite luz solar directa, para evitar decoloración de la cubierta plástica. Las conexiones de proceso pueden tener cualquier longitud sin afectar la exactitud, pero pueden extender el tiempo de respuesta del instrumento. Si hay pulsación de presión o vibración, consulte a fábrica sobre medios de amortiguación.
Los MAGNEHELIC han sido calibrados con el diafragma vertical, y deben ser usados en esas condiciones. Para otras posiciones, se debe especificar en la orden de provisión. Los de rango elevado pueden ser usados en diversas posiciones, pero se debe reajustar el cero. Los modelos de la serie 2000-00 y equivalentes métricos deben ser usados solo verticalmente.

Montaje en Superficie



Perfore tres orificios separados 120° sobre una circunferencia de 105 mm de diám. y sostenga el instrumento con tres tornillos 6-32 de long. apropiada.

Montaje alineado



Perfore un circulo de 115 mm de diám. en el panel, y sostenga el instrumento mediante los.

Montaje Sobre Pipa

Para montar el instrumento sobre pipas de 32 a 50 mm de diám., ordene el adaptador opcional A-610.

Puesta a Cero Después de Instalar

Deje las conexiones de presión abiertas a atmósfera y ajuste a cero desde tornillo del panel frontal.

Operacion

Presión Positiva: Conecte la tubería desde la fuente de presión a cualquiera de las dos conexiones de alta presión (HIGH), bloqueando la no usada; Las conexiones de baja (LOW) presión pueden dejarse uno o los dos abiertos a la atmósfera.
Presión Negativa: Repita el procedimiento anterior, conectado en este caso las conexiones de baja presión (LOW). Deje las otras conexiones abiertas.
Presión diferencial: Conecte el tubo correspondiente a la presión más positiva al cualquiera de los conectores de alta presión (HIGH) bloqueando el no usado, y la más baja presión o presión negativa (vacío) al conector de baja presión (LOW). Puede usarse cualquier conector de cada par, dejando siempre uno bloqueado. Si se deja una conexión abierta a la atmósfera, se recomienda el uso de un filtro tipo A-331 en el lugar correspondiente para mantener limpio el interior del instrumento. Para uso portable, o instalación temporaria, uso adapta dores para rosca de tubo de 1/89 a tubo flexible, y conecte a proceso mediante una tubería de goma, o equivalente. Para instalación permanente, se recomienda el uso de tubo de cobre o aluminio de por lo menos 1/4" de diám. exterior.

No se requiere mantenimiento específico alguno, ni lubricación. Periódicamente, desconecte el instrumento, ventee la presión acumulada, y reajuste el cero. Para instalaciones permanentes, se debe usar un juego de válvulas de montaje permanente para el venteo.
El instrumento de Serie 2000 no puede ser re parado en el campo y debería de ser regresado si reparos son necesarios (Reparos en el campo no deben de ser intentados y pueden cancelar la garantía.). Asegurarse de incluir una descripción breve del problema más cualquier notas pertinentes a la aplicación para devolución de productos antes de enviar el instrumento.

Cuidado! : La recalibración en campo puede invalidar la garantía. No se recomienda la recalibracion por parte del usuario. En caso necesario envie el instrumento con transporte pago a:

Localización De Fallas

• *El instrumento no indica, o es lento en reacción.*
1. Conexión duplicada abierta.
2. Diafragma roto por sobrepresión.
3. Tubería de conexión perforada, con pérdidas o pinchazos.
4. Anillo de retención flojo, u "O " ring dañado.
5. Conexión a proceso indebida o inadecuada.
6. Temperatura muy baja. Para este caso ordene tipos LT (baja temperatura).

 Printed in U.S.A. 12/11 FR# 12-440212-10 Rev. 4

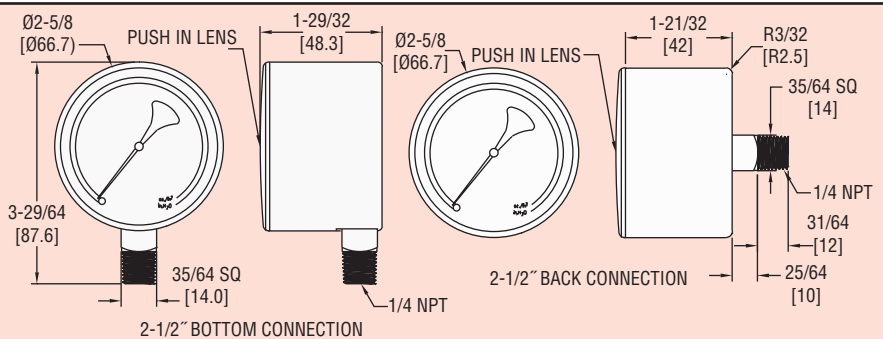
DWYER INSTRUMENTS, INC.
P.O. BOX 373 • MICHIGAN CITY, INDIANA 46360 U.S.A.
Phone: 219/879-8000 Fax: 219/872-9057
www.dwyer-inst.com e-mail: info@dwyer-inst.com

DWYER INSTRUMENTS, INC.
P.O. BOX 373 • MICHIGAN CITY, INDIANA 46360 U.S.A.
Phone: 219/879-8000 Fax: 219/872-9057
www.dwyer-inst.com e-mail: info@dwyer-inst.com

Series LPG3

Low Pressure Gage

1% Full Scale Accuracy in a 2-1/2″ Gage



Series LPG3 Low Pressure Gages are designed to be especially sensitive with an elastic element that expands and contracts with very small changes in pressure for ASME Grade 1A accuracy. This series is meant for the measurement of low pressures of gases and liquids and is ideal for air flow indicators, liquid level indicators and draft gages. Our new low pressure gages are available in 2-1/2″ dial with either a bottom or back connection option.

Model Bottom	Range in w.c./oz/in²	Model Back	Range in w.c./oz/in²
LPG3-D8122N	0-15 (0-8.6 oz/in²)	LPG3-D8142N	0-15 (0-8.6 oz/in²)
LPG3-D8222N	0-32 (0-18.5 oz/in²)	LPG3-D8242N	0-32 (0-18.5 oz/in²)
LPG3-D8422N	0-55 (0-32.0 oz/in²)	LPG3-D8442N	0-55 (0-32.0 oz/in²)
LPG3-D8622N	0-100 (0-58.0 oz/in²)	LPG3-D8642N	0-100 (0-58.0 oz/in²)
LPG3-D8822N	0-200 (0-116 oz/in²)	LPG3-D8842N	0-200 (0-116 oz/in²)
	Range psi/kPa		**Range psi/kPa**
LPG3-D9922N	0-5 (0-35 kPa)	LPG3-D9942N	0-5 (0-35 kPa)
LPG3-D0022N	0-10 (0-70 kPa)	LPG3-D0042N	0-10 (0-70 kPa)

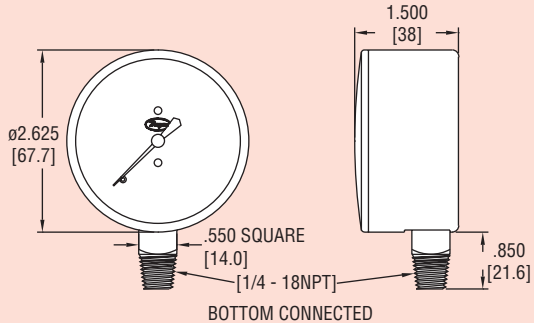
SPECIFICATIONS

Service: Compatible gases and liquids.
Wetted Materials: Brass.
Housing Materials: Steel with black finish.
Lens: Polycarbonate.
Accuracy: 1% full scale; ANSI B40.1 Grade 1A.
Pressure Limit: 110%.
Temperature Limits: -40 to 150°F (-40 to 65°C).
Size: 2-1/2″ (63 mm).
Process Connections: 1/4″ NPT, bottom or back.
Weight: 6.5 oz (184 g).

Series LPG4

2.5" Low Pressure Gage

1.5% Full Scale Accuracy in a 2-1/2" Gage



Our **Series LPG4** gages offer top of the line performance and accuracy for pressure and vacuum applications up to and including 160 in w.c. The LPG4 is constructed from a single beryllium-copper diaphragm affixed to a precision-machined brass plate. This innovative design, together with a high-precision, milled-teeth brass movement and nickel-silver pinion and bearing surface, provide the user with a top of the line low pressure instrument.

SPECIFICATIONS

Service: Compatible gases & liquids.
Wetted Materials: Brass and beryllium copper.
Housing: Drawn steel, black finish.
Lens: Polycarbonate (removable).
Accuracy: ±1.5% full scale.
Pressure Limit: 100% of range scale.

Temperature Limits:
Process: -40 to 160°F (-40 to 70°C);
Ambient: -40 to 140°F (-40 to 60°C).
Size: 2.5" (63 mm).
Process Connections: 1/4" male NPT.
Enclosure Rating: NEMA 3 (IP55).
Weight: 7.3 oz (0.21 kg).

Model	Range	Model	Range
LPG4-D7122N	-10-0 in. w.c. (-2.5-0 kPa)	**LPG4-D8322N**	0-40 in. w.c. (0-10 kPa)
LPG4-D7222N	-16-0 in. w.c. (-4-0 kPa)	**LPG4-D8422N**	0-60 in. w.c. (0-15 kPa)
LPG4-D7322N	-25-0 in. w.c. (-6-0 kPa)	**LPG4-D8522N**	0-80 in. w.c. (0-20 kPa)
LPG4-D7422N	-40-0 in. w.c. (-10-0 kPa)	**LPG4-D8622N**	0-100 in. w.c. (0-25 kPa)
LPG4-D7522N	-60-0 in. w.c. (-15-0 kPa)	**LPG4-D8722N**	0-160 in. w.c. (0-40 kPa)
LPG4-D7622N	-80-0 in. w.c. (-20-0 kPa)	**LPG4-D8922N**	-4-0-6 in. w.c. (-1-0-1.5 kPa)
LPG4-D7722N	-100-0 in. w.c. (-25-0 kPa)	**LPG4-D9022N**	-6-0-10 in. w.c. (-1.5-0-2.5 kPa)
LPG4-D7822N	-160-0 in. w.c. (-40-0 kPa)	**LPG4-D9122N**	-8-0-16 in. w.c. (-2-0-4 kPa)
LPG4-D7922N	-235-0 in. w.c. (-60-0 kPa)	**LPG4-D9222N**	-16-0-24 in. w.c. (-4-0-6 kPa)
LPG4-D8022N	0-10 in. w.c. (0-2.5 kPa)	**LPG4-D9322N**	-24-0-40 in. w.c. (-6-0-10 kPa)
LPG4-D8122N	0-15 in. w.c. (0-3.75 kPa)	**LPG4-D9422N**	-30-0-50 in. w.c. (-7.5-0-14.5 kPa)
LPG4-D8222N	0-25 in. w.c. (0-6 kPa)	**LPG4-D9522N**	-40-0-60 in. w.c. (-10-0-0.15 kPa)

midwest control
an intech industries company

1101 Brown St.
Wauconda IL 60084
P 847-487-5599
F 847-487-0909
www.midwest-control.com

Temperature Gauges

Monitor process temperatures with these thermometers. The thermometer uses a bimetallic sensing element, which reacts measurably and consistently with temperature change. The sensing element is made of two different metals welded together to form a coil which is enclosed in a stainless steel stem. When the stem is exposed to temperature change the coil expands or contracts and the pointer moves accordingly.

- Features Anti-Vibration Design
- Fast Response to Temperature Change
- Case: Hermetically Sealed, Stainless Steel
- Stem: 316 Stainless Steel
- Lens: Glass
- Scale: Dual Fahrenheit and Celsius
- Accuracy: 1% Full Scale Per Grade A, ASME B40.3
- Ambient Temperature: -30°F to 180°F
- External Adjustment: Zero Reset Screw
- Design Meets or Exceed ASME B40.3 Thermometer Standard
- Anti-Parallax Dial with Fixed Back Mount 90 Degrees (TGB Series)
- Adjustable Angle Dial Allows 90°Vertical Adjustment and 360°Dial Rotation (TGL Series)

TGB Series

Back Mount

TGL Series

Lower Mount

Dial Size	Connection	Probe Length	Part No.	Dial Size	Connection	Probe Length	Part No.
2"	1/4" NPT	2.5"	TGB20-XXXP25	3"	1/2" NPT	2.5"	TGL30-XXXP25
2"	1/4" NPT	4.0"	TGB20-XXXP40	3"	1/2" NPT	4.0"	TGL30-XXXP40
2"	1/4" NPT	6.0"	TGB20-XXXP60	3"	1/2" NPT	6.0"	TGL30-XXXP60
3"	1/2" NPT	2.5"	TGB30-XXXP25	5"	1/2" NPT	2.5"	TGL50-XXXP25
3"	1/2" NPT	4.0"	TGB30-XXXP40	5'	1/2" NPT	4.0"	TGL50-XXXP40
3"	1/2" NPT	6.0"	TGB30-XXXP60	5"	1/2" NPT	6.0"	TGL50-XXXP60

Available Temperature Ranges

Part No.	-40°/120°F	-40°/160°F	0°/150°F	0°/200°F	0°/220°F	20°/240°F	0°/250°F	50°/300°F	50°/550°F
TGB20-XXXP25	—	X	—	—	X	–	—	X	X
TGB20-XXXP40	—	X	—	—	X	—	—	X	X
TGB20-XXXP60	—	—	—	—	X	-	—	X	—
TGB30-XXXP25	X	—	X	X	—	X	X	X	X
TGB30-XXXP40	X	X	X	X	—	—	X	X	X
TGB30-XXXP60	X	X	X	—	—	X	X	X	X
TGL30-XXXP25	X	—	X	X	—	X	X	X	—
TGL30-XXXP40	X	—	X	X	—	—	X	—	X
TGL30-XXXP60	X	—	X	X	—	—	X	—	X
TGL50-XXXP25	X	—	X	X	—	X	X	X	X
TGL50-XXXP40	X	X	X	X	—	X	X	X	X
TGL50-XXXP60	X	X	X	X	—	X	X	X	X

Notes:
1. Replace the XXX in the model number, with the last 3 digits of the desired temperature range
2. Additional dial sizes, temperature ranges and probe lengths are available, consult Midwest Control

Model Number Explanation

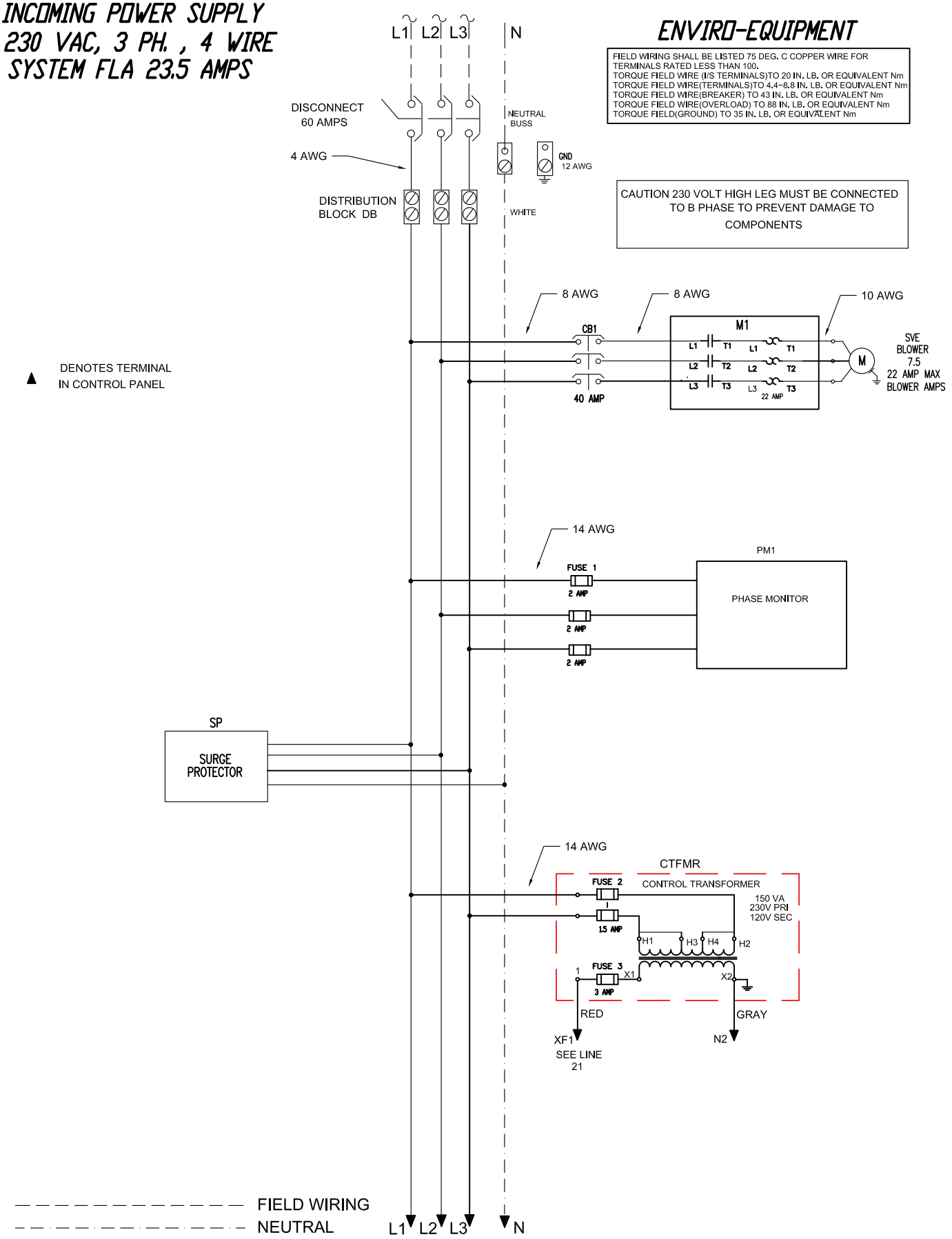
TGB	20	160	P25
Temperature Gauge	Dial Size	40°F/160°F	25= 2-1/2"
B= Back Mount L= Lower Mount	2"	Last 3 Digits of the Temperature Range	Probe Length

INCOMING POWER SUPPLY
230 VAC, 3 PH. , 4 WIRE
SYSTEM FLA 23.5 AMPS

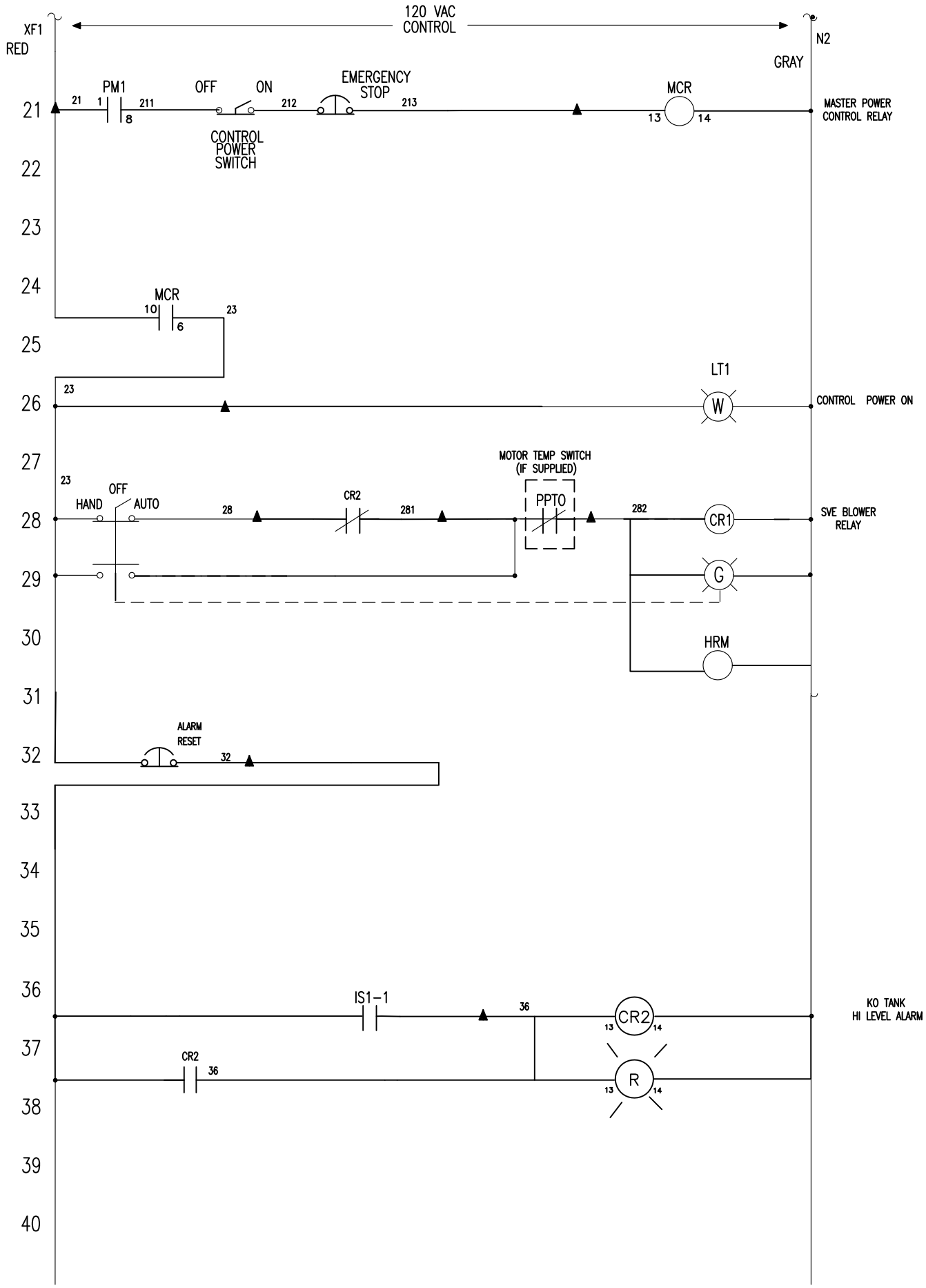
ENVIRO-EQUIPMENT

FIELD WIRING SHALL BE LISTED 75 DEG. C COPPER WIRE FOR TERMINALS RATED LESS THAN 100.
TORQUE FIELD WIRE (I/S TERMINALS)TO 20 IN. LB. OR EQUIVALENT Nm
TORQUE FIELD WIRE(TERMINALS)TO 4.4~8.8 IN. LB. OR EQUIVALENT Nm
TORQUE FIELD WIRE(BREAKER) TO 43 IN. LB. OR EQUIVALENT Nm
TORQUE FIELD WIRE(OVERLOAD) TO 88 IN. LB. OR EQUIVALENT Nm
TORQUE FIELD(GROUND) TO 35 IN. LB. OR EQUIVALENT Nm

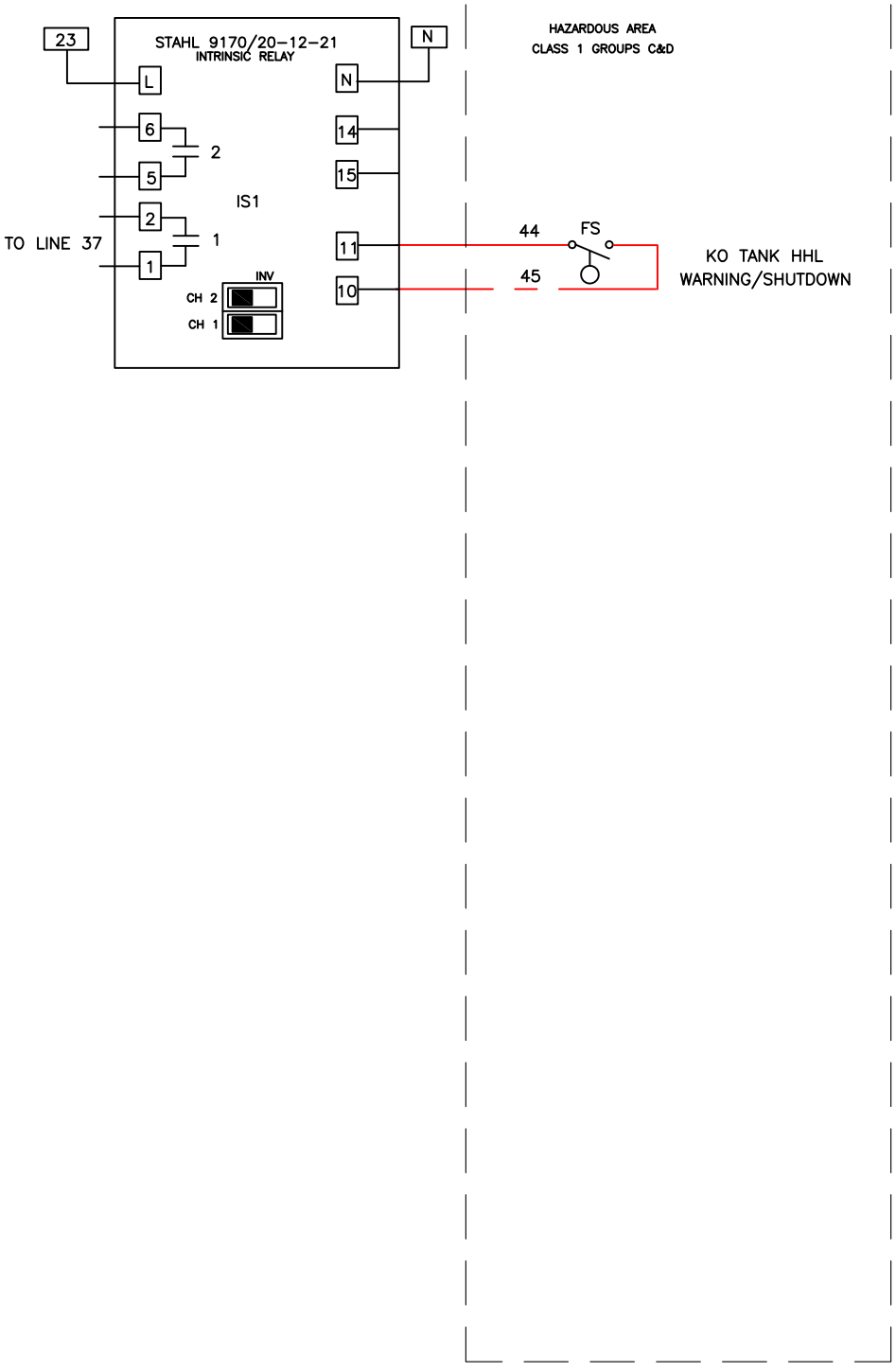
CAUTION 230 VOLT HIGH LEG MUST BE CONNECTED TO B PHASE TO PREVENT DAMAGE TO COMPONENTS



DATE	NAME	ENVIRO-EQUIPMENT	PAGE DESCRIPTION		
4/25/24	DRAWN BY BAH	10120 Industrial Drive Pineville, NC 28134 704-556-7723	PROJECT: 6093	DRAWING-NO.: 6093	PAGE: 1 OF 3



DATE	NAME	ENVIRO-EQUIPMENT	PAGE DESCRIPTION		
4/25/24	DRAWN BY BAH	10120 Industrial Drive Pineville, NC 28134 704-556-7723	PROJECT: 6093	DRAWING-NO.: 6093	PAGE: 2 OF 3



DATE	NAME	ENVIRO-EQUIPMENT	PAGE DESCRIPTION		
4/25/24	DRAWN BY BAH	10120 Industrial Drive Pineville, NC 28134 704-556-7723	PROJECT: 6093	DRAWING-NO.: 6093	PAGE: 3 OF 3

ENVIRO EQUIPMENT COMPONENT TRACABILITY 6093

MET LABS SERIAL # 127

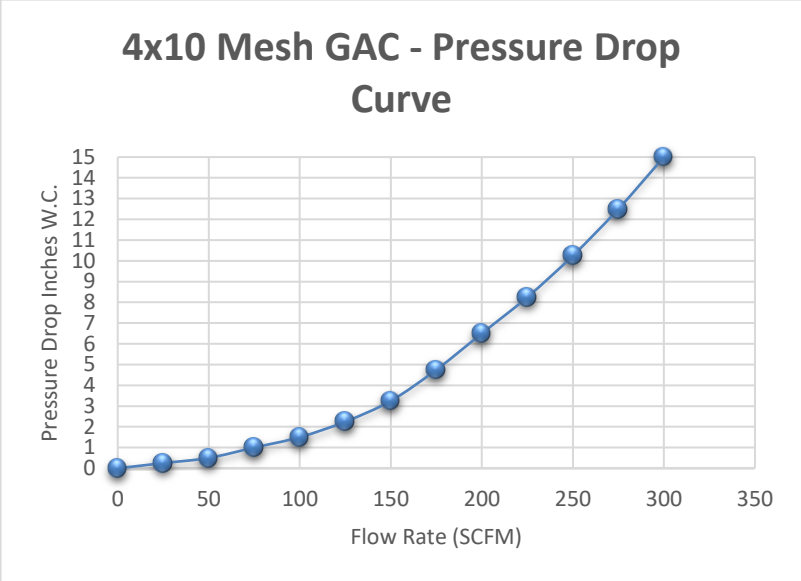
COMPONENT	MANUFACTURER	PART NUMBER	
3 POS GRN MTD IL SEL SWT 2NO	EATON	M22-WRLK3-2-G-K20-230G	UL
HR METER, 115VAC, 2.8-IN	EATON	6-T-3H-508RPM-406	UL
9-12A THERMAL OVERLOAD RELAY	EATON	XT0B012BC1	UL
15A 120V COIL IEC CONTACTOR 3-POLE W/ 1NO AUXILIARY	EATON	XTCE015B10	UL
CLASS C 1A FUSE 600VAC TIME-DELAY	EDISON	HCTR 1	UL
CLASS C 2.5A FUSE 600VAC TIME-DELAY	EDISON	HCTR 2.5	UL
RU SERIES UNIVERSAL RELAY 4PDT 110-120VAC COIL 6A BLADE	IDEC	RU4S-A110	UL
22MM TWIST REL E-STOP	EATON	M22-PVT-K01	UL
NON FUSED ROTARY SWITCH 60 AMP 3 POLE	EATON	R5B3060U	UL
DISCONNECT SHAFT 320MM	EATON	SF320SH5X5	UL
DISCONNECT SELECTOR HANDLE	EATON	SHB00N12	UL
DUAL CHANNEL ISOLATOR	R. STAHL	9170/21-12-21S	
CLASS CC FUSE BLOCK 600VAC BOX LUG TERMINAL	EDISON	BCM603-1C	UR
FLAT DIN RAIL MOUNT SOCKET, 8 PIN TYPE RELAY	IDEC	SR2P-06	UR
NEMA 4,12 ENCLOSURE 24X24X10	HAMMOND	EN4SD24208LG	UL
E-PANEL GALVANIZED -FITS 24x24 ENCLOSURE	HAMMOND	EP2420	UL
SWING PANEL 24x24	HAMMOND	ESP2420	UL
22MM RED PILOT LIGHT W/ LED	EATON	M22-L-R-230R	UL
CONTACT BLOCK 1 N/O W/ SCREW TERMINALS	EATON	M22-K10	UL
RELAY SOCKET	IDEC	SY4S-05	UR
18A 120V COIL IEC CONTACTOR 3-POLE W/ 1NO AUXILIARY	EATON	XTCE018C10	UL
MINI GLASS FUSE 2 AMP	BUSSMANN	GMA-2-R	UL
PWR. DISTRIBUTION BLOCK 600VAC 175A, 3P	LITTLEFUSE	LFD0401-3	UL
PWR. DISTRIBUTION BLOCK 600VAC 175A, 1P	LITTLEFUSE	LD2570-1	UL
22MM BLCK FLUSH MOM PB	EATON	M22-D-S-K01	UL
NEMA 4, 12 ENCLOSURE 20X20X10	HAMMOND	EN4SD202010LG	UL
SWING PANEL	HAMMOND	ESP2020	UL
E-PANEL	HAMMOND	EP2020	UL
GROUND BAR KIT	EATON	GBK10	UL
3P/40A UL489 BREAKER	WEIDMULLER	BR3D40UC	UL
3P/30A UL489 BREAKER	WEIDMULLER	BR2D30UC	UL
2P/15A UL489 BREAKER	WEIDMULLER	BR2D15UC	UL
208-480V UNIV. PHASE MONITOR	EATON	D65VMLP480	UL
150VA MTE CONT. TRANSFORMER PRI. 230/460V SEC. 115V	ACME	TB150N005F0	UL
32A 120V COIL IEC CONTACTOR	EATON	XTCE032C10A	UL
9-45A ELECTRONIC OVERLOAD	EATON	XTOE045CCS	UL
SURGE PROTECTOR, 240V, DELTA	EATON	SP1-240D	UL
2 POS MTD SEL SWITCH	EATON	M22-WKV	UL
CONTACT BLOCK 1 N/O	EATON	M22-K10	UL
22MM WHT PILOT LIGHT	EATON	M22-L-W-230W	UL
D3 2-POLE 8 PIN SOCKET	EATON	D3PA2	UL

I CERTIFY THAT THE COMPONENTS AS LISTED, OR THE ATTACHED LIST OF COMPONENTS HAVE BEEN REVIEWED FOR ACCEPTANCE UNDER THE PANEL LISTING PROGRAM. THESE COMPONENTS ARE EITHER CERTIFIED, LISTED, OR RECOGNIZED BY A COMPONENT APPROVING AGENCY. UNEVALUATED CONTROL COMPONENTS PROTECTED BY A LISTED GFCI MAY BE USED IN ACCORDANCE WITH UL5O8A FOR U.S. PANELS, HOWEVER NO UNEVALUATED COMPONENTS ARE AUTHORIZED FOR PANELS APPROVED FOR CANADA.

SIGNATURE: __ANDY HINDS_____ DATE 6/27/2024

VPCD-85 – Vapor Phase Carbon Drum

Available as empty drums with no media or filled with reactivated carbon, virgin carbon or a variety of specialty medias upon request.



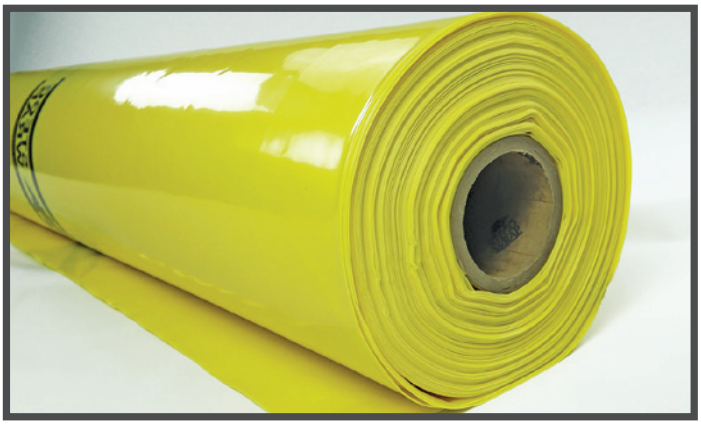
VPCD-85 Specifications			
Dimensions	3’3” Tall x 28” Diameter	Internal Piping	SCH 40 PVC
Inlet / Outlet	3” Female NPT	Internal Coating	Epoxy
GAC Fill	300 Pounds	Max Pressure / Temp	10 PSIG / 140 F
Shipping Weight	375 Pounds	Bed Depth / Volume	2.8 Feet / 9.9 cubic feet
Operational Weight	505 Pounds	Cross Sectional Bed Area	4.2 square Feet

STEGO® WRAP 20-MIL VAPOR BARRIER

A STEGO INDUSTRIES, LLC INNOVATION | VAPOR RETARDERS 07 26 00, 03 30 00 | VERSION: DEC 8, 2022

1. PRODUCT NAME

STEGO WRAP 20-MIL VAPOR BARRIER



2. MANUFACTURER

Stego Industries, LLC
216 Avenida Fabricante, Suite 101
San Clemente, CA 92672 USA
Sales, Technical Assistance
Ph: (877) 464-7834
contact@stegoindustries.com
stegoindustries.com

3. PRODUCT DESCRIPTION

USES: Stego Wrap 20-Mil Vapor Barrier is used as a below-slab vapor barrier.

COMPOSITION: Stego Wrap 20-Mil Vapor Barrier is a multi-layer plastic extrusion manufactured with only the highest grade of prime, virgin, polyolefin resins.

ENVIRONMENTAL FACTORS: Stego Wrap 20-Mil Vapor Barrier can be used in systems for the control of soil gases (radon, methane), soil poisons (oil by-products) and sulfates.

4. TECHNICAL DATA

TABLE 4.1: PHYSICAL PROPERTIES OF STEGO WRAP 20-MIL VAPOR BARRIER

PROPERTY	TEST	RESULTS
Under Slab Vapor Retarders	ASTM E1745 Class A, B & C – Standard Specification for Water Vapor Retarders Used in Contact with Soil or Granular Fill under Concrete Slabs	Exceeds Class A, B & C
Water Vapor Permeance	ASTM F1249 – Test Method for Water Vapor Transmission Rate Through Plastic Film and Sheeting Using a Modulated Infrared Sensor	0.0071 perms
Permeance After Conditioning (ASTM E1745 Sections 7.1.2 - 7.1.5)	ASTM E154 Section 8, F1249 – Permeance after wetting, drying, and soaking ASTM E154 Section 11, F1249 – Permeance after heat conditioning ASTM E154 Section 12, F1249 – Permeance after low temperature conditioning ASTM E154 Section 13, F1249 – Permeance after soil organism exposure	0.0088 perms 0.0081 perms 0.0084 perms 0.0077 perms
Methane Transmission Rate	ASTM D1434 - Standard Test Method for Determining Gas Permeability Characteristics of Plastic Film and Sheeting	152.2 GTR* (mL(STP)/m^2*day)
Radon Diffusion Coefficient	K124/02/95	9.9 x 10^{-12} m^2/second
Puncture Resistance	ASTM D1709 – Test Method for Impact Resistance of Plastic Film by Free-Falling Dart Method	3500+ grams**
Tensile Strength	ASTM D882 – Test Method for Tensile Properties of Thin Plastic Sheeting	97.7 lbf/in
Thickness		20 mil
Roll Dimensions	width x length: area:	14' x 105' 1470 ft^2
Roll Weight		152 lb

Note: perm unit = grains/(ft^2*hr*in-Hg)

*GTR = Gas Transmission Rate

**The material maxed out the testing equipment and did not fail at 3746 grams.

Continued...
Note – legal notice on page 2.

STEGO® WRAP 20-MIL VAPOR WRAP BARRIER

A STEGO INDUSTRIES, LLC INNOVATION | VAPOR RETARDERS 07 26 00, 03 30 00 | VERSION: DEC 8, 2022

5. INSTALLATION

UNDER SLAB: Unroll Stego Wrap 20-Mil Vapor Barrier over an aggregate, sand or tamped earth base. Overlap all seams a minimum of 6 inches and tape using Stego® Tape or Stego® Crete Claw® Tape. All penetrations must be sealed using a combination of Stego Wrap and Stego Accessories.

For additional information, please refer to Stego's complete installation instructions.

6. AVAILABILITY & COST

Stego Wrap 20-Mil Vapor Barrier is available through our network of building supply distributors. For current cost information, contact your local Stego distributor or Stego Industries' Sales Representative.

7. WARRANTY

Stego Industries, LLC believes to the best of its knowledge, that specifications and recommendations herein are accurate and reliable. However, since site conditions are not within its control, Stego Industries does not guarantee results from the use of the information provided herein. Stego Industries, LLC does offer a limited warranty on Stego Wrap. Please see **stegoindustries.com/legal**

8. MAINTENANCE

None required.

9. TECHNICAL SERVICES

Technical advice, custom CAD drawings, and additional information can be obtained by contacting Stego Industries or by visiting the website.

Email: contact@stegoindustries.com
Contact Number: (877) 464-7834
Website: **stegoindustries.com**

10. FILING SYSTEMS: stegoindustries.com

APPENDIX F
O&M Manual

HALEY ALDRICH

www.haleyaldrich.com

REPORT ON

OPERATIONS AND MAINTENANCE MANUAL
1885 ATLANTIC AVENUE REDEVELOPMENT SITE
BROOKLYN, NEW YORK

by
H & A of New York Engineering and Geology, LLP
New York, New York

for
1885 Atlantic Realty LLC
Hauppauge, New York

File No. 0205125
August 2024

Table of Contents

List of Tables

List of Figures

List of Appendices

1. Introduction

On behalf of 1885 Atlantic Realty LLC, H & A of New York Engineering and Geology, LLP (Haley & Aldrich of New York) has prepared this Operations and Maintenance (O&M) Manual for the Soil Vapor Extraction (SVE) system and Sub-Slab Depressurization System (SSDS), at the 1885 Atlantic Avenue Redevelopment Site (Site) located at 1885 Atlantic Avenue, Brooklyn, New York.

The SVE system has been implemented as part of the remedial action to treat on-Site soils in the vadose zone with volatile organic compound (VOC) contamination. The SSDS has been implemented as part of the remedial action to mitigate the potential for soil vapor intrusion into the Site building. The SVE system and SSDS have been designed and installed in accordance with the approved Remedial Action Work Plan (RAWP) dated August 2023 and Decision Document (DD) dated September 2023. The SVE system was installed in the northeastern portion of the Site to target an approximately 3,500-square-foot (sq ft) area from 20 to 60 feet (ft) below ground surface (bgs). The SSDS was installed under the entire building footprint to depressurize an approximately 10,800-sq-ft area.

1.1 GENERAL PROCESS DESCRIPTION

The SVE remedial technology involves inducing airflow within the subsurface with an applied vacuum, enhancing the in-situ volatilization of contaminants, and capturing of soil vapors. The SVE process uses the volatility of the contaminants to allow mass transfer from adsorbed and dissolved phases in the soil and groundwater to the vapor phase, where it is removed under vacuum, and discharged to the atmosphere after treatment using granular activated carbon (GAC). Airflow is induced in the subsurface by a pressure gradient applied through SVE wells. The negative pressure inside the extraction wells will be generated by a vacuum blower, which causes soil vapor to migrate toward the wells. Any water recovered from the SVE wells is collected in an air-water separator and disposed of in 55-gallon steel drums.

The SSDS remedial technology involves using a blower to create a pressure gradient across the subgrade of a building to mitigate the potential for vapor intrusion from the subsurface into the building. Depressurizing the soils below the building slab creates low pressure that alters the direction of soil gas flow (via horizontal piping connected to a riser pipe extending above the roof of the building) to mitigate soil vapor intrusion.

1.2 SITE CONTACTS

A list of Site-related contact information is provided below in Table I.

Table I: Site Contact List

Company	Contact Name	Title	Contact Number	Contact Email
H & A of New York Engineering and Geology, LLP	James Bellew	Principal	646.277.5686	jbellew@haleyaldrich.com
	Scott Underhill, P.E.	Remedial Engineer	518.396.7638	sunderhill@haleyaldrich.com
	Matthew Levy	Project Manager	646.893.4733	mlevy@haleyaldrich.com

Table I: Site Contact List				
Company	**Contact Name**	**Title**	**Contact Number**	**Contact Email**
	Matthew Forshay	Field Lead	862.377.3587	mforshay@haleyaldrich.com
1885 Atlantic Realty LLC	Jacob Kohn	Member	718.963.0536	kohnjacob@gmail.com
Sive, Paget & Riesel PC	Christine Leas	Attorney	646.378.7267	cleas@sprlaw.com

2. SVE System and SSDS Components

The SVE system includes the following components:

- Nine SVE well locations with each SVE location containing two co-located SVE wells (shallow and deep) for a total of 18 SVE wells (SVE-1S through SVE-9S and SVE-1D through SVE-9D). Among the 18 SVE wells, five wells are screened from 20 to 30 ft bgs, four from 30 to 40 ft bgs, five from 40 to 50 ft bgs, and four from 50 to 60 ft bgs;
- Two monitoring point (MP) locations with each MP location containing four co-located MPs each at a distinct depth (25 ft bgs, 35 ft bgs, 45 ft bgs, and 55 ft bgs) for a total of eight MPs (MP-1_25, MP-1_35, MP-1_45, MP-1_55, MP-2_25, MP-2_35, MP-2_45, and MP-2_55);
- Eighteen 1.5-inch (in.), Schedule 40 polyvinyl chloride (PVC) lines connected to each SVE point; and,
- One 4-in., Schedule 40 PVC Manifold line, which combines the flow from each dedicated SVE line.

The SSDS system includes the following components:

- One continuous perforated 4-in. PVC perforated horizontal pipe, embedded within a permeable layer (10-in. washed aggregate);
- One SSDS vertical riser connecting the SSDS horizontal piping to the blower in the basement; and,
- Four monitoring points (MP-1 through MP-4) installed in the permeable layer below the waterproofing/vapor barrier allow for collection of post-mitigation sub-slab vapor samples and additional system monitoring as needed.

Both the SVE system and SSDS include the following components:

- A blower with a minimum capacity of 140 cubic feet per minute (cfm) at 80 inches of water column (IWC) vacuum. The blower is equipped with a pressure relief valve and inline filters. Blower manufacturer specifications are presented in Appendix A;
- An air-water separator with a minimum capacity of 24 gallons, equipped with a high-level alarm and drain port to drain any collected liquids;
- System operation instrumentation, including magnehelic gauges ranging from 0 to 100 IWC vacuum, pressure gauges ranging from 0 to 60 pounds per square inch (psi), and a temperature gauge ranging from 0 to 250 degrees Fahrenheit;
- System enclosure housing all of the system components;
- Two 300-pound (lb) GAC vessels for VOC treatment;
- One 4-in., cast iron discharge line running along the basement ceiling before penetrating to the roof; and,
- A 5-ft tall exhaust stack equipped with a rain cap.

The SVE system layout, SVE well and MP construction details, and piping and instrumentation diagram (P&ID) are provided in Appendix B and Table II. The SSDS as-built is provided in Appendix C.

2.1 SVE SYSTEM CONFIGURATION

During operation, the blower extracts air from 18 dedicated SVE wells (SVE-1S through SVE-9S and SVE-1D through SVE-9D). The extracted air is combined in a single 4-in., Schedule 40 PVC manifold and travels through the air-water separator, where any liquid from the air stream is removed before entering the SVE blower. The SVE system vacuum and flow are controlled by valves on the header lines and at each SVE well.

The optimal flow rate and vacuum were estimated based on the pilot test results and are governed by the Site subsurface conditions and the air permeability of the soil. To achieve four pore volume exchanges per day, each SVE well needs to pull at least 7.8 cfm (140 cfm total) at 80 IWC. During system commissioning, vacuum and flow values for each SVE well will be balanced based on each well's ability to remove VOCs.

2.2 SSDS SYSTEM CONFIGURATION

The SSDS consists of horizontal perforated piping installed in a permeable layer under the building foundation. The permeable layer is a minimum of 10-in.-thick with 3/4 in. of washed aggregate. The horizontal piping consists of 4-in.-diameter perforated schedule 40 PVC pipes connecting to the vertical riser. The vertical PVC riser penetrates the cover system through a pipe sleeve prior to transitioning to a vertical cast iron pipe riser which is connected to the blower in the basement. The exhaust point out of the blower penetrates the roof and is at least 12 in. above the highest roof surface, at least 10 ft away from any adjacent building or heating, ventilating, and air conditioning (HVAC) intakes, and is complete with a rain cap. Four sub-slab vapor monitoring points are installed in the permeable layer below the vapor barrier to allow for the collection of sub-slab vapor samples. During operation, the SSDS assembly will provide at continuous operation a minimum of 60 cfm.

2.3 SYSTEM ENCLOSURE

The SVE enclosure includes a vacuum blower, air-water separator, 18 dedicated SVE lines, a manifold, valves, vacuum/pressure gauges, alarms, a control panel, a transformer, a power panel, sample ports, and GAC vessels.

The extracted airflow from individual SVE and SSDS lines combine into one stream at the manifold located within the system enclosure. VOC concentration (part per million [ppm]), air flow (cfm), and vacuum pressure (IWC) measurements from individual SVE lines and the manifold are collected inside the system enclosure. The air stream passes through the air-water separator and the condensate is separated from the air stream; then, vapors are passed through two GAC vessels before discharging into the atmosphere.

2.4 VOC TREATMENT AND DISCHARGE

Photoionization detector (PID) readings will be recorded before and after treatment at each GAC vessel. The combined air stream passes through the air-water separator, where any liquid in the air stream is removed. The air stream passes through the SVE blower to two GAC vessels, connected in series. The treated vapor stream is then directed through the manifold to the second floor prior to being discharged from a 5-ft high ventilation stack to the atmosphere. The contamination reduction rate from the influent stream by the two 300-lb GAC vessels is anticipated to be 99.9 percent.

2.5 WATER MANAGEMENT

The condensate and moisture from the air stream will be separated and captured in the air-water separator before the air stream reaches the SVE blower. Recovered water will be drained from the air-water separator by gravity into a 55-gallon drum for characterization and off-Site disposal. The system can be temporarily shut down during O&M activities to facilitate draining the air-water separator

3. SVE System Standard Operating Procedures and Monitoring Plan

This SVE System Standard Operating Procedures and Monitoring Plan should be followed in all normal operating circumstances. If circumstances arise while operating the system that are not covered in this O&M Manual, the Remediation Engineer and Project Manager should be notified. This section discusses step-by-step procedures for operating and monitoring the system in a safe manner.

The initial startup period is anticipated to last for approximately three days. Following the startup, monthly visits will be performed to confirm system operations and to collect vapor phase concentration readings.

The following tasks will be conducted during the startup period and routine Site visits:

- Collect system flow rates and operating vacuums at each SVE well;
- Collect influent (in the manifold prior to GAC treatment) and effluent (in the manifold after GAC treatment) vapor concentration readings (using a handheld PID) to assess the vapor control efficiency;
- Collect induced vacuum readings from MPs;
- Inspect SVE lines and adjust the applied vacuum and flows using valves;
- Conduct a general inspection of the system to ensure proper housekeeping; and,
- Assess the volume of liquids in the air-water separator.

The following tasks will be conducted daily during the startup period and then quarterly thereafter:

- Collect PID readings from each SVE well, the SVE manifold, and GAC effluent; and,
- Collect air samples from the influent and effluent sample ports in the manifold and send to a New York-certified laboratory for VOC analysis.

The following sections discuss the procedures for starting and shutting down the system, emergency situations, and routine monitoring.

3.1 START-UP AND SHUT-DOWN PROCEDURES

Before starting the system for the first time, complete the SVE System Startup Checklist and Commission Plan provided in Table III. The following procedures should be followed when starting up the system;

1. Open the valves for each SVE-dedicated line.
2. Set the SVE blower HOA switch to AUTO and allow the flow to stabilize for 15 minutes. NOTE: The SVE blower switch should be set on HAND only while troubleshooting and when an operator is present. The system running in HAND mode will not shut down in alarm conditions.

If water is suspected to be in an SVE line, it can be removed by closing off flow to the other SVE lines using the valves on each SVE line in the system enclosure. Increasing vacuum to the line containing water will pull the water through the SVE line and into the system to be collected by the air-water separator. Remove water from one SVE line at a time and return valves to their normal position when complete.

To shut down the system, the following procedures should be followed:

1. Record a round of system readings.
2. Set the SVE blower HOA switch to OFF.

In the event of an emergency, the following procedures should be followed:

1. Pull the main disconnect on the breaker panel inside the system, evacuate the area (if necessary due to safety concerns), and call the Remediation Engineering and/or the Project Manager. Contact information is provided in Section 1.2.

3.2 SYSTEM READINGS

Collect system readings monthly (including flow, vacuum, pressure, and PID readings) inside the system enclosure. Record readings on the SVE System Data Sheets provided as Tables IV and V.

1. Calibrate a PID before each use. Record calibration data in the field book.
2. Record the SVE blower counter hours and note the time of reading.
3. Record the previous blower counter hours from the last visit, and calculate the hours elapsed.
4. Record vacuum readings from each SVE well and the manifold.
5. Use a hotwire anemometer to measure the air flow in the manifold.
6. Record PID readings from each SVE sample port.
7. Record the temperature at the blower.
8. Record the PID and pressure reading at the sample port located before the primary GAC vessel and before and after the secondary GAC vessel.

3.3 FIELD READINGS

Record induced vacuum readings at each SVE well and MP. Record readings on the SVE System Data Sheet provided as Table IV.

1. For MPs:
    a. Open sample port valve and connect a PID. The PID pump will stop if it tries to pull against a closed valve. If this happens, the PID can be shut down and turned back on to restart the pump.
    b. Record PID readings from the sample port. Connect the PID directly to the sample port using 1/4-in. tubing.
    c. Record the vacuum reading from the sample port. Using 1/4-in. to 1/8-in. tubing, connect the low-pressure port of a magnehelic gauge to the sample port. Record vacuum readings with the high-pressure port open to the atmosphere.
        i. Magnehelic gauge should be zeroed before use using the set screw on the face of the gauge. The needle should sit on zero before connecting to either port. If the needle is moving, relocate to an area blocked from the wind before performing the zero, as wind can affect the reading.

3.4 PERFORMANCE MONITORING AND CALCULATIONS

The treatment system operation and maintenance will be conducted as described above. It is intended to ensure the system is operating correctly in accordance with the proposed full-scale design. A performance monitoring program will also be implemented to assess the effectiveness of the treatment system in achieving the remedial goals. The performance monitoring program will assess whether modifications to the system operation could enhance contaminant recovery.

System performance will be based on PID readings from individual extraction wells, influent PID readings and VOC concentrations, and cumulative VOC mass removal based on effluent PID readings and VOC concentrations. All three criteria will be compared to pre-remediation conditions. Performance monitoring calculations are presented in Tables VI and VII and Figures 1A, 1B, 2A, and 2B.

3.5 SAMPLING PLAN

Air samples will be collected from the influent stream and effluent sample ports during each quarterly monitoring event. The influent sample port is located in the manifold before the air-water separator and SVE blower. Air samples will be analyzed for VOCs using U.S. Environmental Protection Agency (EPA) Method TO+15. The air samples will be used to assess contaminant removal rates. The air samples will be sent to a New York-certified laboratory for analysis.

4. SSDS Standard Operating Procedures and Monitoring Plan

This SSDS Standard Operating Procedures and Monitoring Plan should be followed in all normal operating circumstances. If circumstances arise while operating the system that are not covered in this O&M Manual, the Remediation Engineer and Project Manager should be notified. This section discusses step-by-step procedures for operating and monitoring the system in a safe manner.

Following the startup, bi-annual visits will be performed to confirm system operations.

The following tasks will be conducted during routine Site visits:

- Inspect the blower for functionality and integrity.
- Inspect vacuum monitoring points for functionality and integrity.
- Log the vacuum gauge readings at the SSDS blower.
- Identify any maintenance or repair activity that could affect the lowest-level slabs-on-grade, SSDS piping, or rooftop components. Note that the New York State Department of Health (NYSDOH) and the New York State Department of Environmental Conservation (NYSDEC) must be notified of any maintenance required as a result of routine inspections.
- Corrective actions will be taken in the event that cracks, new utilities, pits, etc. are identified in the lowest-level slab.
- Log the information in the logbook and monthly inspection form.

4.1 SYSTEM READINGS

Collect vacuum readings at monitoring points. Record observations on the SSDS Inspection Forms provided in Appendix D.

5. Equipment Maintenance Requirements

The SVE/SSDS system includes the following components which will require routine maintenance:

- Blower (SVE and SSDS); and,
- GAC Vessels (VOC Treatment).

5.1 SVE/SSDS BLOWER

Blower-specific O&M, such as blower lubrications, flow meter replacement, or influent filter replacement will be conducted per the manufacturer's requirements. SVE blowers create excessive noise when in operation. When the blower is operating, all personnel must wear hearing protection at all times when inside the system trailer.

5.2 GAC VESSELS

GAC vessels will be operated in a lead/lag configuration. Carbon in the lead vessel will be changed out when sampling indicates breakthrough or saturation of the lead GAC vessel (outlet PID reading within 20 percent of inlet reading). When the primary vessel is spent, the GAC will be replaced, and the secondary vessel plumbed to the primary treatment location. GAC will be either re-generated or disposed of off the Site by the vendor. Periodic samples may be collected from the GAC vessels to ensure proper classification and disposal.

6. Health and Safety Plan

All field activities must be performed safely in accordance with the Haley & Aldrich of New York Site-wide Health and Safety Plan (HASP). The HASP is kept on the Site in the system enclosure.

The following Job Hazard Analyses (JHAs) will apply to O&M activities for the SVE system. Copies of the JHAs are provided in Appendix H of the SMP.

TABLES

TABLE II

SVE WELL AND MONITORING POINT CONSTRUCTION

1885 ATLANTIC AVENUE REDEVELOPMENT SITE

BROOKLYN, NEW YORK

Well/Monitoring Point ID	Total Depth (ft bgs)	Screen Depth (ft bgs)	Diameter (in)
SVE-1S	30	20-30	1.5
SVE-1D	50	40-50	1.5
SVE-2S	40	30-40	1.5
SVE-2D	60	50-60	1.5
SVE-3S	30	20-30	1.5
SVE-3D	50	40-50	1.5
SVE-4S	40	30-40	1.5
SVE-4D	60	50-60	1.5
SVE-5S	30	20-30	1.5
SVE-5D	50	40-50	1.5
SVE-6S	40	30-40	1.5
SVE-6D	60	50-60	1.5
SVE-7S	30	20-30	1.5
SVE-7D	50	40-50	1.5
SVE-8S	40	30-40	1.5
SVE-8D	60	50-60	1.5
SVE-9S	30	20-30	1.5
SVE-9D	50	40-50	1.5
MP-1	25, 35, 45, 55	-	0.17
MP-2	25, 35, 45, 55	-	0.17

Notes:

ft bgs - feet below sidewalk grade

in - inches

SVE - Soil Vapor Extraction

MP - Monitoring Point

Each MP location contains four stainless steel probes and polyethylene tubing at the midpoint of each screen interval. See Appendix B for construction details.

TABLE III
SVE SYSTEM STARTUP CHECKLIST AND COMMISSIONING PLAN
1885 ATLANTIC AVENUE REDEVELOPMENT SITE
BROOKLYN, NEW YORK

Date: _____

Personnel: _____

Check	Description	Notes
	Inspect connections to SVE-1S through SVE-9S and SVE-1D through SVE-9D	
	Inspect valves are open to treatment wells and system	
	Inspect that plumbing to GAC is in place	
	Check the condition of the flow meter, vacuum gauges and temperature probe	
	Check the condition of all of the valves, including dilution valve	
	Check the condition of the air filter	
	Check the condition of the GAC vessel for any rusting	
	Check the condition of the enclosure and note for any rusting or damage	
	Check for fire extinguisher	
	Secure the area with cones or barricades	
	Ensure that all sample ports are closed	
	Inspect that the stack is erected at correct height	
	Check depth to groundwater in the existing monitoring well	
	Ensure all MPs are capped (closed)	
	Ensure there is no water in the vapor/liquid separator	
	Record the counter readings on the timers	
After turning on the blower:		
	Bump blower and ensure rotation is correct	
	Run blower and ensure there are no leaks in the above ground line(s)	
	Calibrate magnehelic gauges	

TABLE IV
VAPOR EXTRACTION POINT AND MONITORING POINT READINGS
1885 ATLANTIC AVENUE REDEVELOPMENT SITE
BROOKLYN, NEW YORK

Date: _____ SVE Blower Time (Previous): _____

Weather: _____ SVE Blower Time (Current): _____

Personnel: _____ Time: _____

VEP/MP	Time	Air Flow (cfm)	PID Reading (ppm)	Notes
SVE-1S				
SVE-1D				
SVE-2S				
SVE-2D				
SVE-3S				
SVE-3D				
SVE-4S				
SVE-4D				
SVE-5S				
SVE-5D				
SVE-6S				
SVE-6D				
SVE-7S				
SVE-7D				
SVE-8S				
SVE-8D				
SVE-9S				
SVE-9D				
MP-1_25				
MP-1_35				
MP-1_45				
MP-1_55				
MP-2_25				
MP-2_35				
MP-2_45				
MP-2_55				

Notes:
cfm - cubic feet per minute
ppm - parts per million
VEP - Vapor Extraction Point
MP - Monitoring Point

TABLE V
INFLUENT AND EFFLUENT READINGS
1885 ATLANTIC AVENUE REDEVELOPMENT SITE
BROOKLYN, NEW YORK

Date: _____ SVE Blower Time (Previous): _____

Weather: _____ SVE Blower Time (Current): _____

Personnel: _____ Time: _____

SYSTEM LOCATION	Time	Air Flow (cfm)	Vacuum/Pressure (IWC)	PID Reading (ppm)	Temperature (°F)	Notes
SVE Influent before SSDS Connection					-	
Combined SVE/SSDS Influent					-	
Filter Influent		-		-	-	
Filter Effluent		-		-	-	
Effluent before Drums				-		Air flow: read mag gauge and convert the IWC to cfm with the exhaust flow chart
Effluent after Drum 1					-	
Effluent after Drum 2					-	

Notes:
cfm - cubic feet per minute
ppm - parts per million
IWC - inches of water column
°F - degrees Fahrenheit

TABLE VI
PID REMOVAL

Date	Flow (CFM)	Flow (CFD)	Elapsed Time (Day)	Volume in Reporting Period (ft^3)	Volume in Reporting Period (m^3)	Influent Conc. (ppm)	Effluent Conc. (ppm)	Conc. Removed (ppm)	Conc. Removed ($\mu g/m^3$)	Mass Removed (lbs)
		0		0	0			0.0	0	0.000
Total			0	0	0					0.000

Enter Values

Benzene MW = 78 g/mol

To convert concentration (*C*) ppmv to µg/m³, use:

$$C[\mu g/m^3] = \frac{[C[ppmv]](MW)}{24.5}(10^3) \text{ at } 298 \text{ K}$$

where

MW = molecular weight of chemical species

TABLE VII
VOC MASS REMOVAL

						1,2,4-Trimethylbenzene				1,3,5-Trimethylbenzene			
Date	Flow (CFM)	Flow (CFD)	Elapsed Time (Day)	Volume in Reporting Period (ft^3)	Volume in Reporting Period (m^3)	Influent Conc. ($\mu g/m^3$)	Effluent Conc. ($\mu g/m^3$)	Conc. Removed ($\mu g/m^3$)	Mass Removed (lbs)	Influent Conc. ($\mu g/m^3$)	Effluent Conc. ($\mu g/m^3$)	Conc. Removed ($\mu g/m^3$)	Mass Removed (lbs)
		0		0	0			0	0.000			0	0.000
Total			0	0	0				0.000				0.000

Enter Values

TABLE VII
VOC MASS REMOVAL

						Benzene				Ethylbenzene			
Date	Flow (CFM)	Flow (CFD)	Elapsed Time (Day)	Volume in Reporting Period (ft^3)	Volume in Reporting Period (m^3)	Influent Conc. ($\mu g/m^3$)	Effluent Conc. ($\mu g/m^3$)	Conc. Removed ($\mu g/m^3$)	Mass Removed (lbs)	Influent Conc. ($\mu g/m^3$)	Effluent Conc. ($\mu g/m^3$)	Conc. Removed ($\mu g/m^3$)	Mass Removed (lbs)
		0		0	0			0	0.000			0	0.000
Total			0	0	0				0.000				0.000

Enter Values

TABLE VII
VOC MASS REMOVAL

						Toluene				Xylene (Total)			
Date	Flow (CFM)	Flow (CFD)	Elapsed Time (Day)	Volume in Reporting Period (ft^3)	Volume in Reporting Period (m^3)	Influent Conc. ($\mu g/m^3$)	Effluent Conc. ($\mu g/m^3$)	Conc. Removed ($\mu g/m^3$)	Mass Removed (lbs)	Influent Conc. ($\mu g/m^3$)	Effluent Conc. ($\mu g/m^3$)	Conc. Removed ($\mu g/m^3$)	Mass Removed (lbs)
		0		0	0			0	0.000			0	0.000
Total			0	0	0				0.000				0.000

Enter Values

FIGURES

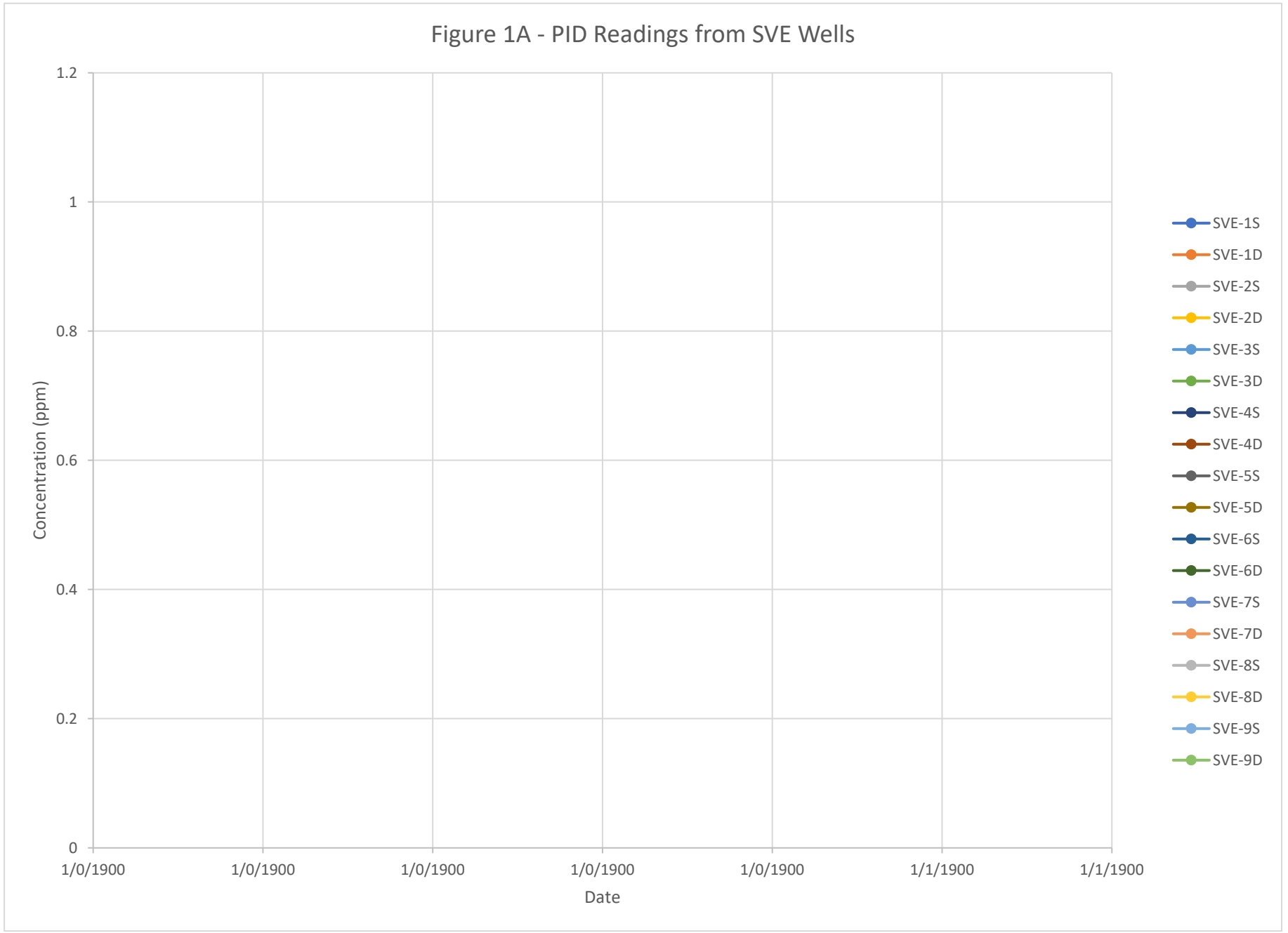
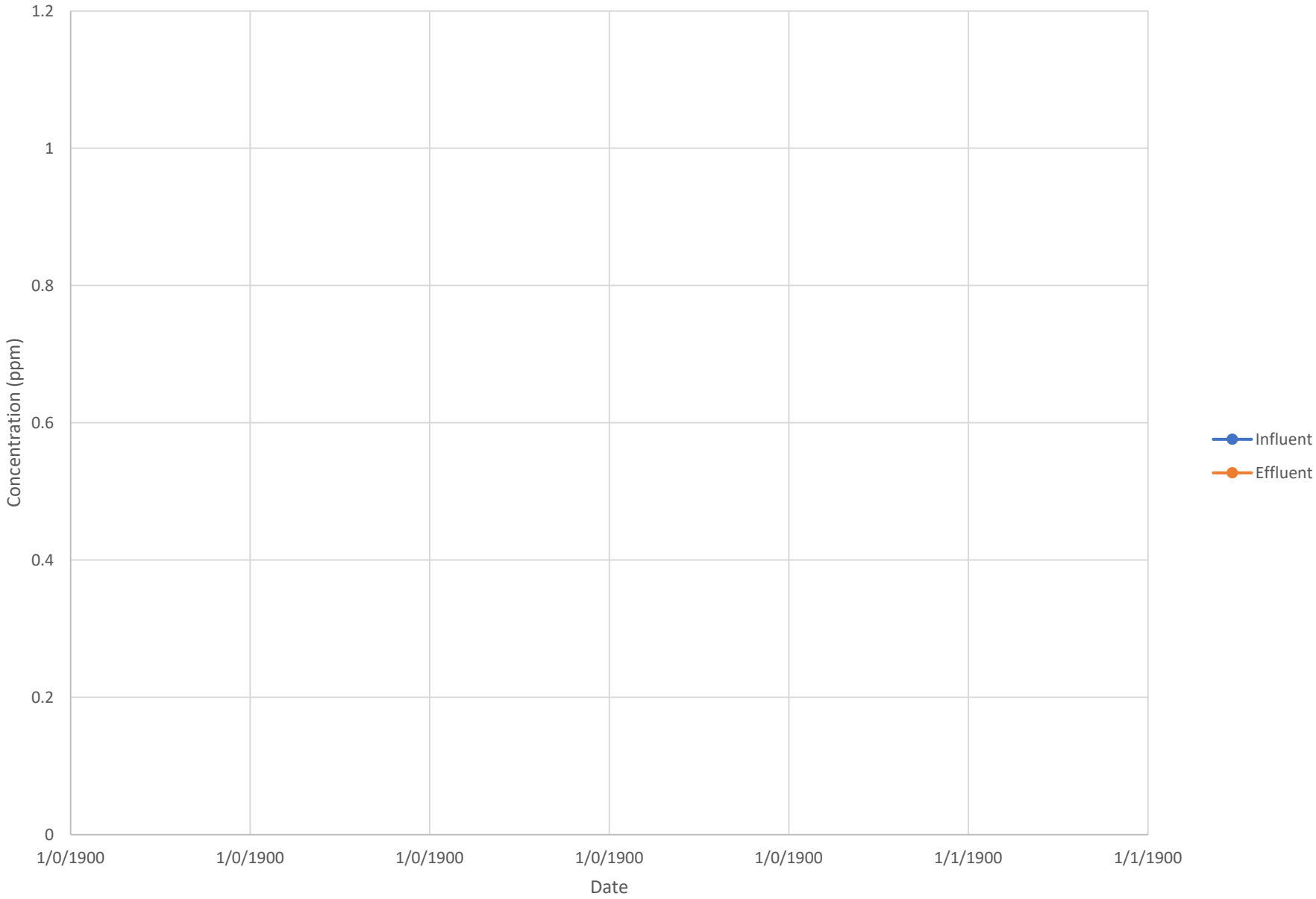


Figure 1A - PID Readings from SVE Wells
1.2
1
0.8
0.6
0.4
0.2
0
Concentration (ppm)
1/0/1900
1/0/1900
1/0/1900
1/0/1900
1/0/1900
1/1/1900
1/1/1900
Date
SVE-1S
SVE-1D
SVE-2S
SVE-2D
SVE-3S
SVE-3D
SVE-4S
SVE-4D
SVE-5S
SVE-5D
SVE-6S
SVE-6D
SVE-7S
SVE-7D
SVE-8S
SVE-8D
SVE-9S
SVE-9D

Figure 1B - PID Readings from SVE System



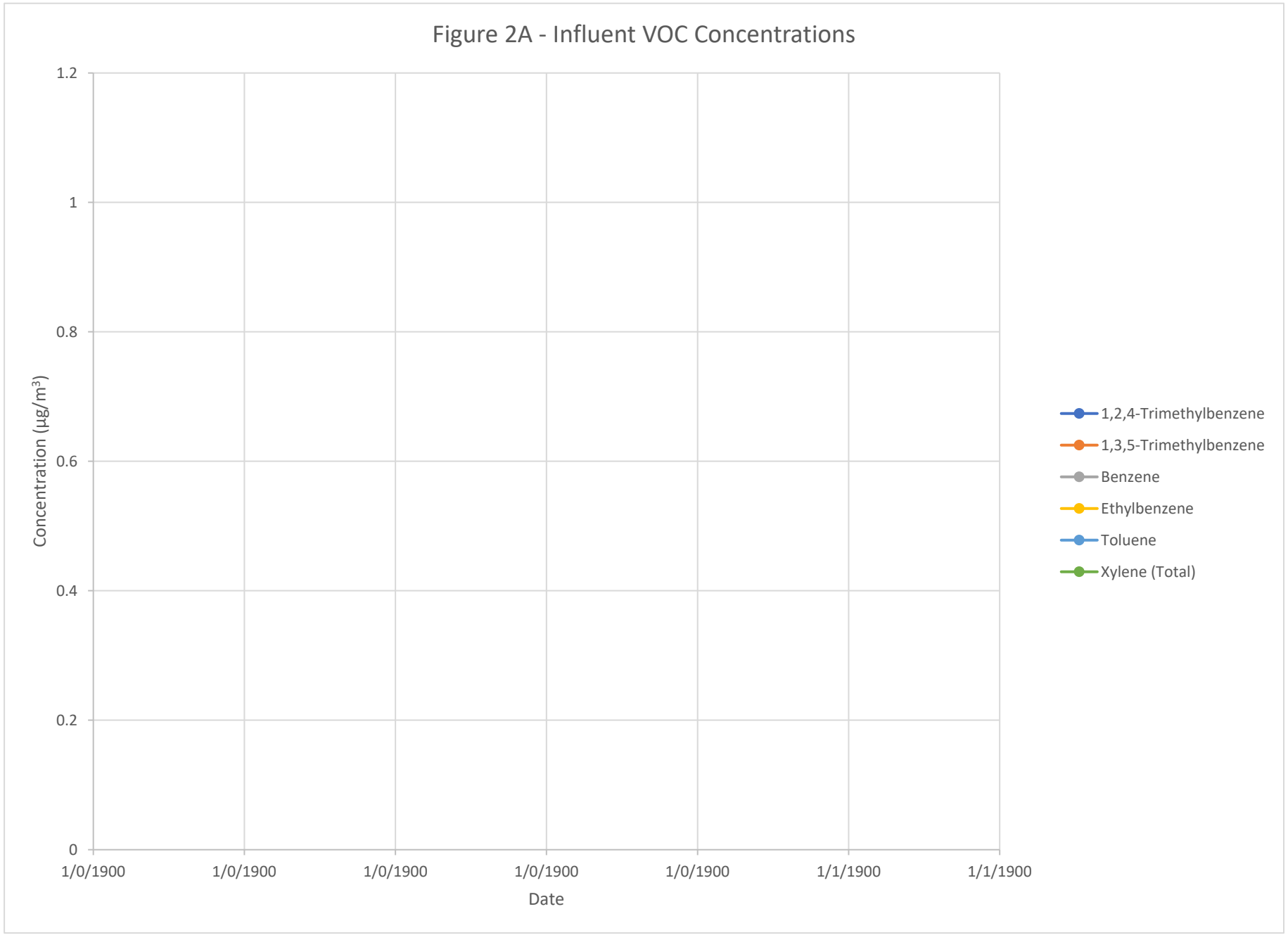


Figure 2A - Influent VOC Concentrations
1.2
1
0.8
0.6
0.4
0.2
0
Concentration (µg/m³)
1/0/1900
1/0/1900
1/0/1900
1/0/1900
1/0/1900
1/1/1900
1/1/1900
Date
1,2,4-Trimethylbenzene
1,3,5-Trimethylbenzene
Benzene
Ethylbenzene
Toluene
Xylene (Total)

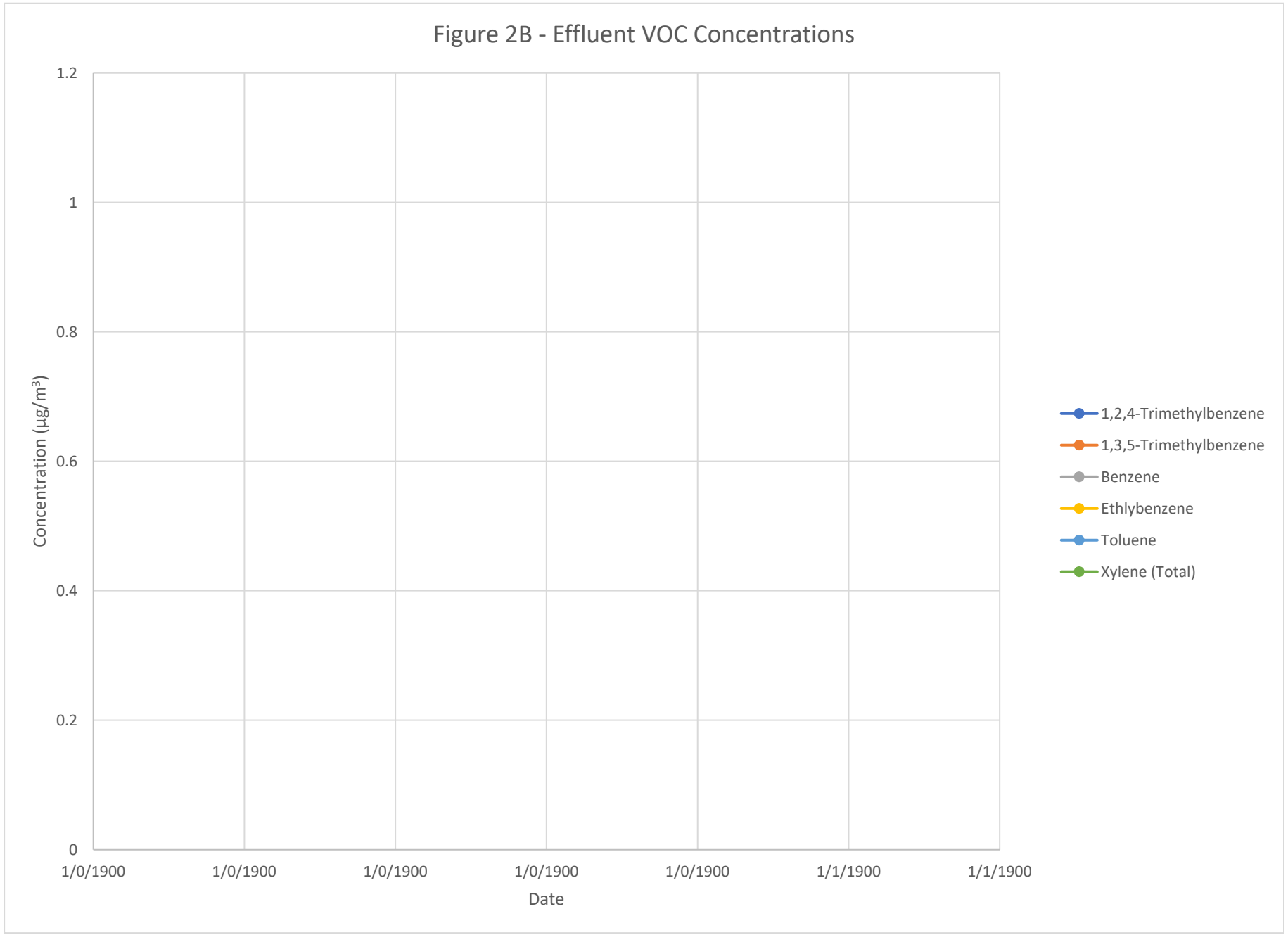


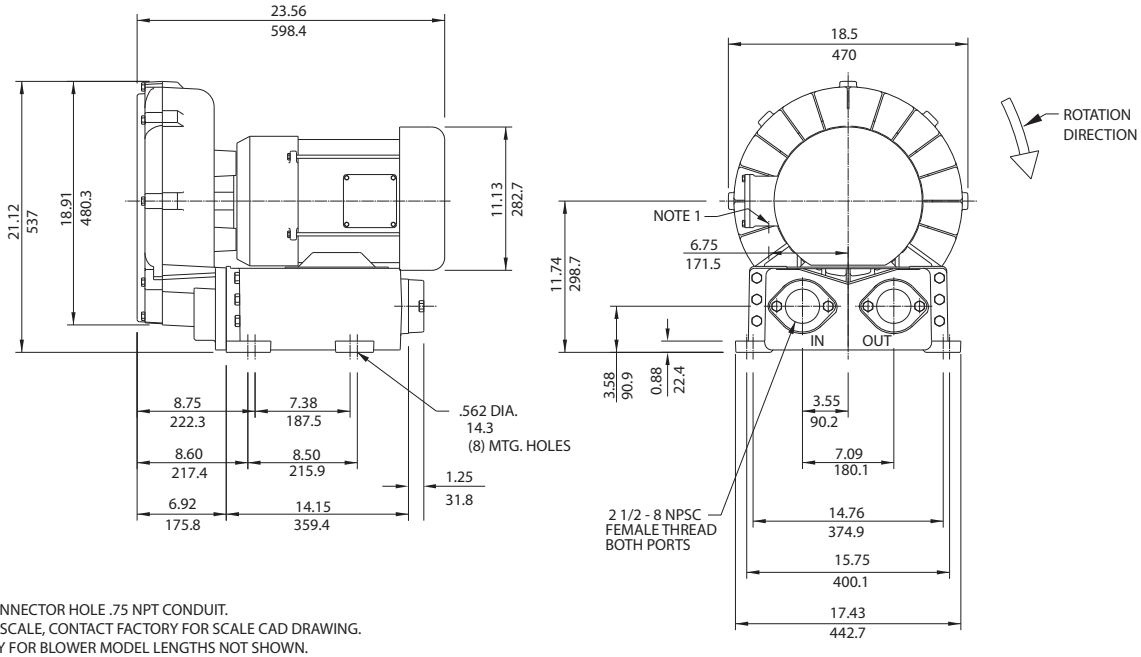
Figure 2B - Effluent VOC Concentrations
1.2
1
0.8
0.6
0.4
0.2
0
Concentration (µg/m³)
1/0/1900
1/0/1900
1/0/1900
1/0/1900
1/0/1900
1/1/1900
1/1/1900
Date
1,2,4-Trimethylbenzene
1,3,5-Trimethylbenzene
Benzene
Ethlybenzene
Toluene
Xylene (Total)

APPENDIX A
Blower Specifications

EN 808 & CP 808 Three-Phase

ROTRON®

Sealed Regenerative Blower w/Explosion-proof Motor



IN
MM

NOTES
1. TERMINAL BOX CONNECTOR HOLE .75 NPT CONDUIT.
2. DRAWING NOT TO SCALE, CONTACT FACTORY FOR SCALE CAD DRAWING.
3. CONTACT FACTORY FOR BLOWER MODEL LENGTHS NOT SHOWN.

		Part/Model Number		
		EN808BA72MXL	EN808BA86MXL	CP808FY72MXLR
Specification	Units	081229	081230	081234
Motor Enclosure - Shaft Mtl.	-	Explosion-proof-CS	Explosion-proof-CS	CHEM XP-SS
Horsepower	-	7.5	7.5	7.5
Phase - Frequency	-	Three-60 hz	Three-60 hz	Three-60 hz
Voltage	AC	230/460	575	230/460
Motor Nameplate Amps	Amps (A)	18.6/9.3	7.4	18.6/9.3
Max. Blower Amps	Amps (A)	22.0/11.0	8.1	22.0/11.0
Locked Rotor Amps	Amps (A)	126/63	56	126/63
Service Factor	-	1/1	1	1/1
Starter Size	-	1.0	1.0	1.0
Thermal Protection	-	Class B - Pilot Duty	Class B - Pilot Duty	Class B - Pilot Duty
XP Motor Class - Group	-	I-D, II-F&G	I-D, II-F&G	I-D, II-F&G
Shipping Weight	Lbs	287	287	287
	Kg	130.2	130.2	130.2

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

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

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

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

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

AMETEK®
PRECISION MOTION CONTROL
DYNAMIC FLUID SOLUTIONS

EN 808 & CP 808 Three-Phase

ROTRON®

Sealed Regenerative Blower w/Explosion-proof Motor

FEATURES

- Manufactured in the USA - ISO 9001 and NAFTA compliant
- Maximum flow: 360 SCFM
- Maximum pressure: 85 IWG
- Maximum vacuum: 90 IWG
- Standard motor: 7.5 HP, explosion-proof
- Cast aluminum blower housing, impeller , cover & manifold; cast iron flanges (threaded); teflon® lip seal
- UL & CSA approved motor with permanently sealed ball bearings for explosive gas atmospheres Class I Group D minimum
- Sealed blower assembly
- Quiet operation within OSHA standards

MOTOR OPTIONS

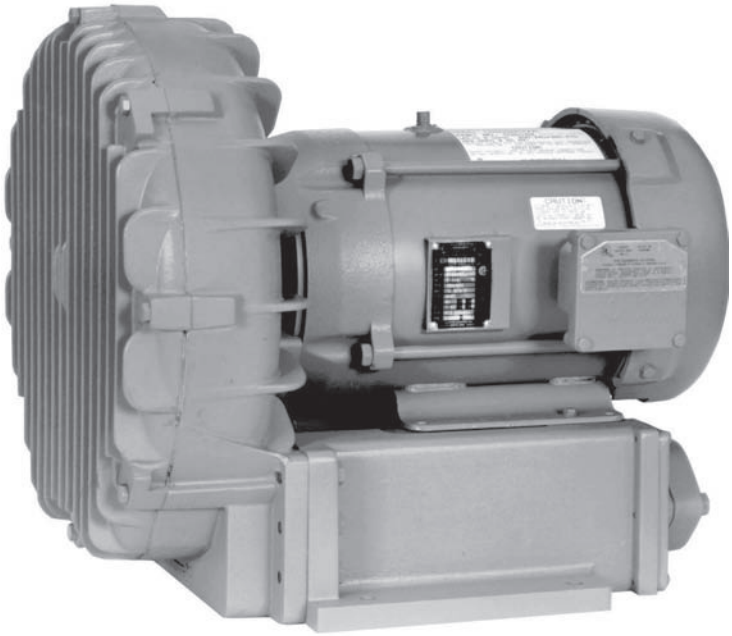
- International voltage & frequency (Hz)
- Chemical duty, high efficiency, inverter duty or industry-specific designs
- Various horsepowers for application-specific needs

BLOWER OPTIONS

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

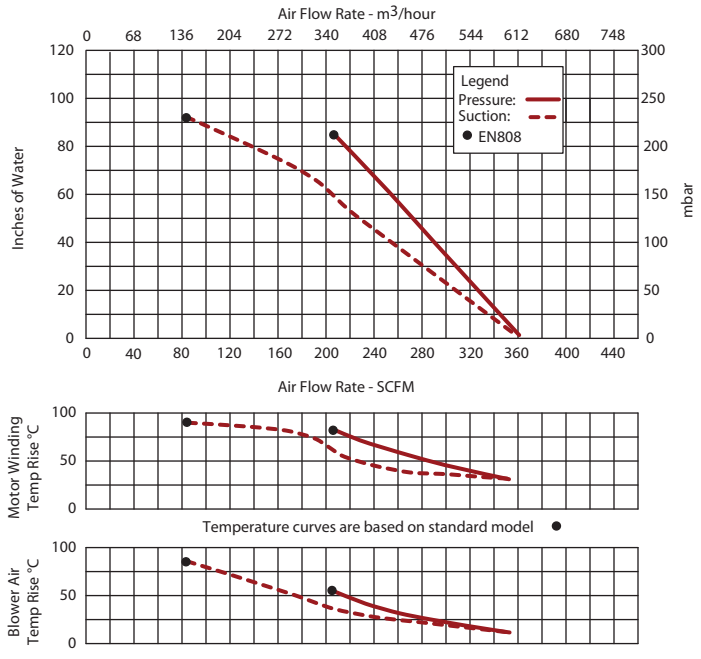
ACCESSORIES

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

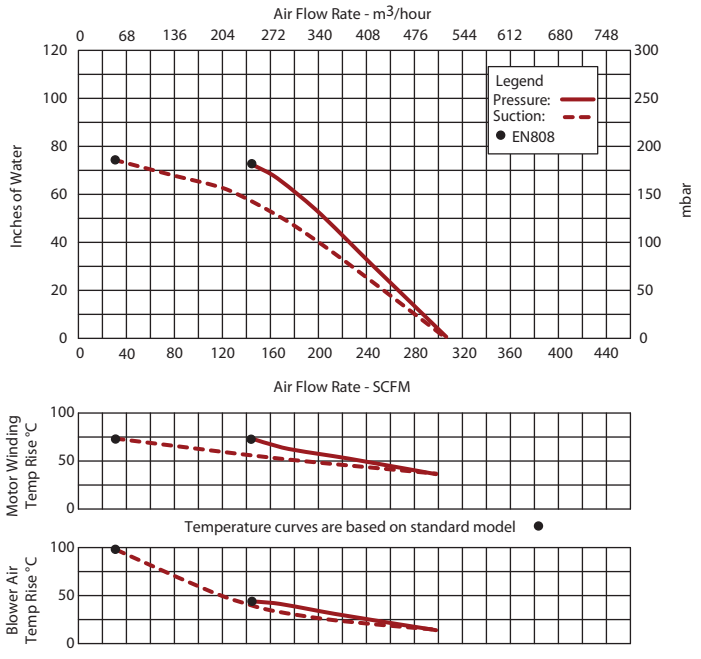


Blower Performance at Standard Conditions

60 Hz



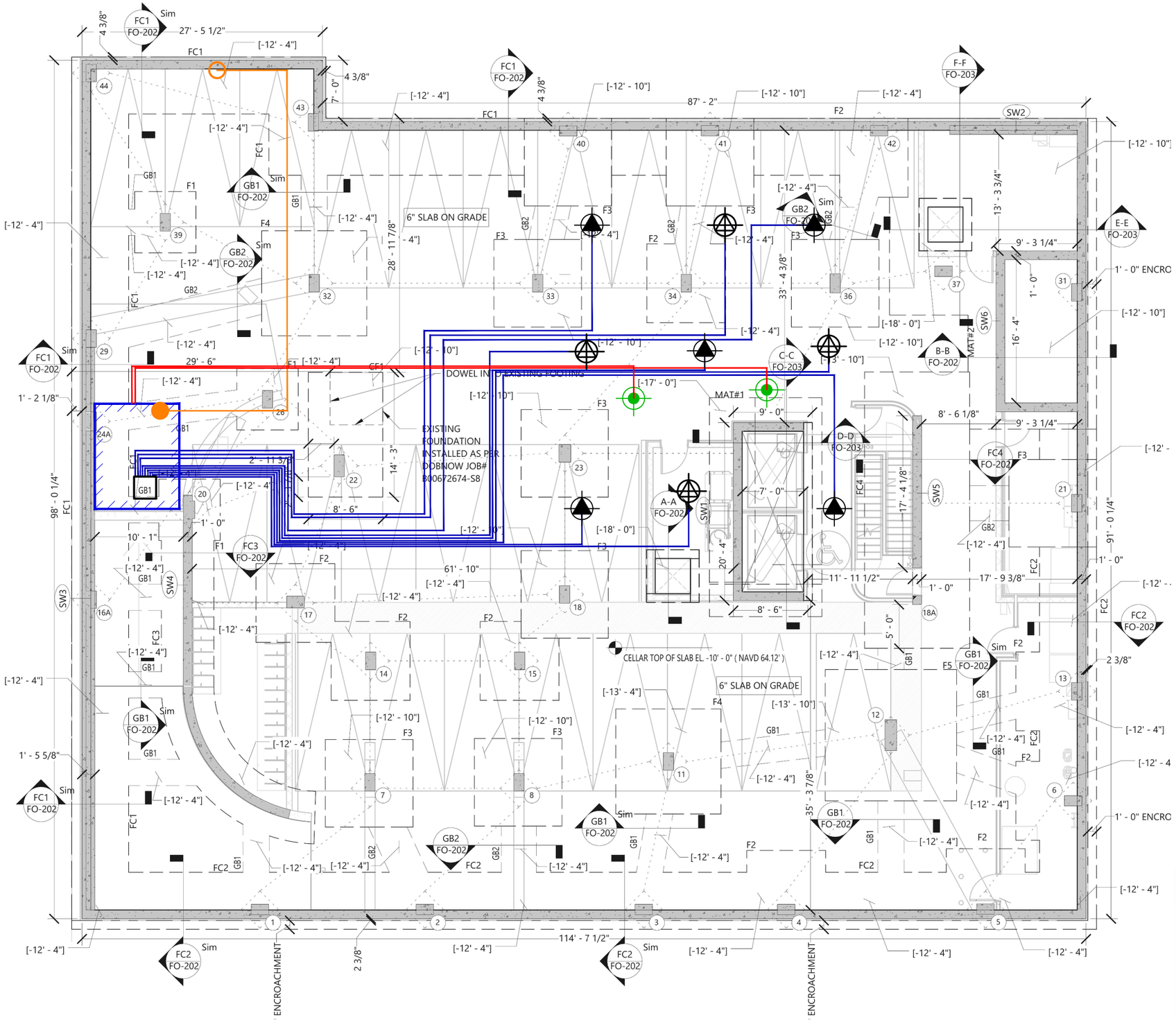
50 Hz



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

AMETEK®
PRECISION MOTION CONTROL
DYNAMIC FLUID SOLUTIONS

APPENDIX B
SVE System As-Builts



LEGEND

- SEALED WELL/FLOOR PENETRATION
- SVE 1.5-INCH SCH 40 PVC PIPE (INDICATES 2 DEDICATED SVE LINES)
- 4 X 1/4-INCH TUBING INSIDE 2-INCH PVC PIPE
- SVE TREATMENT SYSTEM SHED LOCATION
- SVE LOCATION SCREENED FROM 20-30 FT BGS AND 40-50 FT BGS (2 CO-LOCATED VAPOR EXTRACTION WELLS)
- SVE LOCATION SCREENED FROM 30-40 FT BGS AND 50-60 FT BGS (2 CO-LOCATED VAPOR EXTRACTION WELLS)
- SVE MONITORING LOCATION (4 CO-LOCATED MONITORING POINTS AT 25 FT, 35 FT, 45 FT, AND 55 FT BGS)
- SVE 4-INCH SCH 40 PVC MANIFOLD PIPED FROM SHED TO BASEMENT CEILING
- SVE 4-INCH SCH 40 PVC MANIFOLD PIPED ALONG CEILING
- CEILING PENETRATION

NOTES

1. ALL LOCATIONS ARE APPROXIMATE.
2. BASEMENT LAYOUT FROM FOUNDATION/CELLAR FLOOR PLAN, DRAWING FO-101.00, DATED 2 AUGUST 2023 BY J FRANKL ARCHITECTS.
3. SVE = SOIL VAPOR EXTRACTION
4. FT BGS = FEET BELOW GROUND SURFACE

N

0 12 24

SCALE IN FEET

HALEY ALDRICH

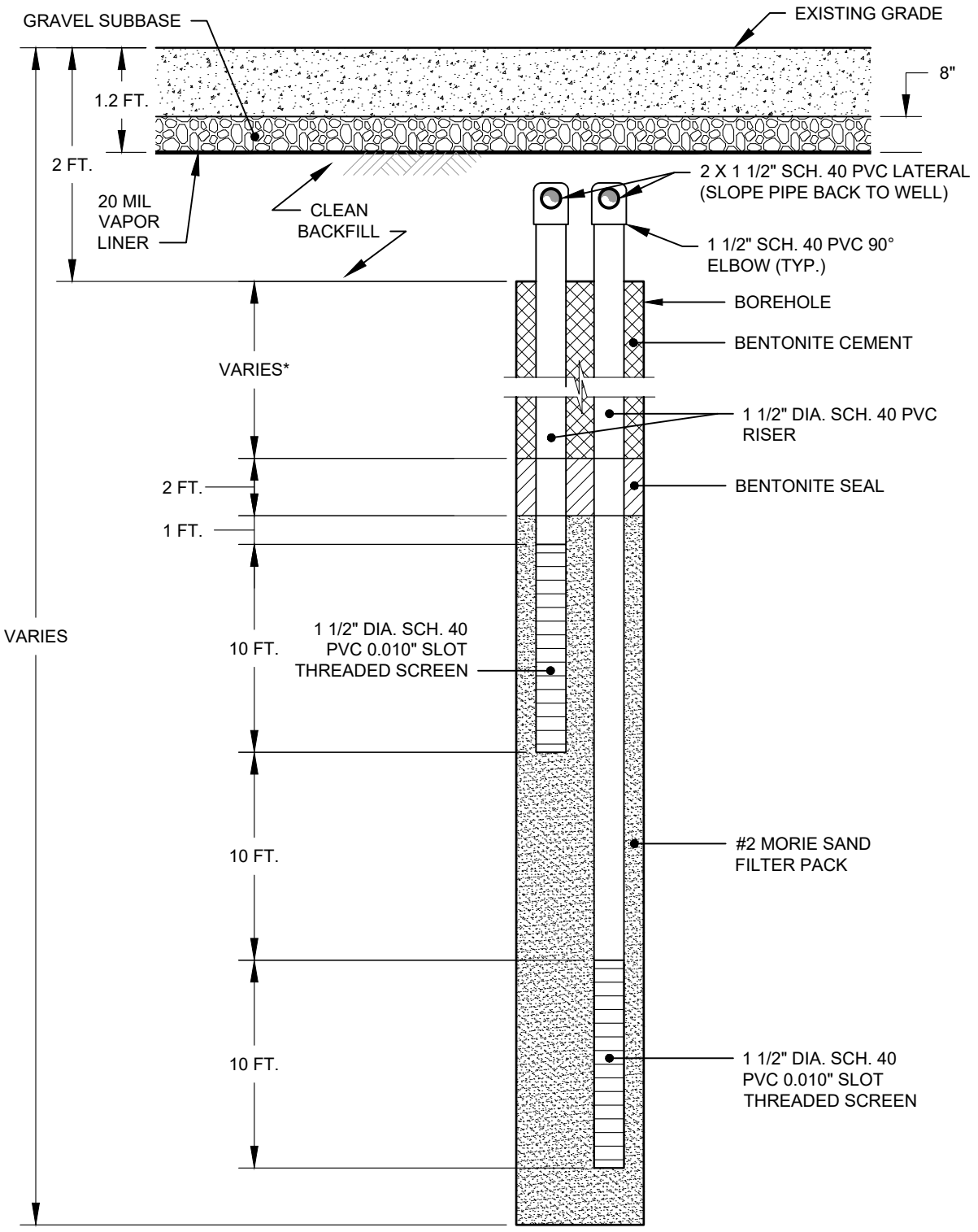
1885 ATLANTIC AVENUE REDEVELOPMENT SITE
1885 ATLANTIC AVENUE
BROOKLYN, NEW YORK

SOIL VAPOR EXTRACTION SYSTEM AS-BUILT

SCALE: AS SHOWN
JANUARY 2024

FIGURE 6

Saved by: KPOSTOLOWSKI Printed: 1/26/2024 10:19 AM Sheet: SVE-FIG 10
\\HALEYALDRICH.COM\SHARE\CF\PROJECTS\020512S\CAD\020512S_000_0009_SVE_SYSTEM_AS-BUILT PLANS.DWG



SOIL VAPOR EXTRACTION WELL

NOT TO SCALE

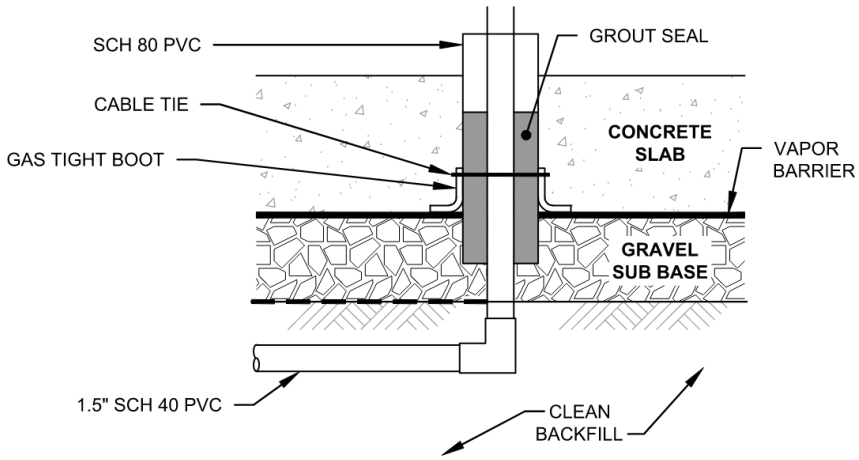
NOTES:

1. FINAL WELL DEPTH WILL VARY BASED ON LOCATION.
2. SEE SOIL VAPOR EXTRACTION SYSTEM PLAN FOR FINAL DEPTH OF EACH WELL AND PLACMENT OF WELL SCREENS.

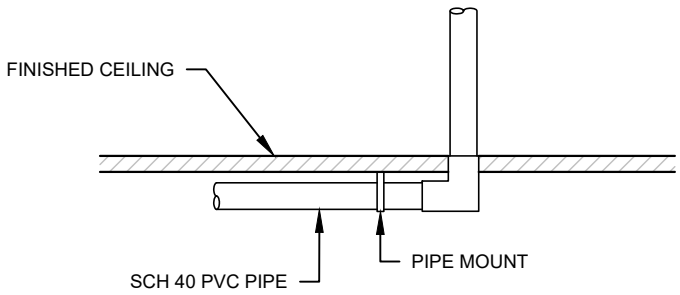
HALEY ALDRICH
1885 ATLANTIC AVENUE
BROOKLYN, NEW YORK

SOIL VAPOR EXTRACTION WELL
CONSTRUCTION DETAIL

SCALE: NTS
AUGUST 2023



SLAB PENETRATION
NOT TO SCALE

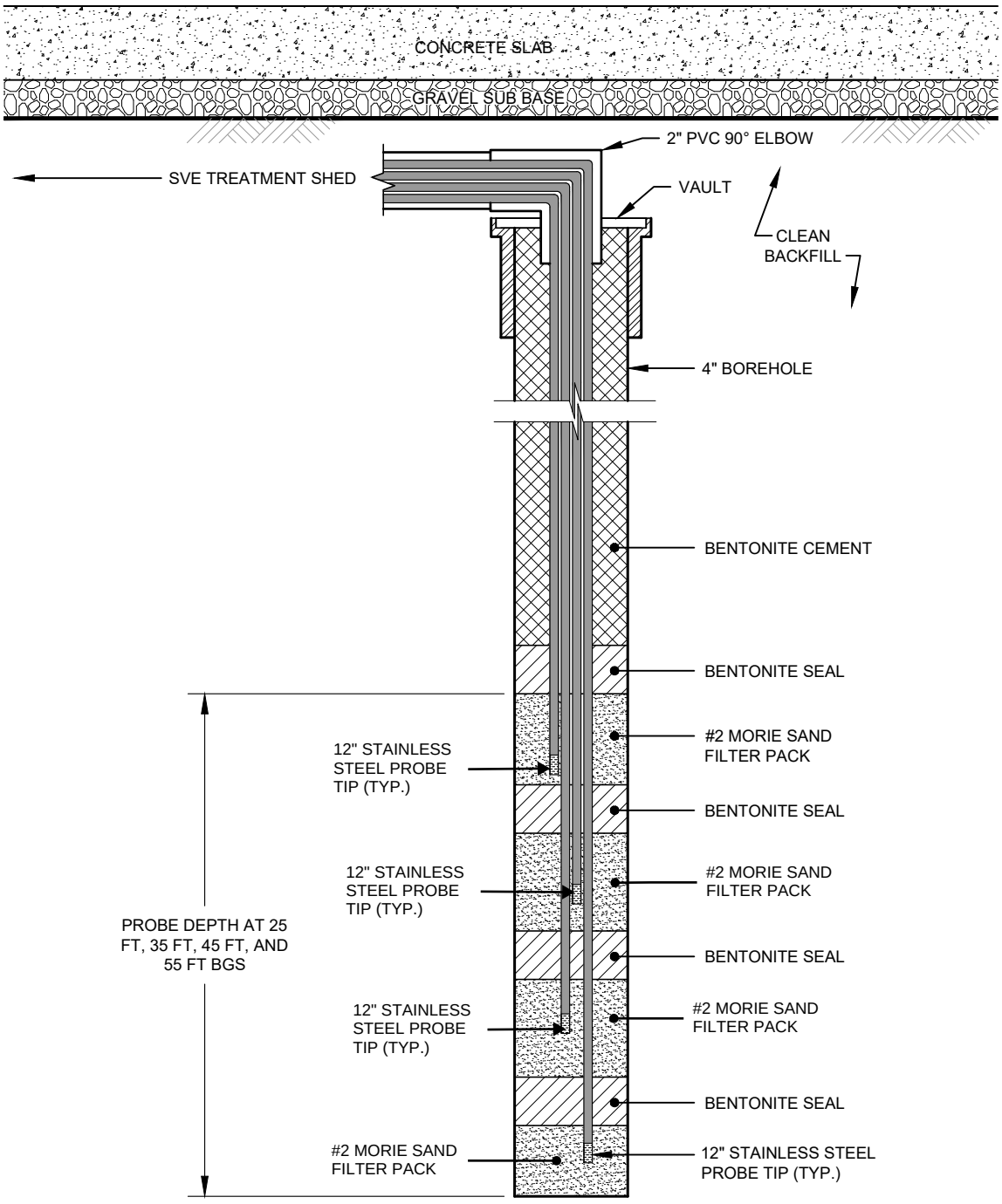


PIPE PENETRATION THROUGH CEILING
NOT TO SCALE

1885 ATLANTIC AVENUE
BROOKLYN, NEW YORK

SOIL VAPOR EXTRACTION DETAILS

SCALE: NTS
AUGUST 2023



SVE MONITORING LOCATION

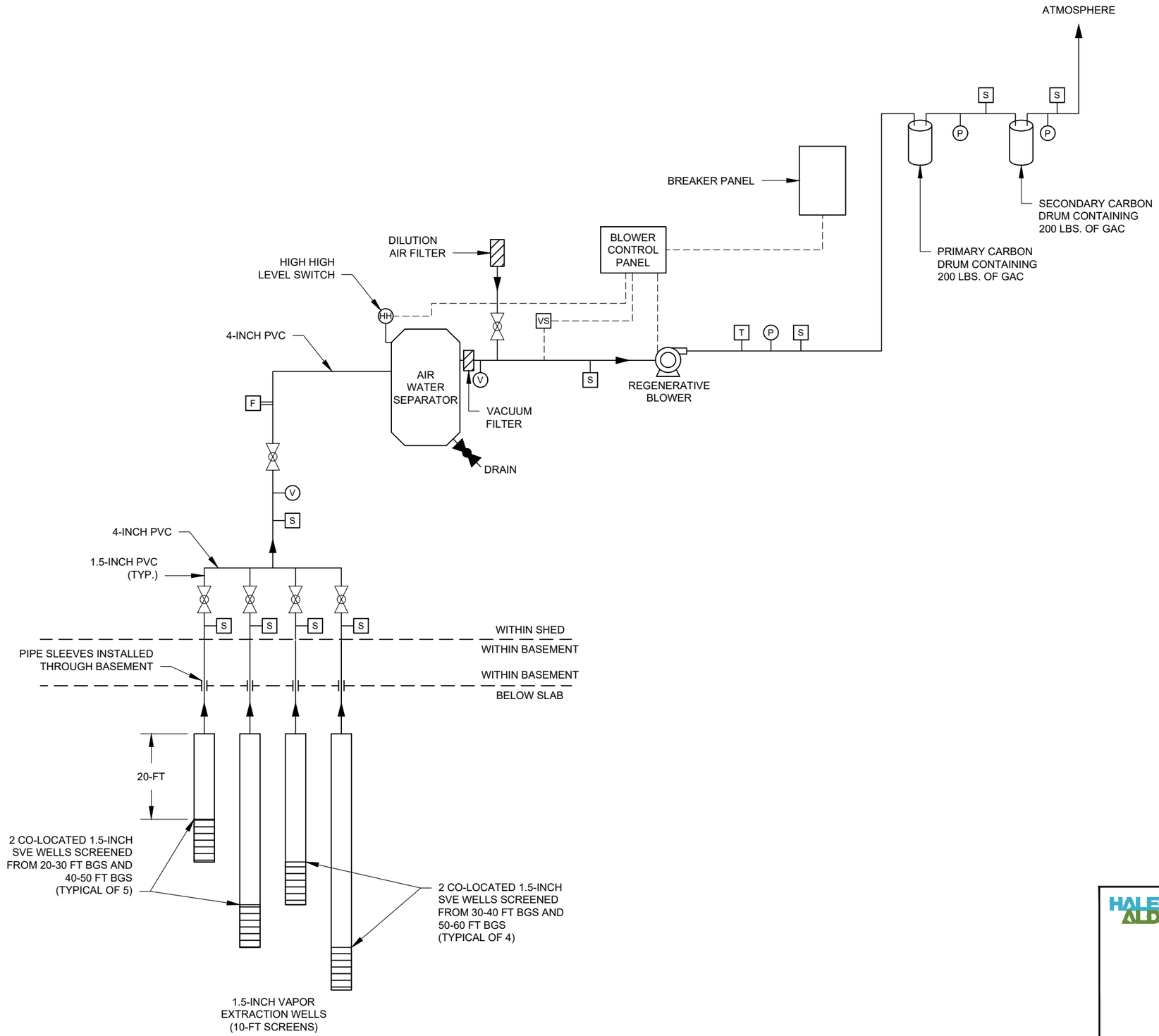
NOT TO SCALE

HALEY ALDRICH

1885 ATLANTIC AVENUE
BROOKLYN, NEW YORK

SOIL VAPOR MONITORING POINT CONSTRUCTION DETAIL

SCALE: NTS
AUGUST 2023



LEGEND

T	TEMPERATURE SWITCH/GAGE
VS	VACUUM SWITCH
F	AIRFLOW/PILOT TUBE
⋈	BALL VALVE
S	SAMPLE PORT
V	VACUUM GAGE
P	PRESSURE GAGE

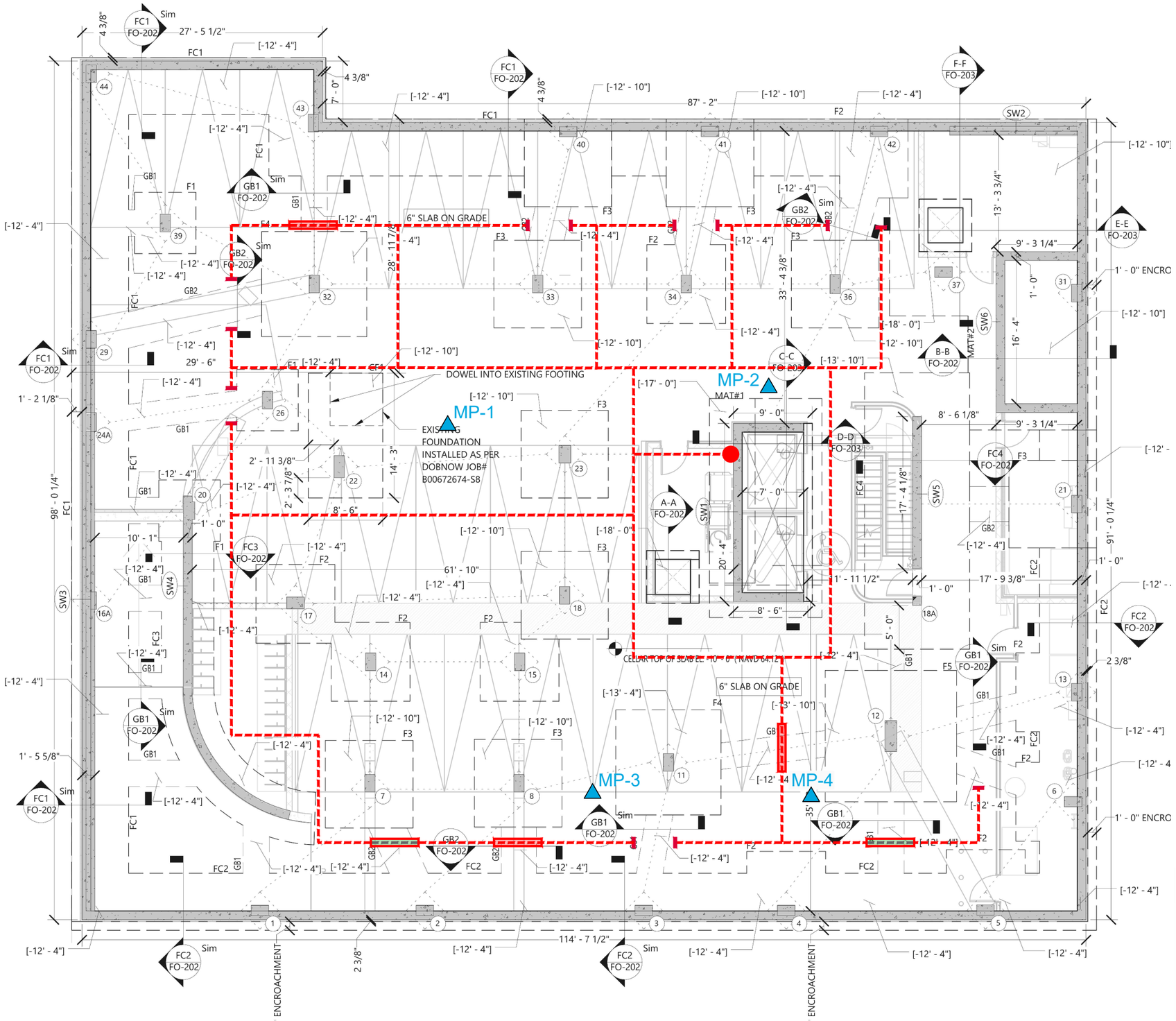
1885 ATLANTIC AVENUE
BROOKLYN, NEW YORK

PIPING AND INSTRUMENTATION DESIGN

SCALE: NTS
AUGUST 2023

Saved by: KPOSTOLOWSKI Printed: 8/25/2023 11:03 AM Sheet: SVE PID
\\HALEYALDRICH.COM\SHARE\CP\PROJECTS\0205125\CAD\0205125_000_0003_SVE PID.DWG

APPENDIX C
SSDS As-Builts



LEGEND

- MP-1 — SUB-SLAB MONITORING POINT
- 4" PERFORATED PVC PIPE
- 4" SOLID PVC END CAP
- 4" CAST IRON VERTICAL RISER PIPE
- PIPE SLEEVES THROUGH GRADE BEAM
- PIPE SLEEVES UNDER GRADE BEAM

NOTES

1. ALL LOCATIONS ARE APPROXIMATE.
2. BASEMENT LAYOUT FROM FOUNDATION/CELLAR FLOOR PLAN, DRAWING FO-101.00, DATED 2 AUGUST 2023 BY J FRANKL ARCHITECTS.

HALEY ALDRICH

1885 ATLANTIC AVENUE REDEVELOPMENT SITE
1885 ATLANTIC AVENUE
BROOKLYN, NEW YORK

PASSIVE SUB-SLAB DEPRESSURIZATION SYSTEM AS-BUILT

SCALE: AS SHOWN
JANUARY 2024

FIGURE 6

APPENDIX D
SSDS Inspection Form

ENGINEERING CONTROL INSPECTION FORM

1885 Atlantic Avenue

Brooklyn, NY

Passive Sub-Slab Depressurization System Component	Condition	No	Yes	Describe Deficiency	Any Corrective Action Performed? If so, describe
Vapor Barrier	Holes, cracks, or other physical deficiencies? (only applicable if asphalt/foundation above is damaged)				
Active Sub-Slab Depressurization System	Holes, cracks, or other physical deficiencies?				
	Blockages in SSDS piping?				
	Monitoring Points Damaged?				

Name of Inspector

Signature of Inspector

Date of Inspection

APPENDIX G
Quality Assurance Project Plan

HALEY ALDRICH

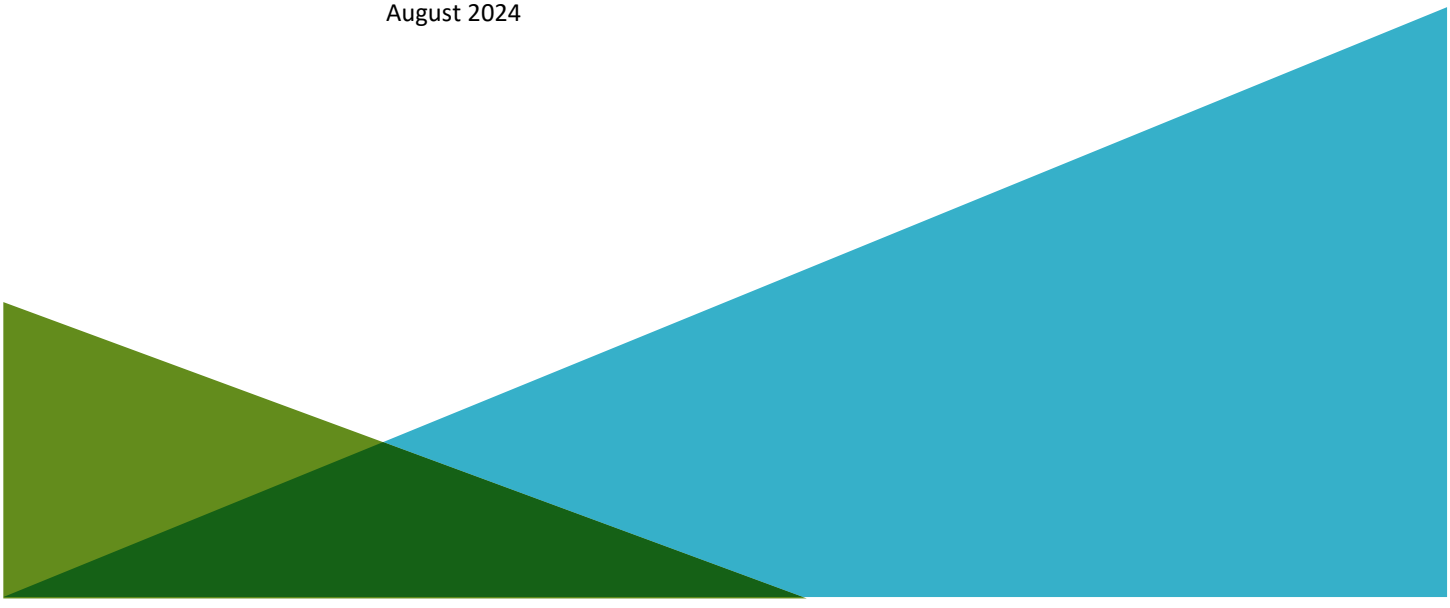
www.haleyaldrich.com

QUALITY ASSURANCE PROJECT PLAN
1885 ATLANTIC AVE
BROOKLYN, NEW YORK

by
H & A of New York Engineering and Geology, LLP
New York, New York

for
1885 Atlantic Realty LLC
Hauppauge, New York

File No. 0205125
August 2024



Executive Summary

This Quality Assurance Project Plan (QAPP) outlines the scope of the quality assurance and quality control (QA/QC) activities associated with the site monitoring activities associated with the Site Management Plan (SMP) for 1885 Atlantic Ave (Site) in Brooklyn, New York.

Protocols for sample collection, sample handling and storage, chain-of-custody procedures, and laboratory and field analyses are described herein or specifically referenced to related project documents.

Table of Contents

Table of Contents

Table of Contents

List of Tables

1. Project Description

This Quality Assurance Project Plan (QAPP) has been prepared as a component of the SMP for the 1885 Atlantic Avenue Site in Brooklyn, New York (Site).

1.1 PROJECT OBJECTIVES

The primary objective for data collection activities is to collect sufficient data necessary to confirm the results of the previous site characterization activities, potentially identify an on-site source, and to determine a course for remedial action. In addition, a qualitative exposure assessment will be conducted and will consider the nature of populations currently exposed or that have the potential to be exposed to Site-related contaminants both on- and off-site, along with describing the reasonably anticipated future land use of the site and affected off-site areas.

1.2 SITE DESCRIPTION AND HISTORY

The general Site description and Site history are provided in the Site Description and History Summary that accompanies the SMP for the Site and incorporated herein by reference.

1.3 LABORATORY PARAMETERS

- The laboratory parameters for groundwater include:
- Target Compound List Volatile Organic Compounds (VOCs) using U.S. Environmental Protection Agency (USEPA) Method 8260B

During the collection of groundwater samples, pH, specific conductivity, temperature, dissolved oxygen (DO), and oxidation/reduction potential (ORP) will be measured until stabilized.

The laboratory parameter for soil vapor, indoor air, and ambient air includes:

- VOCs using USEPA Method TO-15

Laboratory parameters for disposal samples will be determined by the disposal facility after an approved facility has been determined.

1.4 SAMPLING LOCATIONS

The SMP provides the locations of indoor air/ambient air locations and/or groundwater monitoring well locations that may be sampled as part of implementation of the remedy.

2. Project Organization and Responsibilities

This section defines the roles and responsibilities of the individuals who will perform the SMP monitoring activities. A New York State Department of Health (NYSDOH)-certified analytical laboratory will perform the analyses of environmental samples collected at the Site.

2.1 MANAGEMENT RESPONSIBILITIES

The Project Manager is responsible for managing the implementation of the SMP and monitoring and coordinating the collection of data. The Project Manager is responsible for technical quality control and project oversight. The Project Manager's responsibilities include the following:

- Acquire and apply technical and corporate resources as needed to ensure performance within budget and schedule restraints;
- Review work performed to ensure quality, responsiveness, and timelines;
- Communicate with the client point of contact concerning the progress of the monitoring activities;
- Assure corrective actions are taken for deficiencies cited during audits of SMP monitoring activities; and
- Overall site health and safety plan compliance.

2.2 QUALITY ASSURANCE (QA) RESPONSIBILITIES

The QA team will consist of a QA Officer and the Data Validation staff. QA responsibilities are described as follows:

2.2.1 QA Officer

The QA Officer reports directly to the Project Manager and will be responsible for overseeing the review of field and laboratory data. Additional responsibilities include the following:

- Assure the application and effectiveness of the QAPP by the analytical laboratory and the project staff;
- Provide input to the Project Manager as to corrective actions that may be required as a result of the above-mentioned evaluations;
- Prepare and/or review data validation and audit reports.

The QA Officer will be assisted by the data validation staff in the evaluation and validation of field and laboratory-generated data.

2.2.2 Data Validation Staff

The data validation staff will be independent of the laboratory and familiar with the analytical procedures performed. The validation will include a review of each validation criterion as prescribed by the guidelines presented in Section 9.2 of this document and be presented in a Data Usability Summary Report (DUSR) for submittal to the QA Officer.

2.3 LABORATORY RESPONSIBILITIES

Laboratory services in support of the SMP monitoring include the following personnel.

2.3.1 Laboratory Project Manager

The Laboratory Project Manager will report directly to the QA Officer and Project Manager and will be responsible for ensuring all resources of the laboratory are available on an as-required basis. The Laboratory Project Manager will also be responsible for the approval of the final analytical reports.

2.3.2 Laboratory Operations Manager

The Laboratory Operations Manager will report to the Laboratory Project Manager and will be responsible for coordinating laboratory analysis, supervising in-house chain-of-custody (COC) reports, scheduling sample analyses, overseeing data review, and overseeing preparation of analytical reports.

2.3.3 Laboratory QA Officer

The Laboratory QA Officer will have sole responsibility for review and validation of the analytical laboratory data. The Laboratory QA Officer will provide Case Narrative descriptions of any data quality issues encountered during the analyses conducted by the laboratory. The QA Officer will also define appropriate QA procedures, overseeing QA/QC documentation.

2.3.4 Laboratory Sample Custodian

The Laboratory Sample Custodian will report to the Laboratory Operations Manager and will be responsible for the following:

- Receive and inspect the incoming sample containers;
- Record the condition of the incoming sample containers;
- Sign appropriate documents;
- Verify COC and its correctness;
- Notify the Project Manager and Operations Manager of sample receipt and inspection;
- Assign a unique identification number and enter each into the sample receiving log;
- Initiate transfer of samples to laboratory analytical sections; and
- Control and monitor access/storage of samples and extracts.

2.3.5 Laboratory Technical Personnel

The laboratory technical staff will have the primary responsibility for the performance of sample analysis and the execution of the QA procedures developed to determine the data quality. These activities will include the proper preparation and analysis of the project samples in accordance with the laboratory's Quality Assurance Manual (QAM) and associated Standard Operating Procedures (SOP).

2.4 FIELD RESPONSIBILITIES

2.4.1 Field Coordinator

The Field Coordinator is responsible for the overall operation of the field team and reports directly to the Project Manager. The Field Coordinator works with the project Health & Safety Officer (HSO) to conduct operations in compliance with the project Health & Safety Plan (HASP). The Field Coordinator will facilitate communication and coordinate efforts between the Project Manager and the field team members.

Other responsibilities include the following:

- Develop and implement field-related work plans, ensuring schedule compliance, and adhering to management-developed project requirements;
- Coordinate and manage field staff;
- Perform field system audits;
- Oversee quality control for technical data provided by the field staff;
- Prepare and approve text and graphics required for field team efforts;
- Coordinate and oversee technical efforts of subcontractors assisting the field team;
- Identify problems in the field; resolve difficulties in consultation with the Project QA Officer, and Project Manager; implement and document corrective action procedures; and,
- Participate in preparation of the final reports.

2.4.2 Field Team Personnel

Field Team Personnel will be responsible for the following:

- Perform field activities as detailed in the SMP and in compliance with the Field Sampling Plan (FSP) provided in the New York State Department of Environmental Conservation (NYSDEC)-approved Remedial Investigation Work Plan (RIWP) and QAPP.
- Immediately report any accidents and/or unsafe conditions to the Site HSO and take reasonable precautions to prevent injury.

3. Sampling Procedures

The FSP in the NYSDEC-approved RIWP provides the SOPs for sampling required by the SMP. Sampling will be conducted in general accordance with the NYSDEC Technical Guidance for Site Investigation and Remediation (DER-10).

3.1 SAMPLE CONTAINERS

Sample containers for each sampling task will be provided by the laboratory performing the analysis. The containers will be cleaned by the manufacturer to meet or exceed the analyte specifications established in the USEPA's "Specifications and Guidance for Obtaining Contaminant-Free Sample Containers," April 1992, OSWER Directive #9240.0-0.5A. Certificates of analysis for each lot of sample containers used will be maintained by the laboratory.

The appropriate sample containers, preservation method, maximum holding times, and handling requirements for each sampling task are provided in Table I.

3.2 SAMPLE LABELING

Each sample will be labeled with a unique sample identifier that will facilitate tracking and cross-referencing of sample information. Equipment rinse blank and field duplicate samples also will be numbered with a unique sample identifier to prevent analytical bias of field QC samples.

Refer to the FSP in the NYSDEC-approved RIWP for the sample labeling procedures.

3.3 FIELD QC SAMPLE COLLECTION

3.3.1 Field Duplicate Sample Collection

3.3.1.1 Water Samples

Field duplicate samples will be collected by filling the first sample container to the proper level and sealing and then repeating for the second set of sample containers.

1. The samples are properly labeled as specified in Section 3.2.
2. Steps 1 through 4 are repeated for the bottles for each analysis. The samples are collected in order of decreasing analyte volatility as detailed in Section 3.3.1.
3. COC documents are executed.
4. The samples will be handled as specified in Table I.

4. Custody Procedures

Sample custody is addressed in three parts: field sample collection, laboratory analysis, and final project files. Custody of a sample begins when it is collected by or transferred to an individual and ends when that individual relinquishes or disposes of the sample.

A sample is under custody if:

1. The item is in actual possession of a person;
2. The item is in the view of the person after being in actual possession of the person;
3. The item was in actual possession and subsequently stored to prevent tampering; or
4. The item is in a designated and identified secure area.

4.1 FIELD CUSTODY PROCEDURES

Field personnel will keep written records of field activities on applicable preprinted field forms or in a bound field notebook to record data-collecting activities. These records will be written legibly in ink and will contain pertinent field data and observations. Entry errors or changes will be crossed out with a single line, dated, and initialed by the person making the correction. Field forms and notebooks will be periodically reviewed by the Field Coordinator.

The beginning of each entry in the logbook or preprinted field form will contain the following information:

- Date;
- Start time;
- Weather;
- Names of field personnel (including subcontractors);
- Level of personal protection used at the Site; and,
- Names of all visitors and the purpose of their visit.

For each measurement and sample collected, the following information will be recorded:

- Detailed description of sample location;
- Equipment used to collect sample or make measurement and the date equipment was calibrated;
- Time sample was collected;
- Description of the sample conditions;
- Depth sample was collected (if applicable);
- Volume and number of containers filled with the sample; and,
- Sampler's identification.

4.1.1 Field Procedures

The following procedure describes the process to maintain the integrity of the samples:

- Upon collection, samples are placed in the proper containers. In general, samples collected for organic analysis will be placed in pre-cleaned glass containers and samples collected for inorganic analysis will be placed in pre-cleaned plastic (polyethylene) bottles. Refer to the FSP for sample packaging procedures.
- Samples will be assigned a unique sample number and will be affixed to a sample label. Refer to the FSP for sample labeling procedures.
- Samples will be properly and appropriately preserved by field personnel in order to minimize loss of the constituent(s) of interest due to physical, chemical, or biological mechanisms.
- Appropriate volumes will be collected to ensure that the appropriate reporting limits can be successfully achieved and that the required QC sample analyses can be performed.

4.1.2 Transfer of Custody and Shipment Procedures

- A COC record will be completed at the time of sample collection and will accompany each shipment of project samples to the laboratory. The field personnel collecting the samples will be responsible for the custody of the samples until the samples are relinquished to the laboratory. Sample transfer will require the individuals relinquishing and receiving the samples to sign, date and note the time of sample transfer on the COC record.
- Samples will be shipped or delivered in a timely fashion to the laboratory so that holding times and/or analysis times as prescribed by the methodology can be met.
- Samples will be transported in containers (coolers) which will maintain the refrigeration temperature for those parameters for which refrigeration is required in the prescribed preservation protocols.
- Samples will be placed in an upright position and limited to one layer of samples per cooler. Additional bubble wrap or packaging material will be added to fill the cooler. Shipping containers will be secured with strapping tape and custody tape for shipment to the laboratory.
- When samples are split with the NYSDEC representatives, a separate COC will be prepared and marked to indicate with whom the samples are shared. The person relinquishing the samples will require the representative's signature acknowledging sample receipt.
- If samples are sent by a commercial carrier, a bill of lading will be used. A copy of the bill of lading will be retained as part of the permanent record. Commercial carriers will not sign the custody record as long as the custody record is sealed inside the sample cooler and the custody tape remains intact.
- Samples will be picked up by a laboratory courier or transported to the laboratory the same day they are collected unless collected on a weekend or holiday. In these cases, the samples will be stored in a secure location until delivery to the laboratory. Additional ice will be added to the cooler as needed to maintain proper preservation temperatures.

4.2 LABORATORY COC PROCEDURES

A Sample Custodian will be designated by the laboratory and will have the responsibility to receive all incoming samples. Once received, the custodian will document if the sample is received in good condition (i.e., unbroken, cooled, etc.) and that the associated paperwork, such as COC forms has been completed. The custodian will sign the COC forms.

The custodian will also document if sufficient sample volume has been received to complete the analytical program. The Sample Custodian will then place the samples into secure, limited access storage (refrigerated storage, if required). The Sample Custodian will assign a unique number to each incoming sample for use in the laboratory. The unique number will then be entered into the sample-receiving log with the verified time and date of receipt also noted.

Consistent with the analyses requested on the COC form, analyses by the laboratory's analysts will begin in accordance with the appropriate methodologies. Samples will be removed from secure storage with internal COC sign-out procedures followed.

4.3 STORAGE OF SAMPLES

Empty sample bottles will be returned to secure and limited access storage after the available volume has been consumed by the analysis. Upon completion of the entire analytical work effort, samples will be disposed of by the Sample Custodian. The length of time that samples are held will be at least 30 days after reports have been submitted. Disposal of remaining samples will be completed in compliance with all federal, state, and local requirements.

4.4 FINAL PROJECT FILES CUSTODY PROCEDURES

The final project files will be the central repository for all documents with information relevant to sampling and analysis activities as described in this QAPP. The H & A of New York Engineering and Geology, LLP (Haley & Aldrich of New York) Project Manager will be the custodian of the project file. The project files including all relevant records, reports, logs, field notebooks, pictures, subcontractor reports, and data reviews will be maintained in a secured, limited access area and under custody of the Project Director or his designee.

The final project file will include the following:

- Project plans and drawings
- Field data records
- Sample identification documents and soil boring/monitoring well logs
- All COC documentation
- Correspondence
- References, literature
- Laboratory data deliverables
- Data validation and assessment reports
- Progress reports, QA reports

- Final report

The laboratory will be responsible for maintaining analytical logbooks, laboratory data and sample COC documents. Raw laboratory data files and copies of hard copy reports will be inventoried and maintained by the laboratory for a period of six years at which time the laboratory will contact the Haley & Aldrich of New York Project Manager regarding the disposition of the project-related files.

5. Calibration Procedures and Frequency

5.1 FIELD INSTRUMENT CALIBRATION PROCEDURES

Several field instruments will be used for both on-site screening of samples and for health and safety monitoring, as described in the Construction Health and Safety Plan (CHASP). On-site air monitoring for health and safety purposes may be accomplished using a vapor detection device, such as a photoionization detector (PID).

Field instruments will be calibrated at the beginning of each day and checked during field activities to verify performance. Instrument-specific calibration procedures will be performed in accordance with the instrument manufacturer's requirements.

5.2 LABORATORY INSTRUMENT CALIBRATION PROCEDURES

Reference materials of known purity and quality will be utilized for the analysis of environmental samples. The laboratory will carefully monitor the preparation and use of reference materials including solutions, standards, and reagents through well-documented procedures.

All solid chemicals and acids/bases used by the laboratory will be rated as "reagent grade" or better. All gases will be "high" purity or better. All Standard Reference Materials (SRMs) or Performance Evaluation (PE) materials will be obtained from approved vendors of the National Institute of Standards and Technology (NIST; formerly National Bureau of Standards), the USEPA Environmental Monitoring Support Laboratories (EMSL), or reliable Cooperative Research and Development Agreement (CRADA) certified commercial sources.

6. Analytical Procedures

Analytical procedures to be utilized for analysis of environmental samples will be based on referenced USEPA analytical protocols and/or project-specific SOP.

6.1 FIELD ANALYTICAL PROCEDURES

Field analytical procedures include the measurement of pH, temperature, ORP, DO, and specific conductivity during sampling of groundwater, and the qualitative measurement of VOCs during the collection of soil samples.

a

6.2 LABORATORY ANALYTICAL PROCEDURES

Laboratory analyses will be based on the USEPA methodology requirements promulgated in:

- "Test Methods for Evaluating Solid Waste," SW-846 EPA, Office of Solid Waste, and promulgated updates, 1986.
- "Air Method, Toxic Organics-15 (TO-15): Compendium of Methods for the Determination of Toxic Organic Compounds in Ambient Air, Second Edition: Determination of Volatile Organic Compounds (VOCs) in Air Collected in Specially-Prepared Canisters and Analyzed by Gas Chromatography/Mass Spectrometry (GC/MS)." USEPA, 1999, and promulgated updates.

6.2.1 List of Project Target Compounds and Laboratory Detection Limits

The laboratory reporting limits (RLs) and associated method detection limits (MDLs) for the target analytes and compounds for the environmental media to be analyzed are presented in Table I. MDLs have been experimentally determined by the project laboratory using the method provided in 40 CFR, Part 136 Appendix B.

Laboratory parameters for soil vapor and indoor air samples are listed in the SMP. Laboratory parameters for disposal samples will be determined by the disposal facility after an approved facility has been determined.

6.2.2 List of Method-Specific Quality Control (QC) Criteria

The laboratory SOPs include a section that presents the minimum QC requirements for the project analyses. Section 7.0 references the frequency of the associated QC samples for each sampling effort and matrix.

7. Internal Quality Control Checks

This section presents the internal quality control checks that will be employed for field and laboratory measurements.

7.1 FIELD QUALITY CONTROL

7.1.1 Field Blanks

Internal quality control checks will include analysis of field blanks to validate equipment cleanliness. Whenever possible, dedicated equipment will be employed to reduce the possibility of cross-contamination of samples.

7.1.2 Trip Blanks

Trip blank samples will be prepared by the project laboratory using ASTM International (ASTM) Type II or equivalent water placed within pre-cleaned 40 milliliter (ml) VOC vials equipped with Teflon septa. Trip blanks will accompany each sample delivery group (SDG) of environmental samples collected for analysis of VOCs.

Trip blank samples will be placed in each cooler that stores and transports project samples that are to be analyzed for VOCs.

7.2 LABORATORY PROCEDURES

Procedures that contribute to maintenance of overall laboratory quality assurance and control include appropriately cleaned sample containers, proper sample identification and logging, applicable sample preservation, storage, and analysis within prescribed holding times, and use of controlled materials.

7.2.1 Field Duplicate Samples

The precision or reproducibility of the data generated will be monitored through the use of field duplicate samples. Field duplicate analysis will be performed at a frequency of one in 20 project samples.

Precision will be measured in terms of the absolute value of the relative percent difference (RPD) as expressed by the following equation:

$$RPD = [|R1-R2|/[(R1+R2)/2]] \; X \; 100\%$$

Acceptance criteria for duplicate analyses performed on solid matrices will be 100% and aqueous matrices will be 35%. RPD values outside these limits will require an evaluation of the sampling and/or analysis procedures by the project QA Officer and/or laboratory QA Director. Corrective actions may include re-analysis of additional sample aliquots and/or qualification of the data for use.

7.2.2 Matrix Spike Samples

Ten percent of each project sample matrix for each analytical method performed will be spiked with known concentrations of the specific target compounds/analytes.

The amount of the compound recovered from the sample compared to the amount added will be expressed as a percent recovery. The percent recovery of an analyte is an indication of the accuracy of an analysis within the Site-specific sample matrix. Percent recovery will be calculated for MS/MSD using the following equation.

$$\%\ Recovery = \frac{Spiked\ Sample - Background}{Known Value\ of\ Spike} x100\%$$

If the quality control value falls outside the control limits (UCL or LCL) due to sample matrix effects, the results will be reported with appropriate data qualifiers. To determine the effect a non-compliant MS recovery has on the reported results, the recovery data will be evaluated as part of the validation process.

7.2.3 Laboratory Control Sample (LCS) Analyses

The laboratory will perform LCS analyses prepared from SRMs. The SRMs will be supplied from an independent manufacturer and traceable to NIST materials with known concentrations of each target analyte to be determined by the analytical methods performed. In cases where an independently supplied SRM is not available, the LCS may be prepared by the laboratory from a reagent lot other than that used for instrument calibration.

The laboratory will evaluate LCS analyses in terms of percent recovery using the most recent laboratory-generated control limits.

LCS recoveries that do not meet acceptance criteria will be deemed invalid. Analysis of project samples will cease until an acceptable LCS analysis has been performed. If sample analysis is performed in association with an out-of-control LCS sample analysis, the data will be deemed invalid.

Corrective actions will be initiated by the Haley & Aldrich of New York QA Officer and/or Laboratory QA Officer to investigate the problem. After the problem has been identified and corrected, the solution will be noted in the instrument run logbook and re-analysis of project samples will be performed, if possible.

The analytical anomaly will be noted in the SDG Case Narrative and reviewed by the Data Validator. The Data Validator will confirm that appropriate corrective actions were implemented and recommend the applicable use of the affected data.

7.2.4 Surrogate Compound/Internal Standard Recoveries

For VOCs, surrogates will be added to each sample prior to analysis to establish purge and trap efficiency. Quantitation will be accomplished via internal standardization techniques.

The recovery of surrogate compounds and internal standards will be monitored by laboratory personnel to assess possible Site-specific matrix effects on instrument performance.

For semi-volatile organics analyses, surrogates will be added to the raw sample to assess extraction efficiency. Internal standards will be added to all sample extracts and instrument calibration standard immediately before analysis for quantitation via internal standardization techniques.

Method-specific QC limits are provided in the attached laboratory method SOPs. Surrogate compound/internal standard recoveries that do not fall within accepted QC limits for the analytical methodology performed will have the analytical results flagged with data qualifiers as appropriate by the laboratory and will not be noted in the laboratory report Case Narrative.

To ascertain the effect non-compliant surrogate compound/internal standard recoveries may have on the reported results, the recovery data will be evaluated as part of the validation process. The Data Validator will provide recommendations for corrective actions including but not limited to additional data qualification.

7.2.5 Calibration Verification Standards

Calibration verification (CV) standards will be utilized to confirm instrument calibrations and performance throughout the analytical process. CV standards will be prepared as prescribed by the respective analytical protocols. Continuing calibration will be verified by compliance with method-specific criteria prior to additional analysis of project samples.

Non-compliant analysis of CV standards will require immediate corrective action by the project laboratory QA officer and/or designated personnel. Corrective action may include re-analysis of each affected project sample, a detailed description of the problem, the corrective action undertaken, the person who performed the action, and the resolution of the problem.

7.2.6 Laboratory Method Blank Analyses

Method blank sample analysis will be performed as part of each analytical batch for each methodology performed. If target compounds are detected in the method blank samples, the reported results will be flagged by the laboratory in accordance with standard operating procedures. The Data Validator will provide recommendations for corrective actions including but not limited to additional data qualification.

8. Data Quality Objectives

Sampling that will be performed as described in the SMP is designed to produce data of the quality necessary to achieve the minimum standard requirements of the field and laboratory analytical objectives described below. These data are being obtained with the primary objective to assess levels of contaminants of concern associated with the Site.

The overall project data quality objective (DQO) is to implement procedures for field data collection, sample collection, handling, and laboratory analysis and reporting that achieve the project objectives. The following section is a general discussion of the criteria that will be used to measure achievement of the project DQO.

8.1 PRECISION

8.1.1 Definition

Precision is defined as a quantitative measure of the degree to which two or more measurements are in agreement. Precision will be determined by collecting and analyzing field duplicate samples and by creating and analyzing laboratory duplicates from one or more of the field samples. The overall precision of measurement data is a mixture of sampling and analytical factors. The analytical results from the field duplicate samples will provide data on sampling precision. The results from duplicate samples created by the laboratory will provide data on analytical precision. The measurement of precision will be stated in terms of RPD.

8.1.2 Field Precision Sample Objectives

Field precision will be assessed through collection and measurement of field duplicate samples at a rate of one duplicate per 20 investigative samples. The RPD criteria for the project field duplicate samples will be +/- 100% for soil, +/- 35 % for groundwater for parameters of analysis detected at concentrations greater than five times the laboratory RL.

8.1.3 Laboratory Precision Sample Objectives

Laboratory precision will be assessed through the analysis of laboratory control and laboratory control duplicate samples (LCS/LCSD) and matrix spike and matrix spike duplicate (MS/MSD) samples for groundwater and soil samples and the analysis of laboratory duplicate samples for air and soil vapor samples. Air and soil vapor laboratory duplicate sample analyses will be performed by analyzing the same SUMMA canister twice. The RPD criteria for the air/soil vapor laboratory duplicate samples will be +/- 35 % for parameters of analysis detected at concentrations greater than five times the laboratory RL.

8.2 ACCURACY

8.2.1 Definition

Accuracy relates to the bias in a measurement system. Bias is the difference between the observed and the "true" value. Sources of error are the sampling process, field contamination, preservation techniques, sample handling, sample matrix, sample preparation and analytical procedure limitations.

8.2.2 Field Accuracy Objectives

Sampling bias will be assessed by evaluating the results of field equipment rinse and trip blanks. Equipment rinse and trip blanks will be collected as appropriate based on sampling and analytical methods for each sampling effort.

If non-dedicated sampling equipment is used, equipment rinse blanks will be collected by passing ASTM Type II water over and/or through the respective sampling equipment utilized during each sampling effort. One equipment rinse blank will be collected for each type of non-dedicated sampling equipment used for the sampling effort. Equipment rinse blanks will be analyzed for each target parameter for the respective sampling effort for which environmental media have been collected. (Note: If dedicated or disposable sampling equipment is used, equipment rinse samples will not be collected as part of that field effort.)

Trip blank samples will be prepared by the laboratory and provided with each shipping container that includes containers for the collection of groundwater samples for the analysis of VOC. Trip blank samples will be analyzed for each VOC for which groundwater samples have been collected for analysis.

8.3 LABORATORY ACCURACY OBJECTIVES

Analytical bias will be assessed through the use of LCS and Site-specific MS sample analyses. LCS analyses will be performed with each analytical batch of project samples to determine the accuracy of the analytical system.

One set of MS/MSD analyses will be performed with each batch of 20 project samples collected for analysis to assess the accuracy of the identification and quantification of analytes within the Site-specific sample matrices. Additional sample volume will be collected at sample locations selected for the preparation of MS/MSD samples so that the standard laboratory RLs are achieved.

The accuracy of analyses that include a sample extraction procedure will be evaluated through the use of system monitoring or surrogate compounds. Surrogate compounds will be added to each sample, standard, blank, and QC sample prior to sample preparation and analysis. Surrogate compound percent recoveries will provide information on the effect of the sample matrix on the accuracy of the analyses.

8.4 REPRESENTATIVENESS

8.4.1 Definition

Representativeness expresses the degree to which sample data represent a characteristic of a population, a parameter variation at a sampling point or an environmental condition. Representativeness is a qualitative parameter that is dependent upon the design of the sampling program. The representativeness criterion is satisfied through the proper selection of sampling locations, the quantity of samples and the use of appropriate procedures to collect and analyze the samples.

8.4.2 Measures to Ensure Representativeness of Field Data

Representativeness will be addressed by prescribing sampling techniques and the rationale used to select sampling locations. Sampling locations may be biased (based on existing data, instrument surveys, observations, etc.) or unbiased (completely random or stratified-random approaches).

8.5 COMPLETENESS

8.5.1 Definition

Completeness is a measure of the amount of valid (usable) data obtained from a measuring system compared to the total amount anticipated to be obtained. The completeness goal for all data uses is that a sufficient amount of valid data be generated so that determinations can be made related to the intended data use with a sufficient degree of confidence.

8.5.2 Field Completeness Objectives

Completeness is a measure of the amount of valid measurements obtained from measurements taken in this project versus the number planned. Field completeness objective for this project will be greater than 90%.

8.5.3 Laboratory Completeness Objectives

Laboratory data completeness objective is a measure of the amount of valid data obtained from laboratory measurements. The evaluation of the data completeness will be performed at the conclusion of each sampling and analysis effort.

The completeness of the data generated will be determined by comparing the amount of valid data, based on independent validation, with the total laboratory data set. The completeness goal will be >90%.

8.6 COMPARABILITY

8.6.1 Definition

Comparability is a qualitative parameter expressing the confidence with which one data set can be compared to another.

8.6.2 Measures to Ensure Comparability of Laboratory Data

Comparability of laboratory data will be measured from the analysis of SRMs obtained from either USEPA CRADA suppliers or the NIST. The reported analytical data will also be presented in standard units of mass of contaminant within a known volume of environmental media. The standard units for various sample matrices are as follows:

- Aqueous Matrices – nanograms per liter (ng/L) for per- and polyfluoroalkyl substances (PFAS) analyses, micrograms per liter (µg/L) of media for organic analyses, and milligrams per liter (mg/L) for inorganic analyses.
- Soil Vapor and Indoor Air – micrograms per cubic meter (µg/m^3).

8.7 LEVEL OF QUALITY CONTROL EFFORT

If non-dedicated sampling equipment is used, equipment rinse blanks will be prepared by field personnel and submitted for analysis of target parameters. Equipment rinse blank samples will be analyzed to check for potential cross-contamination between sampling locations that may be introduced during the investigation. One equipment rinse blank will be collected per sampling event to the extent that non-dedicated sampling equipment is used.

If necessary, a separate equipment rinse blank sample will be collected for PFAS using the sample collection procedure described in Section 8.1.1 of the NYSDEC-approved FSP. (Note: If dedicated or disposable sampling equipment is used, equipment rinse samples will not be collected as part of that field effort.)

Trip blanks will be used to assess the potential for contamination during sample storage and shipment. Trip blanks will be provided with the sample containers to be used for the collection of groundwater samples for the analysis of VOC. Trip blanks will be preserved and handled in the same manner as the project samples. One trip blank will be included along with each shipping container containing project samples to be analyzed for VOC.

Method blank samples will be prepared by the laboratory and analyzed concurrently with all project samples to assess potential contamination introduced during the analytical process.

Field duplicate samples will be collected and analyzed to determine sampling and analytical reproducibility. One field duplicate will be collected for every 20 or fewer investigative samples collected for off-Site laboratory analysis.

Matrix spikes will provide information to assess the precision and accuracy of the analysis of the target parameters within the environmental media collected. One MS/MSD will be collected for every 20 or fewer investigative samples per sample matrix.

(Note: Soil MS/MSD samples require triple sample volume for VOC only. Aqueous MS/MSD samples require triple the normal sample volume for VOC analysis and double the volume for the remaining parameters.)

9. Data Reduction, Validation and Reporting

Data generated by the laboratory operation will be reduced and validated prior to reporting in accordance with the following procedures:

9.1 DATA REDUCTION

9.1.1 Field Data Reduction Procedures

Field data reduction procedures will be minimal in scope compared to those implemented in the laboratory setting. The pH, conductivity, temperature, turbidity, DO, ORP, and breathing zone VOC readings collected in the field will be generated from direct read instruments. The data will be written into field logbooks immediately after measurements are taken. If errors are made, data will be legibly crossed out, initialed and dated by the field member, and corrected in a space adjacent to the original entry.

9.1.2 Laboratory Data Reduction Procedures

Laboratory data reduction procedures are provided by the appropriate chapter of USEPA's "Test Methods for Evaluating Solid Waste," SW-846, Third Edition. Errors will be noted; corrections made with the original notations crossed out legibly. Analytical results for soil samples will be calculated and reported on a dry weight basis.

9.1.3 Quality Control Data

Quality control data (e.g., laboratory duplicates, surrogates, matrix spikes, and matrix spike duplicates) will be compared to the method acceptance criteria. Data determined to be acceptable will be entered into the laboratory information management system.

Unacceptable data will be appropriately qualified in the project report. Case Narratives will be prepared which will include information concerning data that fell outside acceptance limits and any other anomalous conditions encountered during sample analysis.

9.2 DATA VALIDATION

Data validation procedures of the analytical data will be performed by the Haley & Aldrich of New York QA Officer or designee using the following documents as guidance for the review process:

- "U.S. EPA National Functional Guidelines for Organic Data Review," and the "U.S. EPA National Functional Guidelines for Inorganic Data Review."
- The specific data qualifiers used will be applied to the reported results as presented and defined in the USEPA National Functional Guidelines. Validation will be performed by qualified personnel at the direction of the Haley & Aldrich of New York QA Officer. Tier 1 data validation (the equivalent of USEPA's Stage 2A validation) will be performed to evaluate data quality.
- The completeness of each data package will be evaluated by the Data Validator. Completeness checks will be administered on all data to determine that the deliverables are consistent with the NYSDEC Analytical Services Protocol (ASP) Category A and Category B data package

requirements. The validator will determine whether the required items are present and request copies of missing deliverables (if necessary) from the laboratory.

9.3 DATA REPORTING

Data reporting procedures will be carried out for field and laboratory operations as indicated below:

- Field Data Reporting: Field data reporting will be conducted principally through the transmission of report sheets containing tabulated results of measurements made in the field and documentation of field calibration activities.
- Laboratory Data Reporting: The laboratory data reporting package will enable data validation based on the protocols described above. The final laboratory data report format will include the QA/QC sample analysis deliverables to enable the development of a DUSR based on NYSDEC DER-10 Appendix 2B.

10. Performance and System Audits

A performance audit is an independent quantitative comparison with data routinely obtained in the field or the laboratory. Performance audits include two separate, independent parts: internal and external audits.

10.1 FIELD PERFORMANCE AND SYSTEM AUDITS

10.1.1 Internal Field Audit Responsibilities

Internal audits of field activities will be initiated at the discretion of the Project Manager and will include the review of sampling and field measurements. The audits will verify that all procedures are being followed. Internal field audits will be conducted periodically during the project. The audits will include examination of the following:

- Field sampling records, screening results, instrument operating records
- Sample collection
- Handling and packaging in compliance with procedures
- Maintenance of QA procedures
- COC reports

10.1.2 External Field Audit Responsibilities

External audits may be conducted by the Project Coordinator at any time during the field operations. These audits may or may not be announced and are at the discretion of the NYSDEC. The external field audits can include (but are not limited to) the following:

- Sampling equipment decontamination procedures
- Sample bottle preparation procedures
- Sampling procedures
- Examination of health and safety plans
- Procedures for verification of field duplicates
- Field screening practices

10.2 LABORATORY PERFORMANCE AND SYSTEM AUDITS

10.2.1 Internal Laboratory Audit Responsibilities

The laboratory system audits are typically conducted by the laboratory QA Officer or designee on an annual basis. The system audit will include an examination of laboratory documentation including sample receiving logs, sample storage, chain-of-custody procedures, sample preparation and analysis and instrument operating records.

At the conclusion of internal system audits, reports will be provided to the laboratory's operating divisions for appropriate comment and remedial/corrective action where necessary. Records of audits and corrective actions will be maintained by the Laboratory QA Officer.

10.2.2 External Laboratory Audit Responsibilities

External audits will be conducted as required, by the NYSDOH or designee. External audits may include any of the following:

- Review of laboratory analytical procedures
- Laboratory on-site visits
- Submission of performance evaluation samples for analysis

Failure of any of the above audit procedures can lead to laboratory de-certification. An audit may consist of but not limited to:

- Sample receipt procedures
- Custody, sample security and log-in procedures
- Review of instrument calibration logs
- Review of QA procedures
- Review of log books
- Review of analytical SOPs
- Personnel interviews

A review of a data package from samples recently analyzed by the laboratory can include (but not be limited to) the following:

- Comparison of resulting data to the SOP or method
- Verification of initial and continuing calibrations within control limits
- Verification of surrogate recoveries and instrument timing results
- Review of extended quantitation reports for comparisons of library spectra to instrument spectra, where applicable
- Assurance that samples are run within holding times

11. Preventive Maintenance

11.1 FIELD INSTRUMENT PREVENTIVE MAINTENANCE

The field equipment preventive maintenance program is designed to ensure the effective completion of the sampling effort and to minimize equipment down time. Program implementation is concentrated in three areas:

- Maintenance responsibilities
- Maintenance schedules
- Inventory of critical spare parts and equipment

The maintenance responsibilities for field equipment will be assigned to the task leaders in charge of specific field operations. Field personnel will be responsible for daily field checks and calibrations and for reporting any problems with the equipment. The maintenance schedule will follow the manufacturer's recommendations. In addition, the field personnel will be responsible for determining that an inventory of spare parts will be maintained with the field equipment. The inventory will primarily contain parts that are subject to frequent failure, have limited useful lifetimes and/or cannot be obtained in a timely manner.

In addition to regular maintenance, the field personnel will be responsible for decontaminating monitoring equipment. Because monitoring equipment is difficult to decontaminate, care should be exercised to prevent contamination. Sensitive monitoring instruments should be protected when they are at risk of exposure to contaminants. This may include enclosing them in plastic bags allowing an opening for the sample intake. Ventilation ports should not be covered.

If contamination does occur, decontamination of the equipment will be required; however, immersion in decontamination fluids is not possible. As such, care must be taken to wipe the instruments down with detergent-wetted wipes or sponges, and then with de-ionized water-wetted wipes or sponges.

11.2 LABORATORY INSTRUMENT PREVENTIVE MAINTENANCE

Analytical instruments at the laboratory will undergo routine and/or preventive maintenance. The extent of the preventive maintenance will be a function of the complexity of the equipment.

Generally, annual preventive maintenance service will involve cleaning, adjusting, inspecting and testing procedures designed to deduce instrument failure and/or extend useful instrument life. Between visits, routine operator maintenance and cleaning will be performed according to manufacturer's specifications by laboratory personnel.

12. Specific Routine Procedures Used to Assess Data Precision, Accuracy, and Completeness

12.1 FIELD MEASUREMENTS

Field-generated information will be reviewed by the Field Coordinator and typically includes evaluation of bound logbooks/forms, data entry and calculation checks. Field data will be assessed by the Project Coordinator who will review the field results for compliance with the established QC criteria that are specified in Section 7.0 of this QAPP. The accuracy of pH and specific conductance will be assessed using daily instrument calibration, calibration check, and blank data. Accuracy will be measured by determining the percent recovery (% R) of calibration check standards. Precision of the pH and specific conductance measurements will be assessed on the basis of the reproducibility of duplicate readings of a field sample and will be measured by determining the RPD. Accuracy and precision of the soil VOC screening will be determined using duplicate readings of calibration checks. Field data completeness will be calculated using the following equation:

$$\text{Completeness} = \frac{\text{Valid (usable) Data Obtained}}{\text{Total Data Planned}} \text{ X } 100$$

12.2 LABORATORY DATA

Surrogate, internal standard and MS recoveries will be used to evaluate data quality. The laboratory quality assurance/quality control program will include the following elements:

- Precision, in terms of RPD, will be determined by relative sample analysis at a frequency of one duplicate analysis for each batch of ten project samples or a frequency of 10 percent (10%). RPD is defined as the absolute difference of duplicate measurements divided by the mean of these analyses normalized to percentage.
- Accuracy, in terms of percent recovery (recovery of known constituent additions or surrogate recoveries), will be determined by the analysis of spiked and unspiked samples. MS/MSD will be used to determine analytical accuracy. The frequency of MS/MSD analyses will be one project sample MS/MSD per set of 20 project samples.
- One method blank will be prepared and analyzed with each batch of project samples. The total number of method blank sample analyses will be determined by the laboratory analytical batch size.
- SRMs will be used for each analysis. Sources of SRM's include the USEPA, commercially available material from CRADA-certified vendors and/or laboratory-produced solutions. SRMs, when available and appropriate, will be processed and analyzed on a frequency of one per set of samples.
- Completeness is the evaluation of the amount of valid data generated versus the total set of data produced from a particular sampling and analysis event. Valid data is determined by independent confirmation of compliance with method-specific and project-specific data quality objectives. The calculation of data set completeness will be performed by the following equation.

$$\frac{\textit{Number of Valid Sample Results}}{\textit{Total Number of Samples Planned}} X\ 100 = \%\ \textit{Complete}$$

13. QA Reports

Critically important to the successful implementation of the QAPP is a reporting system that provides the means by which the program can be reviewed, problems identified, and programmatic changes made to improve the plan.

QA reports to management can include:

- Audit reports, internal and external audits with responses
- Performance evaluation sample results; internal and external sources
- Daily QA/QC exception reports/corrective actions

QA/QC corrective action reports will be prepared by the Haley & Aldrich of New York QA Officer when appropriate and presented to the project and/or laboratory management personnel so that performance criteria can be monitored for all analyses from each analytical department. The updated trend/QA charts prepared by the laboratory QA personnel will be distributed and reviewed by various levels of the laboratory management.

References

1. United States Environmental Protection Agency, (1999). EPA Requirements for Quality Assurance Project Plans for Environmental Data Operations. EPA QA/R-5 Interim Final, November 1999.

2. United States Environmental Protection Agency (1991). Preparation Aids for the Development of Category I Quality Assurance Project Plans. U.S. EPA/600/8-91/003, Risk Reduction Engineering Laboratory, Office of Research and Development, Cincinnati, Ohio, February 1991.

3. United States Environmental Protection Agency, (1993). Data Quality Objectives Process for Superfund Interim Final Guidance. U.S. EPA/540/R-93-071, Office of Solid Waste and Emergency Response (OSWER), September 1993.

4. United States Environmental Protection Agency, (1992). Specifications and Guidance for Contaminant-Free Sample Containers. OSWER Directive 9240.0-05A, April 1992.

5. United States Environmental Protection Agency. U.S. EPA National Functional Guidelines for Organic Data Review. U.S. EPA 540/R-2017-002.

6. United States Environmental Protection Agency. U.S. EPA National Functional Guidelines for Organic Data Review. U.S. EPA 540/R-2017-001.

7. United States Environmental Protection Agency. Test Methods for Evaluating Solid Waste, Office of Solid Waste, U.S. EPA, SW-846, November 1986, with updates.

8. New York State Department of Environmental Conservation, NYSDEC Analytical Services Protocol (ASP), Bureau of Environmental Investigation, 1991 with updates.

9. New York State Department of Environmental Conservation, NYSDEC, Division of Environmental Remediation, Technical Guidance for Site Investigation and Remediation, DER-10, May 2010.

TABLE

TABLE I
ANALYTICAL METHODS AND QUALITY ASSURANCE SUMMARY TABLE
1885 ATLANTIC AVENUE
BROOKLYN, NEW YORK

Analysis/Method	Sample Type	Preservation	Holding Time	Volume/Weight	Container
Volatile Organic Compounds/8260B	Groundwater	HCl, Cool, 4 ± 2 °C	14 days	120 mL	3 - 40 mL glass vials
Volatile Organic Compounds/TO-15	Indoor Air	N/A	30 days	2.7 - 6 L	1 2.7 or 6 L Summa Canister
Volatile Organic Compounds/TO-15	Soil Vapor	N/A	30 days	2.7 - 6 L	1 2.7 or 6 L Summa Canister

Notes:
1. mL - milliliters
2. L - liters
3. °C - degrees Celsius

APPENDIX H
Site Management Forms

Routine and Preventative Maintenance Checklist

SSDS Fans

Inspector's Name:

Inspection Date/Time:

Purpose: (circle one) **Biannual Inspection** **Fan Malfunction (describe)**

SSDS Fan Maintenance Checklist

Preform the steps below for every SSDS fan during a biannual inspection, or for any SSDS fan experiencing issues	**Completed Y/N**	**List Any Issues or Unusual Behavior**
1. Disconnect, lock out, and tag fan electrical power source		
2. Check all SSDS fan bearings		
3. Inspect SSDS fan drive belt for tightness and wear. Adjust/replace if required		
4. Clean/blow down centrifugal fan wheel, inlet, fan, and motor housing		
5. Grease fan shaft bearing pillow blocks		
6. Inspect fan inlet and outlet ductwork flex joints		
7. Inspect damper for proper orientation		
8. Inspect fan stack guy wires		
9. Inspect fan mounting and vibration isolators		

*Notify the NYSDEC of any fan unit/component failure. In the event that a fan component fails, the component will be replaced by a qualified engineer. The engineer will make appropriate arrangements in advance with suppliers to provide SSDS replacement parts within 12 hours notice. In the event that a fan unit fails, the fan unit will be replaced by a qualified engineer. A spare fan will be available on-site for immediate replacement in case of fan failure.

Inspector's Signature:

Summary of Green Remediation Metrics for Site Management

Site Name: _____ Site Code: _____
Address: _____ City: _____
State: _____ Zip Code: _____ County: _____

Initial Report Period (Start Date of period covered by the Initial Report submittal)
Start Date: _____

Current Reporting Period
Reporting Period From: _____ To: _____

Contact Information
Preparer's Name: _____ Phone No.: _____
Preparer's Affiliation: _____

I. Energy Usage: Quantify the amount of energy used directly on-site and the portion of that derived from renewable energy sources.

	Current Reporting Period	**Total to Date**
Fuel Type 1 (e.g. natural gas (cf))		
Fuel Type 2 (e.g. fuel oil, propane (gals))		
Electricity (kWh)		
Of that Electric usage, provide quantity:		
Derived from renewable sources (e.g. solar, wind)		
Other energy sources (e.g. geothermal, solar thermal (Btu))		

Provide a description of all energy usage reduction programs for the site in the space provided on Page 3.

II. Solid Waste Generation: Quantify the management of solid waste generated on-site.

	Current Reporting Period (tons)	**Total to Date (tons)**
Total waste generated on-site		
OM&M generated waste		
Of that total amount, provide quantity:		
Transported off-site to landfills		
Transported off-site to other disposal facilities		
Transported off-site for recycling/reuse		
Reused on-site		

Provide a description of any implemented waste reduction programs for the site in the space provided on Page 3.

III. Transportation/Shipping: Quantify the distances travelled for delivery of supplies, shipping of laboratory samples, and the removal of waste.

	Current Reporting Period (miles)	**Total to Date (miles)**
Standby Engineer/Contractor		
Laboratory Courier/Delivery Service		
Waste Removal/Hauling		

Provide a description of all mileage reduction programs for the site in the space provided on Page 3. Include specifically any local vendor/services utilized that are within 50 miles of the site.

IV. Water Usage: Quantify the volume of water used on-site from various sources.

	Current Reporting Period (gallons)	**Total to Date (gallons)**
Total quantity of water used on-site		
Of that total amount, provide quantity:		
Public potable water supply usage		
Surface water usage		
On-site groundwater usage		
Collected or diverted storm water usage		

Provide a description of any implemented water consumption reduction programs for the site in the space provided on Page 3.

V. Land Use and Ecosystems: Quantify the amount of land and/or ecosystems disturbed and the area of land and/or ecosystems restored to a pre-development condition (i.e. Green Infrastructure).

	Current Reporting Period (acres)	**Total to Date (acres)**
Land disturbed		
Land restored		

Provide a description of any implemented land restoration/green infrastructure programs for the site in the space provided on Page 3.

Description of green remediation programs reported above (Attach additional sheets if needed)
Energy Usage:
Waste Generation:
Transportation/Shipping:
Water usage:
Land Use and Ecosystems:
Other:

CONTRACTOR CERTIFICATION
I, _____ (**Name**) do hereby certify that I am _____ (**Title**) of _____ (**Contractor Name**), which is responsible for the work documented on this form. According to my knowledge and belief, all of the information provided in this form is accurate and the site management program complies with the DER-10, DER-31, and CP-49 policies. _____ **Date** **Contractor**

Groundwater Purge/Sample Log

LOW-FLOW GROUNDWATER SAMPLING RECORD

PROJECT		**H&A FILE NO.**	
LOCATION		**PROJECT MGR.**	
CLIENT		**FIELD REP**	
CONTRACTOR		**DATE**	

GROUNDWATER SAMPLING INFORMATION

Well ID:		**Well Volume:**		**Start Time:**	
Well Depth:		**Equipment:**		**Sample Time:**	
Depth to Water:					

Time	Volume purged, gallons	Temp, C (+/-3%)	Conductivity, us/cm (+/- 3%)	Dissolved Oxygen, mg/L (+/- 10%)	pH (+/-0.1)	ORP/eH, mv (+/-10mv)	Turbidity, NTU (<5 NTU)	Depth to Water (ft)

NEW YORK STATE
DEPARTMENT OF ENVIRONMENTAL CONSERVATION

Request to Import/Reuse Fill or Soil

This form is based on the information required by DER-10, Section 5.4(e) and 6NYCRR Part 360.13. Use of this form is not a substitute for reading the applicable regulations and Technical Guidance document.

SECTION 1 – SITE BACKGROUND

The allowable site use is: Choose an item

Have Ecological Resources been identified? Choose an item

Is this soil originating from the site? Choose an item

How many cubic yards of soil will be imported/reused? Choose an item

If greater than 1000 cubic yards will be imported, enter volume to be imported:

SECTION 2 – MATERIAL OTHER THAN SOIL

Is the material to be imported gravel, rock or stone? Choose an item

Does it contain less than 10%, by weight, material that passes a size 100 sieve? Choose an item

Is this virgin material from a permitted mine or quarry? Choose an item

Is this material recycled concrete or brick from a DEC registered processing facility? Choose an item

SECTION 3 - SAMPLING

Provide a brief description of the number and type of samples collected in the space below:

Example Text: 5 discrete samples were collected and analyzed for VOCs. 2 composite samples were collected and analyzed for SVOCs, Inorganics & PCBs/Pesticides.

If the material meets requirements of DER-10 section 5.4(e)5 (other material), no chemical testing needed.

SECTION 3 CONT'D - SAMPLING

Provide a brief written summary of the sampling results or attach evaluation tables (compare to DER-10, Appendix 5):

Example Text: Arsenic was detected up to 17 ppm in 1 (of 5) samples; the allowable level is 16 ppm.

If Ecological Resources have been identified use the "If Ecological Resources are Present" column in Appendix 5.

SECTION 4 – SOURCE OF FILL

Name of person providing fill and relationship to the source:

Location where fill was obtained:

Identification of any state or local approvals as a fill source:

If no approvals are available, provide a brief history of the use of the property that is the fill source:

Provide a list of supporting documentation included with this request:

The information provided on this form is accurate and complete.

_____ _____

Signature Date

_____

Print Name

_____

Firm

Revised April 2023

ENGINEERING CONTROL INSPECTION FORM

1885 Atlantic Avenue

Brooklyn, NY

Passive Sub-Slab Depressurization System Component	Condition	No	Yes	Describe Deficiency	Any Corrective Action Performed? If so, describe
Vapor Barrier	Holes, cracks, or other physical deficiencies? (only applicable if asphalt/foundation above is damaged)				
Active Sub-Slab Depressurization System	Holes, cracks, or other physical deficiencies?				
	Blockages in SSDS piping?				
	Monitoring Points Damaged?				
	SSDS accessories (listed in section 15880) damaged or not functioning properly?				
	Fan stack guy wires damaged?				
	Motor housing dusty or greasy? (If so, remove)				
	Is the spare fan unit missing?				
	Indicator lights on the Building Management System not functioning properly?				
	Bolts/set screws loose or rusty?				

ENGINEERING CONTROL INSPECTION FORM

1885 Atlantic Avenue

Brooklyn, NY

Weather conditions:
Air Temperature:
Name of Inspector
Signature of Inspector
Date of Inspection

INFLUENT AND EFFLUENT READINGS
1885 Atlantic Avenue Redevelopment Site
Brooklyn, New York

Date: _____

Weather: _____

Personnel: _____

SVE Blower Time (Previous): _____

SVE Blower Time (Current): _____

Time: _____

SYSTEM LOCATION	Time	Air Flow (cfm)	Vacuum/Pressure (IW)	PID Reading (ppm)	Temperature (°F)	Notes
Influent before VLS						
Influent after VLS						
Influent after Blower						
Effluent after Drum 1		-			-	
Effluent after Drum 2		-			-	

Notes:
cfm - cubic feet per minute
ppm - parts per million
VLS - Vapor Liquid Separator
IW - inches of water
°F - degrees Farenheit

Synoptic Water Level Measurement Log

PROJECT	
LOCATION	
CLIENT	
H&A FILE NO.	
PROJECT MANAGER	
FIELD REP.	
GAUGING DATE	
WEATHER	

MONITORING WELL ID	TIME	DEPTH TO WATER (FT BELOW TOC)	TOP OF CASING (FT)	GROUNDWATER ELEVATION (FT)

Comments:

1. Monitoring wells "X" through "X" were surveyed by "Insert Name of Surveyor" on "Day Month Year"
2. Wells were gauged on "Day Month Year"
3. Elevation refers to the North American Vertical Datum of 1988 (NAVD88).
4. All dimensions are in US survey feet.

APPENDIX I
Responsibilities of Owner and Remedial Party

Responsibilities

The responsibilities for implementing the Site Management Plan ("SMP") for the 1885 Atlantic Avenue Redevelopment site (the "site"), number C224347, are divided between the site owner(s) and a Remedial Party, as defined below. The term Remedial Party ("RP") refers to any of the following: certificate of completion holder, volunteer, applicant, responsible party, and, in the event the New York State Department of Environmental Conservation ("NYSDEC") is carrying out remediation or site management, the NYSDEC and/or an agent acting on its behalf. Solely for the purposes of this document and based upon the facts related to a particular site and the remedial program being carried out, the owner and Remedial Party is currently listed as:

1885 Atlantic Realty LLC
40 Oser Avenue, Suite 4
Hauppauge, NY 11788

Nothing on this page shall supersede the provisions of an Environmental Easement, Consent Order, Consent Decree, agreement, or other legally binding document that affects rights and obligations relating to the site.

Site Owner's Responsibilities:

1) The owner shall follow the provisions of the SMP as they relate to future construction and excavation at the site.

2) In accordance with a periodic time frame determined by the NYSDEC, the owner shall periodically certify, in writing, that all Institutional Controls set forth in an Environmental Easement remain in place and continue to be complied with. The owner shall provide a written certification to the RP, upon the RP's request, in order to allow the RP to include the certification in the site's Periodic Review Report (PRR) certification to the NYSDEC.

3) In the event the site is delisted, the owner remains bound by the Environmental Easement and shall submit, upon request by the NYSDEC, a written certification that the Environmental Easement is still in place and has been complied with.

4) The owner shall grant access to the site to the RP and the NYSDEC and its agents for the purposes of performing activities required under the SMP and assuring compliance with the SMP.

5) The owner is responsible for assuring the security of the remedial components located on its property to the best of its ability. If damage to the remedial components or vandalism is evident, the owner shall notify the site's RP and the NYSDEC in accordance with the timeframes indicated in Section 1.3 - Notifications.

6) If some action or inaction by the owner adversely impacts the site, the owner must notify the site's RP and the NYSDEC in accordance with the time frame indicated in Section 1.3 - Notifications and coordinate the performance of necessary corrective actions with the RP.

7) The owner must notify the RP and the NYSDEC of any change in ownership of the site property (identifying the tax map numbers in any correspondence) and provide contact information for the new owner of the site property. 6 NYCRR Part contains notification requirements applicable to any construction or activity changes and changes in ownership. Among the notification requirements is the following: Sixty days prior written notification must be made to the NYSDEC. Notification is to be submitted to the NYSDEC Division of Environmental Remediation's Site Control Section. Notification requirements for a change in use are detailed in Section 1.3 of the SMP. A change of use includes, but is not limited to, any activity that may increase direct human or environmental exposure (e.g., day care, school or park). A 60-Day Advance Notification Form and Instructions are found at http://www.dec.ny.gov/chemical/76250.html.

8) Until such time as the NYSDEC deems the vapor mitigation system unnecessary, the owner shall operate the system, pay for the utilities for the system's operation, and report any maintenance issues to the RP and the NYSDEC.

9) In accordance with the tenant notification law, within 15 days of receipt, the owner must supply a copy of any vapor intrusion data, that is produced with respect to structures and that exceeds NYSDOH or OSHA guidelines on the site, whether produced by the NYSDEC, RP, or owner, to the tenants on the property. The owner must otherwise comply with the tenant and occupant notification provisions of Environmental Conservation Law Article 27, Title 24.

Remedial Party Responsibilities

1) The RP must follow the SMP provisions regarding any construction and/or excavation it undertakes at the site.

2) The RP shall report to the NYSDEC all activities required for remediation, operation, maintenance, monitoring, and reporting. Such reporting includes, but is not limited to, periodic review reports and certifications, electronic data deliverables, corrective action work plans and reports, and updated SMPs.

3) Before accessing the site property to undertake a specific activity, the RP shall provide the owner advance notification that shall include an explanation of the work expected to be completed. The RP shall provide to (i) the owner, upon the owner's request, (ii) the NYSDEC, and (iii) other entities, if required by the SMP, a copy of any data generated during the site visit and/or any final report produced.

4) If the NYSDEC determines that an update of the SMP is necessary, the RP shall update the SMP and obtain final approval from the NYSDEC. Within 5 business days after NYSDEC approval, the RP shall submit a copy of the approved SMP to the owner(s).

5) The RP shall notify the NYSDEC and the owner of any changes in RP ownership and/or control and of any changes in the party/entity responsible for the operation, maintenance, and monitoring of and reporting with respect to any remedial system (Engineering Controls). The RP shall provide contact information for the new party/entity. Such activity constitutes a Change of Use pursuant to 375-1.11(d) and requires 60-days prior notice to the NYSDEC. A 60-Day Advance Notification Form and Instructions are found at http://www.dec.ny.gov/chemical/76250.html .

6) The RP shall notify the NYSDEC of any damage to or modification of the systems as required under Section 1.3 - Notifications of the SMP.

7) The RP is responsible for the proper maintenance of any installed vapor intrusion mitigation systems associated with the site, as required in Section 5 of the SMP.

8) Prior to a change in use that impacts the remedial system or requirements and/or responsibilities for implementing the SMP, the RP shall submit to the NYSDEC for approval an amended SMP.

9) Any change in use, change in ownership, change in site classification (*e.g.*, delisting), reduction or expansion of remediation, and other significant changes related to the site may result in a change in responsibilities and, therefore, necessitate an update to the SMP and/or updated legal documents. The RP shall contact the NYSDEC project manager to discuss the need to update such documents.

Change in RP ownership and/or control and/or site ownership does not affect the RP's obligations with respect to the site unless a legally binding document executed by the NYSDEC releases the RP of its obligations.

Future site owners and RPs and their successors and assigns are required to carry out the activities set forth above.

APPENDIX J
Health & Safety Plan

HALEY & ALDRICH, INC.
SITE-SPECIFIC SAFETY PLAN

FOR

1885 Atlantic Avenue Redevelopment

1885 Atlantic Avenue, Brooklyn, New York

Project/File No. 0205125

Gensuite EZ Scan®
BI - Developers

Prepared By: Yanxia Lin	**Date: 2/29/2024**
Approvals: The following signatures constitute approval of this Health & Safety Plan.	
Insert Field Safety Managers electronic signature.	
Field Safety Manager: Brian Ferguson	**Date:** Click or tap to enter a date.
Insert Project Manager's electronic signature.	
Project Manager: Matt Levy	**Date:** Click or tap to enter a date.
HASP Valid Through: 12/31/2025	

Table of Contents

Attachments

STOP WORK AUTHORITY

In accordance with Haley & Aldrich (Haley & Aldrich) Stop Work Authority Operating Procedure (OP1035), any individual has the right to refuse to perform work that he or she believes to be unsafe without fear of retaliation. He or she also has the authority, obligation, and responsibility to stop others from working in an unsafe manner.

STOP Work Authority is the stop work policy for all personnel and subcontractors on the Site. When work has been stopped due to an unsafe condition, Haley & Aldrich site management (e.g., Project Manager [PM], Site Health & Safety Officer [SHSO], etc.) and the Haley & Aldrich Senior Project Manager (SPM) will be notified immediately.

Reasons for issuing a stop work order include, but are not limited to:

- The belief/perception that injury to personnel or accident causing significant damage to property or equipment is imminent.
- An Haley & Aldrich subcontractor is in breach of site safety requirements and/or their own site HASP.
- Identifying a substandard condition (e.g., severe weather) or activity that creates an unacceptable safety risk as determined by a qualified person.

Work will not resume until the unsafe act has been stopped OR sufficient safety precautions have been taken to remove or mitigate the risk to an acceptable degree. Stop work orders will be documented as part of an on-site stop work log, on daily field reports to include the activity/activities stopped, the duration, person stopping work, person in-charge of stopped activity/activities, and the corrective action agreed to and/or taken. Once work has been stopped, only the Haley & Aldrich SPM or SHSO can give the order to resume work. Haley & Aldrich senior management is committed to support anyone who exercises his or her “Stop Work” authority.

ISSUANCE AND COMPLIANCE

This HASP has been prepared in accordance with Occupational Safety and Health Administration (OSHA) regulations (CFR 29, Parts 1904, 1910, and 1926) if such are applicable.

The specific requirements of this HASP include precautions for hazards that exist during this project and may be revised as new information is received or as site conditions change.

- This HASP must be signed by all Haley & Aldrich personnel involved in implementation of the SOW (Section 2 of this HASP).
- This HASP, or a current signed copy, must be retained at all times when Haley & Aldrich staff are present.
- Revisions to this HASP must be outlined within the contents of the HASP. If immediate or minor changes are necessary, the Field Safety Manager (FSM), Haley & Aldrich, SSO and/or Project Manager (PM) may use Attachment 1 (HASP Amendment Form), presented at the end of this HASP. Any revision to the HASP requires employees and subcontractors to be informed of the changes so that they understand the requirements of the change.
- Deviations from this HASP are permitted with approval from the Haley & Aldrich FSM, PM, or Senior Health & Safety Manager (SHSM). Unauthorized deviations may constitute a violation of Haley & Aldrich company procedures/policies and may result in disciplinary action.
- This HASP will be relied upon by Haley & Aldrich's subcontractors and visitors to the site. Haley & Aldrich's subcontractors must have their own HASP which will address hazards specific to their trade that is not included in this HASP. This HASP will be made available for review to Haley & Aldrich's subcontractors and other interested parties (e.g. Facility personnel and regulatory agencies) to ensure that Haley & Aldrich has properly informed our subcontractors and others of the potential hazards associated with the implementation of the SOW to the extent that Haley &Aldrich is aware.

This site-specific HASP provides only site-specific descriptions and work procedures. General safety and health compliance programs in support of this HASP (e.g., injury reporting, medical surveillance, personal protective equipment (PPE) selection, etc.) are described in detail in the Haley &Aldrich Corporate Health and Safety Program Manual and within Haley & Aldrich's Standard Operating Procedures Both the manual and SOPs can be located on the Haley & Aldrich's Company Intranet. When appropriate, users of this HASP should always refer to these resources and incorporate to the extent possible. The manual and SOPs are available to clients and regulators upon request.

EMERGENCY EVENT PROCEDURES

1 - ASSESS THE SCENE

- **STOP WORK**
- Review the situation and ascertain if it's safe to enter the area.
- Evacuate the site if the conditions are unsafe.

2 - EVALUATE THE EMERGENCY

- **Call 911, or designated emergency number, if required.**
- **Provide first aid for the victim if qualified and safe to do so.**
  - First aid will be addressed using the onsite first aid kit. *
    - If providing first aid, remember to use proper first aid universal precautions if blood or bodily fluids are present.
- **If exposure to hazardous substance is suspected, immediately vacate the contaminated area.**
  - Remove any contaminated clothing and/or equipment.
  - Wash any affected dermal/ocular area(s) with water for at least 15 minutes.
  - Seek immediate medical assistance if any exposure symptoms are present.

** Note: Haley & Aldrich employees are not required or expected to administer first aid / CPR to any Haley & Aldrich staff member, Contractor, or Civilian personnel at any time; it is Haley & Aldrich´s position that those who do are doing so on their own behalf and not as a function of their job.*

3 - SECURE THE AREA

- **Cordon off the incident area, if possible.**
  - Notify any security personnel, if required.
  - Escort all non-essential personnel out of the area, if able.

4 - REPORT ON-SITE ACCIDENTS / INCIDENTS TO PM / SSO

- **Notify the PM and SSO as soon as it is safe to do so.**
  - Assist PM and SSO in completing any additional tasks, as required.

5 - INVESTIGATE / REPORT THE INCIDENT

- **Record details of the incident for input to the Gensuite.**
  - Complete any additional forms as requested by the PM and SSO.

6 - TAKE CORRECTIVE ACTION

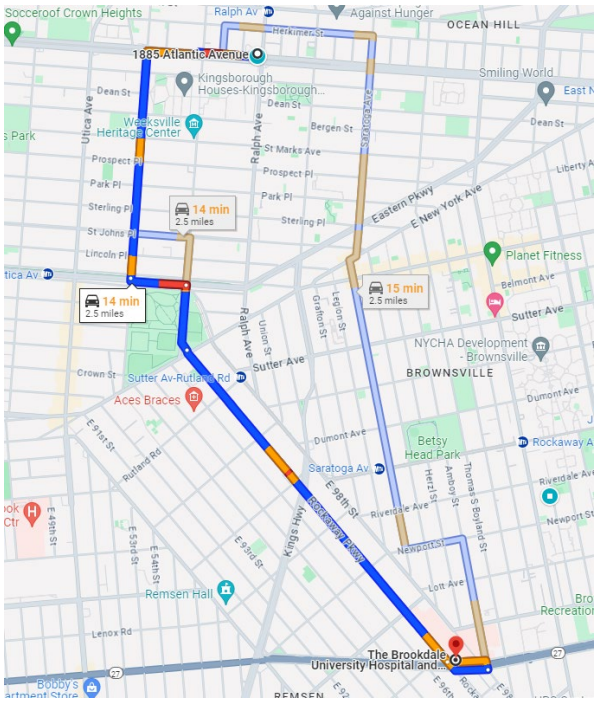
- **Implement corrective actions per the PM following root cause analysis.**
  - Complete Lessons Learned form.

PROJECT INFORMATION AND CONTACTS	
Project Name: 1885 Atlantic Avenue Redevelopment	**Haley & Aldrich File No.:** 0205125
Location: 1885 Atlantic Avenue, Brooklyn, New York	
Client/Site Contact: Phone Number:	1885 Atlantic Realty LLC Mr. Joel and Mr. Jacob Kohn 718.963.0536
Haley & Aldrich Field Representative: Phone Number: Emergency Phone Number:	Matt Forshay 862.377.3587 862.377.3587
Haley & Aldrich Project Manager: Phone Number: Emergency Phone Number:	**Matt Levy** 646.893.4733 516.666.5382
Field Safety Manager: Phone Number: Emergency Phone Number:	Brian Ferguson 617.886.7439 617.908.2761
Subcontractor Project Manager: Phone Number:	Marc Morgenstern 516.587.9570
Nearest Hospital: Address: (see map on next page) Phone Number:	The Brookdale University Hospital and Medical Center 1 Brookdale Plaza, Brooklyn, NY 11212 718.240.5000
Nearest Occ. Health Clinic: http://www.talispoint.com/liberty/ext/ Address: (see map on next page) Phone Number:	CityMD Crown Heights Urgent Care - Brooklyn 256 Utica Avenue, Brooklyn, NY 11213 718.571.9355
Liberty Mutual Claim Policy	**WC6Z11254100033**
Emergency Response Number:	**911**
Other Local Emergency Response Number:	N/A
Other Ambulance, Fire, Police, or Environmental Emergency Resources:	911

DIRECTIONS TO THE NEAREST HOSPITAL

Liberty Mutual Medical Location Directory

The Brookdale University Hospital and Medical Center
1 Brookdale Plaza
Brooklyn, NY 11212
718.240.5000



Directions to the Nearest Hospital:

from 1885 Atlantic Ave, Brooklyn, NY 11233
to The Brookdale University Hospital and Medical ...

14 min (2.5 miles)
via Rockaway Pkwy
Best route now due to traffic conditions

1885 Atlantic Ave
Brooklyn, NY 11233

Head west on Atlantic Ave toward Center underpass to Buffalo Ave
43 sec (0.2 mi)

Take Rochester Ave to Eastern Pkwy
5 min (0.7 mi)

Take Rockaway Pkwy to Linden Blvd
7 min (1.4 mi)

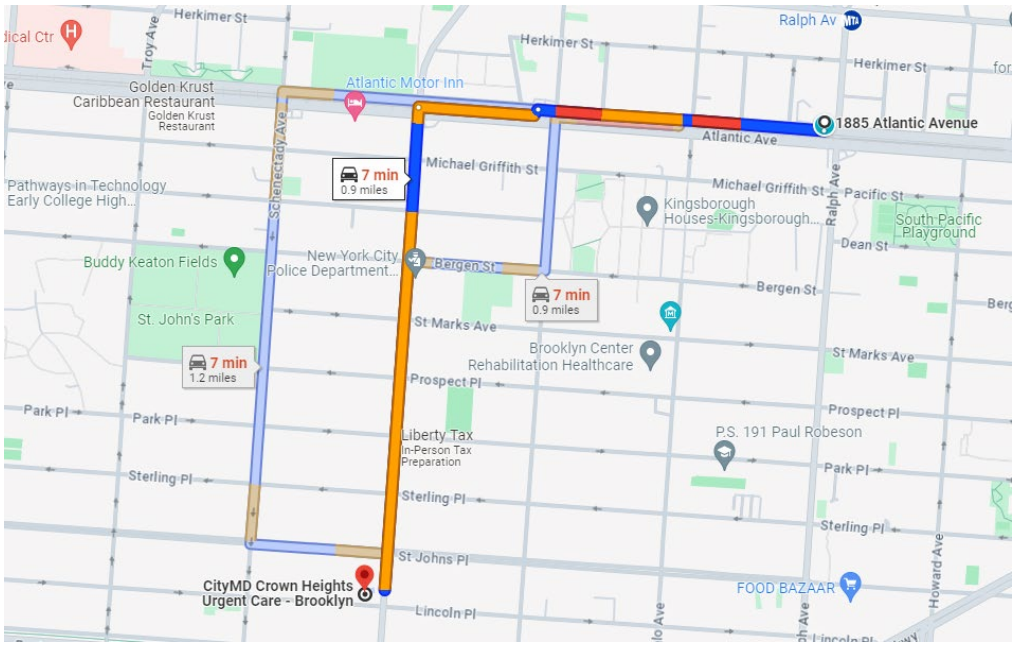
Drive to Linden Blvd
2 min (0.2 mi)

The Brookdale University Hospital and Medical Center
1 Brookdale Plaza, Brooklyn, NY 11212

DIRECTIONS TO THE NEAREST URGENT CARE

Liberty Mutual Medical Location Directory

CityMD Crown Heights Urgent Care – Brooklyn
256 Utica Avenue
Brooklyn, NY 11213
718.571.9355



Directions to the Nearest Occupational Clinic:

from 1885 Atlantic Ave, Brooklyn, NY 11233
to CityMD Crown Heights Urgent Care - Brooklyn, ...

7 min (0.9 mile)
via Atlantic Ave and Utica Ave
Fastest route now due to traffic conditions

1885 Atlantic Ave
Brooklyn, NY 11233

Head west on Atlantic Ave toward Center underpass to Buffalo Ave
0.3 mi

Turn left onto Center underpass to Rochester Ave
0.1 mi

Turn left onto Utica Ave
Pass by AutoZone Auto Parts (on the right)
Destination will be on the right
0.5 mi

CityMD Crown Heights Urgent Care - Brooklyn
256 Utica Ave, Brooklyn, NY 11213

1. WORK SCOPE

This Site-Specific Health and Safety Plan addresses the health and safety practices and procedures that will be exercised by all Haley & Aldrich employees participating in all work on the Project Site. This plan is based on an assessment of the site-specific health and safety risks available to Haley & Aldrich and Haley & Aldrich's experience with other similar project sites. The scope of work includes the following:

1) Implementation of Site Management Plan.
2) Monitor and maintain the sub slab depressurization system (SSDS) and soil vapor extraction (SVE) system; and collect air and groundwater samples to monitor system treatment efficiencies and remaining contamination at the site.

Project Task Breakdown

Task No.	Task Description	Employee(s) Assigned	Work Date(s) or Duration
1	SSDS and SVE System Monitoring and Maintenance	Matt Forshay	1 year
2	Air and Groundwater Sampling	Matt Forshay	1 year

Subcontractor(s) Tasks

Firm Name	Work Activity	Work Date(s) or Duration
Coastal Environmental Solutions, Inc	SSDS system maintenance	1 year

Projected Start Date: 1/1/2024

Projected Completion Date: 12/31/2025

2. SITE OVERVIEW / DESCRIPTION

Site Classification

Commercial

Site Description

The Site is located in Brooklyn, Kings County, New York and is identified as Block 1714 and Lot 30 on the New York City Tax Map. The Site is an approximately 0.250-acre area and is bounded by a parking lot followed by a vacant vegetated lot to the north, Atlantic Avenue and the Long Island Railroad Tracks followed by commercial buildings, including an auto repair facility, to the south, Ralph Avenue followed by mixed-use commercial and residential buildings to the east, and a commercial building occupied by a McDonalds fast food restaurant to the west.

Background and Historic Site Usage

Earliest records identify the Site as vacant until 1908 when it was partially developed with a two-story woodworking shop in the western portion of the Site. By 1932, the woodworking shop was replaced with an auto repair shop, and a garage was developed on the southern half of the Site. A gasoline tank is indicated on the 1932 Sanborn Fire Insurance Map in the southern portion of the Site along Atlantic Avenue. By the early 1950s, the former garage operated as a metal product manufacturing facility, and the former auto repair shop was identified by a plumber. By the early 1960s, the formerly identified structures were razed, and the Site was identified as a gasoline filling station and an auto wrecking facility, with the Site partially developed with a one-story building. The formerly identified gasoline tank was not depicted on Sanborn Fire Insurance Maps after 1951. By 1978, the formerly identified structures were razed and the auto wrecking facility was no longer present. The entire Site was identified as a gasoline service station with a one-story commercial building in the northwest corner of the Site. City directories indicate that “Safeway Ralph” operated the gasoline station in the early to mid-1970s, followed by “Merit Gasoline Stations.” The Site most recently operated as a Speedway gasoline service station and has been vacant since January 2022.

Site Status

Indicate current activity status and describe operations at the site:

Active

The site is installing a sub-slab depressurization system.

Site Plan

Is a site plan or sketch available? Yes

Work Areas

List and identify each specific work areas(s) on the job site and indicate its location(s) on the site plan:

Whole Site

Site Plan

3. HAZARD ASSESSMENT

Indicate all hazards that may be present at the site and for each task. If any of these potential hazards are checked, it is the Project Manager's responsibility to determine how to eliminate / minimize the hazard to protect onsite personnel.

Site Chemical Hazards

Is this Site impacted with chemical contamination? Yes

Source of information about contaminants: Previous Investigation

Contaminant of Concern	Location/Media	Concentration	Units
Volatile Organic Compounds (VOCs)	**Soil**	**140**	**mg/kg**
Benzene	**Soil**	**14**	**mg/kg**
Xylenes	**Soil**	**640**	**mg/kg**
Benzene	**Groundwater**	**569**	**ug/L**
BTEX/VOCs	**Soil Vapor**	**330,640/2,243,640**	**ug/m3**

VOCs: include all organic compounds (substances made up of predominantly carbon and hydrogen) with boiling temperatures in the range of 50-260 degrees C, excluding pesticides. This means that they are likely to be present as a vapor or gas in normal ambient temperatures. Substances which are included in the VOC category include aliphatic hydrocarbons (such as hexane), aldehydes, aromatic hydrocarbons (such as benzene, toluene, and the xylenes or BTEX), and oxygenated compounds (such as acetone and similar ketones). The term VOC often is used in a legal or regulatory context and in such cases the precise definition is a matter of law.

VOCs are released from oil and gasoline refining, storage and combustion as well as from a wide range of industrial processes. Processes involving fuels, solvents, paints or the use of chemicals are the most significant sources. VOCs may also be emitted from cleaning products, degreasing products, fabrics, carpets, plastic products, glues, printed material, varnishes, wax, disinfectants, and cosmetics.

Typically, VOCs are present in gas or vapor and will enter the body by breathing contaminated air. Higher concentrations of VOCs may occur in areas of poor ventilation.

Benzene: Benzene is a colorless liquid with a sweet odor. It evaporates into the air very quickly and dissolves slightly in water. It is highly flammable and is formed from both natural processes and human activities

Breathing very high levels of benzene can result in death, while high levels can cause drowsiness, dizziness, rapid heart rate, headaches, tremors, confusion, and unconsciousness. Eating or drinking

foods containing high levels of benzene can cause vomiting, irritation of the stomach, dizziness, sleepiness, convulsions, rapid heart rate, and death. The major effect of benzene from long-term (365 days or longer) exposure is on the blood. Benzene causes harmful effects on the bone marrow and can cause a decrease in red blood cells leading to anemia. It can also cause excessive bleeding and can affect the immune system, increasing the chance for infection. Some women who breathed high levels of benzene for many months had irregular menstrual periods and a decrease in the size of their ovaries. It is not known whether benzene exposure affects the developing fetus in pregnant women or fertility in men. Animal studies have shown low birth weights, delayed bone formation, and bone marrow damage when pregnant animals breathed benzene.

Xylenes: are colorless liquids with a faint, sweet odor. There are three forms of xylene (meta-, ortho-, and para-), which are referred to as isomers. They are chemically classified as hydrocarbons, meaning they contain hydrogen and carbon atoms. These are chemicals of serious flammability and will easily ignite with heat, sparks or flames. Their flash point range is between 85-115 degrees F. The PEL is 10 ppm averaged over an 8 hour shift.

Typically, these are solvents in making paint, adhesives, and other chemicals. Their odor threshold varies greatly, and this should not be the sole indicator in exposures. Their vapors are heavier than air, but less dense than water, therefore they float. Can be inhaled or absorbed through the skin. Inhalation can irritate throat and nose and cause coughing, headache or dizziness. Absorption can cause skin rash, dryness or redness. Repeated exposures may affect concentration, memory, vision, and muscle coordination.

BTEX/VOCs: BTEX is an acronym for benzene, toluene, ethylbenzene and xylenes. These compounds are VOCs, are common in petroleum-related products (e.g., oil, gasoline, coal-tar DNAPL, etc.), and frequently co-occur at hazardous waste sites. Benzene, toluene, ethylbenzene, and xylenes have acute and chronic harmful effects on the central nervous system. Benzene is classified as a carcinogen. Short-term health effects of low-level BTEX exposure include drowsiness, dizziness, accelerated heart rate, headaches, tremors, confusion, and unconsciousness.

Site Hazards Checklist			
Weather			
Cold Temperatures	High Winds	Hot Temperatures	Select Hazard

Cold Temperatures

Cold stress may occur at any time work is being performed at low ambient temperatures and high velocity winds. Because cold stress is common and has potentially serious illnesses associated with outdoor work during cold seasons, regular monitoring and other preventative measures are vital.

Refer to OP1003-Cold Stress for additional information and mitigation controls.

High Winds

While high winds are commonly associated with severe thunderstorms and hurricanes they may also occur as a result of differences in air pressures, such as when a cold front passes across the area. They can cause downed trees and power lines, and flying debris (such as dust or larger debris), which adds additional risks and could lead to power outages, transportation disruptions, damage to buildings and vehicles, and serious injury.

Wind Advisory are issued for sustained winds 25 to 39 mph and/or gusts to 57 mph. High Wind warnings are issued by the National Weather Service when high wind speeds may pose a hazard or is life threatening. The criteria for this warning will varies by state. The Beaufort Wind Scale is a helpful tool to when dealing with high winds.

Hot Temperatures

Heat stress may occur at any time work is being performed at elevated ambient temperatures. Because heat stress is one of the most common and potentially serious illnesses associated with outdoor work during hot seasons, regular monitoring and other preventative measures are vital. Site workers must learn to recognize and treat the various forms of heat stress. The best approach is preventative heat stress management.

H&A employees and their subcontractors should be aware of potential health effects and/or physical hazards of working when there are hot temperatures or a high heat index. Refer OP1015-Heat Stress for a discussion on hot weather hazards.

Biological			
Mosquitoes	Choose an item.	Choose an item.	Choose an item.

Mosquitos

Work outdoors with temperatures above freezing will likely bring staff into contact with mosquitos. There are a variety of mosquito species that can transmit a range of diseases. Birds act as reservoirs for

the viruses that can be collected by the mosquito and transmitted to a person. Majority of mosquitos are mainly a nuisance but staff need to take appropriate precautions to minimize the potential transmission of a virus that can result in one of the following diseases: West Nile, Eastern Equine Encephalitides and Western Encephalitides. Knowing some key steps that can minimize the risk of mosquito bites is, therefore, important in reducing the risks. Workers working outdoors should be aware that the use of PPE techniques is essential to preventing mosquito bites especially when working at sites where mosquitoes may be active and biting.

Use repellents containing DEET, picaridin, IR3535, and some oil of lemon eucalyptus and para-menthane-diol products provide longer-lasting protection. To optimize safety and effectiveness, repellents should be used according to the label instructions. Cover as much of your skin as possible by wearing shirts with long-sleeves, long pants, and socks whenever possible. Avoid use of perfumes and colognes when working outdoors during peak times when mosquitoes may be active; mosquitoes may be more attracted to individuals wearing perfumes and colognes.

Location/Terrain			
Slip/Trip/Falls	Choose an item.	Choose an item.	Choose an item.

Slips, Trips & Falls

Slip and trip injuries are the most frequent injuries to workers. Statistics show most falls happen on the same level resulting from slips and trips. Both slips and trips result from unintended or unexpected change in the contact between the feet and the ground or walking surface. Good housekeeping, quality of walking surfaces (flooring), awareness of surroundings, selection of proper footwear, and appropriate pace of walking are critical for preventing fall accidents.

Site workers will be walking on a variety of irregular surfaces, that may affect their balance. Extra care must be taken to walk cautiously near rivers because the bottom of the riverbed maybe slick and may not be visible. Rocks, gradient changes, sandy bottoms, and debris may be present but not observable.

Take your time and pay attention to where you are going. Adjust your stride to a pace that is suitable for the walking surface and the tasks you are doing. Check the work area to identify hazards - beware of trip hazards such as wet floors, slippery floors, and uneven surfaces or terrain. Establish and utilize a pathway free of slip and trip hazards. Choose a safer walking route. Carry loads you can see over. Keep work areas clean and free of clutter. Communicate hazards to on-site personnel and remove hazards as appropriate.

Miscellaneous			
Choose an item.	Choose an item.	Choose an item.	Choose an item.
Click + to Add Additional Hazard Language			

Task Hazard Summary

Task 1 – Air Sampling

Air sampling is conducted to monitor levels of air contaminants. Air is the most transient environmental medium and subject to extreme spatial and temporal heterogeneity. Air sampling matrices include: Ambient (outdoor) air, indoor air, point sources (stacks, exhausts, and other emission sources), fugitive emissions (sources of air pollutants other than stacks or vents), and monitor and evaluate remediation processes. Samples can be collected in tedlar bags, sorbent tubes, or summa canisters.

Safety precautions during air sampling include a review of possible environmental hazards before entering the site and the use of proper clothing and equipment. Workers performing stack sampling and air monitoring during emergency situations may be exposed to hazardous levels of air pollutants. Therefore, the JHA must specify what kind of real-time air monitoring will be performed, the action levels for the use of respirators, and the types of respirators to be worn if action levels are exceeded. Safety must always be considered to ensure that the chosen field measurement instrument is compatible with the potential hazard. For example, some instruments are capable of detecting explosive hazards, but not all are safe for operations under these conditions. If the atmospheric concentration is potentially greater than 25% of the lower explosive limit, the meter itself must be certified safe for operation (FM, UL or MSHA certified). Operators should be thoroughly familiar with the instrument and operating instructions before use. Always read or review the manual prior to using an instrument in the field.

Safety concerns are of critical importance in performing sampling at heights due to the possibility of, falling, dropping equipment on workers below, and possibly weather related hazards such as ice, snow, and rain if sampling outdoors.

Gases used to calibrate and operate some instruments come in pressurized cylinders and many are flammable. Proper care should be taken when handling these materials. Light sources from some instruments can cause eye damage when viewed directly.

Task 2 – Water Sampling

Environmental water sampling could include activities such as groundwater sampling from permanent or temporary wells, or surface water sampling from streams, rivers, lakes, ponds, lagoons, and surface impoundments.

Sampling tasks could involve uncapping, purging (pumping water out of the well), and sampling, and/or monitoring, new or existing monitoring wells. A mechanical pump may be used to purge the wells and can be hand-, gas-, or electric-operated. Water samples taken from the wells are then placed in containers and shipped to an analytical laboratory for analysis. The physical hazards of these operations are primarily associated with the collection methods and procedures used.

When sampling bodies of water containing known or suspected hazardous substances, adequate precautions must be taken to ensure the safety of sampling personnel. The sampling team member collecting the sample should not get too close to the edge, where ground failure or slips, trips or falls may cause him/her to lose his/her balance. The person performing the sampling should have fall restraint or protection for the task. When conducting sampling from a boat in an impoundment or flowing waters, appropriate vessel safety procedures should be followed. Avoid lifting heavy coolers with back muscles; instead, use ergonomic lifting techniques, team lift or mechanical lifts. Wear proper gloves, such as when handling sample containers to avoid contacting any materials that may have spilled out of the sample containers.

Inhalation and absorption of COCs are the primary routes of entry associated with water sampling, due to the manipulation of sample media and equipment, manual transfer of media into sample containers, and proximity of operations to the breathing zone. During this project, several different groundwater sampling methodologies may be used based on equipment accessibility and the types of materials to be sampled. These sampling methods may include hand or mechanical bailing. The primary hazards associated with these specific sampling procedures are not potentially serious; however, other operations in the area or the conditions under which samples must be collected may present chemical and physical hazards. The hazards directly associated with groundwater sampling procedures are generally limited to strains or sprains from hand bailing, and potential eye hazards. Exposure to water containing COCs is also possible. All tools and equipment that will be used at the site must be intrinsically safe (electronics and electrical equipment) and non-sparking or explosion-proof (hand tools).

Task Physical Hazards Checklist				
Potential Task Hazards	**Task 1** **Air Sampling**	**Task 2** **Water Sampling**	**Task 3** Task Name	**Task 4** Task Name
Congested Area	☒	☒	☐	☐
Slippery Surfaces	☒	☒	☐	☐
Sharp Objects	☒	☒	☐	☐
Ergonomics	☒	☒	☐	☐
Other: Specify	☐	☐	☐	☐

Summary of Physical Hazards & Controls

Congested Areas

Working in congested areas can expose both workers and the public to a wide range of hazards depending upon the specific activities taking place. Staff Members need to understand the work scope, work areas, equipment on-site, and internal traffic patterns to minimize or eliminate exposure potential.

Controls

- Provide barricades, fencing, warning signs/signals and adequate lighting to protect people while working in or around congested areas.
- Vehicles and heavy equipment with restricted views to the rear should have functioning back-up alarms that are audible above the surrounding noise levels. Whenever possible, use a signaler to assist heavy equipment operators and/or drivers in backing up or maneuvering in congested areas.
- Lay out traffic control patterns to eliminate excessive congestion.
- Workers in congested areas should always wear high visibility clothing.
- Be aware of Line of Fire hazards when performing work activities in congested areas.
- Hazards associated with SIMOPs should be discussed daily at Tailgate Safety Meetings.

Ergonomics

Most Work-related Musculoskeletal Disorders (WMSDs) are caused by Ergonomic Stressors. Ergonomic Stressors are caused by poor workplace practices and/or insufficient design, which may present ergonomic risk factors. These stressors include, but not limited to, repetition, force, extreme postures, static postures, quick motions, contact pressure, vibration, and cold temperatures.

WMSDs are injuries to the musculoskeletal system, which involves bones, muscles, tendons, ligaments, and other tissues in the system. Symptoms may include numbness, tightness, tingling, swelling, pain, stiffness, fatigue, and/or redness. WMSD are usually caused by one or more Ergonomic Stressors. There may be individual differences in susceptibility and symptoms among employees performing similar tasks. Any symptoms are to be taken seriously and reported immediately.

See OP1053 Ergonomics for more information.

Controls

- Ensure workstations are ergonomically correct so bad posture is not required to complete tasks.
- Take periodic breaks over the course of the day.
- Stretch during break times.
- Break up tasks that require repetitive motion.
- Contact Corporate H&S with any ergonomic concerns

Sharp Objects

Workers who handle sharp edged objects like sheets of steel or glass are at risk of cuts. Workers who handle sharp edged objects are also at risk of cuts. Injuries may occur to hands, fingers, or legs when they are in the way of the blade, when the blade slips, or if an open blade is handled unexpectedly.

Other hazards at job sites include stepping on sharp objects (e.g. wooden boards with protruding nails, sharp work-tools, chisels, etc.) and colliding with sharp and/or protruding objects.

Controls
Always be alert when handling sharps. Never look away or become distracted while handling sharp objects. Use caution when working with tools; use right tool for the job. Keep tools sharp, dull blades are a safety hazard, requiring more force to make cuts which can lead to tool slippage. Wear appropriate PPE and do not handle sharp objects (i.e., broken glass) with bare hands. Use mechanical devices, when possible. Stay away from building debris; avoid handling site debris or placing your hand where you cannot see. Watch out for barbed wire and electrical fences; cover with a car mat or equivalent to cross or walk around; use the buddy system to avoid entanglement; wear gloves. Do not leave unprotected sharps unattended. Use protective shields, cases, styrofoam blocks, etc. Pass a sharp by handing it over carefully by the handle with the blade down or retracted. Fixed open blades are prohibited. Always cut away from the body, making several passes when cutting thicker materials. Make sure blades are fitted properly into the knife. Never cut items with a blade or other sharp object on your lap. Never try to catch a blade or cutting tool that is falling.

Slippery Surfaces

Both slips and trips result from unintended or unexpected change in the contact between the feet and ground or walking surface. Good housekeeping, quality of walking surfaces, selection of proper footwear, and appropriate pace of walking are critical for preventing fall accidents. Slips happen where there is too little friction or traction between the footwear and walking surface.

Common causes of slips are wet or oily surfaces, spills, weather hazards, loose unanchored rugs or mats and flooring or other walking surfaces that do not have same degree of traction in all areas.

Weather-related slips and falls become a serious hazard as winter conditions often make for wet or icy surfaces outdoors. Even wet organic material or mud can create hazardous walking conditions. Spills and leaks can also lead to slips and falls.

Controls
- Evaluate the work area to identify any conditions that may pose a slip hazard.
- Address any spills, drips or leaks immediately.
- Mark areas where slippery conditions exist.
- Select proper footwear or enhance traction with additional PPE.
- Where conditions are uncertain or environmental conditions result in slippery surfaces walk slowly, take small steps, and slide feet on wet or slippery surfaces.

Choose a building block.

4. PROTECTIVE MEASURES

The personal protective equipment and safety equipment (if listed) is specific to the associated task. The required PPE and equipment listed must be onsite during the task being performed. Work shall not commence unless the required PPE or Safety Equipment is present.

Required Safety & Personal Protective Equipment

Required Personal Protective Equipment (PPE)	**Task 1**	**Task 2**	**Task 3**	**Task 4**
	Air Sampling	**Water Sampling**	Enter task description.	Enter task description.
Nitrile Gloves	☒	☒	☐	☐
Safety Toed Shoes	☒	☒	☐	☐
Safety Glasses	☒	☒	☐	☐
Class 2 Safety Vest	☒	☒	☐	☐
Hard hat	☒	☒	☐	☐
Cut Resistant Gloves	☒	☒	☐	☐
Level of protection required	D	D	Select	Select
Required Safety Equipment				
First Aid Kit	☒	☒	☐	☐

5. TRAINING REQUIREMENTS

The table below lists the training requirements staff must have respective to their assigned tasks and that are required to access the Site.

Site Specific Training Requirements
HAZWOPER - 40 Hour (Initial)
HAZWOPER - 8 Hour (Annual Refresher)

Task Specific Training Requirements				
Required Training Type	**Task 1**	**Task 2**	**Task 3**	**Task 4**
	Enter task description.	Enter task description.	Enter task description.	Enter task description.
Choose an item.	☐	☐	☐	☐

6. AIR MONITORING PLAN AND EQUIPMENT

Exposures to airborne substances shall be fully characterized throughout project operations to ensure that exposure controls are effectively selected and modified as needed.

Is air/exposure monitoring required at this work site for personal protection? No

Is perimeter monitoring required for community protection? No

Air monitoring plan not applicable No

Air Monitoring/Screening Equipment Requirements

Select Monitoring Equipment.

The required equipment listed above must be on site. Work shall not commence unless the equipment is present and in working order.

Monitoring Plans

Select Monitoring Plan

***If chemical does not have an action level use TLV or REL, whichever is lowest, to be used as an action level. If TLV or REL are the same as PEL, cut the PEL in half for an action level.**

Parameter/ Contaminant	Equipment	Action Level*	Response Activity
Choose an item.	Choose an item.		

Zone Location		Monitoring Interval
Choose an item.	Choose an item.	Choose an item.

7. DECONTAMINATION & DISPOSAL METHODS

All possible and necessary steps shall be taken to reduce or minimize contact with chemicals and contaminated/impacted materials while performing field activities (e.g., avoid sitting or leaning on, walking through, dragging equipment through or over, tracking, or splashing potential or known contaminated/impacted materials.)

Personal Hygiene Safeguards

The following minimum personal hygiene safeguards shall be adhered to:

1. No smoking or tobacco products in any project work areas.
2. No eating or drinking in the exclusion zone.
3. It is required that personnel present on site wash hands before eating, smoking, taking medication, chewing gum/tobacco, using the restroom, or applying cosmetics and before leaving the site for the day.

It is recommended that personnel present on site shower or bathe at home at the end of each day of working on the site.

Decontamination Supplies

All decontamination should be conducted at the project site in designated zones or as dictated by Client requirements. Decontamination should not be performed on Haley & Aldrich owned or leased premises.

☐ Acetone	☐ Distilled Water	☐ Polyethylene Sheeting
☐ Alconox Soap	☐ Drums	☐ Pressure/Steam Cleaner
☐ Brushes	☐ Hexane	☐ Tap Water
☐ Disposal Bags	☐ Methanol	☐ Wash tubs
☐ 5 Gallon Buckets	☐ Paper Towels	☐ Other: Specify

Location of Decontamination Station

Describe/Enter location of decontamination station or refer to a figure where it is shown.

Standard Personal Decontamination Procedures

Outer gloves and boots should be decontaminated periodically as necessary and at the end of the day. Brush off solids with a hard brush and clean with soap and water or other appropriate cleaner whenever possible. Remove inner gloves carefully by turning them inside out during removal. Wash hands and forearms frequently. It is good practice to wear work-designated clothing while on-site which can be removed as soon as possible. Non-disposable overalls and outer work clothing should be bagged onsite prior to laundering. If gross contamination is encountered on-site contact the Project Manager and Field Safety Manager to discuss proper decontamination procedures.

The steps required for decontamination will depend upon the degree and type of contamination but will generally follow the sequence below.

1. Remove and wipe clean hard hat
2. Rinse boots and gloves of gross contamination
3. Scrub boots and gloves clean
4. Rinse boots and gloves
5. Remove outer boots (if applicable)
6. Remove outer gloves (if applicable)
7. Remove Tyvek coverall (if applicable)
8. Remove respirator, wipe clean and store (if applicable)
9. Remove inner gloves (if outer gloves were used)

PPE that is not grossly contaminated can be bagged and disposed in regular trash receptacles.

Small Equipment Decontamination

Pretreatment of heavily contaminated equipment may be conducted as necessary:

1. Remove gross contamination using a brush or wiping with a paper towel
2. Soak in a solution of Alconox and water (if possible)
3. Wipe off excess contamination with a paper towel

Standard decontamination procedure:

4. Wash using a solution of Alconox and water
5. Rinse with potable water
6. Rinse with methanol (or equivalent)
7. Rinse with distilled/deionized water

Inspect the equipment for any remaining contamination and repeat as necessary.

Disposal Methods
Procedures for disposal of contaminated materials, decontamination waste, and single use personal protective equipment shall meet applicable client, locate, State, and Federal requirements.
Disposal of Single Use Personal Protective Equipment
PPE that is not grossly contaminated can be bagged and disposed in regular trash receptacles. PPE that is grossly contaminated must be bagged (sealed and field personnel should communicate with the Project Manager to determine proper disposal.
Select text from the drop down that applies to the project. Click + to add additional language from the drop down.

8. SITE CONTROL

The overall purpose of site control is to minimize potential contamination of workers, protect the public from the site's hazards, and prevent vandalism. Site control is especially important in emergency situations. The degree of site control necessary depends on site characteristics, site size, and the surrounding community. The following information identifies the elements used to control the activities and movements of people and equipment at the project site.

Communication

Internal
Haley & Aldrich site personnel will communicate with other Haley & Aldrich staff member and/or subcontractors or contractors with:

Face to Face Communication

External
H&S site personnel will use the following means to communicate with off-site personnel or emergency services.

Cellular Phones

Visitors

Project Site
Will visitors be required to check-in prior to accessing the project site?

Yes. All Visitors shall be briefed on COVID-19 protocols and PPE. Visitors not briefed, or that do not have the appropriate PPE will be asked to leave the site.

Visitor Access
Authorized visitors that require access to the project site need to be provided with known information with respect to the site operations and hazards as applicable to the purpose of their site visit. Authorized visitors must have the required PPE and appropriate training to access the project site.

Site Safety Officer is responsible for facilitating authorized visitor access.

Zoning

Work Zone
The work zone will be clearly delineated to ensure that the general public or unauthorized worker access is prevented. The following will be used:

Cones
Flagging Tape
Proper Signate

9. SITE SPECIFIC EMERGENCY RESPONSE PLAN

The Emergency Response Plan addresses potential emergencies at this site, procedures for responding to these emergencies, roles, responsibilities during emergency response, and training. This section also describes the provisions this project has made to coordinate its emergency response with other contractors onsite and with offsite emergency response organizations (as applicable).

During the development of this emergency response plan, local, state, and federal agency disaster, fire, and emergency response organizations were consulted (if required) to ensure that this plan is compatible and integrated with plans of those organizations. Documentation of the dates of these consultations are the names of individuals contacted is kept on file and available upon request.

The site has been evaluated for potential emergency occurrences, based on site hazards, and the major categories of emergencies that could occur during project work are:

- Fire(s)/Combustion
- Hazardous Material Event
- Medical Emergency
- Natural Disaster

A detailed list of emergency types and response actions are summarized in Table X below. Prior to the start of work, the SSO will update the table with any additional site-specific information regarding evacuations, muster points, or additional emergency procedures. The SSO will establish evacuation routes and assembly areas for the Site. All personnel entering the Site will be informed of these routes and assembly areas.

Pre-Emergency Planning

Before the start of field activities, the Project Manager will ensure preparation has been made in anticipation of emergencies. Preparatory actions include the following:

Meeting with the subcontractor/and or client concerning the emergency procedures in the event a person is injured. Appropriate actions for specific scenarios will be reviewed. These scenarios will be discussed, and responses determined before the sampling event commences. A form of emergency communication (i.e.; Cell phone, Air horn, etc.) between the Project Manager and subcontractor and/or client will be agreed on before the work commences.

A training session (i.e., “safety meeting”) given by the Project Manager or their designee informing all field personnel of emergency procedures, locations of emergency equipment and their use, and proper evacuation procedures.

Ensuring field personnel are aware of the existence of the emergency response HASP and ensuring a copy of the HASP accompanies the field team(s).

Onsite Emergency Response Equipment

Emergency procedures may require specialized equipment to facilitate work rescue, contamination control and reduction or post-emergency cleanup. Emergency response equipment stocked

Table 9.1 Emergency Equipment and Emergency PPE			
Emergency Equipment	**Specific Type**	**Quantity Stocked**	**Location Stored**
First Aid Kit	ANSI	1	With H&A Staff
Emergency PPE	**Specific Type**	**Quantity Stocked**	**Location Stored**
Gloves	Nitrile	1	With H&A Staff

EVACUATION ALARM
Will be communicated during the Onsite Kickoff Meeting
EVACUATION ROUTES
Will be given a map after site specific training
EVACUATION MUSTER POINT(S)/ SHELTER AREA(S)
Will be given a locations after site specific training
EVACUTION RESPONSE DRILLS
The Site relies on outside emergency responders and a drill is not required.

Table 9-2 – Emergency Planning

Emergency Type	Notification	Response Action	Evacuation Plan/Route
Chemical Exposure	Report event to SSO immediately	Refer to Safety Data Sheet for required actions	Remove personnel from work zone
Fire - Small	Notify SSO and contact 911	Use fire extinguisher if safe and qualified to do so	Mobilize to *Muster Point*
Fire – Large/Explosion	Notify SSO and contact 911	Evacuate immediately	Mobilize to *Muster Point*
Hazardous Material – Spill/Release	Notify SSO; SSO will contact PM to determine if additional agency notification is	If practicable don PPE and use spill kit and applicable procedures to contain the release	See Evacuation Map for route, move at least 100 ft upwind of spill location
Medical – Bloodborne Pathogen	Notify SSO	If qualified dispose in container or call client or city to notify for further instruction.	None Anticipated
Medical – First Aid	Notify SSO	If qualified perform first aid duties	None Anticipated
Medical – Trauma	If life threatening or transport is required call 911, immediately	Wait at site entrance for ambulance	Noe Anticipated
Security Threat	Notify SSO who will call 911 as warranted	Keep all valuables out of site and work zones delineated.	None Anticipated
Weather – Earthquake/Tsunami's	STOP WORK and evacuate Site upon any earthquake	Turn off equipment and evacuate as soon as is safe to do so	Mobilize to *Shelter Location*
Weather – Lightning Storm	STOP WORK	Work may resume 30 minutes after the last observed lightning.	None Anticipated
Weather – Tornadoes/Hurricanes	Monitor weather conditions STOP WORK and evacuate the site	Evacuate to shelter location or shelter in place immediately	Mobilize to *Shelter Location*
MUSTER POINT To be communicated during Site kick-off meeting		*SHELTER LOCATION* To be communicated during Site kick-off meeting	
In case of site emergencies, site personnel shall be evacuated per this table and will not participate in emergency response activities. Site emergencies shall be reported to local, state, and federal governmental agencies as required.			

10. HASP ACKNOWLEDGEMENT FORM

All Haley & Aldrich employees onsite must sign this form prior to entering the site.

I hereby acknowledge receipt of, and briefing on, this HASP prior to the start of on-site work. I declare that I understand and agree to follow the provisions, processes, and procedures set forth herein at all times while working on this site.

Printed Name	Signature	Date

ATTACHMENT A
HASP AMENDMENT FORM

HASP AMENDMENT FORM

This form is to be used whenever there is an immediate change in the project scope that will require an amendment to the HASP. For project scope changes associated with "add-on" tasks, the changes must be made in the body of the HASP. Before changes can be made, a review of the potential hazards must be initiated by the Haley & Aldrich Project Manager.

This original form must remain on site with the original HASP. If additional copies of this HASP have been distributed, it is the Project Manager's responsibility to forward a signed copy of this amendment to those who have copies.

Amendment No.	
Site Name	
Work Assignment No.	
Date	
Type of Amendment	
Reason for Amendment	
Alternate Safeguard Procedures	
Required Changes in PPE	

Project Manager Name (Print)	Project Manager Signature	Date

Health & Safety Approver Name (Print)	Health & Safety Approver Signature	Date

ATTACHMENT B
TRAINING REQUIREMENTS

TRAINING REQUIREMENTS

Health and Safety Training Requirements

Personnel will not be permitted to supervise or participate in field activities until they have been trained to a level required by their job function and responsibility. Haley & Aldrich staff members, contractors, subcontractors, and consultants who have the potential to be exposed to contaminated materials or physical hazards must complete the training described in the following sections.

The Haley & Aldrich Project Manager/FSM will be responsible for maintaining and providing to the client/site manager documentation of Haley & Aldrich staff members' compliance with required training as requested. Records shall be maintained per OSHA requirements.

40-Hour Health and Safety Training

The 40-Hour Health and Safety Training course provides instruction on the nature of hazardous waste work, protective measures, proper use of personal protective equipment, recognition of signs and symptoms which might indicate exposure to hazardous substances, and decontamination procedures. It is required for all personnel working on-site, such as equipment operators, general laborers, and supervisors, who may be potentially exposed to hazardous substances, health hazards, or safety hazards consistent with 29 CFR 1910.120.

8-hour Annual Refresher Training

Personnel who complete the 40-hour health and safety training are subsequently required to attend an annual 8-hour refresher course to remain current in their training. When required, site personnel must be able to show proof of completion (i.e., certification) at an 8-hour refresher training course within the past 12 months.

8-Hour Supervisor Training

On-site managers and supervisors directly responsible for, or who supervise staff members engaged in hazardous waste operations, should have eight additional hours of Supervisor training in accordance with 29 CFR 1910.120. Supervisor Training includes, but is not limited to, accident reporting/investigation, regulatory compliance, work practice observations, auditing, and emergency response procedures.

Additional Training for Specific Projects

Haley & Aldrich personnel will ensure their personnel have received additional training on specific instrumentation, equipment, confined space entry, construction hazards, etc., as necessary to perform their duties. This specialized training will be provided to personnel before engaging in the specific work activities including:

- Client specific training or orientation
- Competent person excavations
- Confined space entry (entrant, supervisor, and attendant)
- Heavy equipment including aerial lifts and forklifts
- First aid/ CPR
- Use of fall protection
- Use of nuclear density gauges
- Asbestos awareness

ATTACHMENT C
ROLES AND RESPONSIBILITIES

SITE ROLES AND RESPONSIBILITIES

Haley & Aldrich Personnel

Field Safety Manager (FSM)

The Haley & Aldrich FSM is a full-time Haley & Aldrich staff member, trained as a safety and health professional, who is responsible for the interpretation and approval of this Safety Plan. Modifications to this Safety Plan cannot be undertaken by the PM or the SSO without the approval of the FSM.

Specific duties of the FSM include:

- Approving and amending the Safety Plan for this project
- Advising the PM and SHSOs on matter relating to health and safety
- Recommending appropriate personal protective equipment (PPE) and air monitoring instrumentation
- Maintaining regular contact with the PM and SSO to evaluate the conditions at the property and new information which might require modifications to the HASP and
- Reviewing and approving JSAs developed for the site-specific hazards.

Project Manager (PM)

The Haley & Aldrich PM is responsible for ensuring that the requirements of this HASP are implemented at that project location. Some of the PM´s specific responsibilities include:

- Assuring that all personnel to whom this HASP applies have received a copy of it;
- Providing the FSM with updated information regarding environmental conditions at the site and the scope of site work;
- Providing adequate authority and resources to the on-site SHSO to allow for the successful implementation of all necessary safety procedures;
- Supporting the decisions made by the SHSO;
- Maintaining regular communications with the SHSO and, if necessary, the FSM;
- Coordinating the activities of all subcontractors and ensuring that they are aware of the pertinent health and safety requirements for this project;
- Providing project scheduling and planning activities; and
- Providing guidance to field personnel in the development of appropriate Job Safety Analysis (JSA) relative to the site conditions and hazard assessment.

Site Health & Safety Officer (SHSO)

The SHSO is responsible for field implementation of this HASP and enforcement of safety rules and regulations. SHSO functions may include some or all of the following:

- Act as Haley & Aldrich´s liaison for health and safety issues with client, staff, subcontractors, and agencies.
- Verify that utility clearance has been performed by Haley & Aldrich subcontractors.
- Oversee day-to-day implementation of the Safety Plan by Haley & Aldrich personnel on site.

- Interact with subcontractor project personnel on health and safety matters.
- Verify use of required PPE as outlined in the safety plan.
- Inspect and maintain Haley & Aldrich safety equipment, including calibration of air monitoring instrumentation used by Haley & Aldrich.
- Perform changes to HASP and document in Appendix A of the HASP as needed and notify appropriate persons of changes.
- Investigate and report on-site accidents and incidents involving Haley & Aldrich and its subcontractors.
- Verify that site personnel are familiar with site safety requirements (e.g., the hospital route and emergency contact numbers).
- Report accidents, injuries, and near misses to the Haley & Aldrich PM and FSM as needed.

The SHSO will conduct initial site safety orientations with site personnel (including subcontractors) and conduct toolbox and safety meetings thereafter with Haley & Aldrich employees and Haley & Aldrich subcontractors at regular intervals and in accordance with Haley & Aldrich policy and contractual obligations. The SHSO will track the attendance of site personnel at Haley & Aldrich orientations, toolbox talks, and safety meetings.

Field Personnel

Haley & Aldrich personnel are responsible for following the health and safety procedures specified in this HASP and for performing their work in a safe and responsible manner. Some of the specific responsibilities of the field personnel are as follows:

- Reading the HASP in its entirety prior to the start of on-site work;
- Submitting a completed Safety Plan Acceptance Form and documentation of medical surveillance and training to the SHSO prior to the start of work;
- Attending the pre-entry briefing prior to beginning on-site work;
- Bringing forth any questions or concerns regarding the content of the Safety Plan to the PM or the SHSO prior to the start of work;
- Stopping work when it is not believed it can be performed safely;
- Reporting all accidents, injuries and illnesses, regardless of their severity, to the SHSO;
- Complying with the requirements of this safety plan and the requests of the SHSO; and
- Reviewing the established JSAs for the site-specific hazards on a daily basis and prior to each shift change, if applicable.

Visitors

Authorized visitors (e.g., Client Representatives, Regulators, Haley & Aldrich management staff, etc.) requiring entry to any work location on the site will be briefed by the Site Supervisor on the hazards present at that location. Visitors will be escorted at all times at the work location and will be responsible for compliance with their employer´s health and safety policies. In addition, this safety plan specifies the minimum acceptable qualifications, training and personal protective equipment which are required for entry to any controlled work area; visitors must comply with these

requirements at all times. Unauthorized visitors, and visitors not meeting the specified qualifications, will not be permitted within established controlled work areas.

SUBCONTRACTOR PERSONNEL

Subcontractor Site Representative

Each contractor and subcontractor shall designate a Contractor Site Representative. The Contractor Site Representative will interface directly with Insert Staff Name Here, the Subcontractor Site Safety Manager, with regards to all areas that relate to this safety plan and safety performance of work conducted by the contractor and/or subcontractor workforce. Contractor Site Representatives for this site are listed in the Contact Summary Table at the beginning of the Safety Plan.

Subcontractor Site Safety Manager

Each contractor / subcontractor will provide a qualified representative who will act as their Site Safety Manager (Sub-SSM). This person will be responsible for the planning, coordination, and safe execution of subcontractor tasks, including preparation of job hazard analyses (JHA), performing daily safety planning, and coordinating directly with the Haley & Aldrich SHSO for other site safety activities. This person will play a lead role in safety planning for Subcontractor tasks, and in ensuring that all their employees and lower tier subcontractors are in adherence with applicable local, state, and/or federal regulations, and/or industry and project specific safety standards or best management practices.

General contractors / subcontractors are responsible for preparing a site-specific HASP and/or other task specific safety documents (e.g., JHAs), which are, at a minimum, in compliance with local, state, and/or federal other regulations, and/or industry and project specific safety standards or best management practices. The contractor(s)/subcontractor(s) safety documentation will be at least as stringent as the health and safety requirements of the Haley & Aldrich Project specific HASP.

Safety requirements include, but are not limited to: legal requirements, contractual obligations and industry best practices. Contractors/subcontractors will identify a site safety representative during times when contractor/subcontractor personnel are on the Site. All contractor/subcontractor personnel will undergo a field safety orientation conducted by the Haley & Aldrich SHSO and/or PM prior to commencing site work activities. All contractors / subcontractors will participate in Haley & Aldrich site safety meetings and their personnel will be subject to training and monitoring requirements identified in this Safety Plan. If the contractors / subcontractors means and methods deviate from the scope of work described in Section 1 of this Safety Plan, the alternate means and methods must be submitted, reviewed and approved by the Haley & Aldrich SHSO and/or PM prior to the commencement of the work task. Once approved by the Haley & Aldrich SHSO and/or PM, the alternate means and methods submittal will be attached to this Safety Plan as an Addendum.

ATTACHMENT D
JOB SAFETY ANALYSES

JOB HAZARD ANALYSIS

PERSONAL PROTECTIVE EQUIPMENT HAZARD ASSESSMENT – USE THIS TO FILL IN YOUR STANDARD PAGE									
Standard PPE	**Tasks**	**Additional PPE**							
									
☒		☒	☒	☒	☐	☐	☐	☐	☐
• Hard Hat • Safety Vest • Cut Resistant Gloves • Safety Glasses • Ear Plugs • Steel-Toed Boots		Eye/Face Protection	Safety Shoes	Protective Gloves	Hearing Protection	Protective Clothing	Respiratory Protection	PFD	Fall Protection
	Groundwater sampling	Safety glasses	Steel toed	Nitrile - chemical	Choose item or enter text.	Choose item or enter text.	Choose item or enter text.	Choose item or enter text.	Choose item or enter text.
	Click here to enter task.	Choose item or enter text.	Choose item or enter text.	Choose item or enter text.	Choose item or enter text.	Choose item or enter text.	Choose item or enter text.	Choose item or enter text.	Choose item or enter text.
	Click here to enter task.	Choose item or enter text.	Choose item or enter text.	Choose item or enter text.	Choose item or enter text.	Choose item or enter text.	Choose item or enter text.	Choose item or enter text.	Choose item or enter text.
	Click here to enter task.	Choose item or enter text.	Choose item or enter text.	Choose item or enter text.	Choose item or enter text.	Choose item or enter text.	Choose item or enter text.	Choose item or enter text.	Choose item or enter text.

6.0 SPECIFIC & HIGH-RISK TASKS – Groundwater Sampling		
Task	**Hazard/Energy Source**	**Mitigations**
Calibrate Measurement Equipment Take Samples and Measurements Decontaminate Self and Equipment	Chemical Exposure	• Some Glassware used for groundwater collection contains acids/bases necessary for later analysis in a lab. Spilling this chemical poses threats to human well-being. • Interaction with the groundwater sample could expose the field staff to potentially dangerous chemicals in the sample. • Certain sites such as landfills sometimes release chemicals in from the ground in a gaseous form. • Proper detection equipment and adequate PPE are necessary.

JOB HAZARD ANALYSIS

6.0 SPECIFIC & HIGH-RISK TASKS – Groundwater Sampling		
Task	**Hazard/Energy Source**	**Mitigations**
Unload Equipment/Mobilize Site	Biological	• When conducting groundwater sampling in woody areas or with tall grass, ticks and other insects present a serious threat. • Proper PPE including long sleeves, pants, and insect repellent must be considered. • Long grasses also present the threat of contact with poisonous plants. • Visually inspecting the collection site before entry will help minimize the risk of encountering poisonous plants (poison ivy/oak/sumac). • Collecting samples in sites prevent the danger of interactions with wild animals which could be dangerous. Be prepared to avoid the potential dangers posed by wild animals when working in remote locations.
List specific task related to hazard identified.	Choose hazard or type hazard not listed.	Click to enter text for mitigations associated with selected hazard.

ATTACHMENT E
PROJECT SITE FORMS

ATTACHMENT F
SITE-SPECIFIC OPERATING PROCEDURES