NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

Division of Environmental Remediation, Region 8
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April 10, 2024

Dennis Maguire
Maguire Family Properties, Inc.
770 Rock Beach Road
Rochester, New York 14617

Re: Site Management Plan
Former Alliance Metal Stamping & Fabrication
Site Nº: C828101
Gates (T), Monroe (C)

Dear Mr. Maguire:

The New York State Department of Environmental Conservation (Department) and the New York State Department of Health (NYSDOH) has completed a review of the Proposed Revision to the Site Management Plan (SMP Revision) dated January 30, 2024, for the Former Alliance Metal Stamping & Fabrication Facility (Site) located at 12 Pixley Industrial Parkway, Gates, New York. This letter dated April 10, 2024, will be added to the Site's Site Management Plan, dated December 03, 2021.

Recharge Well Cleanout and Maintenance Procedures

1. A minimum of seven-days advance notification of any field work activities will be provided to the DER project manager. Any changes in the field work schedule will be provided to the DER project manager.

2. The work area for the recharge well cleanout will be secure to prevent non-cleanout vehicle and pedestrian traffic.

3. A vacuum truck, hydro excavator or similar equipment will be used to vacuum out the Site's recharge well(s) for the removal of clogs, debris, and sludge.

4. A dewater pad will be constructed on-site. The dewatering pad lined with a minimum of 12 ml poly, will contain a sump for the collection of watering fluids, and will be covered to prevent precipitation and erosion issues.

5. The starting recharge well bottom depth and ending bottom depth to confirm volume of sludge removal will be documented in the field logs.

6. A filter sock will be used to filter all solids/sludge during the pumping of the recharge well water/liquids to the water containment system.

7. All non-liquid material (e.g., sludge, clogs, debris) will be containerized in 55-gallon drum(s) staged on the dewatering pad. The 55-gallon drum(s) will be stored in a secure area and will be properly labeled.

8. Water samples will be collected and analyzed at an ELAP certified laboratory for the following:
   - VOCs by EPA Method 624 (Priority Pollutant List volatiles less acrolein & acrylonitrile)
   - RCRA 8 Metals by EPA Method 200.7

9. The recharge water samples analytical results will be used in the application of a Specialty Short Term Discharge Permit through Monroe County Department of Environmental Services Industrial Waste Control Division. A copy of the permit will be provided to the DER project manager prior to the discharge of the containerized liquids.

10. The recharge well water/fluids will be discharged as per the permit requirements. The containerized recharge well water/liquids will be discharged to the sanitary sewer system via on-site cleanout at a rate of 10 gallons per minute, or less or as specified in the permit.

11. The containerized solids/sludge will be sampled as per facility requirements. The analytical results will be submitted to the permitted landfill facility for acceptance for disposal. The material will be disposed as per all applicable local, State, and Federal regulation.

12. A letter report documenting the recharge well cleanout along with all supporting documentation associated with the cleanout activities including, but not limited to, the analytical results, field logs, waste disposal documentation will be submitted to the DER project manager within 45-days of the completion of the recharge well cleanout activities. In addition, the subsequent PRR will document the recharge well cleanout activities. The letter report will be an attachment to the PRR. will include all supporting documentation associated with the cleanout activities including but not limited to analytical results, field logs, waste disposal documentation.

The State seeks to resolve the outstanding differences in a mutually agreeable manner, which addresses the requirements of the Brownfield Cleanup Agreement, the Certificate of Completion, and associated Site plans. If you have any questions or concerns regarding this letter or need further assistance with the Site, please feel free to contact me at (585) 226-5349 or via email Joshua.Ramsey@dec.ny.gov.

Sincerely,

Joshua J. Ramsey

Joshua J. Ramsey
Project Manager

ec:
Dwight Harrienger (Stantec)
Amanda Stone (Stantec)
Paul Sylvestri (Harter Secrest & Emery LLP)
Starr O'Neil (MCHD)
Justin Deming (NYSDOH)
Julia Kenney (NYSDOH)
Dudley Loew (NYSDEC)
David Pratt (NYSDEC)
Charlotte Theobald (NYSDEC)

Former Alliance Metal Stamping & Fabrication Facility Site

MONROE COUNTY

TOWN OF GATES, NEW YORK

SITE MANAGEMENT PLAN

NYSDEC Site Number: C828101

USEPA ID # (Not applicable)

Prepared for:

Maguire Family Properties, Inc.

770 Rock Beach Road, Rochester, NY 14617

Prepared by:

Stantec Consulting Services Inc.

61 Commercial Street, Suite 100, Rochester, NY 14614

(585) 475-1440

Revisions to Final Approved Site Management Plan:

Revision No.	Date Submitted	Summary of Revision	NYSDEC Approval Date

DECEMBER 2021

Site Management Plan

Former Alliance Metal Stamping & Fabrication Facility Site

CERTIFICATION STATEMENT

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

Dwight Harrienger SIGNATURE

12/3/2021 DATE

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MONROE COUNTY
TOWN OF GATES, NEW YORK

SITE MANAGEMENT PLAN

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List of Acronyms

AA, AAR	Alternatives Analysis, AA Report
AMSF	Alliance Metal Stamping & Fabrication
AOC	Area of Concern
ASP	Analytical Services Protocol
BCA	Brownfield Cleanup Agreement
BCP	Brownfield Cleanup Program
bgs	below ground surface
CAMP	Community Air Monitoring Plan
C/D	Construction and Demolition
CFR	Code of Federal Regulation
COC	Certificate of Completion
CO2	Carbon Dioxide
CP	Commissioner Policy
CU	Commercial Use
DER	Division of Environmental Remediation
DUSR	Data Usability Summary Report
EC	Engineering Control
ECL	Environmental Conservation Law
ELAP	Environmental Laboratory Approval Program
EWP	Excavation Work Plan
GHG	Green House Gas
HASP	Health and Safety Plan
IAM	Indoor Air Monitoring
IC	Institutional Control
IRM	Interim Remedial Measure
ITT	ITT Corporation (ITT Inc.)
MFP	Maguire Family Properties, Inc.
NYSDEC	New York State Department of Environmental Conservation
NYSDOH	New York State Department of Health
NYCRR	New York Codes, Rules and Regulations
O&M	Operation and Maintenance
OM&M	Operation, Maintenance and Monitoring
OSHA	Occupational Safety and Health Administration
OU	Operable Unit
PCE, PERC	Perchloroethylene (also known as tetrachloroethylene or tetrachloroethene)
PID	Photoionization Detector
POGW	Protection of Groundwater
ppb	parts per billion
ppm	parts per million
PRP	Potentially Responsible Party
PRR	Periodic Review Report
QA/QC	Quality Assurance/Quality Control
QAPP	Quality Assurance Project Plan

RAO	Remedial Action Objective
RAWP	Remedial Action Work Plan
RCRA	Resource Conservation and Recovery Act
RFM	Rochester Form Machine
RI/FS	Remedial Investigation/Feasibility Study
ROD	Record of Decision
RP	Remedial Party
RSO	Remedial System Optimization
SAC	State Assistance Contract
SCG	Standards, Criteria and Guidelines
SCO	Soil Cleanup Objective
SMP	Site Management Plan
SOP	Standard Operating Procedures
SOW	Statement of Work
SPDES	State Pollutant Discharge Elimination System
SSD, SSDS	Sub-slab Depressurization, SSD System
SVE	Soil Vapor Extraction
SVI	Soil Vapor Intrusion
SVOC	Semi-Volatile Organic Compound
TAL	Target Analyte List
TCA	Trichloroethane
TCE	Trichloroethene (also known as trichloroethylene)
TCL	Target Compound List
TCLP	Toxicity Characteristic Leachate Procedure
USEPA	United States Environmental Protection Agency
$\mu g/m^3$	micrograms per cubic meter
UST	Underground Storage Tank
UU	Unrestricted Use
VCA	Voluntary Cleanup Agreement
VCP	Voluntary Cleanup Program
VOC	Volatile Organic Compound

ES EXECUTIVE SUMMARY

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:

Site Identification:	BCP Site No. C828101 Former Alliance Metal Stamping & Fabrication Facility Site 12 Pixley Industrial Parkway, Gates, Monroe County, NY
Institutional Controls:	A. 1. The Controlled Property may be used for commercial and industrial use as described in New York Codes, Rules and Regulations at 6 NYCRR Part 375-1.8(g)(2)(iii & iv). 2. All Engineering Controls (ECs) must be operated and maintained in accordance with this SMP. 3. All ECs must be inspected at a frequency and in a manner defined in the SMP. 4. The use of groundwater underlying the Controlled Property is prohibited without necessary water quality treatment as determined by the New York State Department of Health (NYSDOH) or the Monroe County Department of Health to render it safe for use as drinking water or for industrial purposes, and the user must first notify and obtain written approval from the New York State Department of Environmental Conservation (NYSDEC, also referred to herein as "the Department"). 5. Groundwater and other environmental or public health monitoring must be performed as defined in this SMP. 6. Data and information pertinent to Site Management of the property must be reported at the frequency and in a manner defined in this SMP. 7. All future activities on the Controlled Property that will disturb remaining contaminated material must be conducted in accordance with this SMP. 8. Monitoring to assess the performance and effectiveness of the remedy must be performed as defined in this SMP. 9. Operation, maintenance, monitoring, inspection and reporting of any mechanical or physical components of the remedy shall be performed as defined in this SMP. 10. Access to the Controlled Property must be provided to agents, employees or other representatives of the State of New York with reasonable prior notice to the property owner to assure compliance with the restrictions herein.

Institutional Controls:	B. The Controlled Property shall not be used for Residential or Restricted Residential purposes as defined in 6 NYCRR Part 375-1.8(g)(2)(i) and (ii), and the Engineering Controls defined herein may not be discontinued without amendment or extinguishment of the Environmental Easements granted to the Department on the Controlled Property. C. The Owner of the Controlled Property and the Owner's successors and assigns are obligated to comply with this SMP. The Owner's assumption of the obligation to comply with this SMP 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 Owner and all successors and assigns have the burden of complying with this SMP and obtaining an up-to-date version of the SMP from: Site Control Section NYSDEC Division of Environmental Remediation 625 Broadway Albany, NY 12233 Phone: (518) 402-9553 D. The Owner shall 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. The Controlled Property is subject to an Environmental Easement that the Owner has granted to the Department. A copy of the Environmental Easement is appended to this SMP. Until such time as the Environmental Easement is extinguished in accordance with the requirements of Environmental Conservation Law (ECL) Article 71, Title 36, the property deed for the Controlled Property and all subsequent issuances of conveyance relating to the Controlled Property shall state the following in at least 15-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 Environmental Conservation Law.** F. The 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 entered into after issuance of a Certificate of Completion.

Site Identification:	BCP Site No. C828101 Former Alliance Metal Stamping & Fabrication Facility Site 12 Pixley Industrial Parkway, Gates, Monroe County, NY
Institutional Controls:	G. The Owner 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 and engineering controls employed at the 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 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 the Controlled Property to evaluate the continued maintenance of the controls; 4. nothing has occurred that would constitute a violation or failure to comply with the SMP; 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 or her knowledge and belief, the work and conclusions described in the 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. H. The site-specific Health and Safety Plan (HASP) and Community Air Monitoring Plan (CAMP) must be adhered to for the activities covered by this SMP. I. The potential for vapor intrusion must be evaluated for any buildings constructed at the Controlled Property or for any changes in the current use of the existing building at the Controlled Property. Any potential impacts that are identified must be monitored or mitigated. J. The Department must be notified prior to any change of use at the Controlled Property. K. Vegetable gardens and farming on the Controlled Property are prohibited.

Site Identification:	BCP Site No. C828101 Former Alliance Metal Stamping & Fabrication Facility Site 12 Pixley Industrial Parkway, Gates, Monroe County, NY
Engineering Controls:	A. Cover system: Exposure to remaining contamination in soil at the Site is prevented by existing cover. The Excavation Work Plan (EWP) provided in Appendix D outlines the procedures required to be implemented in the event the cover system is breached, penetrated or temporarily removed and any underlying remaining contamination is disturbed. B. Sub-Slab Depressurization System (SSDS): The potential for migration of contaminated soil vapor from beneath the building footprint into the interior occupied spaces of the building is mitigated by continuous operation of a SSDS. Procedures for operating and maintaining the SSDS are documented in the Operation, Maintenance & Monitoring Plan (Section 5.0 of this SMP). C. Groundwater Monitoring Program Wells: The network of site monitoring wells used in the groundwater monitoring program for the Site is addressing remaining groundwater contamination.

Inspections:	Frequency
1. Cover inspection	Annually
2. SSDS Inspection	Annually
3. Groundwater monitoring well network inspection	Annually
Monitoring:	
1. SSDS Operations Monitoring	Monthly
2. SSDS Operations Monitoring - including limited indoor air sampling	Annually Annually until NYSDEC approves termination
3. Groundwater Monitoring	Semi-annually through 2023, then annually thereafter
Maintenance:	
1. SSDS Fans	As needed

Site Identification:	BCP Site No. C828101 Former Alliance Metal Stamping & Fabrication Facility Site 12 Pixley Industrial Parkway, Gates, Monroe County, NY
Reporting:	
1. SSDS Operations Data	Annually in PRR
2. Groundwater Data: Electronic Data Deliverables (EDDs) for the NYSDEC Electronic Information Management System (EIMS)	Following each monitoring event listed above
3. Periodic Review Report	Annually

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

1.0 INTRODUCTION

1.1 General

This Site Management Plan (SMP) is a required element of the remedial program for the Former Alliance Metal Stamping & Fabrication Facility Site located in the Town of Gates, Monroe County, New York (hereinafter referred to as the "Site"). A Site Location Map is presented on Figure 1. The Site is currently in the New York State (NYS) Brownfield Cleanup Program (BCP), Site No. 828101 which is administered by New York State Department of Environmental Conservation (NYSDEC).

Maguire Family Properties, Inc. entered into a Brownfield Cleanup Agreement (BCA) with the NYSDEC (BCA effective on October 14, 2011) to remediate the Site. A figure showing the Site location and boundaries of this Site is provided in 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 this Site, which is hereafter referred to as "remaining contamination". Institutional and Engineering Controls (ICs and ECs) have been incorporated into the Site remedy to control exposure to remaining contamination to ensure protection of public health and the environment. An Environmental Easement granted to the NYSDEC, and recorded with the Monroe County Clerk, requires compliance with this SMP and all ECs and ICs placed on the Site.

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

It is important to note that:

- This SMP details the site-specific implementation procedures that are required by the Environmental Easement. Failure to properly implement the SMP is a violation of the Environmental Easement, which is grounds for revocation of the Certificate of Completion (COC);

- Failure to comply with this SMP is also a violation of Environmental Conservation Law, 6NYCRR Part 375 and the BCA (Index #C828101-09-11; Site #C828101) for the Site, and thereby subject to applicable penalties.

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

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

1.2 Revisions

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

1.3 Notifications

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

- 60-day advance notice of any proposed changes in site use that are required under the terms of the BCA, 6NYCRR Part 375 and/or Environmental Conservation Law.

- 7-day advance notice of any field activity associated with the groundwater monitoring component of the remedial program.

- 15-day advance notice of any proposed ground-intrusive activity pursuant to the Excavation Work Plan except in emergency situations as specified under that work plan.

- Notice within 48-hours of any damage or defect to the foundation, structures or EC that reduces or has the potential to reduce the effectiveness of an EC, and likewise, any action to be taken to mitigate the damage or defect.

- Verbal notice by noon of the following day of any emergency, such as a fire, flood, or earthquake, that reduces or has the potential to reduce the effectiveness of ECs in place at the Site, with written confirmation within 7 days that includes a summary of actions taken, or to be taken, and the potential impact to the environment and the public.

- Follow-up status reports on actions taken to respond to any emergency event requiring ongoing responsive action submitted to the NYSDEC within 45 days describing and documenting actions taken to restore the effectiveness of the ECs.

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

- At least 60 days prior to the change, the NYSDEC will be notified in writing of the proposed change. This will include a certification that the prospective purchaser/Remedial Party has been provided with a copy of the Brownfield Cleanup Agreement (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 1 includes contact information for the above notification. The information on this table will be updated as necessary to provide accurate contact information. A full listing of site-related contact information is provided in Appendix B.

Table 1: Notifications*

Name	**Contact Information**
Timothy Schneider, P.E. NYSDEC Project Manager	(585) 226-5480 timothy.schneider@dec.ny.gov
David Pratt, P.E. NYSDEC Regional Hazardous Waste Remediation Engineer	(585) 226-5449 david.pratt@dec.ny.gov
Kelly Lewandowski, P.E. Chief, NYSDEC Site Control Section	(518) 402-9569 kelly.lewandowski@dec.ny.gov
Julia Kenney, P.G. NYSDOH Public Health Specialist	(518) 402-7873 julia.kenney@health.ny.gov

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

2.0 SUMMARY OF PREVIOUS INVESTIGATIONS AND REMEDIAL ACTIONS

2.1 Site Location and Description

The Site is located in the Town of Gates, Monroe County, New York and is identified as Tax Parcel 119.17-1-2 on the Town of Gates Tax Map (a copy is presented in Appendix A). The Site is an approximately 7-acre area and is bounded to the north by a commercial property (2291 Buffalo Road) occupied by a movie theater building and its parking lot, to the south by the Pixley Industrial Parkway roadway, to the east by two commercial properties (4 and 10 Pixley Industrial Parkway) occupied by two-story commercial buildings, and to the west by a vacant property (30 Pixley Industrial Parkway) formerly occupied by an industrial building (the ITT Corporation Rochester Form Machine (RFM) facility). The Site and surrounding properties are shown on Figure 2 – Site Layout Map). The boundaries of the Site are more fully described in Appendix A – Environmental Easement. The owner of the Site parcel at the time of issuance of this SMP is:

Maguire Family Properties, Inc.

2.2 Physical Setting

2.2.1 Land Use

The Site consists of the following: a 120,000-square-foot slab-on-grade building surrounded by paved driveways, loading ramps and parking lots and unpaved lawn areas. The Site is zoned General Industrial. The owner currently leases individual spaces in the facility to a variety of light manufacturing and commercial tenants including a gymnastics instruction and recreation facility, large format digital printing businesses, cleaning service businesses, a spray-paint coatings application business, a basement waterproofing contractor, an automotive repair shop, office and promotional-materials warehouse operations for a wine and liquor distributor, and a manufacturer and installer of counters and furnishings for food-service, convenience store and office applications.

The properties adjoining the Site and in the neighborhood surrounding the Site include commercial and industrial properties. Land uses in the surrounding area include a mix of vacant land and industrial and commercial facilities on the properties to the east, south and west of the AMSF facility and a multi-screen movie theater and its parking lot on the adjacent property to the north.

2.2.2 Geology

Overburden deposits consist of an upper layer of from less than 1 to a few feet of fill material underlain by a few to several feet of glacio-lacustrine sediments which are typically underlain by a few to several feet of glacial till. The glacio-lacustrine sediments include a few to several feet of low-permeability thinly laminated clay-rich layers as well as sandier deposits.

The depth to the top of bedrock was found to occur from 4 to 20.5 feet below ground surface (bgs). The top of bedrock surface at the Site appears to be an irregular surface that slopes generally north to south. A relatively pronounced low is apparent on the east side of the Site at monitoring well AMSF-MW-34. (Monitoring well locations at the Site are shown on Figure 3.)

The uppermost bedrock unit at the Site is the Eramosa Dolostone of the Upper Silurian-aged Lockport Group. The Penfield Dolostone, Decew Dolostone, and the Gates Member of the Rochester Shale underlie the Eramosa.

Site specific boring logs are provided in Appendix C.

2.2.3 Hydrogeology

The data collected during the RI indicate that over most of the Site, the water table occurs at or below the top of bedrock during both high water-table and low water-table conditions. However, the data indicate that it is likely that during high water-table periods, the water table may rise a few feet into the overburden in the area along the southern edge of the Site and other areas where the top of bedrock surface is low. This appears to be the case at shallow bedrock monitoring well AMSF-MW-34, where wet soils were noted from 15 to 20.5 feet bgs during the drilling of the MW-34 well boring and where groundwater

elevations 6.5 to 7.6 feet above the top of bedrock surface elevation were recorded during monitoring events.

Results of the remedial investigation of the adjacent ITT Corporation Rochester Form Machine (RFM) Site have indicated that there are three zones of distinctive groundwater flow characteristics at the Site. Within the shallow (uppermost) bedrock groundwater zone, in the upper 25 ft of the Eramosa Dolostone, the permeability is very high, and flow is predominantly along fractures and zones of solution cavity development. Permeability of the underlying intermediate bedrock horizon is reported to also be high, although not as high as the upper Eramosa. Permeability is reported to be lower in deeper bedrock units.

RI groundwater level monitoring results indicate that, in general, areas to the north, west and south of the Site are all hydraulically upgradient of the Site, and that in general the direction of shallow groundwater flow along the north, west and south Site boundaries is towards the Site from the adjacent off-Site areas. Results of groundwater level monitoring events performed during the RI indicated a very shallow eastward hydraulic gradient in the shallow bedrock zone across the northern half of the Site, with a somewhat steeper northeastward gradient of shallow flow in the southwestern portion of the Site. The RI data indicate that the area to the east of the eastern Site boundary is hydraulically downgradient of the AMSF Site.

Results of groundwater level monitoring performed as part of the ITT site RI indicate that during major precipitation events, stormwater influx to recharge wells RW-1 and RW-2 results in brief periods when the direction of groundwater flow in high permeability sections of the bedrock aquifer zones surrounding the recharge wells is radially outward in all directions away from the recharge wells. There are therefore brief periods during major recharge events when the direction of flow in the areas immediately west and north of recharge well RW-2 is from the AMSF Site towards the adjacent off-Site properties to the west and north.

A groundwater contour map is shown in Figure 4. Groundwater elevation data is provided in Table 3. 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 Section 8.0 - References.

Initial Due-Diligence Investigations

An initial assessment of the environmental history of the AMSF Site was performed in 1991 on behalf of Gleason Corporation. Related investigation of environmental conditions in exterior areas outside the facility building were conducted through 1994. The results of these investigations identified the presence of contamination of Site groundwater by 1,1,1-trichloroethane (1,1,1-TCA), a chlorinated VOC commonly used as a solvent in industrial degreasing operations. The highest levels of contamination were found at a well located at the northwest corner of the Site, and this occurrence was investigated further on behalf of ITT Corporation, the owner of the adjacent property to the west, as described below.

The 1990s-era investigations conducted for Gleason also identified contamination of groundwater by much lower concentrations of tetrachloroethylene, a chlorinated VOC commonly used as a degreasing or dry-cleaning solvent (also known as tetrachloroethene or perchloroethylene, and commonly abbreviated as PERC or PCE) in samples from wells located along the southern boundary of the Site. Four occurrences of soil contamination identified at the Site were addressed in 1994 with remedial actions to remove the contaminated soil.

ITT Site RI/FS

The west boundary of the AMSF Site adjoins the site of the ITT Corporation Former RFM Facility located at 30 Pixley Industrial Parkway (the ITT or RFM site), an inactive hazardous waste site (NYSDEC Site # 828112). The ITT site, portions of the movie theater parcel to the north, and the west/northwest portion of the AMSF Site have been the subject of a Remedial Investigation (RI) and Feasibility Study (FS) program

implemented by ITT under the oversight of NYSDEC. The focus of the ITT site RI/FS was contamination by 1,1,1-TCA and related VOCs related to past releases from degreasing operations at the ITT site. Data from the ITT site RI indicate that bedrock, groundwater and soil vapor in areas of the AMSF Site which are downgradient of the ITT site[1] have been impacted by chlorinated solvent contamination, with 1,1,1-TCA being the principal contaminant. In Operable Unit 1 (OU-1), the northwest portion of the AMSF Site, contamination of the bedrock matrix by chlorinated VOCs appears to act as a source for VOC contamination in Site groundwater. The contamination of the bedrock matrix was found to extend vertically from the shallow to the deeper bedrock horizons intersected by the 149-foot-deep stormwater recharge well (RW-2) located in the northwest corner of the AMSF Site. The location of RW-2 is shown on Figure 2.

In April 2009, ITT detected elevated concentrations of PCE in sub-slab vapor beneath the northeastern portion of the AMSF building when it performed an assessment of the potential for soil-vapor intrusion (SVI) in the AMSF building as part of the ITT RI. Historical records for the AMSF Site identified a degreaser that had been located in that portion of the AMSF facility during AMSF operations. The 2009 SVI data indicated a need for further investigation of the former degreaser area.

AMSF Site RI

The need for further investigation of the subsurface conditions in the area of the former AMSF degreaser was the impetus for MFP to undertake an RI at the AMSF Site under the BCP. MFP applied as a Volunteer under New York State's BCP and the Site was admitted into the BCP by NYSDEC in July 2011.

[1] At most times, the direction of shallow groundwater flow along the western Site boundary is generally eastward from the ITT site towards the AMSF Site. However, during periods immediately following significant rain events, a temporary pattern of flow develops in the area immediately surrounding the stormwater recharge well (RW-2) located in the northwest corner of the AMSF Site. The groundwater flow direction during and immediately following significant rain events is radially outward from the recharge well.

The BCP RI was initiated in March 2012 and completed in December 2015. The findings of the RI concerning the nature and extent of contamination at the Site were as follows:

Soil

Occurrences of soil contamination exceeding NYSDEC's Soil Cleanup Objectives (SCOs) for protection of public health at commercial or industrial use sites were not identified at the Site.

VOC contamination exceeding NYSDEC's SCOs for protection of unrestricted site use (UU SCOs) and protection of groundwater (POGW SCOs) were detected in three areas of the Site:

- Former Degreaser Area - Area of Concern AOC 1
- Former Waste Storage Area B – AOC 5B
- Former Paint Shop Area - AOC 6

All three areas are within the footprint of the Site building, and the contaminated soil is therefore covered by and contained beneath the concrete floor slab of the building. In each area, the water table occurs below the top of bedrock. The cap provided by the floor slab, the unsaturated condition of the soil profile and the contaminant concentrations in both soil and groundwater together indicate that the soil contamination in these areas is unlikely to pose health risks to site workers or others from direct contact or ingestion or to be contributing to groundwater contamination at the Site.

Groundwater

Chlorinated VOCs are present in Site groundwater at concentrations that exceed NYSDEC's groundwater quality standards in the shallow-bedrock zone across the entire Site and are also present in the intermediate- and deep-bedrock zones.

Concentrations of 1,1,1-TCA and the chlorinated VOCs which are the daughter products of the degradation of 1,1,1-TCA in the environment (including principally 1,1-dichloroethane and 1,1-dichloroethene) are highest in OU-1, located in the upgradient

northwest corner of the Site. 1,1,1-TCA-related contamination above standards extends from OU-1 beneath the building to the eastern, downgradient Site boundary. Contamination by PCE and its degradation daughter products (including principally trichloroethene and cis-1,2-dichloroethene) is present at lower concentrations, with the highest levels found in the area of the former degreaser in AOC 1 and with exceedances of standards extending to the eastern Site boundary. As a BCP Volunteer, MFP was not responsible for delineation of the extent of off-Site groundwater contamination, and therefore groundwater sampling was not performed on the adjacent properties located east of the Site during the AMSF Site RI.

Soil Vapor

The results of the RI indicated the potential for chlorinated VOCs present in the subsurface at the Site to migrate by soil vapor intrusion (SVI) from below the floor of the facility building into the air inside the building. Concentrations of TCA, PCE and/or one or more related chlorinated VOC daughter products were detected in sub-slab vapor and indoor air sample pairs collected at locations throughout the building. Concentrations in sub-slab vapor at most of the locations sampled, including those locations throughout the high-ceiling sections of the building originally occupied by AMSF manufacturing operations, exceeded the 'No further action' SVI evaluation guidance values established by the New York State Department of Health (NYSDOH)[2]. The locations where the data met the NYSDOH guidance levels for 'No further action' recommended included:

- an office space in the Storage Shed Addition located on the west side of the building,
- an office area in the former Paint Storage Room addition located on the south side of the southwest corner of the building, and

[2] The guidance values are those specified in the May 2017 matrices for assessing whether indoor air and sub-slab vapor sample analysis results would lead to a recommendation by NYSDOH for further action to address the potential for SVI at a site. The matrices are an updated element of the NYSDOH "Final Guidance for Evaluating Soil Vapor Intrusion in the State of New York" (NYSDOH, October 2006).

- two locations in the office areas of the Original Administration Building section located at the southeast side of the facility.

Interim Remedial Measure Site Management Plan (IRM SMP)

An IRM Site Management Plan (IRM SMP, Stantec 2016) was instituted in 2016 which specified a monitoring program to be performed annually to assess whether the chlorinated VOCs (CVOCs) that are present in the subsurface at the Site are intruding from below the floor into the air inside the building. The monitoring was performed during each heating season. The annual monitoring program specified in the IRM SMP involved:

- an inspection of the building to review conditions of the floor slab,
- a review of activities and operations conducted by the various occupants,
- an inventory of chemical products in use at the Site, and
- collection of indoor air samples at more than 20 locations distributed throughout the entire building and covering the range of activity and occupancy conditions for each tenant's operation.

Initial IRM SMP monitoring activities were conducted in February 2016. Each year, results of the annual monitoring were evaluated to determine whether other actions (actions in addition to the annual monitoring) were warranted to address potential exposure of building occupants to VOCs which may be detected in the samples. Concentrations of Site VOCs detected in the IRM SMP indoor air samples each year have for the most part been below applicable NYSDOH Air Guideline Values. In the few instances where exceedances of the Air Guidelines were identified in indoor air, the concentrations were found to be:

a) below the threshold which NYSDOH regards as cause for immediate further action to reduce potential for exposure; or

b) related to a chemical product in use in a tenant operation.

In those years in which a follow-up round of sampling was conducted to further assess an instance of an exceedance of a NYSDOH Air Guideline Value, the results of the follow-up sampling confirmed that immediate further action was not needed.

The two most recent annual monitoring events were conducted in December 2019 and January 2021 after implementation of an interim remedial measure (described below in a following section of this SMP) that involved the installation and October 2019 startup of a sub-slab depressurization system (SSDS) for mitigation of the potential for soil vapor intrusion at the Site. The results of the two most recent sampling events confirmed that further actions were not needed.

March 2017 Sub-slab Vacuum Communication Testing

Anticipating that mitigation of the potential for SVI using a sub-slab depressurization system (SSDS) was a possible option for the Site remedy, sub-slab vacuum communication testing was performed in 2017 to assess the feasibility of an SSDS approach.

This work was performed in accordance with the Revised Work Plan for Supplemental Activities dated March 2, 2017. The testing was performed with the intent of understanding the ability of the sub-slab substrate in three major sections of the building to propagate vacuum. In each of the three building sections studied, one or two 4-inch-diameter temporary suction holes were drilled through the floor slab. Vacuum was applied at the suction holes using a residential-grade RadonAway™ GP501 fan and a higher-pressure RadonAway™ HS5000 fan. Smaller diameter 1-inch temporary testing holes were installed through the slab at various distances from the suction hole and vacuum pressure was monitored at these holes with a digital manometer before and during the application of suction.

Results of the testing were documented in AMSF RI Progress Report No. 61 (April 10, 2017). A summary of the results of the testing is provided in Appendix B. As indicated on the summary, the testing performed in the Original Manufacturing Building section of the building (constructed in 1967) and in the West Addition section (constructed in 1975) demonstrated extension of a negative pressure field of more than

adequate strength (negative pressures below -0.004 inches water column) to distances of 45 to 55 feet. In the North Addition (constructed in 1979) portion of the building, extension of a negative pressure field was initially observed to be relatively limited. It was determined in the field that this initial poor communication was largely due to the presence of floor slab expansion joints that had apparently cracked through to the base of the slab. The expansion joints in the test areas were either caulked or temporarily sealed with tape and the suction tests were repeated. Sealing of the joints was found to substantially improve sub-slab communication, with adequate negative pressure field extension observed at distances of up to 43 feet.

Installation of SSDS Components for the Excelsus Tenant Space

In late 2017 an approximately 35,000-square-foot portion of the building became vacant. The vacancy of the space, which included the former AMSF degreaser location, afforded MFP an opportunity to install SSDS suction points and risers in the space prior to occupancy by Excelsus, the current tenant in that space. The nine suction cavities and riser pipes were later utilized as components for the SSDS installed during the 2019 implementation of an interim remedial measure (described below).

A plan for installation of these SSDS components was submitted to NYSDEC in a Notification of IRM-SMP Activity letter dated January 31, 2018. The work involved construction of nine SSDS suction points and installation of related SSDS riser pipes up to a height of approximately 6 feet above floor grade. Riser pipes were capped with air-tight seals. The installation of these SSDS components was completed in February 2018 and documented in RI Progress Report No. 72 (Stantec, March 19, 2018).

Alternatives Analysis

Following completion of the RI and the implementation of the IRM SMP activities described above, an Alternatives Analysis (AA) was performed to evaluate remedial options for addressing the conditions indicated by the findings of the RI and the IRM SMP monitoring program. Among other criteria, remedial alternatives were screened under the assumption that an institutional control will be implemented that will

restrict Site uses to commercial and industrial uses, the types of uses that have characterized the Site and surrounding area for the past 50 years. The AA also considered alternatives which could theoretically achieve conditions that would allow for unrestricted use of the Site relative to soil contamination.

The results of the AA yielded a recommendation of the following combination of remedial elements as the remedy for the contamination identified at the Site by the RI:

- Construction and operation of an SSDS for SVI mitigation throughout the entire building.

- Containment of VOC-contaminated soil exceeding UU and POGW SCOs by maintaining the existing building and its concrete floor slab as cover in affected areas.

- Modification of an existing stormwater recharge well located in the northwest corner of the Site (recharge well RW-2) to eliminate direct recharge of stormwater into the deep bedrock horizons of the contaminated bedrock aquifer and thereby reduce the potential for mobilization and migration of VOC contaminants in these horizons.

- Development and implementation of a Site Management Plan (SMP) specifying, among other standard elements, the following:

    - an operation, maintenance & monitoring (OM&M) plan for the SSDS,
    - programs of periodic groundwater and indoor air monitoring for the Site,
    - periodic Site inspection to assess the integrity and continued effectiveness of the various components of the remedy (including the cover system), and
    - procedures for environmental monitoring during future excavations at the Site.

- Institutional Controls granting an environmental easement to NYSDEC, restricting future use of the Site to industrial and commercial uses, and prohibiting use of Site groundwater.

The recommended remedy also included performance of initial SVI assessments at the buildings located on the two off-site properties (4 and 10 Pixley Industrial Parkway) adjacent to the downgradient eastern Site boundary, followed if and as necessary by additional actions such as SVI mitigation or monitoring at the off-site properties. Because MFP, as the BCP Volunteer, would not bear responsibility under BCP regulations for quantitative assessment of the potential for SVI exposures at adjacent off-Site downgradient properties, this component of the recommended remedy will be undertaken by others.

A draft report presenting the Alternatives Analysis was submitted to NYSDEC in June 2018. Two Interim Remedial Measures (IRMs), which are described in the following paragraphs, were completed after the draft AA report was submitted to NYSDEC. The two IRMs addressed the recommended remedial action elements concerned with implementing SVI mitigation throughout the building, modification of a deep recharge well (RW-2) and addressing exceedances of NYSDEC commercial use soil cleanup objectives in cover system surface soil.

Interim Remedial Measures

Initial IRM

An Interim Remedial Measure (IRM) Work Plan for the Site was submitted to NYSDEC in June 2019 and conditionally approved on July 24, 2019. The IRM Work Plan specified construction of two elements of the remedy recommended in the AAR which were not already in place at the Site in July 2019. Those elements included:

- An SSDS that covers the entire building (with the exception of unheated loading docks which are not routinely occupied by site workers or visitors). A design document for the proposed SSDS was attached to the Work Plan.
- Plugging of the deep bedrock interval of recharge well RW-2.

Implementation of the IRM Work Plan was initiated in August 2019 in accordance with the specifications of the IRM Work Plan, modifications to the work plan

specified by NYSDEC in its approval letter, and the "Proposed Amendment to the IRM Work Plan" (September 5, 2019) accepted by NYSDEC on September 27, 2019.

On-Site stormwater recharge well RW-2, located in the northwest corner of the Site, was modified by installation of a grout plug to seal the deep-bedrock portions of the well while maintaining the function of the well as a component of the stormwater management infrastructure for the Site.

In accordance with the requirements of the IRM Work Plan, the modification of RW-2 was documented in a Class V injection well inventory form that was submitted to the U.S. Environmental Protection Agency (EPA) Underground Injection Control (UIC) program office for EPA Region 2. The UIC inventory covered all five on-Site recharge wells (RW-1 through -5). The inventory form was submitted to the EPA, with a copy to NYSDEC, on October 16, 2019.

The SSDS installed during the IRM consists of a network of PVC piping that connects 42 suction cavities constructed under the existing floor slab to 21 vacuum fans located on the building roof. The design of the suction point network and the selection of the locations of the 42 suction cavities were determined on the basis of results of sub-slab vacuum communication testing performed in various sections of the building prior to the SSDS construction activities, taking into account the configuration of building footers throughout the building. After installation of the SSDS, commissioning of the system and demonstration of sub-slab depressurization of the building footprint was conducted. Full-time operation, maintenance and monitoring of the SSDS component of the IRM began in October 2019 and has continued since then.

The IRM construction and commissioning activities were completed in October 2019. The IRM Construction Completion Report (CCR) was issued on August 16, 2020.

Results of routine monitoring of SSDS operations since October 2019 have documented uninterrupted operation of the system as designed. No automated alarms indicating shutdown or failure of system fans have been tripped since system start-up. Monthly monitoring of vacuum gauges for each of the system fans has indicated vacuum

readings at design levels for all components of the system each month since system start-up.

Two annual indoor air monitoring (IAM) events were performed following construction and start-up of the SSDS. Sampling was performed in accordance with the terms of the Department's July 24, 2019, conditional approval of the IRM Work Plan. The IAM events were conducted in December 2019 and January 2021.

As documented in reports for each event submitted to NYSDEC, an exceedance of the NYSDOH Air Guideline for PCE was detected in both sampling events in the sample collected in the tenant space in the northeast corner of the building that is occupied by an automotive repair shop. The building questionnaire product inventory conducted for each event documented the use of an aerosol nut and bolt loosener product with PCE as its primary ingredient in the automotive repair shop. No other exceedances of a NYSDOH Air Guideline were detected in the samples from that space in either event. Furthermore, no elevated concentrations of VOCs were detected in samples collected from other tenant spaces, including spaces immediately surrounding the repair shop space.

Additionally, the results of the pressure field extension testing that had been performed following start-up of the SSDS in 2019 demonstrates sub-slab depressurization vacuum coverage in this part of the building. Routine monthly monitoring of system vacuum levels performed since the operation of the SSDS was initiated demonstrates continuous operation of the SSDS as designed.

All these considerations indicate that additional action is not needed to address the potential for SVI, and indicate the PCE exceedances detected in the automotive repair shop samples are attributable to the aerosol product in use in the repair shop. To confirm that conclusion, a limited additional indoor air sampling program (described in Section 4.4.2) is included in the post-remediation media monitoring and sampling program for the site.

Cover System IRM

The June 2019 IRM Work plan specified a pre-design investigation program of supplemental surface soil sampling in lawn areas of the facility to determine, in accordance with NYSDEC guidance, whether existing surface soil conditions in the lawn areas were appropriate for the Site cover system. The cover system pre-design investigation sampling program was completed in September 2019 as specified in the IRM Work Plan. The results of the sampling program identified benzo(a)pyrene (B(a)P) in composite samples of surface soil collected from the lawn areas on the east and south sides of the Site at concentrations that exceeded the CU SCO for B(a)P.

A Cover System IRM was thereafter designed to bring the cover system into compliance with NYSDEC requirements for a commercial use BCP site. An IRM Work Plan for the Cover System at the Site was submitted to NYSDEC in September 2020 and conditionally approved by NYSDEC on September 25, 2020. The Cover System IRM was implemented to address cover system conditions in lawn areas on the east and south sides of the site with the B(a)P exceedances noted above.

The IRM was implemented in accordance with the specifications of the September 2020 IRM Work Plan, modifications to the work plan specified by NYSDEC in its approval letter dated September 25, 2020, and the "Implementation of Cover System IRM Work Plan – Interim Report" dated March 10, 2021. Cover System remedial excavation activities and installation of new cover soils, lawn and mulch were completed at the Site in May and June 2021.

The Cover System IRM was implemented with the following elements:

- Supplemental soil sampling of the lawn areas on the east and south sides of the Site to delineate areas of exceedance of the CU SCO for B(a)P.
- For those areas confirmed by the supplemental sampling to exhibit exceedances of a CU SCO, one or the other of the following two remedial approaches was implemented:

- In some of the cover system remedial areas, soil exceeding CU SCOs was removed and replaced with an equal thickness of imported cover material. The soil removed from these areas was moved to one of the three cover system lawn areas on the east side of the Site addressed using the second remedial approach.

- In the remaining three remedial areas, soil exceeding CU SCOs was left in place. Soil removed from the areas addressed using the first approach was placed on top of the existing surface soil to create a low-profile berm. A permeable geotextile fabric demarcation layer was placed over the soil with CU SCO exceedances, and an overlying soil cover consisting of a minimum of one foot of imported topsoil of sufficient quality to maintain a vegetative layer was installed. The existing soil at edges of the cover areas was removed as needed to key the edge of the remediated area to the surrounding grade to achieve the required one-foot cover thickness.

- Imported cover material was pre-characterized in accordance with NYSDEC Part 375 regulations and DER-10 policy requirements to confirm its eligibility for use as soil cover.

Completion of the Cover System IRM was documented in a CCR submitted to NYSDEC in August 2021.

Interim Remedial Measures / Alternatives Analysis Report

After the IRMs had been completed, an Interim Remedial Measures / Alternatives Analysis Report (IRM/AAR) was submitted to NYSDEC in September 2021. The IRM/AAR incorporated the AA that had been presented in the June 2018 AA report, summarized the completed IRMs and provided references to the detailed work plans and CCRs that had been submitted to NYSDEC to document the design and implementation of the IRMs. The IRM/AAR recommended the following combination of remedial elements as a remedy for the contamination identified at the Site and the related potential on- and off-Site human health exposures identified by the qualitative exposure assessment:

- No further remedial action is necessary following completion of the IRMs.
- Implementation of the Institutional Controls established in the Environmental Easement that was granted to NYSDEC in 2019. will be implemented. The institutional controls include restricting future use of the Site to industrial and commercial uses and prohibiting use of Site groundwater.
- Development and implementation of a NYSDEC-approved SMP.

Under the recommended remedy, the site building floor slab, outdoor pavements and a clean soil cover will be maintained to serve as a cover over residual soil contamination. Groundwater monitoring will be performed to confirm that contaminant concentrations in on-Site bedrock groundwater will continue to decline gradually as a result of intrinsic degradation and attenuation processes.

Through groundwater monitoring to track intrinsic degradation and attenuation and recharge well influence, engineering controls isolating areas of soil contamination, and discontinuation of direct injection of stormwater into the deep section of the bedrock groundwater system, the potential mobility of contaminants to off-Site locations will be reduced.

Potential on-Site exposures related to vapor intrusion have been addressed by the construction and operation of the SSDS for the Site building. Monitoring of SSDS operation in accordance with the SMP will be performed to track the effectiveness of SVI mitigation at the site over time. A limited indoor air monitoring program related to the automotive repair shop area where an aerosol product containing PCE was in use will be included in the SMP monitoring program.

An SVI assessment program, to be performed by an entity other than the Volunteer (MFP), was recommended for adjacent off-Site properties located east of the Site to determine whether potential exposures exist on those properties from vapor intrusion caused by downgradient off-Site migration of Site contaminants in groundwater.

2.4 Remedial Action Objectives

The Remedial Action Objectives (RAOs) for the Site as listed in the IRM/AAR dated September 22, 2021 are as follows:

Groundwater

RAOs for Public Health Protection

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

RAOs for Environmental Protection

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

Soil

RAOs for Public Health Protection

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

RAOs for Environmental Protection

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

Soil Vapor

RAOs for Public Health Protection

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

2.5 Remaining Contamination

2.5.1 Soil

Table 2 and Figures 5A and 5B summarize the results of all soil samples collected that exceed the Unrestricted Use SCOs and the Commercial Use SCOs at the Site after completion of remedial action. SCO exceedances in soil remaining at the Site are described below.

VOCs

VOC contamination exceeding NYSDEC's SCOs for unrestricted use sites (UU SCOs) and for protection of groundwater at restricted use sites (POGW SCOs) were detected in three areas of the Site. Exceedances of SCOs for protection of public health at commercial or industrial use sites were not identified at the Site.

No exceedances of SCOs, including Unrestricted Use SCOs, were detected in the soil samples collected in Operable Unit 1. OU-1 is the northwest portion of the Site where contamination of the bedrock matrix by chlorinated VOCs is present and appears to act as a source for VOC contamination in Site groundwater.

As shown on Figure 5A, all three areas where VOCs were detected above UU/POGW SCOs are within the footprint of the Site building, and the contaminated soil is therefore covered by and contained beneath the concrete floor slab of the building. In each area, the water table occurs below the top of bedrock. These conditions and the contaminant concentrations described below indicate that the soil contamination in these areas is unlikely to pose health risks to site workers or others from direct contact or ingestion or to be contributing to groundwater contamination at the Site. The three areas include:

Former Degreaser Area - Area of Concern (AOC) 1

PCE (UU/POGW SCOs = 1.3 parts per million, ppm) was detected at concentrations of 1.3 and 2.2 ppm in samples collected at depths of 6.9 and 10.0 ft., respectively, from the AMSF-MW-20 test boring. 1,4-dioxane (UU/POGW SCOs = 0.1 ppm) was detected at a concentration of 2.4 ppm in a sample collected at a depth of 7.5 ft. from the adjacent DG-TB-1 test boring. SCO exceedances were not detected in samples from surrounding test borings. As shown on Figure 5, the area affected by SCO exceedances is estimated to be approximately 375 square feet.

Former Waste Storage Area B – AOC 5B

1,4-dioxane (UU/POGW SCOs = 0.1 ppm) was detected at concentrations of 0.25 to 3.6 ppm in samples collected from the two AOC 5B test borings 5B-TB-1 and 5B-TB-2. The AOC 5B samples were collected at depths ranging from 3 to 7 ft. As shown on Figure 5, the size of the area affected by SCO exceedances is estimated to be approximately 1,600 square feet.

Former Paint Shop Area - AOC 6

Cis-1,2-dichloroethene (DCE) (UU/POGW SCOs = 0.25 ppm) and 1,1-DCE (UU/POGW SCOs = 0.27 ppm) were detected at concentrations of 0.49 and 0.41 ppm, respectively, in a sample collected at a depth of 2 ft. from test boring PS-TB-1. 1,4-dioxane (UU/POGW SCOs = 0.1 ppm) was detected at a concentration of 0.14 ppm in a sample collected from that boring at a depth of 8 ft. SCO exceedances were not detected in samples from other borings in the area. As shown on Figure 5, the size of the area affected by SCO exceedances is estimated to be approximately 600 square feet.

Metals

Zinc was detected at a concentration that exceeded the NYSDEC UU SCO (109 ppm) in one soil sample collected at a depth of 8 ft. from Former Paint Shop (AOC 6) test boring AMSF-MW-26. (The UU SCO for zinc is based on the SCO for protection of ecological resources.) The concentration detected (224 ppm) did not exceed human health or groundwater protection SCOs.

Nickel was detected at a concentration that exceeded the NYSDEC UU SCO (30 ppm, also based on protection of ecological resources) in one of the three surface soil samples collected to characterize Site-wide soil conditions. The nickel concentration (33.9 ppm) detected in the sample (AOC11-TB3-SS-1), which was collected from a test boring in a lawn area on the east side of the Site, did not exceed human health or groundwater protection SCOs.

Exceedances of SCOs for aluminum, iron, magnesium and calcium detected in several samples are due to background conditions and do not represent environmental contamination.

SVOCs

An occurrence of poly-nuclear aromatic hydrocarbon compounds (PAHs) was detected in a surface soil sample (AOC11-TB3-SS-1, 0.1 to 2.0 feet bgs) collected during the remedial investigation to characterize Site-wide soil conditions. The concentrations of five PAHs in the sample exceeded unrestricted use SCOs, and one of the five compounds (benzo(a)pyrene, 1.3 ppm) exceeded its CU SCO (1.0 ppm). However, the detected concentrations (0.830 to 1.8 ppm) of those five PAHs, including benzo(a)pyrene, are not unusual for surface soil in an urban or industrial area. Furthermore, because the sample was collected from a test boring in a lawn area on the east side of the Site at a location adjacent to the facility parking lot, the PAH detections in the sample are believed to reflect conditions related to pavement constituents and/or parking lot run-off. The location of the sample and a summary of the PAH concentrations detected above SCOs in this sample are shown on figure 5A.

The cover system pre-design investigation of surface soil completed in 2019 identified the presence of benzo(a)pyrene above the NYSDEC CU SCO in composite samples of cover system surface soil (soil from 0 to 12 inches bgs) in lawn areas on the east and south sides of the Site. Exceedances of PAH CU SCOs in cover system soil were delineated and addressed by the supplemental surface soil sampling, remedial excavation, and installation of imported cover material activities that were completed during the Cover System IRM. Those activities included leaving soil with exceedances of benzo(a)pyrene and four other PAHs beneath demarcation layer fabric and 12 inches of imported cover

material that meets CU SCOs in three remediated berm areas located on the eastern side of the Site. The locations and dimensions of the three cover system berm areas are shown on Figure 5B.

Pesticides and PCBs

Pesticides and poly-chlorinated biphenyl compounds (PCBs) were not detected above SCOs.

2.5.2 Groundwater

Figures 6A and 6B summarize the results of all samples of groundwater that exceed the SCGs after completion of the remedial action. Exceedances of groundwater standards at the Site are described below.

VOCs

The chlorinated VOCs 1,1,1-TCA and PCE, and the chlorinated ethane and ethene compounds which are the daughter products of the degradation of 1,1,1-TCA and PCE in the environment, are present in Site groundwater at concentrations that exceed NYSDEC's Technical and Operational Guidance Series Memorandum 1.1.1 (TOGS) groundwater quality standards in the shallow-bedrock zone across the entire Site. Contamination is also present in the intermediate- and deep-bedrock zones.

Groundwater monitoring well locations at the Site are shown on Figure 3. Exceedances of groundwater quality standards have been detected in the most recent samples from all of the wells shown on Figure 3 except for the deep bedrock zone wells AMSF-MW-1D, -3D and -8D, which are located at or near the northwest, southeast, and southwest corners of the Site, respectively. Summaries of RI groundwater sample analysis results are presented on Figures 3A (Shallow Bedrock Wells) and 3B (Intermediate and Deep Bedrock Wells).

Concentrations of 1,1,1-TCA and related daughter products are highest in the OU-1 area, located in the upgradient northwest corner of the Site, with contamination above standards extending downgradient beneath the building to the eastern, downgradient Site boundary.

Contamination by PCE and its daughter products is also present across the Site but at lower concentrations. Highest concentrations of PCE and its daughters are found in the area of the former degreaser in AOC 1, in the east-central part of the Site, indicating that the former degreaser area represents a source of contamination that is discrete from the source area located near the northwest corner of the Site. Exceedances of standards for PCE and its daughters also extend to the eastern Site boundary.

In its July 18, 2016, letter accepting the December 2015 RI report for the AMSF Site, NYSDEC stated that a discrete area of groundwater contamination by 1,1,1-TCA originating near monitoring well MW-9S was indicated by the RI groundwater sampling results. MW-9S is located on the west side of the Site building, and in its comments on the RI report NYSDEC stated that former waste handling operations and the past presence of soil contamination in this area represented potential sources for the groundwater contamination in this area of the Site.

RI groundwater level monitoring results indicate that areas to the north, west and south of the Site are all hydraulically upgradient of the Site, and the results indicate that in general the direction of shallow groundwater flow along the north, west and south Site boundaries is towards the Site from the adjacent off-Site areas. Groundwater sampling is not known to have been performed on the adjacent properties located east of the Site, and therefore the extent of the VOC contaminant plume beyond the downgradient eastern Site boundary is not known. (As a BCP Volunteer, MFP was not responsible for delineation of the extent of off-Site groundwater contamination.)

The ITT site RI demonstrated through collection and analysis of bedrock samples that 1,1,1-TCA, 1,1-dichloroethane (1,1-DCA), PCE, and trichloroethene (TCE) are adsorbed in the bedrock matrix in shallow to deep bedrock (to depths of 160 feet) at locations in the northeast corner of the ITT site and the adjacent area in the northwest corner of the AMSF Site. The presence of contaminants adsorbed in the bedrock matrix in this area will likely continue to be a source of contamination impacting shallow and intermediate zone groundwater conditions in downgradient areas of the AMSF Site.

Metals, SVOCs, Pesticides and PCBs

The only occurrence of an exceedance of a groundwater quality standard for potential contaminants other than VOCs was a one-time detection of 82 µg/L of lead in the June 2013 sample collected from monitoring well AMSF-MW-26. The lead concentration in the September 2013 sample from that well was, however, below the TOGS standard of 25 µg/L. Exceedances of groundwater standards and guidance values for iron, magnesium, selenium and sodium that were detected at several other locations are likely due to background conditions present naturally in groundwater in the area.

With one exception, semi-volatile organic compounds (SVOCs, which include PAHs) and pesticides and PCBs were not detected in Site groundwater samples. The one exception was a single detection of a concentration of 3.8 µg/L of caprolactam, an SVOC for which there is no applicable groundwater standard.

2.5.3 Soil Vapor

Figure 7 presents a summary of the SVI assessment locations sampled at the Site during and before the RI and indicates where exceedances of soil vapor SCGs were noted on at least one occasion. Because soil vapor sampling has not been conducted since conclusion of the RI or implementation of the remedy, the Figure 7 summary represents the most recent available data concerning where sub-slab soil vapor contamination may have remained at the Site at the time of the completion of the remedial action (at the time that the construction and commissioning of the SSDS was completed).

Figure 7 shows the locations where validated analysis results for indoor air and sub-slab vapor sample pairs collected prior to and during the RI exceeded SVI assessment guidance values established by NYSDOH for TCA, PCE and/or one or more related chlorinated VOC daughter products. The locations in the building where sampling data indicated that actions were not needed to address the potential for SVI include locations at the west edge (AM-SVIA3), southwest corner (AMSF-10 and AMSF-17) and southeast corner (AM-SVIA10 and AM-SVIA11) of the building.

3.0 INSTITUTIONAL AND ENGINEERING CONTROL PLAN

3.1 General

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

This plan provides:

- A description of all IC/ECs on the Site;
- The basic implementation and intended role of each IC/EC;
- A description of the key components of the ICs set forth in the Environmental Easement;
- A description of the controls to be evaluated during each required inspection and periodic review;
- A description of plans and procedures to be followed for implementation of IC/ECs, such as the implementation of the Excavation Work Plan (EWP) (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/ECs required by the Site remedy, as determined by the NYSDEC.

3.2 Institutional Controls

A series of ICs is required by the Decision Document to: (1) implement, maintain and monitor Engineering Control systems; (2) prevent future exposure to remaining contamination; and (3) limit the use and development of the Site to commercial 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 8. These ICs are:

- The property may be used for: commercial and industrial use;
- All ECs must be operated and maintained as specified in this SMP;
- All ECs must be inspected at a frequency and in a manner defined in the SMP.
- The use of groundwater underlying the property is prohibited without necessary water quality treatment as determined by the NYSDOH or the Monroe County Department of Health to render it safe for use as drinking water or for industrial purposes, and the user must first notify and obtain written approval to do so from the Department.
- Groundwater and other environmental or public health monitoring must be performed as defined in this SMP;
- Data and information pertinent to site management must be reported at the frequency and in a manner as defined in this SMP;
- All future activities that will disturb remaining contaminated material must be conducted in accordance with this SMP;
- Monitoring to assess the performance and effectiveness of the remedy must be performed as defined in this SMP;
- Operation, maintenance, monitoring, inspection, and reporting of any mechanical or physical component of the remedy shall be performed as defined in this SMP;
- Access to the Site must be provided to agents, employees or other representatives of the State of New York with reasonable prior notice to the property owner to assure compliance with the restrictions identified by the Environmental Easement.
- The potential for vapor intrusion must be evaluated for any buildings developed in the area within the IC boundaries noted on Figure 8, and any potential impacts that are identified must be monitored or mitigated; and
- Vegetable gardens and farming on the Site are prohibited.

3.3 Engineering Controls

The ECs described below are required to control remaining contaminated soil, groundwater and soil vapor that exists beneath the Site and protect human health and the environment. Figure 9 shows the location of the ECs for the Site.

3.3.1 Cover System

Exposure to remaining contamination in soil at the Site is prevented by an existing cover system. This cover system is comprised of soil in lawn and landscaped areas, soil or landscaping mulch covering a geotextile fabric demarcation layer in three cover system remedial berm areas located on the east side of the Site, crushed stone overlying soil in the unpaved strip between the south edge of the south parking area and the drainage ditch along Pixley Industrial Parkway, asphalt pavement, concrete-covered sidewalks, and the facility building. Figure 8 presents the location of the cover system. The Excavation Work Plan (EWP) provided in Appendix D outlines the procedures required to be implemented in the event the cover system is breached, penetrated or temporarily removed and any underlying remaining contamination is disturbed. Procedures for the inspection of this cover are provided in the Monitoring and Sampling Plan included in Section 4.0 of this SMP. Any work conducted pursuant to the EWP must also be conducted in accordance with the procedures defined in a Health and Safety Plan (HASP) and associated Community Air Monitoring Plan (CAMP) prepared for the Site and provided in Appendix E.

3.3.2 Sub-slab Depressurization System

The potential for migration of contaminated soil vapor from beneath the building footprint into the interior occupied spaces of the Site building is mitigated by continuous operation of a Sub-Slab Depressurization System (SSDS).

Procedures for operating and maintaining the SSDS are documented in the Operation, Maintenance & Monitoring Plan (Section 5.0 of this SMP). As built drawings, signed and sealed by a professional engineer, are included in Appendix F – SSDS Operation and Maintenance Manual (O&M Manual).

3.3.3 Groundwater Monitoring Wells

A program of periodic groundwater monitoring to address and assess the remaining groundwater contamination at the Site is a component of the Monitoring and Sampling Plan (Section 5.0 of this SMP).

The ECs involved in groundwater monitoring program include the network of site monitoring wells used in the ongoing monitoring program. Procedures for maintaining

the monitoring well network are documented in the Monitoring and Sampling Plan. Well completion reports are included in Appendix C. Figure 9 shows the location of the monitoring wells that constitute the groundwater monitoring program ECs.

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 remedial action objectives identified by the decision document. The framework for determining when remedial processes are complete is provided in Section 6.4 of NYSDEC DER-10. Considerations involved in determining when the groundwater monitoring component of the remedy for this Site is complete are also described below in Section 3.3.4.3 of this SMP.

3.3.4.1 – Cover System

The cover system is a permanent control and the quality and integrity of this system will be inspected at defined, regular intervals in accordance with this SMP in perpetuity.

3.3.4.2 - Sub-Slab Depressurization (SSD) System

The active SSD system will not be discontinued unless prior written approval is granted by the NYSDEC and the NYSDOH. In the event that monitoring data indicates that the SSD system may no longer be required, a proposal to discontinue the SSD system will be submitted by the remedial party to the NYSDEC and NYSDOH.

3.3.4.3 - Monitoring Wells associated with Groundwater Monitoring Program

Groundwater monitoring activities to assess and address the remaining contamination will continue, as determined by the NYSDEC with consultation with NYSDOH, until residual groundwater concentrations are found to be consistently below ambient water quality standards, the Site SCGs, or have become asymptotic at an acceptable level over an extended period. In the event that monitoring data indicates that monitoring may no longer be required, a proposal to discontinue the system will be submitted by the remedial party. Monitoring will continue until permission to discontinue is granted in writing by the NYSDEC. If groundwater contaminant levels become

asymptotic at a level that is not acceptable to the NYSDEC, additional source removal, treatment and/or control measures will be evaluated.

4.0 MONITORING AND SAMPLING PLAN

4.1 General

This Monitoring and Sampling Plan describes the measures for evaluating the overall performance and effectiveness of the remedy. This Monitoring and Sampling Plan may only be revised with the approval of the NYSDEC. Details regarding the sampling procedures, data quality usability objectives, analytical methods, etc. for all samples collected as part of site management for the Site are included in the Quality Assurance Project Plan (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, soils);
- Assessing compliance with applicable NYSDEC standards, criteria and guidance (SCGs), particularly groundwater standards and Part 375 SCOs for soil; and
- Evaluating site information periodically to confirm that the remedy continues to be effective in protecting public health and the environment;

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

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

Reporting requirements are provided in Section 7.0 of this SMP.

4.2 Site-wide Inspection

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

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

Reporting requirements are outlined in Section 7.0 of this plan.

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

4.3 Remedial System Monitoring

4.3.1 SSD System Monitoring

Monitoring of the SSDS will be performed on a routine basis, as identified in Table 4 - Remedial System Monitoring Requirements and Schedule (see below). Modification to the frequency or sampling requirements will require approval from the NYSDEC. A visual inspection of the complete system will be conducted during each annual monitoring event. Inspection of the vacuum blower manometer panels will be conducted during each monthly monitoring event. Unscheduled inspections and/or sampling may take place when a suspected failure of the SSD system has been reported or an emergency occurs that is deemed likely to affect the operation of the system. SSD system components to be monitored include, but are not limited to, the components included in Table 4.

Table 4 – Remedial System Monitoring Requirements and Schedule

Remedial System Component	Monitoring Parameter	Monitoring Schedule
Vacuum blower differential pressure gauges (fan manometers)	Check vacuum pressure differential gauge reading and warning light to confirm suction at each fan	Monthly
Permanent sub-floor pressure monitoring points (PMPs)	Check with digital manometer to confirm minimum vacuum pressure of 0.002 water column inches	Annually during the first part of heating season, during the fourth quarter of the calendar year
SSDS fans, manometers, electrical panels, piping network and rooftop installations and floor slab	Visually inspect for failure, damage or modifications	

Monthly Monitoring

The following monitoring tasks will be completed by the owner or building operator on a monthly basis:

1. Collect vacuum readings from the manometer gauges (labeled by fan number) located in the instrument panels described in the SSDS O&M Manual presented in Appendix F. Record the readings on the Monthly Monitoring Form provided in Appendix H. If the manometer needle rests all the way to the left on the zero bar and/or the low-pressure switch audible warning alarm is activated or warning light is red, confirm operation (either visually or audibly) of the corresponding fan at the roof level and notify the owner and Engineer immediately in order to initiate necessary corrective measures.
2. Indicate on the monitoring form sheet if the instrument panel warning lights are green or red to verify that fans are operating correctly. If any of the warning lights are off, notify the owner and Engineer immediately in order to initiate necessary corrective measures.
3. Maintain panelboard schedules in the electrical panels that contain circuit breakers for SSDS roof-mounted fans.
4. Shut off the corresponding circuit breakers for the SSDS roof-mounted fans to confirm that the low-pressure switches both provide an audible warning and a visual warning via the pilot light changing from green to red. If any low-pressure switches do not work correctly, notify the owner and Engineer immediately to initiate corrective measures.
5. Note any observed abnormalities, visual or auditory, with respect to normal system operating conditions on the log sheet.

Annual Monitoring & Reporting

A complete system evaluation will be performed on an annual basis by the Engineer retained by the owner/operator of the building. The following tasks will be completed as part of this evaluation:

1. For the month of the annual SSDS evaluation only, complete the monthly monitoring tasks 1 through 5 outlined above, recording results on the Annual Monitoring Form provided in Appendix H (rather than on the monthly form).
2. Obtain vacuum readings using a micromanometer from the sub-slab pressure monitoring points located as shown on the record drawings presented in the SSDS O&M Manual presented in Appendix F. Ensure that the micromanometer has been calibrated by the manufacturer within one (1) year of its use. If any of the

sub-slab pressure monitoring points or covers are damaged, take measures for corrective action.

3. Inspect the entire finished floor slab for cracks, new penetrations or other potential leaks. Perform smoke testing as necessary to assess the leakage potential of suspect locations.
4. Inspect the fans and low-pressure switches (audible warning/visual pilot light alarms) and note any abnormal conditions such as hot fan housings, vibrations or unusual noise.
5. If the roof is accessible and safe to be on (e.g., not snow/ice covered), make note of any condensation occurring on the SSDS exhaust piping. Visually inspect the exhaust stacks to verify there are no obstructions to exhaust flow.
6. Conduct a limited program of annual indoor air sampling during the heating season as specified in Section 4.4 until such time as approval for cessation of annual indoor air sampling is received from NYSDEC and NYSDOH.

The results of the annual evaluation shall be presented in the OM&M report section of the annual PRR.

Complete lists of components to be inspected during both the monthly events and the annual events are provided in the Monthly and Annual Monitoring Forms provided in Appendix H - Site Management Forms. 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 SSDS Operations and Maintenance Plan, is required immediately.

4.4 Post-Remediation Media Monitoring and Sampling

Groundwater samples shall be collected on a routine basis. A limited program of annual indoor air sampling shall be conducted. Sampling locations, required analytical parameters and schedule are provided in Table 5 – Post-Remediation Sampling Requirements and Schedule presented below. Modification to the frequency or sampling requirements will require approval from the NYSDEC.

Table 5 – Post-Remediation Sampling Requirements and Schedule

Sampling Locations	**Analytical Parameters and Methods**		**Schedule**
Groundwater Monitoring Wells (* - see notes on next page)	TCL VOCs (EPA Method 8260)	1,4-Dioxane (EPA Method 8270 SIM)	
2022 and 2023			
MW-1S, -3S, -5D, -7, -9S, -13S, -15I, -16I, -20, -21, -22, -28, -29, -30, -33 and -34 and recharge well RW-5	X	X	Annually in spring
MW-20, -21, -22, -28, - 29, -30 and -34 and recharge well RW-5	X	X	Annually in fall
2024, 2025, and 2026			
MW-3S, -7, -9S, -13S, -15I, -16I, -20, -29, -30, -33, and -34	X		Annually
2027 through 2031			
MW-7, -9S, -13S, -16I, -29, -30, -33, and -34	X		Annually
Beginning in 2032			
MW-7, -9S, -13S, -30 and -34	X		Annually
Indoor Air AM-IA-18 (with duplicate sample)	Site-specific list of VOCs (EPA Method TO-15)		Annually during heating season until termination request approved by DEC/DOH

*** - Notes for Table 5:**

- Monitoring well locations at the Site are shown on Figure 3. The wells shown on Figure 3 include the wells listed on Table 5 as well as other existing site wells. All existing site wells will be included in the water-level monitoring component of the groundwater monitoring program described below in Section 4.4.1.

- All wells have the 'AMSF-' prefix. Wells with no letter suffix (MW-7, for example) and wells with an 'S' suffix are shallow wells. An 'I' designates an intermediate-depth well, and 'D' designates a deep well.
- Upgradient wells include MW-1S, MW-7, MW-15I, and MW-3S. Downgradient wells include MW-28, -30, and -34. The remaining wells are distributed in indoor and outdoor areas within the Site. Additional information on the network of monitoring wells included in the sampling program is presented below in Section 4.4.1.
- For the indoor air sampling program, the analytes shall include the chlorinated VOCs which were identified during the RI and previous IRM-SMP monitoring activities as Site-specific compounds of concern (COCs). The Site-specific COC list includes the following compounds: 1,1,1-trichloroethane (1,1-TCA), 1,1-dichloroethane (1,1-DCA), 1-1-dichloroethene (1,1-DCE), Chloroethane, PCE, Trichloroethene (TCE), cis-1,2-DCE, trans-1,2-DCE, Vinyl chloride, and Methylene chloride.

Detailed sample collection and analytical procedures and protocols are provided below in Sections 4.4.1 through 4.4.3 and in Appendix G – Quality Assurance Project Plan.

4.4.1 Groundwater Sampling

Groundwater monitoring will be performed at the locations and on the schedule specified in Table 5 to assess the performance of the remedy. Modification to the sample locations, frequency or sampling requirements will require approval from the NYSDEC.

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

- to allow for assessment of groundwater quality conditions at the upgradient boundary and in and downgradient of on-site areas of VOC contamination;
- to allow for assessment of groundwater elevations and flow directions across the entire Site; and
- to allow for further assessment of the influence of recharge well RW-5 on migration of groundwater contamination at the downgradient eastern side of the Site building.

Table 5 summarizes the well identification numbers of the wells to be sampled as well as the purpose, location, and depths of the wells. All site monitoring wells are depicted on Figure 3, including those existing site wells that are not listed in Table 5 but will be included in the water-level monitoring component of the groundwater monitoring program for the Site. Previous water level measurement data are presented in Table 3. Monitoring well construction logs are presented in Appendix C. A summary of well construction details is presented in Table 6.

The wells selected for sampling will provide data representative of upgradient, on-site and downgradient conditions. The reduction over time in the number of wells to be sampled anticipates that with reduction over time in contaminant concentrations to below SCGs at some locations and demonstration of asymptotic conditions at other locations, the sampling program will continue to provide data representative of site-wide conditions including downgradient conditions. As the monitoring program proceeds over time, the groundwater sampling results will be described and evaluated in each PRR. If the results indicate that changes to the list of wells to be sampled are warranted, a request for approval to revise the Table 5 list will be submitted to NYSDEC with the PRR. If upon review of the PRR NYSDEC requires the addition or substitution of a well or wells to the sampling program for upcoming events, Table 5 shall be revised accordingly.

The wells to be included in the first two years of the groundwater elevation monitoring component of the groundwater monitoring program include all existing accessible on-Site monitoring and recharge wells, including those wells to be sampled, as listed on Table 5, and all other currently existing accessible on-Site monitoring and recharge wells. Well locations are shown on Figure 3.

The list of non-sampling wells included in the groundwater elevation monitoring network will be reduced at the end of the first two years of the groundwater program, and the wells eliminated from the list will be decommissioned. The list of wells to be decommissioned after two years includes the following:

- Overburden well MW-24.
- Shallow bedrock wells MW-4, -8S, -11S, 12S, -21, -22, -23, -25, -26, -27, -28, -31, and -32.

- Deep bedrock wells MW-1D, -3D, -5D, and -8D.

The groundwater monitoring events will consist of:

- Well gauging of water levels in all remaining site wells;
- Well purging and sampling for analysis as indicated above in Table 5; and
- Monitoring well inspections.

All monitoring activities will be recorded in a field book, a well gauging form, a well gauging/well inspection form, or a monitoring well purging and sampling record form. The forms are presented in Appendix H. During well gauging rounds that do not include an inspection, other observations (e.g., well integrity, etc.) will be noted on the well gauging log.

Water levels will be measured at all monitoring wells on the first day of each sampling event. Water levels will be measured from previously surveyed PVC well risers using a water-level indicator with an audible indicator. The water level measurements will be used to develop a groundwater elevation contour map and provide information on groundwater flow directions.

Monitoring wells will be sampled utilizing procedures specified in the Quality Assurance Project Plan (QAPP) presented in Appendix G. Sampling will be performed with submersible bladder-pump equipment using low-flow methods in accordance with USEPA protocols. Field parameters including oxidation/reduction potential (ORP), dissolved oxygen (DO), conductivity, pH, and temperature will be measured during purging using field instrumentation.

Laboratory analysis of all project samples will be performed by an independent laboratory with the experience and certifications appropriate to the analyses to be performed. All standard environmental chemical analyses will be performed by laboratories accredited pursuant to the NYSDOH Environmental Laboratory Accreditation Program (ELAP) for the category of parameters to be analyzed by the laboratory. The specific environmental laboratory or laboratories to be used will be determined at the time the monitoring activities are scheduled.

For sampling events and monitoring activities used to collect documentation samples (as defined in NYSDEC DER-10), duplicates, replicates, and spiked samples will be used as needed to identify the quality of the analytical data. It is currently anticipated that the only documentation samples will be those collected during the last monitoring event. Results of the laboratory analyses for these samples will be reported using NYSDEC ASP Category B deliverables, and a Data Usability Summary Report (DUSR) will be prepared for analytical results from these monitoring activities. The DUSR will be prepared by an independent consultant with the required experience, in accordance with NYSDEC's "Guidance for the Development of Data Usability Summary Reports," revised 1997 and NYSDEC's DER-10 "Technical Guidance for Site Investigation and Remediation." For all other monitoring activities, analyses will be reported using Category A deliverables, and the level of QA/QC will be that level appropriate to support a Category A deliverable. DUSRs will not be prepared for Category A deliverables.

Analysis for tentatively identified compounds (TICs) will not be performed unless requested by NYSDEC.

Analytical summary tables will be prepared which summarize the data and compare them to NYSDEC Class GA Water Quality Standards and Guidance Values for groundwater. If biofouling or silt accumulation occurs in the monitoring wells included in the sampling component of the monitoring program, the wells will be physically agitated/surged and redeveloped. Additionally, monitoring wells included in the sampling component of the monitoring program 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 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 Periodic Review Report. Decommissioning without replacement of any wells other than those listed above (those to be decommissioned after two years) will be done only with the prior approval of the NYSDEC.

Well abandonment will be performed in accordance with NYSDEC's guidance entitled "CP-43: Groundwater Monitoring Well Decommissioning Procedures" with the following clarification: Given the operational and equipment layout considerations of tenant operations inside the building, wells located inside the facility will be abandoned by tremie grouting each existing well in place. Groundwater displaced during grouting activities will be captured and contained in accordance with the applicable provisions of this SMP.

Monitoring wells that are replaced because they have been rendered unusable will be replaced in kind in the nearest available location, unless otherwise approved by the NYSDEC.

Upon termination of the groundwater monitoring program and with NYSDEC approval, all Site-related monitoring wells will be properly decommissioned, and other miscellaneous site restoration activities (such as asphalt patching) will be performed.

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

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

4.4.2 Indoor Air Sampling

A limited program of indoor air sampling will be performed to monitor the effectiveness of the SSDS component of the remedy in mitigating the potential for soil vapor intrusion in the northeast corner of the site building. The sampling program is designed to provide confirmation that exceedances of the NYSDOH Air Guideline for PCE which were detected in December 2019 and January 2021 samples collected in the automotive repair shop located in that corner of the building were attributable to a product containing PCE that was in use in the repair shop at the time of those sampling events.

An aerosol nut and bolt loosener product with PCE as its primary ingredient was used in the automotive repair shop operations at those times. No other exceedances of a

NYSDOH Air Guideline were detected in the samples from that space in either event, and no elevated concentrations of VOCs were detected in samples collected from other tenant spaces, including spaces immediately surrounding the repair shop space. The results of the pressure field extension testing that had been performed following start-up of the SSDS in 2019 demonstrated sub-slab depressurization vacuum coverage in this part of the building. Routine monthly monitoring of system vacuum levels performed since the operation of the SSDS was initiated demonstrates continuous operation of the SSDS as designed. These considerations indicate that additional action is not needed to address the potential for SVI, and indicate that the PCE exceedances detected in the automotive repair shop samples were attributable to the aerosol product in use in the repair shop. A limited indoor air monitoring program will be implemented to confirm those conclusions.

The limited indoor air monitoring program specified herein is related to and focused on the automotive repair shop area. It will consist of the following:

- An annual sampling event will be performed early in the heating season, with the first event to be conducted in January 2022.
- The site owner will request that the tenant stop use of products with chlorinated VOCs and remove containers of any such products from its shop.
- The consultant will confirm removal of products containing chlorinated VOCs from the shop at least two weeks prior to sampling.
- One indoor air sample and a duplicate sample will be collected from the same location in the auto shop where sampling was done in the last two events (sample location AM-IA-18). Sample location AM-IA-18 is shown on Figure 10.
- The samples will be analyzed for the site-specific chlorinated VOC list used for the indoor air monitoring (IAM) program conducted during IRM activities.
- If validated results are both below NYSDOH Air Guidelines and consistent with previously documented site background conditions at other surrounding

locations in the building, a request for termination of the limited indoor air monitoring program will be submitted to NYSDEC for its review and approval.

- If results indicate an exceedance of an Air Guideline Value or a significant inconsistency with previously detected site background, NYSDEC and NYSDOH will be consulted to determine whether additional actions are necessary to mitigate the potential for soil vapor intrusion in the area of the auto repair shop. Unless approval for termination is subsequently requested and is approved by NYSDEC, annual indoor air sampling shall be conducted again as described above at the beginning of the next heating season.

Sampling and analysis methods will be as follows:

Samples will be collected over an 8-hour period utilizing laboratory-supplied, 6-liter pre-evacuated Summa™ (or similar) canisters that have been individually-certified as clean for low-level analysis (clean above low-level analysis quantitation limits). Canisters will be prepared by the laboratory to an initial (prior to shipping) vacuum of approximately -30 inches of mercury. Initial vacuum readings documented at the laboratory will be checked upon receipt, and vacuum readings will be checked again prior to sampling. Use of canisters that have leaked excessively (by more than 20% relative to the initial reading recorded by the laboratory) will be avoided if possible.

Canisters will be positioned three to five feet above the building floor. The sample collection rate will be maintained for each canister with the use of laboratory-supplied low-volume flow controllers. Airflow into the canisters will be controlled and monitored in accordance with NYSDOH's guidance criteria of 0.2 liters/minute for maximum flow rate. Vacuum readings of the canisters will be read and documented at the initiation of, at regular intervals during, and upon completion of sample collection. Sample identifications, vacuum readings, flow controller identification numbers and other relevant information will be recorded on field forms.

Sample canisters will be obtained from and samples will be analyzed by a laboratory accredited in accordance with the NYSDOH Environmental Laboratory

Approval Program (ELAP) and certified to perform USEPA Method TO-15 low-level analysis of air samples for VOCs. The site-specific list of VOCs to be analyzed is presented above in the notes for Table 5. Detection limits for all compounds except for TCE and vinyl chloride will be 1.0 micrograms per cubic meter (µg/m3) or lower; the detection limits for TCE and vinyl chloride will be 0.25 µg/m3 or lower.

Validatable NYSDEC ASP Category B deliverable packages will be used for reporting of the laboratory results. Third-party data usability reviews of the analytical data reports generated for each event will be performed using standard data-usability evaluation criteria. Data validation results will be documented in data usability summary reports (DUSRs).

Deliverables for the limited indoor air monitoring program are specified in Section 7.0 – Reporting Requirements.

4.4.3 Monitoring and Sampling Protocol

All sampling activities will be recorded in a field book and associated sampling logs as provided in Appendix H - Site Management Forms. Other observations (e.g., groundwater monitoring well integrity, etc.) will be noted on the sampling logs. The sampling logs will serve as the inspection forms for the monitoring network.

5.0 OPERATION, MAINTENANCE & MONITORING PLAN

5.1 General

This Operation, Maintenance & Monitoring 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, Maintenance & Monitoring Plan:

- Includes the procedures necessary to allow individuals unfamiliar with the Site to operate and maintain the SSDS;
- Will be updated periodically to reflect changes in site conditions or the manner in which the SSDS is operated and maintained.

Further detail regarding the Operation and Maintenance of the SSDS is provided in Appendix F – SSDS Operation and Maintenance Manual. A copy of the SSDS Operation and Maintenance Manual (SSDS O&M Manual), along with the complete SMP, is to be maintained at the Site. The SSDS O&M Manual is not to be used as a stand-alone document, but as a component document of this SMP.

5.2 Remedial System (or other Engineering Control) Performance Criteria

The SSDS is designed to create a minimum pressure differential between the sub-slab vapor/air space (lower pressure) and the indoor air space (higher pressure) inside the facility building of 0.002 inches of water column. If a sub-slab vacuum of at least -0.002 inches of water column is not observed at each permanent sub-slab pressure monitoring point (PMP) during the annual SSDS monitoring activities described in Section 4, the SSDS may need to be adjusted or optimized. System optimization may include sealing or resealing of floor cracks or other floor slab penetrations, adjusting ball valves on suction-point riser pipes to rebalance flow rates for the suction points within an SSDS zone piping network, or selecting and installing replacement fans for one or more of the SSDS zones.

5.3 Operation, Maintenance & Monitoring of the Sub-slab Depressurization System

The following sections provide a description of the operations and maintenance of the SSDS. Cut-sheets and as-built drawings for the SSDS are provided in Appendix F – SSDS Operation and Maintenance Manual.

The SSDS operation will not be discontinued unless prior written approval is granted by the NYSDEC. In the event that monitoring data indicates that the SSDS is no longer required, a proposal to discontinue the SSDS will be submitted by the property owner to the NYSDEC and NYSDOH.

5.3.1 System Start-Up and Testing

To turn the system on:

1. Ensure that the appropriate breakers in the electrical panel boxes are ON with the help of a person qualified to open the electrical panels on-site;
2. Ensure the motor starter switches are in the ON position. These are located on the roof near the fans; and
3. Confirm proper SSDS operation by applying the appropriate monitoring tasks

The system testing described above will be conducted if, in the course of the SSDS 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, Maintenance & Monitoring

Other than routine monitoring, the SSDS operates continuously and does not require manual system operation.

If the vacuum readings from the manometer instrument panels for the vacuum blower pressure gauges fall below 0.5 inches of water column (WC), or if vacuum at one or more of the pressure monitoring points (PMPs) does not achieve at least -0.002 in WC, the SSDS may need to be adjusted or optimized. System optimization may require replacement of one or more fans.

The operating personnel will consult the owner and its engineer prior to making any equipment changes.

In the event of an electrical failure, the system is designed to restart when power is restored. If the system fails to restart after electrical failure, the Site owner shall promptly contact the system installers.

5.3.3 Non-Routine Operation, Maintenance & Monitoring

Non-routine maintenance will be conducted by the Site owner to correct the condition should it appear that an SSDS has reduced its effectiveness due to malfunction, renovation, or other unplanned circumstance. Examples of such circumstances include the following:

- The building's tenants or the owner's staff report that a warning device indicates that the SSDS is not operating properly;
- An SSDS component is accidentally damaged; or
- The building undergoes renovations that potentially reduce the effectiveness of the SSDS.

All operational problems will be noted in the subsequent Periodic Review Report. If the effectiveness of the SSDS cannot be restored within two weeks from when the issue was identified, the Site owner will notify the NYSDEC project manager and provide a schedule for resolving the issue. Upon NYSDEC request, a formal Corrective Measures Plan will be prepared for NYSDEC approval.

5.3.4 System Monitoring Devices and Alarms

The SSDS has warning devices to indicate that the system is not operating properly. In the event that a warning device is activated, applicable maintenance and repairs will be conducted, as specified in the SSDS Operation and Maintenance Manual, and the SSDS will be restarted. Operational problems will be noted in the Periodic Review Report to be prepared for that reporting period.

6.0 PERIODIC ASSESSMENTS/EVALUATIONS

6.1 Climate Change Vulnerability Assessment

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

A climate change vulnerability assessment has not been performed for the AMSF site, and given its setting, the nature of the remedial program for the Site, and the past and current site conditions, it is evident that the Site and its remedial program will not be vulnerable to climate change impacts. The Site is not located in a flood plain, and because of the topography of the Site and surrounding area, potential for flooding at the Site is remote. Site contamination is confined to the subsurface in areas covered by pavements or buildings, and vulnerability to erosion is therefore not an issue. Similarly, vulnerability to increases in groundwater levels during extreme precipitation events will be managed as at present by removal of storm water in the storm drain system infrastructure presently in place.

This section provides a summary of vulnerability assessments that will be conducted for the Site during periodic assessments, and briefly summarizes the vulnerability of the Site and/or engineering controls to severe storms/weather events and associated flooding.

During the periodic reviews required by this SMP, the integrity of the Site cover and area storm drains will be assessed to determine whether changes in site conditions have occurred that could affect vulnerability of the Site to the effects of extreme weather events. The integrity of anchoring systems for rooftop SSDS fan and discharge pipes will be assessed to determine whether the anchoring systems have been damaged by high wind events or lightning strikes.

6.2 Remedial System Optimization

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

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

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

The RSO study will 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.

7.0 REPORTING REQUIREMENTS

7.1 Site Management Reports

All site management inspection, maintenance and monitoring events will be recorded on the appropriate site management forms provided in Appendix H. These forms are subject to NYSDEC revision.

All applicable inspection forms and other records, including media sampling data and system maintenance reports, generated for the Site during the reporting period will be provided in electronic format to the NYSDEC in accordance with the requirements of Table 7 and summarized in the Periodic Review Report.

Table 7: Schedule of Interim Monitoring/Inspection Reports

Task/Report	Reporting Frequency*
Inspection Report	Annually (to be included in the annual PRR unless otherwise requested by NYSDEC)
Periodic Review Report	Annually, or as otherwise determined by the Department

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

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

- Date of event or reporting period;
- Name, company, and position of person(s) conducting monitoring/inspection activities;
- Description of the activities performed;
- Where appropriate, color photographs or sketches showing the approximate location of any problems or incidents noted (included either on the checklist/form or on an attached sheet);
- Type of samples collected (e.g., sub-slab vapor, indoor air, outdoor air, etc);
- Copies of all field forms completed (e.g., well sampling logs, chain-of-custody documentation, etc.);
- Sampling results in comparison to appropriate standards/criteria;

- A figure illustrating sample type and sampling locations;
- Copies of all laboratory data sheets and the required laboratory data deliverables required for all points sampled (to be submitted electronically in the NYSDEC-identified format);
- Any observations, conclusions, or recommendations; and
- A determination as to whether contaminant conditions have changed since the last reporting event.

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

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

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

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

Data will be reported in digital format as determined by the NYSDEC. Currently, data is to be supplied electronically and submitted to the NYSDEC EQuIS™ database in

accordance with the requirements found at this link: http://www.dec.ny.gov/chemical/62440.html.

7.2 Periodic Review Report

A Periodic Review Report (PRR) will be submitted to the Department beginning sixteen (16) months after the Certificate of Completion is issued. After submittal of the initial Periodic Review Report, the next PRR shall be submitted annually to the Department or at another frequency as may be required by the Department. In the event that the Site is subdivided into separate parcels with different ownership, a single Periodic Review Report will be prepared that addresses the Site described in Appendix 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 Periodic Review Report. The report will include:

- Identification, assessment and certification of all ECs/ICs required by the remedy for the Site.
- Results of the required annual site inspections and severe condition inspections, if applicable.
- All applicable site management forms and other records generated for the Site during the reporting period in the NYSDEC-approved electronic format, if not previously submitted.
- A summary of any discharge monitoring data and/or information generated during the reporting period, with comments and conclusions.
- Data summary tables and graphical representations of contaminants of concern by media (groundwater, soil vapor, etc.), which include a listing of all compounds analyzed, along with the applicable standards, with all exceedances highlighted. These will include a presentation of past data as part of an evaluation of contaminant concentration trends.
- Results of all analyses, copies of all laboratory data sheets, and the required laboratory data deliverables for all samples collected during the reporting period will be submitted in digital format as determined by the NYSDEC. Currently, data is supplied electronically and submitted to the NYSDEC EQuIS™ database in accordance with the requirements found at this link: http://www.dec.ny.gov/chemical/62440.html.

- A site evaluation, which includes the following:
  - The compliance of the remedy with the requirements of the site-specific Decision Document;
  - The operation and the effectiveness of all treatment units, etc., including identification of any needed repairs or modifications;
  - Any new conclusions or observations regarding site contamination based on inspections or data generated by the Monitoring and Sampling Plan for the media being monitored;
  - Recommendations regarding any necessary changes to the remedy and/or Monitoring and Sampling Plan; and
  - Trends in contaminant levels in the affected media will be evaluated to determine if the remedy continues to be effective in achieving remedial goals as specified by the Decision Document.
  - The overall performance and effectiveness of the remedy.

- A performance summary for all treatment systems at the Site during the calendar year, including information such as:
  - The number of days the system operated for the reporting period;
  - 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.

7.2.1 Certification of Institutional and Engineering Controls

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

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

- *The inspection of the Site to confirm the effectiveness of the institutional and engineering controls required by the remedial program was performed under my direction;*
- *The institutional control and/or engineering control employed at this site is unchanged from the date the control was put in place, or last approved by the Department;*
- *Nothing has occurred that would impair the ability of the control to protect the public health and environment;*
- *Nothing has occurred that would constitute a violation or failure to comply with any site management plan for this control;*
- *Access to the Site will continue to be provided to the Department to evaluate the remedy, including access to evaluate the continued maintenance of this control;*
- *If a financial assurance mechanism is required under the oversight document for the Site, the mechanism remains valid and sufficient for the intended purpose under the document;*
- *Use of the Site is compliant with the environmental easement;*
- *The engineering control systems are performing as designed and are effective;*
- *To the best of my knowledge and belief, the work and conclusions described in this certification are in accordance with the requirements of the Site remedial program and generally accepted engineering practices; and*
- *The information presented in this report is accurate and complete.*

I certify that all information and statements in this certification form are true. I understand that a false statement made herein is punishable as a Class "A" misdemeanor, pursuant to Section 210.45 of the Penal Law. I, [name], of [business address], am certifying as the Designated Site Representative for Maguire Family Properties, Inc. for the Site."

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

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

7.3 Corrective Measures Work Plan

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

7.4 Remedial Site Optimization Report

In the event that an RSO is to be performed (see Section 6.2), upon completion of an RSO an RSO report must be submitted to the Department for approval. A general outline for the RSO report is provided in Appendix I. The RSO report will document the research/ investigation and data gathering that was conducted, evaluate the results and facts obtained, present a revised conceptual site model and present recommendations. RSO recommendations are to be implemented upon approval from the NYSDEC. Additional work plans, design documents, HASPs etc., may still be required to implement the recommendations, based upon the actions that need to be taken. A final engineering report and update to the SMP may also be required.

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

8.0 REFERENCES

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

NYSDEC DER-10 – "Technical Guidance for Site Investigation and Remediation". May 3, 2010.

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

NYSDOH, 2006. Final Guidance for Evaluating Soil Vapor Intrusion in the State of New York. October 2006.

NYSDOH, 2017. Soil Vapor Intrusion Updates, May 2017: Updates to Soil Vapor/Indoor Air Decision Matrices.

O'Brien & Gere Engineers, Inc., April 11, 2014. Remedial Investigation Report, Former ITT Rochester Form Machine Facility, Site # 8-28-112, Town of Gates, New York.

Stantec Consulting Services Inc., December 2015. Remedial Investigation Report, Brownfield Cleanup Program Site #C828101, Former Alliance Metal Stamping & Fabrication Facility, 12 Pixley Industrial Parkway, Town of Gates, Monroe County, New York.

Stantec Consulting Services Inc., Revised June 2016. Interim Remedial Measure Site Management Plan, Brownfield Cleanup Program Site #C828101, Former Alliance Metal Stamping & Fabrication Facility, 12 Pixley Industrial Parkway, Town of Gates, Monroe County, New York.

Stantec Consulting Services Inc., June 2019. IRM Work Plan, Brownfield Cleanup Program Site #C828101, Former Alliance Metal Stamping & Fabrication Facility, 12 Pixley Industrial Parkway, Town of Gates, Monroe County, New York.

Stantec Consulting Services Inc., April 2020. IRM SMP Monitoring Report for the 2019/2020 Heating Season, Brownfield Cleanup Program Site #C828101, Former Alliance Metal Stamping & Fabrication Facility, Town of Gates, Monroe County, New York.

Stantec Consulting Services Inc., August 2020. Interim Remedial Measure Construction Completion Report, Site #C828101, Former Alliance Metal Stamping & Fabrication Facility, Town of Gates, Monroe County, New York.

Stantec Consulting Services Inc., Revised September 2020. IRM Work Plan – Cover System, Former Alliance Metal Stamping and Fabrication Facility, Town of Gates, Monroe County, New York, BCP Site #C828101.

Stantec Consulting Services, Inc., September 2020. Response to Comments – Cover System IRM Work Plan, BCP Site #C828101 – Former Alliance Metal Stamping & Fabrication Facility 12 Industrial Parkway, Town of Gates, Monroe County, New York.

Stantec Consulting Services, Inc., March 2021. Implementation of Cover System IRM Work Plan – Interim Report, BCP Site #C828101 – Former Alliance Metal Stamping & Fabrication Facility 12 Pixley Industrial Parkway, Town of Gates, Monroe County, New York

Stantec Consulting Services Inc., August 2021. IRM SMP Monitoring Report for the 2020/2021 Heating Season, Brownfield Cleanup Program Site #C828101, Former Alliance Metal Stamping & Fabrication Facility, Town of Gates, Monroe County, New York.

Stantec Consulting Services Inc., August 2021. Construction Completion Report, Cover System Interim Remedial Measure, Site #C828101, Former Alliance Metal Stamping & Fabrication Facility, Town of Gates, Monroe County, New York.

Stantec Consulting Services Inc., September 2021. Interim Remedial Measures / Alternatives Analysis Report, Brownfield Cleanup Program Site #C828101, Former Alliance Metal Stamping & Fabrication Facility, 12 Pixley Industrial Parkway, Town of Gates, Monroe County, New York.

Table 2
Remaining Soil Sample Exceedances
Former Alliance Metal Stamping and Fabrication Facility Site
BCP Site #C828101

Area of Concern			AOC 1 - Former Degreaser Area		AOC 5 - Former Waste Storage Areas			AOC 6 - Paint Shop, and AOC 7 - Former Plating Area			AOC 11 - Sitewide Conditions
Sample Location			AMSF-MW-20	DG-TB-1	5B-TB-1		5B-TB-2	PS-TB-1		AMSF-MW-26	AOC11-TB-3
Sample Date			29-Apr-13	7-Nov-12	9-Nov-12	9-Nov-12	9-Nov-12	9-Nov-12	9-Nov-12	1-May-13	3-May-13
Sample ID		NYSDEC Soil Cleanup Objectives (SCOs)	MW-20-S-2	DG-TB-1-2	5B-TB-1-2	5B-TB-1-1	5B-TB-2	PS-TB-1-2	PS-TB-1-1	MW-26-S-1	AOC11-TB3-SS-1
Sample Depth			10 - 10.3 ft	7.5 ft	3 - 4 ft	6.8 ft	3 - 4 ft	2 - 4 ft	8 ft	8 - 8.4 ft	0.1 - 2 ft
Laboratory Sample ID			M0688-02	L2408-12/ME	L2407-13	L2407-12	L2407-11	L2407-20	L2407-19	M0688-03	M0716-03
	Units										
Volatile Organic Compounds											
Tetrachloroethene (PCE)	µg/kg	1300[AC] 150000[B]	**2200[AC]**								
Dichloroethene, cis-1,2-	µg/kg	250[AC] 500000[B]						**490[AC]**			
Dichloroethane, 1,1-	µg/kg	270[AC] 240000[B]						**410[AC]**			
Dioxane, 1,4-	µg/kg	100[A] 130000[B] 100[C]		**2400 J[AC]**	**250 J[AC]**	**760 J[AC]**	**3600 J[AC]**		**140 J[AC]**		
Semi - Volatile Organic Compounds											
Benzo(a)anthracene	µg/kg	1000[A] 5600[B] 1000$_g$[C]									**1400[AC]**
Benzo(a)pyrene	µg/kg	1000[A] 1000[B] 22000[C]									**1300[AB]**
Benzo(b)fluoranthene	µg/kg	1000[A] 5600[B] 1700[C]									**1700[A]**
Chrysene	µg/kg	1000[A] 56000[B] 1000[C]									**1800[AC]**
Indeno(1,2,3-cd)pyrene	µg/kg	500[A] 5600[B] 8200[C]									**830[A]**
Metals											
Nickel	mg/kg	30[A] 310[B] 130[C]									**33.9 J[A]**
Zinc	mg/kg	109[A] 10000[B] 2480[C]								**224 J[A]**	

Notes: Refer to Section 3.2.1 of the report text for additional information on SCO exceedances.

NYSDEC 6 NYCRR Part 375 Soil Clean-up Objectives (SCOs):

A Unrestricted Use

B Protection of Human Health - Commercial

C Protection of Groundwater

6.5[A] Concentration detected exceeds the SCO indicated by the letter code.

J The reported result is an estimated value.

Table 2
Remaining Soil Sample Exceedances
Former Alliance Metal Stamping and Fabrication Facility Site
BCP Site #C828101

Cover System Berms			Soil Left In Place in Berm Areas then Covered with Excavated Soil, Demarcation Layer Fabric and 12 Inches of Imported Cover Material			
Sample Location When Sampled			FA-SS-104		FA-SS-117	FA-SS-124
Sample Depth When Sampled			0 - 2 in	2 - 12 in	2 - 12 in	2 - 12 in
Approximate Depth Below Current Ground Surface			24 - 26 in	26 - 36 in	26 - 36 in	26 - 36 in
Sample ID		NYSDEC	FA-SS-104-A	FA-SS-104-B	FA-SS-117-B	FA-SS-124-B
Sample Date		Part 375	19-Jan-21		19-Jan-21	19-Jan-21
Laboratory Sample ID	Units	Commercial SCOs	210267-07	210267-08	210267-38	210267-54
Benzo(a)anthracene	mg/kg	5.6	60 J[A]			
Benzo(a)pyrene	mg/kg	1	43.7 J[A]	1.05 J[A]	1.57 J[A]	1.37 J[A]
Benzo(b)fluoranthene	mg/kg	5.6	41.3 J[A]			
Dibenzo(a,h)anthracene	mg/kg	0.56	9.69 J[A]			
Indeno(1,2,3-cd)pyrene	mg/kg	5.6	27.2 J[A]			

Cover System Berms			Soil Removed From Cover System Remedial Excavations, Moved to Remedial Berms and Covered with Demarcation Layer Fabric and 12 Inches of Imported Cover Material											
Approximate Depth Below Current Ground Surface			12 - 24 in	12 - 24 in	12 - 24 in	12 - 24 in	12 - 24 in	12 - 24 in	12 - 24 in	12 - 24 in	12 - 24 in	12 - 24 in	12 - 24 in	12 - 24 in
Sample ID		NYSDEC	FA-SS-102-B	FA-SS-103-A	FA-SS-104A-2	FA-SS-109-A	FA-SS-111-A	FA-SS-112-A	FA-SS-113-A	FA-SS-121-A	FA-SS-122-A	FA-SS-123-A	FA-SS-123-B	FA-SS-DUP-3
Sample Date		Part 375	19-Jan-21	19-Jan-21	26-Mar-21	19-Jan-21	19-Jan-21	19-Jan-21	19-Jan-21	19-Jan-21	19-Jan-21	19-Jan-21	19-Jan-21	19-Jan-21
Laboratory Sample ID	Units	Commercial SCOs	210267-04	210267-05	211202-02	210267-19	210267-24	210267-26	210267-28	210267-45	210267-47	210267-50	210267-51	210267-52
Benzo(a)anthracene	mg/kg	5.6		12.5 J[A]	44.9									
Benzo(a)pyrene	mg/kg	1	2.56 J[A]	9.93 J[A]	40	1.91 J[A]	1.09 J[A]	1.76 J[A]	1.43 J[A]	2.23 J[A]	1.96 J[A]	3.57 J[A]	1.15 J[A]	1.21 J[A]
Benzo(b)fluoranthene	mg/kg	5.6		9.89 J[A]	40.1									
Dibenzo(a,h)anthracene	mg/kg	0.56	0.577 J[A]	2.46 J[A]	7.54							0.789 J[A]		
Indeno(1,2,3-cd)pyrene	mg/kg	5.6		6.97 J[A]	25.9									

Notes:

6.5[A] Concentration exceeds the NYSDEC 6 NYCRR Part 375 - Restricted Use SCO for Protection of Human Health at Commercial sites.

J The reported result is an estimated value.

Table 3
Groundwater Elevation Measurements
Former Alliance Metal Stamping & Fabrication Facility Site (BCP Site #828101)
12 Pixley Industrial Parkway, Gates, New York

Well ID	Survey event	Elevation (ft AMSL, NAVD88)			Well Type	Water level measurements											
						June 17, 2013		September 24, 2013		May 12, 2014		June 25, 2015		August 17, 2015		March 6, 2019	
		Ground surface or Top of rim at north side of RW cover	Top outer casing (TOC) or Top of RW cover	Top inner casing (TIC) or Top of RW casing		Depth (ft below TIC)*	Elevation (ft AMSL)	Depth (ft below TIC)*	Elevation (ft AMSL)	Depth (ft below TIC)*	Elevation (ft AMSL)	Depth (ft below TIC)*	Elevation (ft AMSL)	Depth (ft below TIC)*	Elevation (ft AMSL)	Depth (ft below TIC)*	Elevation (ft AMSL)
AMSF-MW-1D	Previous	564.20	564.84	564.42	Deep	25.40	539.02	31.78	532.64	27.31	537.11	22.55	541.87	22.00	542.42		
AMSF-MW-1S	Previous	563.80	566.10	566.02	Shallow												
	7/31/13	563.80	566.10	566.03		9.44	556.59	13.37	552.66	10.30	555.73	11.34	554.69	12.68	553.35	10.13	555.90
AMSF-MW-3D	Previous	561.40	561.36	560.93	Deep	14.52	546.41	17.16	543.77	15.08	545.85	15.77	545.16	16.33	544.60		
AMSF-MW-3S	Previous	560.40	561.36	561.06	Shallow												
	7/31/13	561.30	561.34	561.09		4.61	556.48	8.35	552.74	5.44	555.65	6.56	554.53	7.61	553.48		
AMSF-MW-4	Previous	564.10	564.07	564.22	Shallow												
	7/31/13	NM	564.13	563.95		6.97	556.98	10.88	553.07	8.21	555.74	9.10	554.85	10.35	553.60	7.90	556.05
AMSF-MW-5D	Previous	568.00	571.16	571.00	Deep	23.62	547.38	26.60	544.40	24.34	546.66	25.12	545.88	25.80	545.20		
AMSF-MW-5S	Previous	567.10	NA	NA	Shallow	-	-	-	-	-	-	-	-	-	-		
AMSF-MW-7	Previous	563.20	564.12	563.97	Shallow												
	7/31/13	563.40	564.16	564.04		7.45	556.59	11.31	552.73	8.31	555.73	9.27	554.77	10.66	553.38		
AMSF-MW-8D	Previous	560.20	562.49	562.30	Deep	17.00	545.30	18.32	543.98	16.45	545.85	16.65	545.65	17.61	544.69		
AMSF-MW-8S	Previous	560.20	NA	NA	Shallow												
	8/2/13	560.50	562.52	562.32		3.86	558.46	6.97	555.35	4.67	557.65	5.58	556.74	6.63	555.69		
AMSF-MW-9S	Previous	565.30	565.40	565.00	Shallow												
	7/31/13	565.40	565.44	565.03		8.90	556.13	12.22	552.81	9.38	555.65	10.30	554.73	11.68	553.35	9.13	555.90
AMSF-MW-10	Previous	561.40	561.42	561.07	Shallow												
	7/31/13	561.50	561.49	561.13		4.21	556.92	7.46	553.67	5.33	555.80	6.10	555.03	6.92	554.21		
AMSF-MW-11S	Previous	563.50	563.48	563.18	Shallow												
	5/13/14	563.70	563.67	563.24		6.70	556.54	10.70	552.54	7.59	555.65	8.54	554.70	9.98	553.26		
AMSF-MW-12S	Previous	564.00	564.01	563.53	Shallow												
	5/13/14	564.20	564.19	563.57		7.05	556.52	11.00	552.57	7.88	555.69	8.94	554.63	10.35	553.22	7.70	555.87
AMSF-MW-13S	Previous	564.50	564.52	563.95	Shallow												
	7/31/13	NM	564.60	NM													
	5/13/14	564.60	564.60	564.07		7.52	556.55	11.49	552.58	8.42	555.65	9.38	554.69	10.63	553.44		
AMSF-MW-15I	Previous	563.10	563.13	562.83	Intermediate												
	5/13/14	563.12	563.12	562.83		6.79	556.04	10.70	552.13	7.45	555.38	8.65	554.18	9.75	553.08		
AMSF-MW-16I	Previous	564.60	564.58	564.27	Intermediate												
	5/13/14	564.58	564.58	564.26		8.19	556.07	12.12	552.14	8.84	555.42	10.07	554.19	11.20	553.06		
AMSF-MW-20	7/30/13	566.1	566.11	565.71	Shallow	9.48	556.23	13.52	552.19	10.29	555.42	11.45	554.26	12.64	553.07		
AMSF-MW-21	7/30/13	566.1	566.10	565.61	Shallow	9.34	556.27	13.45	552.16	10.14	555.47	11.54	554.07	12.52	553.09		
AMSF-MW-22	7/30/13	566.1	566.07	565.59	Shallow	9.26	556.33	13.32	552.27	10.09	555.50	11.22	554.37	12.26	553.33		
AMSF-MW-23	7/30/13	566.1	566.10	565.73	Shallow	9.35	556.38	13.40	552.33	10.16	555.57	11.27	554.46	12.50	553.23		
AMSF-MW-24	7/30/13	563.6	563.61	563.07	Overburden	5.70	557.37	dry		dry		dry		dry			
AMSF-MW-25	7/30/13	566.1	566.05	565.77	Shallow	9.41	556.36	13.38	552.39	10.23	555.54	11.30	554.47	12.50	553.27		
AMSF-MW-26	7/30/13	566.1	566.02	565.58	Shallow	9.44	556.14	12.13	553.45	9.83	555.75	10.65	554.93	11.50	554.08		
AMSF-MW-27	7/31/13	566.1	566.06	565.71	Shallow	9.18	556.53	12.64	553.07	10.10	555.61	10.95	554.76	12.17	553.54		
AMSF-MW-28	7/31/13	563.7	563.74	563.46	Shallow	7.07	556.39	11.19	552.27	7.89	555.57	9.03	554.43	10.23	553.23	7.73	555.73
AMSF-MW-29	7/31/13	567.8	567.78	567.49	Shallow	11.20	556.29	15.26	552.23	11.98	555.51	13.21	554.28	14.38	553.11	11.97	555.52
AMSF-MW-30	7/31/13	572.9	572.92	572.64	Shallow	16.30	556.34	20.37	552.27	17.11	555.53	18.29	554.35	19.58	553.06	17.01	555.63
AMSF-MW-31	7/30/13	566.1	566.05	565.69	Shallow	9.08	556.61	12.93	552.76	10.02	555.67	10.99	554.70	12.38	553.31		
AMSF-MW-32	5/13/14	566.1	566.09	565.75	Shallow	-	-	-	-	10.12	555.63	11.12	554.63	12.49	553.26		
AMSF-MW-33	5/13/14	564.7	564.66	564.32	Shallow	-	-	-	-	8.64	555.68	9.60	554.72	11.00	553.32		
AMSF-MW-34	8/5/15	567.0	567.02	566.56	Shallow	-	-	-	-	-	-	12.43	554.13	13.59	552.97	11.15	555.41
RW-1	Previous	NM	558.34	NM	Recharge												
	7/31/13	558.43	558.39	555.02		1.49	556.90	4.33	554.06	-	-	1.85	556.54	3.60	554.79		
RW-2	Previous	563.10	563.28	559.09	Recharge												
	7/31/13	563.26	563.27	NM		0.92	562.35	2.30	560.97	7.60	555.67	8.59[1]		4.43[1]			
RW-3	Previous	565.20	565.05	560.96	Recharge												
	7/31/13	565.16	565.17	NM		3.50	561.67	4.07	561.10	3.72	561.45	flooded[2]		4.10	561.07		
RW-4	Previous	566.40	566.36	560.60	Recharge												
	7/31/13	566.36	566.36	NM		4.61	561.75	5.65	560.71	5.10	561.26	flooded[2]		4.94	561.42		
RW-5	Previous	565.40	565.46	561.12	Recharge												
	7/31/13	566.10	566.07	561.26		9.85	556.22	11.30	554.77	5.62	560.45	11.23	554.84	11.32	554.75		
RW-6	Previous	566.10	566.49	564.34	Recharge	-	-	-	-	-	-	12.35	553.75	13.53	552.96		

Notes:

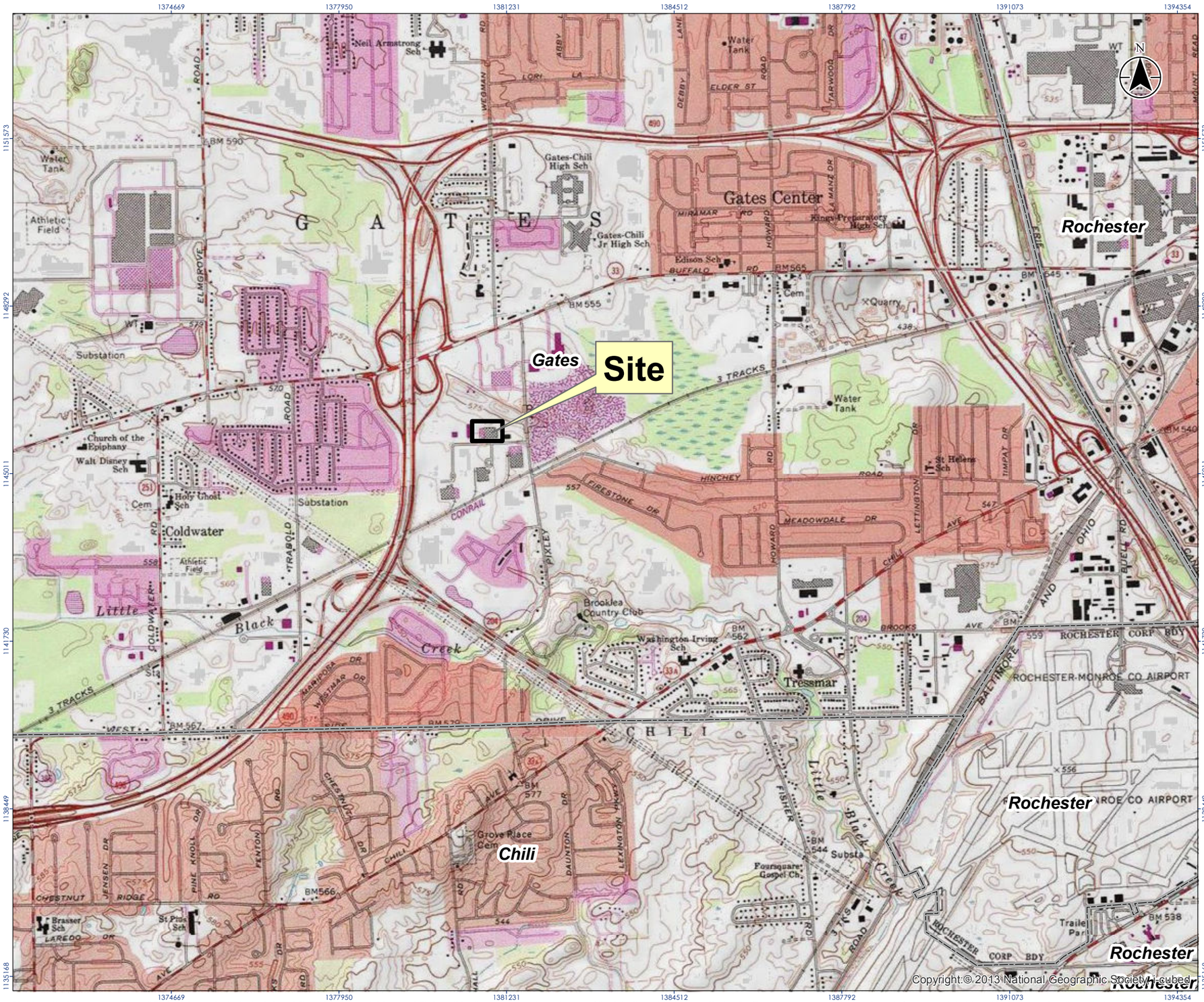
AMSF	Former Alliance Metal Stamping & Fabrication facility
ft AMSL	Feet above mean sea level (NAVD 88)
NA	Not applicable
NM	Not measured
-	Depth to water was not measured (well was either not yet installed, inaccessible, or not part of the monitoring program)
*	Recharge well water levels measured from top of MH cover or grate
[1]	The rim of the cover for recharge well RW-2 has subsided, and the cover elevation no longer equals the previously surveyed reference elevation
S	Shallow bedrock
I	Intermediate bedrock
D	Deep bedrock
RW	Recharge Well
TIC	Top of inner casing
TOC	Top of outer casing
MH	Manhole
[2]	Water was present in the recharge well catch basin above the top of the well casing

Table 6
Monitoring Well Construction Details
Former Alliance Metal Stamping & Fabrication Facility Site (BCP Site #828101)
12 Pixley Industrial Parkway, Gates, New York

Well ID	Northing	Easting	Ground Elevation (ft AMSL)	TOOC Elevation (ft AMSL)	TOIC Elevation (ft AMSL)	Well Diamter (in)	Total Depth (ft bgs)	Screen Interval (ft bgs)	Top of Screen (ft AMSL)	Bottom of Screen (ft AMSL)	Sand Interval (ft bgs)	Bentonite Interval (ft bgs)
AMSF-MW-1D	1146149.33	1380621.24	564.20	564.84	564.42	2.0	87	79.0 - 84.0	485.2	480.2	76.5-84	74.5-76.5
AMSF-MW-1S	1146147.78	1380610.03	563.80	566.10	566.02	2.0	23.5	13.5 - 23.5	550.3	540.3	11.5-25	9.5-11.5
AMSF-MW-3D	1145735.79	1380951.11	561.40	561.36	560.93	2.0	66	60 - 65	501.4	496.4	58-65	56-58
AMSF-MW-3S	1145734.78	1380936.78	561.30	561.34	561.09	2.0	21	7 - 21	554.3	540.3	5-21	3-5
AMSF-MW-4	1145785.58	1380687.62	564.10	564.13	563.95	2.0	25	9 - 25	555.1	555.1	7-25	5-7
AMSF-MW-5D	1146162.01	1380953.52	568.00	571.16	571.00	2.0	75	67 - 72	501	496	63-75	62-63
AMSF-MW-5S	NA	NA	567.10	NA	NA	2.0	25	10 - 25	557.1	542.1	8-25	6-8
AMSF-MW-7	1146093.66	1380586.43	563.40	564.16	564.04	2.0	25	9 - 24	554.4	539.4	7.5-24	6-7.5
AMSF-MW-8D	1145707.55	1380601.38	560.20	562.49	562.30	2.0	69	62 - 67	498.2	493.2	60-69	58-60
AMSF-MW-8S	NA	NA	560.50	562.52	562.32	2.0	23.5	8 - 23	552.5	537.5	6-23	4-6
AMSF-MW-9S	1145894.69	1380676.09	565.40	565.44	565.03	2.0	26	10 - 25	555.4	540.4	8.5-26	7.5-8.5
AMSF-MW-10	1145712.94	1380819.81	561.50	561.49	561.13	2.0	23.5	8 - 23	553.5	538.5	6.3-23.3	4.3-6.3
AMSF-MW-11S	1146107.53	1380679.44	563.70	563.67	563.24	2.0	25	10 - 25	553.7	538.7	NA	NA
AMSF-MW-12S	1146099.91	1380648.50	564.20	564.19	563.57	2.0	25	10 - 25	554.2	539.2	NA	NA
AMSF-MW-13S	1146055.96	1380644.22	564.60	564.60	564.07	2.0	25	10 - 25	554.6	539.6	NA	NA
AMSF-MW-15I	1146049.53	1380600.98	563.12	563.12	562.83	2.0	60	33 - 43	530.12	520.12	NA	NA
AMSF-MW-16I	1146045.73	1380643.26	564.58	564.58	564.26	2.0	60	35 - 45	529.58	519.58	NA	NA
AMSF-MW-20	1145978.89	1380961.03	566.10	566.11	565.71	2.0	24.7	14.5 - 24.3	551.6	541.8	13.5 - 24.7	10.7 - 13.5
AMSF-MW-21	1146014.93	1381000.06	566.10	566.10	565.61	2.0	23.0	13.0 - 22.6	553.1	543.5	11.0 - 23.0	8.8 - 11.0
AMSF-MW-22	1145932.08	1380949.93	566.10	566.07	565.59	2.0	23.8	14.0 - 23.4	552.1	542.7	11.8 - 23.8	9.8 - 11.8
AMSF-MW-23	1145998.36	1380871.99	566.10	566.10	565.73	2.0	25.0	15.8 - 24.6	550.3	541.5	13.0 - 25.0	11.0 - 13.0
AMSF-MW-24	1145857.36	1380633.26	566.10	563.61	563.07	2.0	6.4	3.2 - 6.2	562.9	559.9	2.5 - 6.4	1.5 - 2.5
AMSF-MW-25	1145892.18	1380904.01	566.10	566.05	565.77	2.0	25.8	15.6 - 25.4	550.5	540.7	13.8 - 25.8	11.8 - 13.8
AMSF-MW-26	1145858.33	1380780.44	566.10	566.02	565.58	2.0	25.2	14.8 - 24.6	551.3	541.5	13.2 - 25.2	10.5 - 13.2
AMSF-MW-27	1145839.80	1380822.06	566.10	566.06	565.71	2.0	25.9	15.7 - 25.5	550.4	540.6	13.9 - 25.9	11.9 - 13.9
AMSF-MW-28	1145744.35	1381100.99	563.74	563.74	563.46	2.0	21.8	11.6 - 21.4	552.14	542.34	9.8 - 21.8	7.8 - 9.8
AMSF-MW-29	1145961.21	1381103.30	567.78	567.78	567.49	2.0	28.0	17.8 - 27.6	549.98	540.18	17.8 - 28.0	14.5 - 17.8
AMSF-MW-30	1146150.43	1381092.60	572.92	572.92	572.64	2.0	30.5	20.3 - 30.1	552.62	542.82	18.5 - 30.5	16.5 - 18.5
AMSF-MW-31	1145915.32	1380736.19	566.10	566.05	565.69	2.0	27.9	17.7 - 27.5	548.4	538.6	15.9 - 27.9	13.9 - 15.9
AMSF-MW-32	1146061.00	1380743.00	566.10	566.09	565.75	2.0	22.5	12.5 - 22.5	553.6	543.6	10.5 - 22.5	8.5 - 10.5
AMSF-MW-33	1145981.05	1380646.33	564.70	564.66	564.32	2.0	25.0	15.0 - 25.0	551.1	541.1	12.3 - 25.0	8.0 - 12.3
AMSF-MW-34	1145911.85	1381167.09	567.00	567.02	566.56	2.0	32.6	22.4 - 32.6	544.60	534.40	20.5 - 32.5	16.5 - 20.5

Notes:

ft AMSL	Feet above mean sea level (NAVD 88)
ft bgs	Feet below ground surface
in	Inches
NM	Not measured
RI	Remedial Investigation
TOOC	Top of outer casing
TOIC	Top of inner casing



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N

0 2,000 4,000 Feet

Notes

1. Coordinate System: NAD 1983 StatePlane New York West FIPS 3103 Feet
2. USGS Map Source :This map presents land cover imagery for the world and detailed topographic maps for the United States. The map includes the National Park Service (NPS) Natural Earth physical map at 1.24km per pixel for the world at small scales, i-cubed eTOPO 1:250,000-scale maps for the contiguous United States at medium scales, and National Geographic TOPO! 1:100,000 and 1:24,000-scale maps (1:250,000 and 1:63,000 in Alaska) for the United States at large scales. The TOPO! maps are seamless, scanned images of United States Geological Survey (USGS) paper topographic maps. For more information on this map, including terms of use, visit online at http://goto.arcgisonline.com/maps/USA_Topo_Maps

Project Location:	Prepared by	AL	on 2017-07-17
12 Pixley Industrial Parkway	Technical Review by	TW	on 2017-07-17
Town of Gates, NY	Independent Review by	MPS	on 2017-07-17

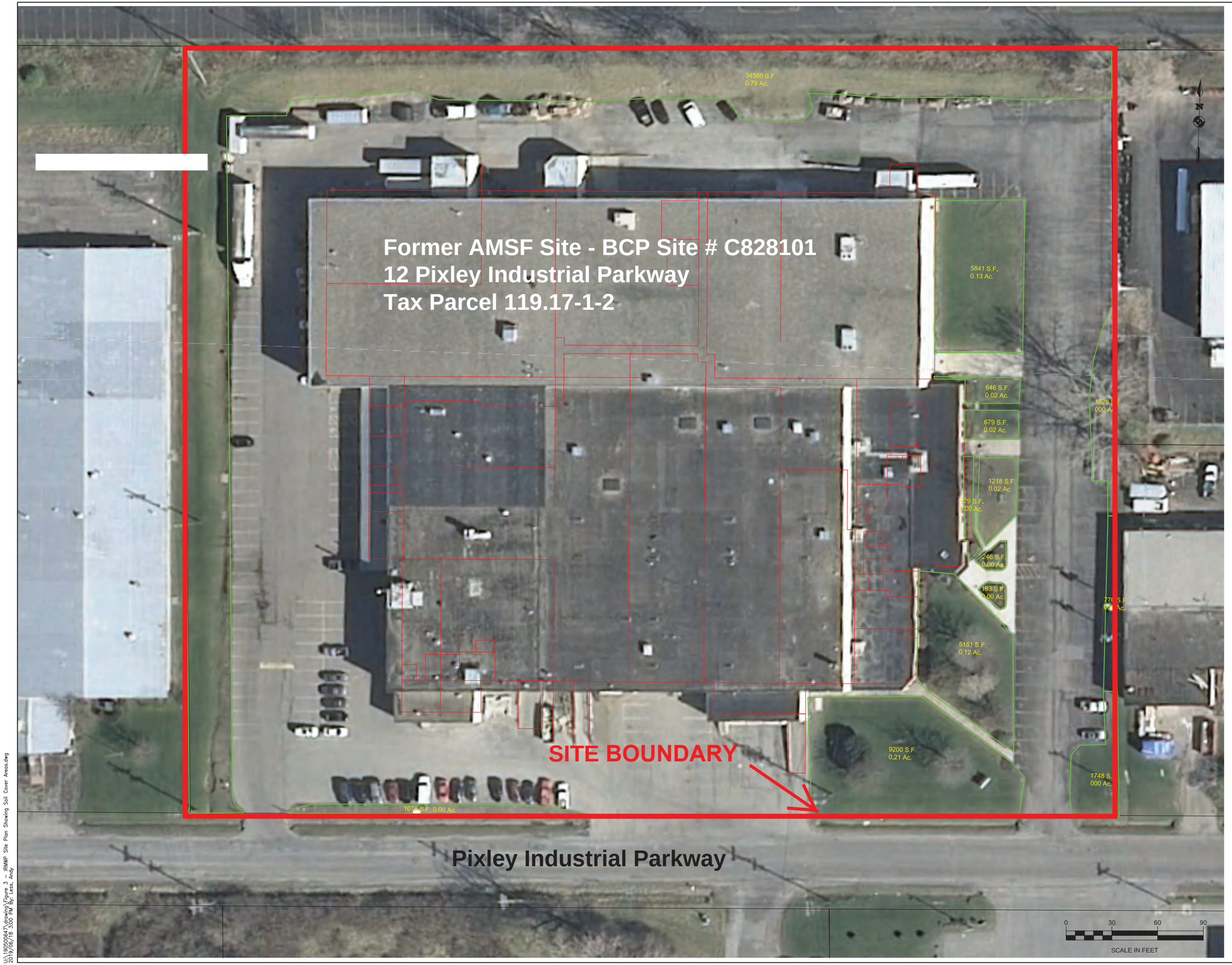
190500647

Client/Project
Former Alliance Metal Stamping and Fabrication Facility
Brownfield Cleanup Program Site #C828101

Figure No.
1

Title
Site Location Map

I:\190500647\Drawing\Alternative Analysis Report Figures\GIS\Figure1 Site Location Map.mxd Revised: 2017-07-17 By: dates



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Legend

AREAS OF SOIL COVER
SF – SQUARE FEET
AC. – ACRES

Notes

Revision	By	Appd.	YY.MM.DD
RI Report	TW	MPS	2014.10
Issued	By	Appd.	YY.MM.DD
File Name:	APL	TW	TW	2014.10
	Dwn.	Chkd.	Dsgn.	YY.MM.DD

Permit-Seal

Client/Project

FORMER ALLIANCE METAL STAMPING & FABRICATION FACILTY
BROWNFIELD CLEANUP PROGRAM SITE # C828101

12 PIXLEY INDUSTRIAL PARKWAY, GATES, NY

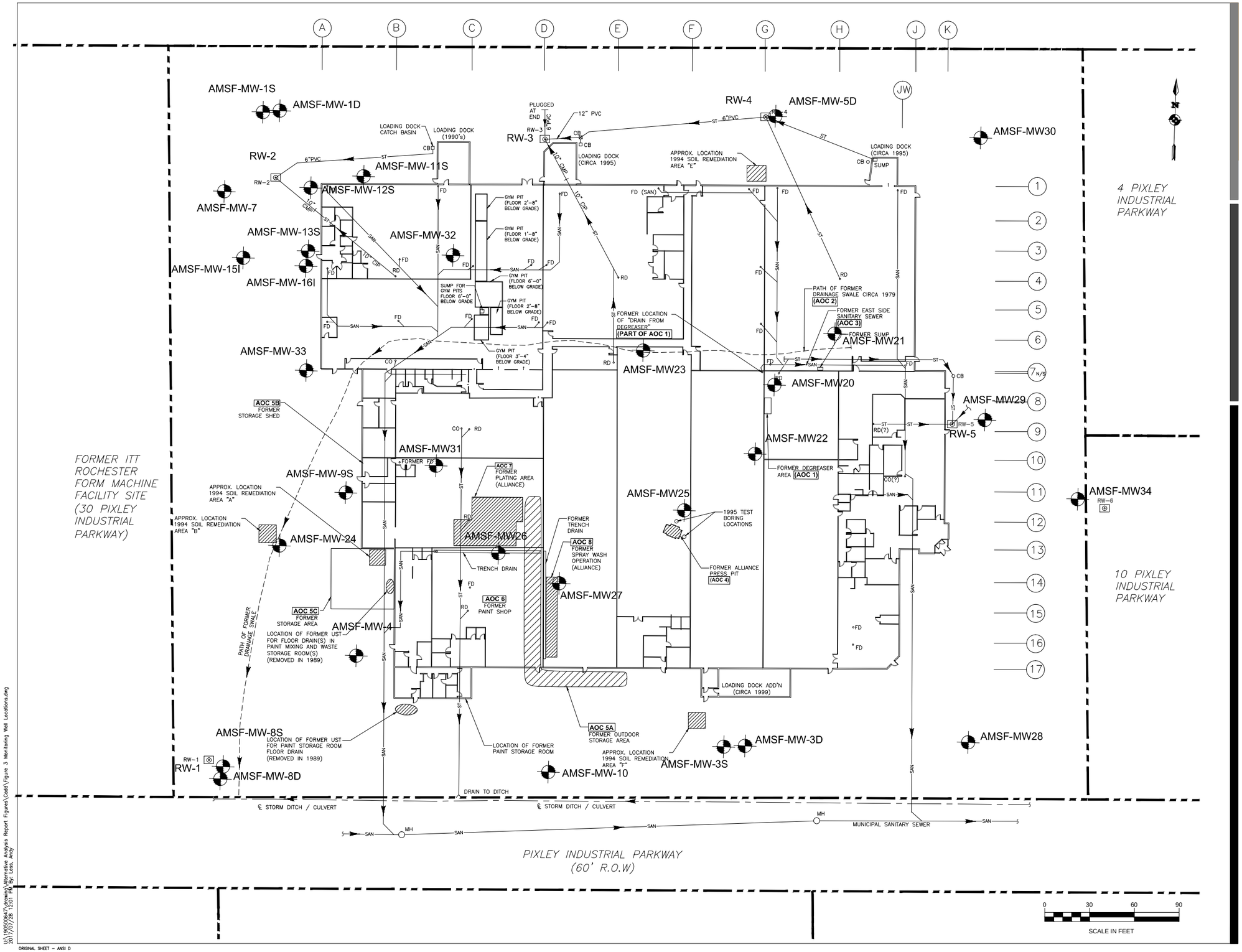
Title

SITE LAYOUT MAP

Project No.	Scale	
190500647	AS SHOWN	
Drawing No.	Sheet	Revision
FIG. 2	of	

U:\190500647\drawings\Figure 3 - IRMP Site Plan Showing Soil Cover Areas.dwg
2019/06/18 3:00 PM By: Lees, Andy

ORIGINAL SHEET – ANSI D



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AMSF-MW21 MONITORING WELL

Notes

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RI Report	TW	MPS	2014.10
Issued	By	Appd.	YY.MM.DD

File Name:	Dwn.	Chkd.	Dsgn.	YY.MM.DD
	APL	TW	TW	2014.10

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Client/Project

FORMER ALLIANCE METAL STAMPING & FABRICATION FACILTY
BROWNFIELD CLEANUP PROGRAM SITE # C828101

12 PIXLEY INDUSTRIAL PARKWAY, GATES, NY

Title

MONITORING WELL LOCATION PLAN

Project No.	Scale	
190500647	AS SHOWN	
Drawing No.	Sheet	Revision
FIG. 3	of	

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2017/07/28 12:01 PM By: Less, Andy

ORIGINAL SHEET – ANSI D

1381231

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Legend

- Monitoring Wells
- Recharge Wells
- **AMSF-MW-1S** / **556.59** — Monitoring/Recharge Well ID, Groundwater Elevation
- Shallow Bedrock Groundwater Elevation Contour (Hash marks on inside of apparent low)
- Inferred Hydraulic Gradient
- Approximate Property Boundary

0 75 150 Feet

1:1,500 (At Original document size of 11x17)

Notes

1. Coordinate System: NAD 1983 StatePlane New York West FIPS 3103 Feet
2. Orthoimagery © NYSGIS Clearinghouse, 2012.
3. Elevations in feet above mean sea level (NAVD 88).
4. Depth to groundwater measured in monitoring wells by Stantec on August 17, 2015.
5. Contours generated from natural neighbor interpolation of groundwater elevation data.
5. Recharge wells were not included in the generation of groundwater elevation contours. Note that the elevation of the catch basin cover at recharge well RW-2 is uncertain due to subsidence of the catch basin rim; therefore, the groundwater elevation reported at that location is an approximate estimate.
6. * The water level in recharge well RW-4 at the time of gauging was observed to be above the top of casing.

Project Location:
12 Pixley Industrial Parkway
Town of Gates, NY

Prepared by LB on 2015-11-10
Technical Review by TW on 2015-12-18
Independent Review by MS on 2015-12-18

190500647

Client/Project

Former Alliance Metal Stamping and Fabrication Facility
Brownfield Cleanup Program Site #C828101

Figure No.

4

Title

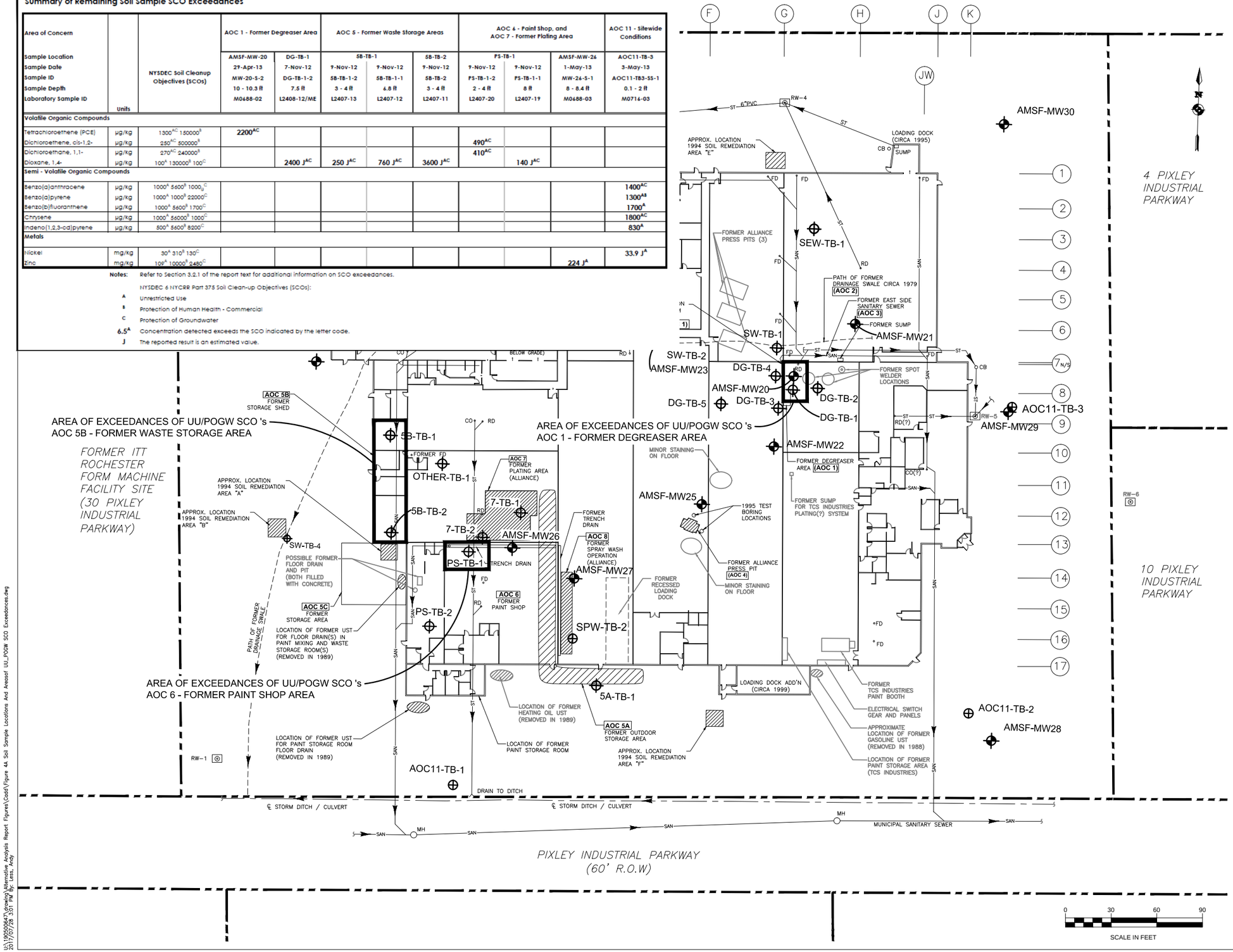
Groundwater Contour Map

1381231

Summary of Remaining Soil Sample SCO Exceedances

Area of Concern			AOC 1 - Former Degreaser Area		AOC 5 - Former Waste Storage Areas			AOC 6 - Paint Shop, and AOC 7 - Former Plating Area			AOC 11 - Sitewide Conditions
Sample Location			AMSF-MW-20	DG-TB-1	SB-TB-1		SB-TB-2	PS-TB-1		AMSF-MW-26	AOC11-TB-3
Sample Date		NYSDEC Soil Cleanup Objectives (SCOs)	29-Apr-13	7-Nov-12	9-Nov-12	9-Nov-12	9-Nov-12	9-Nov-12	9-Nov-12	1-May-13	3-May-13
Sample ID			MW-20-5-2	DG-TB-1-2	SB-TB-1-2	SB-TB-1-1	SB-TB-2	PS-TB-1-2	PS-TB-1-1	MW-26-5-1	AOC11-TB3-SS-1
Sample Depth			10 - 10.3 ft	7.5 ft	3 - 4 ft	6.8 ft	3 - 4 ft	2 - 4 ft	8 ft	8 - 8.4 ft	0.1 - 2 ft
Laboratory Sample ID	Units		M0688-02	L2408-12/ME	L2407-13	L2407-12	L2407-11	L2407-20	L2407-19	M0688-03	M0716-03
Volatile Organic Compounds											
Tetrachloroethene (PCE)	µg/kg	1300[AC] 150000[B]	**2200[AC]**								
Dichloroethene, cis-1,2-	µg/kg	250[AC] 500000[B]						**490[AC]**			
Dichloroethane, 1,1-	µg/kg	270[AC] 240000[B]						**410[AC]**			
Dioxane, 1,4-	µg/kg	100[A] 130000[B] 100[C]		**2400 J[AC]**	**250 J[AC]**	**760 J[AC]**	**3600 J[AC]**		**140 J[AC]**		
Semi - Volatile Organic Compounds											
Benzo(a)anthracene	µg/kg	1000[A] 5600[B] 1000[C]									**1400[AC]**
Benzo(a)pyrene	µg/kg	1000[A] 1000[B] 22000[C]									**1300[AB]**
Benzo(b)fluoranthene	µg/kg	1000[A] 5600[B] 1700[C]									**1700[A]**
Chrysene	µg/kg	1000[A] 56000[B] 1000[C]									**1800[AC]**
Indeno(1,2,3-cd)pyrene	µg/kg	500[A] 5600[B] 8200[C]									**830[A]**
Metals											
Nickel	mg/kg	30[A] 310[B] 130[C]									**33.9 J[A]**
Zinc	mg/kg	109[A] 10000[B] 2480[C]								**224 J[A]**	

Notes:
Refer to Section 3.2.1 of the report text for additional information on SCO exceedances.
NYSDEC 6 NYCRR Part 375 Soil Clean-up Objectives (SCOs):
A Unrestricted Use
B Protection of Human Health - Commercial
C Protection of Groundwater
6.5[A] Concentration detected exceeds the SCO indicated by the letter code.
J The reported result is an estimated value.



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Legend

- TEST BORING / MONITORING WELL
- TEST BORING
- TEST BORING WITH SURFACE SOIL SAMPLE
- SOIL BORING (O'BRIEN & GERE)
- UU/POGW SCO's = NYSDEC UNRESTRICTED USE / PROTECTION OF GROUNDWATER SOIL CLEANUP OBJECTIVES

Notes

Revision	By	Appd.	YY.MM.DD
RI Report	TW	MPS	2014.10
Issued	By	Appd.	YY.MM.DD
File Name:	APL	TW	TW	2014.10
	Dwn.	Chkd.	Dsgn.	YY.MM.DD

Permit-Seal

Client/Project
FORMER ALLIANCE METAL STAMPING & FABRICATION FACILTY
BROWNFIELD CLEANUP PROGRAM SITE # C828101
12 PIXLEY INDUSTRIAL PARKWAY, GATES, NY

Title
REMAINING SCO EXCEEDANCES - AOCs

Project No. 190500647 | Scale AS SHOWN
Drawing No. FIG. 5A | Sheet | Revision | of

U:\190500647\drawings\Alternative Analysis Report Figures\Costs\Figure 4A Soil Sample Locations And Areasof UU_POGW SCO Exceedances.dwg
2017/07/28 3:01 PM By: Less, Andy

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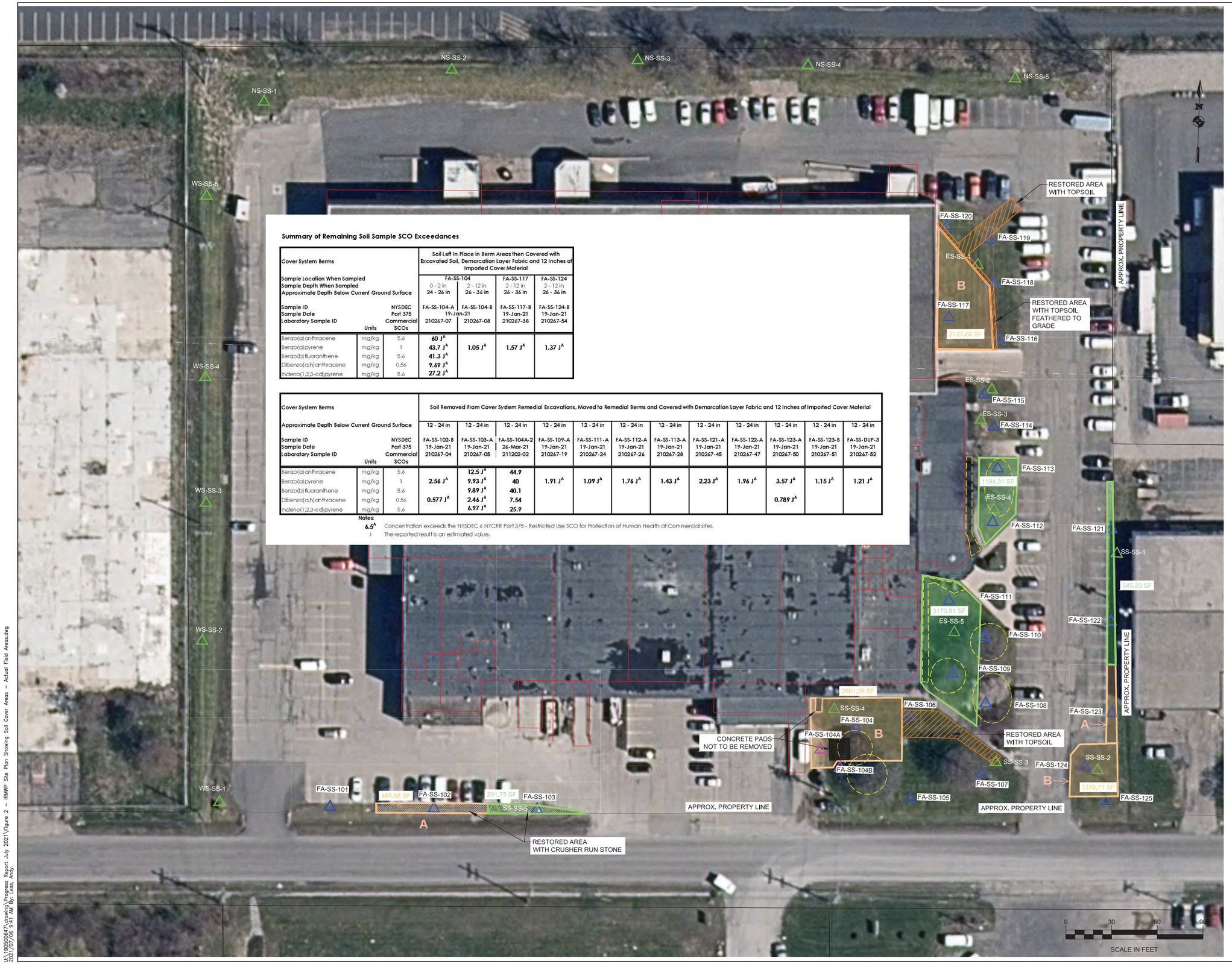

Summary of Remaining Soil Sample SCO Exceedances

Cover System Berms			Soil Left In Place in Berm Areas then Covered with Excavated Soil, Demarcation Layer Fabric and 12 Inches of Imported Cover Material			
Sample Location When Sampled			FA-SS-104		FA-SS-117	FA-SS-124
Sample Depth When Sampled			0 - 2 in	2 - 12 in	2 - 12 in	2 - 12 in
Approximate Depth Below Current Ground Surface			24 - 26 in	26 - 36 in	26 - 36 in	26 - 36 in
Sample ID		NYSDEC Part 375 Commercial SCOs	FA-SS-104-A	FA-SS-104-B	FA-SS-117-B	FA-SS-124-B
Sample Date			19-Jan-21		19-Jan-21	19-Jan-21
Laboratory Sample ID	Units		210267-07	210267-08	210267-38	210267-54
Benzo(a) anthracene	mg/kg	5.6	**60 J[A]**			
Benzo(a) pyrene	mg/kg	1	**43.7 J[A]**	**1.05 J[A]**	**1.57 J[A]**	**1.37 J[A]**
Benzo(b) fluoranthene	mg/kg	5.6	**41.3 J[A]**			
Dibenzo(a,h) anthracene	mg/kg	0.56	**9.69 J[A]**			
Indeno(1,2,3-cd) pyrene	mg/kg	5.6	**27.2 J[A]**			

Cover System Berms			Soil Removed From Cover System Remedial Excavations, Moved to Remedial Berms and Covered with Demarcation Layer Fabric and 12 Inches of Imported Cover Material											
Approximate Depth Below Current Ground Surface			12 - 24 in	12 - 24 in	12 - 24 in	12 - 24 in	12 - 24 in	12 - 24 in	12 - 24 in	12 - 24 in	12 - 24 in	12 - 24 in	12 - 24 in	12 - 24 in
Sample ID		NYSDEC Part 375 Commercial SCOs	FA-SS-102-B	FA-SS-103-A	FA-SS-104A-2	FA-SS-109-A	FA-SS-111-A	FA-SS-112-A	FA-SS-113-A	FA-SS-121-A	FA-SS-122-A	FA-SS-123-A	FA-SS-123-B	FA-SS-DUP-3
Sample Date			19-Jan-21	19-Jan-21	26-Mar-21	19-Jan-21	19-Jan-21	19-Jan-21	19-Jan-21	19-Jan-21	19-Jan-21	19-Jan-21	19-Jan-21	19-Jan-21
Laboratory Sample ID	Units		210267-04	210267-05	211202-02	210267-19	210267-24	210267-26	210267-28	210267-45	210267-47	210267-50	210267-51	210267-52
Benzo(a) anthracene	mg/kg	5.6		**12.5 J[A]**	**44.9**									
Benzo(a) pyrene	mg/kg	1	**2.56 J[A]**	**9.93 J[A]**	**40**	**1.91 J[A]**	**1.09 J[A]**	**1.76 J[A]**	**1.43 J[A]**	**2.23 J[A]**	**1.96 J[A]**	**3.57 J[A]**	**1.15 J[A]**	**1.21 J[A]**
Benzo(b) fluoranthene	mg/kg	5.6		**9.89 J[A]**	**40.1**									
Dibenzo(a,h) anthracene	mg/kg	0.56	**0.577 J[A]**	**2.46 J[A]**	**7.54**							**0.789 J[A]**		
Indeno(1,2,3-cd) pyrene	mg/kg	5.6		**6.97 J[A]**	**25.9**									

Notes:
6.5[A] Concentration exceeds the NYSDEC 6 NYCRR Part 375 - Restricted Use SCO for Protection of Human Health at Commercial sites.
J The reported result is an estimated value.

Stantec

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Consultants

Legend

FA-SS-104A — SURFACE SOIL SAMPLING LOCATIONS, COVER SYSTEM IRM, MARCH 2021

SS-SS-3 — COVER SYSTEM SURFACE SOIL SAMPLING LOCATIONS PRE-DESIGN INVESTIGATION, SEPT. 2019

FA-SS-119 — SURFACE SOIL SAMPLING LOCATIONS, COVER SYSTEM IRM, JANUARY 2021

COVER SOIL REMEDIATION AREA REMOVAL AND REPLACEMENT TO 2 INCH DEPTH

COVER SOIL REMEDIATION AREA -
A: REMOVAL AND REPLACEMENT TO 12 INCH DEPTH
B: COVERED WITH DEMARCATION LAYER AND 12 INCHES IMPORTED TOPSOIL

EXCAVATION IN THESE AREAS WAS LIMITED TO PROTECT ROOTS OF MATURE TREES AND SHRUBS - PLACED LANDSCAPING FABRIC OVER ROOTS AND COVERED WITH 6 INCHES OF MULCH

Notes

1.

Revision	By	Appd.	YY.MM.DD
SITE MANAGEMENT PLAN	TW	MPS	2021.09
COVER SYSTEM IRM CCR	JF	TW	2021.07
COVER SYSTEM - INTERIM REPORT	TW	MPS	2021.04
COVER SYSTEM - INTERIM REPORT	TW	MPS	2021.03
RI Report	TW	MPS	2014.10
Issued	By	Appd.	YY.MM.DD
File Name:	APL	TW	TW	2014.10
	Dwn.	Chkd.	Dsgn.	YY.MM.DD

Permit-Seal

Client/Project

FORMER ALLIANCE METAL STAMPING & FABRICATION FACILTY
BROWNFIELD CLEANUP PROGRAM SITE # C828101

12 PIXLEY INDUSTRIAL PARKWAY, GATES, NY
SITE MANAGEMENT PLAN

Title

REMAINING SCO EXCEEDANCES - COVER SYSTEM REMEDIATION AREAS

Project No.	Scale	
190500647	AS SHOWN	
Drawing No.	Sheet	Revision
FIG. 5B	1 of 1	

U:\190500647\drawing\Progress Report July 2021\Figure 2 - RWMP Site Plan Showing Soil Cover Areas - Actual Field Areas.dwg
2021/07/06 9:41 AM By: Less, Andy

ORIGINAL SHEET – ANSI D

1381231

Sample Location	AMSF-MW-1S				
Sample Date	20-Jun-13	20-Jun-13	26-Sep-13	29-Jun-15	18-Aug-15
Sampling Company	O&G	Stantec	Stantec	Stantec	Stantec
Selected VOCs (ug/L)					
Trichloroethene (TCE)	0.38 J	0.82 J	200 U	2.9 J	5.0 U
Dichloroethene, cis-1,2-	0.37 J	0.67 J	200 U	0.83 J	5.0 U
Vinyl chloride	0.92 J	2.2 J	200 U	4.9 J	1.3 J
Trichloroethane, 1,1,1-	120	140 J	4900	370	49
Dichloroethane, 1,1-	23	19 J	320	95	34
Dichloroethene, 1,1-	9	13 J	63 J	50 UD	4.6 J
Chloroethane	0.51 J	5.0 U	200 U	5.0 U	5.0 U
1,4-Dioxane - 8270 SIM	2.1	-	-	2.7	0.43

Sample Location	RW-2
Sample Date	20-Aug-15
Sampling Company	Stantec
Selected VOCs (ug/L)	
Tetrachloroethene (PCE)	5.8 J
Trichloroethene (TCE)	5.0 J
Dichloroethene, cis-1,2-	3.9 J
Trichloroethane, 1,1,1-	520
Dichloroethane, 1,1-	23
Dichloroethene, 1,1-	20 J
1,4-Dioxane - 8270 SIM	12

Sample Location	ITT SBW-2
Sample Date	21-Jun-13
Sampling Company	O&G
Selected VOCs (ug/L)	
Tetrachloroethene (PCE)	
Trichloroethene (TCE)	1.1 J
Dichloroethene, cis-1,2-	0.59 J
Vinyl chloride	1.4 J
Trichloroethane, 1,1,1-	760
Dichloroethane, 1,1-	18
Dichloroethene, 1,1-	31
Chloroethane	0.55 J
1,4-Dioxane - 8270 SIM	7.5

Sample Location	AMSF-MW-7				
Sample Date	20-Jun-13	26-Sep-13	12-May-14	26-Jun-15	18-Aug-15
Sampling Company	O&G	Stantec	Stantec	Stantec	Stantec
Selected VOCs (ug/L)					
Trichloroethene (TCE)	4 J	200 U	5.0 U	5.0 U	5.0 U
Dichloroethene, cis-1,2-	1.5 U	200 U	5.0 U	5.0 U	1.4 J
Vinyl chloride	1.0 U	200 U	0.97 J	5.0 U	2.1 J
Trichloroethane, 1,1,1-	830	5900	10	5.0 U	11
Dichloroethane, 1,1-	31	32 J	8.4	6.5	17
Dichloroethene, 1,1-	23	65 J	5.0 U	5.0 U	5.0 U
Chloroethane	8.3	200 U	1.5 J	5.0 U	9
1,4-Dioxane - 8270 SIM	6.6	-	-	0.25 U	0.25

Sample Location	AMSF-MW-13S			
Sample Date	27-Jun-13	12-May-14	26-Jun-15	18-Aug-15
Sampling Company	O&G	Stantec	Stantec	Stantec
Selected VOCs (ug/L)				
Tetrachloroethene (PCE)	6.0 U	5.0 U	5.8	0.98 J
Trichloroethene (TCE)	15 J	22	20	15
Dichloroethene, cis-1,2-	6.0 U	3.0 J	9.2	4.1 J
Vinyl chloride	6.4 U	2.9 J	5.0 U	5.3
Trichloroethane, 1,1,1-	1900	2300 D	1300	790
Chloroform	8.2 J			
Dichloroethane, 1,1-	140	220 D	190	170
Dichloroethene, 1,1-	18 J	22	200	21
Chloroethane	4.8 U	6.9	5.0 U	13
1,4-Dioxane - 8270 SIM	17	-	19	9.1

Sample Location	ITT SBW-7
Sample Date	24-Jun-13
Sampling Company	O&G
Selected VOCs (ug/L)	
Dichloroethane, 1,1-	1.4
Dichloroethene, 1,1-	1.3
1,4-Dioxane - 8270 SIM	0.69

Sample Location	AMSF-MW-33			
Sample Date	13-May-14		26-Jun-15	19-Aug-15
Sampling Company	Stantec	Stantec	Stantec	Stantec
Selected VOCs (ug/L)		Duplicate		
Trichloroethene (TCE)	15	16	8.2 J	13 J
Dichloroethene, cis-1,2-	2.5 J	2.5 J	50 U	100 U
Vinyl chloride	2.0 J	2.2 J	50 U	100 U
Trichloroethane, 1,1,1-	2700 D	2800 D	1900	3600
Dichloroethane, 1,1-	370 D	380 D	190	380
Dichloroethene, 1,1-	54	54	360	34 J
Chloroethane	3.1 J	5.0 U	50 U	100 U
1,4-Dioxane - 8270 SIM	-	-	0.44 U	0.44

Sample Location	AMSF-MW-9S					
Sample Date	18-Jun-13	18-Jun-13	27-Sep-13	13-May-14	29-Jun-15	18-Aug-15
Sampling Company	O&G	Stantec	Stantec	Stantec	Stantec	Stantec
Selected VOCs (ug/L)						
Tetrachloroethene (PCE)	99	77 J	66	73	32	19
Trichloroethene (TCE)	52	57	60	56	21	11
Dichloroethene, cis-1,2-	65	80	79	83	35	20
Vinyl chloride	1.0 U	1.2 J	40 U	1.1 J	5.0 U	5.0 U
Trichloroethane, 1,1,1-	540	520 D	930	410 D	270	160
Trichloroethane, 1,1,2-	4.1 J	4.2 J	40 U	4.1 J	5.0 U	1.9 J
Dichloroethane, 1,1-	110	120	130	130	71	38
Dichloroethene, 1,1-	71	80	53	60	66	19
Chloroethane	4.1 J	4.9 J	40 U	4.5 J	5.0 U	5.0 U
1,4-Dioxane - 8260	R	R	R	270 J	R	100 J
1,4-Dioxane - 8270 SIM	230			-	64	66

Sample Location	AMSF-MW-31							
Sample Date	18-Jun-13	25-Sep-13	13-May-14	29-Jun-15		19-Aug-15		
Sampling Company	Stantec	Stantec	Stantec	Stantec	Stantec	Duplicate	Stantec	Duplicate
Selected VOCs (ug/L)								
Tetrachloroethene (PCE)	5.5 J	20	5.0 U	0.99 J	5.0 U	1.1 J	0.89 J	
Trichloroethene (TCE)	2.2 J	2.2 J	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	
Dichloroethene, cis-1,2-	1.2 J	0.62 J	5.0 U	0.62 J	5.0 U	5.0 U	5.0 U	
Vinyl chloride	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	0.82 J	
Trichloroethane, 1,1,1-	91	110	10	19 J	4.1 J	13 J	2.9 J	
Dichloroethene, 1,1-	23	29	25	21	21	13	20	
Dichloroethene, 1,1-	7.1	6	5.0 U	5.0 U	5.0 U	5.0 U	0.80 J	
Chloroethane	3.3 J	5.0 U	3.4 J	5.0 U	5.0 U	5.0 U	2.6 J	
1,4-Dioxane - 8270 SIM	-	-	-	1 U	0.96 U	4.4	4.2	

Sample Location	AMSF-MW-12S
Sample Date	27-Jun-13
Sampling Company	O&G
Selected VOCs (ug/L)	
Tetrachloroethene (PCE)	1.0 J
Trichloroethene (TCE)	2.4
Dichloroethene, cis-1,2-	1.1 J
Vinyl chloride	0.78 J
Trichloroethene, 1,1,1-	280
Dichloroethene, 1,1-	41
Dichloroethene, 1,1-	12
Chloroethane	0.64 J
1,4-Dioxane - 8270 SIM	9

Sample Location	AMSF-MW-32		
Sample Date	13-May-14	26-Jun-15	19-Aug-15
Sampling Company	Stantec	Stantec	Stantec
Selected VOCs (ug/L)			
Tetrachloroethene (PCE)	7.4	11	9.5
Trichloroethene (TCE)	8	11	9.4
Dichloroethene, cis-1,2-	2.8 J	7.2	5.6
Vinyl chloride	1.5 J	5.0 U	5.0 U
Trichloroethane, 1,1,1-	690 D	640	340
Dichloroethane, 1,1-	160	110	100
Dichloroethene, 1,1-	27	170	42
Chloroethane	4.3 J	5.0 U	5.0 U
1,4-Dioxane - 8270 SIM	-	42	44

Sample Location	RW-3
Sample Date	20-Aug-15
Sampling Company	Stantec
Selected VOCs (ug/L)	
Tetrachloroethene (PCE)	1.5 J
Trichloroethene (TCE)	1.7 J
Dichloroethene, cis-1,2-	1.0 J
Trichloroethane, 1,1,1-	150
Dichloroethane, 1,1-	31
Dichloroethene, 1,1-	5.7
Chloroethane	3.0 J
1,4-Dioxane - 8270 SIM	12

Sample Location	AMSF-MW-4	
Sample Date	18-Jun-13	27-Sep-13
Sampling Company	Stantec	Stantec
Selected VOCs (ug/L)		
Tetrachloroethene (PCE)	5.0 UJ	1.5 J
Trichloroethene (TCE)	0.67 J	0.65 J
Dichloroethene, cis-1,2-	3.5 J	1.3 J
Trichloroethane, 1,1,1-	1.2 J	10
Dichloroethane, 1,1-	12	9.4
Dichloroethene, 1,1-	0.86 J	0.59 J

Sample Location	AMSF-MW-26				
Sample Date	20-Jun-13	26-Sep-13		30-Jun-15	20-Aug-15
Sampling Company	Stantec	Stantec	Stantec	Stantec	Stantec
Selected VOCs (ug/L)			Dupl.		
Tetrachloroethene (PCE)	7.1	4.0 J	4.1 B J	6.7	2.6 J
Trichloroethene (TCE)	1.2 J	5.0 U	5.0 U	5.0 U	5.0 U
Dichloroethene, cis-1,2-	7.4	1.0 J	0.96 J	0.64 J	1.3 J
Trichloroethane, 1,1,1-	85	33	34	35	19
Trichloroethane, 1,1,2-	5.7	5.0 U	5.0 U	5.0 U	1.1 J
Dichloroethane, 1,1-	29	7.3	7.4	9.3	7.5
Dichloroethene, 1,1-	28	9.2	8.8	12	4.5 J
1,4-Dioxane - 8270 SIM	-	-	-	8.2	25

Sample Location	AMSF-MW-10		
Sample Date	20-Jun-13	20-Jun-13	26-Sep-13
Sampling Company	O&G	Stantec	Stantec
Selected VOCs (ug/L)			
Tetrachloroethene (PCE)	26	50	25
Trichloroethene (TCE)	0.53 J	1.4 J	0.62 J
Trichloroethane, 1,1,1-	3.3 J	2.1 J	2.7 J
Dichloroethane, 1,1-	1.1 J	0.72 J	0.93 J
1,4-Dioxane - 8270 SIM	0.44	-	-

Sample Location	AMSF-MW-23				
Sample Date	19-Jun-13	25-Sep-13	13-May-14	30-Jun-15	19-Aug-15
Sampling Company	Stantec	Stantec	Stantec	Stantec	Stantec
Selected VOCs (ug/L)					
Tetrachloroethene (PCE)	44	36	45	70	47
Trichloroethene (TCE)	1.4 J	0.88 J	1.4 J	1.5 J	1.7 J
Trichloroethene, 1,1,1-	58	27	48	16	19
Dichloroethane, 1,1-	7.1	4.7 J	6.6	4.8 J	4.2 J
Dichloroethene, 1,1-	11	6.4	6.7	7.5	5.9
1,4-Dioxane - 8270 SIM	-	-	-	3	4.6

Sample Location	AMSF-MW-30		
Sample Date	21-Jun-13		27-Sep-13
Sampling Company	Stantec	Stantec	Stantec
Selected VOCs (ug/L)		Duplicate	
Trichloroethene, 1,1,1-	13 J	13 J	58
Dichloroethene, 1,1-	5.0 U	5.0 U	1.5 J
Dichloroethene, 1,1-	5.0 U	5.0 U	1.9 J

Sample Location	AMSF-MW-21			
Sample Date	19-Jun-13	25-Sep-13	30-Jun-15	19-Aug-15
Sampling Company	Stantec	Stantec	Stantec	Stantec
Selected VOCs (ug/L)				
Tetrachloroethene (PCE)	78 J	190 D	120	43
Trichloroethene (TCE)	3.0 J	8.6	3.1 J	2.4 J
Dichloroethene, cis-1,2-	5.0 U	0.92 J	5.0 U	5.0 U
Trichloroethane, 1,1,1-	31	420 D	23	25
Trichloroethene, 1,1,2-	0.66 J	5.0 U	5.0 U	5.0 U
Dichloroethane, 1,1-	5.6	48	4.6 J	11
Dichloroethene, 1,1-	6.1	27	8.6	6
1,4-Dioxane - 8270 SIM	-	-	1.1 U	4.9

Sample Location	AMSF-MW-20			
Sample Date	19-Jun-13	25-Sep-13	29-Jun-15	18-Aug-15
Sampling Company	Stantec	Stantec	Stantec	Stantec
Selected VOCs (ug/L)				
Tetrachloroethene (PCE)	700 D	510 D	930	230
Trichloroethene (TCE)	15	11	14	9.9
Dichloroethene, cis-1,2-	1.1 J	0.93 J	1.4 J	1.4 J
Trichloroethane, 1,1,1-	120	90	120	58
Trichloroethane, 1,1,2-	1.5 J	5.0 U	5.0 U	5.0 U
Dichloroethane, 1,1-	64	40	53	47
Dichloroethene, 1,1-	42	34	60	21
1,4-Dioxane - 8270 SIM	-	-	16	19

Sample Location	AMSF-MW-29			
Sample Date	21-Jun-13	27-Sep-13	29-Jun-15	19-Aug-15
Sampling Company	Stantec	Stantec	Stantec	Stantec
Selected VOCs (ug/L)				
Tetrachloroethene (PCE)	7.3	19 J	6.3	19
Trichloroethene (TCE)	0.71 J	20 U	5.0 U	0.94 J
Trichloroethane, 1,1,1-	54	380	3.1 J	86
Dichloroethane, 1,1-	2.7 J	23	5.0 U	8.2
Dichloroethene, 1,1-	1.2 J	8.1 J	5.0 U	3.0 J
1,4-Dioxane - 8270 SIM	-	-	0.1 U	1.2

Sample Location	AMSF-MW-22			
Sample Date	19-Jun-13	25-Sep-13	30-Jun-15	19-Aug-15
Sampling Company	Stantec	Stantec	Stantec	Stantec
Selected VOCs (ug/L)				
Tetrachloroethene (PCE)	260 D	180	190	200
Trichloroethene (TCE)	5.0 J	4.5 J	4.0 J	5.6
Dichloroethene, cis-1,2-	0.71 J	1.1 J	1.2 J	1.7 J
Trichloroethane, 1,1,1-	27	20	10	25
Dichloroethane, 1,1-	11	21	5.3	22
Dichloroethene, 1,1-	6.6	11	5.0 U	11
1,4-Dioxane - 8270 SIM	-	-	0.71 U	4.9

Sample Location	AMSF-MW-34	
Sample Date	29-Jun-15	19-Aug-15
Sampling Company	Stantec	Stantec
Selected VOCs (ug/L)		
Tetrachloroethene (PCE)	14	25
Trichloroethene (TCE)	1.9 J	20 U
Dichloroethene, cis-1,2-	2.7 J	20 U
Vinyl chloride	11	3.1 J
Trichloroethane, 1,1,1-	410	210
Dichloroethane, 1,1-	240	130
Dichloroethene, 1,1-	88	13 J
Chloroethane	15	20 U
1,4-Dioxane - 8270 SIM	1.8 U	4.4

Sample Location	AMSF-MW-25	
Sample Date	19-Jun-13	25-Sep-13
Sampling Company	Stantec	Stantec
Selected VOCs (ug/L)		
Tetrachloroethene (PCE)	80 J	120
Trichloroethene (TCE)	1.6 J	2.4 J
Dichloroethene, cis-1,2-	5.0 U	0.82 J
Trichloroethane, 1,1,1-	15	7.5
Dichloroethane, 1,1-	6.3	4.4 J
Dichloroethene, 1,1-	3.0 J	2.3 J

Sample Location	AMSF-MW-28	
Sample Date	21-Jun-13	27-Sep-13
Sampling Company	Stantec	Stantec
Selected VOCs (ug/L)		
Tetrachloroethene (PCE)	5.7	5.7

Sample Location	AMSF-MW-3S		
Sample Date	20-Jun-13	20-Jun-13	26-Sep-13
Sampling Company	O&G	Stantec	Stantec
Selected VOCs (ug/L)			
Tetrachloroethene (PCE)	99	70	45
Trichloroethene (TCE)	1.5 J	1.8 J	1.5 J
Dichloroethene, cis-1,2-	0.65 J	0.76 J	4.2 J
Vinyl chloride	0.3 U	5.0 U	0.77 J
Trichloroethane, 1,1,1-	3.0 J	3.7 J	2.8 J
Dichloroethane, 1,1-	0.61 J	5.0 U	0.68 J
1,4-Dioxane - 8270 SIM	0.34	-	-

Sample Location	AMSF-MW-27	
Sample Date	18-Jun-13	26-Sep-13
Sampling Company	Stantec	Stantec
Selected VOCs (ug/L)		
Tetrachloroethene (PCE)	4.6 J	6.3
Trichloroethene (TCE)	9.3	7.5
Dichloroethane, 1,1-	2.6 J	1.9 J
Dichloroethene, 1,1-	2.2 J	1.2 J

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Stantec

Legend

Shallow Bedrock Wells

N

0 200 400 Feet

Notes

1.Coordinate System: NAD 1983 StatePlane New York West FIPS 3103 Feet

2. Analytical data qualifiers:
U The analyte was not detected above the laboratory's reportable detection limit shown.
B The analyte was found in associated blank as well as in the sample.
D Indicates reanalysis of sample with additional dilution to address exceedance of instrument calibration range.
D* Data reported from a dilution.
J The reported result is an estimated value.

3. Concentrations are reported in units of ug/L.

4. Sampling company O&G indicates O'Brien & Gere Engineers.

Project Location:
12 Pixley Industrial Parkway
Town of Gates, NY

Prepared by AL on 2017-07-28
Technical Review by TW on 2017-07-28
Independent Review by MPS on 2013-11-05

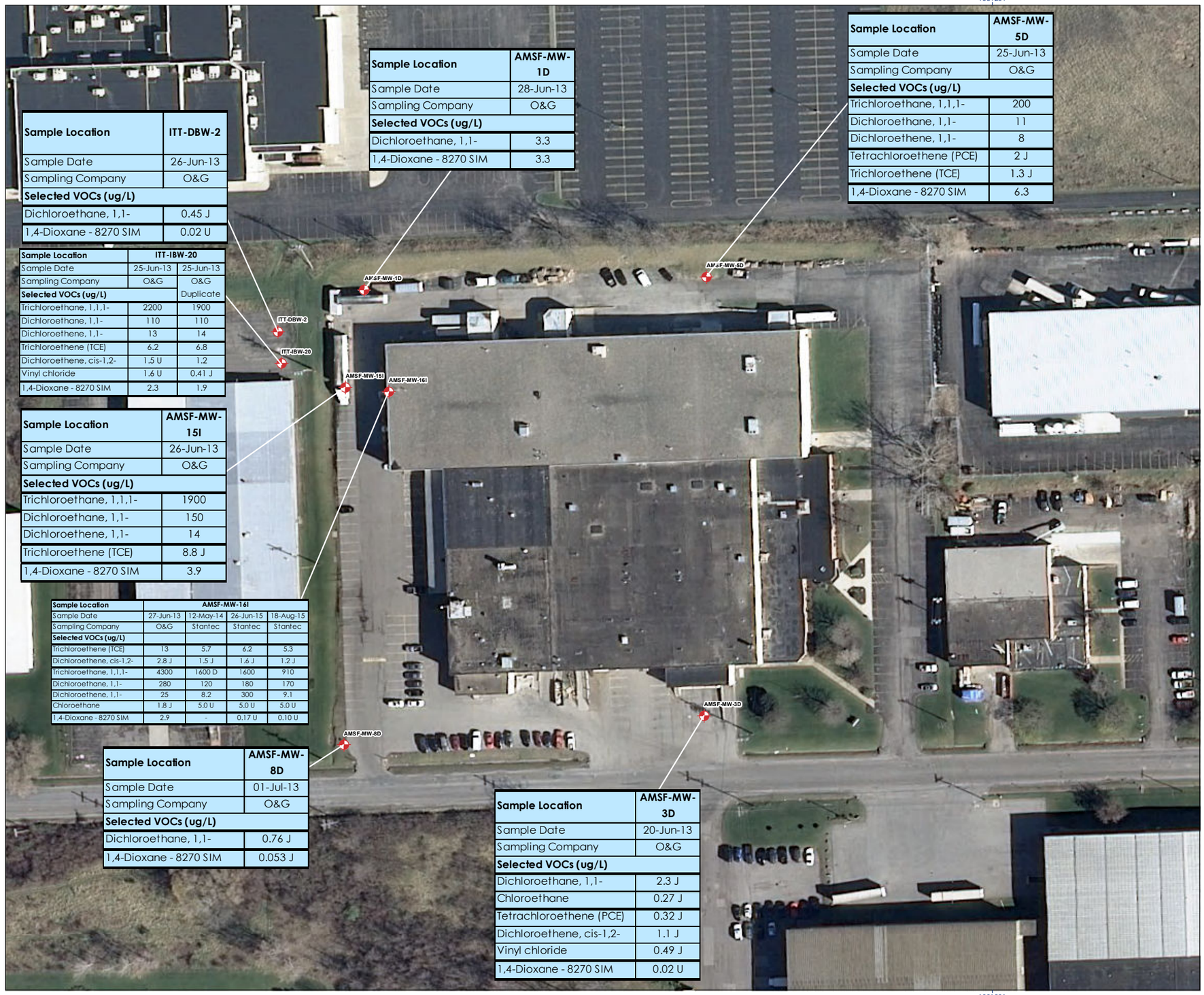
190500647

Client/Project
Former Alliance Metal Stamping and Fabrication Facility
Brownfield Cleanup Program #C828101

Figure No.
6A

Title
Remaining Groundwater Sample Exceedances Shallow Bedrock Wells

1381231



Sample Location	ITT-DBW-2
Sample Date	26-Jun-13
Sampling Company	O&G
Selected VOCs (ug/L)	
Dichloroethane, 1,1-	0.45 J
1,4-Dioxane - 8270 SIM	0.02 U

Sample Location	AMSF-MW-1D
Sample Date	28-Jun-13
Sampling Company	O&G
Selected VOCs (ug/L)	
Dichloroethane, 1,1-	3.3
1,4-Dioxane - 8270 SIM	3.3

Sample Location	AMSF-MW-5D
Sample Date	25-Jun-13
Sampling Company	O&G
Selected VOCs (ug/L)	
Trichloroethane, 1,1,1-	200
Dichloroethane, 1,1-	11
Dichloroethene, 1,1-	8
Tetrachloroethene (PCE)	2 J
Trichloroethene (TCE)	1.3 J
1,4-Dioxane - 8270 SIM	6.3

Sample Location	ITT-IBW-20	
Sample Date	25-Jun-13	25-Jun-13
Sampling Company	O&G	O&G
Selected VOCs (ug/L)		Duplicate
Trichloroethane, 1,1,1-	2200	1900
Dichloroethane, 1,1-	110	110
Dichloroethene, 1,1-	13	14
Trichloroethene (TCE)	6.2	6.8
Dichloroethene, cis-1,2-	1.5 U	1.2
Vinyl chloride	1.6 U	0.41 J
1,4-Dioxane - 8270 SIM	2.3	1.9

Sample Location	AMSF-MW-15I
Sample Date	26-Jun-13
Sampling Company	O&G
Selected VOCs (ug/L)	
Trichloroethane, 1,1,1-	1900
Dichloroethane, 1,1-	150
Dichloroethene, 1,1-	14
Trichloroethene (TCE)	8.8 J
1,4-Dioxane - 8270 SIM	3.9

Sample Location	AMSF-MW-16I			
Sample Date	27-Jun-13	12-May-14	26-Jun-15	18-Aug-15
Sampling Company	O&G	Stantec	Stantec	Stantec
Selected VOCs (ug/L)				
Trichloroethene (TCE)	13	5.7	6.2	5.3
Dichloroethene, cis-1,2-	2.8 J	1.5 J	1.6 J	1.2 J
Trichloroethane, 1,1,1-	4300	1600 D	1600	910
Dichloroethane, 1,1-	280	120	180	170
Dichloroethene, 1,1-	25	8.2	300	9.1
Chloroethane	1.8 J	5.0 U	5.0 U	5.0 U
1,4-Dioxane - 8270 SIM	2.9	-	0.17 U	0.10 U

Sample Location	AMSF-MW-8D
Sample Date	01-Jul-13
Sampling Company	O&G
Selected VOCs (ug/L)	
Dichloroethane, 1,1-	0.76 J
1,4-Dioxane - 8270 SIM	0.053 J

Sample Location	AMSF-MW-3D
Sample Date	20-Jun-13
Sampling Company	O&G
Selected VOCs (ug/L)	
Dichloroethane, 1,1-	2.3 J
Chloroethane	0.27 J
Tetrachloroethene (PCE)	0.32 J
Dichloroethene, cis-1,2-	1.1 J
Vinyl chloride	0.49 J
1,4-Dioxane - 8270 SIM	0.02 U

1381231

Stantec

Legend

Deep Bedrock

N

0 100 200 Feet

Notes

1.Coordinate System: NAD 1983 StatePlane New York West FIPS 3103 Feet

2. Analytical data qualifiers:□
U The analyte was not detected above the laboratory's reportable detection limit shown.
B The analyte was found in associated blank as well as in the sample.
D Indicates reanalysis of sample with additional dilution to address exceedance of instrument calibration range.
D* Data reported from a dilution.
J The reported result is an estimated value.

3. Concentrations are reported in units of ug/L.

4. Sampling company O&G indicates O'Brien & Gere Engineers.

Project Location:
12 Pixley Industrial Parkway
Town of Gates, NY

Prepared by AL on 2014-09-23
Technical Review by TW on 2014-09-23
Independent Review by mmm on 2013-11-05

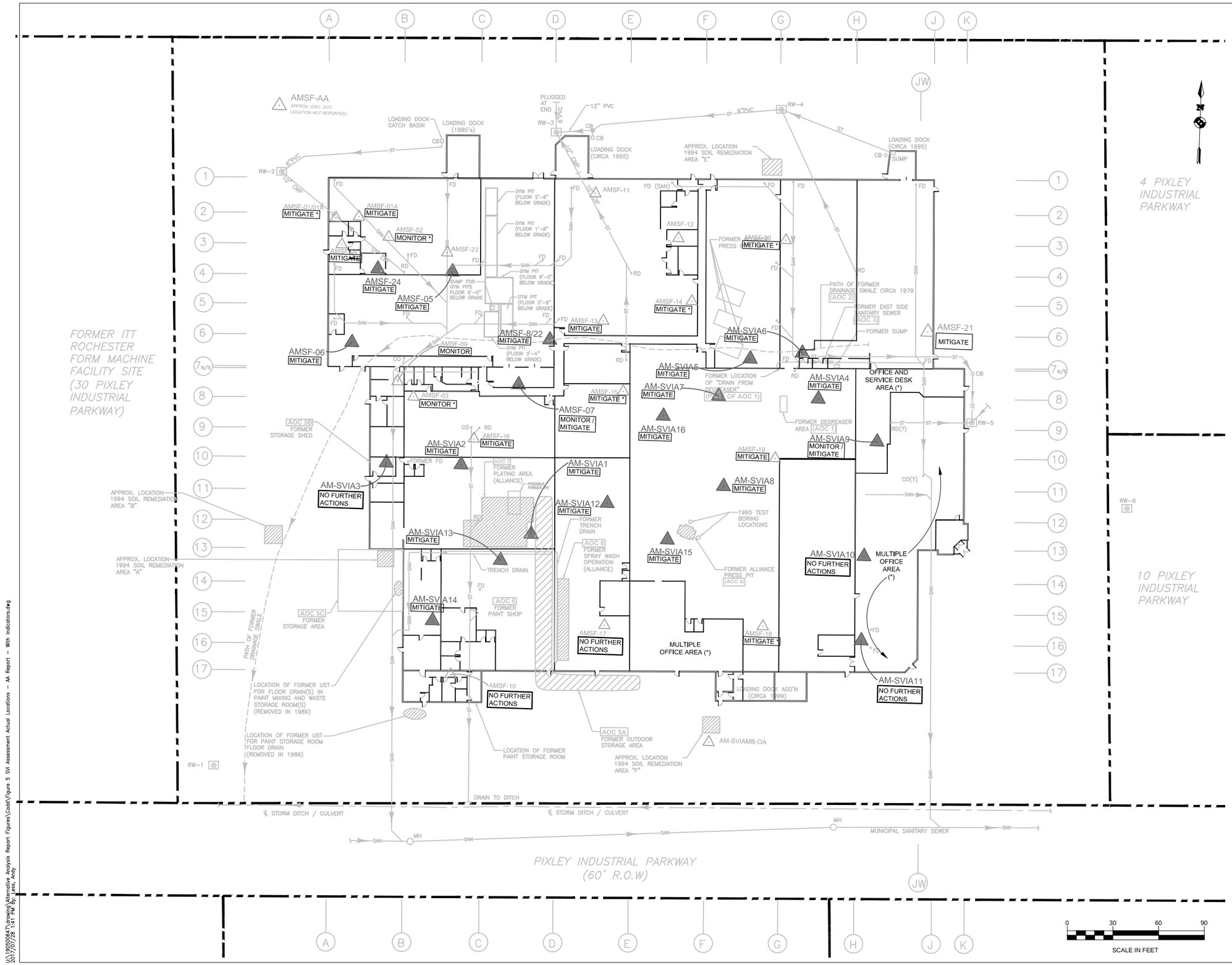
190500647

Client/Project
Former Alliance Metal Stamping and Fabrication Facility
Brownfield Cleanup Program #C828101

Figure No.
6B

Title
Remaining Groundwater Sample Exceedances Intermediate & Deep Bedrock Wells

J:\190500647\drawing\Alternative Analysis Report Figures\GIS Figure 3b - Summary of Chlorinated Ethanes and Chlorinated Ethenes in Groundwater.mxd Revised: 2017-07-28 By: dtes



U:\190500647\drawing\Alternative Analysis Report Figures\Cad\Figure 5 SVI Assessment Actual Locations - AA Report - With Indicators.dwg
2017/07/28 1:41 PM By: Lass, Andy

ORIGINAL SHEET - ANSI D

Stantec

61 Commercial Street
Rochester , NY
14614
Tel. 585-475-1440
Fax. 585-272-1814
www.stantec.com

Consultants

Legend

△ PREVIOUS SOIL VAPOR INTRUSION SAMPLE LOCATION (RFM INVESTIGATION)

▲ PREVIOUS RI SOIL VAPOR INTRUSION SAMPLE LOCATION (FAMSF RI)

Notes

1. The 'Mitigate', 'Mitigate/Monitor', 'Monitor', 'Take Reasonable & Practical Actions' and 'No Further Action' labels shown for the previous sample locations are the designations which the previous results for those locations yield when evaluated using Soil Vapor / Indoor Air Matrices 1 and 2 of the Final Guidance for Evaluating Soil Vapor Intrusion in the State of New York, NYSDOH, October 2006.
2. *- An asterisk indicates that the previous sampling at this location included only sub-slab vapor sampling. The Matrix 1 and 2 designations shown are based on the assumption that indoor air concentrations at that location were within the range applicable to the designation shown.

Revision	By	Appd.	YY.MM.DD

RI Report Issued	TW By	MPS Appd.	2014.10 YY.MM.DD

File Name:	APL Dwn.	TW Chkd.	TW Dsgn.	2014.10 YY.MM.DD

Permit-Seal

Client/Project

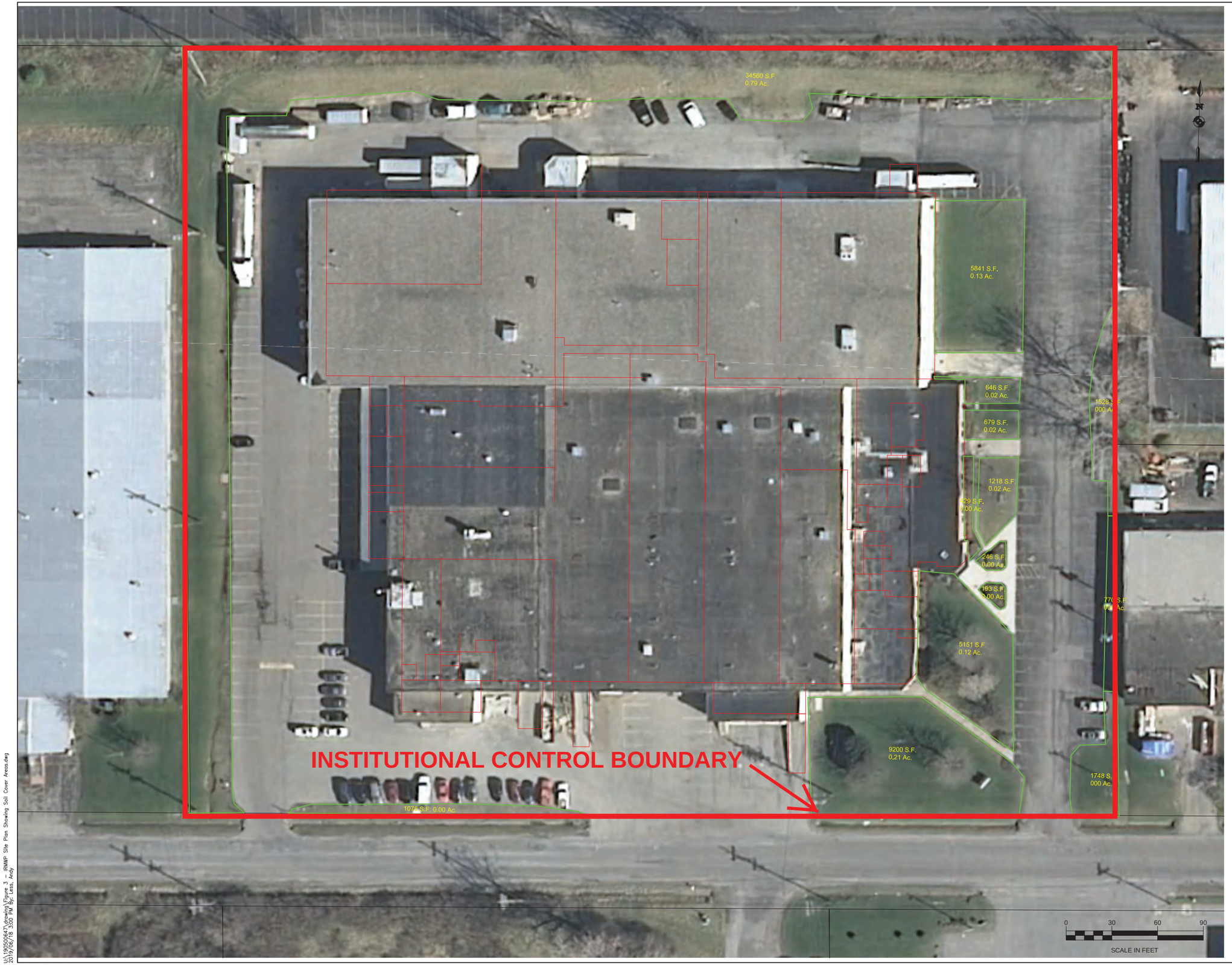
FORMER ALLIANCE METAL STAMPING & FABRICATION FACILTY
BROWNFIELD CLEANUP PROGRAM SITE # C828101

12 PIXLEY INDUSTRIAL PARKWAY, GATES, NY

Title

REMAINING SOIL VAPOR SAMPLE EXCEEDANCES

Project No.	Scale	
190500647	AS SHOWN	
Drawing No.	Sheet	Revision
FIG. 7	of	



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Fax. 585-272-1814
www.stantec.com

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Legend

AREAS OF SOIL COVER
SF – SQUARE FEET
AC. – ACRES

Notes

Revision	By	Appd.	YY.MM.DD
RI Report	TW	MPS	2014.10
Issued	By	Appd.	YY.MM.DD
File Name:	APL	TW	TW	2014.10
	Dwn.	Chkd.	Dsgn.	YY.MM.DD

Permit-Seal

Client/Project

FORMER ALLIANCE METAL STAMPING & FABRICATION FACILTY
BROWNFIELD CLEANUP PROGRAM SITE # C828101

12 PIXLEY INDUSTRIAL PARKWAY, GATES, NY

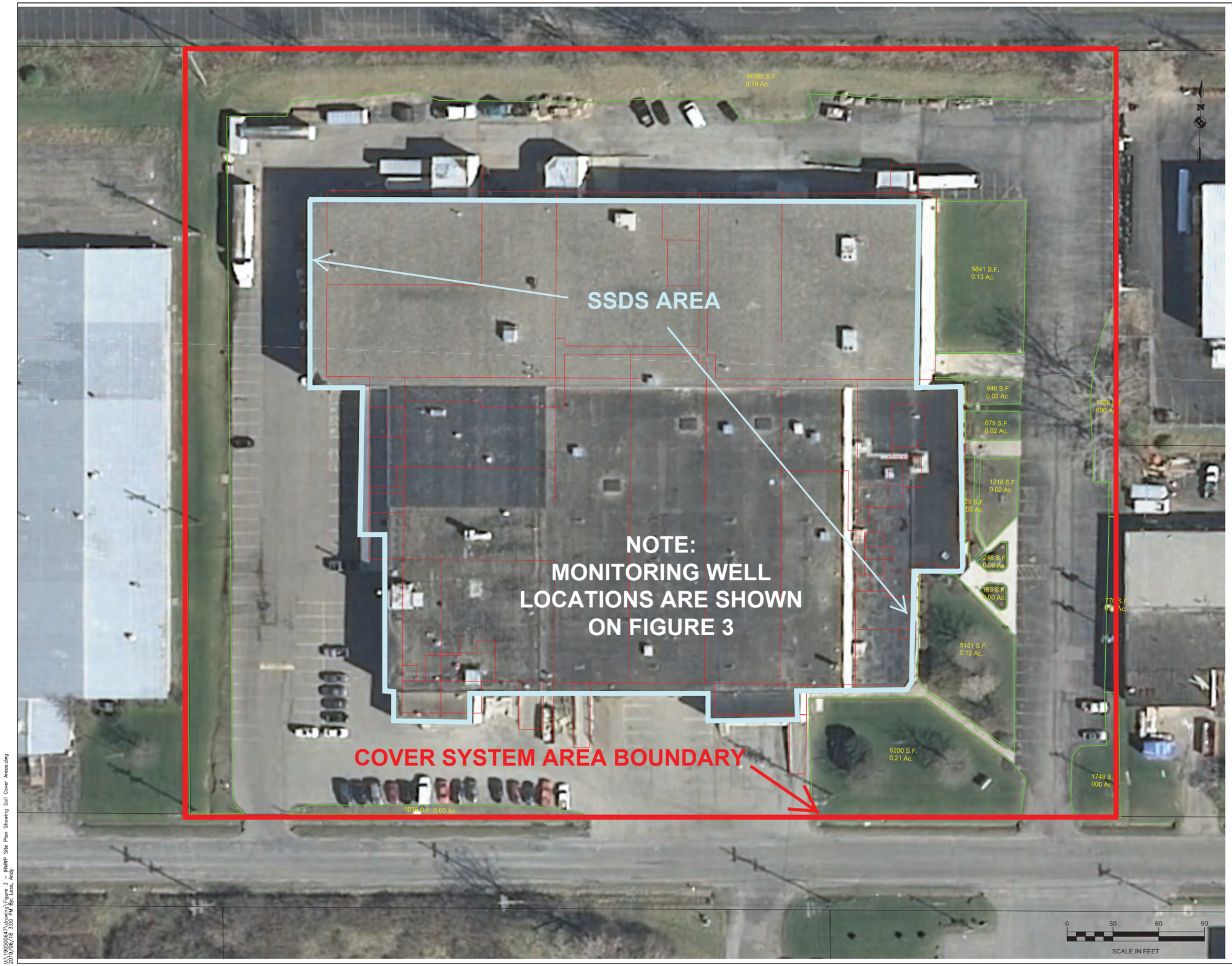
Title

INSTITUTIONAL CONTROL BOUNDARIES

Project No.	Scale	
190500647	AS SHOWN	
Drawing No.	Sheet	Revision
FIG. 8	of	

U:\190500647\drawings\Figure 3 - IRMP Site Plan Showing Soil Cover Areas.dwg
2019/06/18 3:00 PM By: Lees, Andy

ORIGINAL SHEET – ANSI D



U:\190500647\drawings\Figure_3_-_IRMP_Site_Plan_Showing_Soil_Cover_Areas.dwg
2019/06/18 3:00 PM By: Lees, Andy

ORIGINAL SHEET – ANSI D

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14614
Tel. 585-475-1440
Fax. 585-272-1814
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Legend

AREAS OF SOIL COVER
SF – SQUARE FEET
AC. – ACRES

Notes

Revision	By	Appd.	YY.MM.DD
RI Report Issued	TW By	MPS Appd.	2014.10 YY.MM.DD
File Name:	APL Dwn.	TW Chkd.	TW Dsgn.	2014.10 YY.MM.DD

Permit-Seal

Client/Project

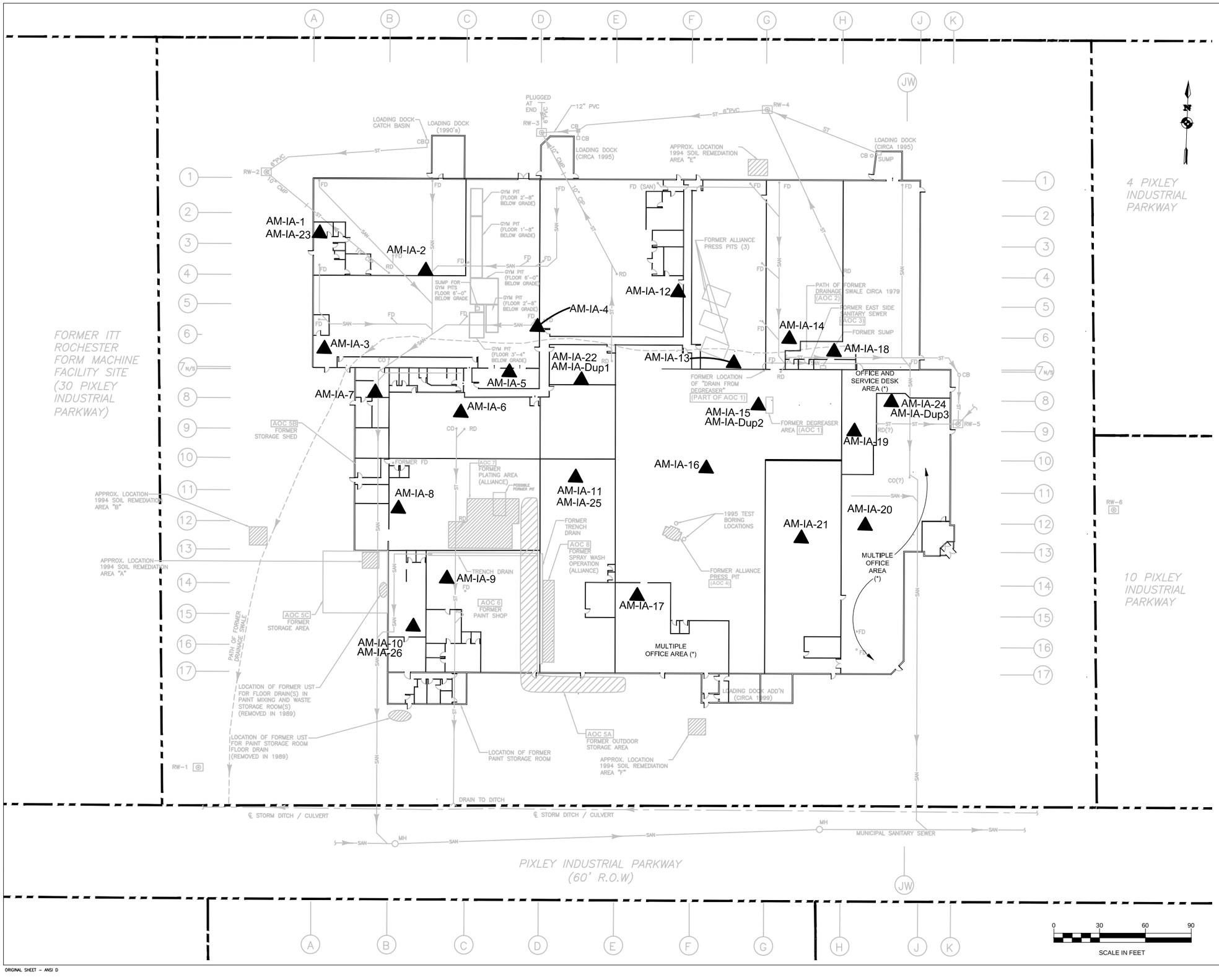
FORMER ALLIANCE METAL STAMPING & FABRICATION FACILTY
BROWNFIELD CLEANUP PROGRAM SITE # C828101

12 PIXLEY INDUSTRIAL PARKWAY, GATES, NY

Title

ENGINEERING CONTROL LOCATIONS

Project No.	Scale	
190500647	AS SHOWN	
Drawing No.	Sheet	Revision
FIG. 9	of	



U:\190500647\drawing\Alternative Analysis Report Figures\Cad\Figure 6 Soil Vapor Intrusion Assessment Sample Actual Locations - 12-15-2016 & 2-2017.dwg
2017/07/17 11:23 AM By: Less, Andy

ORIGINAL SHEET - ANSI D

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Rochester , NY
14614
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Fax. 585-272-1814
www.stantec.com

Consultants

Legend

▲ IRM INDOOR AND OUTDOOR AIR SAMPLE LOCATION

(*) ASTERISK INDICATES OFFICE AND COMMON AREAS SHOWN WITHOUT INTERIOR WALLS FOR INDIVIDUAL OFFICES, ROOMS AND HALLWAYS

Notes

Revision	By	Appd.	YY.MM.DD
SAMPLING LOCATIONS AS OF 12-15-2016	TW	MPS	16.12.15

Issued	By	Appd.	YY.MM.DD

File Name:	Dwn.	Chkd.	Dsgn.	YY.MM.DD
	APL	TW	TW	2014.10

Permit-Seal

Client/Project

FORMER ALLIANCE METAL STAMPING & FABRICATION FACILTY
BROWNFIELD CLEANUP PROGRAM SITE # C828101

12 PIXLEY INDUSTRIAL PARKWAY, GATES, NY

Title

INDOOR AIR SAMPLE LOCATION PLAN

Project No.	Scale	
190500647	AS SHOWN	
Drawing No.	Sheet	Revision
FIG. 10	of	

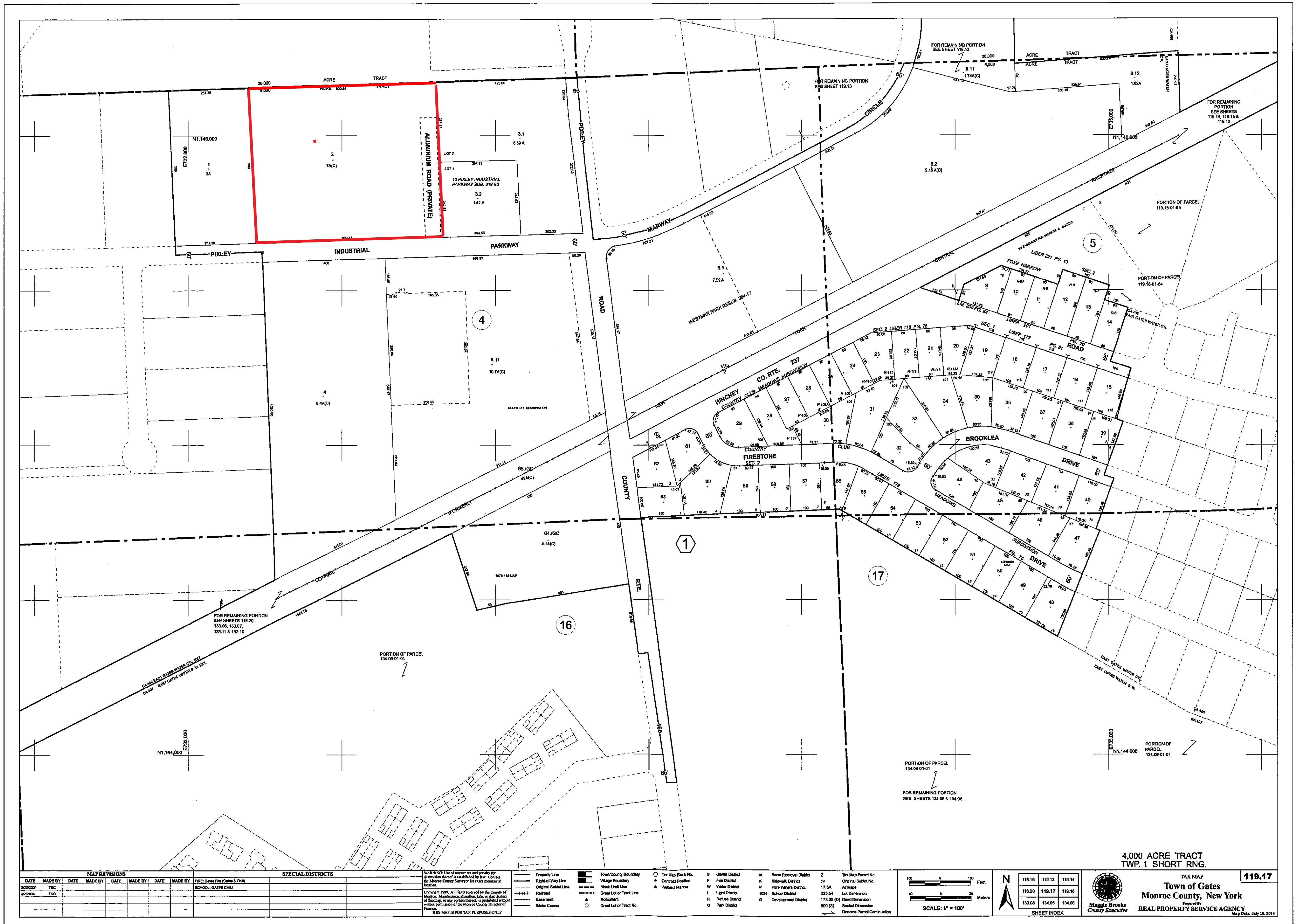
APPENDIX A

TAX MAP

and

ENVIRONMENTAL EASEMENT/NOTICE/DEED RESTRICTION

Tax MAP of
12 Pixley Industrial Pkwy
T/O Gates, NY



MONROE COUNTY CLERK'S OFFICE

THIS IS NOT A BILL. THIS IS YOUR RECEIPT.

Receipt # 2233860

Book Page D 12252 0011

Return To:
BOX 80

No. Pages: 10

Instrument: EASEMENT AGREEMENT

Control #: 201910080870
Ref #: TT0000005059

Date: 10/08/2019

MAGUIRE FAMILY PROPERTIES INC,

Time: 2:29:28 PM

PEOPLE OF THE STATE OF NEW YORK,

Recording Fee	$26.00	
Pages Fee	$45.00	
State Fee Cultural Education	$14.25	
State Fee Records Management	$4.75	Employee: RRR
TP-584 Form Fee	$5.00	
Total Fees Paid:	$95.00	

State of New York

MONROE COUNTY CLERK'S OFFICE
WARNING – THIS SHEET CONSTITUTES THE CLERKS ENDORSEMENT, REQUIRED BY SECTION 317-a(5) & SECTION 319 OF THE REAL PROPERTY LAW OF THE STATE OF NEW YORK. DO NOT DETACH OR REMOVE.

Consideration: $1.00

ADAM J BELLO

MONROE COUNTY CLERK

County: Monroe Site No: C828101 Brownfield Cleanup Agreement Index : C828101-09-11

FILED
2:29PM
OCT 08 2019
MONROE COUNTY
CLERK'S OFFICE

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

THIS INDENTURE made this 15th day of August, 2019, between Owner(s) Maguire Family Properties, Inc., having an office at 770 Rock Beach Road, Rochester, New York 14617, County of Monroe, State of New York (the "Grantor"), and The People of the State of New York (the "Grantee"), acting through their Commissioner of the Department of Environmental Conservation (the "Commissioner", or "NYSDEC" or "Department" as the context requires) with its headquarters located at 625 Broadway, Albany, New York 12233,

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

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

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

WHEREAS, Grantor, is the owner of real property located at the address of 12 Pixley Industrial Parkway in the Town of Gates, County of Monroe and State of New York, known and designated on the tax map of the County Clerk of Monroe as tax map parcel numbers: Section 119.17 Block 1 Lot 2, being the same as that property conveyed to Grantor by deed dated October 10, 1995 and recorded in the Monroe County Clerk's Office in Liber and Page 8669/11. The property subject to this Environmental Easement (the "Controlled Property") comprises approximately 7.000 +/- acres, and is hereinafter more fully described in the Land Title Survey dated April 30, 2009 and last revised May 21, 2019 prepared by Alfred I. LaRue, L.L.S. of McMahon LaRue Associates, P.C., which will be attached to the Site Management Plan. The Controlled Property description is set forth in and attached hereto as Schedule A; and

WHEREAS, the Department accepts this Environmental Easement in order to ensure the protection of public health and the environment and to achieve the requirements for remediation established for the Controlled Property until such time as this Environmental Easement is

extinguished pursuant to ECL Article 71, Title 36; and

NOW THEREFORE, in consideration of the mutual covenants contained herein and the terms and conditions of Brownfield Cleanup Agreement Index Number: C828101-09-11, 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:

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 Monroe County Department of Health to render it safe for use as drinking water or for industrial purposes, and the user must first notify and obtain written approval to do so from the Department;

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

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

(7) All future activities on the property that will disturb remaining contaminated material must be conducted in accordance with the SMP;

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

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

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

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

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

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

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

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

This property is subject to an Environmental Easement held by the New York State Department of Environmental Conservation pursuant to Title 36 of Article 71 of the Environmental Conservation

Law.

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

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

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

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

(i) are in-place;

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

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

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

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

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

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

(7) the information presented is accurate and complete.

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

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

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

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

5. Enforcement

A. This Environmental Easement is enforceable in law or equity in perpetuity by Grantor, Grantee, or any affected local government, as defined in ECL Section 71-3603, against

the owner of the Property, any lessees, and any person using the land. Enforcement shall not be defeated because of any subsequent adverse possession, laches, estoppel, or waiver. It is not a defense in any action to enforce this Environmental Easement that: it is not appurtenant to an interest in real property; it is not of a character that has been recognized traditionally at common law; it imposes a negative burden; it imposes affirmative obligations upon the owner of any interest in the burdened property; the benefit does not touch or concern real property; there is no privity of estate or of contract; or it imposes an unreasonable restraint on alienation.

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

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

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

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

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

Parties shall address correspondence to:

Site Number: C828101
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

County: Monroe Site No: C828101 Brownfield Cleanup Agreement Index : C828101-09-11

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

Maguire Family Properties, Inc.:

By: Dennis P. Maguire

Print Name: Dennis P. Maguire

Title: President Date: 8/7/19

Grantor's Acknowledgment

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

On the 7 day of August, in the year 20 19, before me, the undersigned, personally appeared Dennis P. Maguire, 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.

Notary Public - State of New York

KRISTIN MCDERMOTT
NOTARY PUBLIC STATE OF NEW YORK
MONROE
LIC. #01MC6088109
COMM. EXP. 03/03/23

County: Monroe Site No: C828101 Brownfield Cleanup Agreement Index : C828101-09-11

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: _____
Michael J. Ryan, Director
Division of Environmental Remediation

Grantee's Acknowledgment

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

On the 15th day of August, in the year 2019, before me, the undersigned, personally appeared Michael J. Ryan, personally known to me or proved to me on the basis of satisfactory evidence to be the individual(s) whose name is (are) subscribed to the within instrument and acknowledged to me that he/she/ executed the same in his/her/ capacity as Designee of the Commissioner of the State of New York Department of Environmental Conservation, and that by his/her/ signature on the instrument, the individual, or the person upon behalf of which the individual acted, executed the instrument.

_____
Notary Public - State of New York

David J. Chiusano
Notary Public, State of New York
No. 01CH5032146
Qualified in Schenectady County
Commission Expires August 22, 2022

County: Monroe Site No: C828101 Brownfield Cleanup Agreement Index : C828101-09-11

SCHEDULE "A" PROPERTY DESCRIPTION

ALL THAT TRACT OR PARCEL OF LAND, situate in the Town of Gates, County of Monroe and State of New York, being a part of Lot #4 of the 4,000 Acre tract, bounded and described as follows:

COMMENCING at a point in the westerly line of Pixley Road where said westerly line is intersected by the north line of said Lot #4; thence running westerly at an included angle of 90° 18' 50" along the north line of said Lot #4, a distance of 423 feet to the point and place of beginning; thence (1) westerly along said north line of Lot #4, a distance of 609.84 feet to a point; thence (2) southerly making an interior angle of 90° with the last described course, a distance of 500 feet to a point; thence (3) easterly making an interior angle with the last described course of 90°, a distance of 609.84 feet to a pint; thence (4) northerly making an interior angle with the last described course of 90°, a distance of 500 feet to the point and place of beginning.

Said premises front on the north side of Pixley Industrial Parkway.

Said premises is more recently described as follows:

ALL THAT TRACT OR PARCEL OR LAND situate in part of Town Lot 4, 4,000 Acre Tract, Township 1, Short Range, Town of Gates, County of Monroe, Phelps and Gorham Purchase, and State of New York, being more particularly described as follows:

COMMENCING at a point in the westerly right-of-way line of Pixley Road (66' wide ROW) at its intersection with the northerly line of Town Lot 4; thence, S 88° 01' 56" W, along the northerly line of Town Lot 4, a distance of 423.00 feet to the POINT OF BEGINNING; thence,

1. S 88° 01' 56" W, along the northerly line of Town Lot 4, a distance of 609.84 feet to a point thence,

2. S 01° 58' 04" E, a distance of 500.00 feet to a point on the northerly right-of-way line of Pixley Industrial Parkway (60' wide ROW); thence,

3. N 88° 01' 56" E, along the northerly right-of-way line of Pixley Industrial Parkway, a distance of 609.84 feet to the southwesterly corner of Lot 1 of the 10 Pixley Industrial Parkway Subdivision as filed in the Monroe County Clerk's Office in Liber 319 of Maps Page 80; thence,

4. N 01° 58' 04" W, along the westerly lines of Lots 1 and 2 of the 10 Pixley Industrial Parkway Subdivision, a distance of 500.00 feet to the POINT OF BEGINNING.

Containing 304,920 Sq. Ft. or 7.00Acres of land, more or less, to the right-of-way line of Pixley Industrial Parkway.

All shown on a map prepared by McMahon LaRue Associates, P.C. entitled *"Instrument Survey"* dated April 26, 2019 and last revised May 21, 2019.

APPENDIX B – LIST OF SITE CONTACTS

Name	Phone/Email Address
Dennis Maguire, Maguire Family Properties, Inc. Site Owner, Remedial Party	(585) 338-2269 dext@rochester.rr.com
Dwight Harrienger, P.E., Stantec Consulting Qualified Environmental Professional	(585) 475-1440 dwight.harrienger@stantec.com
Timothy Schneider, P.E. NYSDEC DER Project Manager	(585) 226-5480 timothy.schneider@dec.ny.gov
David Pratt, P.E. NYSDEC Regional Hazardous Waste Engineer	(585) 226-5449 david.pratt@dec.ny.gov
Kelly Lewandowski, P. E. Chief, NYSDEC Site Control Section	(518) 402-9569 kelly.lewandowski@dec.ny.gov
Paul Sylvestri, Esq. Remedial Party Attorney	(585) 231-1194 psylvestri@hselaw.com

Site Tenants:
A list of and contact information for current Site tenants is available from the Site Owner listed above.

APPENDIX C – MONITORING WELL BORING AND CONSTRUCTION LOGS

Appendix C, Part 1

MONITORING WELL INSTALLATION REPORTS FROM PREVIOUS INVESTGATIONS OF THE FORMER AMSF SITE

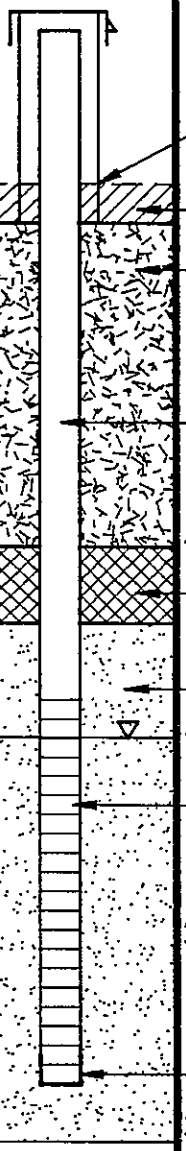
PROJECT: ALLIANCE METAL STAMPING AND FABRICATING
PROJECT NO. G5091.015
TOP OF CASING ELEVATION:

LOCATION: GATES, NEW YORK
PIEZOMETER NO: MW-1
PAGE 1 OF 1

DEPTH FEET	OVERBURDEN/LITHOLOGIC DESCRIPTION
0	GROUND SURFACE
	0'–0.3': DIRT
	0.3'–7': YELLOW BROWN SANDY CLAY, SOME WELL ROUNDED GRAVEL, USCS=CL
	7'–25': MEDIUM GRAY, DENSE, CRYSTALLINE DOLOMITE 7'–19': WEATHERED DOLOMITE 8'–8.5': VOID 19'–25': FRESH DOLOMITE @19': 4.58' OF WATER IN BORE HOLE @25': 9.5' OF WATER IN BORE HOLE
5	
10	
15	
20	
25	

GRAPHIC LOG

WELL CONSTRUCTION GRAPHIC



DEPTH FEET	WELL CONSTRUCTION DETAILS
	LOCKING STEEL PROTECTOR CASING
	1' CEMENT SEAL
	8.5' CUTTINGS
5	16' 2" PVC RISER
10	2' BENTONITE PELLET SEAL
	13.5' QUARTZ SAND FILTER PACK
15	10' 2" 10 SLOT PVC SCREEN
20	
	END CAP
25	

DRILLER NOTHNAGLE
LOGGED BY T. BRICE
DRILLING STARTED 11/23/91
DRILLING COMPLETED 11/23/91
WELL CONSTRUCTION PVC W/ STEEL PROTECTOR CASING
WATER BEARING ZONES NA

BLOWN/BALLED YIELD NA
WELL CASING DIA. 2" FT. 16'
CASING TYPE PVC
WELL SCREEN DIA. 2"' FT. 10'
SCREEN TYPE PVC
SLOT SIZE 10
DRILLING MUD NA
GROUT TYPE NA QUANTITY

BENTONITE SEAL 9.5' TO 11.5'
FILTER PACK QTY. 25' TO 11.5'
FILTER PACK TYPE QUARTZ SAND
STATIC WATER LEVEL 14.5'
DATE 11/23/91
NOTES:

MAG001361

GeoServices, Ltd
earth resource applications
Harrisburg, PA

CAD FILE NAME
MSE-LOG1

PROJECT: ALLIANCE METAL STAMPING & FABRICATING LOCATION: GATES, NEW YORK
PROJECT NO. G5091.024 PIEZOMETER NO: MW-1D
TOP OF CASING ELEVATION: PAGE 1 OF 1

DEPTH FEET	OVERBURDEN/LITHOLOGIC DESCRIPTION
0	GROUND SURFACE
	MEDIUM BROWN SILTY-VERY FINE SANDY CLAY
	MEDIUM GRAY DOLOMITE, SOME TAN-BUFF DOLOMITE W/TRACE WEATHERED DOLOMITE
15	MEDIUM GRAY-BROWNISH GRAY DOLOMITE TRACE TAN-BUFF DOLOMITE, TRACE RED CLAY AND REDDISH BROWN DOLOMITE FROM FRACTURES AT 15 & 17 ft., TRACE DARK GRAY SHALE BELOW 68 FT.
30	
45	FRACTURES: 9.5
	15
	17
	20
	22
60	24
	27
	28
	30.5
	37
	40
	59
75	80
	BOTTOM OF BORING--87'

GRAPHIC LOG

WELL CONSTRUCTION GRAPHIC

DEPTH FEET	WELL CONSTRUCTION DETAILS
	6" STEEL CASING
15	CEMENT GROUT
30	2" PVC CASING
45	
60	
75	BENTONITE PELLET SEAL
	QUARTZ SAND FILTER PACK
	5' 2" 10 SLOT PVC SCREEN

DRILLER NOTHNAGLE
LOGGED BY TCH
DRILLING STARTED 08:40 6/8/82
DRILLING COMPLETED 11:10 6/8/82
WELL CONSTRUCTION PVC
WELL DEVELOPMENT BLOWN/BAIL
WATER BEARING ZONES

BLOWN/BAILED YIELD ~20 gpm
WELL CASING DIA. 2" FT. 79
CASING TYPE PVC
WELL SCREEN DIA. 2" FT. 5
SCREEN TYPE PVC
SLOT SIZE .010
DRILLING MUD NA
GROUT TYPE CEMENT QUANTITY

BENTONITE SEAL 74.5-76.5 ft.
FILTER PACK QTY. 76.5-84 ft.
FILTER PACK TYPE QTZ. SAND
STATIC WATER LEVEL 81.38
DATE 6/12/92
NOTES: SWL FROM TOC

MAG001362

GeoServices, Ltd
Harrisburg, PA

CAD FILE NAME

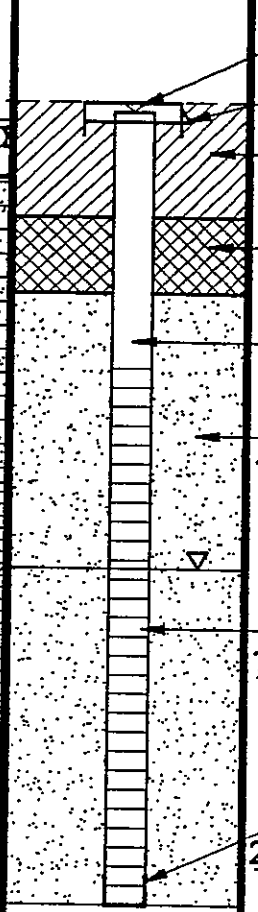
PROJECT: ALLIANCE METAL STAMPING AND FABRICATING
PROJECT NO. G5091.015
TOP OF CASING ELEVATION:

LOCATION: GATES, NEW YORK
PIEZOMETER NO: MW-3
PAGE 1 OF 1

DEPTH FEET	OVERBURDEN/LITHOLOGIC DESCRIPTION
0	GROUND SURFACE
	0'–0.3': ASPHALT
	0.3'–2': GRAVEL FILL
	2'–10': YELLOW BROWN SANDY CLAY, USCS=CL
10	10'–21': MEDIUM GRAY, DENSE, CRYSTALLINE DOLOMITE 10'–16': WEATHERED DOLOMITE 16'–21': FRESH DOLOMITE @21': 8.8' WATER IN BORE HOLE
25	

GRAPHIC LOG

WELL CONSTRUCTION GRAPHIC



DEPTH FEET	WELL CONSTRUCTION DETAILS
	LOCKING PVC WELL CAP
	STEEL FLUSH MOUNT COVER
	3' CEMENT SEAL
	2' BENTONITE PELLET SEAL
	7' 2" PVC RISER
	16' QUARTZ SAND FILTER PACK
	14' 2" 10 SLOT PVC SCREEN
	END CAP

DRILLER NOTHNAGLE
LOGGED BY T. BRICE
DRILLING STARTED 11/23/91
DRILLING COMPLETED 11/23/91
WELL CONSTRUCTION PVC W/ STEEL FLUSH MOUNT COVER
WATER BEARING ZONES NA

BLOWN/BALLED YIELD NA
WELL CASING ____ DIA. 2" FT. 7'
CASING TYPE PVC
WELL SCREEN ____ DIA. 2" FT. 14'
SCREEN TYPE PVC
SLOT SIZE 10
DRILLING MUD NA
GROUT TYPE NA QUANTITY ____

BENTONITE SEAL 3'–5'
FILTER PACK QTY. 5'–21'
FILTER PACK TYPE QUARTZ SAND
STATIC WATER LEVEL 12.2'
DATE 11/23/91
NOTES:

MAG001364

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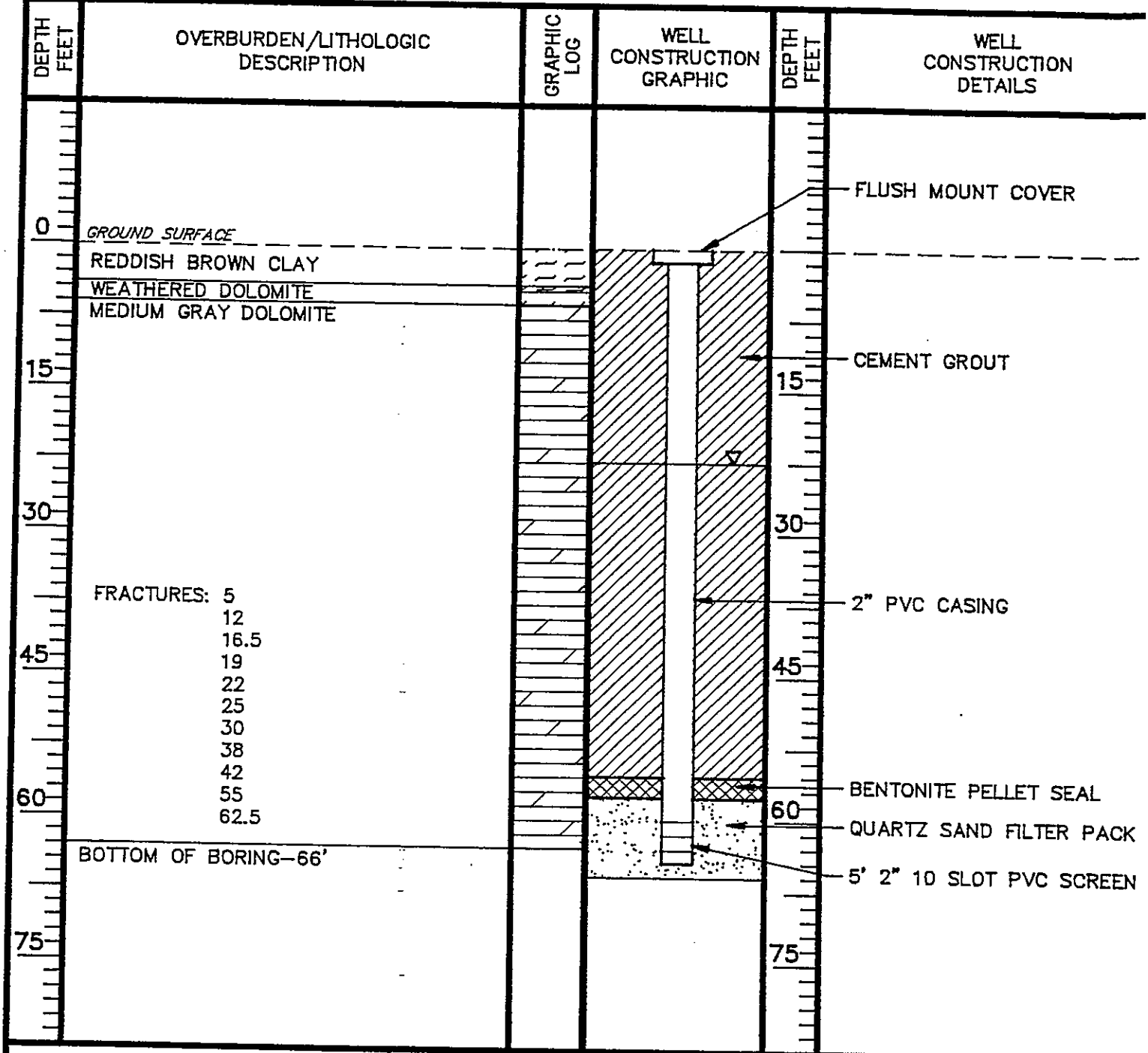
earth resource applications
Harrisburg, PA

CAD FILE NAME

PROJECT: ALLIANCE METAL STAMPING & FABRICATING
PROJECT NO. G5091.024
TOP OF CASING ELEVATION:

LOCATION: GATES, NEW YORK
PIEZOMETER NO: MW-3D
PAGE 1 OF 1



DRILLER NOTHNAGLE
LOGGED BY JJO
DRILLING STARTED 0800 6/6/92
DRILLING COMPLETED
WELL CONSTRUCTION PVC
WELL DEVELOPMENT BLOWN/BAIL
WATER BEARING ZONES

BLOWN/BAILED YIELD
WELL CASING DIA. 2" FT. 60
CASING TYPE PVC
WELL SCREEN DIA. 2" FT. 5
SCREEN TYPE PVC
SLOT SIZE .010
DRILLING MUD NA
GROUT TYPE CEMENT QUANTITY

BENTONITE SEAL 56-58 ft.
FILTER PACK QTY. 58-65 ft.
FILTER PACK TYPE QUARTZ SAND
STATIC WATER LEVEL 21.81
DATE 6/12/92
NOTES: SWL FROM TOC

MAG001365

GeoServices, Ltd
Harrisburg, PA

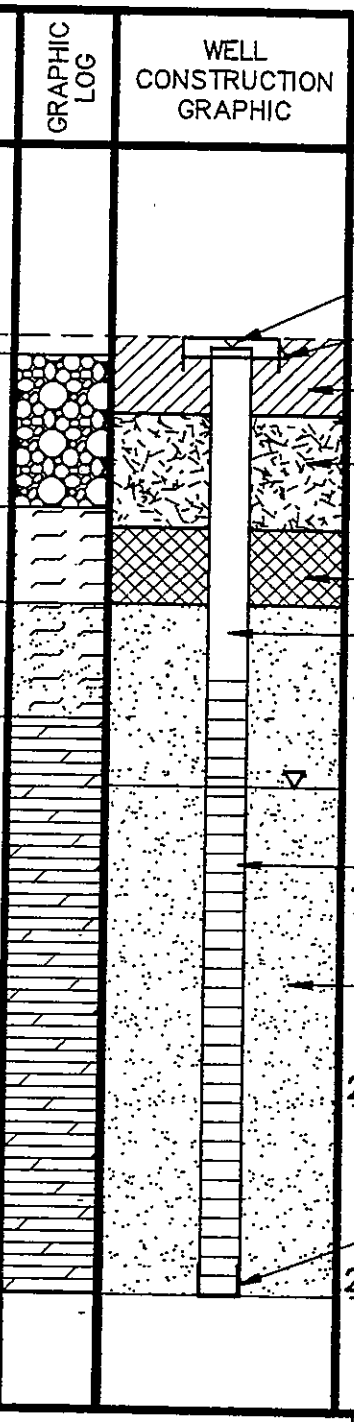
CAD FILE NAME

PROJECT: ALLIANCE METAL STAMPING AND FABRICATING
PROJECT NO. G5091.015
TOP OF CASING ELEVATION:

LOCATION: GATES, NEW YORK
PIEZOMETER NO: MW-4
PAGE 1 OF 1

DEPTH FEET	OVERBURDEN/LITHOLOGIC DESCRIPTION
0	GROUND SURFACE
	0'–0.3': ASPHALT
	0.3'–4.5': GRAVEL FILL
5	4.5'–7': RED BROWN CLAY, TRACE SILT, USCS=CL
	7'–10': YELLOW BROWN SANDY CLAY TRACE WELL ROUNDED GRAVEL, USCS=CL
10	10'–25': MEDIUM GRAY, DENSE, CRYSTALLINE DOLOMITE
	10'–17': WEATHERED DOLOMITE
	17'–25': FRESH DOLOMITE
	@25': 13.25' WATER IN BORE HOLE
15	@25' YIELD: 2 GPM
20	
25	

GRAPHIC LOG



DEPTH FEET	WELL CONSTRUCTION DETAILS
	LOCKING PVC WELL CAP
	STEEL FLUSH MOUNT COVER
	2' CEMENT SEAL
	3' CUTTINGS
5	2' BENTONITE PELLET SEAL
	9' 2" PVC RISER
10	
15	16' 2" 10 SLOT PVC SCREEN
	18' QUARTZ SAND FILTER PACK
20	
25	END CAP

DRILLER NOTHNAGLE
LOGGED BY T. BRICE
DRILLING STARTED 11/24/91
DRILLING COMPLETED 11/24/91
WELL CONSTRUCTION PVC W/ STEEL FLUSH MOUNT COVER
WATER BEARING ZONES NA

BLOWN/BALLED YIELD NA
WELL CASING DIA. 2" FT. 9'
CASING TYPE PVC
WELL SCREEN DIA. 2" FT. 16'
SCREEN TYPE PVC
SLOT SIZE 10
DRILLING MUD NA
GROUT TYPE NA QUANTITY

BENTONITE SEAL 5'–7'
FILTER PACK QTY. 7'–25'
FILTER PACK TYPE QUARTZ SAND
STATIC WATER LEVEL 11.75'
DATE 11/24/91
NOTES:

MAG001366

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earth resource applications
Harrisburg, PA

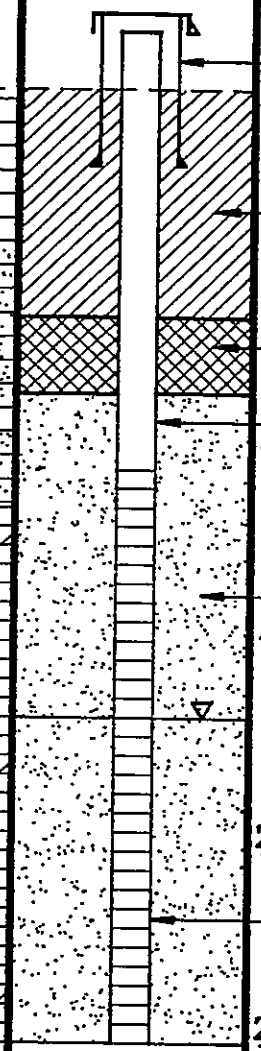
CAD FILE NAME

PROJECT: ALLIANCE METAL STAMPING & FABRICATING
PROJECT NO. G5091.024
TOP OF CASING ELEVATION:

LOCATION: GATES, NEW YORK
PIEZOMETER NO: MW-5S
PAGE 1 OF 1

DEPTH FEET	OVERBURDEN/LITHOLOGIC DESCRIPTION
0	GROUND SURFACE
	MEDIUM BROWN–REDDISH BROWN SILTY CLAY
5	MEDIUM BROWN SILTY–VERY FINE SANDY CLAY, SOME MEDIUM GRAY DOLOMITE AND WEATHERED DOLOMITE BELOW 7 ft.
10	MEDIUM GRAY DOLOMITE, TRACES: BUFF DOLOMITE, REDDISH BROWN DOLOMITE, CLEAR SANDSTONE
15	
20	FRACTURES: 14 19.5 21 23
25	BOTTOM OF BORING–25'

GRAPHIC LOG



DEPTH FEET	WELL CONSTRUCTION DETAILS
0	STEEL PROTECTOR PIPE
	CEMENT GROUT
5	
	BENTONITE PELLET SEAL
	2" PVC CASING
10	
	QUARTZ SAND FILTER PACK
15	
20	
	15' 2" 10 SLOT PVC SCREEN
25	

DRILLER NOTHNAGLE
LOGGED BY TCH
DRILLING STARTED 13:45 6/8/92
DRILLING COMPLETED 14:30 6/8/92
WELL CONSTRUCTION PVC
WELL DEVELOPMENT BLOWN/BAIL
WATER BEARING ZONES

BLOWN/BAILED YIELD ~3 gpm
WELL CASING DIA. 2" FT. 10
CASING TYPE PVC
WELL SCREEN DIA. 2" FT. 15
SCREEN TYPE PVC
SLOT SIZE .010
DRILLING MUD NA
GROUT TYPE CEMENT QUANTITY

BENTONITE SEAL 6–8 ft.
FILTER PACK QTY. 8–25 ft.
FILTER PACK TYPE QUARTZ SAND
STATIC WATER LEVEL 18.05
DATE 6/12/92
NOTES: SWL FROM TOC

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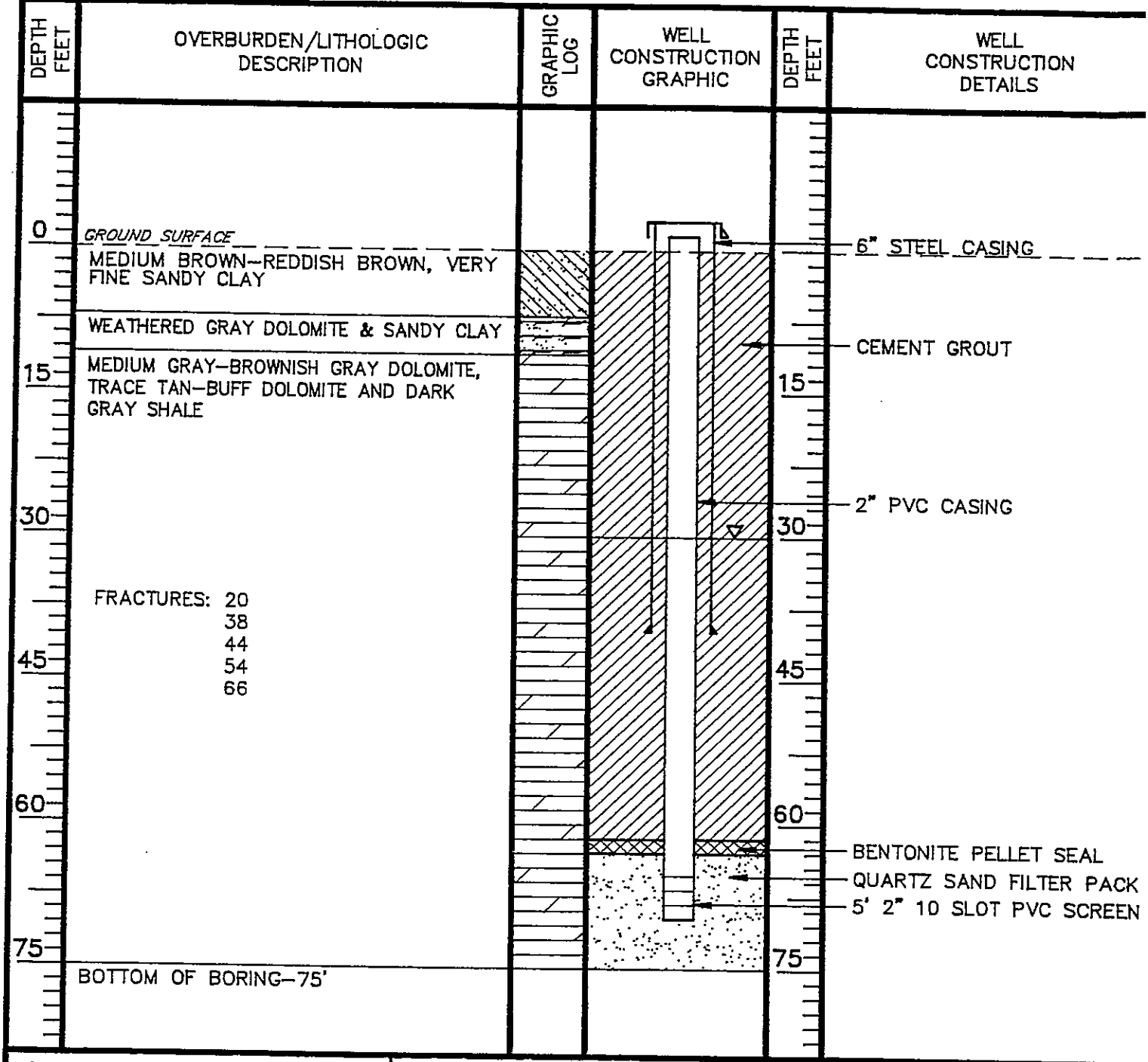
Harrisburg, PA

MAG001367

CAD FILE NAME

PROJECT: ALLIANCE METAL STAMPING & FABRICATING
PROJECT NO. G5091.024
TOP OF CASING ELEVATION:

LOCATION: GATES, NEW YORK
PIEZOMETER NO: MW-5D
PAGE 1 OF 1



DRILLER NOTHNAGLE
LOGGED BY TCH
DRILLING STARTED 11:00 6/1/92
DRILLING COMPLETED 6/2/92
WELL CONSTRUCTION PVC
WELL DEVELOPMENT BLOWN/BAIL
WATER BEARING ZONES

BLOWN/BAILED YIELD 30–40 gpm
WELL CASING DIA. 2" FT. 65
CASING TYPE PVC
WELL SCREEN DIA. 2" FT. 5
SCREEN TYPE PVC
SLOT SIZE .010
DRILLING MUD WATER
GROUT TYPE CEMENT QUANTITY

BENTONITE SEAL 62–63 ft.
FILTER PACK QTY. 63–75 ft.
FILTER PACK TYPE QTZ. SAND & DOL
STATIC WATER LEVEL 31.81
DATE 6/12/92
NOTES: SWL FROM TOC

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Harrisburg, PA

MAG001369

CAD FILE NAM

PROJECT: ALLIANCE METAL STAMPING & FABRICATING LOCATION: GATES, NEW YORK
PROJECT NO. G5091.024 PIEZOMETER NO: MW-7
TOP OF CASING ELEVATION: PAGE 1 OF 1

DEPTH FEET	OVERBURDEN/LITHOLOGIC DESCRIPTION	GRAPHIC LOG	WELL CONSTRUCTION GRAPHIC	DEPTH FEET	WELL CONSTRUCTION DETAILS
0	GROUND SURFACE				6" STEEL CASING
	MEDIUM BROWN VERY FINE SANDY-SILTY CLAY				CEMENT GROUT
5				5	BENTONITE PELLET SEAL
	MEDIUM GRAY DOLOMITE SOME TAN DOLOMITE, RED CLAY AT FRACTURE 14 FT.				2" PVC CASING
10				10	
15	FRACTURES: 14 21 22 24			15	QUARTZ SAND FILTER PACK
20				20	15' 2" 10 SLOT PVC SCREEN
25	BOTTOM OF BORING-25'			25	

DRILLER NOTHNAGLE
LOGGED BY TCH
DRILLING STARTED 14:15 6/3/92
DRILLING COMPLETED 14:30 6/3/92
WELL CONSTRUCTION PVC
WELL DEVELOPMENT BLOWN/BAILED
WATER BEARING ZONES

BLOWN/BAILED YIELD ~2gpm
WELL CASING DIA. 2" FT. 10
CASING TYPE PVC
WELL SCREEN DIA. 2" FT. 15
SCREEN TYPE PVC
SLOT SIZE .010
DRILLING MUD NA
GROUT TYPE CEMENT QUANTITY

BENTONITE SEAL 6-7.5 ft.
FILTER PACK QTY. 7.5-24 ft.
FILTER PACK TYPE QUARTZ SAND
STATIC WATER LEVEL 11.12
DATE 6/12/92
NOTES: SWL FROM TOC-SOLVENT
ODOR AT APPROX. 22-24 ft.

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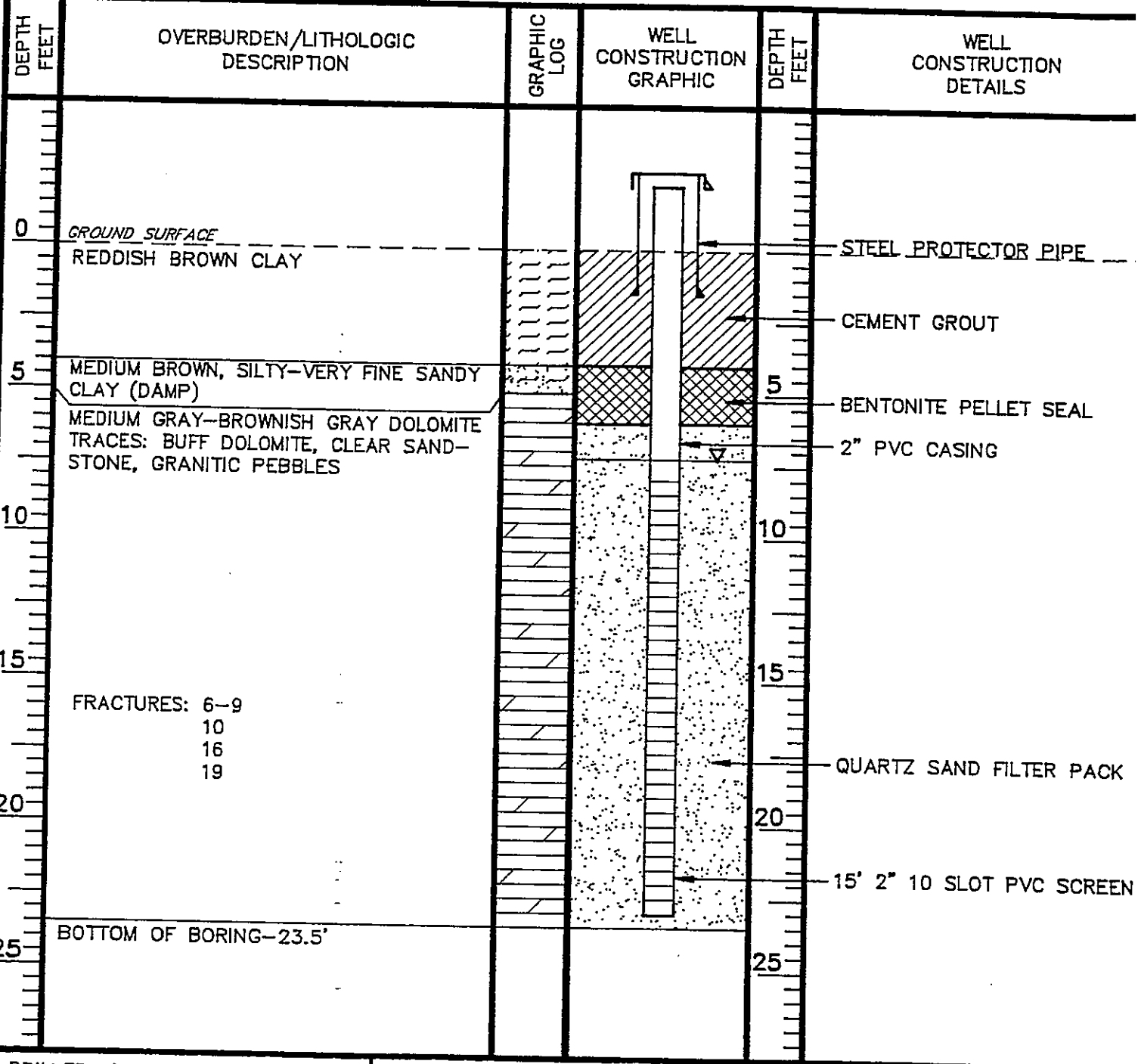
Harrisburg, PA

MAG001371

CAD FILE NAME

PROJECT: ALLIANCE METAL STAMPING & FABRICATING LOCATION: GATES, NEW YORK
PROJECT NO. G5091.024 PIEZOMETER NO: MW-8S
TOP OF CASING ELEVATION: PAGE 1 OF 1



DRILLER NOTHNAGLE
LOGGED BY TCH
DRILLING STARTED 10:00 6/9/92
DRILLING COMPLETED 10:20 6/9/92
WELL CONSTRUCTION PVC
WELL DEVELOPMENT BLOWN/BAILED
WATER BEARING ZONES

BLOWN/BAILED YIELD 5-7 gpm
WELL CASING DIA. 2" FT. 8
CASING TYPE PVC
WELL SCREEN DIA. 2" FT. 15
SCREEN TYPE PVC
SLOT SIZE .010
DRILLING MUD NA
GROUT TYPE CEMENT QUANTITY

BENTONITE SEAL 4-6 ft.
FILTER PACK QTY. 6-23 ft.
FILTER PACK TYPE QUARTZ SAND
STATIC WATER LEVEL 9.51
DATE 6/12/92
NOTES: SWL TOC

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Harrisburg, PA

MAG001372

CAD FILE NAME

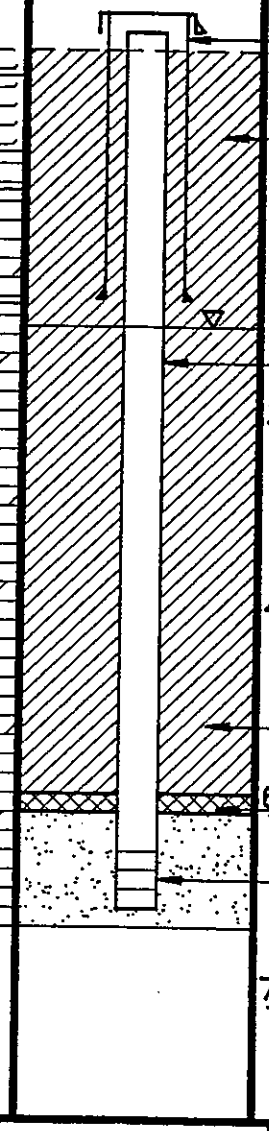
PROJECT: ALLIANCE METAL STAMPING & FABRICATING
PROJECT NO. G5091.024
TOP OF CASING ELEVATION:

LOCATION: GATES, NEW YORK
PIEZOMETER NO: MW-8D
PAGE 1 OF 1

DEPTH FEET	OVERBURDEN/LITHOLOGIC DESCRIPTION
0	GROUND SURFACE
	REDDISH BROWN SILTY CLAY
	MEDIUM BROWN, SILTY-VERY FINE SANDY CLAY
	GRAY AND TAN DOLOMITE
15	GRAY DOLOMITE, SOME TAN DOLOMITE W/ WEATHERED BROWN DOLOMITE AND RED CLAY AT SEAMS, TRACES: REDDISH BROWN DOLOMITE, CLEAR SANDSTONE, PEBBLE
	MEDIUM GRAY DOLOMITE
30	
	FRACTURES: 9
	11.5
	16
	25
	30
	32
	34
45	39.5
	44
	51
60	63
	67
	BOTTOM OF BORING-69'
75	

GRAPHIC LOG

WELL CONSTRUCTION GRAPHIC



DEPTH FEET	WELL CONSTRUCTION DETAILS
0	6" STEEL CASING
	CEMENT GROUT
15	
	2" PVC CASING
30	
45	
	QUARTZ SAND FILTER PACK
60	BENTONITE PELLET SEAL
	5' 2" 10 SLOT PVC SCREEN
75	

DRILLER NOTHNAGLE
LOGGED BY TCH
DRILLING STARTED 10:00 6/4/92
DRILLING COMPLETED 14:20 6/4/92
WELL CONSTRUCTION PVC
WELL DEVELOPMENT BLOWN/BAILED
WATER BEARING ZONES

BLOWN/BAILED YIELD ~40 gpm
WELL CASING DIA. 2" FT. 62.5
CASING TYPE PVC
WELL SCREEN DIA. 2" FT. 5
SCREEN TYPE PVC
SLOT SIZE .010
DRILLING MUD NA
GROUT TYPE CEMENT QUANTITY

BENTONITE SEAL 58-60 ft.
FILTER PACK QTY. 60-69 ft.
FILTER PACK TYPE QUARTZ SAND
STATIC WATER LEVEL 23.32
DATE 6/12/92
NOTES: SWL FROM TOC

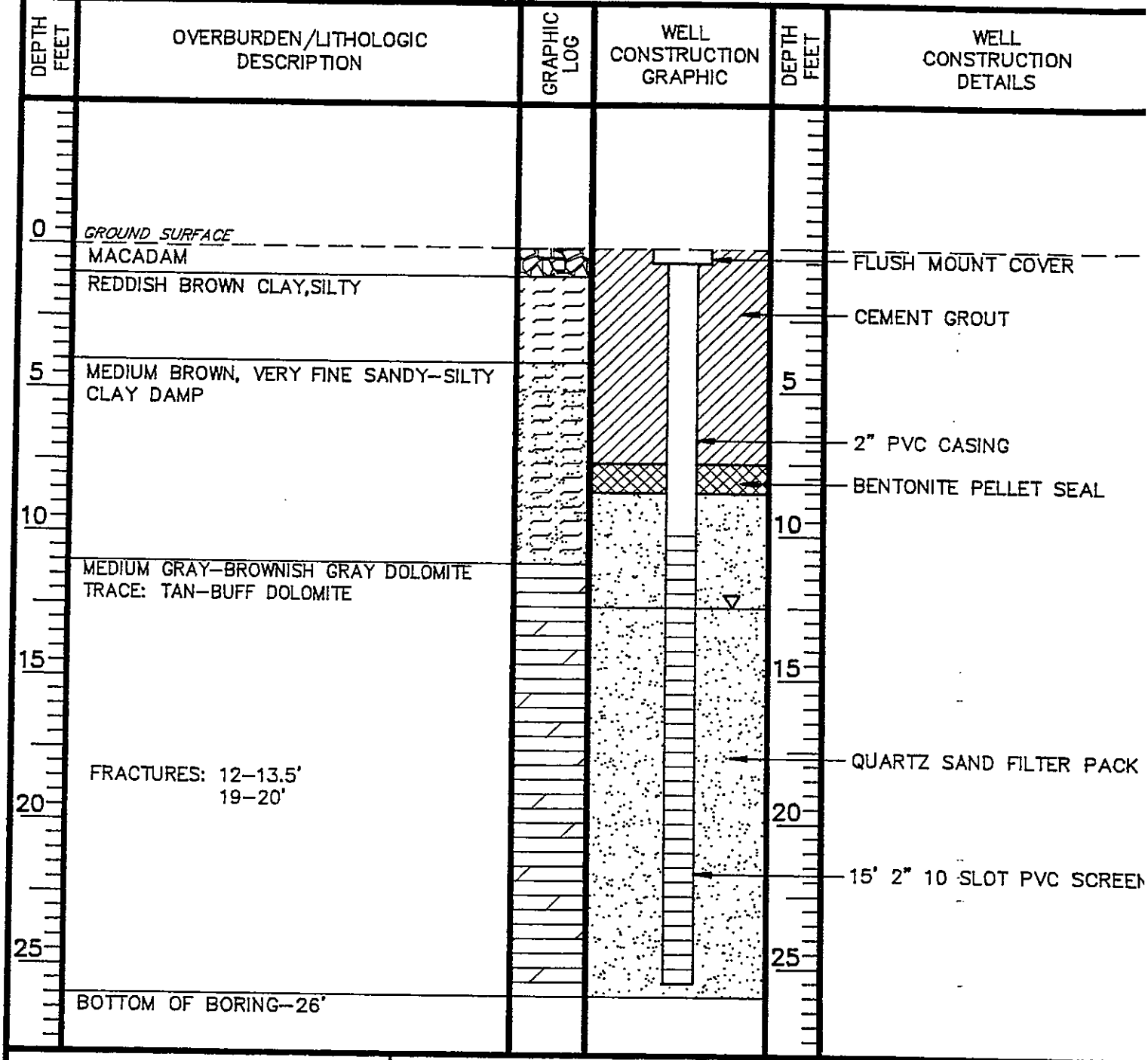
GeoServices, Ltd
Harrisburg, PA

MAG001373

CAD FILE NAME
MSE-MWBD

PROJECT: ALLIANCE METAL STAMPING & FABRICATING
PROJECT NO. G5091.024
TOP OF CASING ELEVATION:

LOCATION: GATES, NEW YORK
PIEZOMETER NO: MW-9S
PAGE 1 OF 1



DRILLER NOTHNAGLE
LOGGED BY TCH
DRILLING STARTED 08:15 6/9/92
DRILLING COMPLETED 08:35 6/9/92
WELL CONSTRUCTION PVC
WELL DEVELOPMENT BLOWN/BAILED
WATER BEARING ZONES

BLOWN/BAILED YIELD ~2 gpm
WELL CASING DIA. 2" FT. 10
CASING TYPE PVC
WELL SCREEN DIA. 2" FT. 15
SCREEN TYPE PVC
SLOT SIZE .010
DRILLING MUD NA
GROUT TYPE CEMENT QUANTITY

BENTONITE SEAL 7.5-8.5 ft.
FILTER PACK QTY. 8.5-26 ft.
FILTER PACK TYPE QUARTZ SAND
STATIC WATER LEVEL 12.15
DATE 6/12/92
NOTES: FLUSH MOUNT
SWL FROM TOC

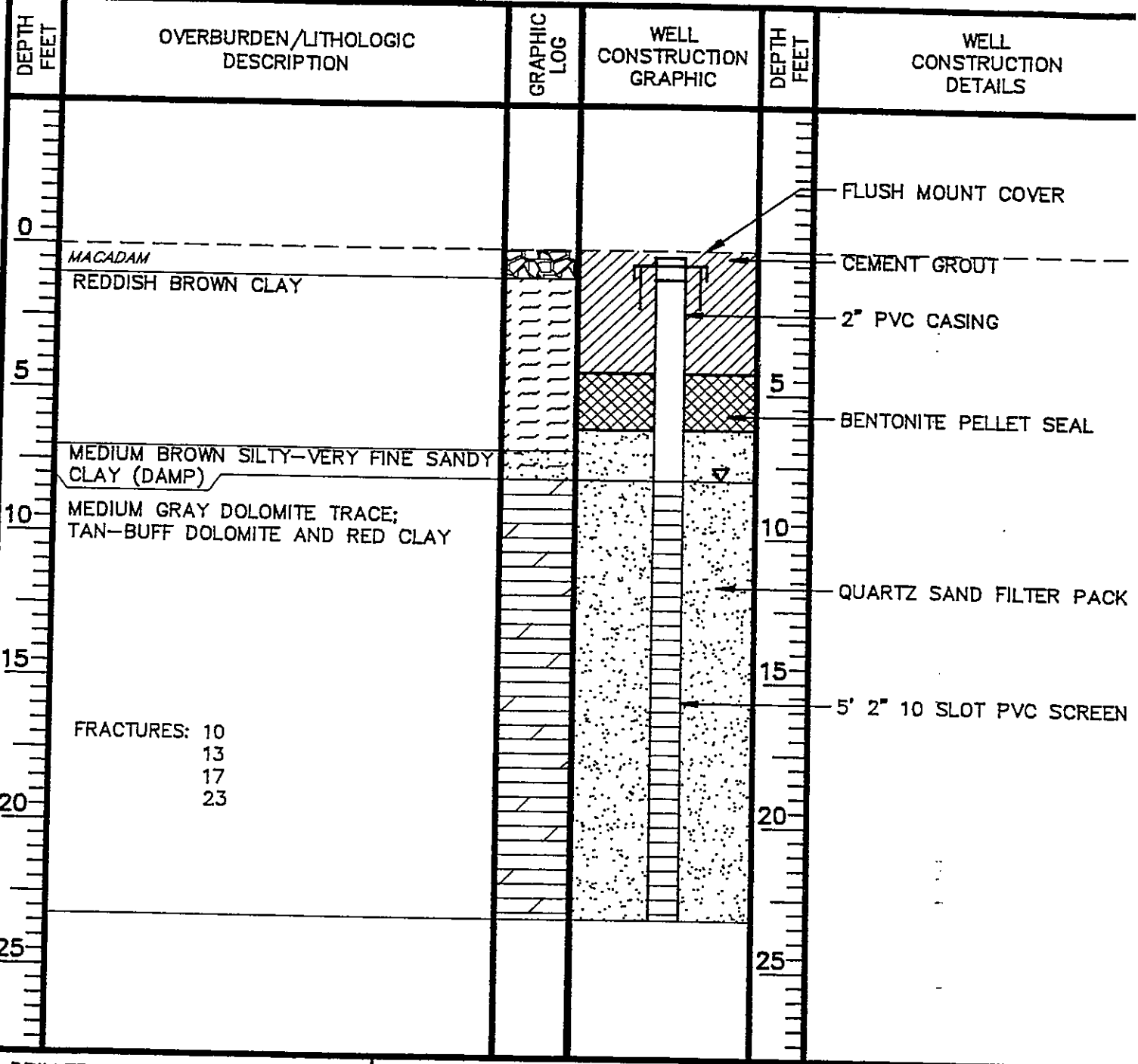
GeoServices, Ltd
Harrisburg, PA

MAG001368

CAD FILE NAM

PROJECT: ALLIANCE METAL STAMPING & FABRICATING
PROJECT NO. G5091.024
TOP OF CASING ELEVATION:

LOCATION: GATES, NEW YORK
PIEZOMETER NO: MW-10
PAGE 1 OF 1



DRILLER NOTHNAGLE
LOGGED BY TCH
DRILLING STARTED 11:45 6/9/92
DRILLING COMPLETED 12:10 6/9/92
WELL CONSTRUCTION PVC
WELL DEVELOPMENT BLOWN/BAILED
WATER BEARING ZONES

BLOWN/BAILED YIELD ~3
WELL CASING DIA. 2 FT.
CASING TYPE PVC
WELL SCREEN DIA. 2 FT. 15
SCREEN TYPE PVC
SLOT SIZE .010
DRILLING MUD NA
GROUT TYPE CEMENT QUANTITY

BENTONITE SEAL 4.3-6.3 ft.
FILTER PACK QTY. 6.3-23.3
FILTER PACK TYPE QUARTZ SAND
STATIC WATER LEVEL 7.54
DATE 6/12/92
NOTES: SWL FROM TOC FLUSH MOUNT

GeoServices, Ltd
Harrisburg, PA

MAG001375

CAD FILE NAME

T.O.P. = Top of PVC casing

Data: Using MSL Elevation

	Corrected T.O.P.	Corrected MSL e
560.00 'MSL @ MW-8D	561.59	560.00
MW-8S	562.30	560.11
MW-4	563.14	563.45
MW-10	560.43	560.80
MW-3S	560.20	560.51
MW-3D	560.16	560.57
MW-9D	564.58	564.72
MW-9S	564.39	564.81
MW-7	563.39	562.40
MW-1S	565 49	562.27
MW-1D	563.72	562.32
MW-6	565.86	563.63
MW-5S	569.23	567.7
MW-5D	569.58	567.7
MW-2	574.15	571.4
BM	561.10	561.1

O'BRIEN & GERE

BORING LOG

BORING NO. **AMSF-MW-11S**

PROJECT: ITT-RFM FH-019
CLIENT: ITT
INSPECTOR: Scott Tucker

SHEET 1 OF 1
JOB NO. 3356/35273
GROUND ELEV. 563.42
DATUM Ground Surface
DATE STARTED 9/15/2004
DATE FINISHED 9/17/2004

DRILLING CONTRACTOR: Nothnagle Drilling Inc.
DRILLER: Kevin Busch
PURPOSE: Bedrock Well
DRILLING METHOD: Coring
DRILL RIG TYPE: Brainard-Kilman BK-81HD

	SAMPLE	CORE	CASING
TYPE	SS	---	---
DIA.	2"	---	---

DEPTH (ft)	Sample Type	Number	Blows/6" (N Value)	Penetration/ Recovery	MATERIAL DESCRIPTION	Graphic Log	Stratum Change	Field Testing PID (ppm)	Well Graphic	REMARKS
		SS-1	()	--	562.9 Blacktop 0.5					
2		SS-2	1-3-4 ()	1.5'/ 1.0'	561.4 10R5/4 Pale Reddish Brown, SILT and CLAY, varved, damp, no odor 2.0			0.2		UV Field Test - neg
		SS-3	8-8-50/0.2 (50+)	1.2'/ 1.2'	560.2 14"- 10YR5/4 Moderate Yellowish Brown, cmf(+) SAND, trace rnd f gravel, becoming soft, moist, no odor, rock in shoe 3.2			0.3		UV Field Test - neg
4										
		SS-4	7-5-10-41 (15)	2.0'/ 1.5'	15"- as above, soft, some rnd mf gravel, wet, no odor.		Overburden	0.4		UV Field Test - neg
6					557.4 6.0					
		SS-5	12-20-44-50/0.2 (64)	1.7'/ 0.6'	N3 Dark Gray, rock fragments, wet, no odor.					UV Field Test - neg
8					555.7 Spoon refusal at 7.7 ft 7.7 Auger refusal at 7.3 ft					
		SS-6	()	--	Socket for casing		No Core			
10					553.4 Casing set at 10 ft. 10.0					
					Refer to bedrock core log AMSF-MW-11S for bedrock core descriptions.					
12										
14										
16										
18										
20							Eramosa Dolomite			
22										
24										
					End of Borehole at 25.0'.					
26										
28										
30										
32										
34										
36										
38										

Notes: 4" Casing set at 10 ft. Northing: 1146107.654, Easting: 1380679.581, Horizontal Datum: NAD83 State Plane Feet (New York West), Vertical Datum: NAVD88
Hole Location: Outside the northwest corner of former AMSF building, approximately 8 ft north of the north wall

Report Name: NEW OBG BORING LOG - NO USCS Data Template: OBG GINT STD US BC.GDT

O'BRIEN & GERE

CORE LOG

AMSF-MW-11S

PROJECT:	ITT-RFM FH-019	**PROJECT LOCATION:**	Rochester, New York
CLIENT:	ITT	**JOB NUMBER:**	3356/35273
INSPECTOR:	Scott Tucker	**HOLE LOCATION:**	Northwest corner former AMSF building, north wall

PURPOSE:	Bedrock Well	**CASING DIAMETER:**	4 in.	**COORDINATES:**	N1146107.654 E1380679.581
DRILLING CONTRACTOR:	Nothnagle Drilling Inc.	**CASING LENGTH:**	10 ft.	**GROUND ELEV:**	563.42
DRILLER:	Kevin Busch	**HOLE DIAMETER:**	0.165 ft.	**HORIZ. DATUM:**	NAD83
DRILL RIG TYPE:	Brainard-Kilman BK-81HD	**CORE TYPE:**	NX	**VERT. DATUM:**	NAVD 1988
LICENSE NUMBER:	NYRD10072	**TOTAL DEPTH:**	25 ft.	**START/END DATE:**	9/15/2004-9/17/2004

Formation	Member	Rock Type	Depth (ft)	Run No.	Pen. Rate (min/ft)	Penetration (ft)	Recovery (%)	RQD (%)	Lithologic Description (per TPPI 302)	Elevation (ft)	Notes
Overburden			5			7.7			See Boring Log AMSF-MW-11S for overburden soil description.	560	
No Core						2.3			No Core	555	
Eramosa Dolomite			10	16:16 1	4.6	5	188	82	Dolostone, medium dark gray, fine to medium grained, medium bedded, moderately fractured, vuggy, fossiliferous (bryzoan and rugose corals). 4 minute pause in coring during run. Breaks @ 11.7 to 12.2 (weathered, solution enlarged), 12.4 (weathered, solution enlarged), 12.5 (weathered), 12.5 to 13.2 (subvertical, slightly weathered), 13.2 (weathered, enlarged), 13.4 (slightly weathered), 14.3 (weathered), 14.5 to 14.7 (low angle, slightly weathered).	550	
			15	16:39 08:20					Dolostone, medium dark gray, fine to medium grained, medium bedded, moderately fractured, vuggy, fossiliferous (brachiopods).	545	
			20	2	5.9	10	30	88	Breaks @ 16.55, 16.95, 17.0 (slightly weathered), 18.0, 18.35 (weathered), 19.3 to 19.7 (void), 19.7 to 20.7 (weathered breaks every 0.1 to 0.2 ft), 20.9 to 21.0 (low angle, very slightly weathered), 21.1 (slightly weathered), 21.9 (very slightly weathered), 22.0 to 22.2 (void), 22.5, 22.6 (slightly weathered), 22.65, 23.5 (weathered), 24.1 (weathered, enlarged), 24.7 (weathered).	540	
			25	09:19					End of core @ 25' bgs		

Report Name: OBG CORE LOG Data Template: OBG GINT STD US BC.GDT

O'BRIEN & GERE

BORING LOG

BORING NO. **AMSF-MW-12S**

PROJECT: ITT-RFM FH-019
CLIENT: ITT
INSPECTOR: Scott Tucker

SHEET 1 OF 1
JOB NO. 3356/35273
GROUND ELEV. 564.02
DATUM Ground Surface
DATE STARTED 9/15/2004
DATE FINISHED 9/20/2004

DRILLING CONTRACTOR: Nothnagle Drilling Inc.
DRILLER: Kevin Busch
PURPOSE: Bedrock Well
DRILLING METHOD: Coring
DRILL RIG TYPE: Brainard-Kilman BK-81HD

	SAMPLE	CORE	CASING
TYPE	SS	---	---
DIA.	2"	---	---

DEPTH (ft)	Sample Type	Number	Blows/6" (N Value)	Penetration/ Recovery	MATERIAL DESCRIPTION	Graphic Log	Stratum Change	Field Testing PID (ppm)	Well Graphic	REMARKS
		SS-1	()	--	563.5 Blacktop 0.5					
2		SS-2	3-2-4 ()	1.5'/ 1.0'	562.0 10R5/4 Pale Reddish Brown, CLAY, varved at 6", damp, no odor. 2.0		Overburden	0.8		UV Field Test - neg
		SS-3	5-8-10-15 (18)	2.0'/ 1.5'	6" - as above 560.0 12" - 10YR5/4 Moderate Yellowish Brown, cmf(+) SAND, trace rnd f gravel, moist, no odor. 4.0			1		UV Field Test - neg
4										
6		SS-4	5-6-7-12 (13)	2.0'/ 1.7'	as above, becoming little cm rnd gravel, moist, no odor. 558.0 6.0			1.8		UV Field Test - neg
		SS-5	12-45-50/0.1 (50+)	1.1'/ 0.9'	556.9 9" - as above, wet, no odor 2" - N3 Dark Gray, rock fragments, calcite crystal pockets. 7.1			1.7		UV Field Test - neg
8		SS-6	()	--	Spoon Refusal at 7.1 ft Auger refusal at 7.7 ft		No Core			
10					554.0 Socket for casing Casign set at 10 ft. 10.0					
12					Refer to bedrock core log AMSF-MW-12S for bedrock core descriptions.		Eramosa Dolomite			
14										
16										
18										
20										
22										
24										
26					End of Borehole at 25.0'.					
28										
30										
32										
34										
36										
38										

Notes: 4" Casing set at 10 ft. Northing: 1146100.019, Easting: 1380648.446, Horizontal Datum: NAD83 State Plane Feet (New York West), Vertical Datum: NAVD88
Hole Location: Outside the northwest corner of former AMSF building, approximate 4 ft west and 3 ft north of the corner

Report Name: NEW OBG BORING LOG - NO USCS Data Template: OBG GINT STD US BC.GDT

O'BRIEN & GERE

CORE LOG

AMSF-MW-12S

PROJECT:	ITT-RFM FH-019	**PROJECT LOCATION:**	Rochester, New York
CLIENT:	ITT	**JOB NUMBER:**	3356/35273
INSPECTOR:	Scott Tucker	**HOLE LOCATION:**	North west corner of former AMSF building

PURPOSE:	Bedrock Well	**CASING DIAMETER:**	4 in.	**COORDINATES:**	N1146100.019 E1380648.446
DRILLING CONTRACTOR:	Nothnagle Drilling Inc.	**CASING LENGTH:**	10 ft.	**GROUND ELEV:**	564.02
DRILLER:	Kevin Busch	**HOLE DIAMETER:**	0.165 ft.	**HORIZ. DATUM:**	NAD83
DRILL RIG TYPE:	Brainard-Kilman BK-81HD	**CORE TYPE:**	NX	**VERT. DATUM:**	NAVD 1988
LICENSE NUMBER:	NYRD10072	**TOTAL DEPTH:**	25 ft.	**START/END DATE:**	9/15/2004-9/20/2004

Formation	Member	Rock Type	Depth (ft)	Run No.	Pen. Rate (min/ft)	Penetration (ft)	Recovery (%)	RQD (%)	Lithologic Description (per TPPI 302)	Elevation (ft)	Notes
Overburden			5			7.1			See Boring Log AMSF-MW-12S for overburden soil description.	560	
No Core			10			2.9			No Core. Overburden casing set to 10 ft bgs.	555	
Eramosa Dolomite			15	11:55 1	3.4	10	80	56	Dolostone, brownish to medium dark gray, fine to medium grained, medium bedded, moderately fractured, vuggy, fossiliferous (bryzoan and rugose corals). 4 minute pause in coring during run. 1 minute pause during core run to add rod. Breaks @ 10.1 , 10.3 , 10.5 , 10.6 ,11 ,11.1 ,12,12.4 (weathered),10-10.3 (subvertical, weathered), 12-12.5 (subvertical, weathered), 13.6 (slightly weathered), 13.6-13.9 (weathered low angle), 13.9, 14.0-14.2 (subvertical), 14.1 (slightly weathered), 14.2-14.3 (weathered, core crushed), 16 (weathered, enlarged), 17 (weathered, core crushed), 17.3, 17.4 (weathered), 17.7, 17.8 (slightly weathered), 19.7 (low angle weathered).	550 545	
			20	12:29 12:49 13:00 14:54 2	22	0.5	180	0	As Above Breaks @ 20.3 (very slightly weathered).		
				2	4.7	4.5	100	87	Dolostone, medium dark gray, fine to medium grained, medium bedded, moderately fractured, very fossiliferous (bryzoan and rugose corals). 4 minute pause in coring during run.	540	
			25	15:15					Breaks @ 20.7, 20.8 (weathered), 21.8 (very slightly weathered), 22, 22.1 (weathered), 22-22.1 (subvertical), 22.5 (slightly weathered), 23.4, 23.5 (weathered), 24.5 (very slightly weathered), 25 (weathered). End of core @ 25' bgs		

Report Name: OBG CORE LOG Data Template: OBG GINT STD US BC.GDT

O'BRIEN & GERE

BORING LOG

BORING NO. **AMSF-MW-13S**

PROJECT: ITT-RFM FH-019
CLIENT: ITT
INSPECTOR: Scott Tucker

SHEET 1 OF 1
JOB NO. 3356/35273
GROUND ELEV. 564.51
DATUM Ground Surface
DATE STARTED 9/16/2004
DATE FINISHED 9/20/2004

DRILLING CONTRACTOR: Nothnagle Drilling Inc.
DRILLER: Kevin Busch
PURPOSE: Bedrock Well
DRILLING METHOD: Coring
DRILL RIG TYPE: Brainard-Kilman BK-81HD

	SAMPLE	CORE	CASING
TYPE	SS	---	---
DIA.	2"	---	---

DEPTH (ft)	Sample Type	Number	Blows/6" (N Value)	Penetration/ Recovery	MATERIAL DESCRIPTION	Graphic Log	Stratum Change	Field Testing PID (ppm)	Well Graphic	REMARKS
		SS-1	()	--	564.0 Blacktop 0.5					
2		SS-2	6-3-5 ()	1.5'/ 0.5'	562.5 10R5/4 Pale Reddish Brown, SILT and CLAY, trace rnd gravel, damp, no odor. 2.0			1.1		UV Field Test - neg
4		SS-3	3-2-4-15 (6)	2.0'/ 1.7'	560.5 10YR5/4 Moderate Yellowish Brown, SILT, some cmf sand, trace rnd f gravel, moist, no odor. 4.0		Overburden	1.2		UV Field Test - neg
6		SS-4	5-8-7-9 (15)	2.0'/ 1.7'	558.5 as above, SAND lens at 15-17", wet at bottom 3", no odor 6.0			1.3		UV Field Test - neg
8		SS-5	12-17-18-34 (35)	2.0'/ 1.3'	556.5 13" - as above, SILT and cmf(+) SAND, little rnd gravel, wet, no odor. 3" - N3 Dark Gray rock fragments 8.0			1.9		UV Field Test - neg
10		SS-6	50/0.1 (50+)	0.1'/ 0.1'	556.4 as above 8.1 Refusal at 8.1 ft.		No Core			
		SS-7	()	--	554.0 Socket casing Casing set at 10.5 ft. 10.5					
12					Refer to bedrock core log AMSF-MW-13S for bedrock core descriptions.					
14										
16							Eramosa Dolomite			
18										
20										
22										
24										
26					End of Borehole at 25.0'.					
28										
30										
32										
34										
36										
38										

Notes: 4" Casing set at 10.5 ft. Northing: 1146056.109, Easting: 1380644.247, Horizontal Datum: NAD83 State Plane Feet (New York West), wall
Vertical Datum: NAVD88
Hole Location: Outside the northwest corner of former AMSF building, approximately 9 ft west of the west wall and 40 ft south of the north

Report Name: NEW OBG BORING LOG - NO USCS Data Template: OBG GINT STD US BC.GDT

O'BRIEN & GERE

CORE LOG

AMSF-MW-13S

PROJECT: ITT-RFM FH-019
CLIENT: ITT
INSPECTOR: Scott Tucker

PROJECT LOCATION: Rochester, New York
JOB NUMBER: 3356/35273
HOLE LOCATION: NW corner of former AMSF building, west wall

PURPOSE: Bedrock Well
DRILLING CONTRACTOR: Nothnagle Drilling Inc.
DRILLER: Kevin Busch
DRILL RIG TYPE: Brainard-Kilman BK-81HD
LICENSE NUMBER: NYRD10072

CASING DIAMETER: 4 in.
CASING LENGTH: 10.5 ft.
HOLE DIAMETER: 0.165 ft.
CORE TYPE: NX
TOTAL DEPTH: 25 ft.

COORDINATES: N1146056.109 E1380644.247
GROUND ELEV: 564.51
HORIZ. DATUM: NAD83
VERT. DATUM: NAVD 1988
START/END DATE: 9/16/2004-9/20/2004

Formation	Member	Rock Type	Depth (ft)	Run No.	Pen. Rate (min/ft)	Penetration (ft)	Recovery (%)	RQD (%)	Lithologic Description (per TPPI 302)	Elevation (ft)	Notes
Overburden			5			8.1			See Boring Log AMSF-MW-13S for overburden soil description.	560	
No Core			10			2.4			No Core. Overburden casing set to 10.5 ft bgs.	555	
Eramosa Dolomite			15	12:58 1 13:50	5.2	10	80	56	Dolostone, brownish to medium dark to dark gray, fine to medium grained, medium bedded, moderately fractured, very vuggy (10.5-18 ft bgs), fossiliferous (bryzoan and rugose corals), few stylolites, flecks throughout (concentrated 15.5 to 17 ft bgs). 6 minute pause in coring during run. Remineralized voids: 11.8, 12.2, 14.1-14.3. Breaks @ 10.6 (very slightly weathered), 13.3, 13.7(slightly weathered), 14.1 (weathered, enlarged), 14.5, 14.7 (slightly weathered), 15.5-16.2 (multiple weathered), 15.6-15.7 (low angle, slightly weathered), 18.3 (weathered, enlarged), 18.8 (weathered), 19.4, 20.4 (slightly weathereed), 20.5 (weathered).	550 545	
			20	14:05 2 14:35	6.7	4.5	20	0	As Above Breaks @ 20.8 (weathered, enlarged), 22.0, 22.1, 22.6 (slightly weathered), 22.9 (weathered, enlarged), 24.3, 24.5 (weathered, enlarged).	540	
			25						End of core @ 25' bgs		

Report Name: OBG CORE LOG Data Template: OBG GINT STD US BC.GDT

O'BRIEN & GERE

CORE LOG

AMSF-MW-15I

PROJECT: ITT-RFM FH-019
CLIENT: ITT
INSPECTOR: Paul Freyer

PROJECT LOCATION: Rochester, New York
JOB NUMBER: 35273.004.103
HOLE LOCATION: Northwest former AMSF property, west of AMSF-MW-13S.

PURPOSE: Bedrock Well
DRILLING CONTRACTOR: Parratt Wolff, Inc.
DRILLER: Bill Rice
DRILL RIG TYPE: CME 75
LICENSE NUMBER: NYRD01621

CASING DIAMETER: 4 in.
CASING LENGTH: 10 ft.
HOLE DIAMETER: 0.315 ft.
CORE TYPE: HQ3
TOTAL DEPTH: 60 ft.

COORDINATES: N1146049.6087 E1380601.0537
GROUND ELEV: 563.07
HORIZ. DATUM: NAD83
VERT. DATUM: NAVD 1988
START/END DATE: 2/12/2008-2/13/2008

Formation	Member	Rock Type	Depth (ft)	Run No.	Pen. Rate (min/ft)	Penetration (ft)	Recovery (%)	RQD (%)	Lithologic Description (per TPPI 302)	Elevation (ft)	Notes
Overburden			5			7			Overburden - Not Logged See boring log OBG-SB-33 for an adjacent description of the overburden Depth to rock = 7 ft bgs 4" Surface casing installed to 10' bgs on 11/15/07 by Barney Moravec Inc.	560	
No Core						3			No Core	555	
Eramosa Dolomite			10	15:01 1 15:16	3.8	4	93.8	87	Dolostone, dark gray, fine grained, thick bedded, slightly fractured, vuggy, few fossils (Halysites corals), travertine, remineralization of voids and pitts. Breaks @ 10.45' (weathered void, residual clay), 10.75' (weathered, possible void), 10.95' (mech).	550	
			15	15:24 2 15:45	4.2	5	102	97	Dolostone, portions arenitic, dark to medium gray, fine grained, thick bedded, slightly fractured, travertine, fossiliferous. Breaks @ 15.2 - 15.25' (weathered, crushed to subrounded fm gravel sized fragments), 16.8' (mech), 17.6' (recalcified fracture), 18.0' (mech), 18.3-18.4' (core crushed).	545	
			20	15:55 3 16:14	3.8	5	95	95	Dolostone, med-dark gray, fine grained, thick bedded, slightly fractured, fossiliferous (rugose corals, brachiopods). Breaks @ 19.45', 19.9', 21.0' (slightly weathered), 21.8' (mech), 22.55' (weathered enlarged, subhorizontal).	540	
			25	16:25 4 16:43	3.6	5	97	89	Dolostone, med-dark gray, fine grained, thick bedded, slightly fractured, fossiliferous (Halysites corals). Breaks @ 24.2' (slightly weathered), 24.45' (weathered, residual clay and grains), 25.9' (mech), 27.9' (weathered).	535	
			30	16:52 5 17:10	3.6	5	105	94	Dolostone, med-dark to medium gray, fine to fine medium grained, thick bedded, slightly fractured, fossiliferous, few stylolites below 31.0'. Breaks @ 29.45' (weathered, residual clay), 30.6' (weathered, residual clay and grains).	530	
			35	08:37 6 09:02	5	5	100	100	Arenitic Dolostone, medium gray, fine-medium grained, thick bedded, slightly fractured, fossiliferous (rugose corals, brachiopods). Breaks @ 35.8' (shaley parting, slightly weathered), 36.7' (mech), 37.35' (weathered, pitting), 38.0' (weathered).	525	

Report Name: OBG CORE LOG Data Template: OBG GINT STD US BC.GDT

O'BRIEN & GERE

CORE LOG

AMSF-MW-15I

PROJECT: ITT-RFM FH-019
CLIENT: ITT
INSPECTOR: Paul Freyer

Formation	Member	Rock Type	Depth (ft)	Run No.	Pen. Rate (min/ft)	Penetration (ft)	Recovery (%)	RQD (%)	Lithologic Description (per TPPI 302)	Elevation (ft)	Notes
Penfield Formation	Upper		40	09:13 7 09:34	4.2	5	100	94	Arenitic Dolostone, medium gray, fine-medium grained, thick bedded, slightly fractured, fossiliferous, stylolites common, remineralized voids. Breaks @ 39.8' (mech), 40.7', 41.2', 41.7' (mech, along stylolite), 42.1', 43.35' (remineralization along plane).	520	
			45	09:44 8 10:06	4.4	5	92	92	Arenitic Dolostone, medium gray to light brown, fine-medium grained, thick bedded, slightly fractured, very few fossils, gypsum, remineralized void, stylolites common, minor pitting. Breaks @ 45.15', 46.2', 47.8' (mech), 48.1' (slightly weathered).	515	
			50	10:32 9 10:58	5.2	5	104	100	Arenitic Dolostone, medium gray, portions brownish gray, fine-medium grained, thick bedded, very slightly fractured, few fossils (brachiopods), gypsum, remineralized voids, stylolites common, minor pitting. Breaks @ 52.9' (mech).	510	
			55	11:09 10 11:32	4.6	5	94	94	SAA to 55.5' Dolostone, increasingly argillaceous, medium gray, fine-medium grained, thick bedded, very slight fracturing, fossiliferous (rugose corals, brachiopods), few stylolites. Breaks @ 55.75' (weathered), 57.65' (mech).	505	
			60	11:50 11 11:57	7	1	175	100	Dolostone more argillaceous, medium gray, fine-medium grained, thick bedded, no breaks, fossiliferous (rugose corals, brachiopods), few stylolites. End of core @ 60' bgs		

Report Name: OBG CORE LOG Data Template: OBG GINT STD US BC.GDT

O'BRIEN & GERE

CORE LOG

AMSF-MW-16I

PROJECT:	ITT-RFM FH-019	**PROJECT LOCATION:**	Rochester, New York
CLIENT:	ITT	**JOB NUMBER:**	35273.004.103
INSPECTOR:	Paul Freyer	**HOLE LOCATION:**	Northwest former AMSF property, south of AMSF-MW-13S.

PURPOSE:	Bedrock Well	**CASING DIAMETER:**	4 in.	**COORDINATES:**	N1146045.681 E1380643.3581
DRILLING CONTRACTOR:	Parratt Wolff, Inc.	**CASING LENGTH:**	11 ft.	**GROUND ELEV:**	564.64
DRILLER:	Bill Rice	**HOLE DIAMETER:**	0.315 ft.	**HORIZ. DATUM:**	NAD83
DRILL RIG TYPE:	CME 75	**CORE TYPE:**	HQ3	**VERT. DATUM:**	NAVD 1988
LICENSE NUMBER:	NYRD01621	**TOTAL DEPTH:**	60 ft.	**START/END DATE:**	2/13/2008-2/14/2008

Formation	Member	Rock Type	Depth (ft)	Run No.	Pen. Rate (min/ft)	Penetration (ft)	Recovery (%)	RQD (%)	Lithologic Description (per TPPI 302)	Elevation (ft)	Notes
Overburden			5			8			Overburden - Not Logged See boring log AMSF-MW-13S for an adjacent description of the overburden Depth to bedrock = 8 ft bgs 4" Surface casing installed to 11' bgs on 11/15/07 by Barney Moravec Inc.	560	
No Core			10			3			No Core	555	
Eramosa Dolomite			15	15:29 1 15:40	3.7	3	91.7	82	Dolostone, med-dark gray, fine grained, medium- thick bedded, slight to moderately fractured, fossiliferous, travertine. Breaks @ 11.15' (weathered), 11.3' (weathered, enlarged).		
				15:48 2 16:05	3.4	5	94	84	Dolostone, med-dark gray, fine grained, medium-thick bedded, moderately fractured, travertine, fossiliferous (Halysites and rugose corals, crinoid platelets). Breaks @ 16.0' (weathered), 16.3' and 16.4' (weathered, possible 0.2' void), 17.25' (mech.), 17.9' (weathered, possible void), 18.0' (slightly weathered).	550	
			20	16:17 3 16:37	4	5	96	90	Dolostone, med-dark gray, fine grained, medium-thick bedded, slightly fractured, fossils common (Halysites and rugose corals, brachiopods, crinoid platelets). Breaks @ 19.4' (slightly weathered), 20.7' (slightyly weathered), 21.35' (mech.), 21.9-22.0' (shaley, crushed to subangular fm gravel), 23.25-23.3' (shaley, crushed to fm gravel sized fragments).	545	
			25	16:42 4 16:58	3.5	4.6	109.8	99	Dolostone, med-dark gray, fine grained, medium-thick bedded, slightly fractured, fossiliferous. Breaks @ 24.7' (slightly weathered, enlarged), 25.4', 25.9' (slightly weathered), 26.4' (weathered, clay and grains), 28.1' (mech).	540	
			30	17:07 5 17:10 08:39	7.5	0.4	112.5	100	Dolostone, medium to dark gray, fine grained, medium-thick bedded, slightly fractured.	535	
				6 08:57	3.6	5	98	91	Dolostone, med-dark gray, fine grained, medium bedded, slightly fractured, fossiliferous, few stylolites. Breaks @ 29.5' (weathered, minor pitting), 29.75-29.85' (shaley, weathered, residual clay and grains, sheen and chemical odor), 32.0' (weathered, residual clay and grains), 32.9-33.1' (core crushed, weathered subrounded fmc gravel sized fragments).		
			35	09:04 7 09:23	3.8	5	99	98	Dolostone to arenitic dolostone, medium gray, fine-medium grained, thick bedded, slightly fractured, few fossils (rugose corals and brachiopods). Breaks @ 35.4' (slightly weathered, chemical odor), 37.0' (shaley parting, weathered), 37.5' (slightly weathered), 38.4'	530	

Report Name: OBG CORE LOG Data Template: OBG GINT STD US BC.GDT

O'BRIEN & GERE

CORE LOG

AMSF-MW-16I

PROJECT: ITT-RFM FH-019
CLIENT: ITT
INSPECTOR: Paul Freyer

Formation	Member	Rock Type	Depth (ft)	Run No.	Pen. Rate (min/ft)	Penetration (ft)	Recovery (%)	RQD (%)	Lithologic Description (per TPPI 302)	Elevation (ft)	Notes
Penfield Formation	Upper		40	09:33 8 09:54	4.2	5	106	92	(mech). Arenitic Dolostone, medium gray, fine-medium grained, thick bedded, slightly fractured, few fossils (rugose corals and brachiopods), remineralized voids. Core crushed from 41.85 to 42.0' bgs. Sheen observed in core sleeve, chemical odor. Breaks @ 39.7' (mech), 40.9' (weathered, crushed to fm gravel), 41.5' (mech, along stylolite), 41.85-42.0' (core crushed, pitting, slight remineralization), 42.15', 43.5' (mech), 43.95' (mech, along stylolite).	525	
			45	10:02 9 10:24	4.4	5	82	80	Arenitic Dolostone, medium gray, fine-medium grained, thick bedded, very slightly fractured, few stylolites, minor pitting, few fossils (brachiopods). Breaks @ 45.75' (mech, along stylolite), 45.8' (slightly weathered).	520	
			50	10:36 10 10:54	4.1	4.4	118.2	100	Arenitic Dolostone, medium gray with light brownish gray sandy bands, fine-medium grained, thick bedded, no breaks, some slight pitting, few fossils (brachipods).	515	
			55	11:03 11 11:24	4.2	5	97	97	Arenitic Dolostone, increasingly argillaceous from 56.4' to the bottom of the run, medium gray, fine-medium grained, thick bedded, very slightly fractured, pitting common, few fossils (brachipods), gypsum, few gypsum filled voids. Breaks @ 55.5' (mech), 57.3' (very slightly weathered, along stylolite).	510	
			60	11:40 12 11:47	4.4	1.6	87.5	88	Dolostone, more argillaceous, medium gray, fine-medium grained, thick bedded, very slightly fractured, few fossils (crinoid platelets, rugose corals). Breaks @ 59.4' (mech). End of core @ 60' bgs	505	

Report Name: OBG CORE LOG Data Template: OBG GINT STD US BC.GDT

Appendix C, Part 2

TEST BORING, BEDROCK CORING, AND MONITORING WELL INSTALLATION LOGS FROM THE BCP REMEDIAL INVESTGATION OF THE FORMER AMSF SITE

Stantec

61 Commercial Street
Rochester, NY 14614
(585) 475-1440

Test Boring No.: DG-TB-1

Project:	FAMSF Site BCP Remedial Investigation	Drill Contractor:	North Star Drilling	Start Date:	11/7/2012
Project #:	190500647.200	Driller:	S. Laramee	Completion Date:	11/7/2012
Client:	Maguire Family Properties	Elevation:	566.1	Drilling Method:	Geoprobe 6620
Location:	Gates, NY	Weather:	- -	Stantec Rep:	E. McCormick

Boring Depth (ft)	Sample Recov.	Sample No.	PID Reading Depth	Field Screening Results PID Readings in Parts Per Million (PPM) 10.6 eV PID Bkgd	10.6 eV PID Sample core	10.6 eV PID Head-space	11.7 eV PID Bkgd	11.7 eV PID Sample core	11.7 eV PID Head-space	Soil Description and Other Observations
	3.5	1								0.0-1.0' CONCRETE SUBBASE, dry
1										1.0-3.0' brown-red brown fine sandy SILT, moist
										1.0-3.0' brown-red brown fine sandy SILT, moist
2			1.7	0.5	1.4	4.6	0.0	0.0	0.8	
			2.5	0.5		9.9	0.0		2.6	
3										
			3.5	0.5	1.3		0.0	0.0		
4			3.9	0.5	10.0	9.1	0.0	0.7	2.7	
	4.0	2								4.0-6.0' brown SILT, little fine sand, moist-wet
5										
6			5.5	0.5	2.6	10.8	0.0	0.2	3.8	
			6.0	0.5	2.6		0.0	0.2		6.0-8.0' red-brown clayey SILT, interbedded with red-brown sandy silt,
7			6.5	0.5	2.0		0.0	0.7		moist -LACUSTRINE-
			7.0	0.5	6.5	10.7	0.0	1.2	3.2	
8			7.5	0.5	15.4	15.3	0.0	1.2	6.3	
	2.3	3	8.0	0.6	5.3		0.0	2.8		8.0-10.3' brown graveley SAND, little silt, moist
9										-TILL-
10			10.0	0.5	2.1	6.4	0.0	0.7	2.4	
			10.3	0.6	3.0		0.0	0.2		
11										Refusal at 10.3'
12										
13										
14										
15										
16										Samples:
17										Sample ID: DG-TB-1-1
										Time: 1650
18										Depth: 5.5'
19										Sample ID: DG-TB-1-2
										Time: 1652
20										Depth 7.5'

Stantec

61 Commercial Street
Rochester, NY 14614
(585) 475-1440

Test Boring No.: DG-TB-3B

Project:	FAMSF Site BCP Remedial Investigation	Drill Contractor:	North Star Drilling	Start Date:	11/7/2012
Project #:	190500647.200	Driller:	S. Laramee	Completion Date:	11/7/2012
Client:	Maguire Family Properties	Elevation:	566.1	Drilling Method:	Geoprobe 6620
Location:	Gates, NY	Weather:	- -	Stantec Rep:	E. McCormick

Boring Depth (ft)	Sample Recov.	Sample No.	PID Reading Depth	Field Screening Results PID Readings in Parts Per Million (PPM) 10.6 eV PID Bkgd	10.6 eV PID Sample core	10.6 eV PID Head-space	11.7 eV PID Bkgd	11.7 eV PID Sample core	11.7 eV PID Head-space	Soil Description and Other Observations
1	4.0	1								0.0-1.0' CONCRETE/GRAVEL subbase, dry
2			1.5	0.4	0.9	1.4	0	0	0	1.0-5.0' red-brown silty SAND, damp-moist
3										
4			3.0	0.6	0	0.9	0	0	0	
5	4.0	2	4.5	0.4	0	0	0	0	0	
6										5.5-7.0' red-brown SILT, trace sand and clay, moist
7			6.5	0.4	0	0.9	0	0	0	
8										7.0-8.0' red-brown clayey SILT, thin bedded, moist -LACUSTRINE-
9	4.0	3	8.0	0.4	0	0.6	0	0.0	0	8.0-10.2' brown-dark brown silty fine to coarse SAND, moist
10										
11			10.2	0.4	0	1.7	0	0	0.3	Refusal at 10.2'
12										
13										
14										
15										
16										Samples:
17										Sample ID: DG-TB-3B
18										Time: 1603 Depth: 10.2'
19										Sample ID: DUP-1
20										Time: 1603 Depth 10.2'

Stantec

61 Commercial Street
Rochester, NY 14614
(585) 475-1440

Test Boring No.: DG-TB-4A

Project:	FAMSF Site BCP Remedial Investigation	Drill Contractor:	North Star Drilling	Start Date:	11/7/2012
Project #:	190500647.200	Driller:	Steve Laramee	Completion Date:	11/7/2012
Client:	Maguire Family Properties	Elevation:	566.1	Drilling Method:	Geoprobe 6620
Location:	Gates, NY	Weather:	- -	Stantec Rep:	E. McCormick

Boring Depth (ft)	Sample Recov.	Sample No.	PID Reading Depth	Field Screening Results PID Readings in Parts Per Million (PPM) 10.6 eV PID Bkgd	10.6 eV PID Sample core	10.6 eV PID Head-space	11.7 eV PID Bkgd	11.7 eV PID Sample core	11.7 eV PID Head-space	Soil Description and Other Observations
1	3.2	1								0.0-1.0' CONCRETE and GRAVEL subbase, dry
2			1.5	0.6	0	1.9	0	0	0	1.0-10.4' brown sandy SILT, trace gravel, dry, then moist
3										
4			3.0	0.6	0	5.6	0	0	1.6	
5	0.0	2								
6										
7										
8										
9	0.5	3								
10			10.0	0.6	0	29.4	0	0	8.6	
11			10.4	1.3	2.7	29.4	0	0.2		Refusal at 10.4'
12										
13										
14										
15										
16										Samples:
17										Sample ID: DG-TB-3B
18										Time: 1603 Depth: 10.2'
19										Sample ID: DUP-1
20										Time: 1603 Depth 10.2'

Stantec

61 Commercial Street
Rochester, NY 14614
(585) 475-1440

Test Boring No.: DG-TB-4B

Project:	FAMSF Site BCP Remedial Investigation	Drill Contractor:	North Star Drilling	Start Date:	11/7/2012
Project #:	190500647.200	Driller:	S. Laramee	Completion Date:	11/7/2012
Client:	Maguire Family Properties	Elevation:	566.1	Drilling Method:	Geoprobe 6620
Location:	Gates, NY	Weather:	- -	Stantec Rep:	E. McCormick

Boring Depth (ft)	Sample Recov.	Sample No.	PID Reading Depth	Field Screening Results PID Readings in Parts Per Million (PPM) 10.6 eV PID Bkgd	10.6 eV PID Sample core	10.6 eV PID Head-space	11.7 eV PID Bkgd	11.7 eV PID Sample core	11.7 eV PID Head-space	Soil Description and Other Observations
1		1								0.0-1.0' CONCRETE and GRAVEL subbase, dry
2			1.0	0.5	2	3.5	0	0.1	0.2	1.0-10.4' brown sandy SILT, trace gravel, dry, then moist
3										
4			3.0	0.5	0	1.7	0	0	9	
5		2								
6										
7			6.0	0.5	0	5.3	0	0	1.1	
8										
9		3	8.0	0.5	0	11.6	0	0.0	10.6	
10			8.8	0.5	42	57.2	0	9.3	21.8	
11			10.0	0.7	88	226.4	0	4	324.9	Resual at 10.4'
12										
13										
14										Samples:
15										Sample ID: DG-TB-4B-1
16										Time: 1519 Depth: 8.8'
17										Sample ID: DG-TB-4B-2 MS/MSD
18										Time: 1517 Depth: 10.0'
19										Sample ID: DG-TB-4B-2
20										Time: 1517 Depth 10.0'

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61 Commercial Street
Rochester, NY 14614
(585) 475-1440

Test Boring No.: DG-TB-5A

Project:	FAMSF Site BCP Remedial Investigation	Drill Contractor:	North Star Drilling	Start Date:	11/7/2012
Project #:	190500647.200	Driller:	S. Laramee	Completion Date:	11/7/2012
Client:	Maguire Family Properties	Elevation:	566.1	Drilling Method:	Geoprobe 6620
Location:	Gates, NY	Weather:	- -	Stantec Rep:	E. McCormick

Boring Depth (ft)	Sample Recov.	Sample No.	PID Reading Depth	Field Screening Results PID Readings in Parts Per Million (PPM) 10.6 eV PID Bkgd	10.6 eV PID Sample core	10.6 eV PID Head-space	11.7 eV PID Bkgd	11.7 eV PID Sample core	11.7 eV PID Head-space	Soil Description and Other Observations
1	3.7	1								0.0-1.0' gray CONCRETE and GRAVEL, dry
2			1.0	1.5	0	0	0	0	0	1.0-7.0' brown silty coarse-fine SAND, trace-little gravel, moist
3			2.0	1.5	0	1.8	0	0	0.1	
4			3.0	1.5	0	0	0	0	0	
5	4.0	2	4.0	1.5	0	0	0	0.0	0	moist at 4.0'
6			5.0	1.2	1.4	0	0	0	0	
7			6.0	1.2	0	0	0	0	0	
8			7.0	1.2	0	0	0	0	0	at 7' -TILL- 7.0-8.0' brown CLAY, red-brown clayey SILT, moist -LACUSTRINE-
9	3.0	3	8.0	1.2	0	3	0	0.0	0	-LACUSTRINE- at 8' -TILL-
10			8.5	0.9	1.3		0	0		9.0-10.0' brown CLAY and fine silty SAND, trace gravel, dry-moist
11			9.0	0.9	1.5	1.6	0	0	0	-LACUSTRINE-
12			10.0	0.9	0	0	0	0	0	Refusal at 10.5'
13										
14										
15										
16										
17										
18										
19										Sample:
20										Sample ID: DG-TB-5A Time: 1420 Depth: 8.0'

Stantec

61 Commercial Street
Rochester, NY 14614
(585) 475-1440

Test Boring No.: SW-TB-4

Project:	FAMSF Site BCP Remedial Investigation	Drill Contractor:	North Star Drilling	Start Date:	11/7/2012
Project #:	190500647.200	Driller:	S. Laramee	Completion Date:	11/7/2012
Client:	Maguire Family Properties	Elevation:	563.6	Drilling Method:	Geoprobe 6620
Location:	Gates, NY	Weather:	Clear, 33°F	Stantec Rep:	E. McCormick

Boring Depth (ft)	Sample Recov.	Sample No.	PID Reading Depth	Field Screening Results PID Readings in Parts Per Million (PPM) 10.6 eV PID Bkgd	10.6 eV PID Sample core	10.6 eV PID Head-space	11.7 eV PID Bkgd	11.7 eV PID Sample core	11.7 eV PID Head-space	Soil Description and Other Observations
	4.0	1								0.0-1.7' ASPHALT and SUBBASE, dry
1										1.7-3.1' SILT with thinly bedded clayey silt, moist
2										
			2.0	0	0	13.4	0	0	7.5	
3										
			3.1	0	1.1	390.2	0	0	241.5	3.1-6.9' silty fine-coarse SAND, trace gravel
4			3.8	0	0	110.6	0	0	183.8	-TILL-
	2.9	2	4.0	0	0.2		0	0.0		at 4.0' saturated
5										
			5.8	0	0.1		0	0		
6			6.0	0	0	11.6	0	0	33.9	
			6.5	0	0.1		0	0.1		
7			6.9	0	0	7.3	0	0	4.9	
										Refusal at 6.9'
8										
9										
10										
11										
12										
13										
14										
15										
16										
17										
18										Sample:
19										Sample ID: SW-TB-4
										Time: 1305
20										Depth: 3.1'

61 Commercial Street
Rochester, NY 14614
(585) 475-1440

Test Boring No.: 5A-TB-1

Project:	FAMSF Site BCP Remedial Investigation	Drill Contractor:	North Star Drilling	Start Date:	11/7/2012
Project #:	190500647.200	Driller:	S. Laramee	Completion Date:	11/7/2012
Client:	Maguire Family Properties	Elevation:	566.1	Drilling Method:	Geoprobe 6620
Location:	Gates, NY	Weather:	Clear, 33°F	Stantec Rep:	E. McCormick

Boring Depth (ft)	Sample Recov.	Sample No.	PID Reading Depth	Field Screening Results PID Readings in Parts Per Million (PPM) 10.6 eV PID Bkgd	10.6 eV PID Sample core	10.6 eV PID Head-space	11.7 eV PID Bkgd	11.7 eV PID Sample core	11.7 eV PID Head-space	Soil Description and Other Observations
	4.0	1								0.0-0.8' No recovery
1			0.8	0.1	0	0.2	0.1	0	0	0.8-2.0' gray ASPHALT, GRAVEL, SAND, SILT, dry
										and brown SAND, SILT, GRAVEL, moist -FILL-
2			1.5	0.1	0	0.2	0.1	0	0	
			2.3	0.1	0	0.1	0.1	0	0	2.0-5.5' SILT, SAND, and thinly bedded clayey SILT, moist
3										
4			3.5	0.1	0	0.3	0.1	0	0	
	4.0	2								from 4.0-4.5' brown GRAVEL and SAND, saturated
5			4.5	0.1	0	0.2	0.1	0	0	at 4.5' SILT and CLAY
										-LACUSTRINE-
6										5.5-7.6' brown SILT, SAND, and fine GRAVEL
			6	0.1	0	0.4	0.1	0	0	-TILL-
7										
			7.6	0.1	0	0.3	0.1	0.0	0	
8										Refusal at 7.6'
9										
10										
11										
12										
13										
14										
15										
16										
17										
18										Sample:
19										Sample ID: 5A-TB-1
										Time: 1230
20										Depth: 4.5'

Stantec

61 Commercial Street
Rochester, NY 14614
(585) 475-1440

Test Boring No.: SW-TB-3

Project:	FAMSF Site BCP Remedial Investigation	Drill Contractor:	North Star Drilling	Start Date:	11/8/2012
Project #:	190500647.200	Driller:	S. Laramee	Completion Date:	11/8/2012
Client:	Maguire Family Properties	Elevation:	566.1	Drilling Method:	Geoprobe 6620
Location:	Gates, NY	Weather:	- -	Stantec Rep:	E. McCormick

Boring Depth (ft)	Sample Recov.	Sample No.	PID Reading Depth	Field Screening Results PID Readings in Parts Per Million (PPM) 10.6 eV PID Bkgd	10.6 eV PID Sample core	10.6 eV PID Head-space	11.7 eV PID Bkgd	11.7 eV PID Sample core	11.7 eV PID Head-space	Soil Description and Other Observations
	3.5	1								0.0-1.0' CONCRETE
1			0.8	2.7	6.5		1.6	2.3		
			1.0	2.2	0	2.4	1	0	1.1	1.0-2.0' brown fine SAND, some silt, dry to moist
2			1.5	2.7	3.1		1	0.8		
										2.0'-6.0' brown fine SAND, silt, little gravel, moist
3			2.5	2.2	0	2.2	1	0	0.8	
4			3.6	2.2	0	2.3	1	0	1.1	
	3.0	2								at 4.4' mottling
5										
			5.0	2.2	0	1.3	1	0	0.8	
6										
			6.0	2.2	0	1.9	1	0	0.8	6.0' red clayey SILT
7										6.5' brown CLAY, some silt and fine sand
			7.2	2.2	0	1.9	1	0	0.9	
8										
	2.4	3	8.0	2.2	0	2	1	0	0.8	
9										
			9.0	1.7	0	1.8	0.6	0	0.7	9.0' brown fine to medium SAND, trace fine to medium gravel, some silt, few mottling, moist
10										
11										
			11.8	1.7	0	8.2	0.6	0	5.7	11.8' fine to coarse GRAVEL, some coarse sand, wet
12										Refusal at 11.8'
13										
14										
15										
16										Samples:
17										Sample ID: SW-TB-3-2
18										Time: 1358 Depth: 4.5'
19										Sample ID: SW-TB-3-1
20										Time: 1348 Depth 11.8'

61 Commercial Street
Rochester, NY 14614
(585) 475-1440

Test Boring No.: DG-TB-2

Project:	FAMSF Site BCP Remedial Investigation	Drill Contractor:	North Star Drilling	Start Date:	11/8/2012
Project #:	190500647.200	Driller:	S. Laramee	Completion Date:	11/8/2012
Client:	Maguire Family Properties	Elevation:	566.1	Drilling Method:	Geoprobe 6620
Location:	Gates, NY	Weather:	- -	Stantec Rep:	E. McCormick

Boring Depth (ft)	Sample Recov.	Sample No.	PID Reading Depth	Field Screening Results PID Readings in Parts Per Million (PPM) 10.6 eV PID Bkgd	10.6 eV PID Sample core	10.6 eV PID Head-space	11.7 eV PID Bkgd	11.7 eV PID Sample core	11.7 eV PID Head-space	Soil Description and Other Observations
	4.0	1								0.0-0.5' CONCRETE and SUBBASE
1										0.5-1.2' light brown fine SAND and SILT
			1.0	0.7	0	1.4	0.5	0	1.6	at 1.2' moist
2										
3			2.5	0.7	0	2.6	0.5	0	2	
4										
	3.0	2	4.0	0.7	0	0.8	0.5	0.0	0.8	4.0-8.0' brown clayey SILT, trace mottling, moist
5										
6			5.5	0.7	0	1.2	0.5	0	1.2	
7										
			7.0	0.7	0	1.9	0.5	0	1.6	
8										
	4.0	3								
9			8.5	0.8	0	1.9	0.6	0	1.8	
										9.0' brown fine SAND and SILT, trace mottling, moist
10			9.7	0.8	0	1.2	0.6	0	1.2	
										Refusal at 9.7'
11										
12										
13										
14										
15										
16										Samples:
17										Sample ID: DG-TB-2-1
										Time: 0838
18										Depth: 2.5'
19										Sample ID: DB-TB-2-2
										Time: 0845
20										Depth 8.5'

Stantec

61 Commercial Street
Rochester, NY 14614
(585) 475-1440

Test Boring No.: SEW-TB-1

Project:	FAMSF Site BCP Remedial Investigation	Drill Contractor:	North Star Drilling	Start Date:	11/8/2012
Project #:	190500647.200	Driller:	S. Laramee	Completion Date:	11/8/2012
Client:	Maguire Family Properties	Elevation:	566.1	Drilling Method:	Geoprobe 6620
Location:	Gates, NY	Weather:	- -	Stantec Rep:	E. McCormick

Boring Depth (ft)	Sample Recov.	Sample No.	PID Reading Depth	Field Screening Results PID Readings in Parts Per Million (PPM) 10.6 eV PID Bkgd	10.6 eV PID Sample core	10.6 eV PID Head-space	11.7 eV PID Bkgd	11.7 eV PID Sample core	11.7 eV PID Head-space	Soil Description and Other Observations
	4.0	1								0.0-0.7' crushed CONCRETE
1										0.7-3.0' brown fine silty SAND, dry
			1.0	0.2	1.1	0.7	0.3	1.2	1.1	at 1.5' moist
2										
3										
			3.0	0.2	0	0.2	0.3	0	0.3	3.0' brown-red clayey SILT, trace mottling
4										
	4.0	2								
5										
			5.0	0.2	0.4	1	0.3	0.8	2.2	5.0' red-brown silty CLAY
6			5.9	0.2	0.4		0.3	0		5.7' brown fine SAND and SILT, moist-wet
			6.3	0.2	0	0.2	0.3	0	0.5	
7										
			7.1	0.2	1.8	0.2	0.3	1.1	0.4	7.0' coarse SAND and medium GRAVEL, some coarse gravel
8										-FILL-
										Refusal at 7.5'
9										
10										
11										
12										
13										
14										
15										
16										
17										
18										Sample:
19										Sample ID: SEW-TB-1
										Time: 0950
20										Depth: 5.0'

Stantec

61 Commercial Street
Rochester, NY 14614
(585) 475-1440

Test Boring No.: SW-TB-1

Project:	FAMSF Site BCP Remedial Investigation	Drill Contractor:	North Star Drilling	Start Date:	11/8/2012
Project #:	190500647.200	Driller:	S. Laramee	Completion Date:	11/8/2012
Client:	Maguire Family Properties	Elevation:	566.1	Drilling Method:	Geoprobe 6620
Location:	Gates, NY	Weather:	- -	Stantec Rep:	E. McCormick

Boring Depth (ft)	Sample Recov.	Sample No.	PID Reading Depth	Field Screening Results PID Readings in Parts Per Million (PPM) 10.6 eV PID Bkgd	10.6 eV PID Sample core	10.6 eV PID Head-space	11.7 eV PID Bkgd	11.7 eV PID Sample core	11.7 eV PID Head-space	Soil Description and Other Observations
	3.4	1								0.0-1.0' gray crushed CONCRETE and GRAVEL SUBBASE, dry
1			1.0	0.3	1.2	5.5	0.1	4.2	3.3	
			1.4	0.7	1.1		0.9	1.8		1.0-3.5 red-brown SILT, little fine to coarse sand, trace clay, damp-moist
2			2.0	0.3	0	5	0.1	0	2.5	-FILL-
3			3.0	0.3	0	2.8	0.1	0	1.9	
4			3.5	0.3	0	4.3	0.1	0	2.4	3.5-5.5' brown silty SAND, little gravel, moist-wet
	1.5	2	4.0	0.5	0	3.1	0.2	0.0	1.3	-FILL-
5										
			5.0	0.3	0	4.5	0	0	3.7	
6			5.5	0.3	0	4.9	0	0	2.4	5.5-8.0' red-brown clayey SILT, little coarse to fine sand with bedding,
										moist
7										-LACUSTRINE-
8										
	1.8	3	8.0	0.3	0	18.4	0	0.0	4.5	8.0-9.4' brown silt and fine SAND, some clay, trace fine gravel
9										
			9.0	0.3	0	7.8	0	0	4	
10			10.0	0.3	0	3	0	0	1.8	10.0' SILT, fine to coarse SAND and GRAVEL, wet
										-TILL-
11										Refusal at 10'
12										
13										
14										Samples:
15										Sample ID: SW-TB-1-2
										Time: 1143
16										Depth: 8.0'
17										Sample ID: SW-TB-1-1 MS/MSD
										Time: 1030
18										Depth: 5.5'
19										Sample ID: SW-TB-1-1
										Time: 1030
20										Depth: 5.5'

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Test Boring No.: SW-TB-2

Project:	FAMSF Site BCP Remedial Investigation	Drill Contractor:	North Star Drilling	Start Date:	11/8/2012
Project #:	190500647.200	Driller:	S. Laramee	Completion Date:	11/8/2012
Client:	Maguire Family Properties	Elevation:	566.1	Drilling Method:	Geoprobe 6620
Location:	Gates, NY	Weather:	- -	Stantec Rep:	E. McCormick

Boring Depth (ft)	Sample Recov.	Sample No.	PID Reading Depth	Field Screening Results PID Readings in Parts Per Million (PPM) 10.6 eV PID Bkgd	10.6 eV PID Sample core	10.6 eV PID Head-space	11.7 eV PID Bkgd	11.7 eV PID Sample core	11.7 eV PID Head-space	Soil Description and Other Observations
	3.6	1	0.5	1.1	2.8		0.9	2.5		0.0-0.7' CONCRETE
1										0.7-0.9' coarse GRAVEL and fine to coarse SAND, dry -FILL-
			1.0	1.3	0	1	1.1	0	1.1	1.0-1.5' red-brown CLRAY, silt, dry
2										1.5-5.0' brown fine to medium SAND and silty CLAY, dry-moist
										at 2.2' gray mottling
3			3.0	1.3	0	1	1.1	0	1	
			3.2	1.1	1.3		0.9	1.1		
4										
	2.1	2	4.0	1.3	0	1.4	1.1	0.0	1	
5										
			5.0	1.3	0	1.3	1.1	0	1	5.0-6.1' fine-medium SAND, some silt, little-few gravel, moist
6			5.7	1.3	0	1.4	1.1	0	1.1	
										at 6.1' same with COBBLE
7										No recovery
8										
	3.1	3								8.0-11.6' fine SAND and SILT, little fine-coarse gravel, moist
9										
			9.0	1.4	0	1.4	0.9	0	1.1	at 9.3' trace gray mottling
10			9.8	1.4	0	1.3	0.9	0	1	
11										
										11.0' Gravel, fine sand, silt, some medium-coarse gravel
12			11.6	1.4	0	1.8	0.9	0	1.9	
										Refusal at 11.6'
13										
14										
15										
16										Samples:
17										Sample ID: SW-TB-2
										Time: 1506
18										Depth: 3.4' (VOCs), 4-5.5' (PCBs, Pesticides, TAL Metals, SVOCs)
19										Sample ID: DUP-2
										Time: 1506
20										Depth: 3.4' (VOCs), 4-5.5' (PCBs, Pesticides, TAL Metals, SVOCs)

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61 Commercial Street
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(585) 475-1440

Test Boring No.: 5B-TB-2

Project:	FAMSF Site BCP Remedial Investigation	Drill Contractor:	North Star Drilling	Start Date:	11/9/2012
Project #:	190500647.200	Driller:	Joe Menzel	Completion Date:	11/9/2012
Client:	Maguire Family Properties	Elevation:	566.1	Drilling Method:	Geoprobe 6620
Location:	Gates, NY	Weather:	- -	Stantec Rep:	K. Premo

Boring Depth (ft)	Sample Recov.	Sample No.	PID Reading Depth	Field Screening Results PID Readings in Parts Per Million (PPM) 10.6 eV PID Bkgd	10.6 eV PID Sample core	10.6 eV PID Head-space	11.7 eV PID Bkgd	11.7 eV PID Sample core	11.7 eV PID Head-space	Soil Description and Other Observations
	3.8	1								0.0-0.5' Concrete
1										0.5-0.9' dark brown fine to coarse SAND and fine to coarse GRAVEL
			1.0	0.3	0	0.8	0.3	0	2.6	-FILL-
2										0.9-2.0' black fine SAND and SILT
										2.0-3.0' fine SAND and SILT, some CLAY
3			2.7	0.3	0	0	0.3	0.8	0.6	
										3.0-4.0' red fine SAND and SILT, some clay, lamination
4			3.9	0.3	0	0.5	0.3	0.6	1.6	
	4.0	2								4.0-6.3' red silty CLAY, some fine sand, moist
5			4.5	0.3	0	0.7	0.3	0	0.9	
6										
			6.2	0.3	0	0.6	0.3	0	1.5	6.3-8.0' brown till, moist
7										-TILL-
8			7.5	0.3	0	0	0.3	0	0.6	
	1.0	3	8.0	0	0	1.3	0.4	0.0	3.6	at 8.0-8.9' moist-wet
9										8.9-9.0' gray coarse SAND and brown fine to coarse GRAVEL,
			9.0	0	0		0.4	0.5		fractured bedrock, wet
10										
11										
12										11.8' Top of rock
13										Refusal at 12.7'
14										
15										
16										
17										
18										Sample:
19										Sample ID: 5B-TB-2
										Time: 0925
20										Depth: 3-4'

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Test Boring No.: Other-TB-1

Project:	FAMSF Site BCP Remedial Investigation	Drill Contractor:	North Star Drilling	Start Date:	11/9/2012
Project #:	190500647.200	Driller:	Joe Menzel	Completion Date:	11/9/2012
Client:	Maguire Family Properties	Elevation:	566.1	Drilling Method:	Geoprobe 6620
Location:	Gates, NY	Weather:	- -	Stantec Rep:	K. Premo

Boring Depth (ft)	Sample Recov.	Sample No.	PID Reading Depth	Field Screening Results PID Readings in Parts Per Million (PPM) 10.6 eV PID Bkgd	10.6 eV PID Sample core	10.6 eV PID Head-space	11.7 eV PID Bkgd	11.7 eV PID Sample core	11.7 eV PID Head-space	Soil Description and Other Observations
	3.5	1								0.0-0.5' crushed CONCRETE
1			0.8	0.9	0.5	0.5	0.9	1.7	40.4	0.5-2.2' brown fine SAND and SILT, dry
2			2.0	0.9	0.5	0.5	0.9	31.2	7.6	
3										2.2-6.2' red clayey SILT
4			3.5	0.9	0	1.1	0.9	0	23.2	
	3.4	2								
5			4.6	0.9	0	0.6	0.9	0	24.8	
6			5.0	0.9	0	0.6	0.9	0	1.4	
7			6.6	0.9	0	0.8	0.9	0	38.1	6.2-7.4' brown fine SAND and SILT
8			7.0	0.6	0.5		1	1.9		at 7.0' trace coarse gravel
	4.0	3								8.4-8.9' CONCRETE with gravel
9										
10			9.0	0.9	2.1	1.5	0.9	137	127	9.0' brown fine to coarse SAND, wet
11			10.3	0.9	0	0.8	0.9	0	1.3	
12										
13	0.8	4	12.0	0.9	0	1	0.9	0		12.0-12.8' brown fine to coarse SAND, fragmented rock, moist to wet
14										Refusal at 13.3'
15										
16										Samples:
17										Sample ID: Other-TB-1-1
18										Time: 1115 Depth: 1.5-2.5'
19										Sample ID: Other-TB-1-2
20										Time: 1145 Depth: 9.0'

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Test Boring No.: 5B-TB-1

Project:	FAMSF Site BCP Remedial Investigation	Drill Contractor:	North Star Drilling	Start Date:	11/9/2012
Project #:	190500647.200	Driller:	Joe Menzel	Completion Date:	11/9/2012
Client:	Maguire Family Properties	Elevation:	566.1	Drilling Method:	Geoprobe 6620
Location:	Gates, NY	Weather:	- -	Stantec Rep:	K. Premo

Boring Depth (ft)	Sample Recov.	Sample No.	PID Reading Depth	Field Screening Results PID Readings in Parts Per Million (PPM) 10.6 eV PID Bkgd	10.6 eV PID Sample core	10.6 eV PID Head-space	11.7 eV PID Bkgd	11.7 eV PID Sample core	11.7 eV PID Head-space	Soil Description and Other Observations
	3.6	1								0.0-0.5'crushed CONCRETE
1										0.5-1.0' brown SAND, SILT and GRAVEL
			1.5	0	0	0	0.3	0	0.4	1.0-3.6' dark brown SILT, some fine sand, moist
2										
3										
			3.2	0	0	0	0.3	0	0.5	
4										
	3.5	2								4.0-7.0' red clayey SILT, some fine sand, trace gray mottling,
5										lamination
			5.0	0	0	0	0.3	0	4.7	
6										
7			6.8	0	0	0	0.3	0	25.7	
										7.0-7.95' -TILL-
8			7.9	0	0	0	0.3	0.0	11.4	
										Refusal at 7.95'
9										
10										
11										
12										
13										
14										
15										
16										Samples:
17										Sample ID: 5B-TB-1-1
										Time: 1050
18										Depth: 6.8' (VOCs only)
19										Sample ID: 5B-TB-1-2
										Time: 1055
20										Depth: 3.0-4.0'

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Test Boring No.: PS-TB-1

Project:	FAMSF Site BCP Remedial Investigation	Drill Contractor:	North Star Drilling	Start Date:	11/9/2012
Project #:	190500647.200	Driller:	Joe Menzel	Completion Date:	11/9/2012
Client:	Maguire Family Properties	Elevation:	566.1	Drilling Method:	Geoprobe 6620
Location:	Gates, NY	Weather:	- -	Stantec Rep:	K. Premo

Boring Depth (ft)	Sample Recov.	Sample No.	PID Reading Depth	Field Screening Results PID Readings in Parts Per Million (PPM) 10.6 eV PID Bkgd	10.6 eV PID Sample core	10.6 eV PID Head-space	11.7 eV PID Bkgd	11.7 eV PID Sample core	11.7 eV PID Head-space	Soil Description and Other Observations
	3.3	1								0.0-0.3' CONCRETE
1										0.3-3.3' black-dark brown fine to coarse SAND, some silt, moist
										1.5-2.0' wet to moist
2										
			2.0	0	0.6	62.3	0	0.6	49.6	
3			2.5	0	3.4		0	3.7		
										No recovery
4										
	4.0	2	4.0	0	0	45.3	0	0.0	36.3	4.0-6.0' brown fine to coarse SAND, some silt, moist
5										
			5.0	0	0	28.9	0	0	14.1	at 5.0' trace gravel
6										
			6.0	0	11.9	36.3	0	5.5	14.9	6.0' gray mottling
7			6.5	0	11.5		0	2.2		6.0-8.0' red-brown fine SAND and SILT, dry
			7.0	0	8.7	53.1	0	5.4	55.2	
8			7.5	0	3.8		0	7.9		
	3.7		8.0	0	2.2	113.2	0	1.5	72	8.0-11.7' Fine to coarse sand, some silt, little coarse gravel, moist-wet
9			8.5	0	0.3		0	1.6		-TILL-
10										
			10.0	0	0	45.6	0	0	22.4	
11										
12			11.7	0	0	8	0	0	6.1	
										Refusal at 11.8'
13										
14										
15										
16										Samples:
17										Sample ID: PS-TB-1-1
										Time: 1555
18										Depth: 8.0' (VOCs only)
19										Sample ID: PS-TB-1-2
										Time: 1600
20										Depth: 2.0-4.0'

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Test Boring No.: PS-TB-2

Project:	FAMSF Site BCP Remedial Investigation	Drill Contractor:	North Star Drilling	Start Date:	11/9/2012
Project #:	190500647.200	Driller:	Joe Menzel	Completion Date:	11/9/2012
Client:	Maguire Family Properties	Elevation:	566.1	Drilling Method:	Geoprobe 6620
Location:	Gates, NY	Weather:	- -	Stantec Rep:	K. Premo

Boring Depth (ft)	Sample Recov.	Sample No.	PID Reading Depth	Field Screening Results PID Readings in Parts Per Million (PPM) 10.6 eV PID Bkgd	10.6 eV PID Sample core	10.6 eV PID Head-space	11.7 eV PID Bkgd	11.7 eV PID Sample core	11.7 eV PID Head-space	Soil Description and Other Observations
	2.4	1								0.0-0.5' CONCRETE
1			0.7	0	0	0	0	0	0	0.5-2.4' brown fine to coarse SAND, some silt, dry
			1.0	0	0		0	0.5		
2										
3			2.5	0	0	0	0	0	0.3	
4										
	4.0	2	4.0	0	0	0	0	0.0	0.1	4.0-4.5' brown fine to coarse SAND, some silt, gray mottles, dry
5										-LACUSTINE-
			5.0	0	0	0	0	0	0.2	4.5-8.0' Red-brown clayey silt, gray mottling, lacustrine lamination, dry
6										-LACUSTRINE-
7										
			7.2	0	0	0	0	0	0.1	
8										
	0.7	3	8.0	0	0	0.2	0	0.0	0.2	8.0-8.7' brown coarse SAND, some silt, few medium to coarse gravel,
9										moist
										-TILL-
10										Refusal at 8.7'
11										
12										
13										
14										
15										
16										
17										
18										Sample:
19										Sample ID: PS-TB-2
										Time: 1640
20										Depth: 2.0-4.0'

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61 Commercial Street
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(585) 475-1440

Test Boring No.: 7-TB-1

Project:	FAMSF Site BCP Remedial Investigation	Drill Contractor:	North Star Drilling	Start Date:	11/9/2012
Project #:	190500647.200	Driller:	J. Menzel	Completion Date:	11/9/2012
Client:	Maguire Family Properties	Elevation:	566.1	Drilling Method:	Geoprobe 6620
Location:	Gates, NY	Weather:	- -	Stantec Rep:	K. Premo

Boring Depth (ft)	Sample Recov.	Sample No.	PID Reading Depth	Field Screening Results PID Readings in Parts Per Million (PPM) 10.6 eV PID Bkgd	10.6 eV PID Sample core	10.6 eV PID Head-space	11.7 eV PID Bkgd	11.7 eV PID Sample core	11.7 eV PID Head-space	Soil Description and Other Observations
1	4.0	1								0.0-0.7' CONCRETE/GRAVEL
										0.7-3.5' dark brown fine to medium SAND and SILT
2			1.1	0.8	0	0.7	0.7	0	0.5	-FORMER TOPSOIL-
3			2.5	0.8	0	0.5	0.7	0	0.4	
4										3.5-4.0' red-brown coarse to fine grained sandy SILT
5	4.0	2	4.0	0.8	0	0.4	0.7	0.0	2	4.0-8.0' red-brown coarse to fine grained sandy silt, trace gravel
6			5.0	0.8	0	0.4	0.7	0	0.6	
7			6.8	0.8	0	0.5	0.7	0	1.1	
8										
9	3.0	3	8.0	0.8	0	0.4	0.7	0.0	6.2	8.0-10.7' red-brown clayey SILT
										-LACUSTRINE-
10			9.0	0.8	0	0.5	0.7	0	3.6	
11			10.7	0.8	0	3.3	0.7	0	3.4	10.7-11.0' brown fine grained sand
12										11.0 fragmented rock
13										12.0-13.7' weathered bedrock
14			13.7	0.8	0	1.9	0.7	0	15.1	
15										Refusal at 13.7'
16										Samples:
17										Sample ID: 7-TB-1-1
										Time: 1245
18										Depth: 2.0-3.0'
19										Sample ID: 7-TB-1-2
										Time: 1240
20										Depth: 13.7' (VOCs only)

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Test Boring No.: 7-TB-2

Project:	FAMSF Site BCP Remedial Investigation	Drill Contractor:	North Star Drilling	Start Date:	11/9/2012
Project #:	190500647.200	Driller:	J. Menzel	Completion Date:	11/9/2012
Client:	Maguire Family Properties	Elevation:	566.1	Drilling Method:	Geoprobe 6620
Location:	Gates, NY	Weather:	- -	Stantec Rep:	K. Premo

Boring Depth (ft)	Sample Recov.	Sample No.	PID Reading Depth	Field Screening Results PID Readings in Parts Per Million (PPM) 10.6 eV PID Bkgd	10.6 eV PID Sample core	10.6 eV PID Head-space	11.7 eV PID Bkgd	11.7 eV PID Sample core	11.7 eV PID Head-space	Soil Description and Other Observations
	3.4	1						3.4	1	0.0-0.5' crushed CONCRETE
1										0.5-3.4' dark brown fine to coarse SAND and SILT, moist
			1.0	0.9	0	0.7	1.1	0.0.	0.7	
2										
			2.0	0.9	0	0.4	1.1	0	0.5	
3										
			3.4	0.9	0	0.6	1.1	0	0.6	
4										
	3.5	2						3.5	2	4.0-6.5' red-brown fine SAND and SILT, trace gray mottling, moist
5										
			5.0	0.9	0	0.4	1.1	0	0.5	
6										
			6.4	0.9	0	0.6	1.1	0	0.6	
7										6.5-7.5' red-brown clayey SILT, trace gravel, moist
										-LACUTRINE (?)-
8			7.5	0.9	0	1.2	1.1	0	0.7	
	1.4	3						1.4	3	8.0-9.0' brown fine to coarse SAND and SILT, wet
9										
			9.0	1	1.1		0.9	1.7		9.0-11.7' brown fine to coarse SAND, some coarse gravel, wet
10			9.8	0.9	0	1.9	1.1	0	1.9	
11										
12			11.7	0.9	0	1.1	1.1	0	0.6	
13										Refusal at 11.7'
14										
15										
16										
17										
18										Sample:
19										Sample ID: 7-TB-2
20										Time: 1415 Depth: 2.0-4.0'

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61 Commercial Street
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Test Boring No.: SPW-TB2

Project:	FAMSF Site BCP Remedial Investigation	Contractor:	Northstar/ GeoLogic	Start Date:	5/8/2013
Project #:	190500647	Driller:	S.Breeds	Compl. Date:	5/8/2013
Client:	Maguire Family Properties	Elevation:	566.1	Drilling Method:	Split Spoon
Location:	Gates, NY	Weather:	Indoors	Stantec Rep:	K. Premo

Boring Depth (ft)	Sample Recov.	Sample No.	PID Reading Depth	Field Screening Results PID Readings in Parts Per Million (PPM) 10.6 eV PID Bkgd	10.6 eV PID Sample core	10.6 eV PID Head-space	11.7 eV PID Bkgd	11.7 eV PID Sample core	11.7 eV PID Head-space	Soil Description and Other Observations
0-0.4										CONCRETE- previously removed
1	1.1	1		0.4	0.4					0.5-1.5' brown fine to medium SAND, moist
			1.5	0.4	0.4	1.0	0.1	0.3	5.9	1.5-5.0' red-brown CLAY and SILT, some fine sand, dry moist with trace gray mottles at 4'
2										
	0.6	2		0.3	0.3		0.1	0.1		
3			2.5	0.3	0.3	1.0	0.1	0.1	2.2	
4										
	1.0	3		0.3	0.3		0.1	0.1		
5			4.5	0.3	0.3	0.6	0.2	0.4	0.7	
6										
	1.2	4		0.4	0.4		0.1	0.1		6.0-10.2' red CLAY with gray-brown mottles, some silt, trace fine gravel
7			6.4	0.4	0.4	1.6	0.1	0.1	0.9	
			7.2	0.4	0.4	0.9	0.1	0.1	8.3	
8										
	0.5	5	8.0	0.4	0.4	0.4	0.4	0.4	16.1	
9										
10										
	1.0	6								10.2-11.0' brown fine to coarse SAND, some fine to coarse gravel, wet fragmented sandstone at bottom
11			11.0	0.1	0.1	0.1	0.2	0.2	2.6	
										Refusal at 11.0'
12										
13										
14										

Lab Sample ID and time:
SPW-TB2-S-1 at 1450 at 8-8.5'

Analytes:
TCL VOCs +TICs, TCL SVOCs + TICs and PPL Metals + Al

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Test Boring No.: AOC11-TB1

Project:	FAMSF Site BCP Remedial Investigation	Contractor:	Northstar/ GeoLogic	Start Date:	5/3/2013
Project #:	190500647	Driller:	S.Breeds	Compl. Date:	5/3/2013
Client:	Maguire Family Properties	Elevation:	561.4	Drilling Method:	Split Spoon
Location:	Gates, NY	Weather:	60s, sunny	Stantec Rep:	K. Premo

Boring Depth (ft)	Sample Recov.	Sample No.	PID Reading Depth	Field Screening Results PID Readings in Parts Per Million (PPM) 10.6 eV PID Bkgd	10.6 eV PID Sample core	10.6 eV PID Head-space	11.7 eV PID Bkgd	11.7 eV PID Sample core	11.7 eV PID Head-space	Soil Description and Other Observations
	0.9	1								0.0-0.3' -TOP SOIL- with trace gravel and wood
										0.3-0.9' red-brown fine SAND and SILT, dry-moist
1			1.0	0.1	0.1	0.1	0.1	0.1	0.1	
2										
	1.8	2	2.0	0.0	0.0	0.1	0.0	0.0	0.0	2.0-6.0' red CLAY, some silt wit gray mottles, dry
3										
4			4.0	0.0	0.0	0.2	0.0	0.0	0.0	
	2.0	3								
			4.5	0.0	0.0	0.2	0.0	0.0	98.5	
5										
			5.5	0.0	0.0	0.2	0.0	0.0	22.5	
6										
	1.5	4	6.0	0.0	0.0	0.2	0.0	0.0	8.7	6.0-6.3' brown-gold coarse SAND and fine GRAVEL
										6.3-6.5 red CLAY with gray mottles, dry
7										-LACUSTRINE-
										6.5-8.8' brown fine to coarse SAND, some SILT, little GRAVEL, wet
			7.4	0.0	0.0	0.2	0.0	0.0	8.7	weathered bedroack and wet at 8'
8										
	0.3	5	8.0	0.0	0.0	0.3	0.0	0.0	1.4	
9										Refusal at 8.8'
10										
11										
12										
13										
14										

Lab Sample ID and time:

AOC11-TB1-SS-1 at 0930 at 0.1-2'

AOC11-TB1-S-1 0940 at 6.5-7.5'

Analytes:

TCL SVOCs + TICs, Pesticides, PCBs and TAL Metals

TCL VOCs +TICs, TCL SVOCs + TICs, Pesticides, PCBs and TAL Metals

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Test Boring No.: AOC11-TB2

Project:	FAMSF Site BCP Remedial Investigation	Contractor:	Northstar/ GeoLogic	Start Date:	5/1/2013
Project #:	190500647	Driller:	S.Breeds	Compl. Date:	5/1/2013
Client:	Maguire Family Properties	Elevation:	563.7	Drilling Method:	Split Spoon
Location:	Gates, NY	Weather:	warm, sunny	Stantec Rep:	K. Premo

Boring Depth (ft)	Sample Recov.	Sample No.	PID Reading Depth	Field Screening Results PID Readings in Parts Per Million (PPM) 10.6 eV PID Bkgd	10.6 eV PID Sample core	10.6 eV PID Head-space	11.7 eV PID Bkgd	11.7 eV PID Sample core	11.7 eV PID Head-space	Soil Description and Other Observations
	1.2	1		0.0	0.0		0.0	0.0		0.0-1.0' dark brown fine SAND and SILT, roots - TOP SOIL-
1			1.0	0.0	0.0	0.1	0.0	0.0	0.0	
										1-4' red CLAY, dry
2										
	0.5	2	2.0	0.0	0.0	0.2	0.0	0.0	0.0	
3										
4			4.0	0.0	0.1	0.3	0.0	0.0	0.0	
			4.2	0.0	0.0	0.4	0.0	0.0	0.0	4.0-4.8' brown SILT, little fine SAND, moist-wet
5			5.0	0.0	0.0	0.2	0.0	0.0	0.0	4.8-5' brown fine SAND and SILT, moist-wet
										Refusal at 5.3'
6										
7										
8										
9										
10										
11										
12										
13										
14										

Lab Sample ID and time:

AOC11-TB2-SS-1 at 1520 at 0.1-1'

AOC11-TB2-S-1 1530 at 4-5'

Analytes:

TCL SVOCs + TICs, Pesticides, PCBs and TAL Metals

TCL VOCs +TICs, TCL SVOCs + TICs, Pesticides, PCBs and TAL Metals

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Test Boring No.: AOC11-TB3

Project:	FAMSF Site BCP Remedial Investigation	Contractor:	Northstar/ GeoLogic	Start Date:	5/3/2013
Project #:	190500647	Driller:	S.Breeds	Compl. Date:	5/3/2013
Client:	Maguire Family Properties	Elevation:	567.0	Drilling Method:	Split Spoon
Location:	Gates, NY	Weather:	70s	Stantec Rep:	K. Premo

Boring Depth (ft)	Sample Recov.	Sample No.	PID Reading Depth	Field Screening Results PID Readings in Parts Per Million (PPM) 10.6 eV PID Bkgd	10.6 eV PID Sample core	10.6 eV PID Head-space	11.7 eV PID Bkgd	11.7 eV PID Sample core	11.7 eV PID Head-space	Soil Description and Other Observations
	1.3	1	0.5	0.0	0.0	0.2	0.0	0.0	0.0	0.0-1.3' brown-light brown fine SAND and SILT, roots -TOP SOIL-
1										
			1.2	0.0	0.0	0.2	0.0	0.0	0.0	
2										
	1.1	2	2.2	0.0	0.0	0.2	0.0	0.0	0.0	2.0-3.0' brown fine SAND and SILT, dry
3			3.0	0.1	0.0	0.2	0.0	0.0	0.0	
										3.0-3.1' red-brown fine SAND and SILT, some clay, dry
4										
	1.4	3		0.0	0.0		0.0	0.0		4.0-4.8' red-brown CLAY, some silt with trace gray mottles
5			4.5	0.0	0..1	0.3	0.0	0.0	0.0	4.8-5.4' red-brown fine SAND and SILT, some clay, gray mottles
6										
	2.0	4	6.0	0.1	0.0	0.2	0.0	0.0	0.0	6.0-8.4' brown fine SAND, some silt, little fine to medium gravel gray mottles, moist
7										
			7.7	0.1	0.0	0.2	0.0	0.0	0.0	
8										
	2.0	5	8.0	0.1	0.0	0.4	0.0	0.0	0.0	
9										8.4-12.9' red CLAY with gray mottles, few medium gravel, dry layer of fine sand at 10.4' moist at 11.8'
			9.5	0.1	0.0	0.2	0.0	0.0	0.0	
10										
	2	6	10.0	0.1	0.0	0.2	0.0	0.0	0.0	
11										
			11.5	0.1	0.0	0.1	0.0	0.0	0.0	
12										
	2	7	12.0	0.1	0.0	0.3	0.0	0.0	0.0	
13										12.9-14.0' brown fine to coarse SAND, little fine to medium gravel, wet weathered bedrock at 14'
14			13.8	0.1	0.0	0.3	0.0	0.0	0.0	
										Refusal at 14.0'

Lab Sample ID and time:
AOC11-TB3-SS-1 at 1030 at 0.1-2'

AOC11-TB3-S-1 at 1050 at 12-14'
MW-DUP-S-1 at 1100 at 12-14'

Analytes:
TCL SVOCs + TICs, Pesticides, PCBs and TAL Metals

TCL VOCs +TICs, TCL SVOCs + TICs, Pesticides, PCBs and TAL Metals
TCL VOCs +TICs, TCL SVOCs + TICs, Pesticides, PCBs and TAL Metals

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Test Boring No.: AMSF-MW-20

Project:	FAMSF Site BCP Remedial Investigation	Contractor:	Northstar/ GeoLogic	Start Date:	4/29/2013
Project #:	190500647	Driller:	S.Breeds	Compl. Date:	4/29/2013
Client:	Maguire Family Properties	Elevation:	566.1	Drilling Method:	Split Spoon
Location:	Gates, NY	Weather:	Indoors	Stantec Rep:	K. Premo

Boring Depth (ft)	Sample Recov.	Sample No.	PID Reading Depth	Field Screening Results PID Readings in Parts Per Million (PPM) 10.6 eV PID Bkgd	10.6 eV PID Sample core	10.6 eV PID Head-space	11.7 eV PID Bkgd	11.7 eV PID Sample core	11.7 eV PID Head-space	Soil Description and Other Observations
0-0.5										CONCRETE - previously removed
1	1.4	1	1.0	0.6	0.6	6.3	0.7	0.7	11.9	0.5-1.9' red CLAY, little silt, dry-moist
				0.6	0.6		0.7	0.7		
2			1.7	0.6	2.0	10.5	0.7	1.3	5.6	
3	1.9	2	3.0	0.6	0.6	1.6	0.8	0.5	0.8	2.0-4.9' red CLAY and SILT, dry-moist at 3.4' thin layer of gray fine SAND and SILT, dry-moist
			3.2	0.6	1.0	8.1	0.8	2.4	32.0	
4			4.0	0.6	1.0	4.1	0.8	2.4	5.8	
5	1.9	3	5.0	1.0	1.0	8.9	0.7	0.7	9.9	4.9-6.4' brown fine SAND, some silt, moist-wet
6			5.9	1.0	1.5	15.7	0.7	2.2	22.7	
7	1.9	4	6.9	1.0	1.0	16.7	0.7	0.7	98.3	6.4-6.7' dark brown fine SAND, some silt, lamination, moist 6.7-7.9' red-brown fine SAND and SILT, some clay, moist wet at 7.5'
8			8.0	1.0	2.0	30.6	0.7	3.2	33.6	
9	1.7	5	8.2	1.0	2.3	43.3	0.7	14.5	43.1	8-8.8' brown fine to medium SAND, little silt and clay, wet
				1.0	2.0		0.7	1.7		8.8-9' red CLAY -LACUSTRIEN -
10			10.0	1.0	1.7		0.7	2.6		9-10.3' brown-gray fine to coarse SAND and fine to coarse GRAVEL, moist-wet, fragemented bedrock
	0.3	6		1.0	1.3	76.7	0.7	4.2	59.0	
11						69.7			53.6	Refusal at 10.3'
12										
13										
14										

Lab Sample ID and time:
MW-20-S-1 at 1115 at 6.9-7' BGS

MW-20-S-2 at 1120 at 10-10.3' BGS

Analytes:
TCL VOCs + TICs

TCl VOCs +TICs

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Test Boring No.: AMSF-MW-21

Project:	FAMSF Site BCP Remedial Investigation	Contractor:	Northstar/ GeoLogic	Start Date:	4/17/2013
Project #:	190500647	Driller:	S.Breeds	Compl. Date:	4/172013
Client:	Maguire Family Properties	Elevation:	566.1	Drilling Method:	Split Spoon
Location:	Gates, NY	Weather:	Indoors	Stantec Rep:	K. Premo

Boring Depth (ft)	Sample Recov.	Sample No.	PID Reading Depth	Field Screening Results PID Readings in Parts Per Million (PPM) 10.6 eV PID Bkgd	10.6 eV PID Sample core	10.6 eV PID Head-space	11.7 eV PID Bkgd	11.7 eV PID Sample core	11.7 eV PID Head-space	Soil Description and Other Observations
0-0.4										CONCRETE - previously removed
1	1.0	1	1.0	0.9	0.9	20.2	1.2	1.2	222.0	0.5-1.0' fragmented CONCRETE 1.0-3.6' brown-tan fine to medium SAND, some silt, moist
2										
3	1.6	2	2.5	1.0 0.6	1.0 0.6	18.4	0.9 1.0	0.9 1.0	263.8	
4			3.6	0.9	0.9	0.9	1.0	1.0	20.5	mottles at 3.5'
5	1.6	3	4.0 4.6	0.5 0.5	0.5 0.5	0.9 0.5	1.8 1.8	4.7 4.7	33.7 5.6	4.0-5.0' red SILT and CLAY -LACUSTRINE-
6			5.6	0.4	0.4		1.3	4.7		5.0-6.3' brown fine to coarse SAND, little fine to medium gravel, moist fragmented rock at 6.3'
7	0.3	4	6.2 6.3	0.4 0.6 0.5	0.4 0.6 0.5	0.7 0.6	1.5 1.5 2.2	1.5 1.5 2.2	14.8 16.9	No recovery
8										sandstone cobble at 8.0'
9										Refusal at 8.0'
10										
11										
12										
13										
14										

Lab Sample ID and time:
MW-21-S-1 at 1240 at 2.5'

Analytes:
TCL VOCs + TICs

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Test Boring No.: AMSF-MW-22

Project:	FAMSF Site BCP Remedial Investigation	Contractor:	Northstar/ GeoLogic	Start Date:	4/22/2013
Project #:	190500647	Driller:	S.Breeds	Compl. Date:	4/22/2013
Client:	Maguire Family Properties	Elevation:	566.1	Drilling Method:	Split Spoon
Location:	Gates, NY	Weather:	Indoors	Stantec Rep:	K. Premo

Boring Depth (ft)	Sample Recov.	Sample No.	PID Reading Depth	Field Screening Results PID Readings in Parts Per Million (PPM) 10.6 eV PID Bkgd	10.6 eV PID Sample core	10.6 eV PID Head-space	11.7 eV PID Bkgd	11.7 eV PID Sample core	11.7 eV PID Head-space	Soil Description and Other Observations
0-0.5										CONCRETE - previously removed
1	1.0	1	1.0	0.6 1.0	0.6 0.6	1.2	0.8 1.2	0.8 0.8	52.5	0.5-1' dark brown-brown fine SAND and SILT, moist
2										1.0-3.5' red CLAY, some silt, dry
3	0.5	2	2.5	0.6	0.6	1.2	0.8	0.8	5.4	
4										
5	1.5	3	4.0	1.3	1.3	2.5	1.4	1.4	1.7	4.0-4.3' light brown fine SAND and SILT, moist
				1.3	1.3		1.4	1..4		4.3-5.1' brown fine SAND and SILT, moist
6			5.5	1.4	1.4	1.7	1.5	1.5	2.8	5.1-7.3' red CLAY -LACUSTRINE-
7	1.4	4	6.0 7.0	1.2 1.5	1.2 1.5	1.8 1.9	1.3 1.5	1.3 1.5	2.8 151.0	
8										7.3-8.4' brown fine to coarse SAND, some coarse gravel, moist
9	0.4	5	8.0	1.3	1.3	2.9	1.4	1.5	45.7	
10										Refusal at 8.8'
11										
12										
13										
14										

Lab Sample ID and time:
MW-22-S-1

Analytes:
TCL VOCs + TICs

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Test Boring No.: AMSF-MW-23

Project:	FAMSF Site BCP Remedial Investigation	Contractor:	Northstar/ GeoLogic	Start Date:	4/24/2013
Project #:	190500647	Driller:	S.Breeds	Compl. Date:	4/24/2013
Client:	Maguire Family Properties	Elevation:	566.1	Drilling Method:	Split Spoon
Location:	Gates, NY	Weather:	Indoors	Stantec Rep:	K. Premo

Boring Depth (ft)	Sample Recov.	Sample No.	PID Reading Depth	Field Screening Results PID Readings in Parts Per Million (PPM) 10.6 eV PID Bkgd	10.6 eV PID Sample core	10.6 eV PID Head-space	11.7 eV PID Bkgd	11.7 eV PID Sample core	11.7 eV PID Head-space	Soil Description and Other Observations
0-0.5										CONCRETE- previously removed
1	0.7	1		0.7	0.8		0.3	0.3		0.5-0.9' SAND and crushed CONCRETE
										0.9-2.5' red CLAY, some silt, dry
			1.2	0.7	0.8	1.4	0.3	0.3	0.4	
2										
	1.6	2		0.7	0.7		0.4	0.4		
			2.5	1.1	1.1	1.6	0.6	0.6	27.0	
3										2.5-5.1' brown fine SAND, some silt, dry-moist
										wet at 4.8'
			3.6	1.1	1.1	1.4	0.6	0.6	0.7	
4										
	1.1	3		0.8	0.8		0.4	0.4		
			4.2	0.8	0.8	0.6	0.4	0.4	8.3	
5			5.1	0.8	0.8		0.4	0.4		
										No recovery
6										
	0.5	4								6.0-9.0' brown fine SAND, some silt, little fine to coarse gravel
										weathered bedrock at bottom at 9.0'
7			6.5	0.8	0.8	1.4	0.4	0.4	1.2	
8										
9			8.0	0.8	0.8	1.6	0.4	0.4	1.5	
10			9.9	0.8	0.8	1.9	0.4	0.4	2.0	
11										Refusal at 9.9'
12										
13										
14										

Lab Sample ID and time:
MW-23-S-1 at 0950 at 2.5'

Analytes:
TCL VOCs +TICs

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Test Boring No.: AMSF-MW-25

Project:	FAMSF Site BCP Remedial Investigation	Contractor:	Northstar/ GeoLogic	Start Date:	4/23/2013
Project #:	190500647	Driller:	S.Breeds	Compl. Date:	4/23/2013
Client:	Maguire Family Properties	Elevation:	566.1	Drilling Method:	Split Spoon
Location:	Gates, NY	Weather:	Indoors	Stantec Rep:	K. Premo

Boring Depth (ft)	Sample Recov.	Sample No.	PID Reading Depth	Field Screening Results PID Readings in Parts Per Million (PPM) 10.6 eV PID Bkgd	10.6 eV PID Sample core	10.6 eV PID Head-space	11.7 eV PID Bkgd	11.7 eV PID Sample core	11.7 eV PID Head-space	Soil Description and Other Observations
0-0.5										CONCRETE - previously removed
1	0.2	1								0.5-1.5' CONCRETE
2			2.0	1.6	1.6	1.5	1.3	1.2	0.9	at 2' brown fine SAND and SILT, trace medium gravel, moist
3	1.4	2	2.2	1.0 1.9	1.0 1.9	2.0	0.9 1.3	0.9 1.3	1.4	2.0-5.4' red CLAY with gray mottles, dry -LACUSTRINE-
4			3.0	1.7	1.7	2.2	1.3	1.3	1.2	
5	1.6	3	4.4	1.2 1.6	1.2 1.6	1.9	1.5 1.5	1.5 1.5	1.3	
6			5.5	1.6	1.6	1.9	1.5	1.5	34.5	5.4-5.6' brown fine SAND, some silt, moist
7	1.8	4	6.3	1.5 1.5	1.5 1.5	3.3	1.4 1.6	1.4 1.6	16.7	6-6.4' brown fine SAND and SILT, moist
8			7.0	1.6	1.6	2.1	1.5	1.5	8.5	6.4-9.9' red CLAY with brown/black/yellow/gray redox features at 8.1' layer of fine SAND
9	1.9	5	7.9	1.7	1.7	3.5	1.6	1.6	5.9	
10			8.4	1.7	1.7	4.5	1.6	1.6	14.2	
11			9.8	1.7	1.7	4.2	1.6	1.6	24.5	
			10.0	1.7	1.7	3.4	1.6	1.6	13.5	10.0-10.5' brown fine to coarse SAND, some fine to medium GRAVEL and weathered bedrock
			10.5	1.8	1.8	4.3	1.6	1.6	53.1	
12										Refusal at 10.5'
13										
14										

Lab Sample ID and time:
MW-25-S-1 at 1020 at 9.5-10.5'

MW-25-S-2 at 1040 at 7-8'

Analytes:
TCL VOCs +TICs, TCL SVOCs +TICs and PCBs

TCL VOCs + TICs, TCl SVOCs +TICs and PCBs

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Test Boring No.: AMSF-MW-26

Project:	FAMSF Site BCP Remedial Investigation	Contractor:	Northstar/ GeoLogic	Start Date:	5/1/2013
Project #:	190500647	Driller:	S.Breeds	Compl. Date:	5/1/2013
Client:	Maguire Family Properties	Elevation:	566.1	Drilling Method:	Split Spoon
Location:	Gates, NY	Weather:	Indoors	Stantec Rep:	K. Premo

Boring Depth (ft)	Sample Recov.	Sample No.	PID Reading Depth	Field Screening Results PID Readings in Parts Per Million (PPM) 10.6 eV PID Bkgd	10.6 eV PID Sample core	10.6 eV PID Head-space	11.7 eV PID Bkgd	11.7 eV PID Sample core	11.7 eV PID Head-space	Soil Description and Other Observations
0-0.5										CONCRETE - previously removed
1	1.2	1	1.5	0.1	0.7	5.7	0.4	0.8	12.3	0.5-1.0' red-brown SILT, some clay, little fine sand, dry-moist
2			1.7	0.1	0.8		0.4	0.9		1.0-2.4' brown-black fine SAND and SILT, dry-moist
3	1.4	2	2.7	0.4	1.1	3.4	0.6	1.2	9.7	2.4-3.0' crushed CONCRETE -FILL-
4			4.0	2.5		6.1	1.5		34.8	3.0-4.5' dark brown-black fine SAND, SILT and CLAY, dry-moist
5	1.7	3	4.5	3.4		5.8	1.6		8.9	4.5-9.0' red CLAY, some silt with dark gray-black mottles, dry-moist
6			6..0	3.4	4.1	4.7	1.6	2.0	2.3	
7	1.6	4	7.0	2.9	4.0	4.9	1.5	2.0	57.1	
8			8.0	2.2	2.2	2.5	1.5	1.5	162.3	
9	1.0	5	8.4 9.0	1.8 1.8 1.8	1.8 1.8 1.8	 2.6 3.2	1.1 1.1 1.1	1.1 1.1 1.1	 135.2 20.4	
10										at 9.0' weathered bedrock
11										Resual at 10.0'
12										
13										
14										

Lab Sample ID and time:
MW-26-S-1 at 1005 at 8-8.4'

Analytes:
TCL VOCs +TICs and PPL Metals + Al

61 Commercial Street
Rochester, NY 14614
(585) 475-1440

Test Boring No.: AMSF-MW-27

Project:	FAMSF Site BCP Remedial Investigation	Contractor:	Northstar/ GeoLogic	Start Date:	5/7/2013
Project #:	190500647	Driller:	S.Breeds	Compl. Date:	5/7/2013
Client:	Maguire Family Properties	Elevation:	566.1	Drilling Method:	Split Spoon
Location:	Gates, NY	Weather:	Indoors	Stantec Rep:	K. Premo

Boring Depth (ft)	Sample Recov.	Sample No.	PID Reading Depth	Field Screening Results PID Readings in Parts Per Million (PPM) 10.6 eV PID Bkgd	10.6 eV PID Sample core	10.6 eV PID Head-space	11.7 eV PID Bkgd	11.7 eV PID Sample core	11.7 eV PID Head-space	Soil Description and Other Observations
0-0.5										CONCRETE - previously removed
1	1.2	1								0.5-0.6' crushed CONCRETE
			1.5	1.1	1.4	1.8	0.6	1.0	4.3	0.6-2.3' brown fine to medium SAND, little silt, dry
2										
	1.2	2	2.3	0.7	1.1	2.0	0.7	0.7	16.4	
3										2.3-4.5' red-brown CLAY and SILT, dry, gray mottles at 2.8' dark gray-black, no mottles
			3.1	0.7	1.1	2.9	0.7	0.9	21.4	
4										
	1.7	3								
5			4.5	0.7	0.7	3.4	0.7	0.7	7.3	4.5-9.8' red-brown CLAY, trace gravel and gray-dark brown mottles at 7.7' gray/black/green stain
			5.3	0.7	0.7	3.4	0.7	0.7	15.1	
6										
	1.7	4								
7			6.7	0.7	0.7	3.6	0.7	0.7	4.5	
			7.7	0.7	0.7	1.8	0.7	0.7	53.6	
8										
	1.8	5								
9			8.5	1.4	1.4	2.7	0.8	0.8	27.9	
10			10.0	1.4	1.4	2.5	0.8	0.8	1.6	
	0.8	6								10.0-10.7' red CLAY, dry
11			10.8	1.4	1.4	3.3	0.8	0.8	1.8	10.7-10.8' brown fine to coarse SAND and weathered bedrock, moist-wet
12										
13										
14										

Lab Sample ID and time:
MW-27-S-1 at 1000 at 7.5-7.7'

Analytes:
TCL VOCs +TICs, TCL SVOCs + TICs and PPL Metals + Al

Stantec

61 Commercial Street
Rochester, NY 14614
(585) 475-1440

Test Boring No.: AMSF-MW-28

Project:	FAMSF Site BCP Remedial Investigation	Contractor:	Northstar/ GeoLogic	Start Date:	5/1/2013
Project #:	190500647	Driller:	S.Breeds	Compl. Date:	5/1/2013
Client:	Maguire Family Properties	Elevation:	563.7	Drilling Method:	Split Spoon
Location:	Gates, NY	Weather:	70s, sunny	Stantec Rep:	K. Premo

Boring Depth (ft)	Sample Recov.	Sample No.	PID Reading Depth	Field Screening Results PID Readings in Parts Per Million (PPM)						Soil Description and Other Observations
				10.6 eV PID			11.7 eV PID			
				Bkgd	Sample core	Head-space	Bkgd	Sample core	Head-space	
	1.2	1		0.0	0.0		0.0	0.0		0.0-0.9' brown fine SAND and SILT -TOP SOIL-
1			1.0	0.0	0.0	0.2	0.0	0.0	0.0	0.9-2.8' red CLAY, some silt, dry
2										
	1.7	2	2.0	0.0	0.0	0.3	0.0	0.0	0.0	
3										2.8-4.9' brown fine SAND and SILT, moist weathered bedrock at 4.9'
4			3.5	0.0	0.0	0.3	0.0	0.0	0.0	
	0.9	3								
5			4.9	0.0	0.0	0.1	0.0	0.0	0.0	
6										Refusalt at 4.9'
7										
8										
9										
10										
11										
12										
13										
14										

Lab Sample ID and time:
MW-28-S-1 at 1610 at 3.5-4.9'

Analytes:
TCL VOCs +TICs, TCL SVOCs + TICs, Pesticides, PCBs and TAL Metals

Stantec

61 Commercial Street
Rochester, NY 14614
(585) 475-1440

Test Boring No.: AMSF-MW-29

Project:	FAMSF Site BCP Remedial Investigation	Contractor:	Northstar/ GeoLogic	Start Date:	5/16/2013
Project #:	190500647	Driller:	S.Breeds	Compl. Date:	5/16/2013
Client:	Maguire Family Properties	Elevation:	567.8	Drilling Method:	Split Spoon
Location:	Gates, NY	Weather:	70s, sunny	Stantec Rep:	K. Premo

Boring Depth (ft)	Sample Recov.	Sample No.	PID Reading Depth	Field Screening Results PID Readings in Parts Per Million (PPM) 10.6 eV PID Bkgd	10.6 eV PID Sample core	10.6 eV PID Head-space	11.7 eV PID Bkgd	11.7 eV PID Sample core	11.7 eV PID Head-space	Soil Description and Other Observations
	1.4	1		0.0	0.0		0.0	0.0		0.0-1.4' brown fine SAND and SILT with roots, dry
1			1	0.0	0.0	0.0	0.0	0.0	0.0	
2										
	0.9	2		0.0	0.0		0.0	0.0		
3			2.4	0.0	0.0	0.0	0.0	0.0	0.0	2.0-5.9' red-brown fine SAND and SILT, some clay, dry moist-wet at 2.5' little gravel at 4'
4										
	1.9	3		0.0	0.0		0.0	0.0		
5			4.5	0.0	0.0	0.1	0.0	0.0	0.0	
6			5.9	0.0	0.0	0.1	0.0	0.0	0.0	
	1.2	4		0.0	0.0		0.0	0.0		6.0-7.2' red CLAY and SILT, some fine sand, little gravel, gray mottles and orange-brown redox features, moist
7			6.7	0.0	0.0	0.1	0.0	0.0	0.0	
8										
	1.8	5		0.0	0.0		0.0	0.0		8.0-9.0' red fine SAND and SILT, gray mottles, moist-wet
9			8.5	0.0	0.0	0.1	0.0	0.0	0.0	
										9.0-10.4' red CLAY, some silt, little fine to coarse gravel, gray mottles, dry
10			9.8	0.0	0.0	0.1	0.0	0.0	0.0	
	1.3	6								
11			10.9	0.0	0.0	0.1	0.0	0.0	0.0	10.4-12.4' red CLAY, some silt, gray mottles, dry -LAUCUSTRINE-
12										
	0.8	7								
13			12.7	0.0	0.0	0.1	0.0	0.0	0.0	12.4-12.8' fine to coarse SAND with weathered bedrock, moist-wet
										Refusal at 12.8'
14										

Lab Sample ID and time:
MW-29-S-1 (MS/MSD) at 0900 at 9.8-12.8'

Analytes:
TCL VOCs +TICs, TCL SVOCs + TICs, Pesticides, PCBs and TAL Metals

Stantec

61 Commercial Street
Rochester, NY 14614
(585) 475-1440

Test Boring No.: AMSF-MW-30

Project:	FAMSF Site BCP Remedial Investigation	Contractor:	Northstar/ GeoLogic	Start Date:	5/14/2013
Project #:	190500647	Driller:	S.Breeds	Compl. Date:	5/14/2013
Client:	Maguire Family Properties	Elevation:	572.9	Drilling Method:	Split Spoon
Location:	Gates, NY	Weather:	40s, sunny	Stantec Rep:	K. Premo

Boring Depth (ft)	Sample Recov.	Sample No.	PID Reading Depth	Field Screening Results PID Readings in Parts Per Million (PPM) 10.6 eV PID Bkgd	10.6 eV PID Sample core	10.6 eV PID Head-space	11.7 eV PID Bkgd	11.7 eV PID Sample core	11.7 eV PID Head-space	Soil Description and Other Observations
0-0.4										ASPHALT - augured through
1	0.9	1	1.0	0.0 0.1	0.0 0.1	0.6	0.0 0.0	0.0 0.0	0.0	0.5-0.7' ASPHALT 0.7-2.4' dark brown fine SAND and SILT, dry-moist
2										tan at 2.0'
3	1.4	2	2.5	0.1	0.1	0.0	0.0	0.0	0.0	2.4-4.8' red-brown fine SAND and SILT, little medium to coarse sand trace coarse gravel dry-moist
4			3.4	0.1	0.1	0.0	0.0	0.0	0.0	wet at 4.0'
5	1.1	3	4.5 5.0	0.0 0.0	0.0 0.0	0.2 0.2	0.0 0.0	0.0 0.0	0.0 0.0	4.8-6.8' brown SILT, some fine sand and clay, few medium gravel, moist
6										gray mottles at 6'
7	1.6	4	6.5	0.1	0.0	0.2	0.0	0.0	0.0	6.8-7.6' brown-red fine SAND and SILT with gray mottles, trace gravel
8			7.5	0.1	0.0	0.2	0.0	0.0	0.1	
9	1.1	5	8.4 9.1	0.1 0.1	0.1 0.1	0.7 0.4	0.1 0.1	0.2 0.2	0.1 0.1	8.0-9.1' red CLAY, some fine sand and silt, little fine to medium gravel, dry-moist
10										
11	1.6	6	10.3	0.1	0.1	0.5	0.1	0.1	0.1	10.0-11.6' red fine SAND and SILT, some clay, little fine to coarse gravel
12			11.6	0.1	0.1	0.7	0.1	0.1	0.0	
13	1.1	7	12.3 13.0	0.0 0.0	0.0 0.0	0.6 0.6	0.2 0.2	0.2 0.2	0.0 0.0	12-12.9' red CLAY -LACUSTRINE- 12.9-14' red-brown fine SAND and SILT, wet
14										weathered bedrock at 14'
	0.3	8	14.0	0.0	0.0	0.4	0.0	0.0	0.0	Refusal at 14.0'

Lab Sample ID and time:

MW-30-S-1 at 1140 at 2.5'

MW-30-S-1 at 1150 at 9.0'

Analytes:

TCL VOCs +TICs, TCL SVOCs + TICs, Pesticides, PCBs and TAL Metals

TCL VOCs +TICs

Stantec
61 Commercial Street
Rochester, NY 14614
(585) 475-1440

Test Boring No.: AMSF-MW-31

Project:	FAMSF Site BCP Remedial Investigation	Contractor:	Northstar/ GeoLogic	Start Date:	5/7/2013
Project #:	190500647	Driller:	S.Breeds	Compl. Date:	5/7/2013
Client:	Maguire Family Properties	Elevation:	566.1	Drilling Method:	Split Spoon
Location:	Gates, NY	Weather:	Indoors	Stantec Rep:	K. Premo

Boring Depth (ft)	Sample Recov.	Sample No.	PID Reading Depth	Field Screening Results PID Readings in Parts Per Million (PPM) 10.6 eV PID Bkgd	10.6 eV PID Sample core	10.6 eV PID Head-space	11.7 eV PID Bkgd	11.7 eV PID Sample core	11.7 eV PID Head-space	Soil Description and Other Observations
0-0.5										CONCRETE - previously removed
1	1.1	1	1.0	3.2	3.2	4.1	1.5	1.5	1.5	0.5-1.6' light-dark brown fine SAND and SILT, little clay, dry
2										
3	1.3	2	2.5	3.1 3.0	3.1 3.0	4.2	1.3 1.3	1.3 1.3	1.3	2.0-5.3' red-brown CLAY and SILT
4			3.3	3.0	3.0	4.8	1.3	1.3	1.2	
5	1.7	3	4.5	3.0 3.0	3.0 3.0	3.2	1.2 1.2	1.2 1.2	1.1	
6			5.6	3.0	3.0	5.2	1.2	1.2	1.2	5.3-6.3' red-brown CLAY, some silt, mottles
7	1.5	4	6.5	2.8 3.4	2.8 3.4	4.2	1.2 1.2	1.2 1.2	1.1	6.3-6.6' dark brown fine SAND and SILT, trace gravel 6.6-7.0' red CLAY, some silt, dry 7.0-7.1' gray GRAVEL
8			7.5	3.4	3.4	4.4	1.2	1.2	1.1	7.1-8.6' brown fine to coarse SAND, some gravel
9	0.6	5	8.2	3.4 2.8	3.4 2.8	2.9	1.2 1.3	1.2 1.3	3.8	
10										8.8-10.8' roller bit through cobble
11										
12	0.5	6	11.5	2.0		2.6	0.6		1.1	11-11.5' brown fine SAND and SILT, some coarse sand fine to medium gravel, wet
13										
14										Refusal at 13'

Lab Sample ID and time:
No Sample

Analytes:

Stantec

61 Commercial Street
Rochester, NY 14614
(585) 475-1440

Test Boring No.: SV-1

Project:	FAMSF Site BCP Remedial Investigation	Contractor:	Northstar/ GeoLogic	Start Date:	5/16/2013
Project #:	190500647	Driller:	S.Breeds	Compl. Date:	5/16/2013
Client:	Maguire Family Properties	Elevation:	not measured	Drilling Method:	geoprobe
Location:	Gates, NY	Weather:	70s sunny	Stantec Rep:	K. Premo

Boring Depth (ft)	Sample Recov.	Sample No.	PID Reading Depth	Field Screening Results PID Readings in Parts Per Million (PPM) 10.6 eV PID Bkgd	10.6 eV PID Sample core	10.6 eV PID Head-space	11.7 eV PID Bkgd	11.7 eV PID Sample core	11.7 eV PID Head-space	Soil Description and Other Observations
	3.8	1		0.0	0.0		0.0	0.0		0.0-1.0' crushed ASPHALT
1										1.0-3.8' red-brown SILT and CLAY, dry
			1.5	0.0	0.0	0.1	0.0	0.0	0.0	
2										
3			3.0	0.0	0.0	0.1	0.0	0.0	0.0	
4										
	2.0	2								4.0-6.0' red CLAY, dry - LACUSTRINE-
5			5.0	0.0	0.0	0.1	0.0	0.0	0.0	
6										6.0 brown fine SAND and SILT, moist
										Boring terminated at 6'
7										Installed soil vapor implant at 5.5' due to cave in
										Installed sand to 3'
8										Bentonite to ground surface
9										
10										
11										
12										
13										
14										

Lab Sample ID and time:

Analytes:

Stantec

61 Commercial Street
Rochester, NY 14614
(585) 475-1440

Test Boring No.: SV-2

Project:	FAMSF Site BCP Remedial Investigation	Contractor:	Northstar/ GeoLogic	Start Date:	5/16/2013
Project #:	190500647	Driller:	S.Breeds	Compl. Date:	5/16/2013
Client:	Maguire Family Properties	Elevation:	not measured	Drilling Method:	geoprobe
Location:	Gates, NY	Weather:	70s sunny	Stantec Rep:	K. Premo

Boring Depth (ft)	Sample Recov.	Sample No.	PID Reading Depth	Field Screening Results PID Readings in Parts Per Million (PPM) 10.6 eV PID Bkgd	10.6 eV PID Sample core	10.6 eV PID Head-space	11.7 eV PID Bkgd	11.7 eV PID Sample core	11.7 eV PID Head-space	Soil Description and Other Observations
	3.1	1		0.0	0.0		0.0	0.0		0.0-1.0' crushed ASPHALT
1										1.0-2.0' dark borwn fine SAND and SILT, moist
2			1.5	0.0	0.0	0.2	0.0	0.0	0.0	
3			3.0	0.0	0.0	0.2	0.0	0.0	0.0	2.0-3.1' red-brown fine SAND, SILT and CLAY, gray mottles, moist wet at 3.1'
4										
5	2.0	2	5.0	0.0	0.0	0.2	0.0	0.0	0.0	4.0-6.0' brown fine SAND and SILT, some clay, trace gravel, wet
6										
7										Boring terminated at 6.0' Water noted at 4.8' Installed soil vapor implant at 3.0' Installed sand to 1.5' Bentonite to ground surface
8										
9										
10										
11										
12										
13										
14										

Lab Sample ID and time:

Analytes:

Stantec
61 Commercial Street
Rochester, NY 14614
(585) 475-1440

Test Boring No.: SV-3

Project:	FAMSF Site BCP Remedial Investigation	Contractor:	Northstar/ GeoLogic	Start Date:	5/17/2013
Project #:	190500647	Driller:	J. Winks	Compl. Date:	5/17/2013
Client:	Maguire Family Properties	Elevation:	not measured	Drilling Method:	geoprobe
Location:	Gates, NY	Weather:	sunny	Stantec Rep:	T. Wells

Boring Depth (ft)	Sample Recov.	Sample No.	PID Reading Depth	Field Screening Results PID Readings in Parts Per Million (PPM) 10.6 eV PID Bkgd	10.6 eV PID Sample core	10.6 eV PID Head-space	11.7 eV PID Bkgd	11.7 eV PID Sample core	11.7 eV PID Head-space	Soil Description and Other Observations
	3.2	1		0.0	0.0		0.0	0.0		0.0-1.0' ASPHALT and GRAVEL sub-base
1				0.0	0.0		0.0	0.0		1.0-5.9' dark borwn-brown silty fine SAND, trace medium SAND, moist
				0.0	0.0		0.0	0.0		wet at 5.0'
2				0.0	0.0		0.0	0.0		-LACUSTRINE SAND-
				0.0	0.0		0.0	0.0		
3				0.0	0.0		0.0	0.0		
				0.0	0.0		0.0	0.0		
4										
	2.0	2		0.0	0.0		0.0	0.0		
5				0.0	0.0		0.0	0.0		
				0.0	0.0		0.0	0.0		
6				0.0	0.0		0.0	0.0		5.9-6.0' light gray weathered bedrock
										Boring terminated at 6.0'
7										Water noted at 5.5'
										Installed soil vapor implant at 3.0'
8										Installed sand to 1.5'
										Bentonite to ground surface
9										
10										
11										
12										
13										
14										

Lab Sample ID and time:

Analytes:

Stantec
61 Commercial Street
Rochester, NY 14614
(585) 475-1440

Test Boring No.: SV-4

Project:	FAMSF Site BCP Remedial Investigation	Contractor:	Northstar/ GeoLogic	Start Date:	5/17/2013
Project #:	190500647	Driller:	J. Winks	Compl. Date:	5/17/2013
Client:	Maguire Family Properties	Elevation:	not measured	Drilling Method:	geoprobe
Location:	Gates, NY	Weather:	sunny	Stantec Rep:	T. Wells

Boring Depth (ft)	Sample Recov.	Sample No.	PID Reading Depth	Field Screening Results PID Readings in Parts Per Million (PPM) 10.6 eV PID Bkgd	10.6 eV PID Sample core	10.6 eV PID Head-space	11.7 eV PID Bkgd	11.7 eV PID Sample core	11.7 eV PID Head-space	Soil Description and Other Observations
	4	1		0.0	0.0		0.0	0.0		0.0-1.0' ASPHALT and GRAVEL sub-base
1				0.0	0.0		0.0	0.0		1.0-4.2.0' brown silty fine SAND, trace medium SAND, damp-moist-wet
				0.0	0.0		0.0	0.0		-LACUSTRINE SAND-
2				0.0	0.0		0.0	0.0		
				0.0	0.0		0.0	0.0		
3				0.0	0.0		0.0	0.0		
				0.0	0.0		0.0	0.0		
4										
	2.0	2		0.0	0.0		0.0	0.0		4.2-6.0' light brown sandy SILT, trace clay, moist
5				0.0	0.0		0.0	0.0		-GLACIAL TILL-
				0.0	0.0		0.0	0.0		
6				0.0	0.0		0.0	0.0		
										Boring terminated at 6.0'
7										
										Installed soil vapor implant at 4.5' due to cave in
8										Installed sand to 3.0'
										Bentonite to ground surface
9										
10										
11										
12										
13										
14										

Lab Sample ID and time:

Analytes:

Stantec

61 Commercial Street
Rochester, NY 14614
(585) 475-1440

Test Boring No.: AMSF-MW-32

Project:	FAMSF Site BCP Remedial Investigation	Contractor:	Northstar/ GeoLogic	Start Date:	4/9/2014
Project #:	190500647	Driller:	S. Breeds	Compl. Date:	4/9/2014
Client:	Maguire Family Properties	Elevation:	566.1	Drilling Method:	Split Spoon
Location:	Gates, NY	Weather:	Indoors	Stantec Rep:	K. Premo

Boring Depth (ft)	Sample Recov.	Sample No.	PID Reading Depth	Field Screening Results PID Readings in Parts Per Million (PPM) 10.6 eV PID Bkgd	10.6 eV PID Sample core	10.6 eV PID Head-space	11.7 eV PID Bkgd	11.7 eV PID Sample core	11.7 eV PID Head-space	Soil Description and Other Observations
0-0.5		1								CONCRETE - underlain by plastic vapor barrier
1	1.1									0.5-1.1' GRAVEL and red CLAY -FILL-
			1.1	1.3	1.9	2.3	0.5	0.5	0.3	
			1.5	1.3	2.5	2.8	0.5	0.5	0.3	1.1-1.5' brown-gold fine to coarse SAND
2										1.5-1.6' red CLAY, some silt, trace fine sand
	1.6	2								
			2.4	1.4	2.5	1.9	0.5	0.5	0.3	2.0-3.2' As above with trace fine gravel
3										
			3.3	1.4	2.2	2.8	0.5	0.5	0.6	
										3.2-3.6 Brown fine to coarse SAND, some silt, trace medium gravel, moist
4										
	1.2	3	4.1	1.4	2.0	2.4	0.5	0.5	0.4	4-5.2' As above, trace coarse gravel
5										
			5.2	1.4	3.0	2.2	0.4	0.5	0.3	
6										
	1.4	4								
7										
			7.0	1.4	1.8	2.3	0.5	0.5	0.4	
8										7.9' coarse SAND, dry
										Refusal at 7.9'
9										
10										
11										
12										
13										
14										

Lab Sample ID and time:
AMSF-OU1-TB/MW-1-4-5 (MS/MSD) at 1135 at 4-5' BGS

Analytes:
TCL VOCs + TICs

Stantec

61 Commercial Street
Rochester, NY 14614
(585) 475-1440

Test Boring No.: AMSF-MW-33

Project:	FAMSF Site BCP Remedial Investigation	Contractor:	Northstar/ GeoLogic	Start Date:	4/7/2014
Project #:	190500647	Driller:	S. Breeds	Compl. Date:	4/7/2014
Client:	Maguire Family Properties	Elevation:	564.7	Drilling Method:	Split Spoon
Location:	Gates, NY	Weather:	40s-50s	Stantec Rep:	K. Premo

Boring Depth (ft)	Sample Recov.	Sample No.	PID Reading Depth	Field Screening Results PID Readings in Parts Per Million (PPM) 10.6 eV PID Bkgd	10.6 eV PID Sample core	10.6 eV PID Head-space	11.7 eV PID Bkgd	11.7 eV PID Sample core	11.7 eV PID Head-space	Soil Description and Other Observations
0-0.5		1								ASPHALT
1	0.5									0.5-0.9' SUBBASE (fine to coarse GRAVEL, some fine sand, wet)
										0.9-1' brown-red fine SAND and SILT
			1.0	0.4	0.4	0.4	0.5	0.4	0.2	No recovery
2										
	1.2	2	2.3	0.3	0.3	0.4	0.2	0.2	0.2	2.0-3.2' red-brown fine SAND and SILT, some clay, wet
3										
			3.2	0.2	0.2	0.4	0.1	0.1	0.2	
4										
	1.6	3								
5			4.5	0.6	0.1	0.6	0.2	0.1	0.2	4.5-5.6' brown fine SAND, some silt, little medium sand, trace gravel, moist
6			5.6	0.6	0.1	0.6	0.2	0.1	0.2	No recovery
	1.8	4								6.0-7.0' red-brown fine SAND, SILT, and CLAY
7										
			7.0	0.8	0.8	0.3	0.3	0.4	0.1	7.0-7.8' fine SAND, SILT, some fine to coarse gravel, little clay, moist
										-TILL-
8			7.8	0.3	0.8	0.3	0.2	0.4	0.2	No recovery
	0.2	5	8.2	0.5	0.5	0.4	0.4	0.4	0.4	8-8.5' red-brown fine SAND, SILT, and red CLAY, moist
9										Refusal at 8.5'
10										
11										
12										
13										
14										

Lab Sample ID and time:
AMSF-OU1-TB/MW-2-7-7.8 at 1150 at 7-7.8' BGS

AMSF-OU1-DUP at 1155

Analytes:
TCL VOCs + TICs

TCL VOCs + TICs

Stantec

61 Commercial Street
Rochester, NY 14614
(585) 475-1440

Test Boring No.: AMSF-MW-34

Project:	Former AMSF Site	Contractor:	Northstar/ GeoLogic	Start Date:	5/26/2015
Project #:	190500647	Driller:	S. Breeds	Compl. Date:	5/26/2015
Client:	Maguire Family Properties	Elevation:	NM	Drilling Method:	Split Spoon
Location:	Gates, NY	Weather:	80s, sunny, & mild wind	Stantec Rep:	T. Wells/L. Best

Boring Depth (ft)	Sampler Blows	Sample Recov.	Sample No.	PID Reading Depth	Field Screening Results PID Readings in Parts Per Million (PPM) 10.6 eV PID Bkgd	10.6 eV PID Sample core	10.6 eV PID Head-space	11.7 eV PID Bkgd	11.7 eV PID Sample core	11.7 eV PID Head-space	Soil Description and Other Observations
0-0.4											ASPHALT to 0.4 ft
1	4	0.9	1	0.7	0.0	0.0	0.0	0.0	0.0		0.5-1.1' Gray medium to coarse GRAVEL
	3			1.4		0.0	0.0		6.3	0.0	- FILL - 1.1-1.4' Brown fine to medium SAND
2	2					0.0			1.7		No recovery
	6	1.6	2		0.0	0.0		0.0	0.0		2.0-2.9' Light brown fine SAND, trace coarse sand, moist
3	5			2.8		0.0	0.0		0.0		2.9-3.6' Red brown to brown SANDY SILT, trace clay, moist
	7					0.0			0.0		
4	4			3.9		0.0	0.0		0.0	0.2	No recovery
	5	1.7	3	4.5	0.0	0.0	0.0			0.0	4.0-5.7' Light brown fine SAND and reddish brown fine sand layers with intermittent medium to coarse sand, few pebble-size clasts of light gray silt, trace clay, moist
5	6					0.0					
	7			5.4		0.0	0.0			0.0	
6	11					0.0					- RE-WORKED LACUSTRINE SEDIMENT - No recovery
	9	1.5	4	6.4	0.0	0.0	0.0			0.0	6.0-13.2' Reddish brown fine SAND, some darker (gray to black) coarse sand, some light (pale brown) coarse sand, trace clay, moist
7	11					1.6					
	13					0.9					
8	12					1.0					
	8	1.9	5	8.5	0.0	0.0	0.0			0.0	
9	9					0.0					
	12					0.4					
10	12					0.0					
	12	0.4	6		0.0	0.2-0.4					
11	12					0.2-0.4					
	15					0.2-0.4					
12	12					0.2-0.4					
	12	1.7	7	12.3	0.0	0.0	0.0			0.0	
13	12					0.0					
	10			13.5		0.0	0.0			0.0	Large cobble at 13.1'
14	7					0.0					13.2-15.0' Red-brown CLAY with layers of gray fine sand and silt, moist
	2	1.8	8		0.1	0.0		0.0	2.6		
15	3			14.8		0.2	0.0		0.0	0.0	

Continued on following page

61 Commercial Street
Rochester, NY 14614
(585) 475-1440

Test Boring No.: AMSF-MW-34

Project:	Former AMSF Site	Contractor:	Northstar/ GeoLogic	Start Date:	5/26/2015
Project #:	190500647	Driller:	S. Breeds	Compl. Date:	5/26/2015
Client:	Maguire Family Properties	Elevation:	NM	Drilling Method:	Split Spoon
Location:	Gates, NY	Weather:	80s, sunny, & mild wind	Stantec Rep:	T. Wells/L. Best

	6			15.5		0.0	0.1		2.9	0.0	15.0-20.5' Gray fine to coarse SAND, some silt, little gravel, wet
16	1										Water level at 15.8'
	2	1.7	9	16.5	0.0	0.0	0.1	0.0	0.0	0.0	
17	3					0.0			0.0		
	4			17.5		0.0	0.1		0.0	0.0	
18	7										
	4	0.7	10	18.3	0.0	0.0	0.0	0.0	0.0	0.0	
19	6					0.0			0.0		
	7										
20	6										
20.5		0.4	11	20.2	0.0	0.0	0.0	0.0	0.0	0.0	
21											Refusal at 20.5'

Stantec

BEDROCK DRILL AND STRATIGRAPHIC LOG

PROJECT NAME	Former AMSF Site	HOLE DESIGNATION	AMSF-MW-20	ELEVATIONS:	
PROJECT NUMBER	190500647.240	DATE COMPLETED	4/30/2013	GROUND SURFACE	566.1 ft amsl
CLIENT	Maguire	DRILLING METHOD	Water Rotary	TOP OF OUTER CASING	566.11 ft amsl
LOCATION	Gates, NY	SUPERVISOR	K.Premo	TOP OF INNER CASING	565.71 ft amsl
				DRILLING CONTRACTOR	Northstar/Geologic

SAMPLE DESCRIPTION	STRAT CHANGE DEPTH	RUN NO.	SAMPLE INTERVAL FROM	SAMPLE INTERVAL TO	% RECOV	RQD %	WATER LOSS
16.3-18.2' Light gray to gray DOLOMITE; moderatly weathered with		R1	12.3	17.3	4.9 / 5	4.7 / 5	
numerous small vugs at top; becoming less weathered and vuggy with					98	94	
depth, stylolitic; with occasssional white to light gray nodules and							
seams filled with carbonate minerals							
13.3-13.7' Large open vug with crystals							
13.3' Horizontal open fracture							
15.3' Horizontal weathered fracture							
15.4' Open horizontal weathered fracture							
17.3-22.3' Same description as above - less weathered		R2	17.3	22.3	4.6 / 5	4.0 / 5.0	
19' Open weathered irregular fracture - lost water circulation					92	80	
19.4-19.6' Highly fractured							
19.9' Horizontal weathered fratures							
22.3-25.3' Same description as above		R3	22.3	25.3	2.7 / 3	2.5 / 3	
23.4' Open weathered horizontal fractures					90	85	
25' Two horizontal weathered fractures							Total water lost: 1,025 gallons

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BEDROCK DRILL AND STRATIGRAPHIC LOG

PROJECT NAME	Former AMSF Site	HOLE DESIGNATION	AMSF-MW-21	ELEVATIONS:	
PROJECT NUMBER	190500647.240	DATE COMPLETED	4/19/2013	GROUND SURFACE	566.1 ft amsl
CLIENT	Maguire	DRILLING METHOD	Water Rotary	TOP OF OUTER CASING	566.10 ft amsl
LOCATION	Gates, NY	SUPERVISOR	K.Premo/T.Wells	TOP OF INNER CASING	565.61 ft amsl
				DRILLING CONTRACTOR	Northstar/Geologic

SAMPLE DESCRIPTION	STRAT CHANGE DEPTH	RUN NO.	SAMPLE INTERVAL FROM	SAMPLE INTERVAL TO	% RECOV	RQD %	WATER LOSS
10.2-15.2' Light gray to gray DOLOMITE; moderately weathered with		R1	10.2	15.2	4.8 / 5	4.1 / 5	
numerous small vugs at top; becoming less weathered and vuggy with					96	82	
depth, stylolitic; with occasional white to light gray nodules and							
seams filled with carbonate minerals;							
10.5' Unweathered wavy fracture - tight possible drill break							
10.7' Irregular open vuggy fracture							
11.4' Two low angle smooth weathered fractures							
13.5' Low angle smooth weathered fracture, open, lost water circulation							
15.2-20.2' Same description as above - less weathered, fossiliferous		R2	15.2	20.2	4.5 / 5	3.8 / 5.0	
17.1' Irregular open fracture, possible drilling void space					90	76	
17.3-17.5' High angle planar fracture							
18.1' Irregular horizontal fracture or parting							
19.2' Horizontal open fracture, weathered, void space noted							
20.2-23.2' Same description as above		R3	20.2	23.2	2.9 / 3	1.4 / 3	
20.6-21.3' Highly fractured					97	47	Total water lost: 750 gallons
21.8-22.1' Low angle fractures or partings							

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BEDROCK DRILL AND STRATIGRAPHIC LOG

PROJECT NAME	Former AMSF Site	HOLE DESIGNATION	AMSF-MW-22	ELEVATIONS:	
PROJECT NUMBER	190500647.240	DATE COMPLETED	4/26/2013	GROUND SURFACE	566.1 ft amsl
CLIENT	Maguire	DRILLING METHOD	Water Rotary	TOP OF OUTER CASING	566.07 ft amsl
LOCATION	Gates, NY	SUPERVISOR	K.Premo	TOP OF INNER CASING	565.59 ft amsl
				DRILLING CONTRACTOR	Northstar/Geologic

SAMPLE DESCRIPTION	STRAT CHANGE DEPTH	RUN NO.	SAMPLE INTERVAL FROM	SAMPLE INTERVAL TO	% RECOV	RQD %	WATER LOSS
10.2-15.7' Light gray to gray DOLOMITE; moderately weathered with		R1	10.8	15.8	4.5 / 5	4.1 / 5	
numerous small vugs at top; becoming less weathered and vuggy with					90	82	
depth, stylolitic; with occasional white to light gray nodules and							
seams filled with carbonate minerals;							
11.8' Irregular open horizontal weathered fracture							
12.2' Horizontal weathered fracture							
13.9' Tight horizontal fracture, possible drill break							
15.8-20.8' Same description as above, fewer vugs		R2	15.8	20.8	4.8 / 5	4.8 / 5	
19.3' Open irregular weathered fracture - lost water circulation					90	76	
20' Horizontal weathered fracture							
20.8-23.8' Same description as above		R3	20.8	23.8	3.0 / 3.0	2.6 / 3	
22.5' Open irregular weathered fracture					100	88	Total water lost: 1,173 gallons
23.5' Open irregular weathered fracture							

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BEDROCK DRILL AND STRATIGRAPHIC LOG

PROJECT NAME	Former AMSF Site	HOLE DESIGNATION	AMSF-MW-23	ELEVATIONS:	
PROJECT NUMBER	190500647.240	DATE COMPLETED	4/25//2013	GROUND SURFACE	566.1 ft amsl
CLIENT	Maguire	DRILLING METHOD	Water Rotary	TOP OF OUTER CASING	566.10 ft amsl
LOCATION	Gates, NY	SUPERVISOR	K.Premo	TOP OF INNER CASING	565.73 ft amsl
				DRILLING CONTRACTOR	Northstar/Geologic

SAMPLE DESCRIPTION	STRAT CHANGE DEPTH	RUN NO.	SAMPLE INTERVAL FROM	SAMPLE INTERVAL TO	% RECOV	RQD %*	WATER LOSS
12-17' Light gray to gray DOLOMITE; moderately weathered with		R1	12	17	4.7 / 5	3.8 / 4.7	
numerous small vugs at top; becoming less weathered and vuggy with					96	96	
depth, stylolitic; with occasional white to light gray nodules and							
seams filled with carbonate minerals;							
12.8' Horizontal weathered fracture							
14.9' Wavy fracture, tight, possible drill break							
15.3' Low angle fracture							
16.6' Moderatly fractured mineralized zone, lost water circulation							
17-22' As above		R2	17	22	4.9 / 5	4.6 / 4.9	
18.9' Horizontal open weathered fracture					98	94	
19.2' Horizontal open weathered fracture							
20.6' Horizontal open weathered fracture							
22-25' As above		R3	22	25	3.3 / 3	3.3 / 3.3	Total water lost: 1,160 gallons
					110	100	

* RQD calculated based on recovered length

Stantec

BEDROCK DRILL AND STRATIGRAPHIC LOG

PROJECT NAME	Former AMSF Site	HOLE DESIGNATION	AMSF-MW-25	ELEVATIONS:	
PROJECT NUMBER	190500647.240	DATE COMPLETED	4/25//2013	GROUND SURFACE	566.1 ft amsl
CLIENT	Maguire	DRILLING METHOD	Water Rotary	TOP OF OUTER CASING	566.05 ft amsl
LOCATION	Gates, NY	SUPERVISOR	K.Premo	TOP OF INNER CASING	565.77 ft amsl
				DRILLING CONTRACTOR	Northstar/Geologic

SAMPLE DESCRIPTION	STRAT CHANGE DEPTH	RUN NO.	SAMPLE INTERVAL FROM	SAMPLE INTERVAL TO	% RECOV	RQD %	WATER LOSS
12.8-17.8' Light gray to gray DOLOMITE; moderately weathered with		R1	12.8	17.8	4.8 / 5	4.8 / 5	
numerous small vugs at top; becoming less weathered and vuggy with					96	96	
depth, stylolitic; with occasional white to light gray nodules and							
seams filled with carbonate minerals;							
16.3' Horizontal smooth weathered fracture							
17.8-22.8' As above, gray, no vugs		R2	17.8	22.8	4.9 / 5	4.4 / 5	
19.3' Horizontal fracture, tight, possible drill break					98	88	
19.8' Open irregular fracture, weathered, lost water circulation							
22.8-25.8' As above		R3	22.8	25.8	3.0 / 3.0	3.0 / 3.0	
23.6' Low angle fracture, tight, possible drill break					100	100	Total water lost: 830 gallons

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BEDROCK DRILL AND STRATIGRAPHIC LOG

PROJECT NAME	Former AMSF Site	HOLE DESIGNATION	AMSF-MW-26	ELEVATIONS:	
PROJECT NUMBER	190500647.240	DATE COMPLETED	5/2/2013	GROUND SURFACE	566.1 ft amsl
CLIENT	Maguire	DRILLING METHOD	Water Rotary	TOP OF OUTER CASING	566.02 ft amsl
LOCATION	Gates, NY	SUPERVISOR	K.Premo	TOP OF INNER CASING	565.58 ft amsl
				DRILLING CONTRACTOR	Northstar/Geologic

SAMPLE DESCRIPTION	STRAT CHANGE DEPTH	RUN NO.	SAMPLE INTERVAL FROM	SAMPLE INTERVAL TO	% RECOV	*RQD %	WATER LOSS
12.2-17.2' Light gray to gray DOLOMITE; moderately weathered with		R1	12.2	17.2	3.9 / 5		
numerous small vugs at top; becoming less weathered and vuggy with					90		
depth; with occasional white to light gray nodules and							
seams filled with carbonate minerals;							
12.2-13' Highly weathered and fractured, lost water circulation							
14.7' Horizontal weathered fracture							
15.8-20.8' Same description as above, with occosional styolites		R2	17.2	21.2	4.3 / 4		
24.7' Open weathered irregular fracture					108		
21.2-25.2' Same description as above		R3	21.2	25.2	4.0 / 4.0	3.9 / 4	Total water lost: 1,175 gallons
23.1' Irregular/wavy fracture, weathered					100	98	
23.7-23.8' Highly fractured and weathered							

* RQD calculated based on recovered length

Stantec

BEDROCK DRILL AND STRATIGRAPHIC LOG

PROJECT NAME	Former AMSF Site	HOLE DESIGNATION	AMSF-MW-27	ELEVATIONS:	
PROJECT NUMBER	190500647.240	DATE COMPLETED	5/9/2013	GROUND SURFACE	566.1 ft amsl
CLIENT	Maguire	DRILLING METHOD	Water Rotary	TOP OF OUTER CASING	566.06 ft amsl
LOCATION	Gates, NY	SUPERVISOR	K.Premo	TOP OF INNER CASING	565.71 ft amsl
				DRILLING CONTRACTOR	Northstar/Geologic

SAMPLE DESCRIPTION	STRAT CHANGE DEPTH	RUN NO.	SAMPLE INTERVAL FROM	SAMPLE INTERVAL TO	% RECOV	RQD %	WATER LOSS
12.9-17.9' Light gray to gray DOLOMITE; moderately weathered with		R1	12.9	17.9	4.8 / 5	4.2 / 5	
numerous small vugs at top; becoming less weathered and vuggy with					96	84	
depth; with occasional white to light gray nodules and							
seams filled with carbonate minerals;							
13' Low angle weathered fracture							
15.25' Horizontal weathered fracture - loss in water circulation							
15.35' Irregular weathered open fracture							
17.9-22.9' Same description as above, less weathered, no vugs		R2	17.9	22.9	4.7 / 5	4.5 / 5	
20.3' Open irregular weathered fracture, void space noted					94	90	
20.5' Horizontal fracture, tight, possible drill break							
21.2-25.2' Same description as above		R3	22.9	25.9	3.2 / 3	3.9 / 4 *	
23.5' Horizontal fracture, tight - possible drill break					106	98	Total water lost: 975 gallons
24.2' Wavy fracture, tight - possible drill break							

* RQD calculated based on recovered length

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BEDROCK DRILL AND STRATIGRAPHIC LOG

PROJECT NAME	Former AMSF Site	HOLE DESIGNATION	AMSF-MW-28	ELEVATIONS:	
PROJECT NUMBER	190500647.240	DATE COMPLETED	5/6/2013	GROUND SURFACE	563.7 ft amsl
CLIENT	Maguire	DRILLING METHOD	Water Rotary	TOP OF OUTER CASING	563.74 ft amsl
LOCATION	Gates, NY	SUPERVISOR	K.Premo	TOP OF INNER CASING	563.46 ft amsl
				DRILLING CONTRACTOR	Northstar/Geologic

SAMPLE DESCRIPTION	STRAT CHANGE DEPTH	RUN NO.	SAMPLE INTERVAL FROM	SAMPLE INTERVAL TO	% RECOV	RQD %*	WATER LOSS
7.3-12.3' Light gray to gray DOLOMITE; moderately weathered with		R1	7.3	12.3	4.5 / 5	3.8 / 4.5	
numerous small vugs at top; becoming less weathered and vuggy with					90	84	
depth; with occasional white to light gray nodules and							
seams filled with carbonate minerals; styolitic							
9' Horizontal fracture, tight, lost water circulation							
9.6' Open weathered irregular fracture							
9.8' Horizontal weathered fracture							
11.3' Low angle open fracture							
11.6' Horizontal weathered fracture							
12.3-17.3' Same description as above		R2	12.3	17.3	5.1 / 5	5.1/5.1	
14.7' Horizontal weathered fracture					102	100	
16.4' Horizontal weathered fracture							
17.-20.3 'Same description as above, gray-dark gray		R3	17.3	20.3	4.4 / 5	3.8 / 4.4	
19.3' Open irregular weathered fracture, void space noted					88	86	
19.8' Horizontal weathered fracture							
19.9' Low angle wavy fracture, tight							Total water lost: 1,130 gallons
20.8' Horizontal fracture, tight, possible drill break							

* RQD calculated based on recovered length

Stantec

BEDROCK DRILL AND STRATIGRAPHIC LOG

PROJECT NAME	Former AMSF Site	HOLE DESIGNATION	AMSF-MW-29	ELEVATIONS:	
PROJECT NUMBER	190500647.240	DATE COMPLETED	5/21//2013	GROUND SURRFACE	567.8 ft amsl
CLIENT	Maguire	DRILLING METHOD	Water Rotary	TOP OF OUTER CASING	567.78 ft amsl
LOCATION	Gates, NY	SUPERVISOR	K.Premo	TOP OF INNER CASING	567.49 ft amsl
				DRILLING CONTRACTOR	Northstar/Geologic

SAMPLE DESCRIPTION	STRAT CHANGE DEPTH	RUN NO.	SAMPLE INTERVAL FROM	SAMPLE INTERVAL TO	% RECOV	RQD %	WATER LOSS
15.2-20.2' Light gray to gray DOLOMITE; moderately weathered with		R1	15.2	20.2	4.4 / 5	2.3 / 5	
numerous small vugs at top; becoming less weathered and vuggy with					88	52	
depth, stylolitic; with occasional white to light gray nodules and							
seams filled with carbonate minerals;							
15.2-17.2' Highly fractured weathered pieces from 0.1' to 0.4' in size							
20.2-25.2' As above, no vugs		R2	20.2	25.2	4.6 / 5	3.5 / 5	
20.8' Open irregular fracture, weathered					92	70	
21.1' Horizontal weathered fracture							
21.6' Horizontal weathered fracture							
22.9' Open irregular fracture, weathered							
24.1' Open irregular fracture, weathered							
24.4' Horizontal weathered fracture							Total water lost: 1,173 gallons
25.2-28.2' As above		R3	25.2	28.2	2.9 / 3	2.85 / 3	
28.05' Horizontal open weathered fracture					97	95	

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BEDROCK DRILL AND STRATIGRAPHIC LOG

PROJECT NAME	Former AMSF Site	HOLE DESIGNATION	AMSF-MW-30	ELEVATIONS:	
PROJECT NUMBER	190500647.240	DATE COMPLETED	5/20/2013	GROUND SURFACE	572.9 ft amsl
CLIENT	Maguire	DRILLING METHOD	Water Rotary	TOP OF OUTER CASING	572.92 ft amsl
LOCATION	Gates, NY	SUPERVISOR	K.Premo/T.Wells	TOP OF INNER CASING	572.64 ft amsl
				DRILLING CONTRACTOR	Northstar/Geologic

SAMPLE DESCRIPTION	STRAT CHANGE DEPTH	RUN NO.	SAMPLE INTERVAL FROM	SAMPLE INTERVAL TO	% RECOV	RQD %	WATER LOSS
16.2-16.3' Concrete grout		R1	16.2	18.2	70	43	
16.3-18.2' Light gray to gray DOLOMITE; moderatly weathered with							
numerous small vugs at top; becoming less weathered and vuggy with							
depth, stylolitic; with occasssional white to light gray nodules and							
seams filled with carbonate minerals							
16.5-16.7' small void, lost drill water circulation							
16.3-17.4' high fractured with weathered high angle rough fractures,							
core broked into 1" to 3" fragments							
18.2-22' Same description as above - less weathered		R2	18.2	22	100	100	
18.7' Horizonal parting fractures							
19' Horizonal parting fractures							
27-31' Same description as above		R3	27	31	90	83	
22.8' Horizontal weathered fracture							
23.3' Horizontal weathered fracture							Total water lost: 1,130 gallons
24' Horizontal weathered fracture							
24.7- 24.9' Two low angle weathered fractures							
26' Horizontal weathered fracture							

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BEDROCK DRILL AND STRATIGRAPHIC LOG

PROJECT NAME	Former AMSF Site	HOLE DESIGNATION	AMSF-MW-31	ELEVATIONS:	
PROJECT NUMBER	190500647.240	DATE COMPLETED	5/15//2013	GROUND SURFACE	566.1 ft amsl
CLIENT	Maguire	DRILLING METHOD	Water Rotary	TOP OF OUTER CASING	566.05 ft amsl
LOCATION	Gates, NY	SUPERVISOR	K.Premo	TOP OF INNER CASING	565.69 ft amsl
				DRILLING CONTRACTOR	Northstar/Geologic

SAMPLE DESCRIPTION	STRAT CHANGE DEPTH	RUN NO.	SAMPLE INTERVAL FROM	SAMPLE INTERVAL TO	% RECOV	RQD %	WATER LOSS
14.9-19.9' Light gray to gray DOLOMITE; moderately weathered with		R1	14.9	19.9	4.6 / 5	4.2 / 5	
numerous small vugs at top; becoming less weathered and vuggy with					92	84	
depth, stylolitic; with occasional white to light gray nodules and							
seams filled with carbonate minerals;							
15.6' Open weathered irregular fracture							
17.9' Horizontal weathered fracture							
17.7-19.6' Vertical slightly weathered tight fracture							
19.9-24.9' As above		R2	19.9	24.9	4.9 / 5	3.9 / 5	
20.4' Horizontal weathered fracture, lost drill water circulation					98	78	
23.1' Horizontal fracture, tight							
23.4' Horizontal fracture, tight							
23.6' Open irregular fracture, weathered							
24.9-27.9' As above		R3	24.9	27.9	3.0 / 3.0	2.9 / 3	
26.4' Wavy fracture, tight, possible drill break					100	97	Total water lost: 3,025 gallons
27.8' Horizontal frature, weathered							

Stantec

BEDROCK DRILL AND STRATIGRAPHIC LOG

PROJECT NAME	Former AMSF Site	HOLE DESIGNATION	AMSF-MW-32	ELEVATIONS:	
PROJECT NUMBER	190500647	DATE COMPLETED	4/10/2014	GROUND SURFACE	566.1 ft amsl
CLIENT	Maguire	DRILLING METHOD	Water Rotary	TOP OF OUTER CASING	566.09 ft amsl
LOCATION	Gates, NY	SUPERVISOR	K.Premo	TOP OF INNER CASING	565.75 ft amsl
				DRILLING CONTRACTOR	Northstar/Geologic

SAMPLE DESCRIPTION	STRAT CHANGE DEPTH	RUN NO.	SAMPLE INTERVAL FROM	SAMPLE INTERVAL TO	% RECOV	RQD %	WATER LOSS
8.3-9.9' Light gray to gray DOLOMITE with occasional small vugs,		R1	8.3	9.9	1.6/1.6	1.4/1.6	
stylolites; occasional white to light gray carbonate filled nodules					100	87.5	
8.8' Horizontal smooth weathered fracture							
8.9' Horizontal smooth weathered fracture							
9.3' Open irregular fracture							
9.8' Irregular fracture							
9.85' Irregular fracture							
9.9-14.9' As above, some vugs 12.4-14.4'		R2	9.9	14.9	4.8 / 5	4.5/5	
12.4-12.5' Highly fractured					96	90	
13.2' Low angle fracture							
13.6-13.8' Open irregular fracture							
14.9-19.9' As above, gray		R3	14.9	19.9	4.9/5	4.6/5	
14.9' Highly fractured					98	92	
15.6' Horizontal weathered fracture							
16.1-16.2' Two horizontal weathered fractures							
19.8' High angle weathered fracture							
19.9-22.9' As above		R4	19.9	22.9	2.3/3	0.9/3	
20.2-20.4' Highly fractured					77	30	
21.3' Horizontal weathered fracture							
21.4' Horizontal weathered fracture							
21.4-22.3' Highly fractured (core piece lengths = 1/2-inch to 2 inches)							
22.7-22.9' High angle open fracture							Total water loss = 1,820 gal

Stantec

BEDROCK DRILL AND STRATIGRAPHIC LOG

PROJECT NAME: Former AMSF Site
PROJECT NUMBER: 190500647
CLIENT: Maguire Family Properties
LOCATION: Gates, NY

HOLE DESIGNATION: AMSF-MW-34
DATE COMPLETED: 5/27/2015
DRILLING METHOD: Water Rotary
SUPERVISOR: T. Wells/L. Best

ELEVATIONS:
GROUND SURFACE: NM ft amsl
TOP OF OUTER CASING: NM ft amsl
TOP OF INNER CASING: NM ft amsl
DRILLING CONTRACTOR: Northstar/GeoLogic

SAMPLE DESCRIPTION	STRAT CHANGE DEPTH	RUN NO.	SAMPLE INTERVAL FROM	SAMPLE INTERVAL TO	% RECOV	RQD %	WATER LOSS
22.5-32.5' Fine-grained gray dolostone, slightly vuggy at top, stylolitic, occassional white to light gray nodules and seams (mineralized)	22.5	R1	22.5	23.0	33	0	
		R2	23.0	27.8	108	71	Lost circulation at 23.2' (short drilling gap at that depth)
23.2' horizontal fracture at parting							
23.7' and 23.8' horizontal fractures at partings							
24.1' and 24.2' horizontal fractures at partings							
25.8' horizontal fracture at parting							
27.8' and 27.9' horizontal fractures at partings		R3	27.8	32.5	100	84	
28.2' horizontal fracture at parting							
28.9' horizontal fracture at parting							
29.2' horizontal fracture at parting							
30.9' horizontal fracture at parting							
							Total water loss = 1,470 gal (note: lost 500 gallons on 5/26/15 during drilling of socket for casing and lost 970 gallons on 5/27/15 during coring)
End of rock core at 32.5'							

Stantec

BEDROCK DRILL AND STRATIGRAPHIC LOG

PROJECT NAME	Former AMSF Site	HOLE DESIGNATION	AMSF-MW-33	ELEVATIONS:	
PROJECT NUMBER	190500647	DATE COMPLETED	4/11/2014	GROUND SURFACE	NM ft amsl
CLIENT	Maguire	DRILLING METHOD	Water Rotary	TOP OF OUTER CASING	564.66 ft amsl
LOCATION	Gates, NY	SUPERVISOR	K.Premo	TOP OF INNER CASING	564.32 ft amsl
				DRILLING CONTRACTOR	Northstar/Geologic

SAMPLE DESCRIPTION	STRAT CHANGE DEPTH	RUN NO.	SAMPLE INTERVAL FROM	SAMPLE INTERVAL TO	% RECOV	RQD %	WATER LOSS
9.7-14.7' Gray DOLOMITE, vuggy, carbonate filled seams and nodules,		R1	9.7	14.7	4.8/5	4.7/5	
white to light gray, stylolites, fossils					96	94	
10.3-10.4' Large open vug with carbonate crystals							
12.6' Wavy, weathered fracture - tight - black mineral deposit							
13' Horizontal weathered fracture							
14.7-16.8' As above, less vugs		R2	14.7	16.8	1.9/2.1	1.9/2.1	
16.1-16.4' Large carbonate seam					90	90	
No fractures (2 drill breaks)							
16.8-21.8' As above, gray, trace vugs		R3	16.8	21.8	5/5	4.7/5	
17.5' Horizontal weathered fracture					100	94	
17.8' Horizontal weathered fracture							
17.9' Horizontal weathered fracture							
17.9-20.9' black mineral deposits in drill breaks							
20.9' Horizontal weathered fracture							
21.8-25' As above, no vugs		R4	21.8	25	2.6/3.2	2.6/3.2	
23.5' Horizontal fracture - tight - potential drill break?					81	81	
							Total water loss = 980 gal

OVERBURDEN MONITORING WELL

DESIGN DETAILS

PROJECT NAME	Former AMSF	HOLE DESIGNATION	AMSF-MW-24
PROJECT NUMBER	190500647	DATE COMPLETED	5/14/2013
CLIENT	Maguire Propeties	DRILLING METHOD	Auger
LOCATION	Gates, NY	SUPERVISOR	K. Premo

SURFACE SEAL TYPE: Grout/Cement

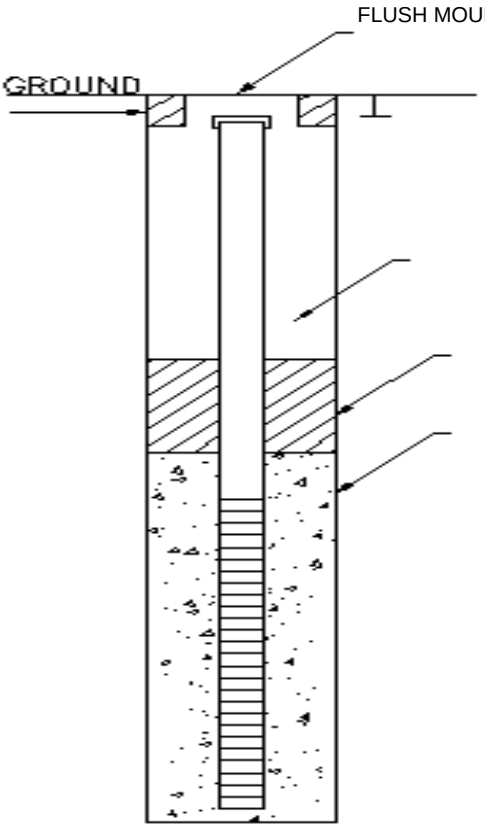
TOP OF SEAL @ 1.5 ft

BOTTOM OF SEAL @ 2.5 ft

TOP OF SCREEN @ 3.2 ft

BOTTOM OF SCREEN @ 6.2 ft

BOTTOM OF HOLE @ 6.4 ft



Ground Surface Elev. 563.6 ft amsl
Top of Outer Casing 563.61 ft amsl
Top of Inner Casing 563.07 ft amsl

WELL CASING
ANNULUS BACKFILL
TYPE: Grout/Cement

SEAL TYPE: Bentonite

PACK TYPE:
SAND, SIZE #1 Size Sand

NOTE:
ALL DIMENSIONS ARE
BELOW GROUND SURFACE (BGS)

SCREEN TYPE: CONTINUOUS SLOT _____ PERFORATED __X___ LOUVRE _____ OTHER _____

SCREEN MATERIAL: STAINLESS STEEL _____ PVC __X__ OTHER _____

SCREEN LENGTH: 3 ft SCREEN DIAMETER ____2.0_____ in. SCREEN SLOT SIZE: 0.020

WELL CASING MATERIAL: PVC WELL CASING DIAMETER: 2.0 in

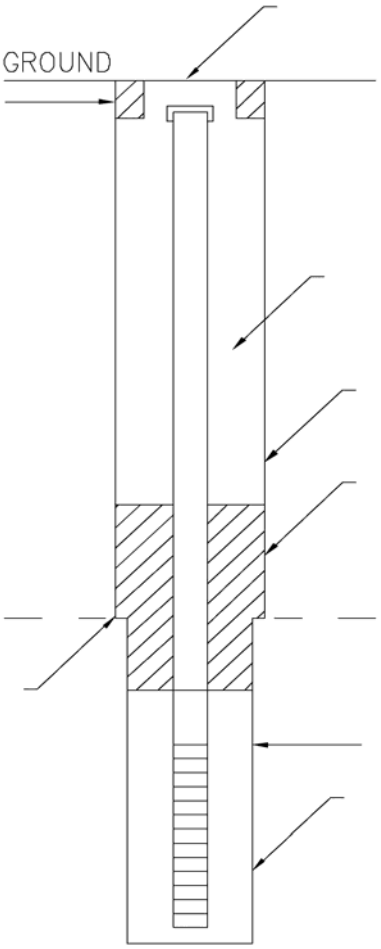
HOLE DIAMETER: 2 inch

BEDROCK MONITORING WELL

DESIGN DETAILS

PROJECT NAME	Former AMSF	HOLE DESIGNATION	AMSF-MW-20
PROJECT NUMBER	190500647	DATE COMPLETED	4/30/2013
CLIENT	Maguire Properties	DRILLING METHOD	Water rotary
LOCATION	Gates, NY	SUPERVISOR	K. Premo

FLUSH MOUNT ROAD BOX



Ground Surface Elev. 566.1 ft amsl
Top of Outer Casing 566.11 ft amsl
Top of Inner Casing 565.71 ft amsl

SURFACE SEAL: Grout/Cement

WELL CASING
ANNULUS BACKFILL
TYPE: Grout/Cement

O/B CASING: 4-inch Black Iron

TOP OF SEAL @ 10.7 ft

SEAL TYPE: Bentonite

TOP OF ROCK @ 10.3 ft

BOTTOM OF SEAL @ 13.5 ft

TOP OF SCREEN 14.5 ft

3.9 in. DIA. BEDROCK BORE

PACK TYPE:
SAND, SIZE #1 Size Sand

BOTTOM OF SCREEN 24.3 ft

BOTTOM OF HOLE @ 24.7 ft

NOTE:
ALL DIMENSIONS ARE
BELOW GROUND SURFACE (BGS)

SCREEN TYPE: CONTINUOUS SLOT _____ PERFORATED __X__ LOUVRE _____ OTHER _____

SCREEN MATERIAL: STAINLESS STEEL _____ PVC __X__ OTHER _____

SCREEN LENGTH: 9.8 ft SCREEN DIAMETER ____2.0_____ in. SCREEN SLOT SIZE: 0.020

WELL CASING MATERIAL: PVC WELL CASING DIAMETER: 2.0 in

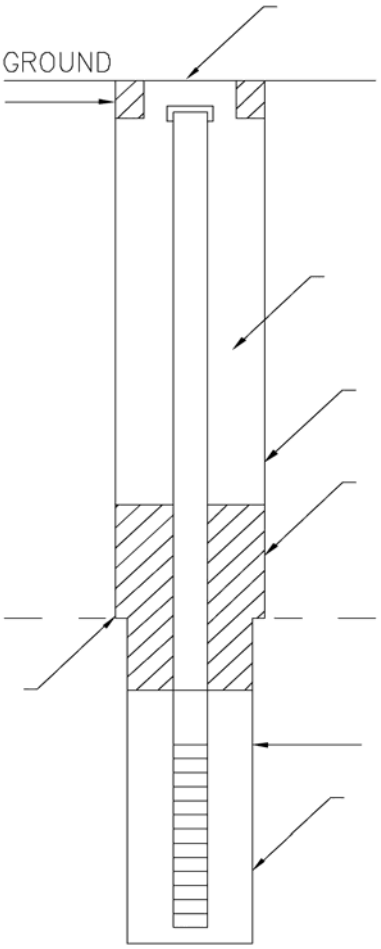
HOLE DIAMETER: 6 inch / 4 inch

BEDROCK MONITORING WELL

DESIGN DETAILS

PROJECT NAME	Former AMSF	HOLE DESIGNATION	AMSF-MW-21
PROJECT NUMBER	190500647	DATE COMPLETED	4/19/2013
CLIENT	Maguire Properties	DRILLING METHOD	Water rotary
LOCATION	Gates, NY	SUPERVISOR	K. Premo

FLUSH MOUNT ROAD BOX



Ground Surface Elev. 566.1 ft amsl
Top of Outer Casing 566.10 ft amsl
Top of Inner Casing 565.61 ft amsl

SURFACE SEAL: Grout/Cement

WELL CASING
ANNULUS BACKFILL
TYPE: Grout/Cement

O/B CASING: 4-inch Black Iron

TOP OF SEAL @ 8.8 ft

SEAL TYPE: Bentonite

TOP OF ROCK @ 8.0 ft

BOTTOM OF SEAL @ 11.0 ft

TOP OF SCREEN 13.0 ft

3.9 in. DIA. BEDROCK BORE

PACK TYPE:
SAND, SIZE #1 Size Sand

BOTTOM OF SCREEN 22.6 ft

BOTTOM OF HOLE @ 23.0 ft

NOTE:
ALL DIMENSIONS ARE
BELOW GROUND SURFACE (BGS)

SCREEN TYPE: CONTINUOUS SLOT _____ PERFORATED __X__ LOUVRE _____ OTHER _____

SCREEN MATERIAL: STAINLESS STEEL _____ PVC __X__ OTHER _____

SCREEN LENGTH: 9.8 ft SCREEN DIAMETER ____2.0_____ in. SCREEN SLOT SIZE: 0.020

WELL CASING MATERIAL: PVC WELL CASING DIAMETER: 2.0 in

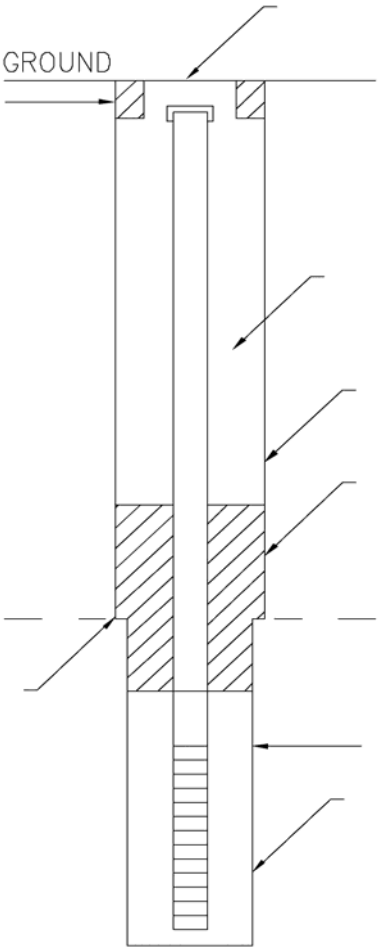
HOLE DIAMETER: 6 inch / 4 inch

BEDROCK MONITORING WELL

DESIGN DETAILS

PROJECT NAME	Former AMSF	HOLE DESIGNATION	AMSF-MW-22
PROJECT NUMBER	190500647	DATE COMPLETED	4/26/2013
CLIENT	Maguire Properties	DRILLING METHOD	Water rotary
LOCATION	Gates, NY	SUPERVISOR	K. Premo

FLUSH MOUNT ROAD BOX



Ground Surface Elev. 566.1 ft amsl
Top of Outer Casing 566.07 ft amsl
Top of Inner Casing 565.59 ft amsl

SURFACE SEAL: Grout/Cement

WELL CASING
ANNULUS BACKFILL
TYPE: Grout/Cement

O/B CASING: 4-inch Black Iron

TOP OF SEAL @ 9.8 ft

SEAL TYPE: Bentonite

TOP OF ROCK @ 8.8 ft

BOTTOM OF SEAL @ 11.8 ft

TOP OF SCREEN 14.0 ft

3.9 in. DIA. BEDROCK BORE

BOTTOM OF SCREEN 23.4 ft

PACK TYPE:
SAND, SIZE #1 Size Sand

BOTTOM OF HOLE @ 23.8 ft

NOTE:
ALL DIMENSIONS ARE
BELOW GROUND SURFACE (BGS)

SCREEN TYPE: CONTINUOUS SLOT _____ PERFORATED __X__ LOUVRE _____ OTHER _____

SCREEN MATERIAL: STAINLESS STEEL _____ PVC __X__ OTHER _____

SCREEN LENGTH: 9.8 ft SCREEN DIAMETER ____2.0_____ in. SCREEN SLOT SIZE: 0.020

WELL CASING MATERIAL: PVC WELL CASING DIAMETER: 2.0 in

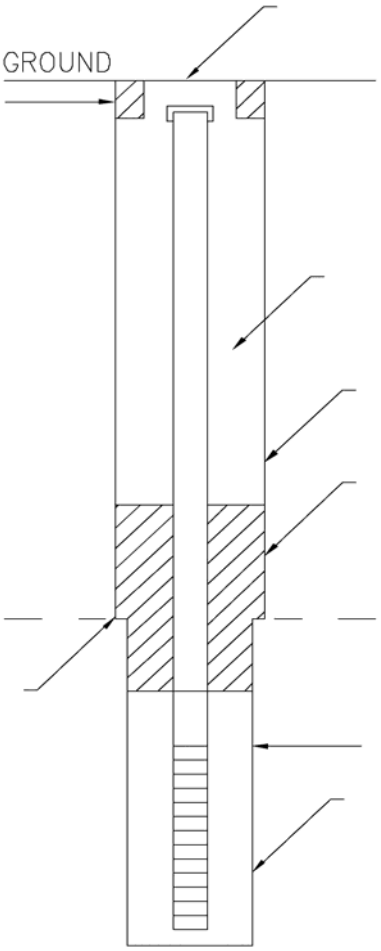
HOLE DIAMETER: 6 inch / 4 inch

BEDROCK MONITORING WELL

DESIGN DETAILS

PROJECT NAME	Former AMSF	HOLE DESIGNATION	AMSF-MW-23
PROJECT NUMBER	190500647	DATE COMPLETED	4/25/2013
CLIENT	Maguire Properties	DRILLING METHOD	Water rotary
LOCATION	Gates, NY	SUPERVISOR	K. Premo

FLUSH MOUNT ROAD BOX



Ground Surface Elev. 566.1 ft amsl
Top of Outer Casing 566.10 ft amsl
Top of Inner Casing 565.73 ft amsl

SURFACE SEAL: Grout/Cement

WELL CASING
ANNULUS BACKFILL
TYPE: Grout/Cement

O/B CASING: 4-inch Black Iron

TOP OF SEAL @ 11.0 ft

SEAL TYPE: Bentonite

TOP OF ROCK @ 9.9 ft

BOTTOM OF SEAL @ 13.0 ft

TOP OF SCREEN 15.8 ft

3.9 in. DIA. BEDROCK BORE

PACK TYPE:
SAND, SIZE #1 Size Sand

BOTTOM OF SCREEN 24.6 ft

BOTTOM OF HOLE @ 25.0 ft

NOTE:
ALL DIMENSIONS ARE
BELOW GROUND SURFACE (BGS)

SCREEN TYPE: CONTINUOUS SLOT _____ PERFORATED __X__ LOUVRE _____ OTHER _____

SCREEN MATERIAL: STAINLESS STEEL _____ PVC __X__ OTHER _____

SCREEN LENGTH: 9.8 ft SCREEN DIAMETER ____2.0_____ in. SCREEN SLOT SIZE: 0.020

WELL CASING MATERIAL: PVC WELL CASING DIAMETER: 2.0 in

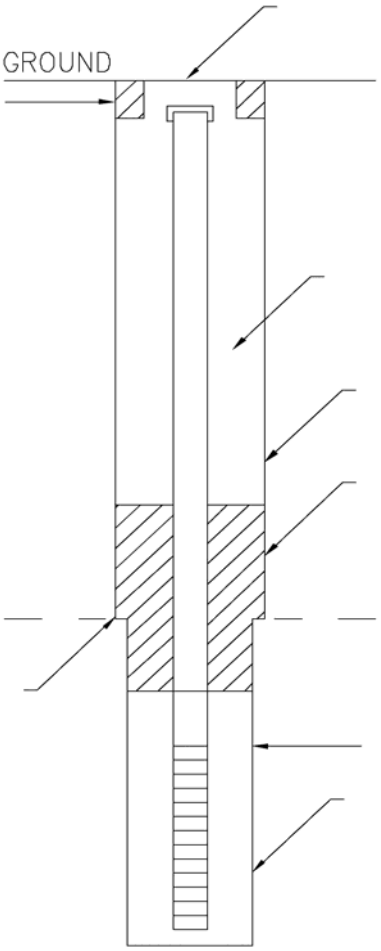
HOLE DIAMETER: 6 inch / 4 inch

BEDROCK MONITORING WELL

DESIGN DETAILS

PROJECT NAME	Former AMSF	HOLE DESIGNATION	AMSF-MW-25
PROJECT NUMBER	190500647	DATE COMPLETED	4/25/2013
CLIENT	Maguire Properties	DRILLING METHOD	Water rotary
LOCATION	Gates, NY	SUPERVISOR	K. Premo

FLUSH MOUNT ROAD BOX



Ground Surface Elev. 566.1 ft amsl
Top of Outer Casing 566.05 ft amsl
Top of Inner Casing 565.77 ft amsl

SURFACE SEAL: Grout/Cement

WELL CASING
ANNULUS BACKFILL
TYPE: Grout/Cement

O/B CASING: 4-inch Black Iron

TOP OF SEAL @ 11.8 ft

SEAL TYPE: Bentonite

TOP OF ROCK @ 10.8 ft

BOTTOM OF SEAL @ 13.8 ft

TOP OF SCREEN 15.6 ft

3.9 in. DIA. BEDROCK BORE

PACK TYPE:
SAND, SIZE #1 Size Sand

BOTTOM OF SCREEN 25.4 ft

BOTTOM OF HOLE @ 25.8 ft

NOTE:
ALL DIMENSIONS ARE
BELOW GROUND SURFACE (BGS)

SCREEN TYPE: CONTINUOUS SLOT _____ PERFORATED __X__ LOUVRE _____ OTHER _____

SCREEN MATERIAL: STAINLESS STEEL _____ PVC __X__ OTHER _____

SCREEN LENGTH: 9.8 ft SCREEN DIAMETER ____2.0_____ in. SCREEN SLOT SIZE: 0.020

WELL CASING MATERIAL: PVC WELL CASING DIAMETER: 2.0 in

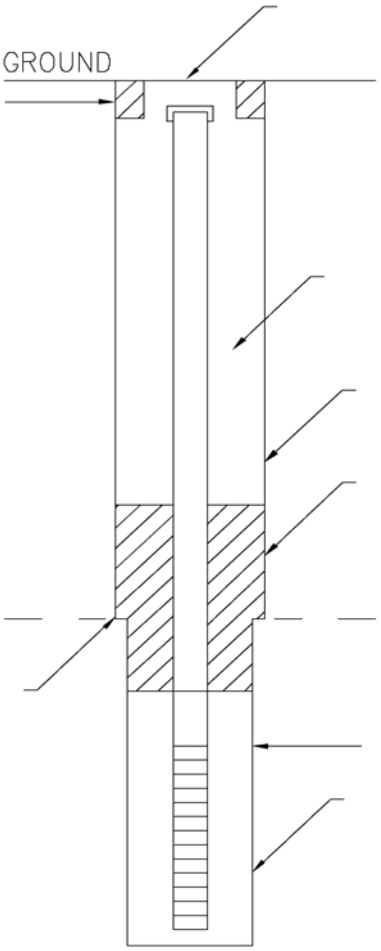
HOLE DIAMETER: 6 inch / 4 inch

BEDROCK MONITORING WELL

DESIGN DETAILS

PROJECT NAME	Former AMSF	HOLE DESIGNATION	AMSF-MW-26
PROJECT NUMBER	190500647	DATE COMPLETED	5/2/2013
CLIENT	Maguire Properties	DRILLING METHOD	Water rotary
LOCATION	Gates, NY	SUPERVISOR	K. Premo

FLUSH MOUNT ROAD BOX



Ground Surface Elev. 566.1 ft amsl
Top of Outer Casing 566.02 ft amsl
Top of Inner Casing 565.58 ft amsl

SURFACE SEAL: Grout/Cement

WELL CASING
ANNULUS BACKFILL
TYPE: Grout/Cement

O/B CASING: 4-inch Black Iron

TOP OF SEAL @ 10.5 ft

SEAL TYPE: Bentonite

TOP OF ROCK @ 12.9 ft

BOTTOM OF SEAL @ 13.2 ft

TOP OF SCREEN 14.8 ft

3.9 in. DIA. BEDROCK BORE

PACK TYPE:
SAND, SIZE #1 Size Sand

BOTTOM OF SCREEN 24.6 ft

BOTTOM OF HOLE @ 25.2 ft

NOTE:
ALL DIMENSIONS ARE
BELOW GROUND SURFACE (BGS)

SCREEN TYPE: CONTINUOUS SLOT _____ PERFORATED __X__ LOUVRE _____ OTHER _____

SCREEN MATERIAL: STAINLESS STEEL _____ PVC __X__ OTHER _____

SCREEN LENGTH: 9.8 ft SCREEN DIAMETER ____2.0_____ in. SCREEN SLOT SIZE: 0.020

WELL CASING MATERIAL: PVC WELL CASING DIAMETER: 2.0 in

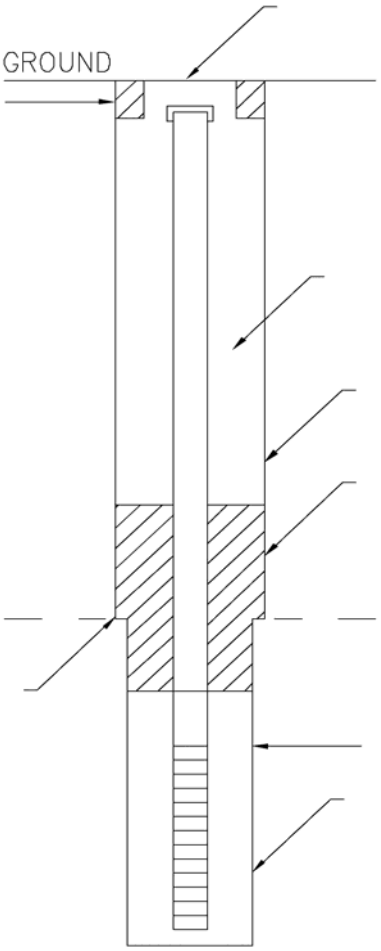
HOLE DIAMETER: 6 inch / 4 inch

BEDROCK MONITORING WELL

DESIGN DETAILS

PROJECT NAME	Former AMSF	HOLE DESIGNATION	AMSF-MW-27
PROJECT NUMBER	190500647	DATE COMPLETED	5/9/2013
CLIENT	Maguire Properties	DRILLING METHOD	Water rotary
LOCATION	Gates, NY	SUPERVISOR	K. Premo

FLUSH MOUNT ROAD BOX



Ground Surface Elev. 566.1 ft amsl
Top of Outer Casing 566.06 ft amsl
Top of Inner Casing 565.71 ft amsl

SURFACE SEAL: Grout/Cement

WELL CASING
ANNULUS BACKFILL
TYPE: Grout/Cement

O/B CASING: 4-inch Black Iron

TOP OF SEAL @ 11.9 ft

SEAL TYPE: Bentonite

TOP OF ROCK @ 10.8 ft

BOTTOM OF SEAL @ 13.9 ft

TOP OF SCREEN 15.7 ft

3.9 in. DIA. BEDROCK BORE

PACK TYPE:
SAND, SIZE #1 Size Sand

BOTTOM OF SCREEN 25.5 ft

BOTTOM OF HOLE @ 25.9 ft

NOTE:
ALL DIMENSIONS ARE
BELOW GROUND SURFACE (BGS)

SCREEN TYPE: CONTINUOUS SLOT _____ PERFORATED __X__ LOUVRE _____ OTHER _____

SCREEN MATERIAL: STAINLESS STEEL _____ PVC __X__ OTHER _____

SCREEN LENGTH: 9.8 ft SCREEN DIAMETER ____2.0_____ in. SCREEN SLOT SIZE: 0.020

WELL CASING MATERIAL: PVC WELL CASING DIAMETER: 2.0 in

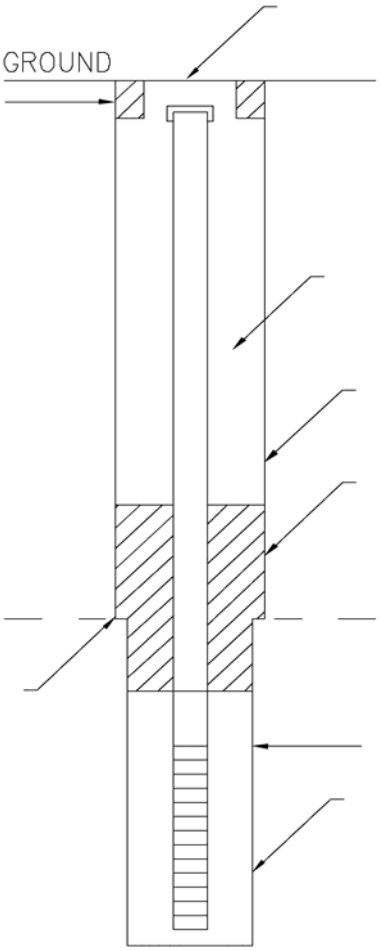
HOLE DIAMETER: 6 inch / 4 inch

BEDROCK MONITORING WELL

DESIGN DETAILS

PROJECT NAME	Former AMSF	HOLE DESIGNATION	AMSF-MW-28
PROJECT NUMBER	190500647	DATE COMPLETED	5/6/2013
CLIENT	Maguire Properties	DRILLING METHOD	Water rotary
LOCATION	Gates, NY	SUPERVISOR	K. Premo

FLUSH MOUNT ROAD BOX



Ground Surface Elev. 563.7 ft amsl
Top of Outer Casing 563.74 ft amsl
Top of Inner Casing 563.46 ft amsl

SURFACE SEAL: Grout/Cement

WELL CASING
ANNULUS BACKFILL
TYPE: Grout/Cement

O/B CASING: 4-inch Black Iron

TOP OF SEAL @ 7.8 ft

SEAL TYPE: Bentonite

TOP OF ROCK @ 5.0 ft

BOTTOM OF SEAL @ 9.8 ft

TOP OF SCREEN 11.6 ft

3.9 in. DIA. BEDROCK BORE

PACK TYPE:
SAND, SIZE #1 Size Sand

BOTTOM OF SCREEN 21.4 ft

BOTTOM OF HOLE @ 21.8 ft

NOTE:
ALL DIMENSIONS ARE
BELOW GROUND SURFACE (BGS)

SCREEN TYPE: CONTINUOUS SLOT _____ PERFORATED __X__ LOUVRE _____ OTHER _____

SCREEN MATERIAL: STAINLESS STEEL _____ PVC __X__ OTHER _____

SCREEN LENGTH: 9.8 ft SCREEN DIAMETER ____2.0_____ in. SCREEN SLOT SIZE: 0.020

WELL CASING MATERIAL: PVC WELL CASING DIAMETER: 2.0 in

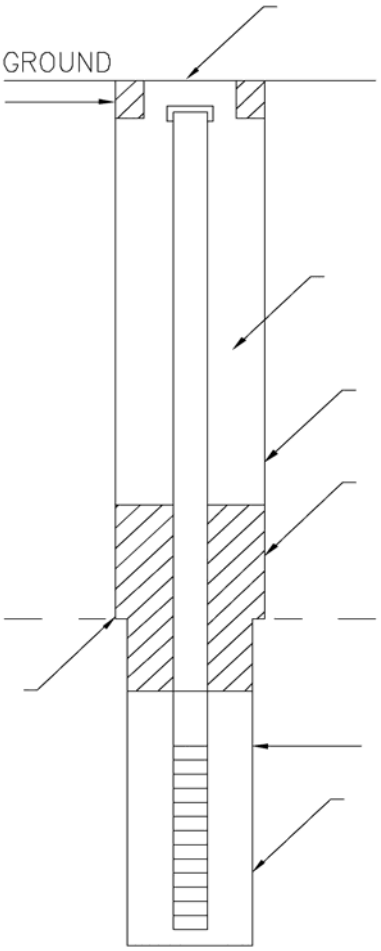
HOLE DIAMETER: 6 inch / 4 inch

BEDROCK MONITORING WELL

DESIGN DETAILS

PROJECT NAME	Former AMSF	HOLE DESIGNATION	AMSF-MW-29
PROJECT NUMBER	190500647	DATE COMPLETED	5/2/2013
CLIENT	Maguire Properties	DRILLING METHOD	Water rotary
LOCATION	Gates, NY	SUPERVISOR	K. Premo

FLUSH MOUNT ROAD BOX



Ground Surface Elev. 567.8 ft amsl
Top of Outer Casing 567.78 ft amsl
Top of Inner Casing 567.49 ft amsl

SURFACE SEAL: Grout/Cement

WELL CASING
ANNULUS BACKFILL
TYPE: Grout/Cement

O/B CASING: 4-inch Black Iron

TOP OF SEAL @ 14.5 ft

SEAL TYPE: Bentonite

TOP OF ROCK @ 16.5 ft

BOTTOM OF SEAL @ 17.8 ft

TOP OF SCREEN 17.8 ft

3.9 in. DIA. BEDROCK BORE

BOTTOM OF SCREEN 27.6 ft

PACK TYPE:
SAND, SIZE #1 Size Sand

BOTTOM OF HOLE @ 28.0 ft

NOTE:
ALL DIMENSIONS ARE
BELOW GROUND SURFACE (BGS)

SCREEN TYPE: CONTINUOUS SLOT _____ PERFORATED __X__ LOUVRE _____ OTHER _____

SCREEN MATERIAL: STAINLESS STEEL _____ PVC __X__ OTHER _____

SCREEN LENGTH: 9.8 ft SCREEN DIAMETER ____2.0_____ in. SCREEN SLOT SIZE: 0.020

WELL CASING MATERIAL: PVC WELL CASING DIAMETER: 2.0 in

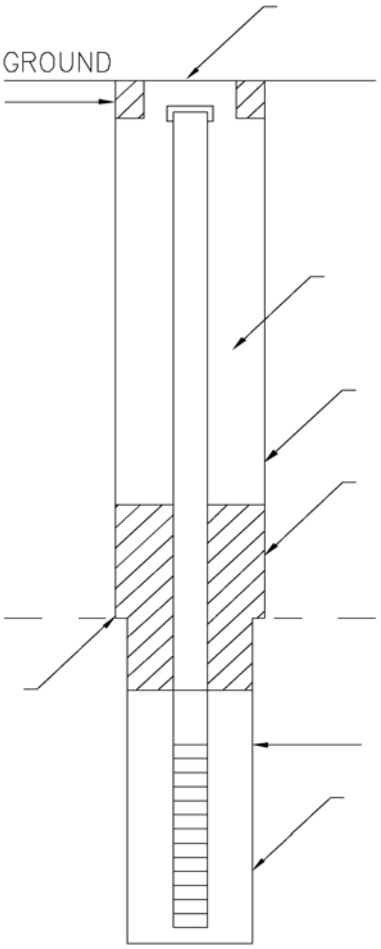
HOLE DIAMETER: 6 inch / 4 inch

BEDROCK MONITORING WELL

DESIGN DETAILS

PROJECT NAME	Former AMSF	HOLE DESIGNATION	AMSF-MW-30
PROJECT NUMBER	190500647	DATE COMPLETED	5/20/2013
CLIENT	Maguire Properties	DRILLING METHOD	Water rotary
LOCATION	Gates, NY	SUPERVISOR	K. Premo

FLUSH MOUNT ROAD BOX



Ground Surface Elev. 572.9 ft amsl
Top of Outer Casing 572.92 ft amsl
Top of Inner Casing 572.64 ft amsl

SURFACE SEAL: Grout/Cement

WELL CASING
ANNULUS BACKFILL
TYPE: Grout/Cement

O/B CASING: 4-inch Black Iron

TOP OF SEAL @ 16.5 ft

SEAL TYPE: Bentonite

TOP OF ROCK @ 14.0 ft

BOTTOM OF SEAL @ 18.5 ft

TOP OF SCREEN 20.3 ft

3.9 in. DIA. BEDROCK BORE

BOTTOM OF SCREEN 30.1 ft

PACK TYPE:
SAND, SIZE #1 Size Sand

BOTTOM OF HOLE @ 30.5 ft

NOTE:
ALL DIMENSIONS ARE
BELOW GROUND SURFACE (BGS)

SCREEN TYPE: CONTINUOUS SLOT _____ PERFORATED __X__ LOUVRE _____ OTHER _____

SCREEN MATERIAL: STAINLESS STEEL _____ PVC __X__ OTHER _____

SCREEN LENGTH: 9.8 ft SCREEN DIAMETER ____2.0_____ in. SCREEN SLOT SIZE: 0.020

WELL CASING MATERIAL: PVC WELL CASING DIAMETER: 2.0 in

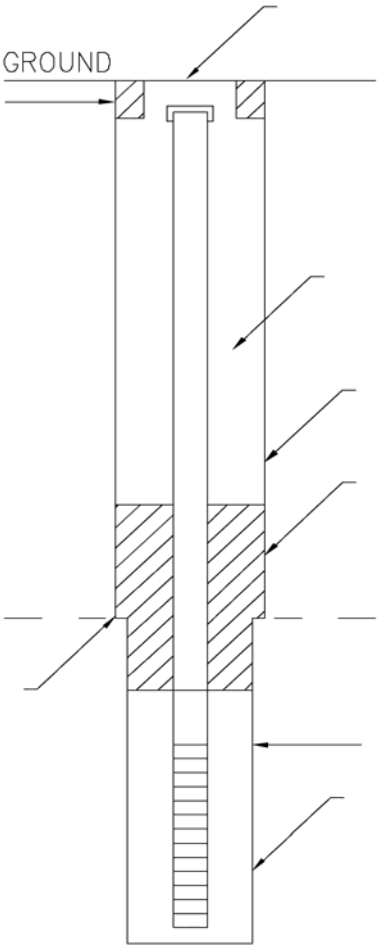
HOLE DIAMETER: 6 inch / 4 inch

BEDROCK MONITORING WELL

DESIGN DETAILS

PROJECT NAME	Former AMSF	HOLE DESIGNATION	AMSF-MW-31
PROJECT NUMBER	190500647	DATE COMPLETED	5/15/2013
CLIENT	Maguire Properties	DRILLING METHOD	Water rotary
LOCATION	Gates, NY	SUPERVISOR	K. Premo

FLUSH MOUNT ROAD BOX



Ground Surface Elev. 566.1 ft amsl
Top of Outer Casing 566.05 ft amsl
Top of Inner Casing 565.69 ft amsl

SURFACE SEAL: Grout/Cement

WELL CASING
ANNULUS BACKFILL
TYPE: Grout/Cement

O/B CASING: 4-inch Black Iron

TOP OF SEAL @ 13.9 ft

SEAL TYPE: Bentonite

TOP OF ROCK @ 13.0 ft

BOTTOM OF SEAL @ 15.9 ft

TOP OF SCREEN 17.7 ft

3.9 in. DIA. BEDROCK BORE

PACK TYPE:
SAND, SIZE #1 Size Sand

BOTTOM OF SCREEN 27.5 ft

BOTTOM OF HOLE @ 27.9 ft

NOTE:
ALL DIMENSIONS ARE
BELOW GROUND SURFACE (BGS)

SCREEN TYPE: CONTINUOUS SLOT _____ PERFORATED __X__ LOUVRE _____ OTHER _____

SCREEN MATERIAL: STAINLESS STEEL _____ PVC __X__ OTHER _____

SCREEN LENGTH: 9.8 ft SCREEN DIAMETER ____2.0_____ in. SCREEN SLOT SIZE: 0.020

WELL CASING MATERIAL: PVC WELL CASING DIAMETER: 2.0 in

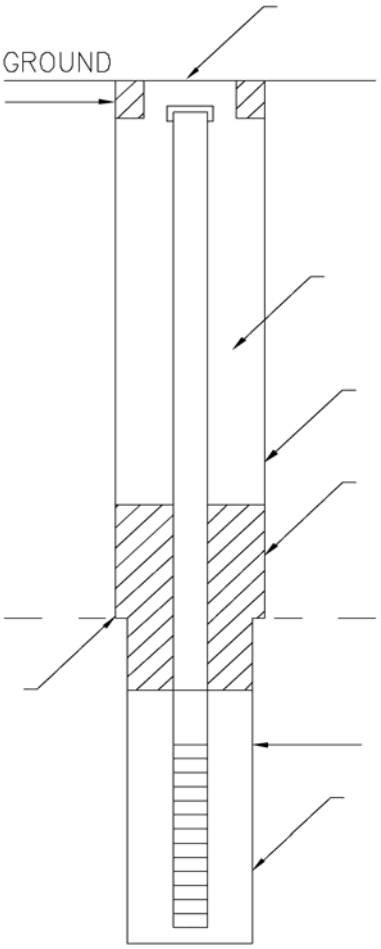
HOLE DIAMETER: 6 inch / 4 inch

BEDROCK MONITORING WELL

DESIGN DETAILS

PROJECT NAME	Former AMSF	HOLE DESIGNATION	AMSF-MW-32
PROJECT NUMBER	190500647	DATE COMPLETED	4/10/2014
CLIENT	Maguire Properties	DRILLING METHOD	Water rotary
LOCATION	Gates, NY	SUPERVISOR	K. Premo

FLUSH MOUNT ROAD BOX



Ground Surface Elev.	566.1	ft amsl
Top of Outer Casing	566.09	ft amsl
Top of Inner Casing	565.75	ft amsl

SURFACE SEAL: Grout

WELL CASING
ANNULUS BACKFILL
TYPE: Grout

O/B CASING: 4-inch Steel

TOP OF SEAL @ 8.5 ft

SEAL TYPE: Bentonite

TOP OF ROCK @ 7.9 ft

BOTTOM OF SEAL @ 10.5 ft

TOP OF SCREEN 12.5 ft

4 in. DIA. BEDROCK BORE

PACK TYPE:
SAND, SIZE #0 Size Sand

BOTTOM OF SCREEN 22.5 ft

BOTTOM OF HOLE @ 22.9 ft

NOTE:
ALL DIMENSIONS ARE
BELOW GROUND SURFACE (BGS)

SCREEN TYPE: CONTINUOUS SLOT _____ PERFORATED __X__ LOUVRE _____ OTHER _____

SCREEN MATERIAL: STAINLESS STEEL _____ PVC __X__ OTHER _____

SCREEN LENGTH: 10 ft SCREEN DIAMETER ____2.0_____ in. SCREEN SLOT SIZE: 0.010

WELL CASING MATERIAL: PVC WELL CASING DIAMETER: 2.0 in

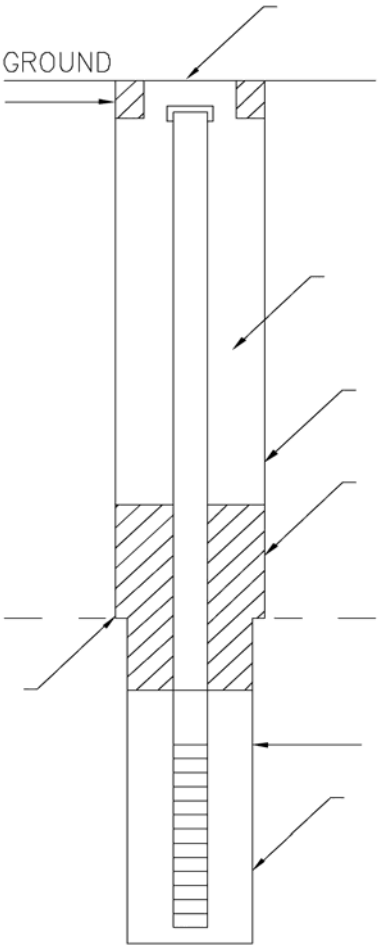
HOLE DIAMETER: 6 inch / 4 inch

BEDROCK MONITORING WELL

DESIGN DETAILS

PROJECT NAME	Former AMSF	HOLE DESIGNATION	AMSF-MW-33
PROJECT NUMBER	190500647	DATE COMPLETED	4/11/2014
CLIENT	Maguire Properties	DRILLING METHOD	Water rotary
LOCATION	Gates, NY	SUPERVISOR	K. Premo

FLUSH MOUNT ROAD BOX



Ground Surface Elev.	NM	ft amsl
Top of Outer Casing	564.66	ft amsl
Top of Inner Casing	564.32	ft amsl

SURFACE SEAL: Grout

WELL CASING
ANNULUS BACKFILL
TYPE: Grout

O/B CASING: 4-inch Steel

TOP OF SEAL @ 8.0 ft

SEAL TYPE: Bentonite

TOP OF ROCK @ 8.5 ft

BOTTOM OF SEAL @ 12.3 ft

TOP OF SCREEN 15.0 ft

4 in. DIA. BEDROCK BORE

PACK TYPE:
SAND, SIZE #0 Size Sand

BOTTOM OF SCREEN 25.0 ft

BOTTOM OF HOLE @ 25.0 ft

NOTE:
ALL DIMENSIONS ARE
BELOW GROUND SURFACE (BGS)

SCREEN TYPE: CONTINUOUS SLOT _____ PERFORATED __X__ LOUVRE _____ OTHER _____

SCREEN MATERIAL: STAINLESS STEEL _____ PVC __X__ OTHER _____

SCREEN LENGTH: 10 ft SCREEN DIAMETER ____2.0_____ in. SCREEN SLOT SIZE: 0.010

WELL CASING MATERIAL: PVC WELL CASING DIAMETER: 2.0 in

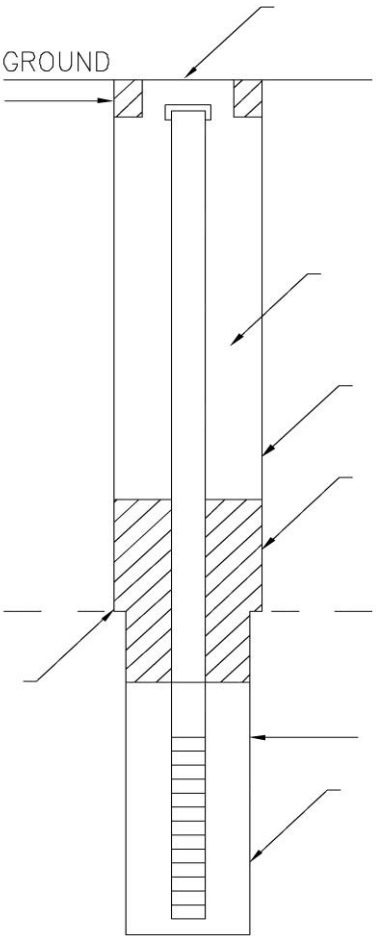
HOLE DIAMETER: 6 inch / 4 inch

BEDROCK MONITORING WELL

DESIGN DETAILS

PROJECT NAME	Former AMSF Site	HOLE DESIGNATION	AMSF-MW-34
PROJECT NUMBER	190500647	DATE COMPLETED	5/27/2015
CLIENT	Maguire Family Properti	DRILLING METHOD	Water rotary
LOCATION	Gates, NY	SUPERVISOR	T. Wells/L. Best

FLUSH MOUNT ROAD BOX



Ground Surface Elev. 567.0 ft amsl
Top of Outer Casing 567.0 ft amsl
Top of Inner Casing 566.6 ft amsl

SURFACE SEAL: Bentonite cement grout

WELL CASING
ANNULUS BACKFILL
TYPE: Bentonite cement grout

RISER ANNULUS
BACKFILL TYPE: Grout

O/B CASING: 4-inch Steel

BOTTOM OF CASING: 22.5 ft

TOP OF SEAL @ AROUND RISER: 16.5 ft

SEAL TYPE: Bentonite chips

TOP OF ROCK @ 20.5 ft

BOTTOM OF SEAL @ AROUND RISER: 20.5 ft

TOP OF SANDPACK: 20.5 ft

3.75 in. DIA. BEDROCK BORE

TOP OF SCREEN: 22.4 ft

PACK TYPE:
SAND, SIZE #0

BOTTOM OF SCREEN: 32.6 ft

BOTTOM OF HOLE @: 33.0 ft

NOTE:
ALL DIMENSIONS ARE
BELOW GROUND SURFACE (BGS)

SCREEN TYPE: CONTINUOUS SLOT ____ PERFORATED __X__ LOUVRE ____ OTHER ____

SCREEN MATERIAL: STAINLESS STEEL ____ PVC __X__ OTHER ____

SCREEN LENGTH: 10.2 ft SCREEN DIAMETER 2.0 SCREEN SLOT SIZE: 0.010

RISER MATERIAL: PVC WELL CASING DIAMETER: 2.0 in

HOLE DIAMETER: 3.75"

APPENDIX D – EXCAVATION WORK PLAN (EWP)

The provisions and requirements of this EWP apply during all invasive activities and excavations into areas of known or potentially contaminated material (areas of remaining soil contamination as defined in Section 2.5 of the SMP to which this EWP is attached).

D-1 NOTIFICATION

Except in cases of emergencies, the Site owner or their representative will notify the NYSDEC at least 15 days prior to the start of any activity that is anticipated to encounter remaining contamination. Table D-1 includes contact information for the above notification. The information on this table will be updated as necessary to provide accurate contact information. A full listing of site-related contact information is provided in Appendix B.

Table D-1: Notifications*

Michael Cruden, P.E. NYSDEC Central Office Representative	(518) 402-9814 michael.cruden@dec.ny.gov
Timothy Schneider, P.E. NYSDEC Project Manager	(585) 226-5480 timothy.schneider@dec.ny.gov
Kelly Lewandowski, P.E. Chief, NYSDEC Site Control Section	(518) 402-9569 kelly.lewandowski@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 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;
- A summary of the applicable components of this EWP;
- A statement that the work will be performed in compliance with this EWP and 29 CFR 1910.120;
- A copy of the contractor's health and safety plan (HASP), in electronic format, if it differs from the HASP provided in Appendix E of this SMP;
- Identification of disposal facilities for potential waste streams; and
- Identification of sources of any anticipated backfill, along with all required chemical testing results.

If implementation of this EWP is required to address an emergency condition, the Site owner or its representative shall notify the NYSDEC verbally by noon of the following day of any such emergency and submit a written confirmation within seven days of the emergency. The written notification shall include a summary of the actions taken pursuant to the EWP to address the emergency, any additional actions planned to resolve the condition, and any identified potential impacts to the environment or the public. Emergency conditions may include, but are not limited to, fire, flood, earthquake or loss of utility service such as power, water or heat to all or a portion of the Site building.

D-2 SOIL SCREENING METHODS

Visual, olfactory and instrument-based (e.g. photoionization detector) soil screening will be performed by a qualified environmental professional during all excavations into known or potentially contaminated material (remaining contamination).

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 Sections D-6 and D-7 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 (QEP) or person under their supervision will oversee all invasive work during all excavations into known or potentially contaminated material (remaining contamination) and related load-out of all excavated material. Full time monitoring of invasive work will not be required once a determination has been made by the QEP or their representative that the subsurface materials have not been impacted by contamination.

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.

Loaded vehicles leaving the Site will be appropriately lined, tarped, securely covered, manifested, and placarded in accordance with appropriate Federal, State, local, and NYSDOT requirements (and all other applicable transportation requirements).

A truck wash will be operated on-site, 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.

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 covers. Loose-fitting canvas-type truck covers will be prohibited. If loads contain wet material capable of producing free liquid, truck liners will be used.

All trucks loaded with site materials will exit the vicinity of the Site using truck routes selected to take into account: (a) limiting transport through residential areas and past sensitive sites; (b) use of city mapped truck routes; (c) prohibiting off-site queuing of trucks

entering the facility; (d) limiting total distance to major highways; (e) promoting safety in access to highways; and (f) overall safety in transport.

Trucks will be prohibited from stopping and idling in the neighborhood outside the project site.

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

Queuing of trucks will be performed on-site 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 transported and disposed in accordance with all local, State (including 6NYCRR Part 360) and Federal regulations. If disposal of material from excavations into known or potentially contaminated material (remaining contamination) at this site is proposed for unregulated off-site disposal (i.e. clean soil removed for development purposes), a formal request with an associated plan will be made to the NYSDEC. Unregulated off-site management of materials from excavations into known or potentially contaminated material (remaining contamination) at this site will not occur without formal NYSDEC approval.

Off-site disposal locations for excavated soils will be identified in the pre-excavation notification. This will include estimated quantities and a breakdown by class of disposal facility if appropriate, i.e. hazardous waste disposal facility, solid waste landfill, petroleum treatment facility, C/D recycling facility, etc. Actual disposal quantities and associated documentation will be reported to the NYSDEC in the Periodic Review Report. This documentation will include: waste profiles, test results, facility acceptance letters, manifests, bills of lading and facility receipts.

Non-hazardous historic fill and contaminated soils taken off-site will be handled, at minimum, as a Municipal Solid Waste per 6NYCRR Part 360-1.2. Material that does not meet Unrestricted SCOs is prohibited from being taken to a New York State recycling facility (6NYCRR Part 360-16 Registration Facility).

D-7 MATERIALS REUSE ON-SITE

The qualified environmental professional will ensure that procedures defined for materials reuse in this SMP are followed and that unacceptable material does not remain on-site. Contaminated on-site material, including historic fill and contaminated soil, that is acceptable for reuse on-site will be placed below a demarcation layer or impervious surface, and will not be reused within a cover soil layer, within landscaping berms, or as backfill for subsurface utility lines.

Any demolition material proposed for reuse on-site will be sampled for asbestos and the results will be reported to the NYSDEC for acceptance. Concrete crushing or processing on-site will not be performed without prior NYSDEC approval. Organic matter (wood, roots, stumps, etc.) or other solid waste derived from clearing and grubbing of the Site will not be reused on-site.

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 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 a SPDES permit.

D-9 COVER SYSTEM RESTORATION

After the completion of soil removal and any other invasive activities, the cover system will be restored in a manner that complies with the decision document. The existing cover system is comprised of clean soil, crushed stone, asphalt pavement, concrete covered sidewalks and the concrete building floor slab. For excavations that remove remaining soil

contamination, a demarcation layer will be placed to provide a visual reference to the top of the remaining contamination zone, the zone that requires adherence to special conditions for disturbance of remaining contaminated soils defined in this SMP. If the type of cover system changes from that which exists prior to the excavation (i.e., a soil cover is replaced by asphalt), this will constitute a modification of the cover element of the remedy and the upper surface of the remaining contamination. A figure showing the modified surface will be included in the subsequent Periodic Review Report and in an updated SMP.

D-10 BACKFILL FROM OFF-SITE SOURCES

All materials proposed for import onto the Site will be in compliance with applicable New York State regulations.

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

All imported soils will meet the backfill and cover soil quality standards established in 6NYCRR 375-6.7(d). Based on an evaluation of the land use, protection of groundwater and protection of ecological resources criteria, the resulting soil quality standards are the lower of the Part 375 commercial use and protection of groundwater soil cleanup objectives. Soils that meet 'exempt' fill requirements under 6 NYCRR Part 360, but do not meet backfill or cover soil objectives for this site, will not be imported onto the Site without prior approval by NYSDEC. Solid waste will not be imported onto the Site.

Trucks entering the Site with imported soils will be securely covered with tight fitting covers. Imported soils will be stockpiled separately from excavated materials and covered to prevent dust releases.

D-11 STORMWATER POLLUTION PREVENTION

Barriers and hay bale checks will be installed and inspected once a week and after every storm event. Results of inspections will be recorded in a logbook and maintained at the Site and available for inspection by 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-12 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.

Sampling will be performed on product, sediment and surrounding soils, etc. as necessary to determine the nature of the material and proper disposal method. Chemical analysis will be performed for a full list of analytes (TAL metals; TCL volatiles and semi-volatiles, TCL pesticides and PCBs), unless the site history and previous sampling results provide a sufficient justification to limit the list of analytes. In this case, a reduced list of analytes will be proposed to the NYSDEC for approval prior to sampling.

Identification of unknown or unexpected contaminated media identified by screening during invasive site work will be promptly communicated by phone to NYSDEC’s Project Manager. Reportable quantities of petroleum product will also be reported to the NYSDEC spills hotline. These findings will be also included in the Periodic Review Report.

D-16 OTHER NUISANCES

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

APPENDIX E – HEALTH & SAFETY PLAN

APPENDIX E

HEALTH AND SAFETY PLAN
SITE MANAGEMENT ACTIVITIES

FORMER ALLIANCE METAL STAMPING & FABRICATION FACILITY
12 PIXLEY INDUSTRIAL PARKWAY
TOWN OF GATES, MONROE COUNTY, NEW YORK

NYSDEC SITE NUMBER C828101

August 2019

Prepared for:

MAGUIRE FAMILY PROPERTIES, INC.
770 ROCK BEACH ROAD
ROCHESTER, NY 14617

Prepared by:

STANTEC CONSULTING SERVICES INC.
61 COMMERCIAL STREET
ROCHESTER, NEW YORK 14614

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Appendices

1.0 INTRODUCTION

The following Health and Safety Plan (HASP) describes personal safety protection standards and procedures to be followed by Stantec staff during planned site management activities at the Former Alliance Metal Stamping & Fabrication (AMSF) Facility site located in the Town of Gates, Monroe County, New York. The HASP is to be used in conjunction with the Site Management Plan (SMP) for the Site. This work will include groundwater sampling and air sampling and may include excavation activities.

This HASP establishes mandatory safety procedures and personal protection standards pursuant to the Occupational Safety and Health Administration (OSHA) regulations 29 Code of Federal Regulations (CFR) 1910.120. The HASP applies to all Stantec personnel conducting any site work, as defined in 29 CFR 1910.120(a). All personnel involved in the mentioned activities must familiarize themselves with this HASP, comply with its requirements and have completed the required health and safety training and medical surveillance program participation pursuant to 29 CFR 1910.120 prior to beginning any work on site.

THIS HASP IS FOR THE EXPRESS USE OF STANTEC EMPLOYEES. ALL OTHER CONTRACTORS TO BE WORKING IN THE EXCLUSION AREAS ARE REQUIRED BY LAW TO DEVELOP THEIR OWN HASP, AS WELL TO MEET ALL PERTINENT ASPECTS OF OSHA REGULATIONS. STANTEC RESERVES THE RIGHT TO STOP ANY SITE WORK WHICH IS DEEMED TO POSE A HEALTH AND SAFETY THREAT TO ITS STAFF.

1.1 Background

Site management activities are being conducted under the NYSDEC Brownfield Cleanup Program. Site management activities are described in detail in the SMP to which this HASP is appended.

Site Background

The Site is located at 12 Pixley Industrial Parkway in the Town of Gates, Monroe County, New York. A Site Location Map is provided in the SMP as Figure 1. The property (Tax Parcel No. 119.17-1-2) is the site of the former AMSF industrial facility. AMSF was a subsidiary of the Gleason Corporation. The AMSF facility was reportedly constructed in 1967, before which the property was undeveloped agricultural land. The facility consists of a ±120,000 square foot industrial building on a 7 acre property. Manufacturing operations were discontinued by AMSF in the 1990s. Since 1995, the property has been owned and operated by Maguire Family Properties, Inc., which leases individual spaces in the facility to several industrial and commercial tenants. Reasonably anticipated future use of the site includes commercial and/or industrial uses.

Previous investigations of the Site are described in the SMP.

1.2 Site-Specific Chemicals of Concern

<u>VOCs</u>

The primary volatile compounds of concern that are documented to be present in the soil and groundwater at the Former AMSF Facility Site are listed in Table 1. Material Safety Data Sheets (MSDSs) for these compounds are presented in Appendix A. The air monitoring action levels will be based on one-half of the current Threshold Limit Valve (TLV) or Permissible Exposure Limit (PEL) for 1,1-dichloroethene (1,1-DCE) with a margin

of safety built into the action levels to account for the non-specificity of the field monitoring instruments. Exposure limits for less hazardous compounds will be satisfied by meeting the more stringent exposure limits for 1,1-DCE. Table 1 summarizes health and safety data for the volatile compounds of primary concern.

Table 1
Health and Safety Data for Volatile Contaminants of Concern

Compound	PEL/ TWA	Physical Description	Odor Threshold	Route of Exposure	Symptoms	Target Organs
Chloroethane	1000 ppm	Colorless gas or liquid (below 54°F) with a pungent, ether-like odor	4.07 ppm	inhalation, skin absorption (liquid), ingestion (liquid), skin and/or eye contact	incoordination, inebriation; abdominal cramps; cardiac arrhythmias, cardiac arrest; liver, kidney damage	Liver, kidneys, respiratory system, cardiovascular system, central nervous system
Chromium	0.5 mg/m^3	Blue-white to steel-gray, lustrous, brittle, hard, odorless solid	Odorless	Inhalation, ingestion, skin and/or eye contact	Irritation eyes, skin; lung fibrosis	Eyes, skin, respiratory system
1,1-Dichloroethane (1,1-DCA)	100 ppm	Colorless, oily liquid with a chloroform-like odor	255 ppm	inhalation, ingestion, skin and/or eye contact	irritation skin; central nervous system depression; liver, kidney, lung damage	Skin, liver, kidneys, lungs, central nervous system
1,1-Dichloroethene (1,1-DCE)	1 ppm	Colorless liquid or gas (above 89°F) with a mild, sweet, chloroform-like odor	35.5 ppm	inhalation, skin absorption, ingestion, skin and/or eye contact	irritation eyes, skin, throat; dizziness, headache, nausea, dyspnea (breathing difficulty); liver, kidney disturbance; pneumonitis; [potential occupational carcinogen]	Eyes, skin, respiratory system, central nervous system, liver, kidneys
cis- 1,2-Dichloroethene (cis-1,2-DCE)	200 ppm	Colorless liquid (usually a mixture of the cis & trans isomers) with a slightly acrid, chloroform-like odor	19.1 ppm	inhalation, ingestion, skin and/or eye contact	Irritation eyes, respiratory system; central nervous system depression	Eyes, respiratory system, central nervous system
Ethylbenzene	125 ppm	Colorless liquid with sweetish gasoline-like odor	140 ppm	Absorbed through skin, inhalation	Irritation eyes, skin, mucous membrane; nervous system	Central nervous system
Mercury	0.05 mg/m^3	Silver-white heavy liquid, odorless	Odorless	Absorbed through skin, dermal contact, eye contact, inhalation, ingestions	Irritation eyes, skin; cough, chest pain, dyspnea (breathing difficulty), bronchitis, pneumonitis; tremor, insomnia, irritability, indecision, headache, lassitude (weakness, exhaustion); stomatitis, salivation;	Blood, kidneys, liver, brain, peripheral nervous system, central nervous system

Compound	PEL/ TWA	Physical Description	Odor Threshold	Route of Exposure	Symptoms	Target Organs
					gastrointestinal disturbance, anorexia, weight loss; proteinuria	
Methylene chloride	25 ppm	Colorless liquid with a chloroform-like odor	0.912 ppm	Inhalation, skin absorption, ingestion, skin and/or eye contact	Irritation eyes, skin; lassitude, drowsiness, dizziness; numb, tingle limbs; nausea	Eyes, skin, cardiovascular system, central nervous system
Methyl ethyl ketone (MEK)	200 ppm	Colorless liquid with a moderately sharp, fragrant, mint or acetone-like odor	0.27 ppm	Inhalation, ingestion, skin and/or eye contact	Irritation eye, skin, nose; headache; dizziness; vomiting; dermatitis	Eyes, skin, respiratory system, central nervous system
Tetrachloroethene (aka Perchloroethene [PCE])	100 ppm	Colorless liquid with a mild chloroform-like odor	6.17 ppm	inhalation, skin absorption, ingestion, skin and/or eye contact	Irritation eyes, skin, nose, throat, respiratory system; nausea; flush face, neck; dizziness, incoordination; headache, drowsiness; skin erythema (skin redness); liver damage; [potential occupational carcinogen]	Eyes, skin, respiratory system, liver, kidneys, central nervous system
1,1,1-trichloroethane (1,1,1-TCA)	350 ppm	Colorless liquid with a mild, chloroform-like odor	22.4 ppm	inhalation, ingestion, skin and/or eye contact	irritation eyes, skin; headache, lassitude (weakness, exhaustion), central nervous system depression, poor equilibrium; dermatitis; cardiac arrhythmias; liver damage	Eyes, skin, central nervous system, cardiovascular system, liver
Trichloroethylene (TCE)	100 ppm	Colorless liquid with a chloroform-like odor	1.36 ppm	inhalation, skin absorption, ingestion, skin and/or eye contact	Irritation eyes, skin; headache, visual disturbance, lassitude (weakness, exhaustion), dizziness, tremor, drowsiness, nausea, vomiting; dermatitis; cardiac arrhythmias, paresthesia; liver injury; [potential occupational carcinogen]	Eyes, skin, respiratory system, heart, liver, kidneys, central nervous system
Toluene	200 ppm	Colorless liquid with a sweet, pungent, benzene-like odor	0.16 ppm	Inhalation, skin absorption, ingestion, skin and/or eye contact	Irritation eyes, nose; lassitude, confusion, euphoria, dizziness, headache; dilated pupils, lacrimation; anxiety, muscle fatigue, insomnia; paresthesia; dermatitis; liver, kidney damage	Eyes, skin, respiratory system, central nervous system, liver, kidneys

Vinyl chloride	1 ppm	Colorless gas or liquid (below 7°F) with a pleasant odor at high concentrations.	0.253 ppm	inhalation, skin, and/or eye contact (liquid)	Lassitude (weakness, exhaustion); abdominal pain, gastrointestinal bleeding; enlarged liver; pallor or cyanosis of extremities; liquid: frostbite; [potential occupational carcinogen]	Liver, central nervous system, blood, respiratory system, lymphatic system

Notes:
PEL - permissible exposure limits
TWA - time weighted average, 8-hour workday
mg/m^3 - milligrams per cubic meter.
ppm - parts per million, in air

2.0 STANTEC PERSONNEL ORGANIZATION

The following Stantec personnel will be involved in health and safety operations at the Former Allegany Bitumens Belmont Asphalt Plant Site:

2.1 Project Manager

Mr. Michael Storonsky, Managing Senior Associate, is the Project Manager. Mr. Storonsky is responsible for ensuring that all Stantec procedures and methods are carried out, and that all Stantec personnel abide by the provisions of this Health and Safety Plan.

2.2 Site Safety Officer/Field Team Leader

Ms. Laura Best will serve as the field team leader (FTL) and Site Safety Officer (SSO) during this project. The FTL/SSO will report directly to the Project Manager and will be responsible for the implementation of this HASP as well as daily calibration of Stantec's safety monitoring instruments. The FTL/SSO will keep a log book of all calibration data and instrument readings for the Site.

2.3 Health and Safety Coordinator

Mr. Tom Wells will be the Health and Safety Coordinator. He will be responsible for overall coordination of Health and Safety issues on the project.

2.4 Daily Meetings

All Stantec personnel and contractors working within the exclusion zone will be required to read this document and sign off on the daily safety meeting form presented in Appendix E.

3.0 MEDICAL SURVEILLANCE REQUIREMENTS

3.1 Introduction

A. Hazardous waste site workers can often experience high levels of physical and chemical stress. Their daily tasks may expose them to toxic chemicals, physical hazards, biologic hazards, or radiation. They may develop heat stress while wearing protective equipment or working under temperature extremes, or face life-threatening emergencies such as explosions and fires. Therefore, a medical program is essential to: assess and monitor worker's health and fitness both prior to employment and during the course of the work; provide emergency and other treatment as needed; and keep accurate records for future reference. In addition, OSHA requires a medical evaluation for employees that may be required to work on hazardous waste sites and/or wear a respirator (29 CFR Part 1910.120 and 1910.134), and certain OSHA standards include specific medical surveillance requirements (e.g., 29 CFR Part 1926.62, Part 1910.95 and Parts 1910.1001 through 1910.1045).

3.2 Medical Examinations

A. All Stantec personnel working in areas of the site where site-related contaminants may be present shall have been examined by a licensed physician as prescribed in 29 CFR Part 1910.120, and determined to be medically fit to perform their duties for work conditions which require respirators. Employees will be provided with medical examinations as outlined below:

- Pre-job physical examination
- Annually thereafter if contract duration exceeds 1 year;
- Termination of employment;
- Upon reassignment in accordance with CFR 29 Part 1910.120(e)(3)(i)(C);
- If the employee develops signs or symptoms of illness related to workplace exposures;
- If the physician determines examinations need to be conducted more often than once a year; and
- When an employee develops a lost time injury or illness during the Contract period.

B. Examinations will be performed by, or under the supervision of a licensed physician, preferably one knowledgeable in occupational medicine, and will be provided without cost to the employee, without loss of pay and at a reasonable time and place. Medical surveillance protocols and examination and test results shall be reviewed by the Occupational Physician.

4.0 ON-SITE HAZARDS

4.1 Chemical Hazards

The primary potential chemical hazards on-site are expected to be exposure to the VOCs detailed in Table 1. Material safety data sheets for the documented VOCs are presented in Appendix A.

The soil and groundwater contaminants are volatile; therefore, any activity at the site which causes physical disturbance of the soil can potentially allow the release of contaminants into the air. For volatiles, this can include release of organic vapors into the air. Such an occurrence may be recognized by noticeable chemical odors. Field personnel should be aware of the odor threshold for these chemicals and their relation to the action levels and Permissible Exposure Limits.

Symptoms of overexposure to primary compounds of concern are detailed in Table 1. To prevent exposure to these chemicals, dermal contact will be minimized by using disposable surgical gloves with work gloves (as appropriate) when handling soil, groundwater equipment or samples. Real time, breathing zone levels of total VOCs will be monitored using a portable photoionization detector (PID). If ambient levels exceed action levels, all site activities will be performed using level C personal protection until ambient concentrations dissipate. Where levels exceed 50 ppm, work will cease and the project manager will be notified immediately. Intrusive work may also be halted where required by action levels detailed in the Community Air Monitoring Plan (CAMP), Appendix D of the RI Work Plan.

In addition, depending on seasonal conditions, disturbance of the site soils may cause the particulate contaminants to become airborne as dust. Therefore, particulates will be monitored as discussed in Section 6.1 and dust-suppression methods used where appropriate as discussed in Section 6.2, or in the CAMP.

Finally, aeration of the groundwater may cause volatilization of chemicals into the air, particularly VOCs. Table 2 summarizes first aid instructions for exposure pathways for the compounds of concern.

Table 2
Exposure Pathways and First Aid Response for Contaminants of Concern

Substance	Exposure Pathways	First-Aid Instructions
VOCs listed in Table 1	Eye	irrigate immediately
	Dermal	soap wash promptly (soap flush immediately for 1,1-DCE)
	Inhalation	respiratory support
	Ingestion	medical attention immediately

4.2 Physical Hazards

Hazards typically encountered at construction sites with drilling and excavation activities will be a concern at this site. These hazards include slippery ground surfaces, holes, and operation of heavy machinery and equipment. Field team members will wear the basic safety apparel such as steel-toed shoes, hard hat and safety glasses during all appropriate activities.

Under no circumstances will Stantec personnel approach the borehole during active drilling operation. All field personnel working around the rig will be shown the location and operation of kill switches, which are to be tested daily.

Multi-purpose fire extinguishers, functional and within annual inspection period, will be staged and readily accessible for use.

The use of electrical equipment in any established exclusion zones will be limited to areas verified as containing non-explosive atmospheres (<10% LEL) prior to operation, unless the equipment has been previously demonstrated or designed to be FM or UL rated as intrinsically safe. Care will be taken to avoid an ignition source while working in the presence of vapors.

The contractor responsible for invasive activities such as excavation shall make all necessary contacts with utilities and/or underground utility locator hotlines prior to invasive activities and shall meet OSHA requirements for distances between the equipment and overhead utilities. No excavation work will be carried out where the equipment chassis has not been stabilized and the equipment is not to be moved between locations with a boom in a vertical position.

4.2.1 Noise

The use of heavy machinery/equipment and operation may result in noise exposures, which require hearing protection. Exposure to noise can result in temporary hearing losses, interference with speech communication, interference with complicated tasks or permanent hearing loss due to repeated exposure to noise.

During the investigative activities, all Stantec field team members will use hearing protection when sound levels are in excess of 90 dB TWA.

4.2.2 Heat and Cold Stress Exposure

Heat is a potential threat to the health and safety of site personnel. The Site Safety Officer under the direction of the Project Manager will determine the schedule of work and rest. These schedules will be employed as necessary so that personnel do not suffer adverse effects from heat. Table 3 summarizes exposure symptoms and first aid instructions for heat stress. Non-caffeinated, thirst replenishment liquids will be available on-site.

Cold stress is also a potential threat to the health and safety of site personnel. Symptoms of cold stress include, shivering, blanching of the extremities, numbness or burning sensations, blue, purple or gray discoloration of hands and feet, frostbite, hypothermia, and loss of consciousness. Cold stress can be prevented by acclimatizing one's self to the cold, increasing fluid intake, avoiding caffeine and alcohol, maintaining proper salt and electrolyte intake, eating a well-balanced diet, wearing proper clothing, building heated enclosures to work in, and taking regular breaks to warm up. If any of the above symptoms are encountered the person should be removed from the cold area. Depending on the severity of the cold stress, 911 should be contacted and first aid administered. No fluids should be given to an unconscious person.

Table 3
Exposure Symptoms and First Aid for Heat Exposure

Hazard	Exposure Symptoms	First-Aid Instructions
Heat Stress	Fatigue, sweating, irritability	rest; take fluids
	Dizziness, disorientation, perspiration ceases, loss of consciousness	remove from hot area, activate 911, administer first aid, no fluids to be administered to unconscious victim.

4.2.3 Roadway Hazards

Field activities are planned to take place near active roadways. Where such work zones are established, personnel shall assure that protective measures including signage, cones, and shielding through use of vehicles parked at workmen perimeter, are in place. All contractors shall be responsible for meeting signage requirements of DOT. Fluorescent safety vests shall be worn by all personnel during activities in or adjacent to roadways and driveways.

4.2.4 Electrical Work

Site work involving electrical installation or energized equipment must be performed by a qualified electrician. All electrical work will be performed in accordance with the OSHA electrical safety requirements found in 29 CFR 1926.400 through 1926.449. Workers are not permitted to work near electrical power circuits unless the worker is protected against electric shock by de-energizing and grounding the circuit or by guarding or barricading the circuit and providing proper personal protective equipment. All electrical installations must comply with NEC regulations. All electrical wiring and equipment used must be listed by a nationally recognized testing laboratory.

All electrical circuits and equipment must be grounded in accordance with the NEC regulations. The path to ground from circuits, equipment, and enclosures will be permanent and continuous. Ground fault circuit interrupters (GFCIs) are required on all 120-volt, single phase, 15- and 20-amp outlets in work areas that are not part of the permanent wiring of the building or structure. A GFCI is required when using an extension cord. GFCIs must be tested regularly with a GFCI tester.

Heavy-duty extension cords will be used; flat-type extension cords are not allowed. All extension cords must be the three-wire type, and designed for hard/extra hard usage. Electrical wire or cords passing through work areas must be protected from water and damage. Worn, frayed, or damaged cords and cables will not be used. Walkways and work spaces will be kept clear of cords and cables to prevent a tripping hazard. Extension cords and cables may not be secured with staples, hung from nails, or otherwise temporarily secured. Cords or cables passing through holes in covers, outlet boxes, etc., will be protected by bushings or fittings.

All lamps used in temporary lighting will be protected from accidental contact and breakage. Metal shell and paper-lined lamp holders are not permitted. Fixtures, lamp holders, lamps, receptacles, etc. are not permitted to have live parts. Workers must not have wet hands while plugging/unplugging energized equipment. Plugs and receptacles will be kept out of water (unless they are approved for submersion).

4.2.5 Lock-Out/Tag-Out

Before a worker sets up, services, or repairs a system where unexpected energizing (or release of stored energy) could occur and cause injury or electrocution, the circuits energizing the parts must be locked-out and tagged. Only authorized personnel will perform lock-out/tag-out procedures. All workers affected by the lock-out/tag-out will be notified prior to, and upon completion of, the lock-out/tag-out procedure.

Lock-out/tag-out devices must be capable of withstanding the environment to which they are exposed. Locks will be attached in such a way as to prevent other personnel from operating the equipment, circuit, or control, or from removing the lock unless they resort to excessive force. Tags will identify the worker who attached the device, and contain information, which warns against the hazardous condition that will result from the system's unauthorized start-up. Tags must be legible and understood by all affected workers and incidental personnel. The procedures for attaching and removing lock-out/tag-out devices include the steps outlined in the following table.

If maintenance work is required, the electrical supply to the equipment must be disconnected. Turning off the MAIN breaker using the disconnect switch will disconnect all power to the system. Once the disconnect switch has been turned off, the switch will be locked-out using the steps outlined below.

STEP	LOCK-OUT/TAG-OUT PROCEDURES
1	Disconnect the circuits and/or equipment to be worked on from all electrical energy sources.
2	Ensure that the system is completely isolated so that it cannot be operated at that shut-off point or at any other location.
3	Release stored electrical energy.
4	Block or relieve stored non-electrical energy.
5	Place a lock on each shut-off or disconnect point necessary to isolate all potential energy sources. Place the lock in such a manner that it will maintain the shut-off/disconnect in the off position.
6	Place a tag on each shut-off or disconnect point. The tag must contain a statement prohibiting the unauthorized re-start or re-connect of the energy source and the removal of the tag, and the identity of the individual performing the tag and lock-out.
7	Workers who will be working on the system must place their own lock and tag on each lock-out point.
8	A qualified person must verify the system cannot be re-started or re-connected, and de-energization of the system has been accomplished.

Once the service or repairs have been made on the system:	
1	A qualified person will conduct an inspection of the work area, to verify that all tools, jumpers, shorts, grounds, etc., have been removed so that the system can then be safely re-energized.
2	All workers stand clear of the system.
3	Each lock and tag will be removed by the worker who attached it. If the worker has left the site, then the lock and tag may be removed by a qualified person under the following circumstances:
	a. The qualified person ensures the worker who placed the lock and tag has left the site; and
	b. The qualified person ensures the worker is aware the lock and tag has been removed before the worker resumes work on-site.

4.2.6 Ladders

One-third of worker deaths in construction result from falls. Many falls occur because ladders are not placed or used safely. Ladder use will comply with OSHA 1926.1053 through 1926.1060, including the following safety requirements.

STEP	PROPER LADDER USE PROCEDURE
1	Choose the right ladder for the task--the proper type and size, with a sufficient rating for the task.
2	Check the condition of the ladder before climbing. • Do not use a ladder with broken, loose, or cracked rails or rungs. • Do not use a ladder with oil, grease, or dirt on its rungs. • The ladder should have safety feet.
3	Place the ladder on firm footing, with a four-to-one pitch.
4	Support the ladder by: • Tying it off; • Using ladder outrigger stabilizers; or • Have another worker hold the ladder at the bottom. If another worker holds the ladder, they must: • Wear a hard hat; • Hold the ladder with both hands; • Brace the ladder with their feet; and • Not look up.
5	Keep the areas around the top and bottom of the ladder clear.
6	Extend the top of the ladder at least 36 inches (3 feet) above the landing.
7	Climb the ladder carefully - facing it - and use both hands. • Use a tool belt and hand-line to carry material to the top or bottom of the ladder. • Wear shoes in good repair with clean soles.
8	Inspect the ladder every day, prior to use, for the following problems: • Rail or rung damage • Broken feet • Rope or pulley damage • Rung lock defects or damage • Excessive dirt, oil, or grease If the ladder fails inspection, it must be removed from service and tagged with a "Do Not Use" sign.

Ladders with non-conductive side rails must be used when working near electrical conductors, equipment, or other sources. Ladders will not be used horizontally for platforms, runways, or scaffolds.

4.2.7 Hand and Power Tools

All hand and power tools will be maintained in a safe condition and in good repair. Hand and power tools will be used in accordance with 29 CFR 1926, Subpart I (1926.300 through 1926.307). Neither Stantec or its subcontractors will issue unsafe tools, and workers are not permitted to bring unsafe tools on-site. All tools will be

used, inspected, and maintained in accordance with the manufacturer's instructions. Throwing tools or dropping tools to lower levels is prohibited. Hand and power tools will be inspected, tested, and determined to be in safe operating condition prior to each use. Periodic safety inspections of all tools will be conducted to assure that the tools are in good condition, all guards are in place, and the tools are being properly maintained. Any tool that fails an inspection will be immediately removed from service and tagged with a "Do Not Use" sign.

Workers using hand and power tools, who are exposed to falling, flying, abrasive, or splashing hazards will be required to wear personal protective equipment (PPE). Eye protection must always be worn when working on-site. Additional eye and face protection, such as safety goggles or face shields, may also be required when working with specific hand and power tools. Workers, when on-site, will wear hard hats. Additional hearing protection may be required when working with certain power tools. Workers using tools, which may subject their hands to an injury, such as cuts, abrasions, punctures, or burns, will wear protective gloves. Loose or frayed clothing, dangling jewelry, or loose long hair will not be worn when working with power tools.

Electric power-operated tools will be double insulated or grounded, and equipped with an on/off switch. Guards must be provided to protect the operator and other nearby workers from hazards such as in-going nip points, rotating parts, flying chips, and sparks. All reciprocating, rotating and moving parts of tools will be guarded if contact is possible. Removing machine guards is prohibited.

Abrasive wheels will only be used on equipment provided with safety guards. Safety guards must be strong enough to withstand the effect of a bursting wheel. Abrasive wheels will not be operated in excess of their rated speed. Work or tool rests will not be adjusted while the wheel is in motion. All abrasive wheels will be closely inspected and ring tested before each use, and any cracked or damaged wheels will be removed immediately and destroyed.

Circular saws must be equipped with guards that completely enclose the cutting edges and have anti-kickback devices. All planer and joiner blades must be fully guarded. The use of cracked, bent, or otherwise defective parts is prohibited. Chain saws must have an automatic chain brake or kickback device. The worker operating the chain saw will hold it with both hands during cutting operations. A chain saw must never be used to cut above the operator's shoulder height. Chain saws will not be re-fueled while running or hot. Power saws will not be left unattended.

Only qualified workers will operate pneumatic tools, powder-actuated tools, and abrasive blasting tools.

4.2.8 Manual Lifting

Back injuries are among the leading occupational injuries reported by industrial workers. Back injuries such as pulls and disc impairments can be reduced by using proper manual lifting techniques. Leg muscles are stronger than back muscles, so workers should lift with their legs and not with their back. Proper manual lifting techniques include the following steps:

STEP	PROPER MANUAL LIFTING PROCEDURE
1	Plan the lift before lifting the load. Take into consideration the weight, size, and shape of the load.
2	Preview the intended path of travel and the destination to ensure there are no tripping hazards along the path.
3	Wear heavy-duty work gloves to protect hands and fingers from rough edges, sharp corners, and metal straps. Also, keep hands away from potential pinch points between the load and other objects.
4	Get the load close to your ankles, and spread your feet apart. Keep your back straight and do not bend your back too far; instead bend at your knees.
5	Feel the weight; test it.
6	Lift the load smoothly, and let your legs do the lifting. If you must pivot, do not swing just the load; instead, move your feet and body with the load.

If the load is too heavy, then do not lift it alone. Lifting is always easier when performed with another person. Assistance should always be used when it is available.

4.2.9 Weather-Related Hazards

Weather-related hazards include the potential for heat or cold stress, electrical storms, treacherous weather-related working conditions, or limited visibility. These hazards correlate with the season in which site activities occur. Outside work will be suspended during electrical storms. In the event of other adverse weather conditions, the Site Safety Officer will determine if work can continue without endangering the health and safety of site personnel.

5.0 SITE WORK ZONES

The following work zones will be physically delineated by Stantec during the investigation activities.

5.1 Control Zones

Control boundaries will be established within the areas of site activities. Examples of boundary zones include the exclusion and decontamination zone. All boundaries will be dynamic, and will be determined by the planned activities for the day. The Field Team Leader will record the names of any visitors to the site.

5.2 Exclusion Zone

The controlled portion of the site will be delineated to identify the exclusion zone, wherein a higher level of personal protective equipment may be required for entry during intrusive activities. The limits of the exclusion zone will be designated at each work location appropriately. A decontamination zone will be located immediately outside the entrance to the exclusion zone. All personnel leaving the exclusion zone will be required to adhere to proper decontamination procedures.

A "super exclusion" zone will be established around the borehole which will not be entered by Stantec personnel at any time during any active drilling, slambar, cathead, silica sand dumping, or other related activities. The drilling contractor will be directed to stop such activity when Stantec site team members have a need to enter this zone.

5.3 Decontamination Zone

The decontamination zone will be located immediately outside the entrance to the exclusion zone on its apparent upwind side, if feasible, and will be delineated with caution tape and traffic cones as needed. This zone will contain the necessary decontamination materials for personnel decontamination. Decontamination procedures are outlined in Section 8.0 of this plan.

6.0 SITE MONITORING/ACTION LEVELS

6.1 Site Monitoring

Field activities associated with drilling, excavation, and sampling may create potentially hazardous conditions due to the migration of contaminants into the breathing zone. These substances may be in the form of mists, vapors, dusts, or fumes that can enter the body through ingestion, inhalation, absorption, and direct dermal contact. Monitoring for VOCs and particulates will be performed as needed to ensure appropriate personal protective measures are employed during site activities.

A separate Community Air Monitoring Plan (CAMP) has also been developed (Appendix D of the Work Plan) to protect the surrounding neighborhood. It is assumed that continuous downwind particulate and VOC monitoring will not be required during indoor drilling and that air monitoring will not be required during the groundwater monitoring events.

Although the concentrations of anticipated contaminants in soil/groundwater should not present an explosive hazard, explosive environments or conditions may be encountered unexpectedly during the course of this project. Monitoring for explosivity in the atmosphere will be routinely conducted during site activities as a precautionary measure to ensure site personnel are not subjected to any dangerous conditions.

The following describes the conditions that will be monitored for during the investigation activities. All background and site readings will be logged, and all instrument calibrations, etc., will be logged.

Organic Vapor Concentrations – During drilling, organic vapors will be monitored continuously in the breathing zone in the work area with a portable photoionization detector (PID), such as a miniRAE Model 2000 with a 10.2 eV lamp. The instrument will be calibrated daily or as per the manufacturer's recommendations. PID readings will be used as the criteria for upgrading or downgrading protective equipment and for implementing additional precautions or procedures.

Split spoons or other soil sampling devices will be monitored using the PID at the time they are opened, with appropriate PPE to be used where soils exhibit measurable volatile organic compound levels.

Explosivity - Explosivity will be monitored continuously during active drilling operations. Measurements obtained from this monitoring instrument will also be used as criteria for implementation of work stoppage or site evacuation. A combination combustible gas/oxygen (CGO_2) instrument, calibrated per manufacturer's recommendations, will be used.

Particulates - Should subsurface conditions be observed to be dry, Stantec will perform particulate monitoring with a MIE PDM-3 Miniram aerosol monitor (or similar), within the outdoor work area to monitor personal exposures to particulates and to compare work area readings with downwind and upwind readings. The first readings of the day will be obtained prior to the commencement of work to obtain a daily background reading, and the instrument will be zeroed daily and calibrated to manufacturer's specifications. Readings will be recorded every 30 minutes thereafter. If the work area particulate levels exceed the background levels by more than 0.15 mg/m^3, the Contractor will be instructed to implement dust suppression measures.

6.2 Action Levels

During the course of any activity, as long as PID readings in the breathing zone are less than 5 ppm above background, Level D protection will be considered adequate. Level C protection will be required when VOC concentrations in ambient air in the work zone exceed 5 ppm total VOCs above background but remain below 50 ppm total VOCs.

If concentrations in the work zone exceed 50 ppm for a period of 5 minutes or longer, work will immediately be terminated by the Site Safety Officer. Options to allow continued drilling would then be discussed amongst all parties. Supplied-air respiratory protection is generally required for drilling to resume under these conditions. If Level B protection is not used, work may resume in Level C once monitoring concentrations have decreased below 50 ppm and conditions outlined in the CAMP are met.

If the monitoring of fugitive particulate levels within the work area exceeds 0.15 mg/m^3 above background, then the drilling Contractor will be directed to implement fugitive dust control measures which may include use of engineering controls such as water spray at the borehole.

7.0 PERSONAL PROTECTIVE EQUIPMENT

Based on an evaluation of the hazards at the site, personal protective equipment (PPE) will be required for all personnel and visitors entering the drilling exclusion zone(s). It is anticipated that all Stantec oversight work will be performed in Level D. All contractors will be responsible for selection and implementation of PPE for their personnel.

7.1 Protective Clothing/Respiratory Protection:

Protective equipment for each level of protection is as follows:

If PID readings are above 50 ppm, requiring an upgrade to Level B, site work will be halted pending review of conditions and options by Stantec and other involved parties.

When PID readings range between 5 and 50 ppm, upgrade to Level C:

<u>Level C</u>

- Full face, air purifying respirator with organic/HEPA cartridge;
- Disposable chemical resistant one-piece suit (Tyvek or Saranex, as appropriate);
- Inner and outer chemical resistant gloves;
- Hard hat;
- Steel-toed boots; and
- Disposable booties.

When PID readings range between background and 5 ppm use Level D:

Level D

- Safety glasses;
- Steel-toed boots;
- Protective cotton, latex or leather gloves depending on site duties;
- Hard hat; and
- Tyvek coverall (optional).

8.0 DECONTAMINATION

8.1 Personnel Decontamination

For complete decontamination, all personnel will observe the following procedures upon leaving the exclusion zone:

1. Remove outer boots and outer gloves and place in disposal drum.

2. If using a respirator, remove respirator, dispose of cartridges if necessary, and set aside for later cleaning.

3. Remove disposable chemical resistant suits and dispose of in drum.

4. Remove and dispose of inner gloves.

Decontamination solutions shall be supplied at the decontamination zone. The wash solution will consist of water and detergent such as Alconox or trisodium phosphate (TSP), and the rinse solution will consist of clean water.

Contaminated wash solutions shall be collected in drums for disposal. All other disposable health and safety equipment will be decontaminated and disposed of as non-hazardous waste.

8.2 Equipment Decontamination

If equipment is used during field activities, it will be properly washed or steam-cleaned prior to exiting the decontamination zone. Pre- or post-use rinsing using solvents will be done wearing appropriate PPE.

Monitoring instruments will be either wrapped in polysheeting or carried by personnel not involved in handling contaminated materials, to reduce the need for decontamination. All instruments will be wet-wiped prior to removal from the work zone.

9.0 EMERGENCY PROCEDURES

The Site Safety Officer will coordinate emergency procedures and will be responsible for initiating emergency response activities. Emergency communications at the site will be conducted verbally and by means of an air or vehicle horn. All personnel will be informed of the location of the cellular telephone and horn. Three blasts on the air or vehicle horn will be used to signal distress.

9.1 List of Emergency Contacts

Ambulance: 911
Hospital: Strong Memorial Hospital, Rochester, NY: (585) 275-2100
Fire Department: 911

Police: 911
Poison Control Center: (585) 222-1222
RG&E Utility Emergency: 911 or (800) 743-1702

9.2 Directions to Hospital

A map presenting directions to the hospital is included in the back of the document (Figure 2). The route shall be reviewed at the initial site safety meeting on site.

9.3 Accident Investigation and Reporting

A. All accidents requiring first aid, which occur incidental to activities onsite, will be investigated. The investigation format will be as follows:

- interviews with witnesses,
- pictures, if applicable, and
- necessary actions to alleviate the problem.

B. In the event that an accident or some other incident such as an explosion or exposure to toxic chemicals occurs during the course of the project, the Project Health and Safety Officer will be telephoned as soon as possible and receive a written notification within 24 hours. The report will include the following items:

- Name of injured;
- Name and title of person(s) reporting;
- Date and time of accident/incident;
- Location of accident/incident, building number, facility name;
- Brief summary of accident/incident giving pertinent details including type of operation ongoing at the time of the accident/incident;
- Cause of accident/incident;
- Casualties (fatalities, disabling injuries), hospitalizations;
- Details of any existing chemical hazard or contamination;
- Estimated property damage, if applicable;
- Nature of damage; effect on contract schedule;
- Action taken to insure safety and security; and
- Other damage or injuries sustained (public or private).

Where reportable injuries, hospitalizations or fatalities occur amongst Stantec personnel, the necessary document required by OSHA will be submitted within timeframes allowed by law.

The accident report form is illustrated in Table 4.

TABLE 4
ACCIDENT REPORT

Project Former Alliance Metal Stamping & Fabrication Facility Site
Date of Occurrence_____

Location __12 Pixley Industrial Parkway, Gates, NY 14624_____
_____

Type of Occurrence: (check all that Apply)

☐Disabling Injury	☐Other Injury
☐Property Damage	☐Equip. Failure
☐Chemical Exposure	☐Fire
☐Explosion	☐Vehicle Accident

☐Other (explain)_____
_____

Witnesses to Accident/Injury:

_____ _____
_____ _____
_____ _____

Injuries:
Name of Injured _____

What was being done at the time of the accident/injury?

_____
_____

What corrective actions will be taken to prevent recurrence? _____
_____
_____

SIGNATURES

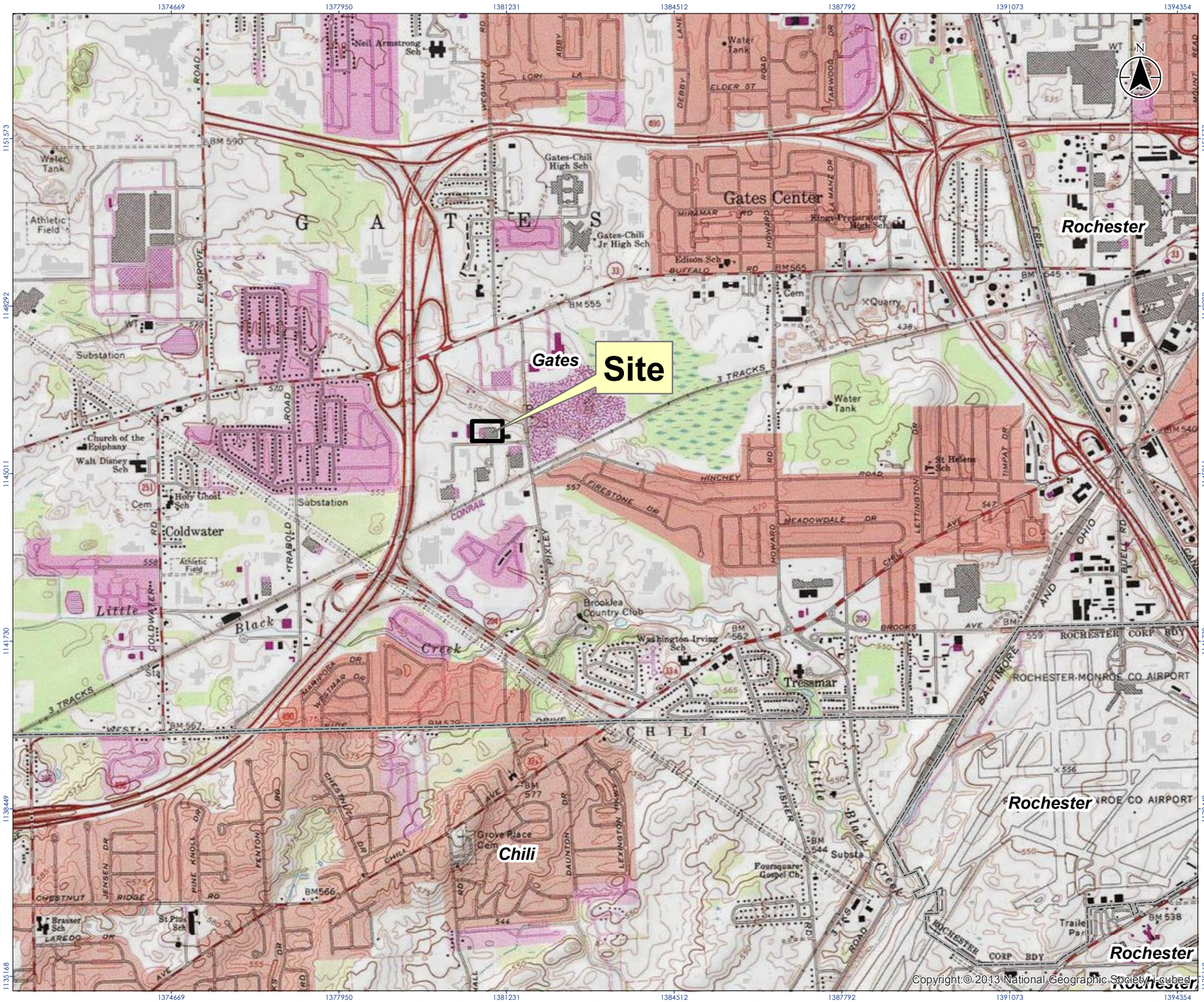
Health and Safety Officer _____ Date _____

Project Manager _____ Date _____

Reviewer _____ Date _____

Comments by reviewer _____
_____
_____

FIGURES



Stantec

N

0 2,000 4,000 Feet

Notes

1. Coordinate System: NAD 1983 StatePlane New York West FIPS 3103 Feet
2. USGS Map Source :This map presents land cover imagery for the world and detailed topographic maps for the United States. The map includes the National Park Service (NPS) Natural Earth physical map at 1.24km per pixel for the world at small scales, i-cubed eTOPO 1:250,000-scale maps for the contiguous United States at medium scales, and National Geographic TOPO! 1:100,000 and 1:24,000-scale maps (1:250,000 and 1:63,000 in Alaska) for the United States at large scales. The TOPO! maps are seamless, scanned images of United States Geological Survey (USGS) paper topographic maps. For more information on this map, including terms of use, visit online at http://goto.arcgisonline.com/maps/USA_Topo_Maps

Project Location:	Prepared by	AL	on 2017-07-17
12 Pixley Industrial Parkway	Technical Review by	TW	on 2017-07-17
Town of Gates, NY	Independent Review by	MPS	on 2017-07-17

190500647

Client/Project
Former Alliance Metal Stamping and Fabrication Facility
Brownfield Cleanup Program Site #C828101

Figure No.
1

Title
Site Location Map

I:\190500647\Drawing\Alternative Analysis Report Figures\GIS\Figure1 Site Location Map.mxd Revised: 2017-07-17 By: dates

FIGURE 2

Directions and Map from the Site to Strong Memorial Hospital, Rochester, NY

Google maps Canada

Directions to Strong Memorial Hospital
601 Elmwood Avenue, Rochester, NY 14620,
United States - (585) 275-2100
6.1 mi – about **12 mins**
Figure 2 - Directions and Map from the site to Strong Memorial Hospital, Rochester, NY

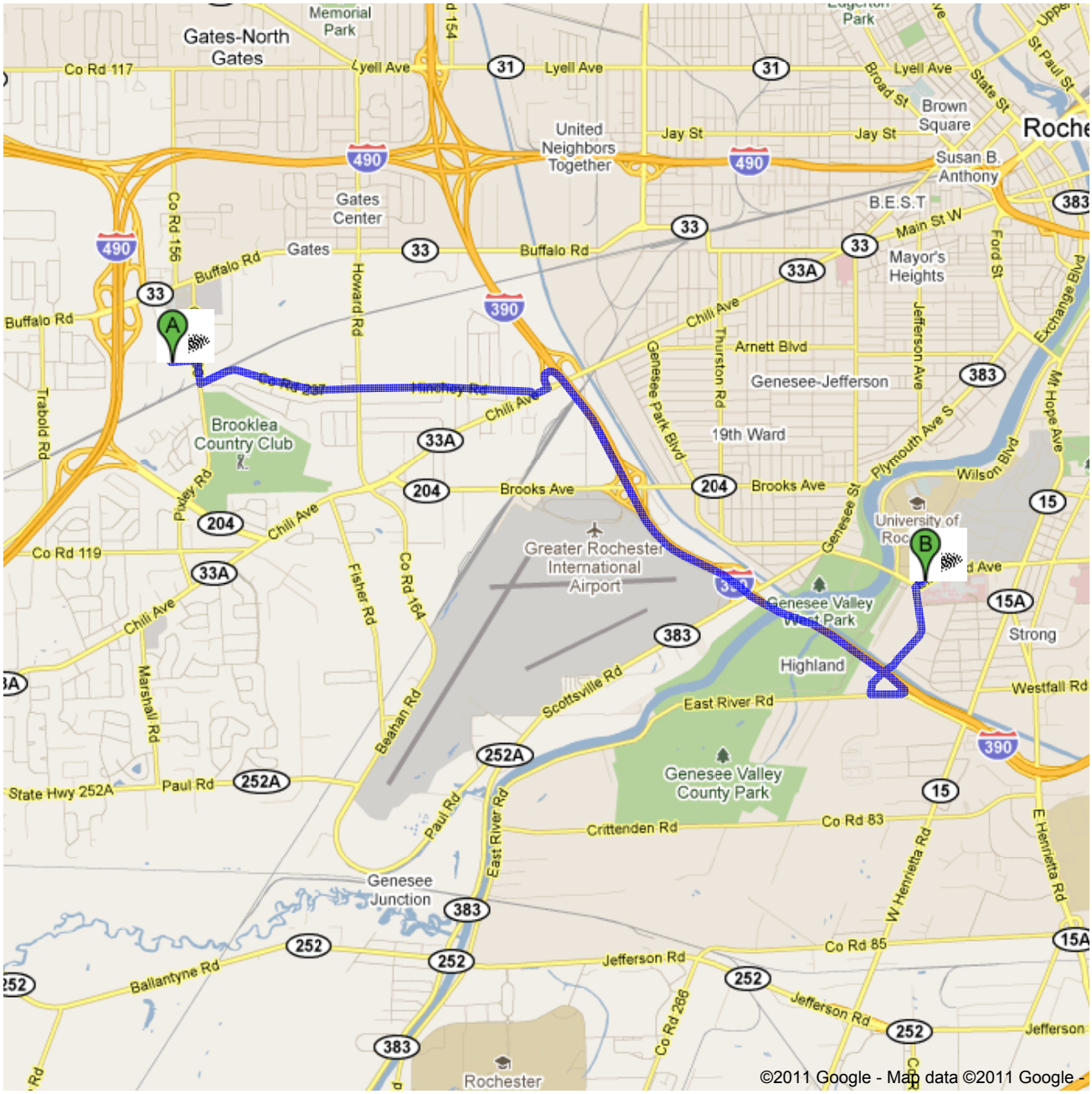


Figure 2 - Directions and Map from the site to Strong Memorial Hospital, Rochester, NY

12 Pixley Industrial Pkwy, Rochester, NY 14624, USA

1.	Head **east** on **Pixley Industrial Pkwy** toward **Aluminum Rd**	go 0.1 mi total 0.1 mi
2.	Take the 1st right onto **Co Rd 160/Pixley Rd**	go 0.1 mi total 0.3 mi
3.	Take the 1st left onto **Co Rd 237/Hinchey Rd** About 4 mins	go 1.9 mi total 2.2 mi
4.	Turn left at **New York 33A E/Chili Ave** About 1 min	go 456 ft total 2.3 mi
5.	Turn left to merge onto **I-390 S** About 3 mins	go 2.8 mi total 5.0 mi
6.	Take exit **16A** for **E River Rd** toward **NY-15/W Henrietta Rd**	go 0.1 mi total 5.2 mi
7.	Sharp right at **Co Rd 84/E River Rd**	go 0.2 mi total 5.3 mi
8.	Take the 1st right onto **Kendrick Rd** About 2 mins	go 0.7 mi total 6.0 mi
9.	Turn right at **Elmwood Ave** Destination will be on the right	go 262 ft total 6.1 mi

Strong Memorial Hospital
601 Elmwood Avenue, Rochester, NY 14620, United States - (585) 275-2100

These directions are for planning purposes only. You may find that construction projects, traffic, weather, or other events may cause conditions to differ from the map results, and you should plan your route accordingly. You must obey all signs or notices regarding your route.

Directions weren't right? Please find your route on maps.google.ca and click "Report a problem" at the bottom left.

Figure 2 - Directions and Map from the site to Strong Memorial Hospital, Rochester, NY

APPENDIX A
MATERIAL SAFETY DATA SHEETS

NIOSH Publication No. 2005-149: **September 2005**

NIOSH Pocket Guide to Chemical Hazards

NPG Home | Introduction | Synonyms & Trade Names | Chemical Names | CAS Numbers | RTECS Numbers | Appendices | Search

Trichloroethylene

CAS

79-01-6

RTECS

KX4550000

DOT ID & Guide

1710 160

CICH=CCl$_2$

Synonyms & Trade Names

Ethylene trichloride, TCE, Trichloroethene, Trilene

Exposure Limits

NIOSH REL: Ca See Appendix A See Appendix C

OSHA PEL†: TWA 100 ppm C 200 ppm 300 ppm (5-minute maximum peak in any 2 hours)

IDLH

Ca [1000 ppm] See: 79016

Conversion

1 ppm = 5.37 mg/m^3

Physical Description

Colorless liquid (unless dyed blue) with a chloroform-like odor.

MW: 131.4	BP: 189°F	FRZ: -99°F	Sol(77°F): 0.1%
VP: 58 mmHg	IP: 9.45 eV		Sp.Gr: 1.46
Fl.P: ?	UEL(77°F): 10.5%	LEL(77°F): 8%	

Combustible Liquid, but burns with difficulty.

Incompatibilities & Reactivities

Strong caustics & alkalis; chemically-active metals (such as barium, lithium, sodium, magnesium, titanium & beryllium)

Measurement Methods

NIOSH 1022, 3800; OSHA 1001

See: NMAM or OSHA Methods

Personal Protection & Sanitation

(See protection)
Skin: Prevent skin contact
Eyes: Prevent eye contact
Wash skin: When contaminated
Remove: When wet or contaminated
Change: No recommendation
Provide: Eyewash, Quick drench

First Aid

(See procedures)
Eye: Irrigate immediately
Skin: Soap wash promptly
Breathing: Respiratory support
Swallow: Medical attention immediately

Respirator Recommendations

NIOSH
At concentrations above the NIOSH REL, or where there is no REL, at any detectable concentration:
(APF = 10,000) Any self-contained breathing apparatus that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode
(APF = 10,000) Any supplied-air respirator that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode in combination with an auxiliary self-contained positive-pressure breathing apparatus
Escape:
(APF = 50) Any air-purifying, full-facepiece respirator (gas mask) with a chin-style, front- or back-mounted organic vapor canister/Any appropriate escape-type, self-contained breathing apparatus
Important additional information about respirator selection

Exposure Routes

inhalation, skin absorption, ingestion, skin and/or eye contact

Symptoms

Irritation eyes, skin; headache, visual disturbance, lassitude (weakness, exhaustion), dizziness, tremor, drowsiness, nausea, vomiting; dermatitis; cardiac arrhythmias, paresthesia; liver injury; [potential occupational carcinogen]

Target Organs

Eyes, skin, respiratory system, heart, liver, kidneys, central nervous system

Cancer Site

[in animals: liver & kidney cancer]

See also: INTRODUCTION See ICSC CARD: 0081 See MEDICAL TESTS: 0236

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Tetrachloroethylene

Synonyms & Trade Names Perchlorethylene, Perchloroethylene, Perk, Tetrachlorethylene

CAS No. 127-18-4	**RTECS No.** KX3850000	**DOT ID & Guide** 1897 160
Formula $Cl_2C=CCl_2$	**Conversion** 1 ppm = 6.78 mg/m^3	**IDLH** Ca [150 ppm] See: 127184
Exposure Limits **NIOSH REL** : Ca Minimize workplace exposure concentrations. See Appendix A **OSHA PEL** †: TWA 100 ppm C 200 ppm (for 5 minutes in any 3-hour period), with a maximum peak of 300 ppm		**Measurement Methods** **NIOSH** 1003 ; **OSHA** 1001 See: NMAM or OSHA Methods

Physical Description Colorless liquid with a mild, chloroform-like odor.

MW: 165.8	**BP:** 250°F	**FRZ:** -2°F	**Sol:** 0.02%	**VP:** 14 mmHg	**IP:** 9.32 eV
Sp.Gr: 1.62	**Fl.P:** NA	**UEL:** NA	**LEL:** NA		

Noncombustible Liquid, but decomposes in a fire to hydrogen chloride and phosgene.

Incompatibilities & Reactivities Strong oxidizers; chemically-active metals such as lithium, beryllium & barium; caustic soda; sodium hydroxide; potash

Exposure Routes inhalation, skin absorption, ingestion, skin and/or eye contact

Symptoms irritation eyes, skin, nose, throat, respiratory system; nausea; flush face, neck; dizziness, incoordination; headache, drowsiness; skin erythema (skin redness); liver damage; [potential occupational carcinogen]

Target Organs Eyes, skin, respiratory system, liver, kidneys, central nervous system

Cancer Site [in animals: liver tumors]

Personal Protection/Sanitation (See protection codes) **Skin:** Prevent skin contact **Eyes:** Prevent eye contact	**First Aid** (See procedures) **Eye:** Irrigate immediately

Wash skin: When contaminated **Remove:** When wet or contaminated **Change:** No recommendation **Provide:** Eyewash, Quick drench	**Skin:** Soap wash promptly **Breathing:** Respiratory support **Swallow:** Medical attention immediately

Respirator Recommendations

NIOSH

At concentrations above the NIOSH REL, or where there is no REL, at any detectable concentration:
(APF = 10,000) Any self-contained breathing apparatus that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode
(APF = 10,000) Any supplied-air respirator that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode in combination with an auxiliary self-contained positive-pressure breathing apparatus

Escape:
(APF = 50) Any air-purifying, full-facepiece respirator (gas mask) with a chin-style, front- or back-mounted organic vapor canister
Any appropriate escape-type, self-contained breathing apparatus

Important additional information about respirator selection

See also: INTRODUCTION See ICSC CARD: 0076 See MEDICAL TESTS: 0179

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Ethyl chloride

Synonyms & Trade Names Chloroethane, Hydrochloric ether, Monochloroethane, Muriatic ether

CAS No. 75-00-3	**RTECS No.** KH7525000	**DOT ID & Guide** 1037 115
Formula CH_3CH_2Cl	**Conversion** 1 ppm = 2.64 mg/m³	**IDLH** 3800 ppm [10%LEL] See: 75003
Exposure Limits **NIOSH REL** : Handle with caution in the workplace. See Appendix C (Chloroethanes) **OSHA PEL** : TWA 1000 ppm (2600 mg/m³)		**Measurement Methods** **NIOSH** 2519 See: NMAM or OSHA Methods

Physical Description Colorless gas or liquid (below 54°F) with a pungent, ether-like odor. [Note: Shipped as a liquefied compressed gas.]

MW: 64.5	**BP:** 54°F	**FRZ:** -218°F	**Sol:** 0.6%	**VP:** 1000 mmHg	**IP:** 10.97 eV
Sp.Gr: 0.92 (Liquid at 32°F)	**Fl.P:** NA (Gas) - 58°F (Liquid)	**UEL:** 15.4%	**LEL:** 3.8%	**RGasD:** 2.23	

Flammable Gas

Incompatibilities & Reactivities Chemically-active metals such as sodium, potassium, calcium, powdered aluminum, zinc & magnesium; oxidizers; water or steam [Note: Reacts with water to form hydrochloric acid.]

Exposure Routes inhalation, skin absorption (liquid), ingestion (liquid), skin and/or eye contact

Symptoms incoordination, inebriation; abdominal cramps; cardiac arrhythmias, cardiac arrest; liver, kidney damage

Target Organs Liver, kidneys, respiratory system, cardiovascular system, central nervous system

Personal Protection/Sanitation (See protection codes) **Skin:** Prevent skin contact (liquid) **Eyes:** Prevent eye contact (liquid) **Wash skin:** No recommendation **Remove:** When wet (flammable)	**First Aid** (See procedures) **Eye:** Irrigate immediately (liquid) **Skin:** Water flush promptly (liquid)

Change: No recommendation	**Breathing:** Respiratory support **Swallow:** Medical attention immediately (liquid)

Respirator Recommendations
OSHA

Up to 3800 ppm:
(APF = 10) Any supplied-air respirator*
(APF = 50) Any self-contained breathing apparatus with a full facepiece

Emergency or planned entry into unknown concentrations or IDLH conditions:

(APF = 10,000) Any self-contained breathing apparatus that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode
(APF = 10,000) Any supplied-air respirator that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode in combination with an auxiliary self-contained positive-pressure breathing apparatus

Escape:
(APF = 50) Any air-purifying, full-facepiece respirator (gas mask) with a chin-style, front- or back-mounted organic vapor canister
Any appropriate escape-type, self-contained breathing apparatus

Important additional information about respirator selection

See also: INTRODUCTION See ICSC CARD: 0132

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1,1-Dichloroethane

Synonyms & Trade Names Asymmetrical dichloroethane; Ethylidene chloride; 1,1-Ethylidene dichloride

CAS No. 75-34-3	**RTECS No.** KI0175000	**DOT ID & Guide** 2362 130
Formula $CHCl_2CH_3$	**Conversion** 1 ppm = 4.05 mg/m³	**IDLH** 3000 ppm See: 75343
Exposure Limits **NIOSH REL** : TWA 100 ppm (400 mg/m³) See Appendix C (Chloroethanes) **OSHA PEL** : TWA 100 ppm (400 mg/m³)		**Measurement Methods** **NIOSH** 1003 ; **OSHA** 7 See: NMAM or OSHA Methods

Physical Description Colorless, oily liquid with a chloroform-like odor.

MW: 99.0	**BP:** 135°F	**FRZ:** -143°F	**Sol:** 0.6%	**VP:** 182 mmHg	**IP:** 11.06 eV
Sp.Gr: 1.18	**Fl.P:** 2°F	**UEL:** 11.4%	**LEL:** 5.4%		

Class IB Flammable Liquid: Fl.P. below 73°F and BP at or above 100°F.

Incompatibilities & Reactivities Strong oxidizers, strong caustics

Exposure Routes inhalation, ingestion, skin and/or eye contact

Symptoms irritation skin; central nervous system depression; liver, kidney, lung damage

Target Organs Skin, liver, kidneys, lungs, central nervous system

Personal Protection/Sanitation (See protection codes) **Skin:** Prevent skin contact **Eyes:** Prevent eye contact	**First Aid** (See procedures) **Eye:** Irrigate immediately **Skin:** Soap flush promptly

Wash skin: When contaminated **Remove:** When wet (flammable) **Change:** No recommendation	**Breathing:** Respiratory support **Swallow:** Medical attention immediately

Respirator Recommendations

NIOSH/OSHA

Up to 1000 ppm:
(APF = 10) Any supplied-air respirator

Up to 2500 ppm:
(APF = 25) Any supplied-air respirator operated in a continuous-flow mode

Up to 3000 ppm:
(APF = 50) Any self-contained breathing apparatus with a full facepiece
(APF = 50) Any supplied-air respirator with a full facepiece

Emergency or planned entry into unknown concentrations or IDLH conditions:

(APF = 10,000) Any self-contained breathing apparatus that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode
(APF = 10,000) Any supplied-air respirator that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode in combination with an auxiliary self-contained positive-pressure breathing apparatus

Escape:
(APF = 50) Any air-purifying, full-facepiece respirator (gas mask) with a chin-style, front- or back-mounted organic vapor canister
Any appropriate escape-type, self-contained breathing apparatus

Important additional information about respirator selection

See also: INTRODUCTION See ICSC CARD: 0249

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Vinylidene chloride

Synonyms & Trade Names 1,1-DCE; 1,1-Dichloroethene; 1,1-Dichloroethylene; VDC; Vinylidene chloride monomer; Vinylidene dichloride

CAS No. 75-35-4	**RTECS No.** KV9275000	**DOT ID & Guide** 1303 130P (inhibited)
Formula $CH_2=CCl_2$	**Conversion**	**IDLH** Ca [N.D.] See: IDLH INDEX
Exposure Limits **NIOSH REL** : Ca See Appendix A **OSHA PEL** †: none		**Measurement Methods** **NIOSH** 1015 ; **OSHA** 19 See: NMAM or OSHA Methods

Physical Description Colorless liquid or gas (above 89°F) with a mild, sweet, chloroform-like odor.

MW: 96.9	**BP:** 89°F	**FRZ:** -189°F	**Sol:** 0.04%	**VP:** 500 mmHg	**IP:** 10.00 eV
Sp.Gr: 1.21	**Fl.P:** -2°F	**UEL:** 15.5%	**LEL:** 6.5%		

Class IA Flammable Liquid: Fl.P. below 73°F and BP below 100°F.

Incompatibilities & Reactivities Aluminum, sunlight, air, copper, heat [Note: Polymerization may occur if exposed to oxidizers, chlorosulfonic acid, nitric acid, or oleum. Inhibitors such as the monomethyl ether of hydroquinone are added to prevent polymerization.]

Exposure Routes inhalation, skin absorption, ingestion, skin and/or eye contact

Symptoms irritation eyes, skin, throat; dizziness, headache, nausea, dyspnea (breathing difficulty); liver, kidney disturbance; pneumonitis; [potential occupational carcinogen]

Target Organs Eyes, skin, respiratory system, central nervous system, liver, kidneys

Cancer Site [in animals: liver & kidney tumors]

Personal Protection/Sanitation (See protection codes)
Skin: Prevent skin contact
Eyes: Prevent eye contact
Wash skin: When contaminated
Remove: When wet (flammable)
Change: No recommendation
Provide: Eyewash, Quick drench

First Aid (See procedures)
Eye: Irrigate immediately
Skin: Soap flush immediately

Breathing: Respiratory support
Swallow: Medical attention immediately

Respirator Recommendations

NIOSH

At concentrations above the NIOSH REL, or where there is no REL, at any detectable concentration:
(APF = 10,000) Any self-contained breathing apparatus that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode
(APF = 10,000) Any supplied-air respirator that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode in combination with an auxiliary self-contained positive-pressure breathing apparatus

Escape:
(APF = 50) Any air-purifying, full-facepiece respirator (gas mask) with a chin-style, front- or back-mounted organic vapor canister
Any appropriate escape-type, self-contained breathing apparatus

Important additional information about respirator selection

See also: INTRODUCTION See ICSC CARD: 0083

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NPG Home | Introduction | Synonyms & Trade Names | Chemical Names | CAS Numbers | RTECS Numbers | Appendices | Search

1,2-Dichloroethylene

CAS

540-59-0

RTECS

KV9360000

DOT ID & Guide

1150 130P

CICH=CHCl

Synonyms & Trade Names

Acetylene dichloride, cis-Acetylene dichloride, trans-Acetylene dichloride, sym-Dichloroethylene

Exposure Limits

NIOSH REL: TWA 200 ppm (790 mg/m^3)

OSHA PEL: TWA 200 ppm (790 mg/m^3)

IDLH

1000 ppm See: 540590

Conversion

1 ppm = 3.97 mg/m^3

Physical Description

Colorless liquid (usually a mixture of the cis & trans isomers) with a slightly acrid, chloroform-like odor.

MW: 97.0	BP: 118-140°F	FRZ: -57 to -115°F	Sol: 0.4%
VP: 180-265 mmHg	IP: 9.65 eV		Sp.Gr(77°F): 1.27
Fl.P: 36-39°F	UEL: 12.8%	LEL: 5.6%	

Class IB Flammable Liquid: Fl.P. below 73°F and BP at or above 100°F.

Incompatibilities & Reactivities

Strong oxidizers, strong alkalis, potassium hydroxide, copper [Note: Usually contains inhibitors to prevent polymerization.]

Measurement Methods

NIOSH 1003; OSHA 7
See: NMAM or OSHA Methods

Personal Protection & Sanitation

(See protection)
Skin: Prevent skin contact
Eyes: Prevent eye contact
Wash skin: When contaminated
Remove: When wet (flammable)
Change: No recommendation

First Aid

(See procedures)
Eye: Irrigate immediately
Skin: Soap wash promptly
Breathing: Respiratory support
Swallow: Medical attention immediately

Respirator Recommendations

NIOSH/OSHA
Up to 2000 ppm:
(APF = 25) Any supplied-air respirator operated in a continuous-flow mode£
(APF = 25) Any powered, air-purifying respirator with organic vapor cartridge(s)£
(APF = 50) Any chemical cartridge respirator with a full facepiece and organic vapor cartridge(s)
(APF = 50) Any air-purifying, full-facepiece respirator (gas mask) with a chin-style, front- or back-mounted organic vapor canister
(APF = 50) Any self-contained breathing apparatus with a full facepiece
(APF = 50) Any supplied-air respirator with a full facepiece
Emergency or planned entry into unknown concentrations or IDLH conditions:
(APF = 10,000) Any self-contained breathing apparatus that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode
(APF = 10,000) Any supplied-air respirator that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode in combination with an auxiliary self-contained positive-pressure breathing apparatus
Escape:
(APF = 50) Any air-purifying, full-facepiece respirator (gas mask) with a chin-style, front- or back-mounted organic vapor canister/Any appropriate escape-type, self-contained breathing apparatus
Important additional information about respirator selection

Exposure Routes

inhalation, ingestion, skin and/or eye contact

Symptoms

Irritation eyes, respiratory system; central nervous system depression

Target Organs

Eyes, respiratory system, central nervous system

See also: INTRODUCTION See ICSC CARD: 0436

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Methyl chloroform

Synonyms & Trade Names Chlorothene; 1,1,1-Trichloroethane; 1,1,1-Trichloroethane (stabilized)					
CAS No. 71-55-6	**RTECS No.** KJ2975000			**DOT ID & Guide** 2831 160	
Formula CH_3CCl_3	**Conversion** 1 ppm = 5.46 mg/m³			**IDLH** 700 ppm See: 71556	
Exposure Limits **NIOSH REL** : C 350 ppm (1900 mg/m³) [15-minute] See Appendix C (Chloroethanes) **OSHA PEL** †: TWA 350 ppm (1900 mg/m³)				**Measurement Methods** **NIOSH** 1003 See: NMAM or OSHA Methods	
Physical Description Colorless liquid with a mild, chloroform-like odor.					
MW: 133.4	**BP:** 165°F	**FRZ:** -23°F	**Sol:** 0.4%	**VP:** 100 mmHg	**IP:** 11.00 eV
Sp.Gr: 1.34	**Fl.P:** ?	**UEL:** 12.5%	**LEL:** 7.5%		
Combustible Liquid, but burns with difficulty.					
Incompatibilities & Reactivities Strong caustics; strong oxidizers; chemically-active metals such as zinc, aluminum, magnesium powders, sodium & potassium; water [Note: Reacts slowly with water to form hydrochloric acid.]					
Exposure Routes inhalation, ingestion, skin and/or eye contact					
Symptoms irritation eyes, skin; headache, lassitude (weakness, exhaustion), central nervous system depression, poor equilibrium; dermatitis; cardiac arrhythmias; liver damage					
Target Organs Eyes, skin, central nervous system, cardiovascular system, liver					
Personal Protection/Sanitation (See protection codes) **Skin:** Prevent skin contact				**First Aid** (See procedures) **Eye:** Irrigate immediately	

Eyes: Prevent eye contact **Wash skin:** When contaminated **Remove:** When wet or contaminated **Change:** No recommendation	**Skin:** Soap wash promptly **Breathing:** Respiratory support **Swallow:** Medical attention immediately

Respirator Recommendations

NIOSH/OSHA

Up to 700 ppm:
(APF = 10) Any supplied-air respirator*
(APF = 50) Any self-contained breathing apparatus with a full facepiece

Emergency or planned entry into unknown concentrations or IDLH conditions:

(APF = 10,000) Any self-contained breathing apparatus that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode
(APF = 10,000) Any supplied-air respirator that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode in combination with an auxiliary self-contained positive-pressure breathing apparatus

Escape:
(APF = 50) Any air-purifying, full-facepiece respirator (gas mask) with a chin-style, front- or back-mounted organic vapor canister
Any appropriate escape-type, self-contained breathing apparatus

Important additional information about respirator selection

See also: INTRODUCTION See ICSC CARD: 0079 See MEDICAL TESTS: 0141

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Vinyl chloride

Synonyms & Trade Names Chloroethene, Chloroethylene, Ethylene monochloride, Monochloroethene, Monochloroethylene, VC, Vinyl chloride monomer (VCM)

CAS No. 75-01-4	**RTECS No.** KU9625000	**DOT ID & Guide** 1086 116P (inhibited)
Formula CH_2=CHCl	**Conversion** 1 ppm = 2.56 mg/m^3	**IDLH** Ca [N.D.] See: IDLH INDEX
Exposure Limits **NIOSH REL** : Ca See Appendix A **OSHA PEL** : [1910.1017] TWA 1 ppm C 5 ppm [15-minute]		**Measurement Methods** **NIOSH** 1007 ; **OSHA** 4 , 75 See: NMAM or OSHA Methods

Physical Description Colorless gas or liquid (below 7°F) with a pleasant odor at high concentrations. [Note: Shipped as a liquefied compressed gas.]

MW: 62.5	**BP:** 7°F	**FRZ:** -256°F	Sol(77°F): 0.1%	**VP:** 3.3 atm	**IP:** 9.99 eV
	Fl.P: NA (Gas)	**UEL:** 33.0%	**LEL:** 3.6%	**RGasD:** 2.21	

Flammable Gas

Incompatibilities & Reactivities Copper, oxidizers, aluminum, peroxides, iron, steel [Note: Polymerizes in air, sunlight, or heat unless stabilized by inhibitors such as phenol. Attacks iron & steel in presence of moisture.]

Exposure Routes inhalation, skin and/or eye contact (liquid)

Symptoms lassitude (weakness, exhaustion); abdominal pain, gastrointestinal bleeding; enlarged liver; pallor or cyanosis of extremities; liquid: frostbite; [potential occupational carcinogen]

Target Organs Liver, central nervous system, blood, respiratory system, lymphatic system

Cancer Site [liver cancer]

Personal Protection/Sanitation (See protection codes)
Skin: Frostbite
Eyes: Frostbite
Wash skin: No recommendation
Remove: When wet (flammable)
Change: No recommendation
Provide: Frostbite wash

First Aid (See procedures)
Eye: Frostbite
Skin: Frostbite
Breathing: Respiratory support

Respirator Recommendations
(See Appendix E)

NIOSH

At concentrations above the NIOSH REL, or where there is no REL, at any detectable concentration:
(APF = 10,000) Any self-contained breathing apparatus that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode
(APF = 10,000) Any supplied-air respirator that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode in combination with an auxiliary self-contained positive-pressure breathing apparatus

Escape:
(APF = 50) Any air-purifying, full-facepiece respirator (gas mask) with a chin-style, front- or back-mounted canister providing protection against the compound of concern
Any appropriate escape-type, self-contained breathing apparatus

Important additional information about respirator selection

See also: INTRODUCTION See ICSC CARD: 0082 See MEDICAL TESTS: 0241

Page last reviewed: April 4, 2011
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Content source: National Institute for Occupational Safety and Health (NIOSH) Education and Information Division

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September 2005

NIOSH Publication Number 2005-149

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1,1-Dichloroethane

Synonyms & Trade Names Asymmetrical dichloroethane; Ethylidene chloride; 1,1-Ethylidene dichloride

CAS No. 75-34-3	**RTECS No.** KI0175000	**DOT ID & Guide** 2362 130
Formula $CHCl_2CH_3$	**Conversion** 1 ppm = 4.05 mg/m³	**IDLH** 3000 ppm See: 75343
Exposure Limits **NIOSH REL** : TWA 100 ppm (400 mg/m³) See Appendix C (Chloroethanes) **OSHA PEL** : TWA 100 ppm (400 mg/m³)		**Measurement Methods** **NIOSH** 1003 ; **OSHA** 7 See: NMAM or OSHA Methods

Physical Description Colorless, oily liquid with a chloroform-like odor.

MW: 99.0	**BP:** 135°F	**FRZ:** -143°F	**Sol:** 0.6%	**VP:** 182 mmHg	**IP:** 11.06 eV
Sp.Gr: 1.18	**Fl.P:** 2°F	**UEL:** 11.4%	**LEL:** 5.4%		

Class IB Flammable Liquid: Fl.P. below 73°F and BP at or above 100°F.

Incompatibilities & Reactivities Strong oxidizers, strong caustics

Exposure Routes inhalation, ingestion, skin and/or eye contact

Symptoms irritation skin; central nervous system depression; liver, kidney, lung damage

Target Organs Skin, liver, kidneys, lungs, central nervous system

Personal Protection/Sanitation (See protection codes) **Skin:** Prevent skin contact **Eyes:** Prevent eye contact	**First Aid** (See procedures) **Eye:** Irrigate immediately **Skin:** Soap flush promptly

Wash skin: When contaminated **Remove:** When wet (flammable) **Change:** No recommendation	**Breathing:** Respiratory support **Swallow:** Medical attention immediately

Respirator Recommendations

NIOSH/OSHA

Up to 1000 ppm:
(APF = 10) Any supplied-air respirator

Up to 2500 ppm:
(APF = 25) Any supplied-air respirator operated in a continuous-flow mode

Up to 3000 ppm:
(APF = 50) Any self-contained breathing apparatus with a full facepiece
(APF = 50) Any supplied-air respirator with a full facepiece

Emergency or planned entry into unknown concentrations or IDLH conditions:

(APF = 10,000) Any self-contained breathing apparatus that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode
(APF = 10,000) Any supplied-air respirator that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode in combination with an auxiliary self-contained positive-pressure breathing apparatus

Escape:
(APF = 50) Any air-purifying, full-facepiece respirator (gas mask) with a chin-style, front- or back-mounted organic vapor canister
Any appropriate escape-type, self-contained breathing apparatus

Important additional information about respirator selection

See also: INTRODUCTION See ICSC CARD: 0249

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Naphthalene

Synonyms & Trade Names Naphthalin, Tar camphor, White tar

CAS No. 91-20-3	**RTECS No.** QJ0525000 (/niosh-rtecs/QJ802C8.html)	**DOT ID & Guide** 1334 133 (http://wwwapps.tc.gc.ca/saf-sec-sur/3/erg-gmu/erg/guidepage.aspx?guide=133) (crude or refined) 2304 133 (http://wwwapps.tc.gc.ca/saf-sec-sur/3/erg-gmu/erg/guidepage.aspx?guide=133) (molten)
Formula $C_{10}H_8$	**Conversion** 1 ppm = 5.24 mg/m³	**IDLH** 250 ppm See: 91203 (/niosh/idlh/91203.html)
Exposure Limits **NIOSH REL** : TWA 10 ppm (50 mg/m³) ST 15 ppm (75 mg/m³) **OSHA PEL** † (nengapdxg.html) : TWA 10 ppm (50 mg/m³)		**Measurement Methods** **NIOSH** 1501 (/niosh/docs/2003-154/pdfs/1501.pdf) ; **OSHA** 35 (http://www.osha.gov/dts/sltc/methods/organic/org035/org035.html) See: NMAM (/niosh/docs/2003-154/) or OSHA Methods (http://www.osha.gov/dts/sltc/methods/index.html)

Physical Description Colorless to brown solid with an odor of mothballs. [Note: Shipped as a molten solid.]

MW: 128.2	**BP:** 424° F	MLT: 176°F	**Sol:** 0.003%	**VP:** 0.08 mmHg	**IP:** 8.12 eV
Sp.Gr: 1.15	**Fl.P:** 174° F	**UEL:** 5.9%	**LEL:** 0.9%		

Combustible Solid, but will take some effort to ignite.

Incompatibilities & Reactivities Strong oxidizers, chromic anhydride

Exposure Routes inhalation, skin absorption, ingestion, skin and/or eye contact

Symptoms irritation eyes; headache, confusion, excitement, malaise (vague feeling of discomfort); nausea, vomiting, abdominal pain; irritation bladder; profuse sweating; jaundice; hematuria (blood in the urine), renal shutdown; dermatitis, optical neuritis, corneal damage

Target Organs Eyes, skin, blood, liver, kidneys, central nervous system

Personal Protection/Sanitation (See protection codes (protect.html)) **Skin:** Prevent skin contact **Eyes:** Prevent eye contact **Wash skin:** When contaminated **Remove:** When wet or contaminated **Change:** Daily	**First Aid** (See procedures (firstaid.html)) **Eye:** Irrigate immediately **Skin:** Molten flush immediately/solid-liquid soap wash promptly **Breathing:** Respiratory support **Swallow:** Medical attention immediately

Respirator Recommendations
NIOSH/OSHA

Up to 100 ppm:
(APF = 10) Any air-purifying half-mask respirator with organic vapor cartridge(s) in combination with an N95, R95, or P95 filter. The following filters may also be used: N99, R99, P99, N100, R100, P100.

Click here (pgintrod.html#nrp) for information on selection of N, R, or P filters.*
(APF = 10) Any supplied-air respirator*

Up to 250 ppm:
(APF = 25) Any supplied-air respirator operated in a continuous-flow mode*
(APF = 50) Any air-purifying full-facepiece respirator equipped with organic vapor cartridge(s) in combination with an N100, R100, or P100 filter.
Click here (pgintrod.html#nrp) for information on selection of N, R, or P filters.
(APF = 25) Any powered, air-purifying respirator with an organic vapor cartridge in combination with a high-efficiency particulate filter.*
(APF = 50) Any self-contained breathing apparatus with a full facepiece
(APF = 50) Any supplied-air respirator with a full facepiece

Emergency or planned entry into unknown concentrations or IDLH conditions:
(APF = 10,000) Any self-contained breathing apparatus that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode
(APF = 10,000) Any supplied-air respirator that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode in combination with an auxiliary self-contained positive-pressure breathing apparatus

Escape:
(APF = 50) Any air-purifying, full-facepiece respirator (gas mask) with a chin-style, front- or back-mounted organic vapor canister having an N100, R100, or P100 filter.
Click here (pgintrod.html#nrp) for information on selection of N, R, or P filters.
Any appropriate escape-type, self-contained breathing apparatus

Important additional information about respirator selection (pgintrod.html#mustread)

See also: INTRODUCTION (/niosh/npg/pgintrod.html) See ICSC CARD: 0667 (/niosh/ipcsneng/neng0667.html) See MEDICAL TESTS: 0152 (/niosh/docs/2005-110/nmed0152.html)

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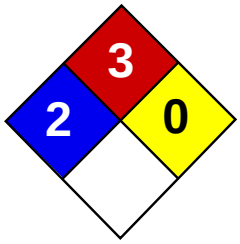

Health	2
Fire	3
Reactivity	0
Personal Protection	H

Material Safety Data Sheet
Ethylbenzene MSDS

Section 1: Chemical Product and Company Identification

Product Name: Ethylbenzene

Catalog Codes: SLE2044

CAS#: 100-41-4

RTECS: DA0700000

TSCA: TSCA 8(b) inventory: Ethylbenzene

CI#: Not available.

Synonym: Ethyl Benzene; Ethylbenzol; Phenylethane

Chemical Name: Ethylbenzene

Chemical Formula: C8H10

Contact Information:

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

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

Order Online: ScienceLab.com

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

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

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

Section 2: Composition and Information on Ingredients

Composition:

Name	CAS #	% by Weight
Ethylbenzene	100-41-4	100

Toxicological Data on Ingredients: Ethylbenzene: ORAL (LD50): Acute: 3500 mg/kg [Rat].

Section 3: Hazards Identification

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

Potential Chronic Health Effects:
Slightly hazardous in case of skin contact (irritant, sensitizer). CARCINOGENIC EFFECTS: Classified 2B (Possible for human.) by IARC. MUTAGENIC EFFECTS: Mutagenic for mammalian somatic cells. Mutagenic for bacteria and/or yeast. TERATOGENIC EFFECTS: Not available. DEVELOPMENTAL TOXICITY: Not available. The substance may be toxic to central nervous system (CNS). Repeated or prolonged exposure to the substance can produce target organs damage.

Section 4: First Aid Measures

Eye Contact:

Check for and remove any contact lenses. In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Cold water may be used. WARM water MUST be used. Get medical attention.

Skin Contact: Wash with soap and water. Cover the irritated skin with an emollient. Get medical attention if irritation develops.

Serious Skin Contact: Not available.

Inhalation:
If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention.

Serious Inhalation:
Evacuate the victim to a safe area as soon as possible. Loosen tight clothing such as a collar, tie, belt or waistband. If breathing is difficult, administer oxygen. If the victim is not breathing, perform mouth-to-mouth resuscitation. WARNING: It may be hazardous to the person providing aid to give mouth-to-mouth resuscitation when the inhaled material is toxic, infectious or corrosive. Seek medical attention.

Ingestion:
Do NOT induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. Loosen tight clothing such as a collar, tie, belt or waistband. Get medical attention if symptoms appear.

Serious Ingestion: Not available.

Section 5: Fire and Explosion Data

Flammability of the Product: Flammable.

Auto-Ignition Temperature: 432°C (809.6°F)

Flash Points:
CLOSED CUP: 15°C (59°F). (Tagliabue.) OPEN CUP: 26.667°C (80°F) (Cleveland) (CHRIS, 2001) CLOSED CUP: 12.8 C (55 F) (Bingham et al, 2001; NIOSH, 2001) CLOSED CUP: 21 C (70 F) (NFPA)

Flammable Limits: LOWER: 0.8% - 1.6%UPPER: 6.7% - 7%

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

Fire Hazards in Presence of Various Substances: Highly flammable in presence of open flames and sparks, of heat.

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

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

Special Remarks on Fire Hazards:
Vapor may travel considerable distance to source of ignition and flash back. Vapors may form explosive mixtures with air. When heated to decomposition it emits acrid smoke and irritating fumes.

Special Remarks on Explosion Hazards: Vapors may form explosive mixtures in air.

Section 6: Accidental Release Measures

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

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

Section 7: Handling and Storage

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

Storage:
Store in a segregated and approved area. Keep container in a cool, well-ventilated area. Keep container tightly closed and sealed until ready for use. Avoid all possible sources of ignition (spark or flame). Sensitive to light. Store in light-resistant containers.

Section 8: Exposure Controls/Personal Protection

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

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

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

Exposure Limits:
TWA: 100 STEL: 125 (ppm) from OSHA (PEL) [United States] TWA: 435 STEL: 545 from OSHA (PEL) [United States] TWA: 435 STEL: 545 (mg/m3) from NIOSH [United States] TWA: 100 STEL: 125 (ppm) from NIOSH [United States] TWA: 100 STEL: 125 (ppm) from ACGIH (TLV) [United States] TWA: 100 STEL: 125 (ppm) [United Kingdom (UK)] TWA: 100 STEL: 125 (ppm) [Belgium] TWA: 100 STEL: 125 (ppm) [Finland] TWA: 50 (ppm) [Norway] Consult local authorities for acceptable exposure limits.

Section 9: Physical and Chemical Properties

Physical state and appearance: Liquid.

Odor: Sweetish. Gasoline-like. Aromatic.

Taste: Not available.

Molecular Weight: 106.16 g/mole

Color: Colorless.

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

Boiling Point: 136°C (276.8°F)

Melting Point: -94.9 (-138.8°F)

Critical Temperature: 617.15°C (1142.9°F)

Specific Gravity: 0.867 (Water = 1)

Vapor Pressure: 0.9 kPa (@ 20°C)

Vapor Density: 3.66 (Air = 1)

Volatility: 100% (v/v).

Odor Threshold: 140 ppm

Water/Oil Dist. Coeff.: The product is more soluble in oil; log(oil/water) = 3.1

Ionicity (in Water): Not available.

Dispersion Properties: See solubility in water, diethyl ether.

Solubility:
Easily soluble in diethyl ether. Very slightly soluble in cold water or practically insoluble in water. Soluble in all proportions in Ethyl alcohol. Soluble in Carbon tetrachloride, Benzene. Insoluble in Ammonia. Slightly soluble in Chloroform. Solubility in Water: 169 mg/l @ 25 deg. C.; 0.014 g/100 ml @ 15 deg. C.

Section 10: Stability and Reactivity Data

Stability: The product is stable.

Instability Temperature: Not available.

Conditions of Instability: Heat, ingnition sources (flames, sparks, static), incompatible materials, light

Incompatibility with various substances: Reactive with oxidizing agents.

Corrosivity: Not considered to be corrosive for metals and glass.

Special Remarks on Reactivity:
Can react vigorously with oxidizing materials. Sensitive to light.

Special Remarks on Corrosivity: Not available.

Polymerization: Will not occur.

Section 11: Toxicological Information

Routes of Entry: Absorbed through skin. Inhalation.

Toxicity to Animals: Acute oral toxicity (LD50): 3500 mg/kg [Rat].

Chronic Effects on Humans:
CARCINOGENIC EFFECTS: Classified 2B (Possible for human.) by IARC. MUTAGENIC EFFECTS: Mutagenic for mammalian somatic cells. Mutagenic for bacteria and/or yeast. May cause damage to the following organs: central nervous system (CNS).

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

Special Remarks on Toxicity to Animals:
Lethal Dose/Conc 50% Kill: LD50 [Rabbit] - Route: Skin; Dose: 17800 ul/kg Lowest Published Lethal Dose/Conc: LDL[Rat] - Route: Inhalation (vapor); Dose: 4000 ppm/4 H

Special Remarks on Chronic Effects on Humans:
May cause adverse reproductive effects and birth defects (teratogenic) based on animal test data. May cause cancer based on animals data. IARC evidence for carcinogenicity in animals is sufficient. IARC evidence of carcinogenicity in humans inadequate. May affect genetic material (mutagenic).

Special Remarks on other Toxic Effects on Humans:
Acute Potential Health Effects: Skin: Can cause mild skin irritation. It can be absorbed through intact skin. Eyes: Contact with vapor or liquid can cause severe eye irritation depending on concentration. It may also cause conjunctivitis. At a vapor exposure level of 85 - 200 ppm , it is mildly and transiently irritating to the eyes; 1000 ppm causes further irritation and tearing; 2000 ppm results in immediate and severe irritation and tearing; 5,000 ppm is intolerable (ACGIH, 1991; Clayton and Clayton, 1994). Standard draize test for eye irritation using 500 mg resulted in severe irritation (RTECS) Inhalation: Exposure to high concentrations can cause nasal, mucous membrane and respiratory tract irritation and can also result in chest constriction and, trouble breathing, respiratory failure, and even death. It can also affect behavior/Central Nervous System. The effective dose for CNS depression in experimental animals was 10,000 ppm (ACGIH, 1991). Symptoms of CNS depression include

headache, nausea, weakness, dizziness, vertigo, irritability, fatigue, lightheadedness, sleepiness, tremor, loss of coordination, judgement and conciousness, coma, and death. It can also cause pulmonary edema. Inhalation of 85 ppm can produce fatigue, insomnia, headache, and mild irritation of the respiratory tract (Haley & Berndt, 1987). Ingestion: Do not drink, pipet or siphon by mouth. May cause gastroinestinal/digestive tract irritation with Abdominal pain, nausea, vomiting. Ethylbenzene is a pulmonary aspiration hazard. Pulmonary aspiration of even small amounts of the liquid may cause fatal pneumonitis. It may also affect behavior/central nervous system with

Section 12: Ecological Information

Ecotoxicity:
Ecotoxicity in water (LC50): 14 mg/l 96 hours [Fish (Trout)] (static). 12.1 mg/l 96 hours [Fish (Fathead Minnow)] (flow-through)]. 150 mg/l 96 hours [Fish (Blue Gill/Sunfish)] (static). 275 mg/l 96 hours [Fish (Sheepshead Minnow)]. 42.3 mg/l 96 hours [Fish (Fathead Minnow)](soft water). 87.6mg/l 96 hours [Shrimp].

BOD5 and COD: Not available.

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

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

Special Remarks on the Products of Biodegradation: Not available.

Section 13: Disposal Considerations

Waste Disposal:
Waste must be disposed of in accordance with federal, state and local environmental control regulations.

Section 14: Transport Information

DOT Classification: CLASS 3: Flammable liquid.

Identification: : Ethylbenzene UNNA: 1175 PG: II

Special Provisions for Transport: Not available.

Section 15: Other Regulatory Information

Federal and State Regulations:
Connecticut hazardous material survey.: Ethylbenzene Illinois toxic substances disclosure to employee act: Ethylbenzene Illinois chemical safety act: Ethylbenzene New York release reporting list: Ethylbenzene Rhode Island RTK hazardous substances: Ethylbenzene Pennsylvania RTK: Ethylbenzene Minnesota: Ethylbenzene Massachusetts RTK: Ethylbenzene Massachusetts spill list: Ethylbenzene New Jersey: Ethylbenzene New Jersey spill list: Ethylbenzene Louisiana spill reporting: Ethylbenzene California Director's List of Hazardous Substances: Ethylbenzene TSCA 8(b) inventory: Ethylbenzene TSCA 4(a) proposed test rules: Ethylbenzene TSCA 8(d) H and S data reporting: Ethylbenzene: Effective Date: 6/19/87; Sunset Date: 6/19/97 SARA 313 toxic chemical notification and release reporting: Ethylbenzene

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

Other Classifications:

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

DSCL (EEC):
R11- Highly flammable. R20- Harmful by inhalation. S16- Keep away from sources of ignition - No smoking. S24/25- Avoid contact with skin and eyes. S29- Do not empty into drains.

HMIS (U.S.A.):

Health Hazard: 2

Fire Hazard: 3

Reactivity: 0

Personal Protection: h

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

Health: 2

Flammability: 3

Reactivity: 0

Specific hazard:

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

Section 16: Other Information

References:
-Manufacturer's Material Safety Data Sheet. -Fire Protection Guide to Hazardous Materials, 13th ed., National Fire Protection Association (NFPA) -Registry of Toxic Effects of Chemical Substances (RTECS) -Chemical Hazard Response Information System (CHRIS) -Hazardous Substance Data Bank (HSDB) -New Jersey Hazardous Substance Fact Sheet -Ariel Global View -Reprotext System

Other Special Considerations: Not available.

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Last Updated: 11/01/2010 12:00 PM

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2-Butanone

Synonyms & Trade Names Ethyl methyl ketone, MEK, Methyl acetone, Methyl ethyl ketone

CAS No. 78-93-3	**RTECS No.** EL6475000 (/niosh-rtecs/EL62CCF8.html)	**DOT ID & Guide** 1193 127 (http://wwwapps.tc.gc.ca/saf-sec-sur/3/erg-gmu/erg/guidepage.aspx?guide=127)
Formula $CH_3COCH_2CH_3$	**Conversion** 1 ppm = 2.95 mg/m³	**IDLH** 3000 ppm See: 78933 (/niosh/idlh/78933.html)
Exposure Limits **NIOSH REL** : TWA 200 ppm (590 mg/m³) ST 300 ppm (885 mg/m³) **OSHA PEL** † (nengapdxg.html) : TWA 200 ppm (590 mg/m³)		**Measurement Methods** **NIOSH** 2500 (/niosh/docs/2003-154/pdfs/2500.pdf) , 2555 (/niosh/docs/2003-154/pdfs/2555.pdf) , 3800 (/niosh/docs/2003-154/pdfs/3800.pdf) ; **OSHA** 16 (http://www.osha.gov/dts/sltc/methods/organic/org016/org016.html) , 84 (http://www.osha.gov/dts/sltc/methods/organic/org084/org084.html) , 1004 (http://www.osha.gov/dts/sltc/methods/mdt/mdt1004/1004.html) See: NMAM (/niosh/docs/2003-154/) or OSHA Methods (http://www.osha.gov/dts/sltc/methods/index.html)

Physical Description Colorless liquid with a moderately sharp, fragrant, mint- or acetone-like odor.

MW: 72.1	**BP:** 175°F	**FRZ:** -123°F	**Sol:** 28%	**VP:** 78 mmHg	**IP:** 9.54 eV
Sp.Gr: 0.81	**Fl.P:** 16°F	UEL (200° F): 11.4%	LEL(200° F): 1.4%		

Class IB Flammable Liquid: Fl.P. below 73°F and BP at or above 100°F.

Incompatibilities & Reactivities Strong oxidizers, amines, ammonia, inorganic acids, caustics, isocyanates, pyridines

Exposure Routes inhalation, ingestion, skin and/or eye contact

Symptoms irritation eyes, skin, nose; headache; dizziness; vomiting; dermatitis

Target Organs Eyes, skin, respiratory system, central nervous system

Personal Protection/Sanitation (See protection codes (protect.html)) **Skin:** Prevent skin contact **Eyes:** Prevent eye contact **Wash skin:** When contaminated **Remove:** When wet (flammable) **Change:** No recommendation **Provide:** Eyewash	**First Aid** (See procedures (firstaid.html)) **Eye:** Irrigate immediately **Skin:** Water wash immediately **Breathing:** Fresh air **Swallow:** Medical attention immediately

Respirator Recommendations
NIOSH/OSHA

Up to 3000 ppm:
(APF = 25) Any supplied-air respirator operated in a continuous-flow mode[£]
(APF = 25) Any powered, air-purifying respirator with organic vapor cartridge(s)[£]
(APF = 50) Any chemical cartridge respirator with a full facepiece and organic vapor cartridge(s)
(APF = 50) Any air-purifying, full-facepiece respirator (gas mask) with a chin-style, front- or back-mounted organic vapor canister
(APF = 50) Any self-contained breathing apparatus with a full facepiece
(APF = 50) Any supplied-air respirator with a full facepiece

Emergency or planned entry into unknown concentrations or IDLH conditions:
(APF = 10,000) Any self-contained breathing apparatus that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode
(APF = 10,000) Any supplied-air respirator that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode in combination with an auxiliary self-contained positive-pressure breathing apparatus

Escape:
(APF = 50) Any air-purifying, full-facepiece respirator (gas mask) with a chin-style, front- or back-mounted organic vapor canister
Any appropriate escape-type, self-contained breathing apparatus

Important additional information about respirator selection (pgintrod.html#mustread)

See also: INTRODUCTION (/niosh/npg/pgintrod.html) See ICSC CARD: 0179 (/niosh/ipcsneng/neng0179.html) See MEDICAL TESTS: 0133 (/niosh/docs/2005-110/nmed0133.html)

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Centers for Disease Control and Prevention 1600 Clifton Rd. Atlanta, GA 30333, USA
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Enter search terms separated by spaces.

Methylene chloride

Synonyms & Trade Names Dichloromethane, Methylene dichloride

CAS No. 75-09-2	**RTECS No.** PA8050000 (/niosh-rtecs/PA7AD550.html)	**DOT ID & Guide** 1593 160 (http://wwwapps.tc.gc.ca/saf-sec-sur/3/erg-gmu/erg/guidepage.aspx?guide=160)
Formula CH_2Cl_2	**Conversion** 1 ppm = 3.47 mg/m^3	**IDLH** Ca [2300 ppm] See: 75092 (/niosh/idlh/75092.html)
Exposure Limits **NIOSH REL** : Ca See Appendix A (nengapdxa.html) **OSHA PEL** : [1910.1052] TWA 25 ppm ST 125 ppm		**Measurement Methods** **NIOSH** 1005 (/niosh/docs/2003-154/pdfs/1005.pdf) , 3800 (/niosh/docs/2003-154/pdfs/3800.pdf) ; **OSHA** 59 (http://www.osha.gov/dts/sltc/methods/organic/org059/org059.html) , 80 (http://www.osha.gov/dts/sltc/methods/organic/org080/org080.html) See: NMAM (/niosh/docs/2003-154/) or OSHA Methods (http://www.osha.gov/dts/sltc/methods/index.html)

Physical Description Colorless liquid with a chloroform-like odor. [Note: A gas above 104°F.]

MW: 84.9	**BP:** 104° F	**FRZ:** -139°F	**Sol:** 2%	**VP:** 350 mmHg	**IP:** 11.32 eV
Sp.Gr: 1.33	**Fl.P:** ?	**UEL:** 23%	**LEL:** 13%		

Combustible Liquid

Incompatibilities & Reactivities Strong oxidizers; caustics; chemically-active metals such as aluminum, magnesium powders, potassium & sodium; concentrated nitric acid

Exposure Routes inhalation, skin absorption, ingestion, skin and/or eye contact

Symptoms irritation eyes, skin; lassitude (weakness, exhaustion), drowsiness, dizziness; numb, tingle limbs; nausea; [potential occupational carcinogen]

Target Organs Eyes, skin, cardiovascular system, central nervous system

Cancer Site [in animals: lung, liver, salivary & mammary gland tumors]

Personal Protection/Sanitation (See protection codes (protect.html)) **Skin:** Prevent skin contact **Eyes:** Prevent eye contact **Wash skin:** When contaminated **Remove:** When wet or contaminated **Change:** No recommendation **Provide:** Eyewash, Quick drench	**First Aid** (See procedures (firstaid.html)) **Eye:** Irrigate immediately **Skin:** Soap wash promptly **Breathing:** Respiratory support **Swallow:** Medical attention immediately

Respirator Recommendations

(See Appendix E) (nengapdxe.html)

NIOSH

At concentrations above the NIOSH REL, or where there is no REL, at any detectable concentration:
(APF = 10,000) Any self-contained breathing apparatus that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode
(APF = 10,000) Any supplied-air respirator that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode in combination with an auxiliary self-contained positive-pressure breathing apparatus

Escape:
(APF = 50) Any air-purifying, full-facepiece respirator (gas mask) with a chin-style, front- or back-mounted organic vapor canister
Any appropriate escape-type, self-contained breathing apparatus

Important additional information about respirator selection (pgintrod.html#mustread)

See also: INTRODUCTION (/niosh/npg/pgintrod.html) See ICSC CARD: 0058 (/niosh/ipcsneng/neng0058.html) See MEDICAL TESTS: 0148 (/niosh/docs/2005-110/nmed0148.html)

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Toluene

Synonyms & Trade Names Methyl benzene, Methyl benzol, Phenyl methane, Toluol					
CAS No. 108-88-3	**RTECS No.** XS5250000 (/niosh-rtecs/XS501BD0.html)	**DOT ID & Guide** 1294 130 (http://wwwapps.tc.gc.ca/saf-sec-sur/3/erg-gmu/erg/guidepage.aspx?guide=130)			
Formula $C_6H_5CH_3$	**Conversion** 1 ppm = 3.77 mg/m³	**IDLH** 500 ppm See: 108883 (/niosh/idlh/108883.html)			
Exposure Limits **NIOSH REL** : TWA 100 ppm (375 mg/m³) ST 150 ppm (560 mg/m³) **OSHA PEL** † (nengapdxg.html): TWA 200 ppm C 300 ppm 500 ppm (10-minute maximum peak)		**Measurement Methods** **NIOSH** 1500 (/niosh/docs/2003-154/pdfs/1500.pdf), 1501 (/niosh/docs/2003-154/pdfs/1501.pdf), 3800 (/niosh/docs/2003-154/pdfs/3800.pdf), 4000 (/niosh/docs/2003-154/pdfs/4000.pdf); **OSHA** 111 (http://www.osha.gov/dts/sltc/methods/organic/org111/org111.html) See: NMAM (/niosh/docs/2003-154/) or OSHA Methods (http://www.osha.gov/dts/sltc/methods/index.html)			
Physical Description Colorless liquid with a sweet, pungent, benzene-like odor.					
MW: 92.1	**BP:** 232° F	**FRZ:** -139°F	Sol(74° F): 0.07%	**VP:** 21 mmHg	**IP:** 8.82 eV
Sp.Gr: 0.87	**Fl.P:** 40° F	**UEL:** 7.1%	**LEL:** 1.1%		
Class IB Flammable Liquid: Fl.P. below 73°F and BP at or above 100°F.					
Incompatibilities & Reactivities Strong oxidizers					
Exposure Routes inhalation, skin absorption, ingestion, skin and/or eye contact					
Symptoms irritation eyes, nose; lassitude (weakness, exhaustion), confusion, euphoria, dizziness, headache; dilated pupils, lacrimation (discharge of tears); anxiety, muscle fatigue, insomnia; paresthesia; dermatitis; liver, kidney damage					
Target Organs Eyes, skin, respiratory system, central nervous system, liver, kidneys					
Personal Protection/Sanitation (See protection codes (protect.html)) **Skin:** Prevent skin contact **Eyes:** Prevent eye contact **Wash skin:** When contaminated **Remove:** When wet (flammable) **Change:** No recommendation		**First Aid** (See procedures (firstaid.html)) **Eye:** Irrigate immediately **Skin:** Soap wash promptly **Breathing:** Respiratory support **Swallow:** Medical attention immediately			

Respirator Recommendations

NIOSH

Up to 500 ppm:
(APF = 10) Any chemical cartridge respirator with organic vapor cartridge(s)*
(APF = 25) Any powered, air-purifying respirator with organic vapor cartridge(s)*
(APF = 50) Any air-purifying, full-facepiece respirator (gas mask) with a chin-style, front- or back-mounted organic vapor canister
(APF = 10) Any supplied-air respirator*
(APF = 50) Any self-contained breathing apparatus with a full facepiece

Emergency or planned entry into unknown concentrations or IDLH conditions:
(APF = 10,000) Any self-contained breathing apparatus that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode
(APF = 10,000) Any supplied-air respirator that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode in combination with an auxiliary self-contained positive-pressure breathing apparatus

Escape:
(APF = 50) Any air-purifying, full-facepiece respirator (gas mask) with a chin-style, front- or back-mounted organic vapor canister
Any appropriate escape-type, self-contained breathing apparatus

Important additional information about respirator selection (pgintrod.html#mustread)

See also: INTRODUCTION (/niosh/npg/pgintrod.html) See ICSC CARD: 0078 (/niosh/ipcsneng/neng0078.html)
See MEDICAL TESTS: 0232 (/niosh/docs/2005-110/nmed0232.html)

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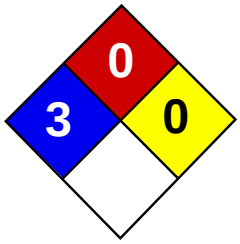

Material Safety Data Sheet
Mercury MSDS

Section 1: Chemical Product and Company Identification

Product Name: Mercury

Catalog Codes: SLM3505, SLM1363

CAS#: 7439-97-6

RTECS: OV4550000

TSCA: TSCA 8(b) inventory: Mercury

CI#: Not applicable.

Synonym: Quick Silver; Colloidal Mercury; Metallic Mercury; Liquid Silver; Hydragyrum

Chemical Name: Mercury

Chemical Formula: Hg

Contact Information:

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

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

Order Online: ScienceLab.com

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

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

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

Section 2: Composition and Information on Ingredients

Composition:

Name	CAS #	% by Weight
Mercury	7439-97-6	100

Toxicological Data on Ingredients: Mercury LD50: Not available. LC50: Not available.

Section 3: Hazards Identification

Potential Acute Health Effects:
Very hazardous in case of skin contact (irritant), of eye contact (irritant), of ingestion, of inhalation. Hazardous in case of skin contact (corrosive, permeator). Liquid or spray mist may produce tissue damage particularly on mucous membranes of eyes, mouth and respiratory tract. Skin contact may produce burns. Inhalation of the spray mist may produce severe irritation of respiratory tract, characterized by coughing, choking, or shortness of breath. Severe over-exposure can result in death. Inflammation of the eye is characterized by redness, watering, and itching. Skin inflammation is characterized by itching, scaling, reddening, or, occasionally, blistering.

Potential Chronic Health Effects:
Hazardous in case of skin contact (permeator). CARCINOGENIC EFFECTS: Classified A5 (Not suspected for human.) by ACGIH. 3 (Not classifiable for human.) by IARC. MUTAGENIC EFFECTS: Not available. TERATOGENIC EFFECTS: Not available. DEVELOPMENTAL TOXICITY: Not available. The substance may be toxic to blood, kidneys, liver, brain, peripheral nervous system, central nervous system (CNS). Repeated or prolonged exposure to the substance can produce target organs damage. Repeated or prolonged contact with spray mist may produce chronic eye irritation and severe skin irritation.

Repeated or prolonged exposure to spray mist may produce respiratory tract irritation leading to frequent attacks of bronchial infection. Repeated exposure to a highly toxic material may produce general deterioration of health by an accumulation in one or many human organs.

Section 4: First Aid Measures

Eye Contact:
Check for and remove any contact lenses. In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Cold water may be used. WARM water MUST be used. Get medical attention immediately.

Skin Contact:
In case of contact, immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Cover the irritated skin with an emollient. Wash clothing before reuse. Thoroughly clean shoes before reuse. Get medical attention immediately.

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

Inhalation:
If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention immediately.

Serious Inhalation:
Evacuate the victim to a safe area as soon as possible. Loosen tight clothing such as a collar, tie, belt or waistband. If breathing is difficult, administer oxygen. If the victim is not breathing, perform mouth-to-mouth resuscitation. WARNING: It may be hazardous to the person providing aid to give mouth-to-mouth resuscitation when the inhaled material is toxic, infectious or corrosive. Seek immediate medical attention.

Ingestion:
Do NOT induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. If large quantities of this material are swallowed, call a physician immediately. Loosen tight clothing such as a collar, tie, belt or waistband.

Serious Ingestion: Not available.

Section 5: Fire and Explosion Data

Flammability of the Product: Non-flammable.

Auto-Ignition Temperature: Not applicable.

Flash Points: Not applicable.

Flammable Limits: Not applicable.

Products of Combustion: Not available.

Fire Hazards in Presence of Various Substances: Not applicable.

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

Fire Fighting Media and Instructions: Not applicable.

Special Remarks on Fire Hazards:
When thrown into mercury vapor, boron phosphodiiodide ignites at once. Flame forms with chlorine jet over mercury surface at 200 deg to 300 deg C. Mercury undergoes hazardous reactions in the presence of heat and sparks or ignition.

Special Remarks on Explosion Hazards:
A violent exothermic reaction or possible explosion occurs when mercury comes in contact with lithium and rubidium. CHLORINE DIOXIDE & LIQUID HG, WHEN MIXED, EXPLODE VIOLENTLY. Mercury and Ammonia can produce an

explosive compound. A mixture of the dry carbonyl and oxygen will explode on vigorous shaking with mercury. Methyl azide in the presence of mercury was shown to be potentially explosive.

Section 6: Accidental Release Measures

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

Large Spill:
Corrosive liquid. Poisonous liquid. Stop leak if without risk. Absorb with DRY earth, sand or other non-combustible material. Do not get water inside container. Do not touch spilled material. Use water spray curtain to divert vapor drift. Use water spray to reduce vapors. Prevent entry into sewers, basements or confined areas; dike if needed. Call for assistance on disposal. Be careful that the product is not present at a concentration level above TLV. Check TLV on the MSDS and with local authorities.

Section 7: Handling and Storage

Precautions:
Keep locked up.. Keep container dry. Do not ingest. Do not breathe gas/fumes/ vapor/spray. Never add water to this product. In case of insufficient ventilation, wear suitable respiratory equipment. If ingested, seek medical advice immediately and show the container or the label. Avoid contact with skin and eyes. Keep away from incompatibles such as oxidizing agents, metals.

Storage: Keep container tightly closed. Keep container in a cool, well-ventilated area. Do not store above 25°C (77°F).

Section 8: Exposure Controls/Personal Protection

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

Personal Protection:
Face shield. Full suit. Vapor respirator. Be sure to use an approved/certified respirator or equivalent. Gloves. Boots.

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

Exposure Limits:
TWA: 0.025 from ACGIH (TLV) [United States] SKIN TWA: 0.05 CEIL: 0.1 (mg/m3) from OSHA (PEL) [United States] Inhalation TWA: 0.025 (mg/m3) [United Kingdom (UK)] Consult local authorities for acceptable exposure limits.

Section 9: Physical and Chemical Properties

Physical state and appearance: Liquid. (Heavy liquid)

Odor: Odorless.

Taste: Not available.

Molecular Weight: 200.59 g/mole

Color: Silver-white

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

Boiling Point: 356.73°C (674.1°F)

Melting Point: -38.87°C (-38°F)

Critical Temperature: 1462°C (2663.6°F)

Specific Gravity: 13.55 (Water = 1)

Vapor Pressure: Not available.

Vapor Density: 6.93 (Air = 1)

Volatility: Not available.

Odor Threshold: Not available.

Water/Oil Dist. Coeff.: Not available.

Ionicity (in Water): Not available.

Dispersion Properties: Not available.

Solubility: Very slightly soluble in cold water.

Section 10: Stability and Reactivity Data

Stability: The product is stable.

Instability Temperature: Not available.

Conditions of Instability: Incompatible materials

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

Corrosivity: Non-corrosive in presence of glass.

Special Remarks on Reactivity:
Ground mixtures of sodium carbide and mercury, aluminum, lead, or iron can react vigorously. A violent exothermic reaction or possible explosion occurs when mercury comes in contact with lithium and rubidium. Incompatible with boron diiodophosphide; ethylene oxide; metal oxides, metals(aluminum, potassium, lithium, sodium, rubidium); methyl azide; methylsilane, oxygen; oxidants(bromine, peroxyformic acid, chlorine dioxide, nitric acid, tetracarbonynickel, nitromethane, silver perchlorate, chlorates, sulfuric acid, nitrates,); tetracarbonylnickel, oxygen, acetylinic compounds, ammonia, ethylene oxide, methylsiliane, calcium,

Special Remarks on Corrosivity:
The high mobility and tendency to dispersion exhibited by mercury, and the ease with which it forms alloys (amalga) with many laboratory and electrical contact metals, can cause severe corrosion problems in laboratories. Special precautions: Mercury can attack copper and copper alloy materials.

Polymerization: Will not occur.

Section 11: Toxicological Information

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

Toxicity to Animals:
LD50: Not available. LC50: Not available.

Chronic Effects on Humans:
CARCINOGENIC EFFECTS: Classified A5 (Not suspected for human.) by ACGIH. 3 (Not classifiable for human.) by IARC. May cause damage to the following organs: blood, kidneys, liver, brain, peripheral nervous system, central nervous system (CNS).

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

Special Remarks on Toxicity to Animals: Not available.

Special Remarks on Chronic Effects on Humans:

May affect genetic material. May cause cancer based on animal data. Passes through the placental barrier in animal. May cause adverse reproductive effects(paternal effects- spermatogenesis; effects on fertility - fetotoxicity, post-implantation mortality), and birth defects.

Special Remarks on other Toxic Effects on Humans:

Section 12: Ecological Information

Ecotoxicity: Not available.

BOD5 and COD: Not available.

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

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

Special Remarks on the Products of Biodegradation: Not available.

Section 13: Disposal Considerations

Waste Disposal:
Waste must be disposed of in accordance with federal, state and local environmental control regulations.

Section 14: Transport Information

DOT Classification: Class 8: Corrosive material

Identification: : Mercury UNNA: 2809 PG: III

Special Provisions for Transport: Not available.

Section 15: Other Regulatory Information

Federal and State Regulations:
California prop. 65: This product contains the following ingredients for which the State of California has found to cause cancer, birth defects or other reproductive harm, which would require a warning under the statute: Mercury California prop. 65: This product contains the following ingredients for which the State of California has found to cause birth defects which would require a warning under the statute: Mercury Connecticut hazardous material survey.: Mercury Illinois toxic substances disclosure to employee act: Mercury Illinois chemical safety act: Mercury New York acutely hazardous substances: Mercury Rhode Island RTK hazardous substances: Mercury Pennsylvania RTK: Mercury Minnesota: Mercury Massachusetts RTK: Mercury New Jersey: Mercury New Jersey spill list: Mercury Louisiana spill reporting: Mercury California Director's List of Hazardous Substances.: Mercury TSCA 8(b) inventory: Mercury SARA 313 toxic chemical notification and release reporting: Mercury CERCLA: Hazardous substances.: Mercury: 1 lbs. (0.4536 kg)

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

Other Classifications:

WHMIS (Canada):
CLASS D-1A: Material causing immediate and serious toxic effects (VERY TOXIC). CLASS D-2A: Material causing other toxic effects (VERY TOXIC). CLASS E: Corrosive liquid.

DSCL (EEC):
R23- Toxic by inhalation. R33- Danger of cumulative effects. R38- Irritating to skin. R41- Risk of serious damage to eyes. R50/53- Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment. S2- Keep out of the

reach of children. S7- Keep container tightly closed. S26- In case of contact with eyes, rinse immediately with plenty of water and seek medical advice. S39- Wear eye/face protection. S45- In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible). S46- If swallowed, seek medical advice immediately and show this container or label. S60- This material and its container must be disposed of as hazardous waste. S61- Avoid release to the environment. Refer to special instructions/Safety data sheets.

HMIS (U.S.A.):

Health Hazard: 3

Fire Hazard: 0

Reactivity: 0

Personal Protection:

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

Health: 3

Flammability: 0

Reactivity: 0

Specific hazard:

Protective Equipment:
Gloves. Full suit. Vapor respirator. Be sure to use an approved/certified respirator or equivalent. Wear appropriate respirator when ventilation is inadequate. Face shield.

Section 16: Other Information

References: Not available.

Other Special Considerations: Not available.

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Last Updated: 11/01/2010 12:00 PM

Chromium metal

Synonyms & Trade Names Chrome, Chromium

CAS No. 7440-47-3	**RTECS No.** GB4200000 (/niosh-rtecs/GB401640.html)	**DOT ID & Guide**
Formula Cr	**Conversion**	**IDLH** 250 mg/m³ (as Cr) See: 7440473 (/niosh/idlh/7440473.html)

Exposure Limits

NIOSH REL : TWA 0.5 mg/m³ See Appendix C (nengapdxc.html)

OSHA PEL *: TWA 1 mg/m³ See Appendix C (nengapdxc.html) [*Note: The PEL also applies to insoluble chromium salts.]

Measurement Methods

NIOSH 7024 (/niosh/docs/2003-154/pdfs (/niosh/docs/2003-154/pdfs/7300.pdf), 7301 (/niosh/docs/2003-154/pdfs/7301.pdf), 7303 (/niosh/docs/200 9102 (/niosh/docs/2003-154/pdfs/9102.pdf

OSHA ID121 (http://www.osha.gov/dts/sltc/methods/inorgar ID125G (http://www.osha.gov/dts/sltc/methods/inorgar

See: NMAM (/niosh/docs/2003-154/) or OSH (http://www.osha.gov/dts/sltc/methods/index.h

Physical Description Blue-white to steel-gray, lustrous, brittle, hard, odorless solid.

MW: 52.0	**BP:** 4788° F	MLT: 3452°F	**Sol:** Insoluble	**VP:** 0 mmHg (approx)
Sp.Gr: 7.14	**Fl.P:** NA	**UEL:** NA	**LEL:** NA	

Noncombustible Solid in bulk form, but finely divided dust burns rapidly if heated in a flame.

Incompatibilities & Reactivities Strong oxidizers (such as hydrogen peroxide), alkalis

Exposure Routes inhalation, ingestion, skin and/or eye contact

Symptoms irritation eyes, skin; lung fibrosis (histologic)

Target Organs Eyes, skin, respiratory system

Personal Protection/Sanitation (See protection codes (protect.html))
Skin: No recommendation
Eyes: No recommendation
Wash skin: No recommendation
Remove: No recommendation
Change: No recommendation

First Aid (See procedures (firstaid.html))
Eye: Irrigate immediately
Skin: Soap wash
Breathing: Respiratory support
Swallow: Medical attention immediately

Respirator Recommendations

NIOSH

Up to 2.5 mg/m³:
(APF = 5) Any quarter-mask respirator.
Click here (pgintrod.html#nrp) for information on selection of N, R, or P filters.*

Up to 5 mg/m³:
(APF = 10) Any particulate respirator equipped with an N95, R95, or P95 filter (including N95 filtering facepieces) except quarter-mask respirators. The following filters may also be used: N R100, P100.
Click here (pgintrod.html#nrp) for information on selection of N, R, or P filters.*
(APF = 10) Any supplied-air respirator*

Up to 12.5 mg/m³:
(APF = 25) Any supplied-air respirator operated in a continuous-flow mode*
(APF = 25) Any powered, air-purifying respirator with a high-efficiency particulate filter.*

Up to 25 mg/m³:
(APF = 50) Any air-purifying, full-facepiece respirator with an N100, R100, or P100 filter.
Click here (pgintrod.html#nrp) for information on selection of N, R, or P filters.
(APF = 50) Any powered, air-purifying respirator with a tight-fitting facepiece and a high-effic filter*
(APF = 50) Any self-contained breathing apparatus with a full facepiece
(APF = 50) Any supplied-air respirator with a full facepiece

Up to 250 mg/m³:
(APF = 2000) Any supplied-air respirator that has a full facepiece and is operated in a pressur positive-pressure mode

Emergency or planned entry into unknown concentrations or IDLH conditions:
(APF = 10,000) Any self-contained breathing apparatus that has a full facepiece and is operate demand or other positive-pressure mode
(APF = 10,000) Any supplied-air respirator that has a full facepiece and is operated in a pressu positive-pressure mode in combination with an auxiliary self-contained positive-pressure brea

Escape:
(APF = 50) Any air-purifying, full-facepiece respirator with an N100, R100, or P100 filter.
Click here (pgintrod.html#nrp) for information on selection of N, R, or P filters.
Any appropriate escape-type, self-contained breathing apparatus

Important additional information about respirator selection (pgintrod.html#mustread)

See also: INTRODUCTION (/niosh/npg/pgintrod.html) See ICSC CARD: 0029 (/niosh/ipcsneng/

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APPENDIX B
ON-SITE SAFETY MEETING FORMS

ON-SITE SAFETY MEETING

Project: Former Alliance Metal Stamping & Fabrication Facility Site
Date:_____ Time:_____ Job No.: 190500647
Address: 12 Pixley Industrial Parkway, Gates, NY 14624

Scope of Work:_____

Weather Temp:_____ Wind direction/speed: _____
Sky Conditions:_____ Humidity:_____
Weather Conditions affecting work: _____

Safety Topics Discussed

Protective Clothing/Equipment: Level D (steel toe boots, hard hat with overhead hazards, etc.)

Chemical Hazards: Chlorinated VOCs

Physical Hazardous: Slip/trip/fall; weather/heat/cold; overhead hazards during excavator operation; and noise during excavation

Personnel/Equipment Decontamination: Alconox solution and water rinse or high pressure wash

Personnel/Job Functions: _____

Emergency Procedures: Emergency will be signaled verbally or with air or vehicle horn. Appropriate authorities will be contacted and after event, accident reporting procedures will be followed, as appropriate.

Special Equipment: _____

Other: _____

Emergency Phone Numbers/Addresses

Ambulance: 911
Hospital: Strong Memorial Hospital (585) 475-2100
Police: 911
Fire Department: 911

On-Site Safety Meeting
ATTENDEES

Name Printed	Signature	Job Function
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

Meeting Conducted By: _____ _____
Name Printed Signature

Site Safety Officer _____ _____

Team Leader _____ _____

APPENDIX F – SSDS O&M MANUAL

Sub-Slab Depressurization System Operation & Maintenance Manual

Former Alliance BCP Site
12 Pixley Industrial Parkway
Town of Gates, Monroe County, New York
BCP Site # C828101

August 2020, Revised November 2021

Prepared for:

Maguire Family Properties, Inc.
770 Rock Beach Road
Rochester, NY 14617

Prepared by:

Stantec Consulting Services Inc.
61 Commercial Street Suite 100
Rochester NY 14614-1009

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Certification

I, Dwight A. Harrienger, certify that I am currently a NYS registered professional engineer and that this Sub-Slab Depressurization System Operation & Maintenance Manual 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).

Dwight Harrienger, P.E.

Date: NOV. 5, 2021

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Abbreviations

AA and AAR	Alternatives Analysis, AA Report
ACM	Asbestos Containing Material
AMSF	Alliance Metal Stamping & Fabrication
AOC	Area of Concern
BCP	Brownfield Cleanup Program
CAMP	Community Air Monitoring Plan
CCR	Construction Completion Report
CU	Commercial Use
CVOC	Chlorinated Volatile Organic Compound
DER-10	NYSDEC Technical Guidance for Site Investigation and Remediation, May 2010
DOT	Department of Transportation
ELAP	Environmental Laboratory Approval Program
ft bgs	feet below ground surface
HASP	Health and Safety Plan
HVAC	Heating, Ventilation and Air-Conditioning
IRM	Interim Remedial Measure
IU	Industrial Use
MFP	Maguire Family Properties, Inc.
NYSDEC	New York State Department of Environmental Conservation
NYSDOH	New York State Department of Health
OM&M	Operation, Maintenance & Monitoring
OU	Operable Unit
PCE or PERC	Perchloroethylene, also tetrachloroethene, tetrachloroethylene
PID	Photoionization Detector
PMP	Pressure Monitoring Point
POGW	Protection of Groundwater
PVC	Polyvinyl Chloride
RI	Remedial Investigation
SCOs	Soil Cleanup Objectives
SGVs	Standards and Guidance Values
SMP	Site Management Plan
SSDS	Sub-Slab Depressurization System
SVI	Soil Vapor Intrusion
TAL	USEPA's Target Analyte List
TCA	Trichloroethane
TCE	Trichloroethene, also trichloroethylene
TCL	USEPA's Target Compound List
TOGS	Technical and Operational Guidance Series
TO-15	USEPA air sample analysis method Toxic Organics - 15
USEPA	United States Environmental Protection Agency
UU	Unrestricted Use
VOC	Volatile Organic Compound

1.0 INTRODUCTION

This Sub-Slab Depressurization System (SSDS) Operation and Maintenance (O&M) Manual has been developed for the Former Alliance Metal Stamping & Fabrication (AMSF) Facility Site located at 12 Pixley Industrial Parkway in the Town of Gates, Monroe County, New York (the "Site"). The Site is identified by the New York State Department of Environmental Conservation (NYSDEC) as Brownfield Cleanup Program (BCP) Site No. C828101.

The installation of an SSDS in the Site building was performed as an element of a BCP Interim Remedial Measure (IRM) approved by NYSDEC and the New York State Department of Health (NYSDOH) in July 2019. The IRM was implemented to address the presence of contamination by volatile organic compounds (VOCs) in Site soil and groundwater. The SSDS component of the IRM was designed to mitigate the potential for soil vapor intrusion (SVI), a process by which VOCs could migrate in vapor present beneath the floor of the Site building into indoor air inside the Site building.

Operation of the SSDS began in October 2019 and has continued uninterrupted since then. Operation and maintenance of the SSDS will be a component of the final remedy for the Site when a final BCP remedy is approved by NYSDEC. SSDS operation and maintenance will be an element of, and subject to the requirements of, the final Site Management Pan (SMP) [1] for the Site.

This plan may be periodically reviewed and updated. NYSDEC/NYSDOH must approve any revision to this document prior to implementation of the revision.

1.1 SITE DESCRIPTION

The Site occupies a 7-acre property on the north side of Pixley Industrial Parkway. A Site Location Map is presented on Figure 1. A Site Plan is presented on Figure 2.

The property is improved with a 120,000-square-foot slab-on-grade building surrounded by paved driveways and parking lots and unpaved lawn areas. The original sections of the Site building were constructed in approximately 1967. Historical records indicate the original Site building may have been operated as a warehouse by the Alcoa Aluminum Corporation. The facility was purchased by the Alliance Tool Corporation, a subsidiary of the Gleason Corporation, in 1973. Alliance operated the Alliance Metal Stamping & Fabrication facility at the Site until July 1994. The Alliance manufacturing operations included stamping, forming, grinding, cleaning, painting, phosphating, and deburring of metal piecework. Alliance decommissioned the manufacturing operation and sold the vacant facility to Maguire Family Properties (MFP) in 1995. Since 1995, MFP has been leasing subdivided spaces in the building to companies operating a variety of light manufacturing operations and commercial activities. The current layout of tenant spaces is depicted on Sub-Slab Depressurization System Coverage Plan (Drawing No. ENV-100) in the Record Drawings package presented in Appendix A.

The Site building was constructed in seven sections beginning with the original manufacturing and office building sections in 1967 and five additions constructed from 1975 through 1988. Three loading docks were added on the

[1] The SMP and other references are listed in Section 7 of this O&M Manual.

north side of the building in the 1990s. The outlines of the various building sections are depicted on Drawing ENV-100 in Appendix A.

1.2 SUMMARY OF ENVIRONMENTAL CONDITIONS

Remedial Investigation Summary

MFP applied as a Volunteer under New York State's BCP and the Site was admitted into the BCP by NYSDEC in July 2011. A Remedial Investigation (RI) was initiated in March 2012 and completed in December 2015. The findings of the RI concerning the nature and extent of contamination at the Site were as follows:

Soil

Occurrences of soil contamination exceeding NYSDEC's Soil Cleanup Objectives (SCOs) for protection of public health at commercial or industrial use sites were not identified at the Site.

VOC contamination exceeding NYSDEC's SCOs for protection of unrestricted site use (UU SCOs) and protection of groundwater (POGW SCOs) were detected in three areas of the Site:

- Former Degreaser Area - Area of Concern AOC 1
- Former Waste Storage Area B – AOC 5B
- Former Paint Shop Area - AOC 6

As shown on the Site Plan presented on Figure 2, all three areas are within the footprint of the Site building, and the contaminated soil is therefore covered by and contained beneath the building floor slab. In each area, the water table occurs below the top of bedrock. The cap provided by the floor slab, the unsaturated condition of the soil profile and the contaminant concentrations in both soil and groundwater together indicate that the soil contamination in these areas is unlikely to pose health risks to site workers or others from direct contact or ingestion or to be contributing to groundwater contamination at the Site.

Groundwater

Chlorinated VOCs (CVOCs) are present in Site groundwater at concentrations that exceed NYSDEC's groundwater quality standards. The CVOCs are present in the shallow-bedrock zone across the entire Site and are also present in the intermediate- and deep-bedrock zones.

Concentrations of 1,1,1-trichloroethane (1,1,1-TCA), a CVOC commonly used as a solvent in industrial degreasing operations, and the CVOCs which are the daughter products of the degradation of 1,1,1-TCA in the environment (including principally 1,1-dichloroethane and 1,1-dichloroethene) are highest in OU-1, located in the upgradient northwest corner of the Site. 1,1,1-TCA-related contamination above standards extends from OU-1 beneath the building to the eastern, downgradient Site boundary. Contamination by tetrachloroethylene, a CVOC commonly used as a degreasing or dry-cleaning solvent (also known as tetrachloroethene or perchloroethylene and commonly abbreviated as PERC or PCE), and its degradation daughter products (including principally trichloroethene and cis-1,2-dichloroethene) are present at lower concentrations, with the highest levels found in the area of the former degreaser in AOC 1 and with exceedances of standards extending to the eastern Site boundary.

Soil Vapor

The results of the RI indicated the potential for CVOCs present in the subsurface at the Site to migrate by soil vapor intrusion (SVI) from below the floor of the facility building into the air inside the building. Concentrations of TCA, PCE and/or one or more related CVOC daughter products were detected in sub-slab vapor and indoor air sample pairs collected at locations throughout the building. Concentrations in sub-slab vapor at most of the locations sampled, including those locations throughout the high-ceiling sections of the building originally occupied by AMSF manufacturing operations, exceeded SVI evaluation guidance values established by the New York State Department of Health (NYSDOH). NYSDOH guidance recommends taking action to monitor or mitigate the potential for SVI where contaminants are found to be present in soil vapor at levels above the NYSDOH guidance values.

SSDS Installation

The SSDS described in this O&M Manual was installed to address the potential for SVI identified by the results of the soil vapor evaluation conducted during the RI. The SSDS covers the entire building with the exception of unheated loading docks, since those loading docks are not routinely occupied by site workers or visitors. After installation of the of the SSDS was completed, commissioning of the system and demonstration of sub-slab depressurization of the building footprint was performed. Full-time operation of the SSDS began in October 2019.

1.3 O&M MANUAL OBJECTIVES AND CONTENTS

The primary objectives of this SSDS O&M Manual are to:

- facilitate understanding by the Site owner and building management personnel of the purpose, operation, maintenance and monitoring of the SSDS.
- define system components and operation.
- specify maintenance activities required for continuous and effective operation of the system.
- define monthly monitoring requirements to be completed by the building operator.
- describe annual monitoring and reporting requirements to be completed by a professional Engineer.

The O&M Manual includes the following:

- a basic description of the potential for soil vapor intrusion and how it is mitigated by an SSDS.
- a description of the installed system and its basic operating principles.
- information on how the owner or tenant can check that the system is operating properly.
- information on how and by whom the system will be maintained and monitored.
- a list of appropriate actions for the Owner or a tenant to take if a system warning device (differential pressure gauge) indicates degradation or failure of the operation of the system.
- a description of the proper operating procedures for the system, including manufacturer's operation and maintenance instructions and warrantees.
- contact information if the Owner or a tenant has questions, comments, or concerns about system operation or maintenance.

2.0 SSDS DESCRIPTION

2.1 BASIC PRINCIPLES

Soil vapor intrusion is the migration of volatile or semi-volatile chemical compounds from contaminated groundwater and soil into overlying buildings. The chemical vapors can migrate into the building interior through openings in the building floor slab or foundation. The potential for SVI increases if the air pressure inside the building is lower than the soil gas pressure beneath the floor, a condition which may occur when, for example, building air is drawn out the interior of the building by operation of the heating, ventilation and air-conditioning (HVAC) systems for the building.

Sub-slab depressurization systems are designed to mitigate the migration of subsurface vapors into the interior of a structure by establishing and maintaining a pressure differential across the building floor slab such that the soil gas pressure below the floor slab is less than the air pressure inside the building. The negative sub-slab pressure relative to the indoor air pressure is established by using vacuum fans to extract vapor from suction points installed through the floor slab. From the suction points the vapor is safely routed in solid piping through the interior of the building to exhaust points above the roof line. The exhaust points are designed in a manner that does not lead to recirculation of the soil gas into indoor air by operation of the HVAC system for the building.

The SSDS for the building located at 12 Pixley Industrial Parkway was designed and constructed in accordance with the applicable standards, criteria and guidance (SCGs) contained or referenced in the following:

- NYSDOH's "Guidance for Evaluating Soil Vapor Intrusion in the State of New York" dated October 2006, with matrices updated May 2017.
- NYSDEC's "DER-10 Technical Guidance for Site Investigation and Remediation".

The goal and objective for implementation of the SSDS at the Site were and remain as follows:

- Goal: Mitigate the potential migration of soil vapor impacted by CVOCs from beneath the building footprint into the interior occupied spaces of the building.
- Objective: Construct, commission and operate the SSDS to achieve and maintain a minimum vacuum pressure differential of 0.002 inches of water column between the sub-slab soil pore and void spaces and the routinely occupied interior spaces of the building.

2.2 EQUIPMENT AND MATERIAL DETAILS

The components and operational information for the SSDS are described below. Record drawings for the SSDS are presented in an Appendix A. Representative photographs of and product information sheets for system components are presented in Appendix B.

2.2.1 SSDS Suction Points

The SSDS connects a network of 42 suction cavities constructed under the existing floor slab to 21 vacuum fans located on the building roof. The design of the suction point network and the selection of the locations of the 42 suction cavities were determined on the basis of results of sub-slab vacuum communication testing performed in various sections of the building prior to the SSDS construction activities, taking into account the configuration of building footers throughout the building as well as features associated with areas of concern such as the former degreaser location in AOC 1. Refer to Record Drawing ENV-100 in Appendix A for SSDS suction point locations.

To construct suction cavities, a hole was cut through the existing concrete floor and a suction point cavity with a volume of approximately 1 cubic foot was excavated into the underlying soil. Clean, washed #2 gravel was placed in the suction cavity and a 12-inch-long (approximately) section of perforated 4-inch Schedule 40 polyvinyl chloride (PVC) pipe with a bottom end cap was installed to a depth of approximately 12 inches below the bottom of the floor slab. The remaining void space in the excavated cavity was filled with clean, washed #2 gravel to encase the perforated pipe.

2.2.2 SSDS Piping

The 4-inch perforated pipe was connected by a stainless-steel sleeve to a solid (not perforated) 4-inch diameter Schedule 40 steel pipe at the top of the suction cavity. The steel pipe was installed through the floor slab either as a vertical riser pipe extending directly above the suction cavity or in welded sections as necessary to form a horizontal pipe run to reach the point at which a vertical steel riser could exit the floor slab at a roof support column. The vertical steel riser pipe transitions to a 4” Schedule 40 PVC riser at a height of 10 feet above the re-established finished floor slab, and a ball valve is installed on the bottom end of the PVC section of each SSDS riser. Typical construction details for SSDS suction points and riser pipes are shown on Drawing ENV-500.

Risers for seven of the suction points (suction points SP-8, -19, -20, -21, -22, -26 and -28) extend vertically to a point just below the building ceiling/roof where they connect to Schedule 80 PVC fan stack riser pipes that penetrate the roof and to which the SSDS fan and Schedule 80 PVC discharge piping for that single suction point are connected. For the remaining 35 suction points, the vertical risers from each point extends up to the roof trusses and structural webbing for the building ceiling system. From there, 6-inch Schedule 40 PVC distribution header laterals connect the 4-inch piping from either two or three individual suction cavities. These 6” distribution headers transition just below the roof to 6” Schedule 80 PVC vertical fan stack riser pipes which connect to 14 SSDS fans and Schedule 80 PVC discharge pipes on the roof. The top end of the discharge stack for each fan is equipped with a rain cap made out of a Schedule 80 PVC tee with ½” by ½” hot dipped galvanized mesh covering both ends of the tee to prevent foreign objects from entering the depressurization piping.

The layout of the lateral SSDS distribution piping network inside the building is shown on Drawing ENV-100. The layout of the 21 SSDS fan and discharge point locations on the building roof is shown on Drawing ENV-101. Typical

roof penetration and exhaust stack riser and fan details are shown on Drawing ENV-500, and typical roof-top exhaust stack support structure details are shown on Drawing ENV-501.

2.2.3 SSDS Fans

The roof-mounted fans which depressurize the SSDS suction cavity network for the building are RadonAway in-line vacuum fans including 19 Model RP265 fans and two (2) Model GX5 fans. The two Model GX5 fans are fan numbers 18 and 20. Cut sheet and installation and operating instructions for the RadonAway fans are presented in Appendix B.

2.2.4 Operation Monitoring System

The continuous operation of each fan is monitored using a RadonAway Checkpoint IIa low pressure alarm. Each alarm is paired with a Dwyer Instruments Magnehelic 2000-Series differential pressure gauge (manometer) for measuring the vacuum pressure for each SSDS fan at a point just below where the riser for the fan stack penetrates the building roof. The vacuum connection between the manometer and the fan stack riser is made using semi-rigid ¼-in. vinyl tubing run from the monitoring point along ceiling and wall system elements to the monitoring panels. Each low-pressure switch/alarm and manometer pair is installed in a lockable cabinet in one of four monitoring panel groups located along the central hallway that runs between tenant spaces through the interior of the building. Monitoring panel locations are shown on Drawing ENV-100, and monitoring panel details are shown on Drawings ENV-502 and -503.

RadonAway Checkpoint IIa low-pressure alarms have two pilot lights. When the system is operating correctly, a green light (the light on the right side if facing the instrument) is illuminated. The low-pressure switches also have an audible warning alarm. The goal of the low-pressure switches is to monitor the vacuum being produced by the roof-mounted fans. When the fans are creating greater than 0.25 inches of water column pressure differential, the audible/visual alarm will not be activated, and the green pilot light will be illuminated. If the pressure differential in the SSDS fan stack piping drops below 0.25 inches of water column pressure differential, the audible alarm will be activated and the red pilot light will become illuminated.

Installation and operating instructions for the RadonAway alarms and Magnehelic differential pressure gauges are presented in Appendix B.

In addition to the 21 Magnehelic manometers used to monitor the vacuum being produced by each of the SSDS fans, each of the risers for the 35 suction points that are not piped individually (singly) to a fan is equipped with a separate monitoring port fitted with a Dwyer LPG Series low pressure gauge to allow for reading the individual pressures at the two or three suction points with SSDS piping manifolded together and connected to a shared fan. The monitoring ports on the suction point riser pipes are located approximately 8 feet above floor level below the riser ball valve. A monitoring port without a Dwyer low pressure gauge is installed on each of the seven risers for suction points piped singly to an SSDS fan, and these could be used to connect a portable manometer for manual pressure monitoring at that location.

2.2.5 Performance Monitoring

The system is designed to exhaust sub-slab vapor at a total rate of no more than 300 cfm per fan. Each fan is sized to operate at approximately 2 inches of water column (+/- 0.5 inches of water column), a level of vacuum designed to generate a pressure extension field capable of depressurizing the sub-slab void spaces beneath the building floor. Twenty-seven (27) permanent Vapor Pin sub-slab pressure monitoring points (PMPs) are installed throughout building to allow for periodic manual monitoring of the sub-slab vacuum. The locations of the PMPs are shown on Drawing ENV-100 in Appendix A, and details on their construction are shown on Drawing ENV-500 in Appendix A. Manufacturer's cut sheet and installation instructions for the Vapor Pin PMPs are presented in Appendix B.

2.2.6 Warning Labels

In order to avoid accidental damage to the SSDS that could disturb its function, labels containing the following message were placed on accessible/visible portions of the riser pipes and distribution pipes:

"THIS IS A COMPONENT OF A SUB-SLAB DEPRESSURIZATION SYSTEM. DO NOT ALTER OR DISCONNECT."

During the first of the annual monitoring events described in Section 3.3 of this plan, labels with contact information for the building owner will be attached to accessible riser pipes indicating that the owner should be contacted if the system appears to need service or inspection. These labels will be updated as necessary during each subsequent annual event.

3.0 OPERATION, MAINTENANCE AND MONITORING

Specific SSDS monitoring tasks need to be completed by the building manager on a monthly basis. In addition, annual monitoring and certification of the system must be performed by a qualified professional.

Under normal operating conditions, regular maintenance of the system is not required unless monitoring results indicate a significant change from normal operating conditions.

System monitoring tasks, non-routine maintenance procedures, and start-up and shut down procedures are described below. SSDS monitoring data will be recorded on the Sub-Slab Depressurization System Monthly Monitoring Log or Annual Monitoring Log; the log forms to be used are presented in Appendix C.

3.1 MONTHLY MONITORING, RECORD KEEPING AND COMMUNICATION

The following SSDS monitoring tasks will be completed by the owner or building operator on a monthly basis:

1. Collect vacuum readings from the Magnehelic® manometer gauges (labeled by fan number) located in the monitoring instrument panels described in Section 2.2.4 and shown on Drawing ENV-100 in Appendix A. Record the readings on the Monthly Monitoring Log provided in Appendix C.

2. Note any observed abnormalities, visual or auditory, with respect to normal system operating conditions on the log sheet. If the manometer needle rests all the way to the left on the zero bar and/or the Checkpoint IIa low-pressure switch audible warning alarm is activated and/or the pilot light is red, confirm operation (either visually or audibly) of the corresponding fan at the roof level and notify the owner and Engineer immediately in order to initiate necessary corrective measures. Indicate on the log sheet if the instrument panel pilot lights are green or red to verify that fans are operating correctly. If any of the pilot lights are off, notify the owner and Engineer immediately to initiate necessary corrective measures.

3. Maintain a digital or paper copy of the completed log form in a file dedicated to saving monitoring records for the SSDS. Provide a copy of the completed log sheet to the owner's Engineer.

4. Maintain panelboard labels in the electrical panel box that contains circuit breakers for the SSDS fans.

5. On an occasional basis (at least once annually), toggle each of the circuit breakers for the SSDS fans off and back on to confirm that the low-pressure switches provide the intended audible and visual warnings. If any low-pressure switches do not work correctly, notify the owner and Engineer immediately to initiate corrective measures.

While not directly related to SSDS operation monitoring, monitoring of passive exhaust discharges such as those for gas-fired hot water heaters and gas-fired process heating equipment should be performed by the owner or building operator on a regular basis to confirm that back drafting is not occurring.

3.2 NON-ROUTINE MAINTENANCE

Non-routine maintenance may be required to address issues such as unresolvable alarms, repeatedly malfunctioning components, or accidental or weather-related damage to system components. If non-routine maintenance is required, the Engineer must be notified. Contact information for the Engineer is provided below in Section 6 of this plan.

If the routine operation of the SSDS cannot be restored within 2 weeks from when a non-routine maintenance issue was identified, the owner must notify NYSDEC/NYSDOH and provide a schedule for resolving the issue.

A field log or simple report documenting any non-routine maintenance activities performed must be prepared and maintained in the file with the monthly monitoring logs described above in Section 3.1. The documentation should include a description of the issue addressed, the location of the components involved, a description of the maintenance actions completed, a description of the actions taken to confirm that routine system operation was restored, the date or dates when the activities were performed, and the names and affiliations of the personnel involved.

3.3 ANNUAL MONITORING & REPORTING

A complete system evaluation will be performed on an annual basis by the Engineer retained by the owner/operator of the building. The following tasks will be completed as part of this evaluation:

1. Compile the monthly monitoring logs prepared by the building owner or operator and records of any non-routine maintenance for the preceding year.

2. Complete the monthly monitoring tasks outlined in section 3.1 above, recording results on the Annual Monitoring Log provided in Appendix C. Inspect the SSDS monitoring panels and confirm that the instrument housings, electrical connections, gauges and alarms are undamaged and in good working order.

3. Obtain vacuum readings using a portable micromanometer from the 27 sub-slab pressure monitoring points (refer to Drawing ENV-100 in Appendix A for the locations of the sub-slab pressure monitoring points). Ensure that the micromanometer has been calibrated by the manufacturer within one (1) year of its use. If any of the sub-slab pressure monitoring points are damaged or protective covers are missing, take measures for corrective action.

4. Use visual observations and listen for audible evidence of air leaks to inspect the finished floor slab for new cracks or penetrations that represent either apparent potential pathways for vapor intrusion or potential compromises to sub-slab depressurization. Perform smoke testing as necessary to assess the leakage potential of suspect locations.

5. If the roof is accessible and safe to be on (e.g., not snow/ice covered), inspect the fans and exhaust stacks on the roof and note any abnormal conditions such as hot fan housings, vibrations, or unusual noise. Make note of any condensation occurring on the SSDS exhaust piping. Visually inspect the ½" by ½" hot dipped galvanized mesh on the exhaust stacks to verify there are no obstructions to exhaust flow.

6. Conduct annual indoor air sampling during the heating season as specified in the Site Management Plan.

The results of the annual evaluation shall be presented in an annual Operation, Maintenance and Monitoring (OM&M) report. The OM&M report will be signed by a professional engineer or environmental professional. The OM&M report will be submitted for approval to the NYSDEC and NYSDOH on behalf of the owner. The first annual report will be due 18 months after approval of this OM&M Plan.

3.4 SYSTEM STARTUP AND SHUTDOWN PROCEDURES

3.4.1 SSDS Startup

The SSDS has been in operation at the Site since 2019. Should circumstances call for a need for a restart of some or all the system components, the following steps will be needed to turn the fans on and resume normal operation:

1. After the fans are inspected to assure that the discharges are clear and that no -one is in contact with wiring, confirm that the appropriate breakers in the electrical panel boxes are ON with the help of a person qualified to open the electrical panels on-site.

2. Confirm the fan motor starter switches are in the ON position. These are affixed to the exhaust stack support structures located on the roof.

3. Confirm proper operation by performing the appropriate monitoring steps outlined in sections 3.1 and 0.

3.4.2 SSDS Shutdown

To temporarily turn system components off:

1. Put the SSDS fan motor starter switches affixed to the exhaust stack supports in the OFF position.

2. Place the appropriate circuit breakers in the OFF position with the help of a person qualified to open the electrical panels on-site.

4.0 SYSTEM OPTIMIZATION AND MODIFICATION

4.1 OPTIMIZATION

Changes to subsurface conditions or other factors may affect the performance of the SSDS such that its operational settings may need to be adjusted or optimized or equipment or components may need to be replaced or added. If during annual monitoring or system restart a vacuum (differential pressure) greater than or equal to 0.002 inches of water column is not detected at all permanent sub-slab pressure monitoring points shown (the PMPs shown on Drawing ENV-100 in Appendix A), the SSDS may need to be adjusted or optimized. Should such a situation arise, contact the owner and the Engineer immediately.

System optimization should be accomplished by using the PMP readings to identify areas of the building which have inadequate differential pressures as well as adjacent areas where an excess of vacuum is indicated. To perform the optimization:

- At those locations where a number of suction points lead to one fan, and excess sub-slab vacuum (pressure differences of significantly more than 0.002 inches) is indicated, incrementally throttle the ball valves down on risers for those individual suction points in that area to attempt to balance the influence of the fan operations more evenly across the affected area. Recheck all PMPs in that section of the building to determine if sufficient vacuum is now present at each PMP location. Several adjustments and readjustments of ball valves on more than one riser may be needed to accomplish the rebalancing.
- If throttling back the suction point riser valves does not yield acceptable vacuum throughout the area of the building addressed by that fan, it's possible that system optimization could be accomplished by selecting and installing a fan of a different size (different performance characteristics) to replace the fan in question and/or fans for other nearby suction points. The Engineer will need to be involved in determining and implementing the appropriate action.

If effectiveness of the SSDS cannot be restored within 2 weeks from when the issue requiring optimization was identified, the owner must notify NYSDEC/NYSDOH and provide a schedule for resolving the issue.

4.2 MODIFICATION

If building maintenance, remodeling or renovation activities require consideration of relocating SSDS fans and discharge points on the roof, minimum clearances to air intakes will need to be maintained. Where interior construction requires consideration of relocating suction points or re-routing of interior SSDS piping, the impacts to SSDS operation and performance must be evaluated by the Engineer. As with modifications to the SSDS itself, planned changes to or modifications of the HVAC system for the building should be evaluated by the Engineer for possible impacts to the performance of the SSDS.

Contact the Engineer at least 75 days in advance of the proposed construction if changes to the SSDS or HVAC system are required. Contact information for the Engineer is provided below in Section 6 of this plan. NYSDEC/NYSDOH should also be notified two weeks in advance of any planned modification to the SSDS.

5.0 SYSTEM DECOMMISSIONING

It is anticipated that the SSDS will need to be operated for an extended period of time. The active SSDS will not be discontinued unless prior written approval is granted by the DEC and the DOH project managers. If monitoring data indicates that the SSD system may no longer be required, a proposal to discontinue the SSDS will be submitted by the remedial party to the DEC and DOH.

Decommissioning of the system may include:

- Removal of the SSDS fans and monitoring instrument panels and proper decommissioning of associated electrical connections by a qualified electrician.
- Grouting of the sub-slab piping and permanent sub-slab pressure monitoring points.
- Capping (or removal if required by owner) of the risers and piping network.

6.0 ENGINEER OF RECORD CONTACT INFORMATION

The contact information for the NYS-licensed Professional Engineer of Record for the design of this SSDS is presented below, in the event the Owner and/or Tenants have questions or concerns regarding the SSDS operation, performance, monitoring or maintenance.

Dwight Harrienger, P.E. LEED BD + C
Senior Associate

Direct: 585 413-5273
Cell: 585 413-8740
dwight.harrienger@stantec.com

Stantec
61 Commercial Street Suite 100
Rochester NY 14614-1009

7.0 REFERENCES

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

NYSDEC, 2010a. NYSDEC's DER-10, Technical Guidance for Site Investigation and Remediation. May 3, 2010.

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Stantec Consulting Services Inc., Revised June 2016. Interim Remedial Measure Site Management Plan, Brownfield Cleanup Program Site #C828101, Former Alliance Metal Stamping & Fabrication Facility, 12 Pixley Industrial Parkway, Town of Gates, Monroe County, New York.

Stantec Consulting Services Inc., June 2019. IRM Work Plan, Brownfield Cleanup Program Site #C828101, Former Alliance Metal Stamping & Fabrication Facility, 12 Pixley Industrial Parkway, Town of Gates, Monroe County, New York.

Stantec Consulting Services Inc., August, 2020. Health & Safety Plan, Site Management Activities, Former Alliance Metal Stamping & Fabrication Facility, 12 Pixley Industrial Parkway, Town of Gates, Monroe County, New York, NYSDEC Site Number C828101. (The HASP is presented in Appendix E of the SMP referenced below.)

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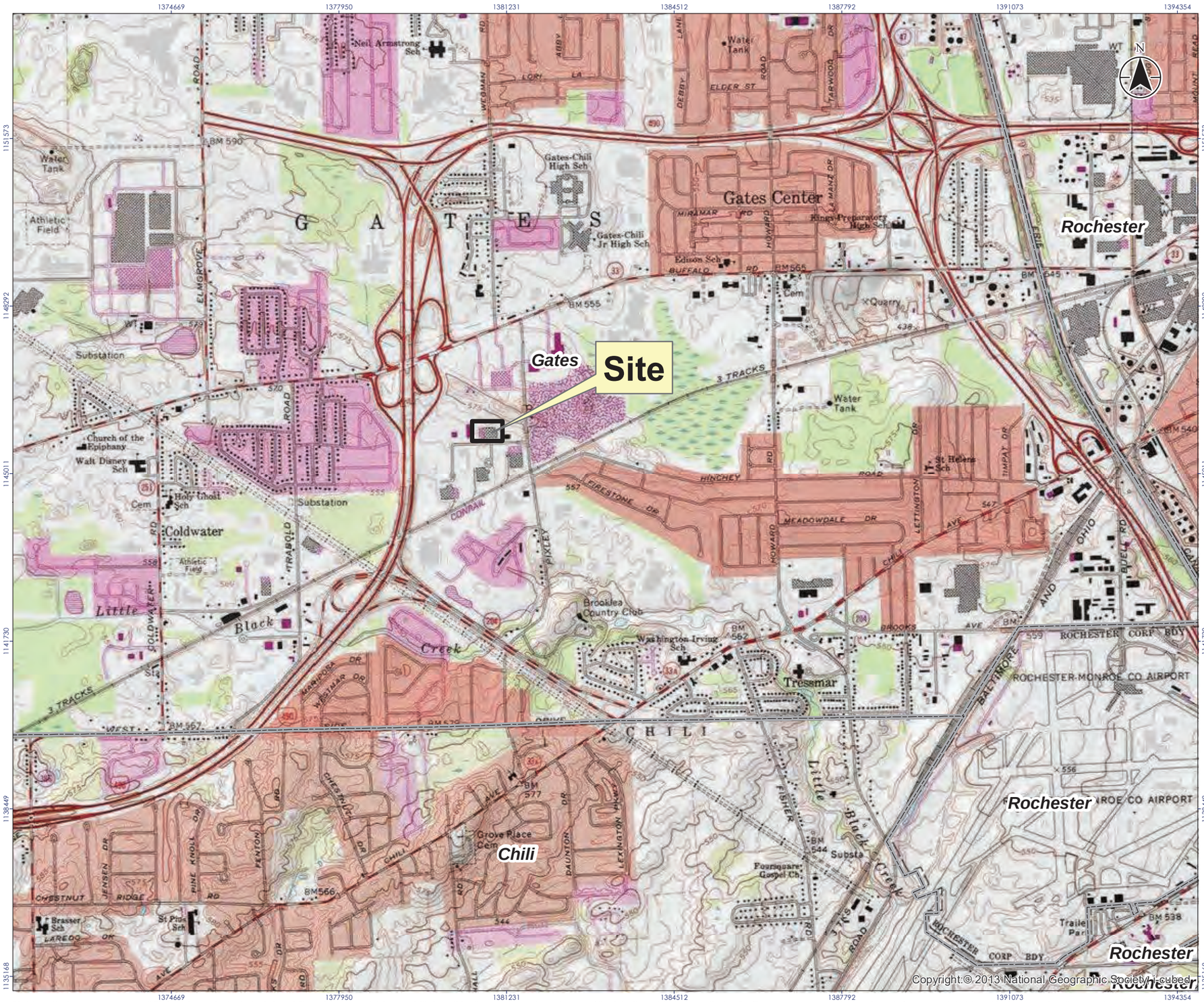
Stantec Consulting Services Inc., October 2021. Site Management Plan, Former Alliance Metal Stamping & Fabrication Facility, 12 Pixley Industrial Parkway, Town of Gates, Monroe County, New York, NYSDEC Site Number C828101.



0 2,000 4,000 Feet

Notes

1. Coordinate System: NAD 1983 StatePlane New York West FIPS 3103 Feet
2. USGS Map Source :This map presents land cover imagery for the world and detailed topographic maps for the United States. The map includes the National Park Service (NPS) Natural Earth physical map at 1.24km per pixel for the world at small scales, i-cubed eTOPO 1:250,000-scale maps for the contiguous United States at medium scales, and National Geographic TOPO! 1:100,000 and 1:24,000-scale maps (1:250,000 and 1:63,000 in Alaska) for the United States at large scales. The TOPO! maps are seamless, scanned images of United States Geological Survey (USGS) paper topographic maps. For more information on this map, including terms of use, visit online at http://goto.arcgisonline.com/maps/USA_Topo_Maps

Project Location:
12 Pixley Industrial Parkway
Town of Gates, NY

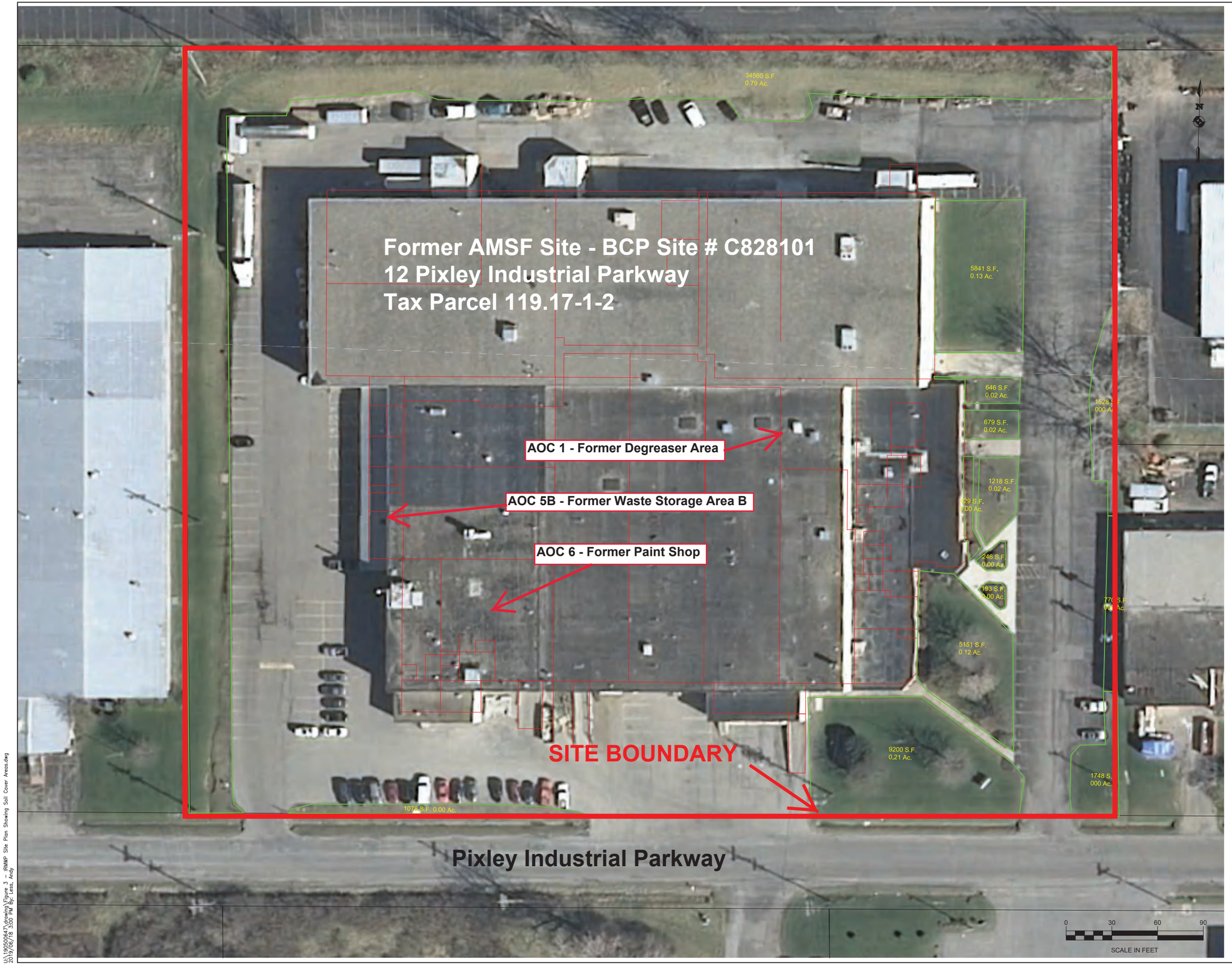
Prepared by AL on 2017-07-17
Technical Review by TW on 2017-07-17
Independent Review by MPS on 2017-07-17

190500647

Client/Project
Former Alliance Metal Stamping and Fabrication Facility
Brownfield Cleanup Program Site #C828101

Figure No.
1

Title
Site Location Map



U:\190500647\drawing\Figure 3 - IRMWP Site Plan Showing Soil Cover Areas.dwg
2019/06/18 3:00 PM By: Lees, Andy

ORIGINAL SHEET – ANSI D

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Legend

AREAS OF SOIL COVER
SF – SQUARE FEET
AC. – ACRES

Notes

Revision	By	Appd.	YY.MM.DD
RI Report	TW	MPS	2014.10
Issued	By	Appd.	YY.MM.DD
File Name:	APL	TW	TW	2014.10
	Dwn.	Chkd.	Dsgn.	YY.MM.DD

Permit-Seal

Client/Project

FORMER ALLIANCE METAL STAMPING & FABRICATION FACILTY
BROWNFIELD CLEANUP PROGRAM SITE # C828101

12 PIXLEY INDUSTRIAL PARKWAY, GATES, NY

Title

SITE LAYOUT MAP

Project No.	Scale	
190500647	AS SHOWN	
Drawing No.	Sheet	Revision
FIG. 2	of	

Appendix A RECORD DRAWINGS

- ENV-000 – General Notes and Table of Contents
- ENV-100 – Sub-Slab Depressurization System Coverage Plan
- ENV-101 – Sub-Slab Depressurization System Discharge and Exhaust Locations
- ENV-500 – Sub-Slab Depressurization System Interior Details
- ENV-501 – Sub-Slab Depressurization System Exterior Details
- ENV-502– Sub-Slab Depressurization System Monitoring Panel Details (Sheet 1 of 2)
- ENV-503 – Sub-Slab Depressurization System Monitoring Panel Details (Sheet 2 of 2)

GENERAL NOTES

1. THERE HAS NOT BEEN A FORMAL SURVEY/INVENTORY OF SUB-SLAB UTILITIES/PIPING/CONDUIT. CONTRACTOR'S SCOPE AND BUDGET SHALL INCLUDE NECESSARY PROVISIONS TO PERFORM UTILITY LOCATING PRIOR TO ANY PENETRATIONS OF THE CONCRETE SLAB. ANY CONDUIT/PIPE/UTILITY REPAIR WILL BE THE RESPONSIBILITY OF THE CONTRACTOR.
2. THE CONFIGURATION OF THE BUILDING'S FOOTERS FOR INTERIOR OR EXTERIOR COLUMNS HAS NOT BEEN INVESTIGATED. PROPOSED SUCTION CAVITY CONSTRUCTIONS ARE PROVIDED FOR SEVERAL FOOTER CONFIGURATIONS. CONTRACTOR TO CONFIRM THE CONSTRUCTION OF EACH SUCTION CAVITY WITH THE ENGINEER BASED ON FIELD INVESTIGATION PERFORMED BY THE CONTRACTOR.
3. ALL WORK SHALL BE IN ACCORDANCE WITH APPLICABLE CODES AND REGULATIONS, AS WELL AS THE INTERIM REMEDIAL WORK PLAN APPROVED BY THE NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION (NYSDEC) AND NEW YORK STATE DEPARTMENT OF HEALTH (NYSDOH).
4. ALL WORK SHALL BE DONE IN PROPER SEQUENTIAL PHASES. ALL STAGES OF WORK RELATED TO THE SUB-SLAB DEPRESSURIZATION SYSTEM SHALL BE INSPECTED AND APPROVED BY THE ENGINEER. CHANGES TO DRAWINGS AND SPECIFICATIONS RELATED TO THE SUB-SLAB DEPRESSURIZATION SYSTEM SHALL BE APPROVED BY THE ENGINEER BEFORE BEING IMPLEMENTED. NO SUB-SLAB DEPRESSURIZATION SYSTEM PIPING SHALL BE COVERED BEFORE INSPECTION AND APPROVAL IS GIVEN BY THE ENGINEER.
5. ALL SSDS COMPONENT LOCATIONS ON DRAWINGS ARE APPROXIMATE AND THEIR LOCATIONS MUST BE CONFIRMED IN THE FIELD PRIOR TO ANY WORK ON THE SSDS INSTALLATION.
6. FOR EACH COMMON PVC PIPE HEADER LEADING TO AN EXHAUST FAN, SUPPLY AND INSTALL ONE BRASS NIPPLE THREADED WITH TEFLON TAPE THAT CONNECTS ¼" I.D. POLYETHYLENE (PE) TUBING TO BE USED FOR PRESSURE MONITORING OF THE EXHAUST FANS. THE PE TUBING CONNECTS TO A DWYER MAGNEHELIC MANOMETER (WITH A MINIMUM OPERATING TEMPERATURE RANGE OF -20ºF TO 130ºF) AND LOW-PRESSURE SWITCH MOUNTED INSIDE MANOMETER/WARNING LIGHT BOXES. SEE ELECTRICAL DRAWINGS FOR LOCATIONS OF MONITORING PANELS. REFER TO THE CONTRACT DRAWING FOR FURTHER DETAILS.
7. LOW-PRESSURE SWITCHES SHALL BE RADONAWAY CHECKPOINT IIA MITIGATION SYSTEM ALARM, WITH AUDIBLE ALARM, GREEN AND RED LED LIGHTS, FACTORY PRESET TO ACTIVATE AT 0.25 INCHES OF WATER COLUMN.
8. EACH VERTICAL SUCTION CAVITY RISER SHALL HAVE A BALL VALVE INSTALLED. REFER TO THE CONTRACT DRAWINGS FOR MOUNTING HEIGHT ABOVE FINISHED FLOOR. BALL VALVES SHALL BE INSTALLED IN THE CLOSED POSITION IF THE END OF THE PIPE DOES NOT TERMINATE TO THE EXTERIOR OF THE BUILDING TO MINIMIZE THE POTENTIAL FOR CREATING A NEW VAPOR INTRUSION PATHWAY.
9. ALL POLYVINYL CHLORIDE (PVC) PIPING SHALL BE SOLID WALL, PRESSURE RATED PIPING, MEETING THE REQUIREMENTS OF ASTM D 2241, ASTM D 1785 OR ASTM F 480. ALL PVC PIPING IS SUBJECT TO FINAL APPROVAL BY THE ENGINEER.
10. CLEAN, WASHED GRAVEL FOR SUCTION CAVITIES, SHALL BE SUPPLIED AND MAINTAINED FREE OF CONTAMINANTS, SAND, SILT, CLAY OR OTHER FINE MATERIALS OR DEBRIS. PROPOSED MATERIAL IS SUBJECT TO APPROVAL BY THE ENGINEER.
11. ANY SLAB PENETRATION THAT WILL NOT IMMEDIATELY BE SEALED TO BE VAPOR TIGHT SHALL BE COVERED AT MINIMUM WITH A RIGID PLASTIC COVER THAT IS URETHANE CAULKED TO THE FLOOR.
12. CONTRACTOR TO PROVIDE NOTICE OF ANY PLANNED SUB-SLAB PENETRATION WORK A MINIMUM OF 48 HOURS IN ADVANCE TO THE ENGINEER TO ALLOW THE ENGINEER TO COORDINATE ANY NECESSARY MONITORING EQUIPMENT.
13. CONTRACTOR SHALL HAVE NEW ACTIVATED CARBON FILTERS ON-SITE IN THE EVENT THAT EXHAUST TUBING FOR USE DURING DRILLING OF SUCTION CAVITIES IS UNABLE TO REACH AN EXTERIOR DISCHARGE POINT.
14. SEAL ALL PENETRATIONS THROUGH THE CONCRETE SLAB IN ACCORDANCE WITH THE CONTRACT DRAWINGS AND MANUFACTURER'S SPECIFICATIONS. CONCRETE MIX USED SHALL HAVE A COMPRESSIVE STRENGTH OF 5,000 PSI AFTER 28 DAYS.
15. ALL PIPING SHALL MAINTAIN A MINIMUM OF 1% SLOPE DRAINING TOWARDS SUCTION CAVITIES (REFER TO THE CONTRACT DRAWINGS) TO ENSURE THAT CONDENSATE FLOWS DOWN THE RISERS TO THE SUBSURFACE.
16. ALL PVC CONSTRUCTION SHALL BE AIRTIGHT AND GLUED WITH APPROPRIATE ADHESIVES.
17. ROOF PENETRATIONS AND SEALS SHALL BE PERFORMED BY THE ROOFING CONTRACTOR WHO INSTALLED THE ROOF TO NOT VOID THE ROOF WARRANTY. CONTRACTOR TO MARK LOCATIONS OF PLANNED ROOF PENETRATIONS AND COORDINATE TIMING OF THOSE PENETRATIONS WITH THE ROOFING CONTRACTOR WHO WILL BE ENGAGED BY THE OWNER.

GENERAL NOTES (CONT,)

18. CLEARLY LABEL ALL COMPONENTS OF THE SUB-SLAB DEPRESSURIZATION SYSTEM ABOVE THE FLOOR SLAB AT 20-FOOT INTERVALS WITH THE FOLLOWING MESSAGE: "THIS IS A COMPONENT OF A SUB-SLAB DEPRESSURIZATION SYSTEM. DO NOT ALTER OR DISCONNECT." ALSO LABEL EACH VERTICAL SUCTION CAVITY RISER AT AN ELEVATION OF 4 FEET ABOVE FINISHED FLOOR.
19. USE SCHEDULE 80 PVC PIPE AND FITTINGS FOR ALL SSDS COMPONENTS LOCATED ON THE EXTERIOR OF THE BUILDING.
20. PROVIDE AND INSTALL RADONAWAY OR FANTECH IN-LINE FANS AS PER MANUFACTURER'S SPECIFICATIONS AND AS SHOWN ON THE CONTRACT DRAWINGS. INSTALL FANS WITH AIRTIGHT AND EASILY REMOVABLE COUPLINGS FOR EASE OF REPAIR, REPLACEMENT OR UPGRADE.
21. CLEARLY LABEL ALL EXHAUST FANS WITH THE PROPER ID (I.E. FAN #1, FAN #2, FAN #3, AND FAN #4).
22. RESERVED
23. RESERVED
24. ALL SUB-SLAB DEPRESSURIZATION SYSTEM ROOFTOP EXHAUST STACKS TERMINATIONS SHALL BE LOCATED A MINIMUM OF 25 HORIZONTAL FEET FROM AIR INTAKES OR BUILDING OPENINGS AND 10 HORIZONTAL FEET FROM ROOF EDGES.
25. INSTALL SCHEDULE 80 PVC RAIN CAP WITH GALVANIZED MESH TO PREVENT FOREIGN OBJECTS FROM ENTERING THE EXHAUST STACK.
26. CONTRACTOR SHALL CONTAINERIZE ALL CONSTRUCTION WATER GENERATED OR ENCOUNTERED (I.E. GROUNDWATER, WET CORING) IN 55-GALLON DOT APPROVED DRUMS. DRUMS SHALL BE STORED ON-SITE IN A LOCATION APPROVED BY THE ENGINEER AND THE OWNER.
27. CONTRACTOR SHALL CONTAINERIZE ALL CONCRETE CUTTINGS, SOIL CUTTINGS AND AGGREGATE CUTTINGS IN 55-GALLON DOT APPROVED DRUMS. DRUMS SHALL BE STORED ON-SITE IN A LOCATION APPROVED BY THE ENGINEER AND THE OWNER.
28. A REPRESENTATIVE OF THE ENGIINEER MUST BE ON-SITE AT ALL TIMES WHILE THE CONTRACTOR IS PERFORMING WORK.
29. CONTRACTOR TO FOLLOW APPROVED DUST CONTROL MEASURES.

HAZARDOUS MATERIALS

30. RESERVED
31. THE ENGINEER RESERVES THE RIGHT TO STOP WORK IF MATERIALS ARE ENCOUNTERED THAT HAVE THE POTENTIAL TO BE HAZARDOUS AND ARE DETERMINED TO REQUIRE FURTHER ANALYTICAL TESTING.
32. THE CONTRACTOR SHALL HAVE ALL WORKERS ON-SITE WITH 40-HOUR OSHA HAZWOPER TRAINING.
33. A HAZARDOUS MATERIALS SURVEY OF THE BUILDING MATERIALS (E.G. ASBESTOS, PCB CAULKS, LEAD BASED PAINTS), HAS NOT BEEN PERFORMED. THE POTENTIAL EXISTS FOR THESE HAZARDS TO BE ON-SITE. THE CONTRACTOR IS RESPONSIBLE FOR CONDUCTING THE WORK UNDER THEIR OWN HEALTH AND SAFETY PLAN PER OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION (OSHA) REQUIREMENTS AND PER THE SITE-SPECIFIC SAFETY REQUIREMENTS.

ELECTRIC, GENERAL

34. ALL FAN BREAKERS SHOULD BE LABELED AS "SSDS FAN NO. __" ON THE PANELBOARD SCHEDULE.

TABLE OF CONTENTS

1) RECORD DRAWINGS

NOTES FOR RECORD DRAWING:

TO PREPARE THE RECORD DRAWING VERSION OF THIS SHEET, THE FOLLOWING CHANGES WERE MADE TO THE CONSTRUCTION DRAWING VERSION OF ENV-000:

1. SHEET NOS. ENV-504 AND ENV-505 WERE REMOVED FROM THE TABLE OF CONTENTS. THE SSDS MONITORING PANEL DETAILS PRESENTED ON THOSE TWO SHEETS WERE CONSOLIDATED ON TO ENV-502 AND ENV-503 FOR THE RECORD DRAWING SET.
2. INTERIM REMEDIAL MEASURE WORK PLAN DOCUMENTS WERE REMOVED FROM THE TABLE OF CONTENTS BECAUSE THOSE DOCUMENTS WERE NOT INCLUDED IN THE RECORD DRAWING SET.

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Notes

Revision	By	Appd.	YY.MM.DD
RECORD DRAWING FOR CCR	TW	DH	2020.08
ISSUED FOR AGENCY REVIEW	MB/AK	DH	2019.03
Issued	By	Appd.	YY.MM.DD
File Name:	APL Dwn.	DH Chkd.	MB/AK Dsgn.	2019.03 YY.MM.DD

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Client/Project

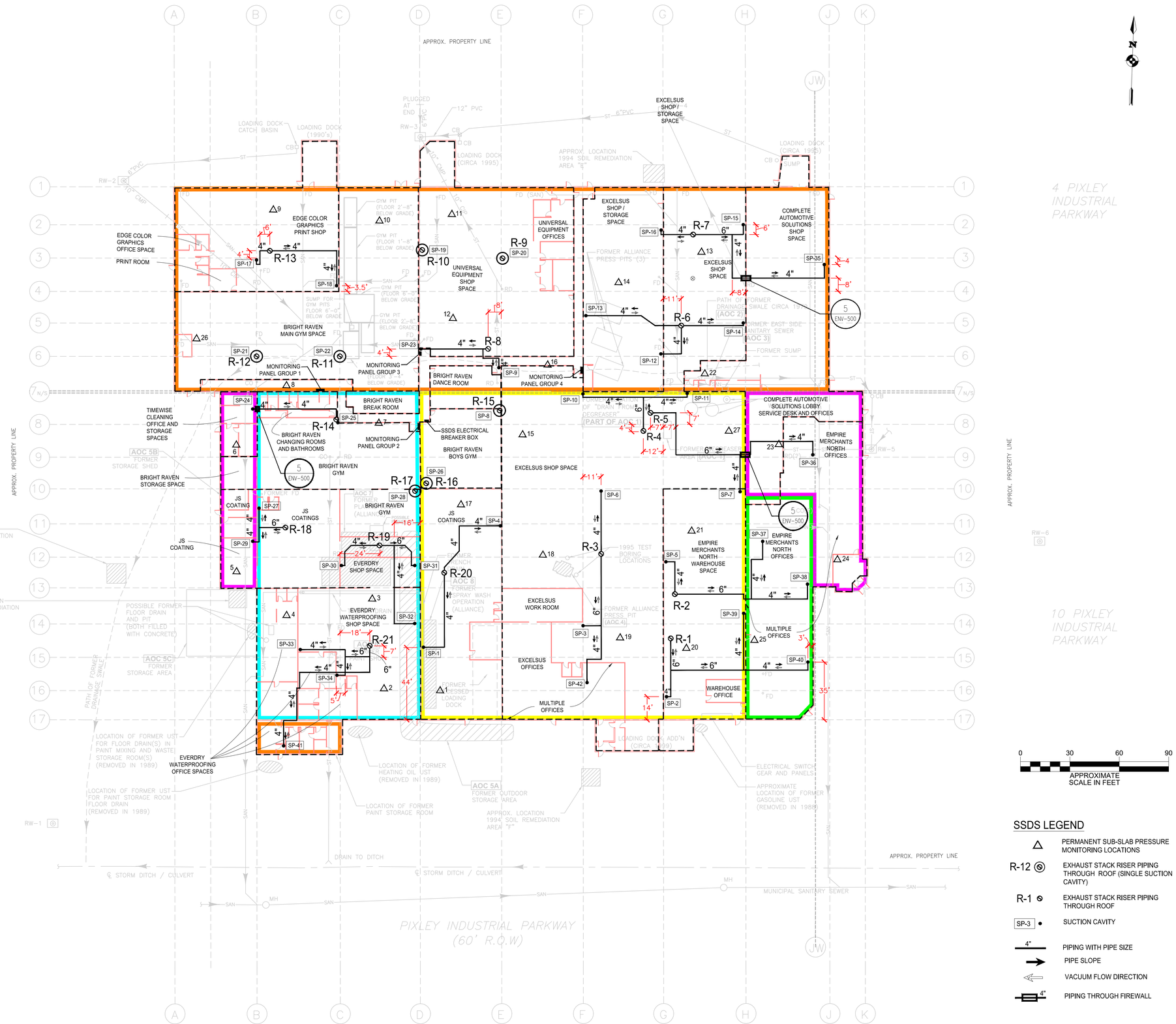
FORMER ALLIANCE METAL STAMPING & FABRICATION FACILTY
BROWNFIELD CLEANUP PROGRAM SITE # C828101
12 PIXLEY INDUSTRIAL PARKWAY, GATES, NY

SSDS RECORD DRAWINGS

Title

GENERAL NOTES AND TABLE OF CONTENTS

Project No.	Scale	
190500647	NONE	
Drawing No.	Sheet	Revision
ENV-000	1 of 7	1



SSDS LEGEND

- △ PERMANENT SUB-SLAB PRESSURE MONITORING LOCATIONS
- R-12 ◎ EXHAUST STACK RISER PIPING THROUGH ROOF (SINGLE SUCTION CAVITY)
- R-1 ◎ EXHAUST STACK RISER PIPING THROUGH ROOF
- SP-3 • SUCTION CAVITY
- 4" PIPING WITH PIPE SIZE
- → PIPE SLOPE
- VACUUM FLOW DIRECTION
- 4" PIPING THROUGH FIREWALL

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TENANT SPACE OUTLINE (AS OF JULY 2020)

INTERIOR WALL (GENERALLY LESS THAN FULL HEIGHT IF SHOWN WITHOUT OVER-PRINTED DASHED LINE). NOT ALL INTERIOR WALLS ARE SHOWN.

FD FLOOR DRAIN
RD ROOF DRAIN PIPE UP
CB CATCH BASIN
SAN SANITARY SEWER
ST STORM SEWER
RW RECHARGE WELL
CO CLEAN OUT
MH MANHOLE

FOUNDATION WALL / GRADE BEAM/ FOOTER OUTLINES

- ORIGINAL MFG BUILDING
- ORIGINAL ADMIN BUILDING
- WEST ADDITION (1975)
- NORTH ADDITION (1979) AND PAINT STORAGE ADDITION (1979)
- OFFICE ADDITION (1988) AND STORAGE SHED ADDITION (1988)

Notes

1. The building floor plan shown on this drawing was drawn based on the floor plan shown on the following drawing: "Series: Tenant Layout, Floor: First, Title: Floor Plan, No.: TP-1", prepared by Miller Anderson Architects, Rochester, NY, date May 1999, issued 5-24-99.

2. Locations of floor drains, roof drains, catch basins and recharge wells were taken from various historic site plans (see separate *Summary of Available Building Plans* prepared by Stantec dated 4/19/12) and then field checked by Stantec personnel on 3/20/12 to confirm that they were present. Additional floor drains, roof drains, catch basins and recharge wells not shown on historic plans or drawings but noted during the field check are also shown. All locations are approximate. Interior tenant walls my have been revised.

3. Locations shown for underground sanitary sewer ('SAN') and storm sewer ('ST') lines and foundation features were taken from various historic site plans (see separate *Summary of Available Building Plans* prepared by Stantec dated 4/19/12). These features have not been field verified.

Revision	By	Appd.	YY.MM.DD
RECORD DRAWING FOR CCR	TW	DH	2020.08
ISSUED FOR AGENCY REVIEW	MB/AK	DH	2019.03

Issued	By	Appd.	YY.MM.DD
File Name:	APL	DH	2019.03
	Dwn.	Chkd.	Dsgn.

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STATE OF NEW YORK · ROBERT ALAN HARRINGER · 061282 · LICENSED PROFESSIONAL ENGINEER

Client/Project

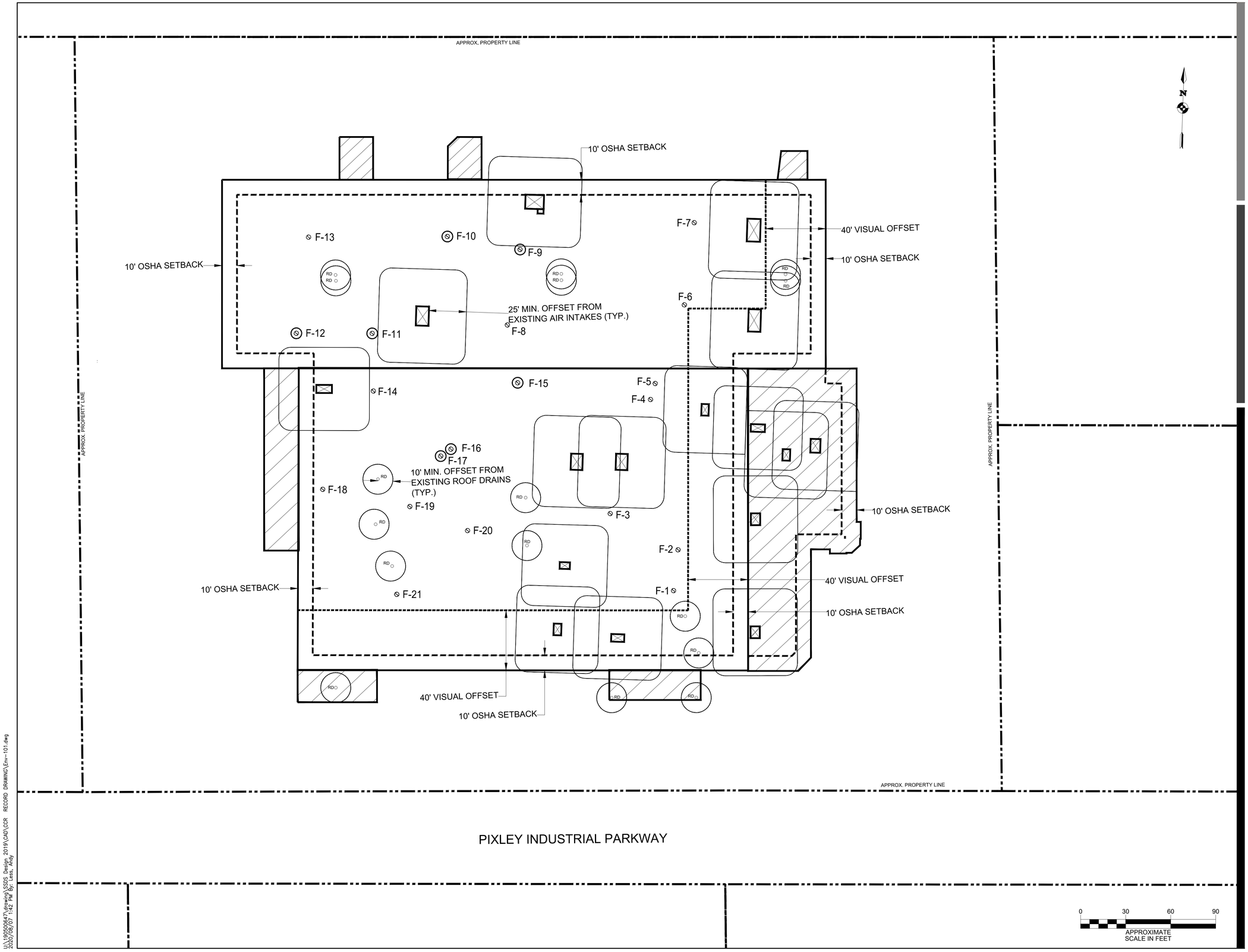
FORMER ALLIANCE METAL STAMPING & FABRICATION FACILTY
BROWNFIELD CLEANUP PROGRAM SITE # C828101
12 PIXLEY INDUSTRIAL PARKWAY, GATES, NY

SSDS RECORD DRAWINGS

Title

SUB-SLAB DEPRESSURIZATION SYSTEM COVERAGE PLAN

Project No.	Scale	
190500647	As Shown	
Drawing No.	Sheet	Revision
ENV-100	2 of 7	1



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- AIR INTAKE STRUCTURE
- LOWER ELEVATION ROOF
- AIR INTAKE BUFFER (AREA WITHIN 25 FEET OF OF AIR INTAKE EQUIPMENT)
- 40 FOOT VISUAL OFFSET
- OSHA FALL PROTECTION BOUNDARY (10 FOOT OFFSET FROM BUILDING EDGE)
- F-1 FAN/RISER DISCHARGE LOCATION WITH DESIGNATION FROM MULTIPLE SUCTION CAVITY POINTS
- F-11 FAN/RISER DISCHARGE LOCATION WITH DESIGNATION FROM SINGLE SUCTION CAVITY POINT
- RD EXISTING ROOF DRAIN WITH 10 FOOT OFFSET

Notes

1. The building floor plan shown on this drawing was drawn based on the floor plan shown on the following drawing: "Series: Tenant Layout, Floor: First, Title: Floor Plan, No.: TP-1", prepared by Miller Anderson Architects, Rochester, NY, date May 1999, issued 5-24-99.

2. Locations of floor drains, roof drains, catch basins and recharge wells were taken from various historic site plans (see separate *Summary of Available Building Plans* prepared by Stantec dated 4/19/12) and then field checked by Stantec personnel on 3/20/12 to confirm that they were present. Additional floor drains, roof drains, catch basins and recharge wells not shown on historic plans or drawings but noted during the field check are also shown. All locations are approximate.

3. Locations of air intakes are approximate and based on publicly available aerial imagery. Contractor to field verify SSDS discharge locations are a minimum of 25 horizontal feet away from any air intakes.

Revision	By	Appd.	YY.MM.DD
RECORD DRAWING FOR CCR	TW	DH	2020.08
ISSUED FOR AGENCY REVIEW	MB/AK	DH	2019.03

Issued	By	Appd.	YY.MM.DD
File Name:	APL Dwn.	DH Chkd.	MB/AK Dsgn.	2019.03 YY.MM.DD

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STATE OF NEW YORK
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061282
LICENSED PROFESSIONAL ENGINEER

Client/Project

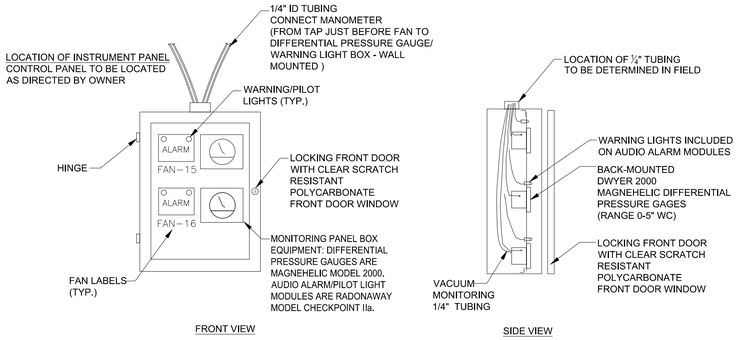
FORMER ALLIANCE METAL STAMPING & FABRICATION FACILTY
BROWNFIELD CLEANUP PROGRAM SITE # C828101
12 PIXLEY INDUSTRIAL PARKWAY, GATES, NY

SSDS RECORD DRAWINGS

Title

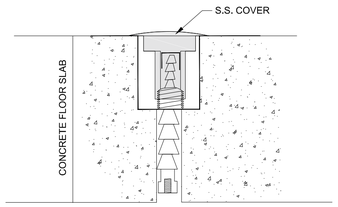
SUB-SLAB DEPRESSURIZATION SYSTEM
DISCHARGE AND EXHAUST LOCATIONS
ROOF PLAN

Project No.	Scale	
190500647	As Shown	
Drawing No.	Sheet	Revision
ENV-101	3 of 7	1

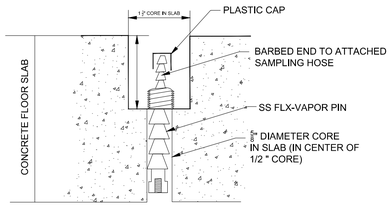


NOTE :
1) ¼" TUBING NOT TO BE RUN THROUGH DUCT WORK
2) APPROVED MANUFACTURERS : ATTABOX OR APPROVED EQUAL

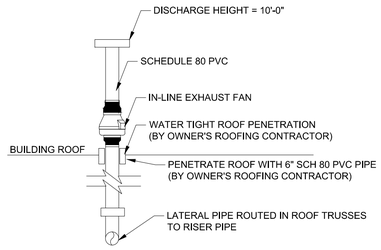
1 ENV-500 TYPICAL WALL-MOUNTED INSTRUMENT PANEL INSTALLATION DETAIL
NO SCALE



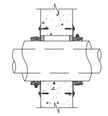
2 ENV-500 SUB-SLAB VACUUM MONITORING PIN COVER DETAIL
NOT TO SCALE



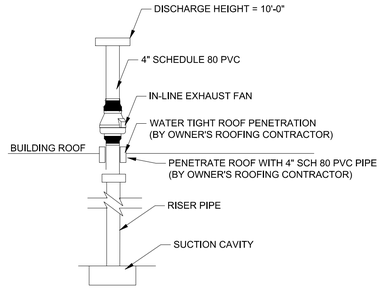
3 ENV-500 SUB-SLAB VACUUM MONITORING PIN
NOT TO SCALE



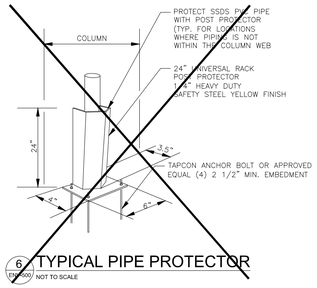
4A ENV-500 TYPICAL VERTICAL RISER SECTION FOR MULTIPLE SUCTION CAVITIES
NOT TO SCALE



5 ENV-500 TYPICAL WALL PENETRATION FIRE STOP
NOT TO SCALE

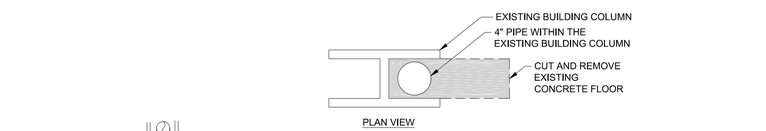


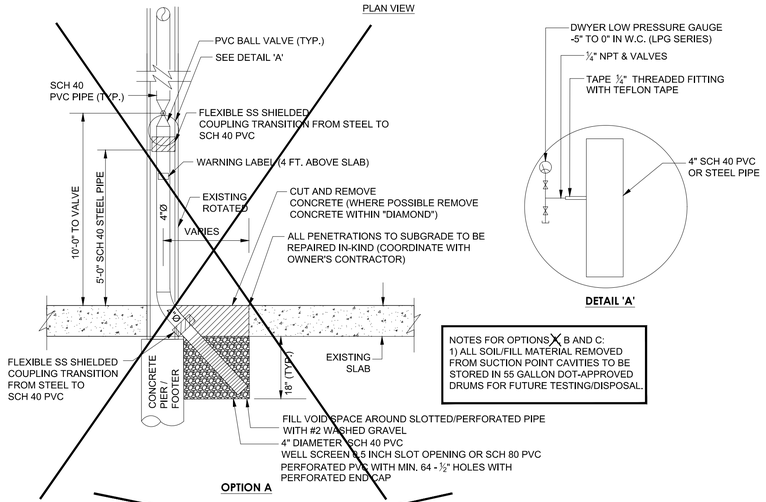
4B ENV-500 TYPICAL VERTICAL RISER SECTION FOR SINGLE SUCTION CAVITY
NOT TO SCALE



6 ENV-500 TYPICAL PIPE PROTECTOR
NOT TO SCALE

(PIPE PROTECTORS NOT NEEDED, STEEL PIPING USED BELOW A HEIGHT OF 8' AT UNPROTECTED LOCATIONS)

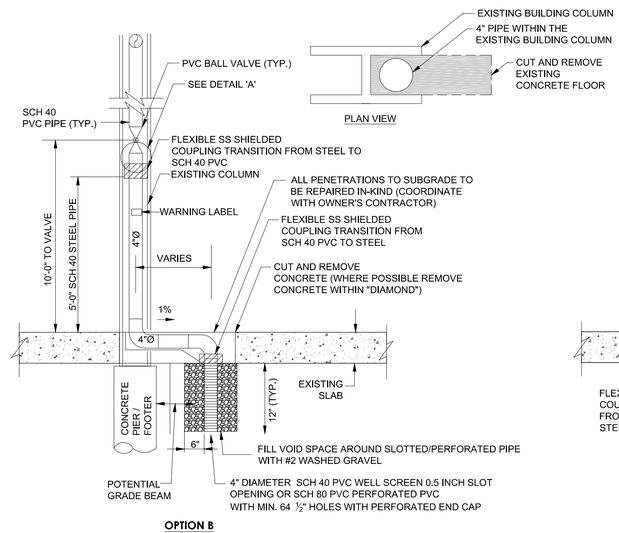




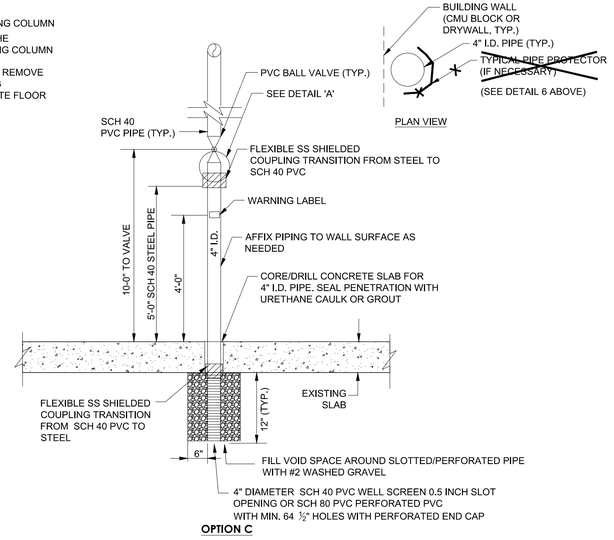
NOTES FOR OPTIONS A, B AND C:
1) ALL SOIL/FILL MATERIAL REMOVED FROM SUCTION POINT CAVITIES TO BE STORED IN 55 GALLON DOT-APPROVED DRUMS FOR FUTURE TESTING/DISPOSAL.

7 ENV-500 TYPICAL COLUMN MOUNTED SUCTION POINT INSTALLATION SECTION
NOT TO SCALE

(NOT TYPICAL OF COLUMN FOOTER LOCATIONS AT SITE)



8 ENV-500 TYPICAL COLUMN MOUNTED VERTICAL SUCTION POINT INSTALLATION SECTION
NOT TO SCALE



9 ENV-500 TYPICAL VERTICAL SUCTION POINT INSTALLATION SECTION (NOT ON A COLUMN)
NOT TO SCALE

Stantec
61 Commercial Street
Rochester , NY
14614
Tel. 585-475-1440
Fax. 585-272-1814
www.stantec.com

Consultants

Legend

Notes

Revision	By	Appd.	YY.MM.DD
RECORD DRAWING FOR CCR	TW	DH	2020.08
ISSUED FOR AGENCY REVIEW	MB	DH	2019.02.22
Issued	By	Appd.	YY.MM.DD
File Name:	APL Dwn.	DH Chkd.	MB Dsgn.	2019.02.22 YY.MM.DD

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Client/Project

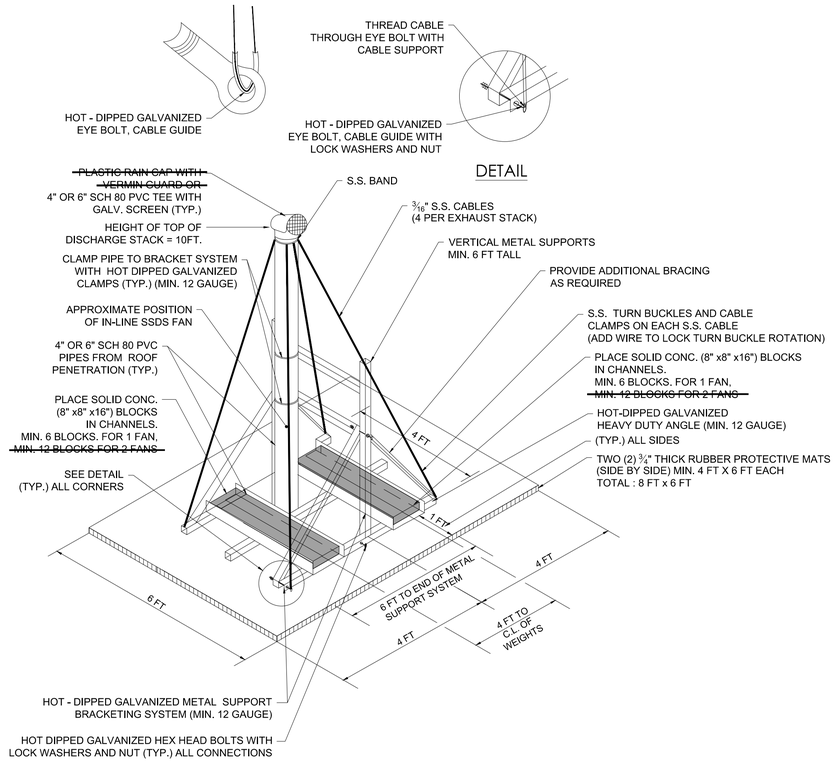
FORMER ALLIANCE METAL STAMPING & FABRICATION FACILTY
BROWNFIELD CLEANUP PROGRAM SITE # C828101
12 PIXLEY INDUSTRIAL PARKWAY, GATES, NY

SSDS RECORD DRAWINGS

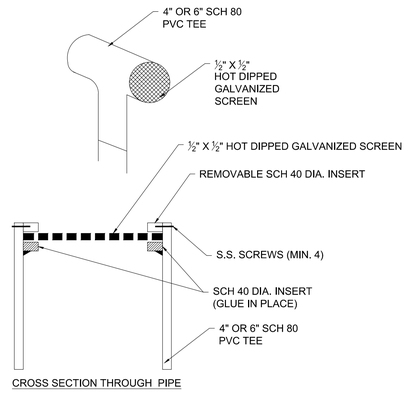
Title

SUB-SLAB DEPRESSURIZATION SYSTEM INTERIOR DETAILS

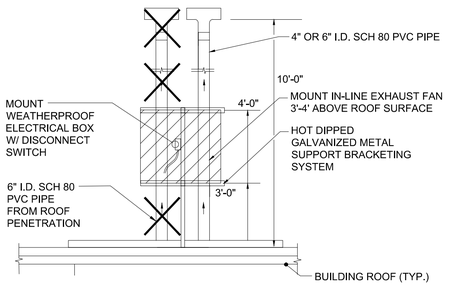
Project No.	Scale	
190500647	AS SHOWN	
Drawing No.	Sheet	Revision
ENV-500	4 of 7	1



1 ENV-501 SSDS ROOF EXHAUST STACK SUPPORT SYSTEM (TYP.)
NO SCALE



2 ENV-501 RAIN CAP SCREEN DETAIL
NO SCALE



3 ENV-501 SSDS DOUBLE STACK ROOF EXHAUST STACK
NO SCALE

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Notes

Revision	By	Appd.	YY.MM.DD
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File Name:	APL Dwn.	DH Chkd.	MB/AK Dsgn.	2019.03 YY.MM.DD

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Client/Project

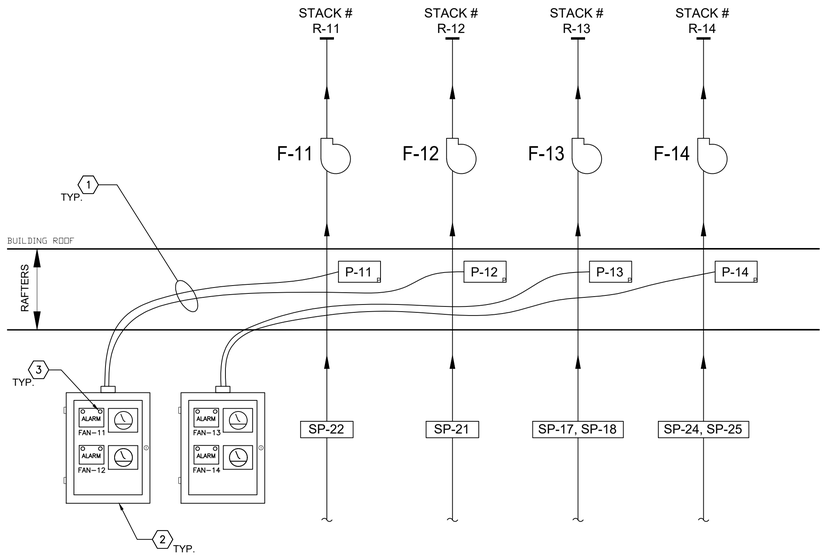
FORMER ALLIANCE METAL STAMPING & FABRICATION FACILTY
BROWNFIELD CLEANUP PROGRAM SITE # C828101
12 PIXLEY INDUSTRIAL PARKWAY, GATES, NY

SSDS RECORD DRAWINGS

Title

SUB-SLAB DEPRESSURIZATION SYSTEM EXTERIOR DETAILS

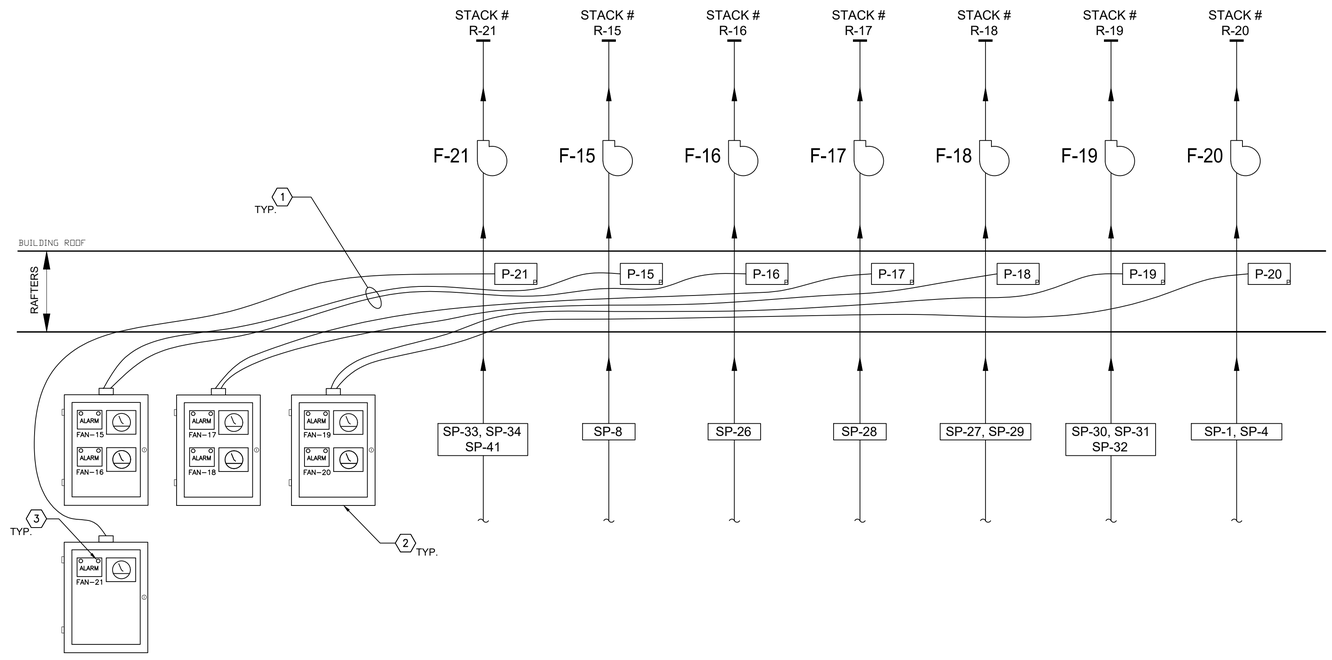
Project No.	Scale	
190500647	AS SHOWN	
Drawing No.	Sheet	Revision
ENV-501	5 of 7	1



MONITORING PANEL GROUP 1

NO SCALE

LOCATION: HALLWAY BETWEEN COLUMNS B-7 AND C-7



MONITORING PANEL GROUP 2

NO SCALE

LOCATION: HALLWAY ALCOVE AT COLUMN D-8

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Legend

F-5 IN-LINE EXHAUST FAN

P-01 POINT OF MEASUREMENT FOR THE DIFFERENTIAL PRESSURE GAUGE (MOUNTED INSIDE DIFFERENTIAL PRESSURE GAUGE/WARNING LIGHT BOX)

SP-22 SUB-SLABSUCTION CAVITY

AIR FLOW

Notes

1. ALL EXHAUST FANS ARE RADONAWAY MODEL RP265 EXCEPT FANS F-18 AND F-20 WHICH ARE RADONAWAY MODEL GX5.
2. MONITORING PANEL BOX EQUIPMENT: DIFFERENTIAL PRESSURE GAUGES ARE MAGNEHELIC MODEL 2000. AUDIO ALARM/PILOT LIGHT MODULES ARE RADONAWAY MODEL CHECKPOINT IIa.
3. ¼" TUBING IS EATON SYNFLEX 1219FR.
4. REFER TO ENV-100 FOR PLAN SHOWING LOCATIONS OF MONITORING PANEL GROUPS 1 TO 4, EXHAUST STACKS R-1 TO R-21, AND SUCTION CAVITIES SP-1 TO SP-42.

KEYED NOTES:

1. 1/4" ID TUBING
2. TYPICAL WALL-MOUNTED INSTRUMENT PANEL INSTALLATION DETAIL
3. VACUUM PILOT LIGHT WITH AUDIO ALARM (MOUNTED INSIDE DIFFERENTIAL PRESSURE GAUGE/WARNING LIGHT BOX)

Revision	By	Appd.	YY.MM.DD
RECORD DRAWING FOR CCR	TW	DH	2020.08
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File Name:	APL Dwn.	DH Chkd.	MB/AK Dsgn. 2019.03 YY.MM.DD

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STATE OF NEW YORK
ROBERT ALAN HARRINGER
061282
LICENSED PROFESSIONAL ENGINEER

Client/Project

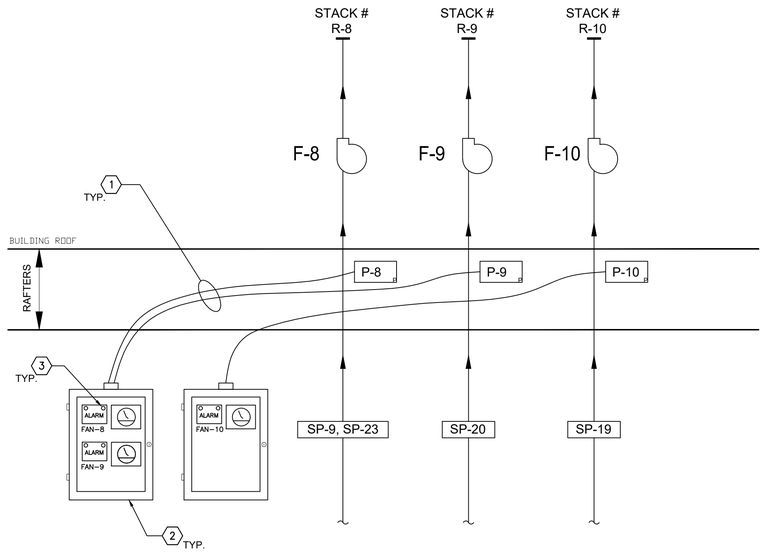
FORMER ALLIANCE METAL STAMPING & FABRICATION FACILTY
BROWNFIELD CLEANUP PROGRAM SITE # C828101
12 PIXLEY INDUSTRIAL PARKWAY, GATES, NY

SSDS RECORD DRAWINGS

Title

SUB-SLAB DEPRESSURIZATION SYSTEM MONITORING PANEL DETAILS (SHEET 1 OF 2)

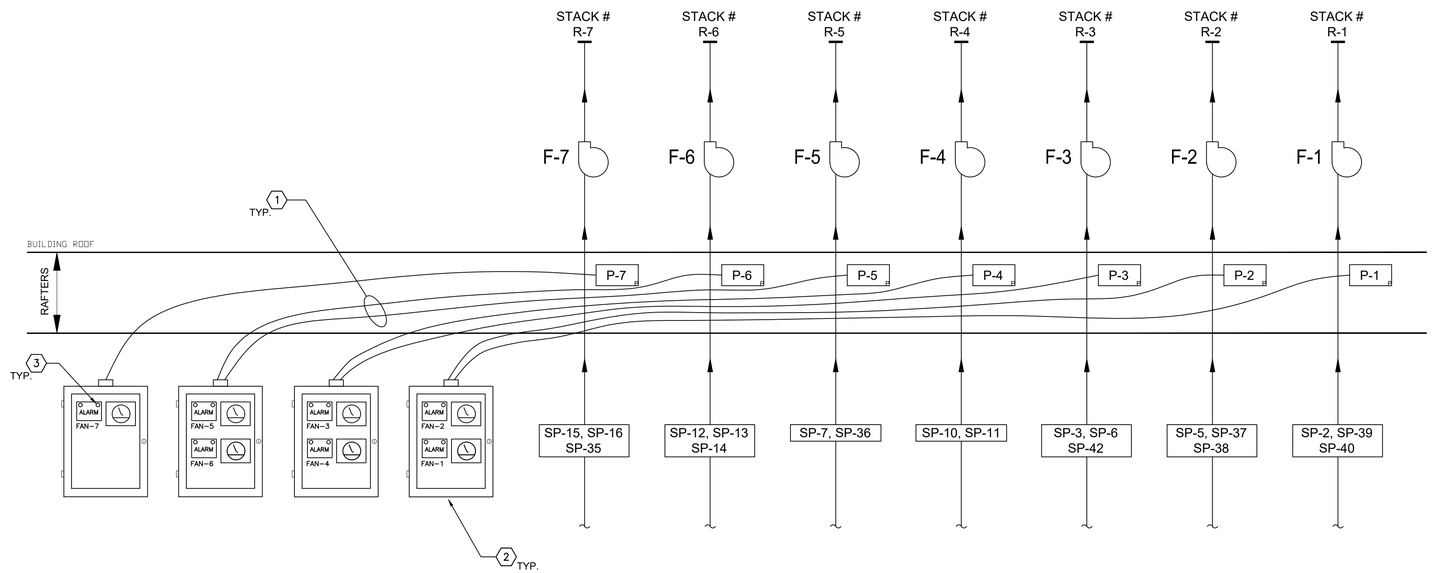
Project No.	Scale	
190500647	AS SHOWN	
Drawing No.	Sheet	Revision
ENV-502	6 of 7	1



MONITORING PANEL GROUP 3

NO SCALE

LOCATION: HALLWAY ALCOVE AT COLUMN D-6



MONITORING PANEL GROUP 4

NO SCALE

LOCATION: HALLWAY ALCOVE BETWEEN COLUMNS F-6 AND F-7

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F-5 IN-LINE EXHAUST FAN

P-01 POINT OF MEASUREMENT FOR THE DIFFERENTIAL PRESSURE GAUGE (MOUNTED INSIDE DIFFERENTIAL PRESSURE GAUGE/WARNING LIGHT BOX)

SP-22 SUB-SLABSUCTION CAVITY

AIR FLOW

Notes

1. ALL EXHAUST FANS ARE RADONAWAY MODEL RP265 EXCEPT FANS F-18 AND F-20 WHICH ARE RADONAWAY MODEL GX5.
2. MONITORING PANEL BOX EQUIPMENT: DIFFERENTIAL PRESSURE GAUGES ARE MAGNEHELIC MODEL 2000. AUDIO ALARM/PILOT LIGHT MODULES ARE RADONAWAY MODEL CHECKPOINT IIa.
3. ¼" TUBING IS EATON SYNFLEX 1219FR.
4. REFER TO ENV-100 FOR PLAN SHOWING LOCATIONS OF MONITORING PANEL GROUPS 1 TO 4, EXHAUST STACKS R-1 TO R-21, AND SUCTION CAVITIES SP-1 TO SP-42.

KEYED NOTES:

1. 1/4" ID TUBING
2. TYPICAL WALL-MOUNTED INSTRUMENT PANEL INSTALLATION DETAIL
3. VACUUM PILOT LIGHT WITH AUDIO ALARM (MOUNTED INSIDE DIFFERENTIAL PRESSURE GAUGE/WARNING LIGHT BOX)

Revision	By	Appd.	YY.MM.DD
RECORD DRAWING FOR CCR	TW	DH	2020.08
ISSUED FOR AGENCY REVIEW	MB/AK	DH	2019.03

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	By	Appd.	YY.MM.DD
File Name:	APL	DH	MB/AK	2019.03
	Dwn.	Chkd.	Dsgn.	YY.MM.DD

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Client/Project

FORMER ALLIANCE METAL STAMPING & FABRICATION FACILTY
BROWNFIELD CLEANUP PROGRAM SITE # C828101
12 PIXLEY INDUSTRIAL PARKWAY, GATES, NY

SSDS RECORD DRAWINGS

Title

SUB-SLAB DEPRESSURIZATION SYSTEM
MONITORING PANEL DETAILS (SHEET 2 OF 2)

Project No.	Scale	
190500647	AS SHOWN	
Drawing No.	Sheet	Revision
ENV-503	7 of 7	1

Appendix B PHOTOGRAPHS OF AND PRODUCT INFORMATION FOR SSDS COMPONENTS

- Photographic Log
- Product Sheets, Specifications, and Installation, Operating and Maintenance Instructions

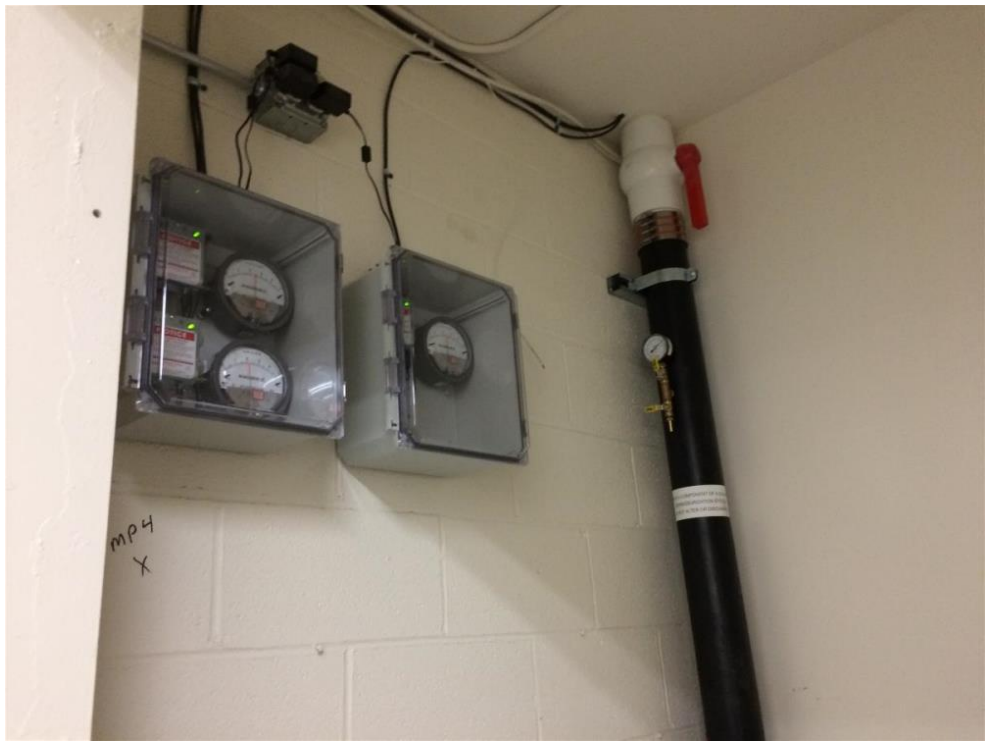
Stantec

Photographic Log

Client:	**Maguire Family Properties**	**Project:**	**Sub-Slab Depressurization System**
Site Name:	**Former Alliance BCP Site**	**Site Location:**	**12 Pixley Industrial Parkway, Gates, New York**

Photograph ID: 1 **Photo Location:** Backfilled suction cavity **Direction:** **Survey Date:** 8/29/2019 **Comments:**	
Photograph ID: 2 **Photo Location:** Suction point SP-35 riser prior to installation of overhead piping **Direction:** **Survey Date:** 8/26/2019 **Comments:**	

Client:	**Maguire Family Properties**	**Project:**	**Sub-Slab Depressurization System**
Site Name:	**Former Alliance BCP Site**	**Site Location:**	**12 Pixley Industrial Parkway, Gates, New York**

Photograph ID: 3	
Photo Location: SSDS overhead piping leading to fan stack riser R-21 in EverDry Shop	
Direction:	
Survey Date: 10/18/2019	
Comments:	
Photograph ID: 4	
Photo Location: Monitoring panel group 3 and riser for Suction point SP-23	
Direction:	
Survey Date: 10/29/2019	
Comments:	

Client:	**Maguire Family Properties**	**Project:**	**Sub-Slab Depressurization System**
Site Name:	**Former Alliance BCP Site**	**Site Location:**	**12 Pixley Industrial Parkway, Gates, New York**

Photograph ID: 5	
Photo Location: Monitoring panel close-up for SSDS fans 1 and 2	
Direction:	
Survey Date: 10/29/2019	
Comments:	
Photograph ID: 6	
Photo Location: Suction point riser gauge close-up	
Direction:	
Survey Date: 10/22/2019	
Comments:	

Client:	**Maguire Family Properties**	**Project:**	**Sub-Slab Depressurization System**
Site Name:	**Former Alliance BCP Site**	**Site Location:**	**12 Pixley Industrial Parkway, Gates, New York**

Photograph ID: 7	
Photo Location: Panel box for SSDS electrical system breaker switches	
Direction:	
Survey Date: 11/1/2019	
Comments:	
Photograph ID: 8	
Photo Location: View of SSDS discharge stacks on building roof	
Direction:	
Survey Date: 10/15/2019	
Comments:	

Client:	**Maguire Family Properties**	**Project:**	**Sub-Slab Depressurization System**
Site Name:	**Former Alliance BCP Site**	**Site Location:**	**12 Pixley Industrial Parkway, Gates, New York**

Photograph ID: 9 **Photo Location:** Discharge stack and support structure prior to installation of support cables and discharge vent screen **Direction:** **Survey Date:** 10/15/2019 **Comments:**	
Photograph ID: 10 **Photo Location:** Close-up of on/off for switch for SSDS fan on rooftop support structure **Direction:** **Survey Date:** 11/1/2019 **Comments:**	

Client:	**Maguire Family Properties**	**Project:**	**Sub-Slab Depressurization System**
Site Name:	**Former Alliance BCP Site**	**Site Location:**	**12 Pixley Industrial Parkway, Gates, New York**

Photograph ID: 11	
Photo Location: Close-up of SSDS fan model RP265	
Direction:	
Survey Date: 10/25/2019	
Comments:	
Photograph ID: 12	
Photo Location: Close-up of SSDS fan model GX5	
Direction:	
Survey Date: 10/25/2019	
Comments:	

RadonAway®

The world's leading radon fan manufacturer.

2019 / 2020 Radon Professional's Pull-Out Fan Guide

Fan Selection Specifications and Guidelines

With Fan Replacement Guide

This handy 4-page guide is intended to make it easier for you to have RadonAway® fan specifications and our fan replacement chart at your fingertips where you need them, when you need them – on a job site, in your truck, at your desk, or anywhere else you might want to quickly check for fan specs or replacements.

As always, we are committed to providing you with not only the highest quality radon mitigation products but also information to help you provide expert, effective professional radon services.

To remove this guide, firmly hold this 4-page section, then fold back the rest of the catalog and gently pull the guide from the staples.

RP Pro Series

Use RP fans for quiet operation, energy efficiency and high air flow in porous sub-slab or sub-membrane materials consisting of about 4 inches of clean, size 4-6 gravel.

XP/XR Pro Series

Use XP/XR fans for compact size, lower pressure and average flow in very porous sub-slab/membrane materials consisting of 4 inches of clean, size 4-6 gravel.

LV175

The LV175 Low Voltage Radon Fan includes a power pack and cord for connecting to up to 120v AC power. No additional electrical work is required.

GX5

Coming soon, the GX5 is powerful, capable of operating at 5". It will get the job done when conditions call for power, reliability and quiet operation.

MODEL	P/N	FAN DUCT DIAMETER	RRNC 2.0 RADON FAN TYPE	WATTS	RECOM. MAX OP. PRESSURE "WC* Alt.>1,000ft. see NOTE	MAX. PRESSURE"WC	
RP140	28460	4"	RF1	15-21	0.7	0.8	
RP145	28461	4"	RF1, RF2	41-72	1.7	2.1	
RP260	28462	6"	-	47-65	1.3	1.4	
RP265	28463	6"	-	95-139	2.3	2.4	
RP380	28464	8"	-	96-138	2.0	2.3	
XP151	28469	4"	RF1, RF2	53-70	1.4	1.5	
XP201	28470	4"	RF1	38-74	1.6	1.7	
XR261	23019-1	6"	-	67-117	1.6	1.7	
LV175	28537	4"	RF1, RF2	35-75	1.9	2.0	
GX5	28536	4"	RF1, RF2	77-133	5.0	5.3	
GP201	28465	3"	-	31-67	1.8	2.1	
GP301	28466	3"	-	56-100	2.3	2.5	
GP401	28467	3"	-	62-128	3.0	3.2	
GP501	28468	3"	-	68-146	3.8	4.1	
SF180	28317	3" or 4"	-	53-71	1.7	2.1	
GP500	23003-1	3"	-	85-153	3.8	4.0	

	MODEL	P/N	FAN DUCT DIAMETER	WATTS	RECOM. MAX OP. PRESSURE "WC*	MAX. PRESSURE "WC	TYPICAL CFM vs. STATIC PRESSURE WC						FAN WEIGHT	SHIPPING WEIGHT
							0"	10"	15"	20"	25"	35"		
With Cord	HS2000	23004-1	3"in / 2"out	153-314	14	16	62	40	23	-	-	-	17	20
	HS3000	23004-2	3"in / 2"out	120-250	21	24	39	30	25	19	-	-	18	21
	HS5000	23004-3	3"in / 2"out	349-381	35	41	43	35	32	28	24	18	18	21
With Switch Box	HS2000E	23004-4	3"in / 2"out	153-314	14	16	62	40	23	-	-	-	17	20
	HS3000E	23004-5	3"in / 2"out	120-250	21	24	39	30	25	19	-	-	18	21
	HS5000E	23004-6	3"in / 2"out	349-381	35	41	43	35	32	28	24	18	18	21

GP Pro Series

Use GP fans for versatility and a broad performance range in moderate to tight sub-slab/sub-membrane conditions. Ideal choice when multiple suction points are necessary.

SF180

Use the SF180 for its low-profile design and moderate to good air flow in porous sub-slab or sub-membrane conditions ranging from about 4 inches of 4-6 gravel to very loose soil.

GP500 Series

Use the GP500 in situations that require a high-performance box fan as an alternative to inline tube fans. It can provide coverage up to 1000 square feet per slab penetration.

HS Series

Use HS fans in sand, clay or tight soil conditions when you need up to 25 times the suction of inline radon fans.

	TYPICAL CFM vs. STATIC PRESSURE WC									FAN WEIGHT (lbs)	SHIPPING WEIGHT (lbs)
	0"	.5"	1.0"	1.5"	2.0"	2.5"	3.0"	3.5"	4.0"		
	135	70	-	-	-	-	-	-	-	3.9	5
	166	126	82	41	3	-	-	-	-	5.5	7
	251	157	70	-	-	-	-	-	-	5.6	8
	375	282	204	140	70	-	-	-	-	6.5	9
	531	415	268	139	41	-	-	-	-	9.1	12
	167	127	77	-	-	-	-	-	-	4.9	6
	126	98	66	26	-	-	-	-	-	5	6
	217	149	87	27	-	-	-	-	-	5.7	8
	187	162	132	97	12	-	-	-	-		
	174	161	150	136	121	105	87	69	50		
	-	-	54	42	-	-	-	-	-	9.1	11
	-	-	64	54	41	-	-	-	-	9.8	12
	-	-	-	61	52	44	22	-	-	10	12
	-	-	-	-	66	58	50	27	-	10	12
	149	127	96	61	-	-	-	-	-	12.8	15
	-	-	-	-	51	45	35	18	-	18	20

RRNC 2.0 ANSI/AARST Standard

Reducing Radon in New Construction of 1 & 2 Family Dwellings and Townhouses

This chart displays the designated radon fan types recommended in the new standard.

*Radon Fan Types RF1 & RF2 minimum flow and pressure ratings are manufacturer specifications.

PIPE SIZE Nominal (I.D.)	TOTAL FOUNDATION AREA		
	< 1600 sq. feet < 149 sq. meters	1600 to 2500 sq. feet 149 to 232 sq. meters	> 2500 sq. feet > 232 sq. meters
(3 inch) [7.6 cm]	Use Radon Fan Type: **RF1** RF1 Minimum rating:* 50 cfm @ 0.5" WC [85m³/hr @ 125 Pa]	Use Radon Fan Type: **RF2** RF2 Minimum rating:* 75 cfm @ 1.0" WC [127m³/hr @ 250 Pa]	Radon fan to be sized by a certified/licensed radon mitigator.
(4 inch) [10 cm]	Use Radon Fan Type: **RF1** RF1 Minimum rating:* 50 cfm @ 0.5" WC [85m³/hr @ 125 Pa]	Use Radon Fan Type: **RF1** RF1 Minimum rating:* 50 cfm @ 0.5" WC [85m³/hr @ 125 Pa]	Radon fan to be sized by a certified/licensed radon mitigator.

***NOTE: This chart is based on airflow through the ducting of the fan. Every time you reduce the duct size, there is a 20% degradation of airflow. Airflow drops 4% every 1000 feet alt. You can calculate adjusted recommended maximum operating pressure based on the following formula:**

$$\left(\text{Recommended Fan Operating Pressure}\right) - \left(\textit{Recommended} \text{ Fan Operating Pressure} \times \frac{\text{Altitude}}{1{,}000\text{ ft}} \times 4\%\right) = \textit{Actual} \text{ Maximum Fan Operating Pressure } \textit{(Adjusted for altitude)}$$

EXAMPLE:
GP501 Fan Operating in Denver, CO at Elevation of 5280 ft

$$\left(3.8\text{" } \textit{Recommended WC}\right) - \left(3.8\text{" } \times \frac{5{,}280\text{ ft}}{1{,}000\text{ ft}} \times 4\%\right) = 3.0\text{" } \textit{Actual} \text{ WC}$$

Using Denver, CO as an example, RP145 actual WC reduces to 1.3, and RP265 reduces to 1.7 at 5,280 ft.

Need a replacement for other brands?
We've got you covered.

The RadonAway® replacement fans listed below provide superior performance and durability. In many cases, they use the same flexible pipe couplings and require little or no change to the system piping.This guide is intended to help you select a replacement fan for most brands. Included are many of the older fans with their current replacements.

Don't see the fan you need to replace? Give us a call and we will gladly help you find the best replacement fan for your requirements. 1-(800) 767-3703

ORIGINALLY INSTALLED FAN		RadonAway® REPLACEMENT FAN
Fantech	R100, F100, FR100, HP2133, Rn1	**RP140 or LV175**
	R150, F150, FR150, Rn3	**XR261 or RP260**
	R160, F160, FR160	**RP260 or RP265**
	R175, F175, FR175	**RP265**
	HP190, HP2190, Rn2	**RP145 or LV175**
	HP190SL, Rn2SL	**SF180**
	HP220	**RP265**
AMG/FESTA	Maverick	**RP145, XP151, XP201, or LV175**
	Hawk	**RP260 or XR261**
	Prowler	**GP301**
	Legend	**RP265**
	Eagle	**GP401 or GX5**
	Goliath	**RP260, GP501**, or GX5**
	Force	**RP260, GP501**, or GX5**
Kanalflakt/ FanAmerica	T1 Turbo 5 (Fiberglass)	**XP201*, XP151*, or LV175**
	T2 Turbo 6 (Fiberglass)	**XR261 or RP260**
	K4 (Metal Kanalflakt)	**RP140* or LV175**
	K4XL (Metal Kanalflakt)	**XP201*, XP151*, or LV175**
	K6 (Metal Kanalflakt)	**XR261 or RP260**
Rosenberg	R100	**RP140* or LV175**
	R150	**XR261 or RP260**

*** Slightly different duct diameter requires different flexible couplings. ** Depends on site needs: Airflow vs. static pressure**

RP PRO SERIES BY RADONAWAY®

RP FANS

RP145

RP265

SPECIFICATIONS

MODEL	FAN DUCT DIAMETER	WATTS	RECOM. MAX. OP. PRESSURE "WC	TYPICAL CFM vs. STATIC PRESSURE WC					RRNC 2.0 Radon Fan Type[1]
				0"	0.5"	1.0"	1.5"	2.0"	
RP140*	4"	15-21	0.7	135	70	-	-	-	RF1
RP145	4"	41-72	1.7	166	126	82	41	3	RF1, RF2
RP260	6"	47-65	1.3	251	157	90	-	-	-
RP265	6"	95-139	2.3	375	282	204	140	70	-
RP380	8"	96-138	2.0	531	415	268	139	41	-

1 Suitable as designated by the Reducing Radon in New Construction Standard, RRNC 2.0. See chart p. 87.

See p. 22 for fan dimensions.

HVI CERTIFIED

* Most Efficient 2019 RadonAway RP140

MADE IN USA Made in the USA with U.S. and imported parts.

ETL Listed

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

PRICING

MODEL	P/N	UNIT PRICE		
		1-3	4-7	8+
RP140	28460			
RP145	28461			
RP260	28462			
RP265	28463			
RP380	28464			

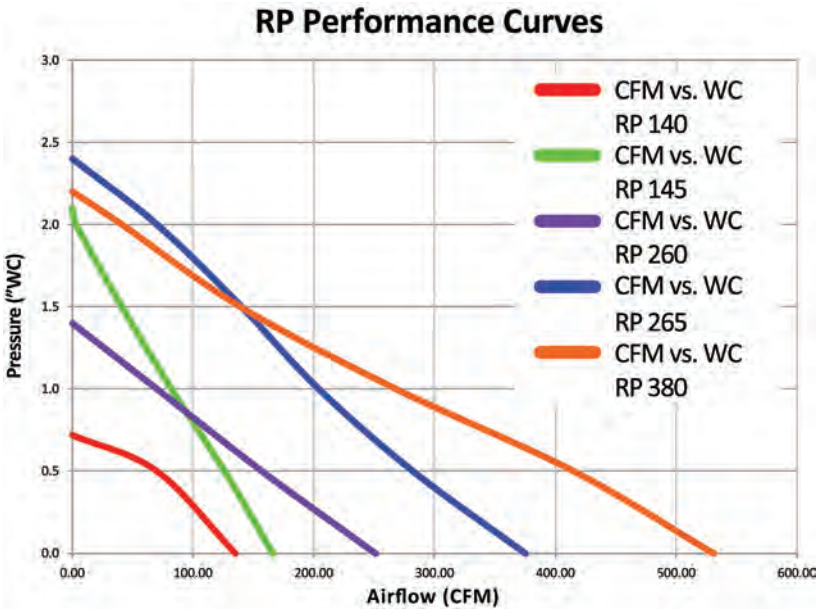
Quantity discounts determined by number of RadonAway® fans (any model) per order.

In 2018 we enhanced the performance of the RP265.
The motor was re-engineered to provide better performance curves for air flow and pressure while maintaining quiet operation.

FEATURES

- **Stay-White™ Housing**
- Energy efficient
- Ultra-quiet operation
- Meets all electrical code requirements
- Water-hardened motorized impeller
- Sealed seams to inhibit radon leakage (RP140 & RP145 double snap sealed)
- RP140 Energy Star® Most Efficient 2019
- ETL Listed—for indoor or outdoor use
- Thermally protected motor
- Rated for commercial and residential use

The RP145 is the most popular fan in the industry!
The RP145 radon fan provides high air flow and is one of the most energy-efficient radon mitigation fans in the industry.



INSTALLATION ACCESSORIES

ITEM	SIZE	COLOR	FOR USE WITH	P/N	QTY / CASE	UNIT PRICE		
						<CASE	CASE*	3+ CASES*
Flexible Couplings	3 x 4	black white	RP140, RP145	79011 79038	40			
	4 x 4	black white	RP140, RP145	79012 79040	40			
	4 x 6	black white	RP260, RP265	79013 79039	20 30			

NOTE: Coupling sizes are for selection only, actual sizes may vary fractionally. See Flexible Coupling Sizing Chart on p. 25 or at radonaway.com/couplings
*Price applies to case quantities only.

ITEM	COLOR	P/N	QTY / CASE	UNIT PRICE		
				< CASE	CASE	2+ CASES*
4.5" Easy Read U-tube Manometer	Blue	50017	50			
	Red	50018	50			

*Must be purchased in case quantity. For more package details see p. 26.

Easy Read U-tube package includes:
Hangable bag with homeowner brochure and all system labels to help you to comply with RRNC 2.0 "Model Code" Standard (see p. 87) and provide important system information.

ITEM	P/N	PRICE
6' Power Cord Kit[1, 3]	27005	
6' Power Cord Kit[2]	27009	
8' Power Cord Kit[1,3,4]	27004	
Fan Mounting Bracket	25007	
RP380 Mounting Bracket	25033-1	
Transition Fitting[5]	13245	

[1]18 ga 3-prong plug and bushing
[2]16 ga 3-prong plug and bushing
[3]Not in IN
[4]See p. 53 for details and case pricing
[5]Not for use in Canada

Flexible Couplings
79011

Transition Fitting
13245

Fan Mounting Bracket
25007

Flexible Couplings
79039

6' Power Cord Kit
27005

Zoom

RP265 Radon Fan Pro Series

SKU: 28463

Be the first to review this product

We have just enhanced the performance of our popular RadonAway RP265 Pro Series radon fan (see below for details). The RP265 Pro Series fan installs white and stays white. It has a 6" duct and is chosen most often by radon professionals when there is a need for quiet efficiency coupled with more power and higher air flow. Made in the USA with U.S. and imported parts.

NOTE: New RP265 performance curves are shown below.

NOTICE

Log In to Purchase

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

Add to Wishlist Add to Compare

Share

Details | Additional Info | Reviews | Conditions of Sale

RP265 Radon Fan Features:

Stay-White™ housing
Five-year limited warranty
Quiet and attractive (Installs white, stays white)

Product Categories

- Radon Fans +
- HRVs / ERVs +
- Radon System Components +
- Mitigation Tools & Diagnostic Aids +
- Sealing Products +
- Crawlspace Moisture and Radon Control +
- Sump Pumps & Accessories +
- Pipe Accessories +
- Radon System Accessories +
- Radon in Water Removal Systems +
- Radon Testing +
- Spruce Inline Ventilation +
- Canada Fulfillment +
- Air Purifiers
- New Products New
- Best Sellers

1-2 day shipping in most of US Read more...

Five year manufacturer's warranty on RadonAway fans

Free technical support for our customers

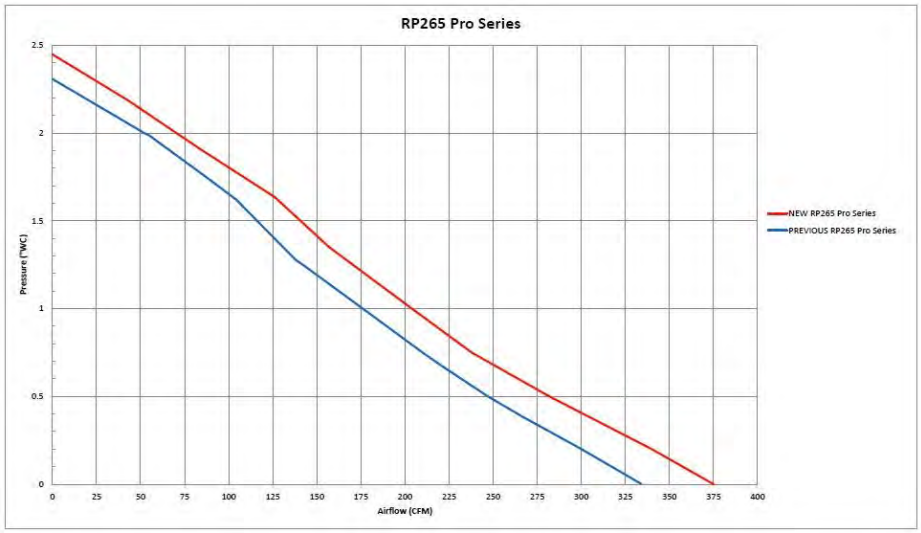
Contact Us

Thermally protected
Water-hardened motorized impeller
Seams sealed to inhibit radon leakage
ETL Listed - for indoor or outdoor use
Meets all electrical code requirements
Rated for commercial and residential use

Additional Radon Fan Information:

Downloadable Fan Specifications/Sales Sheet (PDF format)
Downloadable Fan Installation Instructions (PDF format)
Calculate your estimated annual electrical cost.
Also available through our Canadian distribution location.

RP265 New Performance Curves



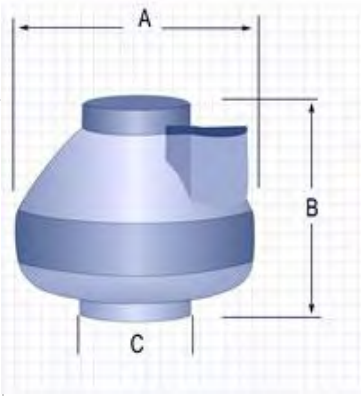
Model	P/N	Energy Star® Rated	Fan Duct Diameter	Watts	Recommended Max Operating Pressure "WC	Typical CFM vs. Static Pressure WC 0"	.5"	1.0"	1.5"	2.0"	RRNC Type1
RP140 Pro Series	28460	Yes	4"	15-21	0.7	135	70	-	-	-	RF1
RP145 Pro Series	28461	-	4"	41-72	1.7	166	126	82	41	3	RF1, RF2
RP260 Pro Series	28462	-	6"	47-65	1.3	251	157	70	-	-	-
RP265 Pro Series	28463	-	6"	95-139	2.3	375	282	204	140	70	-

Model	P/N	Energy Star® Rated	Fan Duct Diameter	Watts	Recommended Max Operating Pressure "WC	Typical CFM vs. Static Pressure WC 0"	.5"	1.0"	1.5"	2.0"	RRNC Type1
RP380 Pro Series	28208	-	8"	96-138	2.0	531	415	268	139	41	-

1 Suitable as designated by the new Reducing Radon in New Construction Standard, RRNC 2.0. Click here for details.

Dimensions

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



Related

RadonAway® Easy Read Manometer - BLUE
Add to Wishlist

RadonAway® Transition Fitting
Add to Wishlist

6" x 6" Black Coupling (Single)
Add to Wishlist

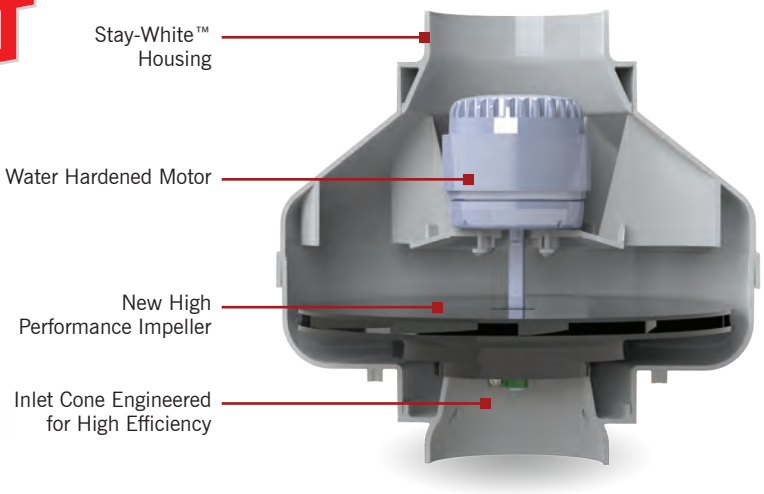
4" x 4.5" Black Coupling (Single)
Add to Wishlist

GX5 PRO SERIES BY RADONAWAY®

GX5 FAN

COMING SOON

GX5



SPECIFICATIONS

MODEL	FAN DUCT DIAMETER	WATTS	RECOM. MAX. OP. PRESSURE "WC	TYPICAL CFM vs. STATIC PRESSURE WC					
				0"	1.0"	2.0"	3.0"	4.0"	5.0"
GX5	4"	77-133	5.0	174	150	121	87	50	8

See p. 22 for fan dimensions.

HVI CERTIFIED

MADE IN USA Made in the USA with U.S. and imported parts.

ETL Listed Intertek

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

PRICING

MODEL	P/N	UNIT PRICE		
		1-3	4-7	8+
GX5	28536			

Quantity discounts determined by number of RadonAway® fans (any model) per order.

TECH TIP 6.5" MANOMETER

Designed and manufactured in RadonAway's Massachusetts production facility, the new 6.5" Easy Read U-tube Manometer is made specifically for the GX5's higher vaccuum pressure. However, since the gauge shows from 0" - 6.5" WC, it can also be used with other RadonAway radon fans.

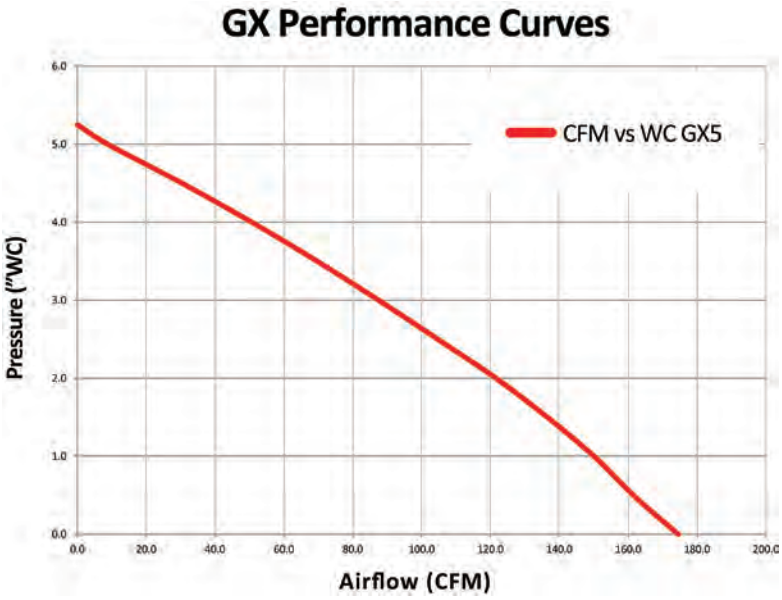
For more informaiton on the 6.5" Manometer, see p. 27.

FEATURES

- **Stay-White™ Housing**
- Quiet Operation
- Water-Hardened Thermally-Protected Motor
- 4" Duct for Use with 3" or 4" Pipe
- Sealed Seams to Inhibit Radon Leakage
- Electrical Box for Hard Wire or Plug In
- For Indoor or Outdoor Use
- Rated for Commercial or Residential Use
- New Revolutionary Impeller
- Modern "RP Style" Housing

Experience the POWER of the GX5!

Capable of operating at 5" of vacuum, our revolutionary GX5's power will blow you away.



INSTALLATION ACCESSORIES

ITEM	SIZE	COLOR	P/N	QTY / CASE	UNIT PRICE		
					<CASE	CASE*	3+ CASES*
Flexible Couplings	3 x 4	black white	79011 79038	40			
	4 x 4	black white	79012 79040	40			
	4 x 6	black white	79013 79039	20 30			

NOTE: Coupling sizes are for selection only, actual sizes may vary fractionally. See Flexible Coupling Sizing Chart on p. 25 or at radonaway.com/couplings
*Price applies to case quantities only.

ITEM	COLOR	P/N	QTY / CASE	UNIT PRICE		
				< CASE	CASE	2+ CASES*
6.5" U-tube Manometer	Blue	50036	50			

*Must be purchased in case quantity. For more package details see p. 27.

6.5" U-tube package includes:
Hangable bag with homeowner brochure and all system labels to help you to comply with RRNC 2.0 "Model Code" Standard (see p. 87) and provide important system information.

ITEM	P/N	PRICE
6' Power Cord Kit[1, 3]	27005	
6' Power Cord Kit[2]	27009	
8' Power Cord Kit[1,3,4]	27004	
Fan Mounting Bracket	25007	
RP380 Mounting Bracket	25033-1	
Transition Fitting[5]	13245	

[1]18 ga 3-prong plug and bushing
[2]16 ga 3-prong plug and bushing
[3]Not in IN
[4]See p. 53 for details and case pricing
[5]Not for use in Canada

Flexible Couplings
79011

Transition Fitting
13245

Fan Mounting Bracket
25007

Flexible Couplings
79039

6' Power Cord Kit
27005

RadonAway®

The world's leading radon fan manufacturer

RP, GP, XP Pro Series Installation Instructions

Fan Installation & Operating Instructions
RP, GP, XP Pro Series Fans
Please Read and Save These Instructions.

DO NOT CONNECT POWER SUPPLY UNTIL FAN IS COMPLETELY INSTALLED. MAKE SURE ELECTRICAL SERVICE TO FAN IS LOCKED IN "OFF" POSITION. DISCONNECT POWER BEFORE SERVICING FAN.

1. **WARNING!** For General Ventilating Use Only. Do Not Use to Exhaust Hazardous, Corrosive or Explosive Materials, Gases or Vapors. See Vapor Intrusion Application Note #AN001 for important information on VI Applications. RadonAway.com/vapor-intrusion

2. **NOTE:** Fan is suitable for use with solid state speed controls; however, use of speed controls is not generally recommended.

2. **WARNING!** Check voltage at the fan to insure it corresponds with nameplate.

3. **WARNING!** Normal operation of this device may affect the combustion airflow needed for safe operation of fuel burning equipment. Check for possible backdraft conditions on all combustion devices after installation.

4. **NOTICE!** There are no user serviceable parts located inside the fan unit.
Do NOT attempt to open. Return unit to the factory. (See Warranty, p. 8, for details.)

5. **WARNING!** Do not leave fan unit installed on system piping without electrical power for more than 48 hours. Fan failure could result from this non-operational storage.

6. **WARNING!** TO REDUCE THE RISK OF FIRE, ELECTRIC SHOCK, OR INJURY TO PERSONS, OBSERVE THE FOLLOWING:

   a) Use this unit only in the manner intended by the manufacturer. If you have questions, contact the manufacturer. (See p. 8.)

   b) Before servicing or cleaning unit, switch power off at service panel and lock the service disconnecting means to prevent power from being switched on accidentally. When the service disconnecting means cannot be locked, securely fasten a prominent warning device, such as a tag, to the service panel.

   c) Installation work and electrical wiring must be done by qualified person(s) in accordance with all applicable codes and standards, including fire rated construction.

   d) Sufficient air is needed for proper combustion and exhausting of gases through the flue (chimney) of fuel burning equipment to prevent backdrafting. Follow the heating equipment manufacturers' guidelines and safety standards such as those published by any National Fire Protection Association, and the American Society for Heating, Refrigerating and Air Conditioning Engineers (ASHRAE), and the local code authorities.

   e) When cutting or drilling into a wall or ceiling, do not damage electrical wiring and other hidden utilities.

   f) Ducted fans must always be vented to outdoors.

   g) If this unit is to be installed over a tub or shower, it must be marked as appropriate for the application and be connected to a GFCI (Ground Fault Circuit Interrupter) protected branch circuit.

Fan Installation & Operating Instructions

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

1.0 SYSTEM DESIGN CONSIDERATIONS

1.1 INTRODUCTION

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

1.2 FAN SEALING

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

1.3 ENVIRONMENTALS

The RP, GP and XP Pro Series Fans are designed to perform year-round in all but the harshest climates without additional concern for temperature or weather. For installations in an area of severe cold weather, please contact RadonAway for assistance. When not in operation, the fan should be stored in an area where the temperature is never less than 32 degrees F or more than 100 degrees F.

1.4 ACOUSTICS

The RP, GP and XP Pro Series Fans, when installed properly, operate with little or no noticeable noise to the building occupants. The velocity of the outgoing air should be considered in the overall system design. In some cases the "rushing" sound of the outlet air may be disturbing. In these instances, the use of a RadonAway Exhaust Muffler is recommended.

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

1.5 GROUND WATER

In the event that a temporary high water table results in water at or above slab level, water may be drawn into the riser pipes, thus blocking air flow to the RP, GP and XP Pro Series Fan. The lack of cooling air may result in the fan cycling on and off as the internal temperature rises above the thermal cutoff. Should this condition arise, it is recommended that the fan be turned off until the water recedes, allowing for return to normal operation.

1.6 SLAB COVERAGE

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

1.7 CONDENSATION & DRAINAGE

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

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

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

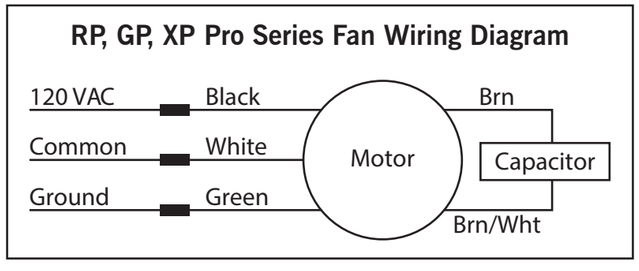
See p. 7 for detailed specifications.

1.8 SYSTEM MONITOR & LABEL

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

1.9 ELECTRICAL WIRING

The RP, GP and XP Pro Series Fans operate on standard 120V, 60Hz AC. All wiring must be performed in accordance with National Fire Protection (NFPA) National Electrical Code, Standard #70, current edition, for all commercial and industrial work, and state and local building codes. All wiring must be performed by a qualified and licensed electrician. Outdoor installations require the use of a UL Listed watertight conduit. Ensure that all exterior electrical boxes are outdoor rated and properly sealed to prevent water penetration into the box. A means, such as a weep hole, is recommended to drain the box.



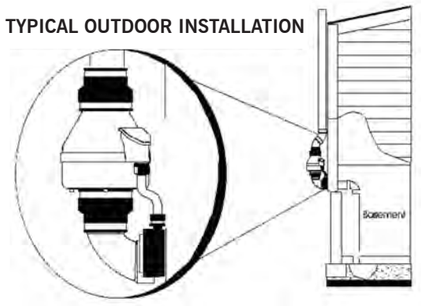
1.10 SPEED CONTROLS

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

2.0 INSTALLATION

The RP, GP and XP Pro Series Fans can be mounted indoors or outdoors. (It is suggested that EPA and radon mitigation standards recommendations be followed in choosing the fan location.) The GP fans have an integrated mounting bracket; RP and XP Pro Series Fans may be mounted directly on the system piping or fastened to a supporting structure by means of an optional mounting bracket.
The ducting from the fan to the outside of the building has a strong effect on noise and fan energy use. Use the shortest, straightest duct routing possible for best performance, and avoid installing the fan with smaller ducts than recommended. Insulation around the ducts can reduce energy loss and inhibit mold growth. Fans installed with existing ducts may not achieve their rated airflow.

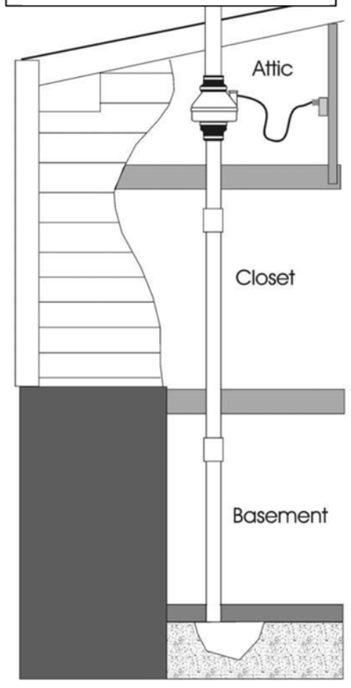
TYPICAL OUTDOOR INSTALLATION



2.1 MOUNTING

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

TYPICAL INDOOR INSTALLATION



2.2 MOUNTING BRACKET (optional)

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

2.3 SYSTEM PIPING

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

2.4 ELECTRICAL CONNECTION

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

2.5 VENT MUFFLER (optional)

Install the muffler assembly in the selected location in the outlet ducting. Solvent weld all connections. The muffler is normally installed at the end of the vent pipe.

2.6 OPERATION CHECKS & ANNUAL SYSTEM MAINTENANCE

_____ **Verify** all connections are tight and **leak-free**.

_____ **Ensure** the RP, GP and XP Pro Series Fan and all ducting are **secure and vibration-free**.

_____ **Verify system vacuum pressure** with manometer. **Insure** vacuum pressure is within normal operating range and **less than** the maximum recommended operating pressure.
(Based on sea-level operation, at higher altitudes reduce by about 4% per 1000 feet)
(Further reduce Maximum Operating Pressure by 10% for High Temperature environments.)
See Product Specifications. If this is exceeded, increase the number of suction points.

_____ **Verify Radon levels** by testing to EPA Protocol and applicable testing standards.

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

RP Pro Series Product Specifications

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

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

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

Model	Size	Weight	Inlet/Outlet	L.2
RP140	8.5"H x 9.7" Dia.	5.5 lbs	4.5"OD (4.0" PVC Sched 40 size compatible)	25
RP145	8.5"H x 9.7" Dia.	5.5 lbs	4,5" OD	15
RP260	8.6"H x 11.75" Dia.	5.5 lbs	6.0" OD	48
RP265	8.6"H x 11.75" Dia.	6.5 lbs	6.0" OD	30
RP380	10.53"H x 13.41" Dia.	11.5 lbs	8.0" OD	57

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

XP Pro Series Product Specifications

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

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

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

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

GP Pro Series Product Specifications

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

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

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

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

RP, XP and GP Pro Series Additional Specifications

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

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

Most Efficient 2019 ENERGY STAR www.energystar.gov
RP140 Only

LISTED Electric Fan

Intertek 77728

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

IMPORTANT INSTRUCTIONS TO INSTALLER

Inspect the RadonAway® RP, GP and XP Pro Series Fan for shipping damage within 15 days of receipt. **Notify RadonAway of any damages immediately.** RadonAway is not responsible for damages incurred during shipping. However, for your benefit, RadonAway does insure shipments.

There are no user serviceable parts inside the fan. **Do not attempt to open the housing.** Return unit to factory. (See Warranty below).

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

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

Warranty

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

RadonAway® will replace any fan which fails due to defects in materials or workmanship during the Warranty Term. This Warranty is contingent on installation of the Fan in accordance with the instructions provided. This Warranty does not apply where any repairs or alterations have been made or attempted by others, or if the unit has been abused or misused. Warranty does not cover damage in shipment unless the damage is due to the negligence of RadonAway®.

The Fan must be returned (at Owner's cost) to the RadonAway® factory. Any Fan returned to the factory will be discarded unless the Owner provides specific instructions along with the Fan when it is returned regardless of whether or not the Fan is actually replaced under this warranty. Proof of purchase must be supplied upon request for service under this Warranty.

5-YEAR EXTENDED WARRANTY WITH PROFESSIONAL INSTALLATION.

RadonAway® will extend the Warranty Term of the fan to 60 months (5 years) from date of purchase or 66 months from date of manufacture, whichever is sooner, provided that the fan is installed by a professional radon mitigation contractor. Proof of purchase and/or proof of professional installation may be required for service under this warranty. No extended warranty is offered outside the Continental United States and Canada beyond the standard 12 months from the date of purchase or18 months from the date of manufacture, whichever is sooner.

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

LIMITATION OF WARRANTY

EXCEPT AS STATED ABOVE, THE RP, GP (excluding GP500) and XP PRO SERIES FANS ARE PROVIDED WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESS OR IMPLIED, INCLUDING, WITHOUT LIMITATION, IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULARPURPOSE.

IN NO EVENT SHALL RADONAWAY BE LIABLE FOR ANY DIRECT, INDIRECT, SPECIAL, INCIDENTAL, OR CONSEQUENTIAL DAMAGES ARISING OUT OF, OR RELATING TO, THE FAN OR THE PERFORMANCE THEREOF. RADONAWAY'S AGGREGATE LIABILITY HEREUNDER SHALL NOT IN ANY EVENT EXCEED THE AMOUNT OF THE PURCHASE PRICE OF SAID PRODUCT. THE SOLE AND EXCLUSIVE REMEDY UNDER THIS WARRANTY SHALL BE THE REPAIR OR REPLACEMENT OF THE PRODUCT, TO THE EXTENT THE SAME DOES NOT MEET WITH RADONAWAY'S WARRANTY AS PROVIDED ABOVE.

For service under this Warranty, contact RadonAway for a Return Material Authorization (RMA) number and shipping information. No returns can be accepted without an RMA. If factory return is required, the customer assumes all shipping costs, including insurance, to and from factory.

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

Record the following information for your records:

Serial Number: _____ Purchase Date: _____

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

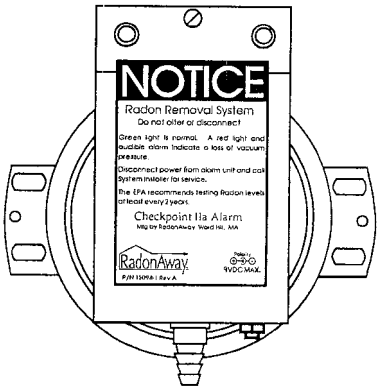
INSTALLATION INSTRUCTIONS
(WALL MOUNTING)

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

Drill two ¼" holes 4" apart horizontally where the unit is to be mounted.

Install the two ¼" wall anchors provided.

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



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

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

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

CALIBRATION AND OPERATION.

The CHECKPOINT IIa units are calibrated and sealed at the factory to alarm when the vacuum pressure falls below the factory setting and should not normally require field calibration. Factory Settings are:
28001-2 -.25" WC Vacuum
28001-3 -.10" WC Vacuum

To Verify Operation:

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

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

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

WARRANTY INFORMATION

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

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

For service under these warranties, contact RadonAway for a Return Material Authorization (RMA) number and shipping information. **No returns can be accepted without an RMA.** If factory return is required, the customer assumes all shipping costs to and from factory.

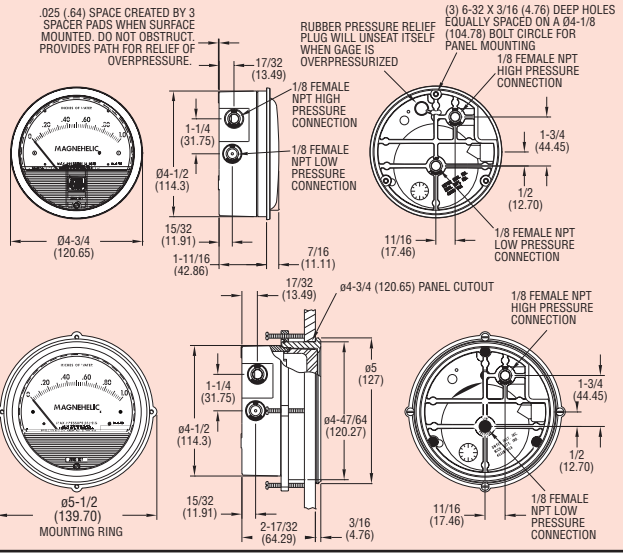
Manufactured by:
RadonAway
Ward Hill, MA
(978)-521-3703

Series 2000

Magnehelic® Differential Pressure Gages

Indicate Positive, Negative or Differential, Accurate within 2%

RoHS



Select the Dwyer® Magnehelic® gage for high accuracy – guaranteed within 2% of full-scale – and for the wide choice of 81 models available to suit your needs precisely. Using Dwyer's simple, frictionless Magnehelic® gage movement, it quickly indicates low air or non-corrosive gas pressures – either positive, negative (vacuum) or differential. The design resists shock, vibration and over-pressures. No manometer fluid to evaporate, freeze or cause toxic or leveling problems. It's inexpensive, too.

The Magnehelic® gage is the industry standard to measure fan and blower pressures, filter resistance, air velocity, furnace draft, pressure drop across orifice plates, liquid levels with bubbler systems and pressures in fluid amplifier or fluidic systems. It also checks gas-air ratio controls and automatic valves, and monitors blood and respiratory pressures in medical care equipment.

Mounting

A single case size is used for most models of Magnehelic® gages. They can be flush or surface mounted with standard hardware supplied. Although calibrated for vertical position, many ranges above 1″ may be used at any angle by simply re-zeroing. However, for maximum accuracy, they must be calibrated in the same position in which they are used. These characteristics make Magnehelic® gages ideal for both stationary and portable applications. A 4-9/16″ hole is required for flush panel mounting. Complete mounting and connection fittings, plus instructions, are furnished with each instrument. See pages 6 and 7 for more information on mounting accessories.

Flush, Surface or Pipe Mounted

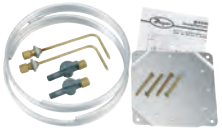
Enclosure Mounted

SPECIFICATIONS

Service: Air and non-combustible, compatible gases (natural gas option available).
Note: May be used with hydrogen. Order a Buna-N diaphragm. Pressures must be less than 35 psi.
Wetted Materials: Consult factory.
Housing: Die cast aluminum case and bezel, with acrylic cover. Exterior finish is coated gray to withstand 168 hour salt spray corrosion test.
Accuracy: ±2% of FS (±3% on - 0, -100 Pa, -125 Pa, 10MM and ±4% on - 00, -60 Pa, -6MM ranges), throughout range at 70°F (21.1°C).
Pressure Limits: -20 in Hg to 15 psig† (-0.677 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. See Overpressure Protection Note on next page.
Temperature Limits: 20 to 140°F*
(-6.67 to 60°C). -20°F (-28°C) with low temperature 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).
Standard Accessories: Two 1/8″ NPT plugs for duplicate pressure taps, two 1/8″ pipe thread to rubber tubing adapter, and three flush mounting adapters with screws. (Mounting and snap ring retainer substituted for three adapters in MP & HP gage accessories.)
Agency Approval: RoHS. **Note:** -SP models not RoHS approved.
†For applications with high cycle rate within gage total pressure rating, next higher rating is recommended. See Medium and High pressure options at lower left.

ACCESSORIES

Model A-432 Portable Kit
Combine carrying case with any Magnehelic® gage of standard range, except high pressure connection. Includes 9 ft (2.7 m) of 3/16″ ID rubber tubing, standhang bracket and terminal tube with holder **$48.00**



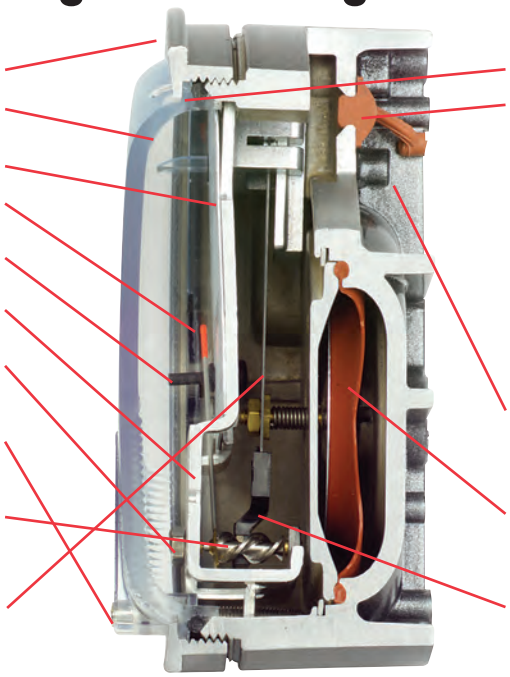
Model A-605 Air Filter Gage Accessory Kit
Adapts any standard Magnehelic® gage for use as an air filter gage. Includes aluminum surface mounting bracket with screws, two 5 ft (1.5 m) lengths of 1/4″ aluminum tubing two static pressure tips and two molded plastic vent valves, integral compression fittings on both tips and valves **35.00**

A-605B Air Filter Gage Accessory Kit, Air filter kit with two plastic open/close valves, two 4″ steel static tips, plastic tubing and mounting flange **26.00**

A-605C Air Filter Gage Accessory Kit, Air filter kit with two plastic open/close valves, two plastic static tips, plastic tubing and mounting flange **21.00**

Series 2000

Magnehelic® Gage Models & Ranges



Bezel provides flange for flush mounting in panel.

Clear plastic face is highly resistant to breakage. Provides undistorted viewing of pointer and scale.

Precision litho-printed scale is accurate and easy to read.

Red tipped pointer of heat treated aluminum tubing is easy to see. It is rigidly mounted on the helix shaft.

Pointer stops of molded rubber prevent pointer over-travel without damage.

"Wishbone" assembly provides mounting for helix, helix bearings and pointer shaft.

Jeweled bearings are shock-resistant mounted; provide virtually friction-free motion for helix. Motion damped with high viscosity silicone fluid.

Zero adjustment screw is conveniently located in the plastic cover, and is accessible without removing cover. O-ring seal provides pressure tightness.

Helix is precision made from an alloy of high magnetic permeability. Mounted in jeweled bearings, it turns freely, following the magnetic field to move the pointer across the scale.

Calibrated range spring is flat spring steel. Small amplitude of motion assures consistency and long life. It reacts to pressure on diaphragm. Live length adjustable for calibration.

O-ring seal for cover assures pressure integrity of case.

OVERPRESSURE PROTECTION
Blowout plug is comprised of 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 (1.7 bar). To provide a free path for pressure relief, there are four spacer pads which maintain 0.023″ clearance when gage is surface mounted. Do not obstruct the gap created by these pads. The blowout plug is not used on models above 180″ of water pressure, medium or high pressure models, or on gages which require an elastomer other than silicone for the diaphragm. The blowout plug should not be used as a system overpressure control. High supply pressures may still cause the gage to fail due to over pressurization, resulting in property damage or serious injury. Good engineering practices should be utilized to prevent your system from exceeding the ratings or any component.

Die cast aluminum case is precision made and iridite-dipped to withstand 168 hour salt spray corrosion test. Exterior finished in baked dark gray hammerloid. One case size is used for all standard pressure options, and for both surface and flush mounting.

Silicone rubber diaphragm with integrally molded O-ring is supported by front and rear plates. It is locked and sealed in position with a sealing plate and retaining ring. Diaphragm motion is restricted to prevent damage due to overpressures.

Samarium Cobalt magnet mounted at one end of range spring rotates helix without mechanical linkages.

Model	Range Inches of Water	Price
2000-00N†••	.05-0-.2	$77.45
2000-00†••	0-.25	73.00
2000-0†•	0-.50	63.50
2001	0-1.0	63.50
2002	0-2.0	63.50
2003	0-3.0	63.50
2004	0-4.0	63.50
2005	0-5.0	63.50
2006	0-6.0	63.50
2008	0-8.0	63.50
2010	0-10	63.50
2012	0-12	63.50
2015	0-15	63.50
2020	0-20	63.50
2025	0-25	63.50
2030	0-30	63.50
2040	0-40	63.50
2050	0-50	63.50
2060	0-60	63.50
2080	0-80	63.50
2100	0-100	63.50
2120	0-120	63.50
2150	0-150	63.50
2160	0-160	88.50
2180*	0-180	190.00
2250*	0-250	190.00
Zero Center Ranges		
2300-00†••	0.125-0-0.125	$74.00
2300-0†•	.25-0-.25	74.00
2301	.5-0-.5	74.00
2302	1-0-1	74.00
2304	2-0-2	74.00
2310	5-0-5	74.00
2320	10-0-10	74.00
2330	15-0-15	74.00

Model	Range PSI	Price
2201	0-1	$67.95
2202	0-2	67.95
2203	0-3	67.95
2204	0-4	67.95
2205	0-5	67.95
2210*	0-10	169.45
2215*	0-15	169.45
2220*	0-20	169.45
2230**	0-30	242.00

Model	Range, CM of Water	Price
2000-15CM	0-15	$63.50
2000-20CM	0-20	63.50
2000-25CM	0-25	63.50
2000-50CM	0-50	63.50
2000-80CM	0-80	63.50
2000-100CM	0-100	63.50
2000-150CM	0-150	67.95
2000-200CM	0-200	67.95
2000-250CM	0-250	67.95
2000-300CM	0-300	67.95
Zero Center Ranges		
2300-4CM	2-0-2	$78.45
2300-10CM	5-0-5	78.45
2300-30CM	15-0-15	78.45

†These ranges calibrated for vertical scale position.
• Accuracy +/-3%
• • Accuracy +/-4%
*MP option standard
**HP option standard

Model	Range MM of Water	Price
2000-6MM†••	0-6	$73.00
2000-10MM†•	0-10	63.50
2000-15MM	0-15	63.50
2000-25MM	0-25	63.50
2000-30MM	0-30	63.50
2000-50MM	0-50	63.50
2000-80MM	0-80	63.50
2000-100MM	0-100	63.50
2000-125MM	0-125	63.50
2000-150MM	0-150	63.50
2000-200MM	0-200	63.50
2000-250MM	0-250	63.50
2000-300MM	0-300	63.50
Zero Center Ranges		
2300-6MM†••	3-0-3	$99.00
2300-10MM†•	5-0-5	74.00
2300-20MM†•	10-0-10	74.00

Model	Range, Pa	Price
2000-60NPA†••	10-0-50	$77.45
2000-60PA†••	0-60	73.00
2000-100PA†•	0-100	63.50
2000-125PA†•	0-125	63.50
2000-250PA	0-250	63.50
2000-300PA	0-300	63.50
2000-500PA	0-500	63.50
2000-750PA	0-750	63.50
2000-1000PA	0-1000	63.50
Zero Center Ranges		
Model	Range, Pa	Price
2300-60PA†••	30-0-30	$74.00
2300-100PA†•	50-0-50	74.00
2300-120PA	60-0-60	74.00
2300-200PA	100-0-100	74.00
2300-250PA	125-0-125	74.00
2300-300PA	150-0-150	74.00
2300-500PA	250-0-250	74.00
2300-1000PA	500-0-500	74.00

Model	Range, kPa	Price
2000-0.5KPA	0-0.5	$63.50
2000-1KPA	0-1	63.50
2000-1.5KPA	0-1.5	63.50
2000-2KPA	0-2	63.50
2000-2.5KPA	0-2.5	63.50
2000-3KPA	0-3	63.50
2000-4KPA	0-4	63.50
2000-5KPA	0-5	63.50
2000-8KPA	0-8	63.50
2000-10KPA	0-10	63.50
2000-15KPA	0-15	63.50
2000-20KPA	0-20	63.50
2000-25KPA	0-25	63.50
2000-30KPA	0-30	63.50
Zero Center Ranges		
2300-1KPA	.5-0-.5	$74.00
2300-2KPA	1-0-1	74.00
2300-2.5KPA	1.25-0-1.25	74.00
2300-3KPA	1.5-0-1.5	74.00

Dual Scale Air Velocity Units
For use with pitot tube

Model	Range in W.C./ Velocity F.P.M.	Price
2000-00AV†••	0-.25/ 300-2000	$98.00
2000-0AV†•	0-.50/ 500-2800	88.50
2001AV	0-1.0/ 500-4000	67.95
2002AV	0-2.0/ 1000-5600	67.95
2005AV	0-5.0/ 2000-8800	67.95
2010AV	0-10/ 2000-12500	67.95

Dual Scale English/Metric Models

Model	Range, in w.c.	Range, Pa or kPa	Price
2000-00D†••	0-.25	0-62 Pa	$73.00
2000-0D†•	0-0.5	0-125 Pa	67.95
2001D	0-1.0	0-250 Pa	67.95
2002D	0-2.0	0-500 Pa	67.95
2003D	0-3.0	0-750 Pa	67.95
2004D	0-4.0	0-1.0 kPa	67.95
2005D	0-5.0	0-1.25 kPa	67.95
2006D	0-6.0	0-1.5 kPa	67.95
2008D	0-8.0	0-2.0 kPa	67.95
2010D	0-10	0-2.5 kPa	67.95
2015D	0-15	0-3.7 kPa	67.95
2020D	0-20	0-5 kPa	88.50
2025D	0-25	0-6.2 kPa	88.50
2050D	0-50	0-12.4 kPa	88.50
2060D	0-60	0-15 kPa	88.50

VELOCITY AND VOLUMETRIC FLOW UNITS
Scales are available on the Magnehelic® that read in velocity units (FPM, m/s) or volumetric flow units (SCFM, m^3/s, m^3/h). Stocked velocity units with dual range scales in inches w.c. and feet per minute are shown above. For other ranges contact the factory.
When ordering volumetric flow scales please specify the maximum flow rate and its corresponding pressure. Example: 0.5 in w.c. = 16,000 CFM.

ACCESSORIES
A-321, Safety Relief Valve **34.00**
A-448, 3-piece magnet kit for mounting Magnehelic® gage directly to magnetic surface **10.75**
A-135, Rubber gasket for panel mounting **1.50**

A-310A 3-Way Vent Valves **$16.50**
In applications where pressure is continuous and the Magnehelic® gage is connected by metal or plastic tubing which cannot be easily removed, we suggest using Dwyer A-310A vent valves to connect gage. Pressure can then be removed to check or re-zero the gage.

Standard Operating Procedure Installation and Extraction of the FLX-VP VAPOR PIN®

Updated October 4, 2016

Scope:

This standard operating procedure describes the installation, use, and extraction of the FLX-VP for sub-slab soil-gas sampling.

Purpose:

The purpose of this procedure is to assure good quality control in field operations and uniformity between field personnel in the use of the FLX-VP for the collection of sub-slab soil-gas samples or pressure readings.

Equipment Needed:

- Assembled FLX-VP [FLX-VP barb fitting with O-ring, FLX-VP base, and silicone sleeve (Figure 1)]; Because of sharp edges, gloves are recommended for sleeve installation;
- Hammer drill;
- 5/8-inch (16mm) diameter hammer bit (hole must be 5/8-inch (16mm) diameter to ensure seal. It is recommended that you use the drill guide). (Hilti™ TE-YX 5/8" x 22" (400 mm) #00206514 or equivalent);
- 1½-inch (38mm) diameter hammer bit (Hilti™ TE-YX 1½" x 23" #00293032 or equivalent) for flush mount applications;
- ¾-inch (19mm) diameter bottle brush;
- Wet/Dry vacuum with HEPA filter (optional);
- VAPOR PIN® installation/extraction tool;
- Dead blow hammer;
- VAPOR PIN® flush mount cover, if desired;
- VAPOR PIN® drilling guide, if desired;
- VAPOR PIN® protective cap; and
- VOC-free hole patching material (hydraulic cement) and putty knife or trowel for repairing the hole following the extraction of the FLX-VP.

Figure 1. Assembled FLX-VP

Installation Procedure:

1) Check for buried obstacles (pipes, electrical lines, etc.) prior to proceeding.
2) Set up wet/dry vacuum to collect drill cuttings.

3) If a flush mount installation is required, drill a 1½-inch (38mm) diameter hole at least 1¾-inches (45mm) into the slab. Use of a VAPOR PIN® drilling guide is recommended.

4) Drill a 5/8-inch (16mm) diameter hole through the slab and approximately 1-inch (25mm) into the underlying soil to form a void. Hole **must** be 5/8-inch (16mm) in diameter to ensure seal. It is recommended that you use the drill guide.

5) Remove the drill bit, brush the hole with the bottle brush, and remove the loose cuttings with the vacuum.

6) Place the lower end of the assembled FLX-VP into the drilled hole. Place the small hole located in the handle of the installation/extraction tool over the barb fitting, and tap the FLX-VP into place using a dead blow hammer (Figure 2). Make sure the installation/extraction tool is aligned parallel to the FLX-VP to avoid damaging the barb fitting.

Figure 2. Installing the FLX-VP

During installation, the silicone sleeve will form a slight bulge between the slab and the FLX-VP shoulder. Place the protective cap on FLX-VP to prevent vapor loss prior to sampling (Figure 3).

Figure 3. Installed FLX-VP

7) For flush mount installations, cover the FLX-VP with a flush mount cover, using either the plastic cover or the optional stainless-steel Secure Cover (Figure 4).

Figure 4. Secure Cover Installed

8) Allow 20 minutes or more (consult applicable guidance for your situation)

for the sub-slab soil-gas conditions to re-equilibrate prior to sampling.

9) Remove protective cap and connect sample tubing to the barb fitting of the FLX-VP. This connection can be made using a short piece of Tygon™ tubing to join the FLX-VP with the Nylaflow tubing (Figure 5). Put the Nylaflow tubing as close to the FLX-VP as possible to minimize contact between soil gas and Tygon™ tubing.

   If you wish to directly connect to FLX-VP accessory (e.g. Swagelok fitting, TO-17 tube, or quick connect) unscrew the barb fitting and replace with accessory (Figures 6 and 7).

Figure 5. FLX-VP sample connection

Figure 6. FLX-VP with Swagelok® connection

Figure 7. FLX-VP with TO-17 Sorbent tube connection

10) Conduct leak tests in accordance with applicable guidance. If the method of leak testing is not specified, an alternative can be the use of a water dam and vacuum pump, as described in SOP Leak Testing the FLX-VP via Mechanical Means (Figure 8). For flush-mount installations, distilled water can be poured directly into the 1 1/2 inch (38mm) hole.

Figure 8. Water dam used for leak detection

11) Collect sub-slab soil gas sample or pressure reading. When finished, replace the barb fitting and protective cap and flush mount cover until the next event. If the sampling is complete, extract the FLX-VP.

Extraction Procedure:

1) Remove the protective cap, and thread the installation/extraction tool onto the barrel of the FLX-VP (Figure 9). Continue turning the tool clockwise to pull the FLX-VP from the hole into the installation/extraction tool.

2) Fill the void with hydraulic cement and smooth with a trowel or putty knife.

Figure 9. Removing the FLX-VP

3) Prior to reuse, remove the silicone sleeve and protective cap and discard. Decontaminate the FLX-VP in a hot water and Alconox® wash, then heat in an oven to a temperature of 265° F (130° C) for 15 to 30 minutes. For both steps, STAINLESS – ½ hour, BRASS 8 minutes

The FLX-VP is designed to be used repeatedly, however, accessories, replacement parts and supplies will be required periodically. These parts are available on-line at VaporPin.CoxColvin.com

Standard Operating Procedure Use of the VAPOR PIN® Drilling Guide and Secure Cover

Updated October 4, 2016

Scope:

This standard operating procedure (SOP) describes the methodology to use the VAPOR PIN® Drilling Guide and Secure Cover to install and secure a VAPOR PIN® in a flush mount configuration.

Purpose:

The purpose of this SOP is to detail the methodology for installing a VAPOR PIN® and Secure Cover in a flush mount configuration. The flush mount configuration reduces the risk of damage to the VAPOR PIN® by foot and vehicular traffic, keeps dust and debris from falling into the flush mount hole, and reduces the opportunity for tampering. This SOP is an optional process performed in conjunction with the SOP entitled "Installation and Extraction of the VAPOR PIN®". However, portions of this SOP should be performed prior to installing the VAPOR PIN®.

Equipment Needed:

- VAPOR PIN® Secure Cover (Figure 1);
- VAPOR PIN® Drilling Guide (Figure 2);
- Hammer drill;
- 1½-inch diameter hammer bit (Hilti™ TE-YX 1½" x 23" #00293032 or equivalent);
- 5/8-inch diameter hammer bit (Hilti™ TE-YX 5/8" x 22" #00226514 or equivalent);
- assembled VAPOR PIN®;
- #14 spanner wrench;
- Wet/Dry vacuum with HEPA filter (optional); and
- personal protective equipment (PPE).

Figure 1. VAPOR PIN® Secure Cover

Figure 2. VAPOR PIN® Drilling Guide

Installation Procedure:

1) Check for buried obstacles (pipes, electrical lines, etc.) prior to proceeding.

2) Set up wet/dry vacuum to collect drill cuttings.

3) While wearing PPE, drill a 1½-inch diameter hole into the concrete slab to a depth of approximately 1 3/4 inches. Pre-marking the desired depth on the drill

bit with tape will assist in this process.

4) Remove cuttings from the hole and place the Drilling Guide in the hole with the conical end down (Figure 3). The hole is sufficiently deep if the flange of the Drilling Guide lies flush with the surface of the slab. Deepen the hole as necessary, but avoid drilling more than 2 inches into the slab, as the threads on the Secure Cover may not engage properly with the threads on the VAPOR PIN®.

Figure 3. Testing Depth with the Drilling Guide

5) When the 1½-inch diameter hole is drilled to the proper depth, replace the drill bit with a 5/8-inch diameter bit, insert the bit through the Drilling Guide (Figure 4), and drill through the slab. The Drilling Guide will help to center the hole for the VAPOR PIN®, and keep the hole perpendicular to the slab.

6) Remove the bit and drilling guide, clean the hole, and install the VAPOR PIN® in accordance with the SOP "Installation and Extraction of the VAPOR PIN®.

Figure 4. Using the Drilling Guide

7) Screw the Secure Cover onto the VAPOR PIN® and tighten using a #14 spanner wrench by rotating it clockwise (Figure 5). Rotate the cover counter clockwise to remove it for subsequent access.

Figure 5. Tightening the Secured Cover

Limitations:

On slabs less than 3 inches thick, it may be difficult to obtain a good seal in a flush mount configuration with the VAPOR PIN.®

Standard Operating Procedure Installation and Extraction of the Vapor Pin®

Updated March 16, 2018

Scope:

This standard operating procedure describes the installation and extraction of the VAPOR PIN® for use in sub-slab soil-gas sampling.

Purpose:

The purpose of this procedure is to assure good quality control in field operations and uniformity between field personnel in the use of the VAPOR PIN® for the collection of sub-slab soil-gas samples or pressure readings.

Equipment Needed:

- Assembled VAPOR PIN® [VAPOR PIN® and silicone sleeve(Figure 1)]; Because of sharp edges, gloves are recommended for sleeve installation;
- Hammer drill;
- 5/8-inch (16mm) diameter hammer bit (hole **must** be 5/8-inch (16mm) diameter to ensure seal. It is recommended that you use the drill guide). (Hilti™ TE-YX 5/8" x 22" (400 mm) #00206514 or equivalent);
- 1½-inch (38mm) diameter hammer bit (Hilti™ TE-YX 1½" x 23" #00293032 or equivalent) for flush mount applications;
- ¾-inch (19mm) diameter bottle brush;
- Wet/Dry vacuum with HEPA filter (optional);
- VAPOR PIN® installation/extraction tool;
- Dead blow hammer;
- VAPOR PIN® flush mount cover, if desired;
- VAPOR PIN® drilling guide, if desired;
- VAPOR PIN® protective cap; and
- VOC-free hole patching material (hydraulic cement) and putty knife or trowel for repairing the hole following the extraction of the VAPOR PIN®.

Figure 1. Assembled VAPOR PIN®

Installation Procedure:

1) Check for buried obstacles (pipes, electrical lines, etc.) prior to proceeding.

2) Set up wet/dry vacuum to collect drill cuttings.

3) If a flush mount installation is required, drill a 1½-inch (38mm) diameter hole at least 1¾-inches (45mm) into the slab. Use of a VAPOR PIN® drilling guide is recommended.

4) Drill a 5/8-inch (16mm) diameter hole through the slab and approximately 1-inch (25mm) into the underlying soil to form a void. Hole **must** be 5/8-inch (16mm) in diameter to ensure seal. It is recommended that you use the drill guide.

5) Remove the drill bit, brush the hole with the bottle brush, and remove the loose cuttings with the vacuum.

6) Place the lower end of VAPOR PIN® assembly into the drilled hole. Place the small hole located in the handle of the installation/extraction tool over the vapor pin to protect the barb fitting, and tap the vapor pin into place using a dead blow hammer (Figure 2). Make sure the installation/extraction tool is aligned parallel to the vapor pin to avoid damaging the barb fitting.

Figure 2. Installing the VAPOR PIN®

During installation, the silicone sleeve will form a slight bulge between the slab and the VAPOR PIN® shoulder. Place the protective cap on VAPOR PIN® to prevent vapor loss prior to sampling (Figure 3).

Figure 3. Installed VAPOR PIN®

7) For flush mount installations, cover the vapor pin with a flush mount cover, using either the plastic cover or the optional stainless-steel Secure Cover (Figure 4).

Figure 4. Secure Cover Installed

8) Allow 20 minutes or more (consult applicable guidance for your situation) for the sub-slab soil-gas conditions to re-equilibrate prior to sampling.

9) Remove protective cap and connect sample tubing to the barb fitting of the VAPOR PIN®. This connection can be made using a short piece of Tygon™ tubing to join the VAPOR PIN® with the

Nylaflow tubing (Figure 5). Put the Nylaflow tubing as close to the VAPOR PIN® as possible to minimize contact between soil gas and Tygon™ tubing.

Figure 5. VAPOR PIN® sample connection

10) Conduct leak tests in accordance with applicable guidance. If the method of leak testing is not specified, an alternative can be the use of a water dam and vacuum pump, as described in SOP Leak Testing the VAPOR PIN® via Mechanical Means (Figure 6). For flush-mount installations, distilled water can be poured directly into the 1 1/2 inch (38mm) hole.

Figure 6. Water dam used for leak detection

11) Collect sub-slab soil gas sample or pressure reading. When finished, replace the protective cap and flush mount cover until the next event. If the sampling is complete, extract the VAPOR PIN®.

Extraction Procedure:

1) Remove the protective cap, and thread the installation/extraction tool onto the barrel of the VAPOR PIN® (Figure 7). Turn the tool clockwise continuously, don't stop turning, the VAPOR PIN® will feed into the bottom of the installation/extraction tool and will extract from the hole like a wine cork, DO NOT PULL.

2) Fill the void with hydraulic cement and smooth with a trowel or putty knife.

Figure 7. Removing the VAPOR PIN®

- Prior to reuse, remove the silicone sleeve and protective cap and discard. Decontaminate the VAPOR PIN® in a hot water and Alconox® wash, then heat in an oven to a temperature of 265° F (130° C) for 15 to 30 minutes. For both steps, **STAINLESS – ½ hour, BRASS 8 minutes**

3) Replacement parts and supplies are available online.

Appendix C MONITORING LOG FORMS

- Monthly Monitoring Log
- Annual Monitoring Log

Former AMSF Site (BCP Site #C828101) **MONTHLY INSPECTION FORM**

12 Pixley Industrial Parkway, Gates, New York

SSDS Pressure Monitoring Form

Fan	Monitoring Panel Group	Approximate Time	Differential Pressure (inches of water column)
1	4		
2			
3			
4			
5			
6			
7			
8	3		
9			
10			
11	1		
12			
13			
14			
15	2		
16			
17			
18			
19			
20			
21			

Date:
Weather conditions:
Is an air supply/heating system on:
Name and Position:
Company:

SSDS Inspection Form

Date _____
Name _____
Company _____
Position _____

Done?	Task	Notes
SSDS Inspection		
	Visual inspection of the equipment and piping	
	Identification and subsequent repair of any leaks	
	Inspection of exhaust points to verify that no air intakes have been located nearby	
	Audible operational status check of vent fans	
	Documentation of manifold settings and vacuum at each fan and extraction point	
	Documentation of sub-slab pressure at each permanent sub-slab pressure monitoring point	
	Suction point riser valve adjustments as required to balance parallel branches of system	
	Maintenance activities conducted	
	Any modifications to the system	
Cover System (Concrete Floor Slab) Inspection		
	Visual inspection of the hard surface cover for evidence of deep cracks, potholes, cuts, depressions, and deterioration of joint seals and penetration seals	
	Identification of any areas where there is evidence of excessive settlement relative to the surrounding areas	
	Note any audible indications of leaks in the cover system, and/or note results of any smoke tests performed to check for leaks	

SSDS Pressure Monitoring Form

PMP	Date	Approximate Time	Differential Pressure (inches of water column)	Manometer Zeroed?

Fan	SSDS Zone	Date	Approximate Time	Differential Pressure (inches of water column)	Manometer Zeroed?

Suction Point (Riser)	SSDS Zone	Date	Approximate Time	Differential Pressure (inches of water column)	Manometer Zeroed?

Weather conditions: _____

Is an air supply/heating system on: _____

Name and Position: _____

Company: _____

Notes:

1) All sub-slab pressure readings are shown as differential pressure readings between the indoor air and the sub-slab void space. Values shown as negative values indicate that sub-slab pressure is lower than indoor air pressure.

APPENDIX G – QUALITY ASSURANCE PROJECT PLAN

APPENDIX G

QUALITY ASSURANCE PROJECT PLAN
SITE MANAGEMENT ACTIVITIES

FORMER ALLIANCE METAL STAMPING & FABRICATION FACILITY
12 PIXLEY INDUSTRIAL PARKWAY
TOWN OF GATES, MONROE COUNTY, NEW YORK

NYSDEC SITE NUMBER C828101

August 2019

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QUALITY ASSURANCE PROJECT PLAN
SITE MANAGEMENT ACTIVITIES
FORMER ALLIANCE METAL STAMPING & FABRICATION FACILITY SITE
12 PIXLEY INDUSTRIAL PARKWAY
TOWN OF GATES, MONROE COUNTY, NEW YORK

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Quality Assurance Project Plan
Former Alliance Metal Stamping & Fabrication Facility Site
BCP Site #828101
Gates, New York
August 2019

1.0 Introduction

This Quality Assurance Project Plan (QAPP) is to be used in conjunction with the Site Management Plan (SMP) for the Former Alliance Metal Stamping & Fabrication (AMSF) Facility located at 12 Pixley Industrial Parkway in the Town of Gates, Monroe County, New York (Site). This QAPP presents the policies, organization, objectives, functional activities, and specific quality assurance and quality control activities to ensure the validity of data generated in the completion of the investigation. The purpose of this QAPP program is to ensure that all technical data generated are accurate and representative.

Quality assurance (QA) is a management system for ensuring that all information, data, and decisions resulting from investigation and environmental monitoring programs are technically sound, and properly documented. Quality control (QC) is the functional mechanism through which quality assurance achieves its goals. Quality control programs, for example, define the frequency and methods of checks, audits, and reviews necessary to identify problems and dictate corrective actions to resolve these problems, thus ensuring high quality data. As such, a quality assurance and quality control program pertains to all data collection, evaluation, and review activities which are part of the investigation.

All QA/QC procedures will be in accordance with applicable professional technical standards, government regulations and guidelines, and specific project goals and requirements. This QAPP has been prepared in accordance with New York State Department of Environmental Conservation (NYSDEC) and United States Environmental Protection Agency (EPA) Region II guidance documents.

The QAPP incorporates the following activities:

- Sample collection, control, chain-of-custody, and analysis;
- Document control;
- Laboratory instrumentation, analysis, and control; and
- Review of project reports.

Laboratory analysis of all project samples will be performed by an independent laboratory with the experience and certifications appropriate to the analyses to be performed. All analyses will be performed by laboratories accredited pursuant to the NYSDOH Environmental Laboratory Accreditation Program (ELAP) for the category of parameters to be analyzed by the laboratory. The specific environmental laboratory or laboratories to be used will be determined at the time the monitoring activities are scheduled.

Duplicates, replicates, and spiked samples will be used to identify the quality of the analytical data. Field audits may be conducted to verify that proper sampling techniques and chain-of-custody procedures are followed. Field data compilation, tabulation, and analysis will be checked for accuracy. Calculations and other post-field tasks will be reviewed by senior project personnel. Equipment used to take field measurements will be maintained and calibrated in accordance with established procedures. Records of calibration and maintenance will be kept by assigned personnel. Field testing and data acquisition will be performed following strict guidelines as described herein.

Document control procedures will be used to coordinate the distribution, coding, storage, retrieval, and review of all data collected during all sampling tasks.

For sampling events and monitoring activities used to collect “documentation samples” as defined in NYSDEC’s DER-10 “Technical Guidance for Site Investigation and Remediation” (DER-10), duplicates, replicates, and spiked samples will be used as needed to identify the quality of the analytical data. Results of the laboratory analyses for these samples will be reported using NYSDEC ASP Category B deliverables, and a Data Usability Summary Report (DUSR) will be prepared for analytical results from these monitoring activities. The DUSR will be prepared by an independent consultant with the required experience, in accordance with NYSDEC's "Guidance for the Development of Data Usability Summary Reports," revised 1997, and DER-10. For all other monitoring activities, analyses will be reported using Category A deliverables, and the level of QA/QC will be that level appropriate to support a Category A deliverable. DUSRs will not be prepared for Category A deliverables.

2.0 Project Description

This QAPP pertains to the completion of field activities and subsequent laboratory and data analysis required by the Site Management Plan (SMP) for the Former AMSF Facility located at 12 Pixley Industrial Parkway in the Town of Gates, Monroe County, New York. The investigation elements are described in detail in the SMP.

2.1 Site Description

The Site is located at 12 Pixley Industrial Parkway in the Town of Gates, Monroe County, New York. A Site Location Map is provided in the SMP as Figure 1. The property (Tax Parcel No. 119.17-1-2) is the site of the former AMSF industrial facility. AMSF was a subsidiary of the Gleason Corporation. The AMSF facility was reportedly constructed in 1967, before which the property was undeveloped agricultural land. The facility consists of a ±120,000 square foot industrial building on a 7 acre property. Manufacturing operations were discontinued by AMSF in the 1990s. Since 1995, the property has been owned and operated by Maguire Family Properties, Inc., which leases individual spaces in the facility to several industrial and commercial tenants. Reasonably anticipated future use of the site includes commercial and/or industrial uses.

2.2 Previous Investigations

Previous investigations of the Site are described in the SMP.

3.0 Project Organization and Responsibility

This QAPP provides for designated qualified personnel to review products and provide guidance on QA matters. This QAPP also outlines the approach to be followed to ensure that products of sufficient quality are obtained. The project QA organization will provide for direct and constant operational responsibility, clear lines of authority, and the integration of QA activities. The various QA functions of the project positions are explained in the following subsections.

Project Manager
The project manager will have overall responsibility for ensuring that the project meets the objectives and quality standards as presented in the SMP and this QAPP. He/She will be responsible for implementing the project and will have the authority to commit the resources necessary to meet project objectives and requirements. The project manager's primary function is to ensure that technical, financial, and scheduling objectives are achieved successfully. The project manager will provide the major point of contact and control for matters concerning the project. In addition, he/she will be responsible for technical quality control and project oversight.

Team Leaders
The project manager will be supported by a team leader or leaders who will be responsible for leading and coordinating the day-to-day activities of the various resource specialists under their supervision. The team leader is a highly experienced environmental professional who will report directly to the project manager.

Technical Staff
The technical staff (team members) for this project will be drawn from corporate resources and appropriately qualified subcontractors. The technical team staff will be used to gather and analyze data, and to prepare various task reports and support materials. All of the designated technical team members will be experienced professionals who possess the degree of specialization and technical competence required to effectively and efficiently perform the required work.

Project QA Director
The Project QA Director will be responsible for maintaining QA for the project.

Laboratory Director
The laboratory director will be responsible for all analytical work and works in conjunction with the QA unit. He/She maintains liaison with the QA officer regarding QA and custody requirements.

Laboratory Manager
The laboratory manager will maintain liaison with the laboratory director regarding QA elements of specific sample analyses tasks. He/She will report to the laboratory director and work in conjunction with the laboratory QA unit.

Laboratory QA Coordinator
The Laboratory QA officer will be responsible for overseeing the QA program within the laboratory and for maintaining all QC documentation. He/She reports directly to the laboratory director.

Laboratory Staff
Each member of the laboratory staff will perform an assigned QA or analytical function that is pertinent to and within the scope of his or her knowledge, experience, training, and aptitude. An individual will be assigned the responsibility for checking, reviewing, or otherwise verifying that a sample analysis activity has been correctly performed.

Laboratory Facilities
All laboratory work will be performed in accordance with guidelines established by NYSDEC, United States Environmental Protection Agency (USEPA), the Water Pollution Control Federation, and/or the American Society for Testing and Materials (ASTM). In case of conflict,

these guidelines and protocols will be considered in the order shown (i.e., NYSDEC criteria is of primary precedence). In addition, QA and QC programs will be maintained for the instruments and the analytical procedures used. A NYSDOH ELAP certified laboratory capable of providing NYSDEC Analytical Services Protocol (ASP) Category B deliverables will be identified to provide laboratory services for this project. The laboratory's preventative maintenance procedures will be provided and outlined in their Laboratory Quality Assurance Manual.

4.0 QA Objectives for Data Measurement

All measurements will be made to ensure that analytical results are representative of the media and conditions measured. Unless otherwise specified, all data will be calculated and reported in units consistent with other organizations who report similar data to allow comparability of databases among organizations.

The key considerations for the QA assessment of generated data are accuracy, precision, completeness, representativeness, and comparability. These characteristics are defined below:

Accuracy: Accuracy is the degree of agreement of a measurement or average of measurements with an accepted reference or "true" value and is a measure of bias in the system.

Precision: Precision is the degree of mutual agreement among individual measurements of a given parameter.

Completeness: Completeness is a measure of the amount of valid data obtained from a measurement system compared to the amount expected to be obtained under correct normal conditions.

Representativeness: Representativeness expresses the degree to which data accurately and precisely represent a characteristic of a population, parameter variations at a sampling point, a process condition, or an environmental condition.

Comparability: Comparability expresses the confidence with which one data set can be compared to another.

4.1 Goals

The QA/QC goal will focus on controlling measurement error within the limits established and will ultimately provide a database for estimating the actual uncertainty in the measurement data.

Target values for detection limit, percent spike recovery and percent "true" value of known check standards, and RPD of duplicates/replicates are provided in the referenced analytical procedures. It should be noted that target values are not always attainable. Instances may arise where high sample concentrations, non-homogeneity of samples, or matrix interferences preclude achievement of target detection limits or other quality

control criteria. In such instances, the laboratory will report reasons for deviations from these detection limits or noncompliance with quality control criteria.

5.0 Sampling Procedures

The sampling of various environmental media will be completed as specified in the SMP.

5.1 Sampling Protocol

The sampling and field procedures for the following activities are described in the SMP:

- Air sampling including indoor air and outdoor air;
- Groundwater level measurement;
- Groundwater sampling from existing monitoring wells.

Maps of the sampling locations are provided in the SMP. The sample containers that will be used are identified in Table 1. The sample containers will be labeled in accordance with Section 6.2. Sample handling, packaging and shipping procedures are presented in Section 6.3.

5.2 Field Quality Control Samples

Field quality control samples will be collected as specified in the SMP. Some, all or none of the following field QC samples will be collected during a given sampling event. For routine groundwater and indoor air monitoring activities, field duplicates, trip blanks MS/MSD and rinsate blanks will not be collected.

5.2.1 Field Duplicates

Field duplicates samples are collected to verify reproducibility of the sampling and analytical methods. If collected, field duplicates will be obtained at a rate of one per 20 original field samples.

5.2.2 Trip Blanks

Trip blanks are used to assess whether groundwater has been exposed to volatile constituents during sample storage and transport. If collected, trip blanks for water samples will consist of a container filled by the laboratory with analyte-free water. The trip blanks will remain unopened throughout the sampling event and will only be analyzed for volatile organics.

5.2.3 Matrix Spike/Matrix Spike Duplicates

Matrix Spike/Matrix Spike Duplicates (MS/MSD) are obtained to determine if the matrix is interfering with the sample analysis. If collected, MS/MSDs will be collected at a rate of one per 20 original field samples.

5.2.4 Rinsate Blanks

Rinsate blanks are used to assess decontamination procedures for non-dedicated equipment.

5.2.5 Laboratory Quality Control Checks

Internal laboratory quality control checks will be used to monitor data integrity. These checks include method (equipment) blanks, spike blanks, internal standards, surrogate samples, calibration standards, and reference standards.

5.3 Sample Containers

The volumes and containers required for the sampling activities are included in Table 1. Pre-washed sample containers will be provided by the laboratory. All bottles are to be prepared in accordance with EPA bottle washing procedures.

5.4 Decontamination

Dedicated and/or disposable groundwater sampling equipment will be used to the extent possible to minimize decontamination requirements and the possibility of cross-contamination.

The water level indicator will be decontaminated between locations by using the following decontamination procedures:

- Initial cleaning of any foreign matter with paper towels, if needed;
- Low phosphate detergent wash;
- De-ionized water rinse; and
- Air dry.

Decontamination wastewater will be collected in 55-gallon drums.

5.5 Levels of Protection/Site Safety

All sampling will be conducted under a documented Health and Safety Plan. Crew members will stand upwind of wellheads during the collection of samples, when possible.

All work will initially be conducted in Level D (refer to Site Specific Health and Safety Plan). Air purifying respirators (APRs) will be available if monitoring indicates an upgrade to Level C is appropriate.

6.0 Sample Custody

This section describes standard operating procedures for sample identification and chain-of-custody to be used for all field activities. The purpose of these procedures is to ensure that the quality of the samples is maintained during collection, transportation, storage, and analysis. All chain-of-custody requirements comply with standard operating procedures indicated in USEPA and NYSDEC sample-handling protocol.

Sample identification documents must be carefully prepared so that sample identification and chain-of-custody can be maintained and sample disposition controlled. Sample identification documents include:

- Field records,
- Sample label,
- Custody seals, and
- Chain-of-custody records.

6.1 Chain-Of-Custody

The primary objective of the chain-of-custody procedures is to provide an accurate written or computerized record that can be used to trace the possession and handling of a sample from collection to completion of all required analyses.

6.1.1 Sample Labels

Sample labels attached to, or affixed around, the sample container must be used to properly identify all samples collected in the field. To the extent possible, the sample labels are to be placed on the bottles so as not to obscure any QA/QC lot numbers on the bottles. Sample information must be printed in a legible manner using waterproof ink. Field identification must be sufficient to enable cross-reference with the field sampling records or sample logbook. For chain-of-custody purposes, all QC samples are subject to exactly the same custodial procedures and documentation as "real" samples.

6.1.2 Custody Seals

Custody seals are preprinted adhesive-backed seals often with security slots which are designed to break if the seals are disturbed. Sample shipping containers (coolers, cardboard boxes, etc., as appropriate) are sealed in as many places as necessary to ensure security. Seals must be signed and dated before use. On receipt at the laboratory, the custodian must check (and certify, by completing logbook entries) that seals on shipping containers are intact. Strapping tape should be placed over the seals to ensure that seals on shipping containers are not accidentally broken during shipment.

6.1.3 Chain-Of-Custody Record

The chain-of-custody record must be fully completed at least in duplicate by the field technician who has been designated by the project manager as being responsible for sample shipment to the appropriate laboratory for analysis. In addition, if samples are known to require rapid turnaround in the laboratory because of project time constraints or analytical concerns (e.g., extraction time or sample retention period limitations, etc.), the person completing the chain-of-custody record should note these constraints in the "Remarks" section of the custody record.

6.1.4 Field Custody Procedures

- As few persons as possible should handle samples.
- Sample containers will be obtained pre-cleaned by the laboratory and shipped to the sampling personnel in charge of the field activities. Coolers or boxes containing cleaned bottles should be sealed with a custody tape seal during transport to the field or while in storage prior to use.
- The sample collector is personally responsible for the care and custody of samples collected until they are transferred to another person or dispatched properly under chain-of-custody rules.
- The sample collector will record sample data in a controlled field notebook and/or on appropriate field sampling records.
- The site team leader will determine whether proper custody procedures were followed during the fieldwork and decide if additional samples are required.

6.2 Documentation

6.2.1 Sample Identification

All containers of samples collected from the project will be identified using the following format on a label or tag fixed to the sample container:

AM-XX-Y

- AM - This set of initials indicates the Former Alliance Metal Stamping & Fabrication Facility project.
- XX - These initials identify the sample. Actual sample locations will be recorded on the sampling record. Field duplicates, field blanks and rinsate blanks will be assigned unique sample numbers.

- Y - These initials identify the sample matrix in accordance with the following abbreviations:

W – Water Sample
A – Air

Each sample will be labeled, chemically preserved, if required, and sealed immediately after collection. To minimize handling of sample containers, labels will be filled out prior to sample collection to the extent possible. The sample label will be filled out using waterproof ink and will be firmly affixed to the sample containers. The sample label will give the following information:

- Name or initials of sampler;
- Date (and time, if possible) of collection;
- Sample number;
- Intended analysis; and
- Preservation performed.

6.2.2 Daily Logs

Daily logs and data forms are necessary to provide sufficient data and observations to enable participants to reconstruct events that occurred during the project. All daily logs will be kept in a notebook and consecutively numbered. All entries will be made in waterproof ink, dated, and signed. Sampling data will be recorded in the sampling records. All information will be completed in waterproof ink. Corrections will be made according to the procedures given at the end of this section.

6.3 Sample Handling, Packaging, and Shipping

The transportation and handling of samples must be accomplished in a manner that not only protects the integrity of the sample, but also prevents any detrimental effects due to the possible hazardous nature of samples. Regulations for packaging, marking, labeling, and shipping hazardous materials are promulgated by the United States Department of Transportation (DOT) in the Code of Federal Regulations, 49 CFR 171 through 177.

All chain-of-custody requirements must comply with standard operating procedures in the NYSDEC and USEPA sample handling protocol. Field personnel will make arrangements for transportation of samples to the laboratory. When custody is relinquished to a shipper, field personnel will ensure that the laboratory custodian or project manager is aware of the expected time of arrival of the sample shipment and of any time constraints on sample analysis(es). All samples will be delivered to the laboratory in a timely manner to help ensure that holding times are followed.

7.0 Calibration Procedures and Frequency

All instruments and equipment used during sampling and analysis will be operated, calibrated, and maintained according to the manufacturer's guidelines and recommendations as well as criteria set forth in the applicable analytical methodology references.

7.1 Field Instruments

A calibration program will be implemented to ensure that routine calibration is performed on all field instruments. Field team members familiar with the field calibration and operations of the equipment will maintain proficiency and perform the prescribed calibration procedures outlined in the Operation and Field Manuals accompanying the respective instruments. Calibration records for each field instrument used on the project will be maintained on-site during the respective field activities and a copy will be kept in the project files.

7.1.1 Portable Total Organic Vapor Monitor

Any vapor monitor used will undergo routine maintenance and calibration prior to shipment to the project site. Daily calibration and instrument checks will be performed by a trained team member at the start of each day. Daily calibrations will be performed according to the manufacturer's specifications and are to include the following:

Battery check: If the equipment fails the battery check, recharge the battery.

- Gas standard: The gauge should display an accurate reading when a standard gas is used.

- Cleaning: If proper calibration cannot be achieved, then the instrument ports must be cleaned.

7.1.2 pH and Specific Conductance

The following steps should be observed by personnel engaged in groundwater sampling for pH and specific conductance:

- The operation of the instrument should be checked, and calibrated if needed, with fresh standard buffer solution (pH 4, pH 7 and pH 10) prior to each day's sampling.
- The specific conductance meter should be calibrated prior to each sampling event using a standard solution of known specific conductance.

More frequent calibrations may be performed as necessary to maintain analytical integrity. Calibration records for each field instrument used on the project should be maintained and a copy kept in the project files.

7.2 Laboratory Instruments

Laboratory calibration procedures are addressed in detail in the laboratory Quality Assurance Manual (QAM), which can be provided upon selection of a laboratory. All calibration procedures will be consistent with the method used for analysis.

8.0 Analytical Procedures

8.1 Laboratory

Specific analytical methods for constituents of interest in air and groundwater are listed in Table 1. The laboratory will maintain and have available for the appropriate operators standard operating procedures relating to sample preparation and analysis according to the methods stipulated in Table 1.

9.0 Data Reduction and Reporting

QA/QC requirements will be strictly adhered to during sampling and analytical work. All data generated will be reviewed by comparing and interpreting results from chromatograms (responses, stability of retention times), accuracy (mean percent recovery of spiked samples), and precision (reproducibility of results). Refer to Section 10 for a discussion of QA/QC protocol.

Data storage and documentation will be maintained using logbooks and data sheets that will be kept on file. Analytical QC will be documented and included in the analytical testing report. A central file will be maintained for the sampling and analytical effort after the final laboratory report is issued.

All calculations and data manipulations are included in the appropriate methodology references. Control charts and calibration curves will be used to review the data and identify outlying results. Prior to the submission of the report to the client, all data will be evaluated for precision, accuracy, and completeness. Sections 4.0, 8.0, and 13.0 of this document include some of the QC criteria to be used in the data evaluation process.

Laboratory reports will be reviewed by the laboratory supervisor, the QA officer, laboratory manager and/or director, and the project manager. Analytical reports will contain a data tabulation including results and supporting QC information will be provided. Raw data will be available for later inspection, if required, and maintained in the control job file. Routine monitoring data will be reported with a NYSDEC ASP Category A deliverable. Data collected from final monitoring events will be reported with a NYSDEC ASP Category B deliverable.

All data will be reported to NYSDEC in electronic format in accordance with DER-10 and the NYSDEC's Environmental Data Submission requirements.

10.0 Internal Quality Control Checks

QC data are necessary to determine precision and accuracy and to demonstrate the absence of interferences and/or contamination of glassware and reagents. The procedures to be followed for internal quality control checks are consistent with NYSDEC ASP protocols.

11.0 Performance and System Audits

11.1 Field Audits

The Project QA Director may conduct episodic audits of the operations at the site to ensure that work is being performed in accordance with the work plan and associated standard operating practice. The audit will cover, but not necessarily be limited to, such areas as:

- Conformance to standard operating procedures
- Completeness and accuracy of documentation
- Chain of custody procedures
- Construction specifications

11.2 Laboratory Audits

In addition to any audits required by the NYSDEC, the Project QA Director may chose to audit the laboratory. These additional audits may take the form of performance evaluation samples or on-site inspections of the laboratory. Performance evaluation samples may be either blind samples or samples of known origin to the laboratory. Reasonable notice will be provided if the audit is to include an on-site inspection of the laboratory.

12.0 Preventive Maintenance

12.1 Field

Field personnel assigned to complete the work will be responsible for preventative maintenance of all field instruments. The field sampling personnel will protect the portable total organic vapor monitors, water quality meter, etc. by placing them in portable boxes and/or protective cases.

All field equipment will be subject to a routine maintenance program, prior to and after each use. The routine maintenance program for each piece of equipment will be in accordance with the manufacturer's operations and maintenance manual. All equipment will be cleaned and checked for integrity after each use. Necessary repairs will be performed immediately after any defects are observed, and before the item of equipment is used again. Equipment parts with a limited life (such as batteries, membranes and

some electronic components) will be periodically checked and replaced or recharged as necessary according to the manufacturer's specifications.

12.2 Laboratory

The laboratory's preventative maintenance procedures can be provided as outlined in their Laboratory Quality Assurance Manual.

13.0 Data Assessment Procedures

Performance of the following calculations will be completed to evaluate the accuracy, precision and completeness of collected measurement data.

13.1 Precision

Precision of a particular analysis is measured by assessing its performance with duplicate or replicate samples. Duplicate samples are pairs of samples taken in the field and transported to the laboratory as distinct samples. Their identity as duplicates is sometimes not known to the laboratory and usually not known to bench analysts, so their usefulness for monitoring analytical precision at bench level is limited. For most purposes, precision is determined by the analysis of replicate pairs (i.e., two samples prepared at the laboratory from one original sample). Often in replicate analysis the sample chosen for replication does not contain target analytes so that quantification of precision is impossible. Replicate pairs of spiked samples, known as matrix spike/matrix spike duplicate samples, are used for precision studies. This has the advantage that two real positive values for a target analyte can be compared.

Precision is calculated in terms of Relative Percent Difference (RPD), which is expressed as follows:

$$RPD = \frac{(X_1 - X_2)}{(X1 + X2)/2} \times 100$$

where X_1 and X_2 represent the individual values found for the target analyte in the two replicate analyses or in the matrix spike/matrix spike duplicate analyses.

RPDs must be compared to the method RPD for the analysis. The analyst or his supervisor must investigate the cause of RPDs outside stated acceptance limits. This may include a visual inspection of the sample for non-homogeneity, analysis of check samples, etc. Follow-up action may include sample re-analysis or flagging of the data as suspect if problems cannot be resolved.

13.2 Accuracy

Accuracy of a particular analysis is measured by assessing its performance with "known" samples. These "knowns" can take the form of EPA or NBS traceable standards (usually spiked into a pure water matrix), or laboratory prepared solutions of target analytes into a

pure water or sample matrix; or (in the case of GC or GC/MS analyses) solutions of surrogate compounds which can be spiked into every sample and are designed to mimic the behavior of target analytes without interfering with their determination. In each case the recovery of the analyte is measured as a percentage, corrected for analytes known to be present in the original sample if necessary, as in the case of a matrix spike analysis. For EPA or NBS supplied known solutions, this recovery is compared to the published data that accompany the solution. For prepared solutions, the recovery is compared to EPA-developed data or historical data as available. For surrogate compounds, recoveries are compared to USEPA CLP acceptable recovery tables. If recoveries do not meet required criteria, then the analytical data for the batch (or, in the case of surrogate compounds, for the individual sample) are considered potentially inaccurate.

For highly contaminated samples, recovery of matrix spike may depend on sample homogeneity. As a rule, analyses are not corrected for recovery of matrix spike or surrogate compounds.

13.3 Completeness

Completeness is a measure of the amount of valid data obtained from a measurement system compared to the total amount expected to be obtained under normal conditions. Completeness for each parameter is calculated as:

$$\text{Completeness} = \frac{\text{Number of successful analyses} \times 100}{\text{Number of requested analyses}}$$

Target value for completeness for all parameters is 100%. A completeness value of 95% will be considered acceptable. Incomplete results will be reported to the client project officer.

13.4 Representativeness

The characteristic of representativeness is not quantifiable. Subjective factors to be taken into account are as follows:

- The degree of homogeneity of a site;
- The degree of homogeneity of a sample taken from one point in a site; and
- The available information on which a sampling plan is based.

To maximize representativeness of results, sampling techniques and sample locations will be carefully chosen so that they provide laboratory samples representative of the site and the specific area.

14.0 Corrective Action

Corrective actions can be initiated as a result of performance and system audits, laboratory and interfield comparison studies, data validation, and/or a QA program audit. They may also be required as a result of a request from project representatives. All corrective action necessary to resolve analytical problems will be taken. Success or failure of corrective actions will be reported with an estimate of effect on data quality, if any.

Corrective actions may include altering procedures in the field, conducting subsequent audits, or modifying project protocol. Time and type of corrective action, if needed, will depend on the severity of the problem and relative overall project importance. The project manager is responsible for initiating corrective action and the team leader is responsible for its implementation in the correction of field non-conformance corrective actions.

15.0 Quality Assurance Reports

Analytical and QC data for final groundwater or indoor air sampling events will be included in a Data Usability Summary Report (DUSR) that summarizes the work and provides a data evaluation. A discussion of the usability of the results in the context of QA/QC procedures will be made, as well as a summation of the QA/QC activity. The DUSR will be performed in accordance with the DEC's "Guidance for the Development of Data Usability Summary Reports," revised 1997 and DER-10.

Serious analytical problems will be reported. Time and type of corrective action, if needed, will depend on the severity of the problem and relative overall project importance. Corrective actions may include altering procedures in the field, conducting an audit, or modifying laboratory protocol. All corrective action will be implemented after notification of the project representatives.

TABLE 1
REQUIRED SAMPLE CONTAINERS, VOLUMES, PRESERVATION, AND HOLDING TIMES
SMP Sampling Activities
Former Alliance Metal Stamping Fabrication Facility
Gates, New York

Media	Type of Analysis	Method	Required Container(s)	Preferred Sample Volume	Preservation	Maximum Holding Time
Water	TCL VOCs	EPA 8260	(2) 40 ml glass vials	80 ml	pH<2, HCl	14 days
Indoor Air	VOCs	EPA TO-15	6-L Summa Cannister	N/A	N/A	30 Days
Outdoor Air	VOCs	EPA TO-15	6-L Summa Cannister	N/A	N/A	30 Days

TABLE 2
SUMMARY OF QUALITY CONTROL CHECKS
SMP Sampling Activities
Former Alliance Metal Stamping Fabrication Facility
Gates, New York

Type of QC Check	Frequency	Min. Number Required	Remarks
Laboratory Quality Control Guidelines			
Method Blank	1 per batch of 20 or fewer samples	1 or 5% of batch size	Batch may include samples from other projects
Reagent/Solvent Blank	1 per lot	1	
Blank Spike (Lab Control Sample)	1 per batch of 20 or fewer samples	1	Batch may include samples from other projects; applicable to air samples
Blank Spike Duplicate (Lab Control Sample Duplicate)	1 per batch of 20 or fewer samples (if batch does not include MS/MSD)	1	Batch may include samples from other projects; applicable to air samples
Calibration Check Standard	At the beginning of each analytical run	1	Batch may include samples from other projects; applicable to air samples
Matrix Spike/Matrix Spike Duplicate	1 set per 20 field samples per media	1	
Laboratory Replicates	1 per batch, if requested	1	None planned but may be required to perform additional analyses on a sample
Field Quality Control Guidelines for Final Monitoring Events			
Field Duplicates	1 per 20 field samples per media	1	Sample to be selected based on field screening
Trip Blanks	1 per shipment for each cooler in which aqueous samples for VOC analysis are shipped	1	
Rinsate Blanks	1 per non-dedicated equipment set	1	

APPENDIX H – SITE MANAGEMENT FORMS

Site Inspection Form
Former AMSF Site
NYSDEC Site # C828101, Gates, Monroe County, NY
Site Management Plan

Date _____
Name _____
Company _____
Position _____

Done?	Task	Notes
Cover System Inspection		
	Visual inspection of the hard surface cover for evidence of deep cracks, potholes, cuts, depressions, and deterioration of joint seals and penetration seals	
	Identification of any areas where there is evidence of excessive settlement relative to the surrounding areas	
Site-wide Inspection		
	Compliance with the ICs, including site usage:	
	Compliance with the Environmental Easement and the SMP by the Grantor and the Grantor's successors and assigns	
	Confirm that all Engineering Controls are operated, maintained, and inspected as specified in the SMP	
	Confirm that SSDS monitoring and groundwater and indoor air monitoring are being performed as defined in the SMP	
	Confirm that reporting of data and information pertinent to site management of the real property to which the Environmental Easement applies (Controlled Property) has been completed at the frequency and in a manner defined in the SMP	
	Evaluation of the condition and continued effectiveness of ECs, including:	
	Cover system	
	SSDS	
	Groundwater monitoring wells	
	Examination of general site conditions at the time of the inspection	
	Confirm compliance with schedules included in the Operation, Maintenance and Monitoring Plan	
	Confirm that site records are up to date	

SSDS Pressure Monitoring Form

Fan	Date	Approximate Time	Differential Pressure (inches of water column)

Weather conditions:
Is an air supply/heating system on:
Name and Position:
Company:

Former AMSF Site (BCP Site #C828101)

SSDS Inspection Form

Date _____
Name _____
Company _____
Position _____

Done?	Task	Notes
SSDS Inspection		
	Visual inspection of the equipment and piping	
	Identification and subsequent repair of any leaks	
	Inspection of exhaust points to verify that no air intakes have been located nearby	
	Audible operational status check of vent fans	
	Documentation of manifold settings and vacuum at each fan and extraction point	
	Documentation of sub-slab pressure at each permanent sub-slab pressure monitoring point	
	Damper adjustments as required to balance parallel branches of system	
	Maintenance activities conducted	
	Any modifications to the system	
Cover System (Concrete Floor Slab) Inspection		
	Visual inspection of the hard surface cover for evidence of deep cracks, potholes, cuts, depressions, and deterioration of joint seals and penetration seals	
	Identification of any areas where there is evidence of excessive settlement relative to the surrounding areas	
	Note any audible indications of leaks in the cover system, and/or note results of any smoke tests performed to check for leaks	

SSDS Pressure Monitoring Form

PMP	Date	Approximate Time	Differential Pressure (inches of water column)	Manometer Zeroed?
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				
11				
12				
13				
14				

Fan	SSDS Zone	Date	Approximate Time	Differential Pressure (inches of water column)	Manometer Zeroed?

Suction Point (Riser)	SSDS Zone	Date	Approximate Time	Differential Pressure (inches of water column)	Manometer Zeroed?

Weather conditions: _____

Is an air supply/heating system on: _____

Name and Position: _____

Company: _____

Notes:

1) All sub-slab pressure readings are shown as differential pressure readings between the indoor air and the sub-slab void space. Values shown as negative values indicate that sub-slab pressure is lower than indoor air pressure.

Former AMSF Site - SVI Assessment Sampling Field Record Date: _____ Field Personnel:_____

Sample ID	Sample Type	Building Area (tenant and use)	Nearest column	Ambient PID (ppm)	Can ID	Flow Regulator ID	Start Time	Start Pressure (in Hg)	Check #1 Time	Check #1 Pressure	Check #2 Time	Check #2 Pressure	Check #3 Time	Check #3 Pressure	Stop Time	Stop Pressure (in Hg)	Box #	Comments
AM-OA-1-_____(date)	IA	Outdoors																
AM-IA-12-_____(date)	IA	Universal	F5															
AM-IA-13-_____(date)	IA	Excelsus	F/G7															
AM-IA-14-_____(date)	IA	Excelsus	G6															
AM-IA-15-_____(date)	IA	Excelsus	G8															
AM-IA-18-_____(date)	IA	Complete Auto	H7															
AM-IA-22-_____(date)	IA	Bright Raven	E7															

Sample Type Codes: IA= Indoor Air AMB=Ambient Upwind Outdoor Air D=Duplicate

Soil Vapor Intrusion - Structure Sampling Building Questionnaire

Tenant:
~~**Structure ID**~~ **:** _____

Site No. : BCP site C828101 **Site Name** : Former Alliance Metal Stamping & Fabrication Facility

Date: _____ **Time:** _____

Structure Address : 12 Pixley Industrial Parkway, Gates, Monroe Co., New York

Preparer's Name & Affiliation : _____

Residential ? ☐ **Yes** ☐ **No** **Owner Occupied ?** ☐ **Yes** ☐ **No** **Owner Interviewed ?** ☐ **Yes** ☐ **No**

Commercial ? ☐ **Yes** ☐ **No** **Industrial ?** ☐ **Yes** ☐ **No** **Mixed Uses ?** ☐ **Yes** ☐ **No**

Identify all non-residential use(s) : _____

Owner Name : _____ **Owner Phone** : ( ) _____ - _____

Secondary Owner Phone : ( ) _____ - _____

Owner Address (if different) : _____

Occupant Name : _____ **Occupant Phone** : ( ) _____ - _____

Secondary Occupant Phone : ( ) _____ - _____

Number & Age of All Persons Residing at this Location : _____

Additional Owner/Occupant Information : _____

Describe Structure (style, number floors, size) : _____

_____

Approximate **Year Built** : _____ Is the building **Insulated**? ☐ Yes ☐ No

Lowest level : ☐ Slab-on-grade ☐ Basement ☐ Crawlspace

Describe Lowest Level (finishing, use, time spent in space) : _____

_____

Floor Type: ☐ Concrete Slab ☐ Dirt ☐ Mixed : _____

Floor Condition : ☐ Good (few or no cracks) ☐ Average (some cracks) ☐ Poor (broken concrete or dirt)

Sumps/Drains? ☐ Yes ☐ No Describe : _____

Identify other floor penetrations & details : _____

_____

Wall Construction : ☐ Concrete Block ☐ Poured Concrete ☐ Laid-Up Stone

Identify any wall penetrations : _____

_____

Identify water, moisture, or seepage: location & severity (sump, cracks, stains, etc) : _____

_____

Heating Fuel : ☐ Oil ☐ Gas ☐ Wood ☐ Electric ☐ Other : _____

Heating System : ☐ Forced Air ☐ Hot Water ☐ Other : _____

Hot Water System : ☐ Combustion ☐ Electric ☐ Boilermate ☐ Other: _____

Clothes Dryer : ☐ Electric ☐ Gas Where is dryer **vented** to? _____

If combustion occurs, describe where air is drawn from (cold air return, basement, external air, etc.) : _____

_____

Fans & Vents (identify where fans/vents pull air from and where they vent/exhaust to) : _____

_____

Describe factors that may affect indoor air quality (chemical use/storage, unvented heaters, smoking, workshop):

Attached garage ? ☐ Yes ☐ No Air fresheners ? ☐ Yes ☐ No

New carpet or furniture ? ☐ Yes ☐ No What/Where ? _____

Recent **painting** or **staining** ? ☐ Yes ☐ No Where ? : _____

Any **solvent** or **chemical-like** odors ? ☐ Yes ☐ No Describe : _____

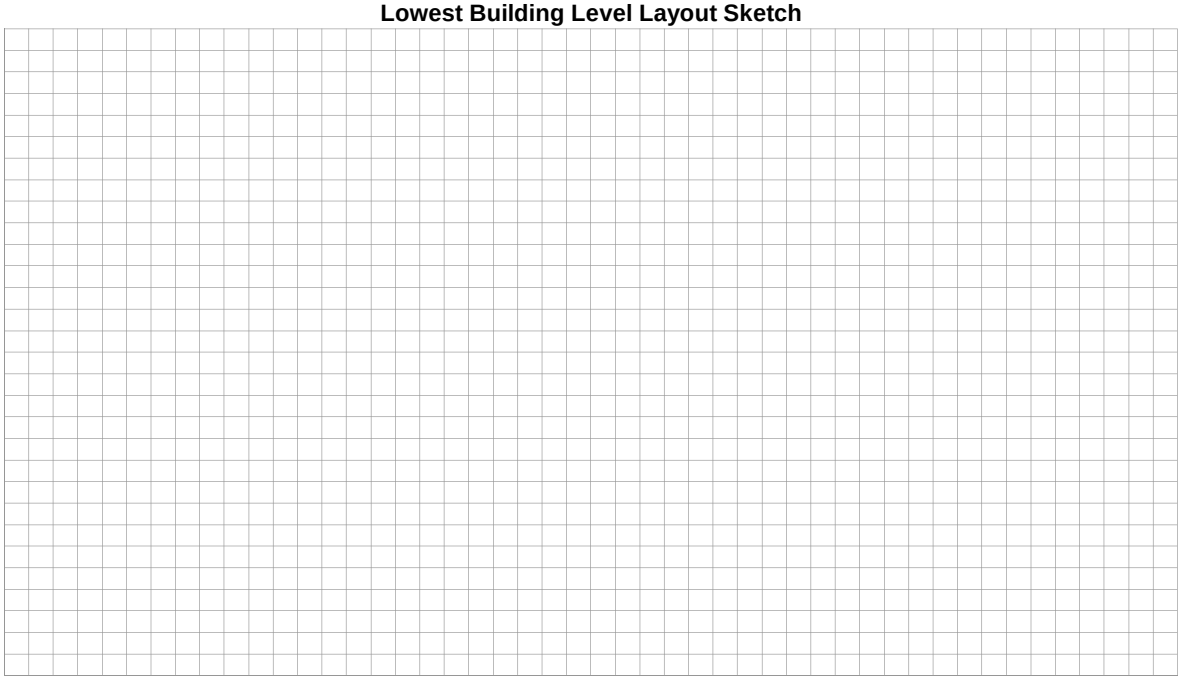
Last time **Dry Cleaned** fabrics brought in ? _____ What / Where ? _____

Do any building occupants use solvents at work ? ☐ Yes ☐ No Describe : _____

Any testing for Radon ? ☐ Yes ☐ No Results : _____

Radon System/Soil Vapor Intrusion Mitigation System present ? ☐ Yes ☐ No If yes, describe below

Lowest Building Level Layout Sketch



- Identify and label the locations of all sub-slab, indoor air, and outdoor air samples on the layout sketch.
- Measure the distance of all sample locations from identifiable features, and include on the layout sketch.
- Identify room use (bedroom, living room, den, kitchen, etc.) on the layout sketch.
- Identify the locations of the following features on the layout sketch, using the appropriate symbols:

B or **F**	Boiler or Furnace	o	Other floor or wall penetrations (label appropriately)
HW	Hot Water Heater	**xxxxxxx**	Perimeter Drains (draw inside or outside outer walls as appropriate)
FP	Fireplaces	######	Areas of broken-up concrete
WS	Wood Stoves	● SS-1	Location & label of sub-slab vapor samples
W/D	Washer / Dryer	● IA-1	Location & label of indoor air samples
S	Sumps	● OA-1	Location & label of outdoor air samples
@	Floor Drains	● PFET-1	Location and label of any pressure field test holes.

Structure Sampling - Product Inventory

Homeowner Name & Address: 12 Pixley Industrial Parkway, Gates, Monroe Co., New York

Date: __________

Tenant: ~~Structure ID:~~ __________

Samplers & Company: __________

Site Number & Name: C828101, Former Alliance BCP Site,

Phone Number: __________

Make & Model of PID: __________

Date of PID Calibration: __________

Identify any Changes from Original Building Questionnaire : __________

Product Name/Description	Quantity	Chemical Ingredients	PID Reading	Location

Structure Sampling - Product Inventory

Homeowner Name & Address: 12 Pixley Industrial Parkway, Gates, Monroe Co., New York

Date: ____________

Samplers & Company: ____________

Tenant: ~~Structure ID:~~ ____________

Site Number & Name: C828101, Former Alliance BCP Site,

Phone Number: ____________

Make & Model of PID: ____________

Date of PID Calibration: ____________

Identify any Changes from Original Building Questionnaire : ____________

Product Name/Description	Quantity	Chemical Ingredients	PID Reading	Location

Site Name: Former AMSF

Project Number: 190500647

Date:

Names:

Equipmment:

Well ID	Water Level (TOIC ft)	Total Depth (TOIC ft)	Well Diameter (in)	Notes

Well Volume Calculation
1 inch = 0.041
2 inch = 0.163
4 inch = 0.653

Stantec

61 Commercial Street
Rochester, NY 14614
(585) 475-1440

Monitoring Well Purging and Sampling Record

Site Name: Former AMSF _____ Well ID: _____

Depth to Water: _____ ft TOIC Date: _____

Total Well Depth: _____ ft TOIC Purge Start Time: _____

Depth to Pump: _____ ft TOIC Purge End Time: _____

Initial Pump Rate: _____ mL/min Pump Type: _____

adjusted to: _____ mL/min at _____ Well Diameter: _____ inches

adjusted to: _____ mL/min at _____ Well Volume: _____ gallons

Time	Purge Volume (gallons)	pH (s.u.)	ORP (mV)	Conductivity (mS/cm)	Temp. (°C)	DO (mg/L)	Turbidity (NTU)	Water Level (ft)
Final Sample Data:								

Sample ID(s): _____

Sample Time: _____ Sampler(s): _____

Analyses:	Dup?	MS/MSD?
☐ VOCs	☐	☐
☐ 1,4-Dioxane	☐	☐
☐ SVOCs	☐	☐
☐ PCBs	☐	☐
☐ Pesticides	☐	☐
☐ TAL Metals		

Equipment: _____

Comments: _____

Monitoring Well Inspection Form
Former AMSF Site
NYSDEC Site # C828101, Gates, Monroe County, NY
Site Management Plan

Well ID	Inspection Date	Water Level (ft btoic)	Well Depth (ft btoic)	Well Label (G/F/P)	Condition of Outer Casing (G/F/P)	Condition of J-Plug (G/F/P)	Condition of Inner Casing (G/F/P)	Comments/Repair Actions Required

Key: F=Fair G=Good ft btoic=Feet below top of inner casing P=Poor

Stantec

COMMUNITY AIR MONITORING FORM

Name(s): ____

Date: ________________________________

Site: Former AMSF Site

Weather Conditions: ____

Estimated Wind Speed (calm, moderate, strong): ____

Work Location	**Wind Direction***	**TIME**	**UPGRADIENT**			**DOWNGRADIENT**			**WORK AREA**		
			DUST (mg/m^3)	*VOC 10.6 eV (ppm)*	*VOC 11.7 eV (ppm)*	*DUST (mg/m^3)*	*VOC 10.6 eV (ppm)*	*VOC 11.7 eV (ppm)*	*VOC (ppm)*	*LEL (%)*	*O_2 (%)*

*Wind direction is reported by the direction from which it originates

APPENDIX I

REMEDIAL SYSTEM OPTIMIZATION

GENERAL OUTLINE FOR AN RSO REPORT

REMEDIAL SYSTEM OPTIMIZATION FOR FORMER AMSF SITE

General Outline for an RSO Report