



West Virginia Purchasing Division

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Charleston, WV 25305
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The following documentation is an electronically-submitted vendor response to an advertised solicitation from the *West Virginia Purchasing Bulletin* within the Vendor Self-Service portal at wvOASIS.gov. As part of the State of West Virginia's procurement process, and to maintain the transparency of the bid-opening process, this documentation submitted online is publicly posted by the West Virginia Purchasing Division at WVPurchasing.gov with any other vendor responses to this solicitation submitted to the Purchasing Division in hard copy format.

Header 2

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Procurement Folder: 1828803

SO Doc Code: CEOI

Procurement Type: Central Purchase Order

SO Dept: 0313

Vendor ID: 000000189555



Legal Name: ATC GROUP SERVICES LLC

SO Doc ID: DEP2600000003

Alias/DBA:

Published Date: 12/16/25

Total Bid: \$0.00

Close Date: 1/13/26

Response Date: 01/13/2026



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Responded By User ID: ATCGroupservices



Total of Header Attachments: 2

First Name: Jeff

Total of All Attachments: 2

Last Name: Rossi

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Phone: 4122971794



Department of Administration
Purchasing Division
2019 Washington Street East
Post Office Box 50130
Charleston, WV 25305-0130

**State of West Virginia
Solicitation Response**

Proc Folder: 1828803

Solicitation Description: EOI: OER- Ravenswood PCE and Vienna Tetrachloroethene

Proc Type: Central Purchase Order

Solicitation Closes	Solicitation Response	Version
2026-01-13 13:30	SR 0313 ESR01132600000003908	1

VENDOR

000000189555
ATC GROUP SERVICES LLC

Solicitation Number: CEOI 0313 DEP2600000003

Total Bid: 0

Response Date: 2026-01-13

Response Time: 11:23:32

Comments:

FOR INFORMATION CONTACT THE BUYER

Joseph (Josh) E Hager III
(304) 558-2306
joseph.e.hageriii@wv.gov

Vendor
Signature X

FEIN#

DATE

All offers subject to all terms and conditions contained in this solicitation

Line	Comm Ln Desc	Qty	Unit Issue	Unit Price	Ln Total Or Contract Amount
1	EOI Ravenswood PCE (OER)				0.00

Comm Code	Manufacturer	Specification	Model #
81100000			

Commodity Line Comments:

Extended Description:

EOI Ravenswood PCE (OER)

Line	Comm Ln Desc	Qty	Unit Issue	Unit Price	Ln Total Or Contract Amount
2	EOI Vienna Tetrachloroethene (OER)				0.00

Comm Code	Manufacturer	Specification	Model #
81100000			

Commodity Line Comments:

Extended Description:

EOI Vienna Tetrachloroethene (OER)



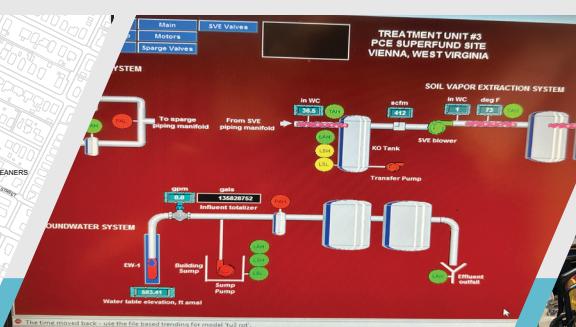
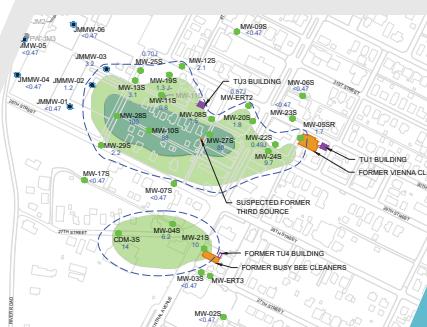
EXPRESSION OF INTEREST NO. 0313 DEP2600000003



West Virginia Department of Environmental Protection
Office of Environmental Remediation

RAVENSWOOD PCE AND VIENNA TETRACHLOROETHENE

01.13.2026 / Submitted by ATC Group Services, LLC
dba Atlas Technical Consultants, LLC





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January 13, 2026



West Virginia Department of Environmental Protection
 Department of Administration
 Purchasing Division
 2019 Washington Street East
 Post Office Box 50130
 Charleston, WV 25305-0130

ATLAS
 125 Granville Square, Suite 115
 Morgantown, WV 26501
 www.oneatlas.com

RE: EOI: OER- Ravenswood PCE and Vienna Tetrachloroethene, Solicitation No CEOI 0313 DEP2600000003

Dear Selection Committee Members,

The West Virginia Department of Environmental Protection (WVDEP), Office of Environmental Remediation, is seeking qualified firms to provide engineering services for the operation and technical evaluation of two CERCLA project sites with air sparge and soil vapor extraction systems located in the cities of Vienna and Ravenswood. **As a former contract holder of nearly four years at the Vienna Tetrachloroethene site, ATC Group Services, LLC dba Atlas Technical Consultants, LLC (Atlas), is especially qualified to provide these services.** From comprehensive deliverables to detailed diagnostic work performed for the Vienna Site, Atlas has demonstrated that we understand the technical aspects and challenges presented by these project sites and we are committed to delivering all requested services with a high-level of technical competency, remedial strategy comprehension, and a dedication to cost efficiency.

Atlas is a full-service consulting firm with the expertise and capacity to support WVDEP in all aspects of CERCLA remediation projects. Our Environmental Engineering Division offers a broad array of services, the following of which are directly applicable to the subject sites:

- Environmental Remediation System Engineering
- Remediation System O&M and Optimization
- Environmental Sampling (groundwater, soil vapor)
- Remediation System Sampling (process water and vapor)

With decades of experience and a proven track record, Atlas helps clients **minimize risk, control costs, and ensure timely, successful outcomes.**

As a nationwide firm with over **3,300 employees and 130 offices across 40 states**, Atlas combines national resources with local responsiveness. This extensive reach allows us to deliver tailored solutions with the agility of a local partner, ensuring each project benefits from both broad expertise and community alignment.

Atlas offers more than technical services—we provide **strategic partnerships**. The guiding principles of our Environmental division aligns with the WVDEP mission to promote a healthy environment. At Atlas, **quality is foundational**. Our reputation is built on technical excellence, responsiveness, and client-focused service. WVDEP can rely on Atlas to provide the leadership, oversight, and precision required for successful contract performance—project after project.

We welcome the opportunity to demonstrate again how Atlas can support WVDEP's remedial objectives and exceed expectations.

Sincerely,
ATC Group Services, LLC dba Atlas Technical Consultants, LLC

Benjamin Staud, PE
Senior Project Manager
 412.335.4256
 ben.staud@oneatlas.com

Mait Walker, PE
Project Manager
 440.262.2383
 mait.walker@oneatlas.com

Jeff Rossi
Operations Manager - WV and PA
 304.533.0367
 jeff.rossi@oneatlas.com



WEST VIRGINIA DEPARTMENT OF ENVIRONMENTAL PROTECTION
CONSULTANT QUALIFICATION QUESTIONNAIRE

PROJECT NAME		DATE (DAY, MONTH, YEAR)	FEIN
EOI: OER - Ravenswood PCE and Vienna Tetrachloroethene		01/13/2026	460399408
1. FIRM NAME		2. HOME OFFICE BUSINESS ADDRESS	
ATC Group Services, LLC dba Atlas Technical Consultants, LLC		125 Granville Square Morgantown, WV 26501	
4. HOME OFFICE TELEPHONE		5. ESTABLISHED (YEAR)	
304-533-0367		DE 12-14-87; converted to LLC 11-2015. Merged with Atlas 2017	
6. TYPE OF OWNERSHIP		6a. WV REGISTERED DBE (DISADVANTAGED BUSINESS ENTERPRISE)	
<input type="checkbox"/> INDIVIDUAL		<input type="checkbox"/> CORPORATION	
<input checked="" type="checkbox"/> PARTNERSHIP		<input type="checkbox"/> JOINT-VENTURE	
7. PRIMARY OFFICE: ADDRESS/ TELEPHONE/ PERSON IN CHARGE/ NO. (name particular type) PERSONNEL IN EACH OFFICE			
125 Granville Square, Morgantown, WV 26501 / 304-533-0367 / Benjamin Staud, PE / 5 270 William Pitt Way, Pittsburgh, PA 15238 / 412-826-3120 / Jeff Rossi / 24 8100 Snowville Road, Brecksville, OH 44141 / 440-438-7177 / Jim Detgen / 29 685 Grandview Avenue, Columbus, OH 43215 / 614-367-7840 / David Sedlick / 20			
8. NAMES OF PRINCIPAL OFFICERS OR MEMBERS OF FIRM		8a. NAME, TITLE, & TELEPHONE NUMBER – OTHER PRINCIPALS	
Jacqueline Hinman - Chief Executive Officer Harshal Desai - Chief Growth Officer Jeanne DiBella - Chief Financial Officer Sarah Hilty - Chief Legal Officer Mark Micikas - Chief Performance Officer Tom Price - Infrastructure Business President Lyle Trout - Environmental Business President		Kelly Hurstak - Environmental Solutions (East) Initiatives Director 781-428-0363	
9. KEY PERSONNEL (Check mark key personnel below that you have on staff and will work on project)			
<input checked="" type="checkbox"/> ADMINISTRATION		<input checked="" type="checkbox"/> GEOLOGIST	
<input type="checkbox"/> CHEMIST		<input checked="" type="checkbox"/> HYDRO-GEOLOGIST	
<input checked="" type="checkbox"/> ENVIRONMENTALIST		<input checked="" type="checkbox"/> LABORER	
<input checked="" type="checkbox"/> FIELD OPERATIONS MANAGER		<input checked="" type="checkbox"/> PROJECT MANAGER	
		<input checked="" type="checkbox"/> OTHER: Tech. Exp. & Risk Asses.	
10. If submittal is by joint-venture, list participating firms & outline specific areas of responsibility (including administrative, technical & financial) for each firm. Each participating firm must complete a "Consultant Qualification Questionnaire".			
Not applicable.			
10a. HAS THIS JOINT-VENTURE WORKED TOGETHER BEFORE? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO			

11. OUTSIDE KEY CONSULTANTS/ SUB-CONSULTANTS ANTICIPATED TO BE USED. Attach "Consultant Qualification Questionnaire" for each.

12a. Identify each individual supporting this project and their assigned tasks.

Ben Staud, PE - Senior Project Manager - Primary Point of Contact. Coordination and oversight of project team.

Mait Walker, PE - Project Manager - Day to day project and site operations. Project support to Sr. Project Manager.

Robert Campana, PE - QA/QC and O&M and Reporting - Oversee quality assurance review of plans, data, and reports. Provides engineering technical support to O&M team and contributes to reporting.

Andrew Frost - O&M and Reporting - Manages sampling program and contributes to reporting.

Dennie Sutton - Field O&M Services - Experienced field technician with prior experience operating Vienna remediation systems conducting routine O&M visits.

Matt Hummel - Field O&M Services - Provides high level field technical work with electrical and mechanical troubleshooting

Steven Homolak - O&M and Reporting - Provides technical support to O&M team and contributes to reporting.

Chris Bale - Technical Advisor - High level review of O&M data and reports that pertain to AS/SVE system functionality

Chris Barrett, PE - Technical Advisor - High level review of O&M data and reports that pertain to AS/SVE system functionality

Ken Pasterak, LRS, PG - Technical Advisor - Provides technical consultation related to PCE remediation aspects of O&M

Ashley Offer, PG - Technical Advisor - Provides technical consultation related to PCE remediation aspects of O&M

12b. Are the individuals supporting this project experienced in performing environmental site assessments according to USEPA Guidance for Performing Preliminary Assessments under CERCLA, Site Inspection (SI) Guidance Manual, Risk Assessment Guidelines for Superfund (RAGS), Hazard Ranking System (HRS) Guidance Manual, and using Dynamic Field Activities for On-Site Decision Making?

YES Identify the project(s) and describe work performed that relates directly to the question:

Additional space was required. See full response in Attachment 1 - Consultant Questionnaire Supplemental Answers.

NO

12c. Are the individuals supporting this project experienced in USEPA *Guidance for Quality Assurance Project Plans* (EPA QA/G-5) and the WVDEP *Quality Assurance Program Plan for the WVDEP OER CERCLA (Superfund) Program*?

YES Identify the project(s) and describe the work performed that relates directly to the question:

Individuals supporting this project have extensive experience with WVDEP Quality Assurance Program Plan for the WVDEP OER CERCLA (Superfund) Program. These individuals have prepared Sampling and Analysis Plans (SAPs) and completed sampling efforts under the WVDEP QAPP at the following sites:

Vienna PCE Superfund Site, Vienna, West Virginia (Vienna Tetrachloroethene). Atlas staff have prepared the SAP as well as updated the SAP to the newest CERCLA requirements under the WVDEP QAPP. Operating under the SAP, Atlas performed routine groundwater sampling at the Vienna PCE Superfund Site to monitor plume status and potential migration. Additionally, under the SAP, Atlas also performs process water and vapor sampling, and performance vapor sampling on existing the AS/SVE remediation system. Analytes include: tetrachloroethene (PCE), 1,2-DCA, trichloroethene, methylene chloride and vinyl chloride.

Rose Bud Plaza, Clarksburg, West Virginia. Atlas staff has performed soil and groundwater sampling as part of Remedial Design Characterization under the WVDEP QAPP for PCE and PFAS/PFOA compounds at this site as part of the WV Voluntary Remediation Program (VRP).

Former Petroleum Retail, Glasgow, WV. Atlas staff have performed tasks associated with Site Characterization, Risk Assessment, and remediation under WVDEP QAPP.

NO

12d. Are the individuals supporting this project experienced with the West Virginia contract laboratories?

YES Identify the project(s) and describe work performed that relates directly to the question:

Vienna PCE Superfund Site, West Virginia (Vienna Tetrachloroethene). Semi-annual groundwater sampling for PCE plume monitoring. Atlas staff have nearly four years of experience working with contract laboratories for the analysis of groundwater samples under the Nonpotable Water Volatile Organic Chemicals category.

Rosebud Plaza, Clarksburg, West Virginia. Voluntary Remediation Program #25002. Site assessment and monitoring. Atlas staff have five years of experience working with contract laboratories for the analysis of soil and groundwater samples under the Solid and Chemical Volatile Organic Chemicals and Nonpotable Water Volatile Organic Chemicals category.

Bandys, Inc., Lookout, West Virginia. Atlas staff has two years of experience working with contract laboratories for the analysis of soil and groundwater samples under the Solid and Chemical Volatile Organic Chemicals and Nonpotable Water Volatile Organic Chemicals category.

Frontier Communications, Bluefield, WV. Atlas staff have one year of experience working with contract laboratories for the analysis of soil and groundwater samples under the Solid and Chemical Volatile Organic Chemicals and Nonpotable Water Volatile Organic Chemicals category.

Parkways Authority, Charleston, WV. Atlas staff have one year of experience working with contract laboratories for the analysis of soil and groundwater samples under the Solid and Chemical Volatile Organic Chemicals and Nonpotable Water Volatile Organic Chemicals category.

NO

12e. Are the individuals supporting this project experienced with the WVDEP OER SOPs?

YES Identify the project(s) and describe work performed that relates directly to the question:

Additional space was required. See Attachment 1 - Consultant Questionnaire Supplemental Answers.

NO

12f. Are the individuals supporting this project experienced with the Scribe software?

YES Identify the project(s) and describe work performed that relates directly to the question:

Atlas has ample experience with adaptation of analytical results and other data to comply with various database structures, including Scribe. The most applicable example for this EOI is the work performed as part of the previous O&M and Monitoring contract for the Vienna Tetrachloroethene site, the Atlas project team provided analytical data as electronic data deliverables (EDDs) for direct import to the WVDEP Scribe software database. Our team has additional experience working with Scribe on other project sites typically utilizing it for the advance creation of sampling Chain of Custodies and sample bottle labels. However, with recent technology updates, this function is now frequently performed in coordination with the contract laboratory.

NO

12g. Have field personnel completed an OSHA 40-hour HAZWOPER course and mandatory 8-hour refresher training (as applicable)? The training must cover the requirements in 29 CFR 1910.120 including, but not limited to: personal protective equipment (PPE), toxicological effects of various chemicals, hazard communication, handling of unknown tanks and drums, confined-space entry procedures, etc.?

YES Describe the training and list the name of the individual(s) certified who will be supporting this project:

All Atlas staff identified for support of this project have received, at a minimum, the OSHA 40-hour training that meets the requirements of 29 CFR 1910.120 with coverage of the identified topics. Many of the field and technical individuals receive additional safety training commensurate with their responsibilities. Each year, all staff receive the mandatory 8-hour refresher training compliant with 29 CFR 1910.120 as well as refreshers on other training topics. Training for key staff is indicated on their resumes. Certificates of training are retained on file and are available upon request.

The following is the list of Atlas staff who may contribute to the project by visiting either of the two project sites. Each staff member has received the above described training.

Benjamin Staud, PE
Mait Walker, PE
Robert Campana, PE
Andrew Frost
Steven Homolak
Dennie Sutton
Matt Hummel
Justin Petricko
River Howard
Taylor Maxwell
Caroline Gress

NO

12h. Are the individuals supporting this project experienced with the technical writing skills needed to meet the requirements of this project?

YES Attach an example of the writing (preferably a Sampling and Analysis Plan or equivalent; all reports will be kept confidential):

Atlas prepares technical reports as regular deliverables for a wide variety of projects. Key individuals from the prior contract at the Vienna site represent a significant portion of the proposed project team. Here are samples of reports developed by these individuals while performing work on the prior contract at the Vienna site:

Attachment 2: Sampling and Analysis Plan Operations and Maintenance Long Term Remedial Action Monitoring for Vienna PCE Superfund Site updated August 6, 2024

This document is submitted to comply with this questionnaire request, which indicates a preference for a Sampling and Analysis Plan

Attachment 3: The Semi-annual O&M Report (January - June 2024) for Vienna PCE Superfund Site dated August 27, 2024

This report is submitted to comply with Solicitation Section 2 number 3 request for a writing sample with figures and tables.

NO

13a. PERSONAL HISTORY STATEMENT OF KEY PERSONNEL (Furnish complete data but keep to essentials)

NAME & TITLE (Last, First, MI): **Staud, Benjamin T - PE; Senior Project Manager**

Years & Type of Experience: **24 years total; 15 years as Division Head and Program Manager for large scale investigation, design, permitting and civil projects in West Virginia and Pennsylvania**

Brief Explanation of Responsibilities

Ben has 24 years of experience with 2.5 years of experience with project management of the Vienna Tetrachloroethene site. He will serve as the engineer of record for the project, liaison with the WVDEP, provide overall team guidance, and ensure all timelines and milestones are met throughout the life of the contract.

EDUCATION (Degree, Year, Specialization)

M.S. Engineering, 2000
B.S. Engineering, 1997

MEMBERSHIP IN PROFESSIONAL ORGANIZATION(S) & REGISTRATION STATUS (Type, Year, State)

PROFESSIONAL LICENSE(S) (Type, State, Expiration Date)

Professional Engineer, WV #020372 Expires: 12/31/2026
Professional Engineer, PA #PE071430 Expires: 09/30/2027

13b. PERSONAL HISTORY STATEMENT OF KEY PERSONNEL (Furnish complete data but keep to essentials)

NAME & TITLE (Last, First, MI): **Walker, Mait - PE; Project Manager**

Years & Type of Experience: **20 years of experience on a variety of remediation projects, including environmental site assessment and sampling, and O&M**

Brief Explanation of Responsibilities

Mait has 20 years of experience with 2 years of experience with O&M and Monitoring of the Vienna Tetrachloroethene site and has also provided design review for the Ravenswood Site. He will manage day-to-day operations, coordinate project activities with the Senior Project Manager, coordinate troubleshooting efforts, and oversee reporting efforts.

EDUCATION (Degree, Year, Specialization)

B.A. Environmental Science, 1999

MEMBERSHIP IN PROFESSIONAL ORGANIZATION(S) & REGISTRATION STATUS (Type, Year, State)

PROFESSIONAL LICENSE(S) (Type, State, Expiration Date)

Professional Engineer, PA #PE096264 Expires: 09/30/2027
Professional Engineer, CO #PE0049954 Expires 10/31/2027

13c. PERSONAL HISTORY STATEMENT OF KEY PERSONNEL (Furnish complete data but keep to essentials)

NAME & TITLE (Last, First, MI): Campana, Robert - PE; QA/QC Officer, O&M Engineer

Years & Type of Experience: 7 years of experience with remediation system operations and permitting

Brief Explanation of Responsibilities

Robert has 7 years of experience and provided design review of the proposed Ravenswood Site system upgrades. He will oversee quality assurance reviews of plans, data, and reports and contribute to technical portions of remediation tasks as well as reporting

EDUCATION (Degree, Year, Specialization)

M.S. Chemical Engineering, 2014

B.S. Chemical Engineering, 2012

MEMBERSHIP IN PROFESSIONAL ORGANIZATION(S) & REGISTRATION STATUS (Type, Year, State)

PROFESSIONAL LICENSE(S) (Type, State, Expiration Date)

Professional Engineer, WV #26902 Expires: 12/31/2026

Professional Engineer, PA #PA095853 Expires: 9/30/2027

13d. PERSONAL HISTORY STATEMENT OF KEY PERSONNEL (Furnish complete data but keep to essentials)

NAME & TITLE (Last, First, MI): Hummel, Matt - Field O&M Senior Technician

Years & Type of Experience: 17 years of experience in geology and environmental consulting

Brief Explanation of Responsibilities

Matt has 17 years of experience with 3 years of experience performing troubleshooting for equipment repairs at the Vienna Tetrachloroethene site including the recent successful diagnostic efforts at TU1 in the fall of 2025. He will be returning to this role in which he will be available for specific tasks.

EDUCATION (Degree, Year, Specialization)

B.S. Environmental Science/Geology, 2009

MEMBERSHIP IN PROFESSIONAL ORGANIZATION(S) & REGISTRATION STATUS (Type, Year, State)

PROFESSIONAL LICENSE(S) (Type, State, Expiration Date)

13e. PERSONAL HISTORY STATEMENT OF KEY PERSONNEL (Furnish complete data but keep to essentials)

NAME & TITLE (Last, First, MI): Frost, Andrew - O&M and Reporting/ Senior Scientist

Years & Type of Experience: 12 years of experience in the environmental industry focusing on remediation, regulatory compliance and due diligence

Brief Explanation of Responsibilities

Andrew has 12 years of experience with 3.5 years of experience with the sampling and reporting of the Vienna Tetrachloroethene site. He will resume this role, managing the field work required for the site-specific sampling plans and will contribute to reporting.

EDUCATION (Degree, Year, Specialization)

M.S. Environmental Science 2015

B.S. Biology, 2011

MEMBERSHIP IN PROFESSIONAL ORGANIZATION(S) & REGISTRATION STATUS (Type, Year, State)

PROFESSIONAL LICENSE(S) (Type, State, Expiration Date)

13f. PERSONAL HISTORY STATEMENT OF KEY PERSONNEL (Furnish complete data but keep to essentials)

NAME & TITLE (Last, First, MI): Sutton, Dennie - Field O&M Service Technician

Years & Type of Experience: nearly 50 years of experience performing mechanical repairs beginning with automobiles and within the last 5-6 years O&M of complex environmental remediation equipment

Brief Explanation of Responsibilities

Dennie has 48 years of experience with 5 years of experience as an on-site operator performing technical O&M of the Vienna Tetrachloroethene site. He will return to this role bringing his expansive skill and understanding of the mechanical components of the remediation system and conduct the regular O&M tasks and oversee equipment repairs.

EDUCATION (Degree, Year, Specialization)

MEMBERSHIP IN PROFESSIONAL ORGANIZATION(S) & REGISTRATION STATUS (Type, Year, State)

PROFESSIONAL LICENSE(S) (Type, State, Expiration Date)

14. CURRENT ACTIVITIES ON WHICH YOUR FIRM IS THE DESIGNATED CONSULTANT ON:			
PROJECT NAME, TYPE AND LOCATION	NAME/TELEPHONE COMPANY CONTACT	NATURE OF YOUR FIRM'S RESPONSIBILITY	PERCENT COMPLETE
Former Chemical Manufacturing Facility, Groundwater Monitoring and O&M of two Groundwater Extraction/Hydraulic Control Systems - Painesville, OH	Teresa Jordan 972-687-7540	Site Assessment services including routine groundwater sampling, operations of groundwater extraction system for hydraulic control of water impacted by high concentrations of industrial waste compounds	Contract began 2018. Work is ongoing.
Former Petroleum Retail, WVDEP UECA-LUST Program - Glasgow, WV	West Virginia Department of Environmental Protection Dave Long Senior Brownfields Project Manager 412-926-0499 x41217	Site characterization, risk assessment, remediation, land use covenant preparation.	98%
Rose Bud Plaza, PCE Remediation under VRP - Clarksburg, WV	West Virginia Department of Environmental Protection Curtis Phillips Brownfields Project Manager 304-926-0499 x30237	Site Assessment including soil and groundwater sampling, vapor intrusion evaluation, Risk Assessment, and Remedial Design Characterization sampling and analysis	30%
Garvey Grain Elevator, Superfund Operations and Maintenance - Lead, Carbon Tetrachloride, PCE, TCE, 1,2-DCE, chloroform, and vinyl chloride Remediation System - Hastings, NE	US EPA Region 7; Clint Sperry Remedial Project Manager 918-551-7157	Atlas, through its ClearPath Consultants JV, is the prime contractor for the Garvey Elevator Site. Project responsibilities include: O&M of Groundwater Treatment System and SVE System pursuant to the ROD of groundwater impacted by multiple compounds including PCE	Incrementally funded; Started 8/14/2020, currently funded through Sept 30, 2025. Additional increments ongoing pending funding.
2023 AML Contract S3, Abandoned Mine Land Reclamation - Fayette County, WV	WV Department of Environmental Protection Division of Land Restoration Office of Abandoned Mine Lands and Reclamation Mark Proctor 304-574-4465, ext. 00263	Engineering design and construction oversight for 14 AML project sites	40%

15. CURRENT ACTIVITIES ON WHICH YOUR FIRM IS THE DESIGNATED SUB-CONSULTANT ON:

PROJECT NAME, TYPE AND LOCATION	NAME/TELEPHONE COMPANY CONTACT	NATURE OF YOUR FIRM'S RESPONSIBILITY	PERCENT COMPLETE
Emergency Spill Response Services, Lookout, West Virginia	Herrygers Environmental Services LLC 602 Northwood Road Lexington, SC 29072 Ron Herrygers 803-951-8947	Emergency Spill Response Management / Remediation Oversight and Environmental Sampling / Water line Replacement / Construction Management	Ongoing master service agreement

16. COMPLETED WORK WITHIN THE LAST 5 YEARS ON WHICH YOUR FIRM HAS BEEN A CONSULTANT TO:

PROJECT NAME, TYPE AND LOCATION	NAME/TELEPHONE COMPANY CONTACT	NATURE OF YOUR FIRM'S RESPONSIBILITY	YEAR COMPLETED
Vienna PCE Superfund Site (AKA Vienna Tetrachloroethene) - PCE Remediation, Vienna, WV	West Virginia Department of Environmental Protection Office of Environmental Remediation: William F. Huggins, Jr. ERS-3 Project Manager/ Supervisor Superfund/Federal Facilities Section - 304-238-1220 x00098	O&M of two AS/SVE systems with groundwater treatment system. Routine groundwater, vapor, and system performance sampling. Routine Weekly, Monthly, and Semi-annual reporting.	Contact began May 2021 and completed September 2024.
Fuller Supply - O&M of SVE remediation System, Raleigh, NC	North Carolina Department of Environmental Quality Division of Waste Management Dry-Cleaning Solvent Cleanup Act (DSCA) Program Billy Meyer 919-707-8366	Installation and ongoing O&M of SVE system, Risk Assessment; reuse of used SVE system for cost savings	Contract began in 2007. Awarded 5-year contract renewal in 2024. Site work initiated 2007. Project ongoing
Modern Laundry and Dry Cleaners, Site Assessment and remediation of PCE impacted soil - Mount Airy, NC	North Carolina Department of Environmental Quality Division of Waste Management DSCA Program Billy Meyer 919-707-8366	Site Assessment, vapor intrusion evaluation, source removal of PCE impacted soil, and cost-benefit analysis resulting in replacement of existing SVE to SSDS managing vapor intrusion levels at lower cost	Contract began in 2007. Awarded 5-year contract renewal in 2024. Client-related work initiated 2007. Project ongoing.
\$2.50 Cleaners, Site Assessment and soil excavation with in-situ groundwater remediation - High Point, NC	North Carolina Department of Environmental Quality Division of Waste Management DSCA Program Billy Meyer 919-707-8366	Site Assessment, source removal of PCE impacted soil, in-situ groundwater remediation, vapor intrusion evaluation	Contract began in 2007. Awarded 5-year contract renewal in 2024. Site work initiated 2017. Project ongoing.
Las Vegas Convention and Visitors Authority - Chlorinated Solvent Assessment, Remediation Design, and O&M of Remediation System - Las Vegas, NV	Las Vegas Convention and Visitors Authority Walter Laub Director, Capital Projects/Engineering Projects 435-619-2844	Provided environmental consulting services including quarterly groundwater sampling and implementation of remediation systems, developed SAP and O&M Plans, transitioned to ongoing O&M of remediation systems	Environmental services began in 2008 onward; Awarded 5 year O&M contract in 2020.

17. COMPLETED WORK WITHIN THE LAST 5 YEARS ON WHICH YOUR FIRM HAS BEEN A SUB-CONSULTANT TO:			
PROJECT NAME, TYPE AND LOCATION	NAME/TELEPHONE COMPANY CONTACT	NATURE OF YOUR FIRM'S RESPONSIBILITY	YEAR COMPLETED
Exide Technologies Superfund Site - Vernon, CA	Weston Solutions Alex Grubb 415-925-9777	Air Modeling and technical consultation to support a CERCLA Site Investigation. Work included reviewing historic reports, identifying potential data gaps, and generating air models to support CERCLA Site Investigation activities related to contaminant migration.	2024
Emergency Spill Response Services for projects in Ansted, WV, Pax, WV, and Saulsville, WV.	Herrygers Environmental Services, LLC 602 Northwood Road Lexington, SC 29072 Ron Herrygers 803-951-8947	Emergency Spill Response Management / Remediation Oversight and Environmental Sampling / Water line Replacement / Construction Management	2023

18. Use this space to provide any additional information or description of resources supporting your firm's qualifications to perform work for the West Virginia Department of Environmental Protection.

Additional space is required. Supporting information is provided within the following pages of the Expression of Interest for 0313 DEP2600000003

19. The foregoing is a statement of facts. Should any information in this questionnaire be falsified or determined falsified at a later date, the West Virginia Department of Environmental Protection reserves the right to void any agreement or contract entered into between the undersigned and their respective firm and the WVDEP.

Signature: *Kelly Hurstak*

Title: Senior Vice President

Printed Name: Kelly Hurstak

Date: 1/13/2026

ATC Group Services, LLC dba Atlas Technical Consultants, LLC (Atlas), is a full-service engineering and consulting firm with an Environmental Engineering Division that performs routine Operations and Maintenance and Monitoring at active remediation sites across the United States. Atlas operates in northern West Virginia through a local office in Morgantown with support from Pittsburgh, Columbus, and Cleveland offices. **Atlas previously operated the Vienna Tetrachloroethene site from Spring of 2021 through the Fall of 2024.** Former Vienna system operator, Dennis Sutton, will return as Atlas system operator applying his significant experience to both the Vienna and the Ravenswood systems. Mr. Sutton is conveniently located minutes from the Vienna Site and approximately 30 minutes from the Ravenswood Site. Our team's collective experience in successfully troubleshooting, repairing, and operating the complex remediation equipment of the Vienna Tetrachloroethene site positions Atlas to effectively operate the Ravenswood PCE systems based on their similarities. We are confident that our current project team will provide the same high quality of work produced during our previous operational stewardship. Atlas will continue to provide detailed and comprehensive operational and site assessment reports while reviewing for cost-effective adjustments to optimize the remedial operations.

Atlas is a licensed engineering firm in the State of West Virginia with a proven history of delivering design services as well as ongoing operation and maintenance services for complex remediation projects. We anticipate that the contract will involve ongoing O&M services with routine sampling and reporting but may also need comprehensive “full service” engineering support—including planning, engineering design, and construction oversight associated with equipment replacement or changes in remedial design implementation. Our team is experienced and capable of providing a wide spectrum of technical and engineering support as the remedial goals evolve at the Ravenswood and Vienna projects.

Atlas holds a business license from the West Virginia Secretary of State and a Certificate of Authorization (COA) from the West Virginia Board of Registration for Professional Engineers, allowing it to provide engineering services in West Virginia. Our team includes licensed Professional Engineers (PE) with active registrations through the West Virginia Board of Professional Engineers.

Our responses to the EOI requirements are provided in Section 2.



Atlas is also a trusted partner with WVDEP providing environmental services on the S3 Abandoned Mine Land (AML) project awarded in 2023 and on which design work and ecological studies commenced in the spring of 2025.



3300+
Staff
Nationwide



130
Offices



40
States

With over 100 offices located throughout 40 states, Atlas is positioned to draw upon a vast array resources and expertise to provide a superior level of consistent support to our clients no matter where their projects may be located.

1. COMPLETED CONSULTANT QUALIFICATIONS QUESTIONNAIRE

The completed questionnaire is included in this EOI.

2. A CONFLICT-OF-INTEREST DISCLOSURE, AS PER THE REQUIREMENTS OF 40 CFR PAR 35.6550 (SUBPART O)

Atlas affirms that for the Vienna Tetrachloroethene and Ravenswood PCE project sites, it has no known actual, apparent, or potential conflict of interest that would prevent the company from performing services in an objective and impartial manner. Atlas does not have any financial, personal, or organizational relationships with any Potentially Responsible Parties (PRPs) that could improperly influence, or appear to influence, its work on behalf of its clients.

Internal search results confirm that Atlas has performed work for WVDEP at the Vienna Tetrachloroethene Site under the project name Vienna PCE Superfund Site and also at the Ravenswood PCE Site under the project name Ravenswood PCE Superfund Site.

Atlas remains committed to maintaining the highest standards of integrity and transparency in all business dealings. Should any potential conflict arise during the course of the contract, Atlas will promptly disclose it and take appropriate steps to mitigate or eliminate the conflict in accordance with applicable laws and company policies.

3. AN EXAMPLE OF TECHNICAL WRITING WITH FIGURES AND TABLES

In consideration that the Consultant Qualifications Questionnaire item 12h requests an example of writing, preferably a Sampling and Analysis Plan (SAP), Atlas is submitting two samples:

- An example of a SAP developed for the Vienna Tetrachloroethene site as Attachment 2; and
- A Semi-annual O&M Report for the Vienna Tetrachloroethene site that includes relevant figures and tables as Attachment 3.

4A. CORPORATE/PERSONAL EXPERIENCE AS IT RELATES THE TWO PROJECT SITES

Ravenswood PCE

Atlas engineers Robert Campana and Mait Walker performed a design review for WVDEP for the proposed upgrades to the existing remediation system in September and October of 2025. While Atlas has not physically worked on the site, the design review provided an advance view of the existing and proposed equipment arrangements. The project scope and remediation equipment are similar to those of the Vienna Tetrachloroethene site. The experience of operating similar equipment at the Vienna site positions Atlas to quickly assess the system conditions and efficiently assume operations.

Vienna Tetrachloroethene

Atlas provided O&M and monitoring services for the Vienna PCE Superfund Site (Vienna Site) beginning in the Spring of 2021 through the Fall of 2024. A number of key staff from that contract period are included in the proposed Atlas team. Senior Project Manager, Ben Staud, was the team leader from early 2022 through the end of the contract in Fall of 2024. Project Manager Mait Walker was a project engineer from mid-2022 through the end of the contract in Fall of 2024. Senior Scientist, Andrew Frost, lead the sampling and reporting services from the beginning of the Atlas contract in 2021 through the end of the contract in the Fall of 2024. O&M technician, Dennie Sutton, was the onsite technician from the beginning of the Atlas contract in 2021 through the end of the contract in the Fall of 2024 and has been more recently involved in O&M activities at the site outside of the Atlas contract.

In the fall of 2025, Atlas provided troubleshooting services for a compressor at the TU1 air sparge system of the Vienna Site. Diagnostic efforts were performed which resulted in identification of faulty components. Several repairs were performed which would allow for the compressor to function in Automatic mode. Upon completion of the service, the assessment provided to WVDEP was that the compressor fault alarm was likely caused by the failure of the oil cooling system which would require additional repair efforts. This work serves to provide an example of the capabilities of the Atlas team to effectively diagnose, repair, and maintain the complex systems at the Vienna Site.



4B. UNIQUELY QUALIFYING EXAMPLES OR QUALIFYING INFORMATION

During the time period for which Atlas retained the O&M contract at the Vienna Site, the Atlas project team was responsible for several site-specific accomplishments including the following:

- **Atlas restored functionality and continued operation of the computer systems responsible for the SCADA monitoring and remote telemetry of both TU1 and TU3.** Prior to contract acquisition, these units were non-functional and remote access to the SCADA was not available.
- **A comprehensive list and timeline of repairs was maintained and provided to WVDEP during the O&M Contract.** The Atlas team maintained functionality to three of the four air sparge compressors with increasing percentage of air sparge system uptimes. Air sparge uptimes for both TU1 and TU3 were reported over 90% during the final Semi-annual O&M report issued during the contract.
- **Several detailed reports including the TU3 Air Sparge and Soil Vapor Extraction System Leak Test Report of April 24, 2024, and the Monitoring Well and System Well Inventory and Condition Report of July 8, 2024,** which summarize identified issues with both the remediation systems as well as the monitoring well network. Both reports provided recommendations for repairs that were organized by priority in order to maintain component integrity and in consideration of cost-effectiveness.
- **Atlas developed more detailed O&M reports for TU1 and TU3 that included discussions of the air sparge and soil vapor extraction functionality which also monitored the variances in operations.** These reports lead to the documentation of the effects of seasonal changes in the water table on the functionality of systems as well as the development of recommendations for adjustments to the operation of the well arrangements in order to improve remedial impact on the PCE plume area. An example O&M report for the Vienna Tetrachloroethene site is submitted as a writing example as Attachment 3.
- **During O&M activities and data evaluation, the Atlas O&M team identified a piping mismatch which appeared to have been undocumented.** This mismatch occurs at the flex hose connections at the SVE manifold of the TU-1 remediation system. While the mismatch was not corrected to allow for the continuity of the data, acknowledging the mismatch allows for a more accurate analysis of the effects of the SVE system. The two SVE wells are at slightly different locations within the Former Vienna Dry Cleaners PCE plume and one of the SVE wells is diagonally drilled under the former building foundation location while the other is a vertical well.
- **Provided technical expertise and support to WVDEP during US EPA Five Year Review.** Atlas developed graphics and presented technical details to the US EPA on more than one occasion during their review of the Vienna site.

4C. PROPOSED PROJECT MANAGEMENT PLAN

Vienna Tetrachloroethene

Due to prior O&M and Monitoring at the Vienna Site, the Atlas team has familiarity with the site, equipment, reporting and remedial goals and is prepared to resume activities with appropriate updates. Atlas proposes the following Project Management Plan (PMP) which is generally consistent with activities conducted during the prior contract period.

1. Kickoff Meeting & Site Visit

Atlas will schedule a kickoff meeting within five business days of receiving the notice to proceed. Topics covered during the kickoff meeting will include:

- Discussion of current remediations system operations
- Identification of known equipment issues or upgrades completed prior to contract award
- Discussion of changes to site specific sampling plans
- Review the contract scope of work

Following the kickoff meeting, Atlas will schedule a meeting to meet WVDEP for a site visit to inspect and document the remediation system conditions.

2. System Status and Document Review

Atlas will evaluate the current status of the existing remediation equipment and develop recommendations to WVDEP for repairs or replacement. The Sampling and Analysis Plan (SAP) and other relevant documentation will be reviewed for changes and additions associated with the findings of the Fourth Five-Year Review by US EPA dated December of 2024.

3. Implement Updated O&M and Monitoring Plans

Based on the system status and document review, Atlas will coordinate with WVDEP for the implementation of monitoring activities such as groundwater sampling and remediation system process sampling in accordance with WVDEP CERCLA Quality Assurance Program Plan (QAPP), Standard Operating Procedures (SOPs), and West Virginia Contract Laboratory Program (CLP).



All collected monitoring data will be provided to WVDEP in Scribe software compliant format for integration into the existing database. Prior experience indicates that semi-annual groundwater sample events are anticipated which target a list of monitoring wells approved by WVDEP and that remediation system process sampling will be contingent upon the functionality of the AS system.

Atlas anticipates that routine O&M can commence immediately following the kickoff meeting and site visit. Altas will deploy our local field technician, who resides in Vienna, to the two Vienna AS/SVE treatment systems to begin collecting operations data. Dennie Sutton has more than 4 years of experience performing operations at the Vienna AS/SVE systems and will be available for the routine O&M and alarm response.

With WVDEP approval, Atlas will implement the repair of faulty equipment on an as-needed basis. Many of the selected Atlas team have experience working on large scale AS/SVE systems, not only at the Vienna Site but also other similar systems. The Atlas team has a solid track-record of troubleshooting both mechanical and electrical faults as highlighted in several examples above. In the event that troubleshooting identifies work that requires a specialist, Atlas will seek vendor services of a technical specialist consistent with WVDEP subcontractor requirements. Integral to the PMP process is scope tracking for cost control to identify work determined to be nonroutine and to develop estimates for client approval before initiation.

4. Reporting

In accordance with any updates to WVDEP reporting requirements as determined in Step 1, Atlas anticipates providing the following reports for the Vienna Site consistent with historical reports developed by Atlas:

- Weekly O&M Reports that provide updates on the system status and a brief summary of repairs or other ongoing work along with notable meeting topics.
- Monthly O&M Reports that provide details on maintenance activities and compiled data from weekly O&M visits with a discussion on observed variances within the data.
- Semi-annual O&M Reports with compiled semi-annual O&M data to include discussion on the following:
 - System uptime including planned or unplanned shut-downs
 - Analytical results of samples collected for process evaluation
 - Mass of contaminant recovered
 - Summary and evaluation of system operational data including pressure or vacuum deficiencies
 - Full details of maintenance and repairs performed
 - Health and Safety concerns
 - Observations and recommendations for adjustments to operational procedures

- Semi-annual Monitoring Reports with compiled analytical and operational data and discusses the following:
 - Sampling activities, including deviations from plan
 - Analytical results
 - Remediation system performances
 - Recommendations for adjustments to remediation system operational procedures
 - Tables including:
 - Groundwater level measurements and groundwater elevations
 - Analytical results for each sampling location for current and historical events
 - Monthly contaminant mass removal rates from each remediation system
 - Time series graphs of tetrachloroethene concentrations for each sample location
 - Trend analyses of mass removal rates and concentrations, as applicable
 - Figures including:
 - Site location map with sampling locations and results
 - Site location map with groundwater elevation and contour interpretations
 - Site location map with concentration iso-contours

5. Technical Investigations and Assistance

Atlas will provide assistance to WVDEP for any non-routine tasks as requested or approved tasks recommended by Atlas. Examples of services anticipated in support of the site remedial goals may include:

- Attendance of meetings and/or presentation of remediation data
- Development of additional documentation, reports, or figures such as:
 - Well Inventory and Condition Reports
 - Figures or Diagrams detailing system cycling sequences
 - Leak Test Reports
 - Compressor Maintenance Updates
 - Well Redevelopment Reports
- Implementation or oversight of construction or repair activities identified as outside of typical O&M activities.
- Atlas' familiarity with the location of subsurface remediation components allows for Atlas to assist with clearing Utility One-Call requests.



Ravenswood PCE

Due to the general similarities between the Vienna and Ravenswood AS/SVE systems, Atlas anticipates implementing a PMP for Ravenswood that may be similar in framework to that of the Vienna Site. However, due to unknown factors related to the current status of equipment functionality and the potential for equipment upgrades or replacement, Atlas will update the following PMP as new information becomes available.

1. Kickoff Meeting & Site Visit

Atlas will schedule a kickoff meeting within five business days of receiving the notice to proceed. Topics covered during the kickoff meeting will include:

- ▶ Discussion of current remediation system operations
- ▶ Identification of known equipment issues or upgrades completed prior to contract award
- ▶ Discussion of changes to site-specific sampling plan
- ▶ Review the contract scope of work

Following the kickoff meeting, Atlas will schedule a site visit with WVDEP to assess and document the condition of the remediation system.

2. System Investigation Phase

Atlas will review available documentation and conduct investigations into the functionality of any equipment identified as faulty. Based upon Atlas' experience with initial operations of antiquated equipment at the Vienna Site, the process may require multiple rounds of investigation and inspection to develop an understanding of the current functionality relative to the design intent. In consultation with WVDEP, Atlas may develop recommendations for repairs or equipment replacement if such actions have not yet occurred. Atlas will implement scope tracking for cost controlling measures.

3. Ongoing Operations and Maintenance

Based on the review of the functionality of the two remediation systems, Atlas will implement operations and resume regular maintenance accordingly. Initial O&M work will be provided by Dennie Sutton, located in Vienna, and supplemented with additional local staff provisioned in accordance to project needs.

4. Site Environmental Monitoring and Reporting

Upon review of available documentation, Atlas will coordinate with WVDEP for the implementation of monitoring activities such as groundwater sampling and remediation system process sampling in accordance with WVDEP QAPP, SOPs, and CLP. All collected monitoring data will be provided to WVDEP in Scribe software compliant format for integration into the existing database. Prior experience at the Vienna Tetrachloroethene site indicates that semi-annual groundwater sample events are likely that target a list of monitoring wells approved by WVDEP. Remediation system process sampling will be determined after a review of the functionality of the remediation system equipment.

Reporting for the Ravenswood site will be determined following the efforts of Step 2 but it is anticipated to share a framework with the Vienna site as outlined in Step 4 of the Vienna Tetrachloroethene PMP above.

5. Technical Investigations and Assistance

Atlas will provide assistance to WVDEP for any non-routine tasks as requested or approved tasks recommended by Atlas. Examples of services anticipated in support of the site remedial goals may include:

- ▶ Attendance of meetings and/or presentation of remediation data
- ▶ Development of additional documentation, reports, or figures such as:
 - ▶ Well Inventory and Condition Reports
 - ▶ Figures or Diagrams detailing system cycling sequences
 - ▶ Leak Test Reports
 - ▶ Compressor Maintenance Updates
 - ▶ Well Redevelopment Reports
- ▶ Implementation or oversight of construction or repair activities identified as outside of typical O&M activities.

4D. SUMMARY OF KEY PERSONNEL AND AVAILABILITY

Our team includes a diverse pool of cross-trained professionals—engineers, scientists, geologists, and field technicians—who can be accessed quickly based on project needs and geographic proximity.

The full project team is depicted on the Project Team Organization Chart located in Section 4 of the EOI. Section 4 also contains the resumes of the key team members and several other key personnel identified for environmental remediation advisory roles. The advisory team member involvement will be minimal and will lend their expertise in AS/SVE operation and PCE remediation as needed.



A number of the Atlas project team from the previous Vienna Site O&M and Monitoring contract and the design review team for the Ravenswood PCE Site have been selected to be part of the proposed new project team. Their collective experience spans both the O&M and the sampling and monitoring portions of the scope of work within the former contract allowing for a smooth transition into the new project scope of work. The team members designated for regular work on project tasks and the most likely to interface with WVDEP include:



BENJAMIN (BEN) STAUD, PE / SENIOR PROJECT MANAGER (Primary Point of Contact)

Ben has 24 years of experience with 2.5 years of experience with project management of the Vienna Tetrachloroethene site. He will serve as the engineer of record for the project, liaison with the WVDEP, provide overall team guidance, and ensure all timelines and milestones are met throughout the life of the contract.



MAIT WALKER, PE / PROJECT MANAGER

Mait has 20 years of experience with 2 years of experience with O&M and Monitoring of the Vienna Tetrachloroethene site and has also provided design review for the Ravenswood Site. He will manage day-to-day operations, coordinate project activities with the Senior Project Manager, coordinate troubleshooting efforts, and oversee reporting efforts.



ANDREW FROST / O&M AND REPORTING

Andrew has 12 years of experience with 3.5 years of experience with the sampling and reporting of the Vienna Tetrachloroethene site. He will resume this role, managing the field work required for the site-specific sampling plans and will contribute to reporting.



DENNIE SUTTON / ENVIRONMENTAL FIELD TECHNICIAN

Dennie has 48 years of experience with 5 years of experience as an on-site operator performing technical O&M of the Vienna Tetrachloroethene site. He will return to this role bringing his expansive skill and understanding of the mechanical components of the remediation system and conduct the regular O&M tasks and oversee equipment repairs.



MATT HUMMEL / FIELD O&M SERVICES

Matt has 17 years of experience with 3 years of experience performing troubleshooting for equipment repairs at the Vienna Tetrachloroethene site including the recent successful diagnostic efforts at TU1 in the fall of 2025. He will be returning to this role in which he will be available for specific tasks.



ROBERT CAMPANA, PE / QA/QC, O&M, AND REPORTING

Robert has 7 years of experience and provided design review of the proposed Ravenswood Site system upgrades. He will oversee quality assurance reviews of plans, data, and reports and contribute to technical portions of remediation tasks as well as reporting.



Atlas anticipates hiring additional field technicians local to the project sites to support routine operational requirements.

4E. PRODUCT QUALITY CONTROL / PROJECT COST CONTROL

Communication with WVDEP is central to our approach. Project Manager, Ben Staud, serves as your point of contact, accountable for scope, budget, and schedule. Weekly internal reviews and weekly client updates keep all parties informed and aligned.

Atlas is committed to a total quality management system in which our goal is zero defects in our work products and offered services. To assure that quality documents, services, and consultations are provided to our clients, Atlas has established rigorous quality assurance and quality control procedures for managing our quality system and checking our work throughout the life of a project.

The Proposed PMPs above are based upon historical Atlas O&M and Monitoring work at the Vienna Site and other similar remediation systems with comparable remedial goals. Atlas anticipates working with WVDEP to determine the most cost-effective implementation of O&M activities and reporting content appropriate to the current status of each project site. The PMPs are anticipated to be updated with site-specific current information and may include more or less than as presented within this EOI, as approved by WVDEP. Atlas routinely evaluates project tasks for available efficiencies in context with project budgets and goals. Atlas anticipates the proximity of Vienna to Ravenswood, will offer opportunities to combine field work at the two locations to reduce costs.

PROJECT QUALITY CONTROL (QC)

QC responsibility will rest primarily with the Atlas Project Manager. They maintain the authority to work directly under the Atlas Senior Project Manager and with the client and various stakeholders addressing any project needs.

- Coordinate and manage technical personnel, including any contract teaming partners
- Commit the resources necessary to meet scope and schedule changes
- Assign appropriate staff to respond to the needs of the project on a continual basis
- Assign the technical and administrative staff necessary to complete each task for any projects authorized by the client.



Project Quality Assurance / Quality Control Officer
Robert Campana, PE will serve as the QA/QC Officer and oversee quality assurance reviews of the plans, data, and reports.

The quality checks for final documents include reviewing the technical content and scientific basis for any conclusions drawn or recommendations offered. In addition, checks are made for conformance to style and grammar, and most importantly with regards to whether the deliverable will meet or exceed the client's expectations.

Document Quality Control

In coordination with the QA/QC Officer, the Project Manager will ensure the proper preparation of deliverables as the project continues. They will personally conduct a rigorous QA/QC review of every draft and final report to eliminate errors, provide accurate information, and ensure overall consistency. All reviews will be performed on two levels:

- The first review will focus on meeting major format requirements and ensure that the documents are substantively accurate and meet applicable federal, state, and local requirements.
- Once issues identified during the first review are addressed and approved, the document will undergo a second review that will include a detailed focus on consistency, formatting, appearance, and minor editing for grammar and spelling

Not only does Atlas utilize standard procedures for document review, but we also employ proactive measures to reduce the likelihood of issues arising during the review process. These measures are intended to eliminate issues before they occur and focus primarily on staff preparation. Atlas will communicate all project expectations and goals to all affected personnel. We develop and use project reference documents and work practice guidelines to make certain a consistent approach is applied that ensures accurate and complete collection of information from site inspections.

Peer Review Procedure

All technical reports will undergo at least one peer review by senior Atlas staff that have the applicable certification/licensure. Additional peer review may be warranted on a case-by-case basis depending on the complexity of the project and the disciplines required to complete the task. All subcontractor work products will be peer reviewed by Atlas. Robert Campana, PE, as the QA/QC Officer, will oversee quality assurance reviews of the plans, data, and reports.

PROJECT COST CONTROL



Our strategy is built on proactive planning, transparent communication, and skilled execution — supporting the successful delivery of projects that meet safety, regulatory, and stakeholder expectations.

Atlas controls costs for ongoing O&M and Monitoring projects by:

- Communicating with the client to define goals, responsibilities, and expectations
- Developing budgets for routine tasks
- Identifying out-of-scope items and providing proposals for client approval
- Tracking progress on efforts and continually reviewing for variances
- Providing regular updates to the client with early projections of budget differentials.

Accounting and Tracking

Our advanced accounting systems position the company for sustained project management performance and compliance with Federal Cost Accounting Standards (FAR). The system provides all necessary information at the contract, project, and task levels for Atlas managers to effectively execute their budget control responsibilities in a timely manner. Project costs are tracked “real-time” by management personnel. A client approved budget is established against which project costs are tracked. Thus, the client cannot be billed for amounts greater than what has been authorized on a project.

Change Control

Atlas manages changes in scope and project costs through an Out-of-Scope work tracker that is integral to our PMPs. When changes do occur, Atlas provides clients with documentation for notification and for authorization to proceed to maintain clear communication and full transparency. Atlas also applies this process to subcontractors, requiring approval of quotations and documented authorization to proceed.

With regard to managing document changes, Atlas employs a suite of industry-standard software and services to manage schedule, budget, and documentation across all phases of environmental engineering and operations work. Software such as Microsoft Project and BST support resource planning and financial tracking, while Bluebeam Revu and AutoCAD Civil 3D facilitate design details with strict document control. Secure cloud-based platforms provide centralized access to project files, enabling real-time visibility into progress and supporting timely decision-making. These technologies also streamline inspection tracking, submittals, change orders, and report delivery. Atlas communication protocols include regular coordination meetings, issue tracking, and responsive reporting to all stakeholders—promoting transparency, accountability, and efficient project delivery.



Maintaining equilibrium among Scope, Schedule, and Budget is essential to keeping the program on track and responsive to evolving conditions.

4F. Experience (Years and/or number of projects) in which Vendor and/or Vendor's firm utilized WVDEP Standard Operating Procedures

- Greater than 3 years experience with Vienna PCE Superfund Site, Vienna, WV
- 5 years experience with Rose Bud Plaza, Clarksburg, WV
- Greater than 3 years experience with Englefield oil, Dutchess, BP, Ripley, WV
- Greater than 3 years experience with Phillips 66, Glasgow, WV
- 1 year experience, Bandys, Inc., Lookout, WV
- 1 year experience, Frontier Communications, Bluefield, WV

See response to Form Question 12e for additional details.

4G. Experience (Years and/or number of projects) in which Vendor and/or Vendor's firm utilized WVDEP Quality Assurance Program Plan

- Greater than 3 years experience with Vienna PCE Superfund Site, Vienna, WV
- 5 years experience with Rose Bud Plaza, Clarksburg, WV
- Greater than 5 years experience, Phillips 66, Glasgow, WV

See response to Form Question 12c for additional details.

4H. Experience (Years and/or number of projects) in which Vendor and/or Vendor's firm has been involved with WVDEP remediation programs (i.e. CERCLA, RCRA Corrective Action, VRP, UECA-LUST, Brownfields)

- Greater than 3 years experience with Vienna PCE Superfund Site, Vienna, WV – **CERCLA**
- 5 years experience with Rose Bud Plaza, Clarksburg, WV – **VRP** #25002
- 8 years experience, Phillips 66, Glasgow, WV, **UECA-LUST**
- 8 years experience, Englefield oil Dutchess, BP, Ripley, WV, **UECA** – **LUST**
- 2 years experience, frontier communications, Bluefield, WV, **LUST**
- 1 year experience, Bandys, Inc., bulk storage tank facility, Lookout, WV
- 1 year experience, Pilot #243, Nitro, WV, **VRP**

SAFETY

At Atlas, we are committed to safety and work to strengthen our culture around it. The health of our employees, the prevention of incidents, and the protection of the environment are mandates incorporated into every aspect of our company, surpassing all other considerations. Our clients expect it, and we require it of ourselves.



Our **Think 12** safety mantra means that you must always be aware of what is: 12 feet in front of you, 12 feet behind you, 12 feet to each side, 12 feet above you, and 12 feet below you.



In the three and a half years of work conducted on the former Vienna Tetrachloroethene contract and almost two years on the WVDEP AML S3 projects, Atlas has experienced zero reportable accidents.



QUALIFICATIONS AND RELEVANT EXPERIENCE

Atlas is a national engineering and environmental consulting firm with more than 3,300 staff that operates out of over 130 offices across the country, including licensed professional engineers, licensed scientists, geotechnical engineers, certified inspectors, project managers, construction managers and support personnel. With our primary management office located at **125 Granville Square, Morgantown, West Virginia, 26501**, the Atlas team can mobilize quickly to the site to conduct the necessary site work and meet the needs of WVDEP-OER.

The routine O&M services as well as all emergency service calls for the project sites will be managed by local staff in the Atlas Vienna office. Additional local staff will be onboarded based on updated scope review for work at the Ravenswood Site. Key staff identified to support these project sites operate out of the Morgantown, Pittsburgh, and Brecksville office locations. Project staff capacity for expedient responses is considered to be high from each of these offices. Field staff from these offices will be deployed to support the Vienna location for scheduled field work. Additional field staff support is available from the Atlas office in Columbus, Ohio.



Former Vienna system operator, **Dennis Sutton**, will return as Atlas system operator applying his significant experience to both the Vienna and the Ravenswood systems. Mr. Sutton is conveniently located minutes from the Vienna Site and approximately 30 minutes from the Ravenswood Site.

Atlas Office Locations	Project Contribution	Staff	Office Total Project Load	Communication Response Time	Field Response Time
VIENNA, WV¹	Primary	1	100% Dedicated to Project	0-1 Day	0-1 Day ¹
MORGANTOWN, WV 125 Granville Square, Suite 115 Morgantown, WV 26501	Primary	5	80-90%	0-1 Day	2-3 Days
PITTSBURGH, PA 270 William Pitt Way Bldg A3, 3rd Flr Pittsburgh, PA 15238	Primary	24	75%	0-1 Day	1-3 Days
BRECKSVILLE, OH 8100 Snowville Rd. Brecksville, OH 44141	Primary	29	60-70%	0-1 Day	1-3 Days
COLUMBUS, OH 685 Grandview Avenue Columbus, OH 43215	Support	20	75-85%	1-2 Days	2-5 Days

¹Office identified for emergency response to alarm conditions

Firm Name	Atlas Technical Consultants LLC (Atlas)	
Address (Headquarters)	5050 South Syracuse Street, Suite 1150 Denver, CO 80237	
Primary Contact Info	Mait Walker, PE Project Manager mait.walker@oneatlas.com 8100 Snowville Rd. Brecksville, OH 44141	Ben Staud, PE Senior Project Manager ben.staud@oneatlas.com 125 Granville Square, Suite 115 Morgantown, WV 26501
Office Performing Work	Morgantown 125 Granville Square, Suite 115, Morgantown, WV 26501	

ENR Rankings



- No. 12**
Top 20 Design Firms
Hazardous Waste Sector
- No. 29**
Top Construction Program
Management Firm
- No. 39**
Top 100 Pure Designers
- No. 49**
Top 500 Design Firms
- No. 86**
Top Environmental Firms



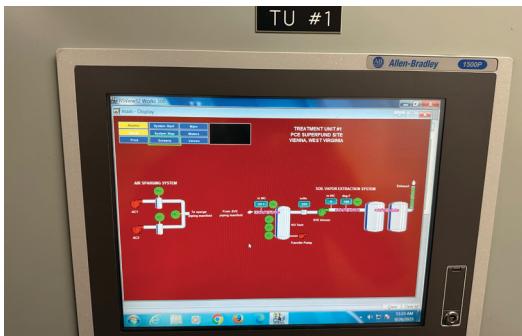
Atlas is a full-service engineering and consulting firm with a deep understanding of the challenges and objectives of WVDEP's program. With a local office in Morgantown, Atlas brings a strong regional presence and a history of successful project delivery. Our team is well positioned to provide comprehensive engineering services that directly support the Department's goals.



PROJECT DESCRIPTIONS

Our project summaries below detail the type and location of each project, PM contact information, the project goals and objectives, and key staff.

OPERATIONS AND MAINTENANCE OF REMEDIATION SYSTEM & DNAPL PLUME MONITORING - WVDEP VIENNA, WEST VIRGINIA



Dates of Services

April 2021 - September 2024

Project Location

Vienna, WV

Project Type

Environmental Remediation, O&M

Atlas Contact

Mait Walker

440-262-2383

Mait.Walker@oneatlas.com

PROJECT GOALS AND OBJECTIVES

Atlas held the contract for the operation and maintenance (O&M) of dual remediation systems, located in Vienna, West Virginia (Site). This Superfund project was initiated in 2005 to address Tetrachloroethene (PCE) present in the groundwater across the city and posed a threat to the city water supply wells. Remediation is accomplished using air sparge (AS) and soil vapor extraction (SVE) systems, combined with a groundwater recovery system using carbon filtration. O&M consisted of maintaining two independent AS/SVE systems.

Atlas was also responsible for monitoring activities related to tracking the PCE plume location as well as changes in PCE concentrations. Monitoring activities included low-flow sampling of the network of over 30 monitoring wells in accordance with WV state procedures and the established Quality Assurance Program Plan (QAPP). Additional monitoring activities involved performance vapor sampling of the remediation systems. Atlas utilized the results from these monitoring activities to develop biannual sampling reports which provided updates on the remedial progress at the Site, and PCE plume isoconcentration figures.

O&M responsibilities for the Site included weekly site visits to collect system measurements and to perform regular maintenance and repairs to ensure the equipment was fully operational. The Atlas team regularly reviewed the operational data in conjunction with the monitoring data and provided recommendations to the WVDEP for the improvement of operational efficiency and enhanced PCE recovery. These improvements ranged from equipment replacement to adjustments to the monitoring well sampling plan and changes in the operations of individual AS and SVE wells. As part of O&M, Atlas was responsible for producing weekly, monthly, quarterly, and semi-annual O&M reports that detailed O&M activities completed at the Site during each timeframe. Atlas performed work on this contract with a cost-effective mindset, providing recommendations to WVDEP with prioritization of cost-saving measures.

WVDEP VOLUNTARY REMEDIATION PROGRAM #25002

ROSE BUD PLAZA, CLARKSBURG, WEST VIRGINIA



Dates of Services
June 2020 to Present
Project Location
Clarksburg, Harrison County, WV
Project Type
Environmental Remediation
Atlas Contact
Ken Pasterak, PG, LRS 412.337.8621 Kenneth.Pasterak@oneatlas.com

Opened as one of the first strip shopping centers in the State, this 136,600 square foot retail plaza in Clarksburg, Harrison County, West Virginia was the site of an on-premises dry cleaning operation in the 1970s and 1980s. One or more releases of perchloroethylene (PCE) to the subsurface have resulted in impacted soil and groundwater and a dissolved chlorinated volatile organic compound (cVOC) plume extending over 600 feet off-site.

Atlas was retained by the innocent purchaser to enter the site into the WV Voluntary Remediation Program, perform soil and groundwater assessment, vapor intrusion evaluation, risk assessment, remediation, and obtain a certificate of completion from WV Department of Environmental Protection (WVDEP). The release resulted in dense non-aqueous phase liquid in weathered bedrock.

Following completion of High Resolution Site Characterization including Optical Imaging and Hydraulic Profiling and remedial design characterization (RDC) sampling and analysis, remedial alternatives analysis will be completed and a Remedial Action Plan will be submitted to WVDEP. In situ bioremediation feasibility is currently being evaluated to include injection of zero valent iron, activated carbon, and an electron donor at the source and as a permeable reactive barrier to degrade the contaminants into non-toxic gases. Access agreements were successfully obtained and the assessment was completed without disruption to tenant business operations.

The scope of services included evaluation of PFAS/PFOA (forever chemical) compounds via rigorous analytical and QA/QC procedures. A pathway elimination remediation strategy has been developed to reduce the VRP process cost and timeframe and ultimately obtain liability relief and closure pursuant to the WV Voluntary Remediation and Redevelopment Act.

DESIGN, BUILD, AND OPERATION OF MULTI-PHASE EXTRACTION SYSTEM AT RETAIL PETROLEUM SITE - PRIVATE ENTITY, FORT LITTLETON, PENNSYLVANIA



In March of 2019, hydrocarbon impacts were detected in the water supply well at a retail gasoline site located near Fort Littleton, Pennsylvania. Site characterization activities identified dissolved phase hydrocarbons associated with gasoline as well as light non-aqueous phase liquids (LNAPL) in the groundwater. Following site characterization activities, Pennsylvania Department of Environmental Protection (PADEP) approved a Remedial Action Plan for the use of Multi-phase Extraction (MPE) in June of 2020.

Beginning in 2021, Atlas has been responsible for ongoing site monitoring activities related to the hydrocarbon plume and LNAPL recovery. Atlas also completed additional site characterization work including performing the MPE pilot test. This work transitioned into the design of the MPE system and collaboration with remediation equipment vendors to complete the construction of the system. The remediation system was brought online in early 2025 and Atlas continues to perform the O&M and monitoring responsibilities.

Dates of Services
2021 - Present
Project Location
Fort Littleton, PA
Project Type
O&M
Atlas Contact
Mait Walker 440-262-2383 Mait.Walker@oneatlas.com

CONFIDENTIAL CLIENT, OHIO



A private entity operates an active chemical manufacturing facility in Ohio. The private entity operates the onsite water treatment facilities. These systems manage process water from the manufacturing process facility, as well as groundwater and stormwater collected onsite. Commissioned in 1990, the system treats groundwater impacted by VOCs and SVOCs, and stormwater containing low-level SVOCs.

Treatment is accomplished through an air stripper, sand filters, activated carbon vessels, and associated process controls. Since commissioning, multiple upgrades have been completed to align the system with current standards and best practices.

Atlas has been retained to provide technical oversight and support for optimizing this legacy system. Through the installation and integration of modern sensors and control systems on key subsystems, Atlas has improved system uptime and overall performance. Atlas also assists with routine maintenance activities, such as air stripper cleaning and carbon changeouts, and provides emergency repairs services for components that are outside the scope and training of the facility maintenance team.

Dates of Services
Dates
Project Location
Ohio
Project Type
Technical assistance, O&M
Atlas Contact
Matt Hummel Matthew.Hummel@oneatlas.com

FORMER CHEMICAL MANUFACTURING FACILITY - CONFIDENTIAL CLIENT, OHIO



Site History

The site is a former chemical manufacturing facility constructed in the early 1900s, encompassing approximately 1,100 acres and over one mile of Lake Erie shoreline. Historical operations at the facility included the production of soda ash, carbon tetrachloride, chromium, and polyvinyl chloride.

Regulatory Status

Remedial activities are conducted in accordance with the Ohio Environmental Protection Agency's (EPA) 1995 Director's Final Findings and Orders (DFFO). In addition, a separate portion of the site is subject to a 1983 Administrative Consent Order (ACO) with the U.S. EPA. As part of the DFFO-driven remedial investigation and feasibility study (RI/FS) process, the site has been divided into 22 Operable Units (OUs). As the RI/FS work for each OU is completed, decision documents and state orders for remedial design and remedial action (RD/RA) are being negotiated.

Dates of Services
May 2018 - Ongoing
Project Location
Ohio
Project Value
\$4.5M 2025 Contract Value: \$975,000
Project Type
Environmental Consulting, Remediation Management, Groundwater Monitoring, O&M
Atlas Contact
Ben Staud 412.335.4256 Ben.Staud@oneatlas.com
Christopher Bale Christopher.Bale@oneatlas.com

Atlas Project Involvement

Atlas was engaged in 2018 to assess the performance of existing interim remedial measure (IRM) groundwater recovery systems at two of the 22 OUs. These systems are designed to contain the groundwater plume while the final remedy is developed and implemented. Groundwater is currently recovered through five wells located within a capped landfill OU and three wells within a second OU. The recovered groundwater is pumped into temporary storage tanks and transported offsite for treatment and disposal.

Contaminants of concern include volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), chlorides, and hexavalent chromium (Cr(VI)). Atlas provides full operational management of both groundwater recovery systems with support from a project-dedicated remediation specialist. Atlas also participates in the site's Innovative Solutions group—a collaborative team of consultants and client representatives focused on developing an on-site treatment strategy for Cr(VI)-impacted groundwater. Atlas leads the field implementation of ongoing feasibility testing for potential treatment technologies.

Since joining the project, Atlas has implemented several system enhancements, including:

- Integration of a fully automated SCADA system to optimize performance
- Recovery pump performance evaluations and operational optimization
- Installation and integration of process control devices
- Health and safety improvements aimed at reducing worker exposure and mitigating client risk

Project Status

The project remains operational and ongoing. Atlas continues to provide full-time operations and maintenance support for the two recovery systems, including RCRA waste management. Additional responsibilities include managing a capped landfill (routine inspections, maintenance, and compliance support), as well as performing quarterly groundwater sampling and reporting. Atlas is also expected to support the final remedy through participation in engineering design and field implementation.

DRY-CLEANING SOLVENT CLEANUP ACT (DSCA) FUND - NORTH CAROLINA DEPARTMENT OF ENVIRONMENTAL QUALITY (NCDEQ) DIVISION OF WASTE MANAGEMENT, RALEIGH, NORTH CAROLINA



Atlas has 18 consecutive years of experience working on the DSCA Program contract. The Atlas team brings the knowledge needed to effectively investigate, mitigate, and remediate contaminants associated with dry-cleaning releases in all media with the understanding that our site assessment evaluations and any subsequent site investigations build on the information gathered, including historical data, interviews, and sampling to adequately characterize each site and identify threats to human health and the environment. Our reliable data and reporting determine critical next steps as to whether a site warrants short-term or long-term cleanup or if a site requires no further action.

Vapor intrusion investigation and mitigation can be extremely complex due to changing modeling and risk characterization procedures, indoor sources, and spatial/temporal variability. We have thorough expertise in current vapor intrusion practices and strive to stay ahead of emerging vapor intrusion practices. Ashley Offer, DSCA Program Manager, has co-authored a paper on vapor intrusion-related issues with NC Division of Waste Management staff. Atlas has provided engineering services to design numerous vapor intrusion mitigation systems to address volatile organic compounds, including chlorinated compounds, radon, and methane for sites in North Carolina.

Atlas has extensive experience in both traditional and innovative remedial approaches that facilitate site closure. A broad technical and financial screening of remedial technologies is conducted before the selection of a specific design. This screening is not biased or tied to any technology. Once remediation is underway, frequent evaluations are conducted to ensure that the project is on track to meet the established goals. Our work for the DWM has included reviewing remedial alternatives and preparation and successful implementation of a wide variety of remedial approaches, including innovative technologies for soil and groundwater remediation (chemical oxidation, bioremediation, reductive dechlorination, phytoremediation), as well as more traditional remedial technologies (air sparge, dual-phase extraction, soil vapor extraction, pump and treat), and vapor mitigation systems.

Dates of Services
2007 - Ongoing
Project Location
Raleigh, NC
Project Type
Environmental Remediation
Atlas Contact
Ashley M.W. Offer, PG (919) 871-0999 Ashley.Offer@oneatlas.com
Lawrence George, PG, RSM Lawrence.George@oneatlas.com
Client Contact
Ms. Delonda Alexander, NCDEQ, Division of Waste Management Superfund Section 1646 Mail Service Center Raleigh, North Carolina 27699-1646

NCDEQ DRY-CLEANING SOLVENT CLEANUP ACT (DSCA) PROGRAM - FULLER SUPPLY, RALEIGH, NORTH CAROLINA



Atlas was retained by the DSCA Program to assess Fuller Supply, a dry-cleaning supply distribution facility from the mid-1950s to 1994. Assessment activities were initiated in 1994, with Atlas taking over project work in 2007. Atlas services performed included:

- Extensive soil sampling to determine the extent of impacts to the source property, City of Raleigh Right-of-Way (ROW), and North Carolina Railroad Company (NCRR) ROW. Atlas also performed groundwater assessment to characterize groundwater impacts in the overburden and bedrock zones.
- Atlas completed a risk assessment to evaluate source area cleanup goals. The results indicated soil concentrations exceeded site-specific target levels protective of groundwater, surface water, and commercial and construction workers for inhalation.
- Atlas installed a soil vapor extraction (SVE) system to reduce concentrations in soil and mitigate risks. The SVE system was previously used at a separate DSCA site and was transferred to Fuller Supply to reduce costs. After activation, Atlas monitored the SVE emissions to ensure effluent treatment was not warranted.
- SVE wells were installed in the City of Raleigh ROW and NCRR ROW, which entailed an extensive permitting process that requires occasional access renewals.
- Confirmatory soil sampling performed 2 years following system activation exhibited soil reductions greater than three orders of magnitude on the source property.

NCDEQ DRY-CLEANING SOLVENT CLEANUP ACT (DSCA) PROGRAM - MODERN LAUNDRY AND DRY CLEANERS, MOUNT AIRY, NORTH CAROLINA



Atlas was retained by the DSCA Program to assess and remediate the former dry-cleaner site that utilized PCE from 1956 through 2001. Soils contaminated from a release of PCE were identified and contributed to vapor intrusion in the source property building. Atlas services performed included:

- Source removal of approximately 120 tons of impacted soil from inside the former dry-cleaning space. Following the excavation, Atlas installed an SVE system with extraction points inside the site building. The SVE system began operation in June 2014.
- Atlas explored cost-effective alternatives for site remediation due to the high expense of the SVE system. Atlas concluded that a single extraction point linked to the porous backfill area of the excavation pit would likely impact a larger affected zone and target the most impacted area.
- Atlas replaced the costly SVE system with a more efficient SSDS. Atlas is currently monitoring indoor air quality on a quarterly basis to ensure the SSDS is effective in maintaining acceptable indoor air concentrations. The SSDS significantly reduced vapors below acceptable levels and decreased the utility costs by 90%.

NCDEQ DRY-CLEANING SOLVENT CLEANUP ACT (DSCA) PROGRAM - \$2.50 CLEANERS, HIGH POINT, NORTH CAROLINA



Atlas was retained by the DSCA Program for a former dry-cleaning facility utilizing PCE from the 1950s to 2017, when the building was demolished. Concentrations of PCE exceeded soil saturation levels. High Point University purchased the property with the intent of redeveloping the former dry-cleaning site, which would remove the concrete cap overlying the highest area of soil impacts and allow soil to leach into groundwater. Atlas services performed included:

- Conducted a preliminary source removal of approximately 200 tons of impacted soil. During the excavation, Atlas emplaced 2,000 lbs of Provect-OX2 in the excavation pit and blended the remediation agent below the seasonal high-water table to target reduction of sorbed and dissolved phase contaminants. Provect-OX2 was selected to mitigate vapor intrusion issues because it converts PCE to chloride and breakdown to TCE is not anticipated.
- Additional High Point University redevelopment included constructing residences near the source property. These areas had not undergone vapor intrusion assessment. Consequently, Atlas performed supplemental vapor assessment activities to verify that residential vapor exposure limits were not exceeded in the unassessed areas.

SITE MONITORING, REMEDIAL SYSTEM DESIGN, INSTALLATION AND OPERATION - TROPICANA EAST SHOPPING CENTER, LAS VEGAS, NEVADA



A dry cleaner operated at the site from 2006 through 2015, and PCE contamination was discovered in 2009. A large network of thirty-one (31) groundwater monitoring wells was eventually installed, and pilot testing of vapor extraction, air sparging, and groundwater extraction technologies were subsequently completed. Atlas took over the project in May 2016, and has been monitoring and sampling of the well network on a semi-annual basis since that time.

Based on the pilot test results, Atlas also designed and installed a groundwater extraction system to prevent further migration of the PCE plume towards a downgradient apartment complex in 2018. The 100 gallon per minute (gpm) groundwater extraction and treatment system includes a network of groundwater extraction wells with submersible pumps, a batch tank, transfer pump, two 2000-pound and two 1,000-pound granular activated carbon vessels. The current groundwater extraction pumps are capable of providing continuous flow rates ranging from approximately 5 to 7 gpm, rates that appear consistent with the sustainable pumping rate of the groundwater formation. The cumulative quantity of groundwater extracted and treated since commencement of groundwater extraction activities in January 2018 through April 9, 2020 is approximately 9,977,400 gallons with a cumulative quantity of approximately 63.66 pounds of recovered PCE.

Atlas has achieved hydraulic control of the spread of the plume, and PCE concentrations have decreased significantly in the shallow and intermediate groundwater zones. Atlas is in the process of developing a system expansion involving soil vapor extraction wells with associated soil vapor extraction system, and additional groundwater extraction wells which would aid in treating the source area and eventually move the project towards closure.

Dates of Services
May 2016 - Ongoing
Project Location
Las Vegas, NV
Project Type
Site Monitoring, Environmental Remediation, O&M
Atlas Contact
Ken Pasterak, PG, LRS Kenneth.Pasterak@oneatlas.com
Client Contact
Tina Wells Tropicana East Shopping Center (702) 898-0009

CHLORINATED SOLVENTS ASSESSMENT, CHARACTERIZATION, REMEDIATION DESIGN AND OPERATIONS & MAINTENANCE - LAS VEGAS CONVENTION AND VISITORS AUTHORITY (LVCVA), LAS VEGAS, NEVADA

Atlas has provided environmental consulting services to the LVCVA since 2008. Prior to the current contract, Atlas was under contract to perform quarterly groundwater monitoring at the former City Laundry and Cleaners site and to perform quarterly monitoring and remediation system operations and maintenance at the former Hudson Cleaners site. Atlas also implemented the start-up of the three new remediation systems following the completion of the construction of the Convention Center Expansion project and prepared the regulatory-required system documentation, including the Sampling and Analysis Plan, System Start-Up and Performance Monitoring Plan, As-Built Report, and System Operations and Maintenance Plan for these systems.

In 2020, Atlas was awarded a five-year contract to provide groundwater monitoring and remediation system O&M at their convention facility located at the north end of the Strip. The project site consists of two chlorinated solvent source areas and the areas where the original groundwater contaminant plumes have migrated. The three VE/AS remediation systems installed at the facility to address source areas and co-mingled contaminant plumes include a network of 68 groundwater monitoring wells, 30 groundwater remediation wells with nine vapor extraction dual completions, and 15 nested vapor extraction/air sparge wells. NDEP is overseeing corrective actions with the overall goal of limiting further migration of the chlorinated solvent plumes and decreasing chlorinated solvent concentrations in both soil and groundwater at the site.

In March 2010, Atlas implemented the NDEP-approved CAP at the former Hudson Cleaners site, which included the original installation of the on-site VE/AS remediation system. The active remediation system includes 16 VE/AS wells, which are constructed with separate well screens installed at four different depths to allow for focused vapor extraction and/or air sparging at various depths. The locations and multiple depths of the VE/AS wells allow for targeted adjustments to remediation system operations within both distinct vertical intervals and geographic areas of the site. Five groundwater extraction (GWE) wells located near the eastern boundary of the property line provide hydraulic control and remediation of dissolved-phase VOCs in groundwater downgradient of the VE/AS wells. The GWE wells can also be utilized for soil vapor extraction. The vapor extraction, air sparge, and groundwater extraction wells are connected to a remediation system compound through a series of underground fluid recovery, air sparge, and soil vapor conveyance piping. Soil vapor and groundwater extracted during remediation system operation are treated through separate carbon adsorption systems prior to discharge. Atlas designed and installed the original system and has been responsible for its operation and optimization since 2010. The remediation system was taken out of service prior to the start of construction of the new West Hall on the LVCVA property. The system was re-installed at a new location in 2021 and Atlas has been conducting groundwater monitoring and remediation system operations and maintenance since that time. Atlas conducts regular sampling of the extracted vapor and groundwater streams to determine the mass of PCE removal from the site, which to date has decreased at least 95% in the remediation zone.

Based on the laboratory analysis, Atlas periodically adjusts the system to increase the operational efficiency of the remediation system and to target specific areas for continued remediation. As of the 4th quarter of 2023, the VE system had removed approximately 1,815 pounds of vapor phase PCE from the subsurface, and groundwater analytical results indicate a continued decrease in PCE concentrations from monitoring wells compared to concentrations prior to remediation. The GWE system has removed and treated an estimated 76,809,710 gallons of groundwater, resulting in the cumulative removal of approximately 295 pounds of dissolved-phase PCE from the subsurface.

Two active remediation systems (Gold Lot and North Road) were installed in 2020 to further assess and remediate the PCE groundwater plumes present on the west and east sides of Paradise Road. The North Road system is a groundwater pump and treat system consisting of a total of 12 remediation wells to the north and northeast of the North Hall. The Gold Lot remediation system is a groundwater pump and treatment system with targeted soil vapor extraction around the former source area. Ten remediation wells (four containing soil vapor extraction and groundwater pump and treat) were installed to the east of the new Convention Center Expansion project. Through the 4th quarter of 2023, a cumulative total of 141 pounds of PCE have been removed through the operation of the Gold Lot/North Road soil vapor and groundwater extraction systems, and 179,096,200 gallons of groundwater have been removed and treated.

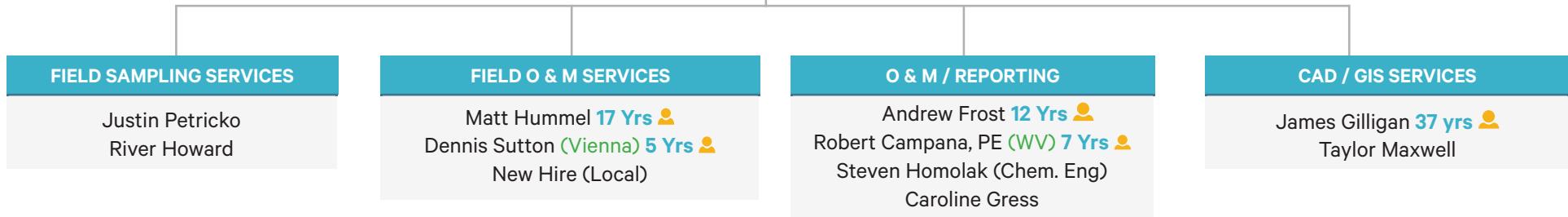
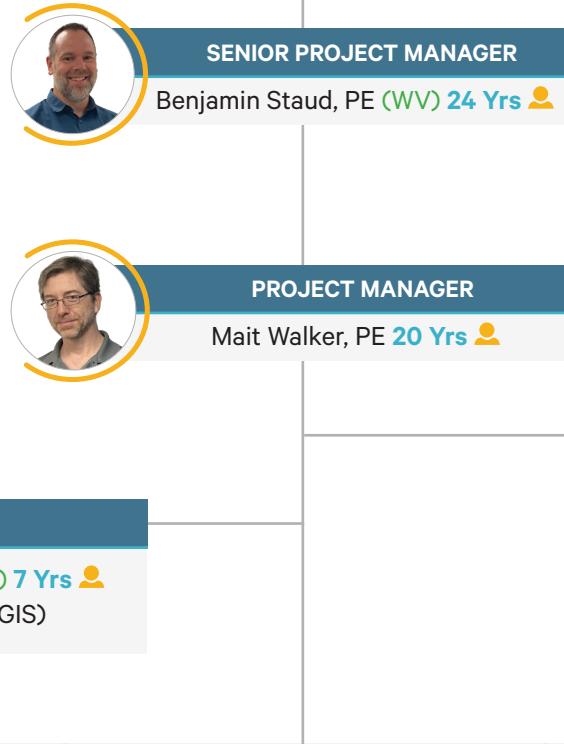
Atlas has provided several cost savings to the LVCVA, including expedited assessment, design, and installation. Cost savings were achieved using local knowledge, creative assessment and sampling techniques, and the use of pilot study data from similar sites and geology. Atlas successfully negotiated volume discounts with vendors and subcontractors utilized under this contract, resulting in significant savings for the LVCVA. Atlas has also been successful in significantly reducing contaminant concentrations. Since site remediation has been implemented at the former Hudson Cleaners site, concentrations have decreased by at least 95% in the contamination zone. Since 2010, more PCE mass has been removed at this site than any other project in the State of Nevada.

Dates of Services
2008 - Ongoing
Project Location
Las Vegas, NV
Project Value
\$3,100,000
Project Type
Site Monitoring, Environmental Remediation, O&M
Atlas Contact
Ken Pasterak, PG, LRS Kenneth.Pasterak@oneatlas.com
Client Contact
Walter Laub LVCVA (and Former Hudson Cleaners) 435-619-2844



LEGEND

Key Staff Resume included





BENJAMIN STAUD, PE

SENIOR PROJECT MANAGER

Years of Experience // 24

Years with ATLAS // 5

EDUCATION

MS, Civil Engineering, West Virginia University, 2000

BS, Civil and Environmental Engineering, West Virginia University, 1997

REGISTRATION AND CERTIFICATIONS

Professional Engineer:

- WV #020372
- PA #PE071430
- MA #50126
- NY #086812

TRAININGS

ASCE Natural Stream Restoration

29 CFR 1910-120 OSHA 40-hour HAZWOPER Training

29 CFR 1910-120 OSHA 8-hour HAZWOPER Refresher Training

Emergency Care & Safety Institute Adult CPR, AED, and Standard First Aid Certification

EXPERIENCE HIGHLIGHTS

Remedial Site Design Engineering

Remediation System O&M Project Management

Stormwater Analysis and BMP Design

SPCC/FRP Plan Development

Remediation System Assessment and Evaluation

Ben Staud is the Engineering Division Manager for Atlas in the Environmental Services Division. Mr. Staud is a licensed Professional Engineer with over 24 years of project management and design experience. His experience centers around investigating, designing, permitting, and managing a diverse array of environmental, geotechnical, and civil projects. He has completed projects in Pennsylvania, West Virginia, Virginia, Ohio, New York, Massachusetts, Maryland, Michigan, and Oklahoma.

PROJECT EXPERIENCE

Vienna Tetrachloroethene Site, Vienna WV

Senior Project Manager for operations, maintenance, sampling and reporting for an AS/SVE system located in the city of Vienna.

AML S3 Contract, WV

Certifying Engineer for 14 Abandoned Mine Lands (AML) reclamation projects located in West Virginia. Projects involved grading design, stormwater management, wet and dry mine seals, and stream restoration/reconstruction for areas impacted by historical mining activities.

AMD Treatment System Design, WV

Manager and Design Engineer for active AMD treatment system in Greenbrier County West Virginia. Project involved the grading and channelization of existing seeps to a 5,700-sf flushable limestone bed and 5,000-sf polishing pond.

Sanitary & Wash Bay Sewer Design, WV

Managed, designed and permitted treatment systems for a 1,000 gallon/day sanitary sewer system and a 1,000 gallon/day wash bay water treatment system in West Virginia.

Fishing Creek AML, PA

Senior Project Manager and Certifying Engineer for AML reclamation project located in central Pennsylvania. Project involved design of regrading plans and drainage facilities for an approximately 43 acre site. Project included backfilling against the existing highwall with adjacent mining spoils while addressing vertical openings, collapsed mine openings, water problem areas and surface drainage. Project also includes design of Allegheny Woodrat and native bat habitat structures.

Eagle Eye AML, PA

Senior Project Manager and Certifying Engineer for AML reclamation project located in central Pennsylvania. Project involved design of regrading plans and drainage facilities for an approximately 44 acre site. Project included backfilling approximately 5,000-lf of highwall with adjacent mining spoils and surface drainage channels.

Johnstown Inclined Hill AML Project, Conemaugh Valley Conservancy, Johnstown, PA

Certifying Engineer for AML reclamation project located in Johnstown Pennsylvania. Project involved the design of grading plan and drainage facilities for 1,500-lf of recreational trail along an existing AML highwall overlooking the city of Johnstown. Project also included design of a protective capping system for an existing vertical mine shaft, design of new bat gates for two open portals, and design of rock fall mitigation measures along the trail.

Conifers Coupon AML, PA

Senior Project Manager and Certifying Engineer for AML reclamation project located in central Pennsylvania. Project involved design of regrading plans and drainage facilities for an approximately 6 acre site. Project included backfilling approximately 8,000-lf of highwall with adjacent mining spoils, a temporary sedimentation basin, subsurface drainage piping and surface runoff channels.

AML Blue Ball East, PA

Certifying Engineer for AML reclamation project located in central Pennsylvania. Project involved design of a regrading plan and drainage facilities for backfilling approximately 6,000-lf of highwall with adjacent mining spoils.



Operations, Maintenance, and Monitoring, Former Chemical Manufacturing Facility, Ohio, OH

Senior Project Manager for operations, maintenance, sampling and reporting for a closed industrial landfill and chromium impacted groundwater pumping/disposal system.

Groundwater Treatment System Treatment Design, OH

Managed, designed and permitted ~4,000 gpd treatment systems for the removal of iron and manganese from drinking water utilizing manganese greensand treatment media continuously regenerated by chlorine injection.

Post Construction Stormwater BMPs

Provided real time verification of Post Construction Stormwater BMP construction with the assistance of survey equipment for Notice of Termination documentation.

Aluminum Dross Landfill Capping, AL

Completed procurement and oversight of geotechnical and environmental drilling programs, historical records review, slope stability analyses, grading plans, cap system design, and construction oversight for a capping and leachate treatment project for a 40-acre industrial landfill.

Facility Response Plan, OK

Managed and prepared a Facility Response Plan for a 70 thousand barrel per day oil refinery.

Environmental Compliance, Asphalt Emulsions Manufacturing Facility, PA, MD, OH, & NC

Managed compliance for multiple asphalt emulsions production facilities across four states.

MGP Permitting & Remediation – Phase II, Greenfield, MA

Provided a detailed design of the stream bank and bed restoration utilizing a combination of hard armoring and natural stream restoration techniques; obtained all required permits from local, state, and federal regulators (Section 404/401 permits); prepared remedial and restoration design documents; assisted with contractor selection; attained E&S permits, supervision of field oversight activities; and submitted completion documentation. This MGP impacted sediment removal and stream/bank restoration project required the complete gravity diversion of a medium-sized stream to facilitate the removal and replacement of 12,000 tons of sediment. The restoration portion of the project was designed to mitigate for stream and bank impacts due to the extensive remediation work. Remediation, stream, bank and wetland restoration goals addressed water quality, eroded stream banks and restoration of bordering vegetated wetlands.

MGP Remedial Design, Danville, NY

Evaluated remedial design investigation results, attained regulatory approval, prepared remedial design documents, and secured an E&S control permit for an impacted soil removal project at a former manufactured gas plant located in an urban area under complete containment.

MGP Permitting & Remediation Phase I, Greenfield, MA

Completed a detailed design of the stream bank and bed restoration utilizing natural stream restoration techniques; obtained all required permits from local, state, and federal regulators (Section 404/401 permits); prepared remedial and restoration design documents; assisted with contractor selection; attained E&S permits, supervised field oversight activities; and submitted completion documentation for the initial phase of an MGP impacted sediment removal and stream/bank restoration project.

This required the installation of a structural soil mix barrier wall and complete gravity diversion of a medium sized stream to facilitate the removal and replacement of approximately 12,000 tons of sediment. The restoration portion of the project was designed to mitigate for stream and bank impacts due to the extensive remediation work. Remediation, stream, bank and wetland restoration goals addressed water quality, eroded stream banks and restoration of bordering vegetated wetlands.

Civil Design and Permitting Management, PA & WV

Managed the design and permitting of Marcellus natural gas well sites in Pennsylvania and West Virginia. Responsibilities included bidding and managing contract engineering services, identifying and tracking of permits required for location construction, extensive technical reviews of draft drawings and permit applications, inspections of completed projects to evaluate design and/or as-built performance, and identification and incorporation of lessons learned from past and present construction projects. Management of these projects required rigorous coordination with all divisions within the company to ensure proposed locations facilitated the development process while simultaneously minimizing construction costs, addressing slope instability concerns and avoiding unnecessary permitting delays.

Oil Water Separator Design, IA

Managed and designed a 1,200-gallons/min oil/water separator replacement project for an oil terminal loading rack.

Firing Range Redesign, PA

Developed detailed grading plans, lead mitigation plan, geotechnical investigation, and oversight of stormwater for the City of Pittsburgh.

Former Creosote Wood Treatment Site, Reed City MI

Completed investigation, design, and field oversight of a steel sheet pile cut-off wall installation along the banks of the Hersey River to contain coal tar impacts.

Construction Inspection & Drilling Oversight, VA, WV, & MD

Conducted field inspection of various municipal and industrial construction projects. Oversaw field drilling operations to support geotechnical and environmental site investigations.

MGP Permitting and Remediation, Canandaigua, NY

Completed a detailed design of a stream bank and bed restoration utilizing a combination of hard armoring and natural stream restoration techniques; obtained Section 404/401 permit, prepared remedial design documents, assisted with contractor selection, attained E&S permits, supervised field oversight activities, and submittal of completion documentation for a MGP impacted sediment/soil removal and stream restoration project adjacent to an existing commercial facility located in an urban area. This project included sheet pile walls for groundwater control and excavation support, pumped stream bypass, disposal of 12,000 tons of impacted sediments, onsite water pre-treatment, and the construction of a vegetated segmental retaining wall. The restoration portion of the project was designed to mitigate for stream and bank impacts due to the extensive remediation work. Remediation, stream and bank restoration goals addressed water quality, eroded stream banks and restoration of riparian buffer strips.





MAIT WALKER, PE

PROJECT MANAGER

Years of Experience // 20

Years with ATLAS // 5

EDUCATION

BA, Environmental Science,
Boston University, MA, 1999

REGISTRATION AND CERTIFICATIONS

Professional Engineer:

- CO #PE0049954
- PA #PE096264

TRAININGS AND CERTIFICATIONS

OSHA 1910.120 40-Hour Safety Training.

OSHA 1910-120 8-Hour Refresher Training

Atlas Level 2 O&M Electrical Safety Certification

Emergency Care & Safety Institute Adult CPR, AED, and Standard First Aid Certification

EXPERIENCE HIGHLIGHTS

Remediation System Design, Operation, and Maintenance

Site Assessments/Investigations including sample collection for CERCLA sites.

Stormwater SWPPPs and BMPs

Mechanical and Electrical System Troubleshooting

Mr. Walker is a Project Manager for Atlas in the Environmental Service Division. Mr. Walker has over 20 years of experience in the environmental engineering field that spans a wide variety of specialties. His early career included the design and permitting of onsite stormwater and wastewater treatment systems. The most recent years have expanded this scope to include the design and implementation of remediation systems including water recovery and treatment, air sparging and vapor extraction, and in-situ chemical oxidation injections. Mr. Walker also has experience in Phase I/II Environmental Site Assessments, environmental emergency response, environmental sampling, and has spent time as a licensed water treatment plant operator at a 30 MGD Recycle Plant.

PROJECT EXPERIENCE

Operations and Maintenance of Remediation System, Vienne Tetrachloroethene Site, Vienna, WV

Mr. Walker was the lead engineer responsible for ensuring the continued operations of twin air sparge and soil vapor extraction systems to remove PCE from the groundwater from historical drycleaning operations. He facilitated the maintenance activities that kept the system functional and evaluated operational data for system optimization and remedial effectiveness. He also contributed to regular progress reporting as a senior engineer.

Monitoring, Operations, and Maintenance at a Former Chemical Manufacturing Facility, OH

Mr. Walker is a contributing engineer to the operations, maintenance, sampling, and reporting for a closed industrial landfill and chromium impacted groundwater pumping and disposal system.

Retail Petroleum Station: Leaking UST Remediation - Fort Littleton, PA

Mr. Walker is the project manager and design engineer for the dual phase extraction system used to remediate the groundwater at the site impacted with dissolved and free phase gasoline. The remedial activities were developed in accordance with the state DEP approved Remedial Action Plan and state underground storage tank indemnity fund requirements for projections on Cost to Close.

Retail Petroleum Station: Remedial Action Plan Development and Design for LNAPL Removal - Erie, PA

Mr. Walker is the design engineer for a proposed multi-phase subsurface LNAPL removal system to gain site closure. He has performed design calculations, designed pilot tests, and evaluated pilot test data to determine the most effective remedial strategy including the development of metrics for measuring the removal of LNAPL to the Maximum Extent Practical (MEP).

Large Scale Solar Array: Stormwater SWPPP Updates and Inspections - Circleville, OH

Mr. Walker performed stormwater inspections at a large construction project of a large, centralized installation of a 274 MW solar panel array that experienced stormwater violations. He provided engineering recommendations to implement new Best Management Practices (BMPs) and revisions to the SWPPP that resulted in avoiding compliance fines.

Wind Farm: Stormwater SWPPP Updates and Inspections - Forestville, NY

Mr. Walker performed stormwater inspections at a large construction project involving the remote installation of wind turbines that struggled with stormwater compliance during winter and spring conditions. His efforts lead to the revision of the SWPPP and implementation of new BMPs to regain compliance and avoid State DEP action.

County Airport Operations: Oil/Water Separator Survey - Pittsburgh, PA

Mr. Walker was the lead engineer responsible for the inspection and inventory of over a dozen oil/water separators across two airport locations. Inspections required establishing current conditions and the recommendations of maintenance activities or the possible replacement of the units. Where replacement was warranted, he developed draft designs and the associated replacement costs.



Low Level Mercury Flux & Mixing Zone Sample Program - Petoskey, MI

Mr. Walker was the team lead of the sampling program responsible for the collection of quarterly samples from 155 monitoring wells at a site managing leachate from cement kiln dust leachate. Sampling activities conformed to Low Level Mercury protocols for EPA 1631E (aka Clean Hands/Dirty Hands) to measure mercury in parts per trillion. Mr. Walker also developed the sampling reports including QA/QC compliant with Superfund Environmental Data Collection Activities.

LEED/Living Building Challenge: Stormwater & Wastewater Guidance Documents

Mr. Walker authored a number of guidance documents for the achievement of stormwater and wastewater credits under the Living Building Challenge version 2.0 program. These documents were also compliant with LEED.

Various Phase I/II Environmental Site Assessments

Mr. Walker has performed nearly all the tasks and functions in the development of multiple environmental site assessments from Colorado to Ohio and Pennsylvania.

Large Scale Water Treatment Plant Operator - Denver, CO

As an operator, Mr. Walker has performed operation and maintenance duties at a 30 MGD water treatment plant which reclaims treated wastewater and creates non-potable service water for use in irrigation and industrial operations. His duties included wet lab analysis, hazardous chemical operations, emergency response, and machinery maintenance and repairs.

Innovative Wastewater Treatment Design

Mr. Walker has developed designs for wastewater treatment systems based upon recirculating wetland principals including a multistage and multiphase system for a resort on the island of St. Kitts. He was also a consulting engineer for the construction and operations of 20,000 GPD Solar Aquatics System™.





ROBERT CAMPANA, PE

QA/QC / O & M / REPORTING

Years of Experience // 7
 Years with ATLAS // 2

EDUCATION

MS, Chemical Engineering,
 University of Michigan, 2014

BS, Chemical Engineering,
 Rutgers University, 2012

REGISTRATION AND CERTIFICATIONS

Professional Engineer

- WV #26902
- PA #PE095853
- OH #91262
- FL #91999
- NJ #24GE06090300
- MI #6201313878

TRAININGS AND CERTIFICATIONS

29 CFR 1910-120 OSHA 40-hour
 HAZWOPER Training

29 CFR 1910-120 OSHA 8-hour
 HAZWOPER Refresher Training

Atlas Level 1 O&M Electrical Safety
 Certification

EXPERIENCE HIGHLIGHTS

Remediation system design,
 equipment selection, and
 installation

Operations and maintenance of
 remediation systems

Permit and regulatory
 compliance

Mr. Campana is a Remediation Systems Engineer for Atlas Technical Consultants, LLC in the Engineering & Environmental Services Division. Mr. Campana is a licensed Professional Engineer with over 7 years of experience in the environmental field. His experience centers around managing a diverse array of environmental projects, in particular remediation design projects.

PROJECT EXPERIENCE

Operations and Maintenance for System at Retail Gas Station, Fort Littleton, PA

Operations and maintenance technician for existing multiphase extraction remediation system at a retail gas station. Responsibilities included regular visits to the site to obtain static and operational data for the system, as well as propose changes to the operation of the system to ensure that soil and groundwater contamination were being targeted to the maximum extent possible. Other duties included reporting of remedial action status and progress to regulators.

Remedial Design at Car Dealership, Hayward, CA

Design engineer for the cleanup of petroleum-contaminated groundwater and soil at a car dealership. Responsibilities included developing a full-scale multiphase extraction remedial system design using key parameters derived from prior pilot test data. Cost estimates for the proposed system were also obtained.

Supporting Engineering Work for Future Remediation System at Retail Gas Station, North East, PA

Contributing engineer for future vacuum-enhanced liquid recovery remediation system at a retail gas station. Responsibilities included completing design calculations and developing specifications for proposed remediation equipment. Other duties included contributing to written reports to regulators about the status of the project.

Remedial Design and Implementation at Retail Gas Station, Apopka, FL

Lead engineer for the cleanup of petroleum-contaminated groundwater at a gas station from the implementation of the air sparge/soil vapor extraction pilot test through remedial system design, construction, and startup. Responsibilities included collecting and analyzing pilot test data, as well as developing a full-scale remedial action plan using key parameters derived from that data. Implementation and startup of the state-approved design, as well as operations and maintenance visits, were also undertaken. Other duties included reporting, managing subcontractors, and supervising field work.

Remedial Design and Implementation at Former Retail Gas Station, St. Petersburg, FL

Lead engineer for the cleanup of a former retail gas station with residual groundwater and soil petroleum contamination. Supervised chemical injection pilot test and used pressure and radius of influence data to develop a full remedial action plan. Responsibilities also included supervising the full-scale injection event, reporting and analysis of data, and coordinating with subcontractors and regulators to ensure project completion and proper funding. Active remediation was completed successfully.

Remedial Design at Former Retail Gas Station, Ocala, FL

Lead design engineer for the cleanup of a former retail gas station with residual groundwater and soil petroleum contamination. Completed air sparge/soil vapor extraction system design to remediate groundwater plume covering two properties. The design involved angled treatment wells to reach under utility lines and a city street. The design was approved by the state, with implementation to proceed at a future date.





MATTHEW HUMMEL

FIELD O & M SERVICES

Years of Experience // 17

Years with ATLAS // 11

EDUCATION

BS, Environmental Science/
Geology, Edinboro University of
Pennsylvania, 2009

TRAININGS AND CERTIFICATIONS

Commercial Drivers License
(CDL) Class C, + HAZMAT, +
Air Brakes

FAA Part 107 Certified Remote
UAV Pilot

29 CFR 1910-120 OSHA 8-hour
HAZWOPER Refresher Training

29 CFR 1926 10-hour General
Industry Safety Training

29 CFR 1910-120 OSHA 40-hour
HAZWOPER Training

29 CFR 1910.120 OSHA Site
Supervisor

Electrical Safety Certification

49 CFR 172.704 DOT Hazardous
Materials Transportation

40 CFR 262.34, 264.16, 265.16
RCRA Hazardous Waste
Generator Safety

EXPERIENCE HIGHLIGHTS

Company Safety Training Officer
for LOTO, O&M, and Electrical
Safety

Remediation System Design,
Operation, and Maintenance

Mechanical and Electrical
System Troubleshooting and
Repairs

Chemical Spill Response for
Petroleum and Rail Clients

Environmental Site Investigation
and Phase II Assessments

Mr. Hummel has 17 years of experience in geology and environmental consulting, Mr. Hummel brings demonstrated capabilities to his role as a Project Manager for the Cleveland, Ohio office. He oversees field work for multiple sites throughout Ohio which involves evaluating site conditions, managing field effort, and supporting reporting activities. He oversees fieldwork including drilling and soil sampling, UST system closures, remedial excavations, remedial system installations, remediation system operation & maintenance, remediation system troubleshooting & repairs, as well as develops, implements, and generates reports for Phase II Environmental Site Assessments.

PROJECT EXPERIENCE

Branch Health and Safety Officer

In this role, Mr. Hummel serves as the office health and safety coordinator. This role includes the management and implementation of the health and safety program and training. This includes the development and review of site-specific health and safety plans and job safety analysis (JSA) documents, tracking of leading and lagging indicator metrics, and leading training courses on electrical safety and administering respirator fit tests. He also is the liaison between the office and corporate level safety program.

Independent Petroleum Market Sector

Mr. Hummel is a project manager for this highly flexible and adaptable market sector. Mr. Hummel provides guidance with UST closures, site investigations and reporting requirements. He works to find cost effective methods to assist small to mid-sized petroleum retailers with their regulatory requirements through the Bureau of Underground Storage Tanks (BUSTR). Relevant site experience in Ohio, Pennsylvania, and West Virginia.

UST Systems Release Investigation, Reporting and Compliance/Various National Clients/ Midwest Region

Managed and conducted soil and groundwater investigations and UST system upgrades/ removal activities at over 200 UST sites. Site specific responsibilities included supervising and conducting soil and groundwater investigations and UST system upgrades/removal activities, preparing Tier I and Tier II evaluation reports, remedial action plans, and underground storage tank (UST) system closure reports for the Bureau of underground Storage Tank Regulations. Relevant site experience in Ohio, Pennsylvania, and West Virginia.

Remediation System Project Supervisor, Major Petroleum and Chemical Clients Midwest Region

Supervises the daily running, OM, optimization, trend tracking, and reporting for current and former UST sites with active remediation systems. Manages resources and personnel to support 6 active remediation sites statewide. These systems include DPE, SVE/AS (with and without auxiliary water treatment capabilities), and DPE/Pump and treat. Additionally provides logistics, permitting, and construction support via mobile dewatering trailers for ongoing construction projects in addition to fulfilling reporting requirements to government agencies for all systems. Major components have included: positive displacement, regenerative, and rotary claw blowers; centrifugal, diaphragm, progressive cavity, and down well pneumatic and electric pumps; air strippers; air compressors carbon units (both air and water); and catalytic oxidizer (catox) units. There were as many as seven active remediation systems operational at any given period.

Relevant site experience in Ohio, Indiana, Pennsylvania, and West Virginia.

Discharge Permitting and Regulatory Compliance/Various Nation Clients/Ohio Region

Manages the permitting process and compliance for several clients in support of onsite construction and remediation activities. Works with various government agencies to Obtain the correct discharge permitting for a site (water and air) as well as performs the appropriate recording and reporting requirements to remain within compliance.



Emergency Responder/Various Clients

Provided health and safety oversight and field operation oversite for a variety of emergency response situations in the Rail, Pipeline and Retail petroleum Sectors Onsite.

KEYNOTE PROJECTS

Remedial Troubleshooting, Vienna Tetrachloroethene, Vienna, WV

Atlas took over the management of several remediation systems at a superfund site in northern West Virginia. Mr. Hummel has assisted the management team with the troubleshooting and repair of multiple components within the system and assisted with the creation of new safety documentation to maintain current health and safety standards. As part of this work, assessment of the current system components was completed, and recommendations made to the WVDEP in order to provide the best value added for the project. Mr. Hummel would oversee the contractors, and other field crews to ensure proper safety and ensure the progression of remedial activities. This involved site monitoring, remediation system design, installation and maintenance, drilling oversite, air monitoring and client interactions. Relevant site experience in Ohio, Michigan, Pennsylvania, and West Virginia.

Remedial Technical Troubleshooting and oversight, Former Chemical Manufacturing Facility, Ohio

Mr. Hummel provided technical expertise in the assessment, repair, and optimization for a ongoing remedial project onsite. This included the development of new safety procedures for working with the existing remedial systems, as well as modifications to the systems to bring them more in line with current standards. Mr. Hummel provided valuable expertise during the modification process to bring the system up to date and to modern standards.

Remedial Technical Troubleshooting and oversight, Chemical Manufacturing Facility, Ohio

Through this project, extensive troubleshooting was performed on the existing legacy control systems, electrical and mechanical sub-systems, and performing system optimization tasks to ensure the highest efficiencies during runtime. Mr. Hummel also provided technical and oversight support on behalf of the client during the design and installation of new components by third party contractors to ensure the systems follow client standards. After installation, Mr. Hummel assisted with the training of onsite personnel on the new equipment and assisted with any technical troubleshooting that need to be done during any downtime. Mr. Hummel also assisted with the routine monitoring of system performance to track trends and identify needed maintenance.

Phase II Environmental Site Assessments/Various Clients/

Multiple Locations in Ohio

Assisted with Phase II subsurface investigations including extracting and field screening Soil, Vapor and Water Samples, installation and purging monitoring wells and surveying site topography for groundwater flow modeling. After Collection, the date is then compared to various action levels depending on the applicable pathway of concern to provide the client with an accurate depiction of the site conditions. If issues are identified, Mr. Hummel assists with the design and remediation of the site to achieve remediation goals with the client.

Phase II Site Assessment: AvFlight, Canton Akron Airport

Mr. Hummel provided field oversight and reporting services for a major Phase II environmental assessment that was part of a property transaction at the airport. This included over 18 separate buildings and associated areas. During this work, he coordinated between the client and the airport personnel to achieve the necessary results while maintaining safe procedures. At the conclusion of the work, he lead the review and interpretation of the analytical data and the creation of the phase II report for client submittal



DENNIE SUTTON

ENVIRONMENTAL FIELD TECHNICIAN (VIENNA)

Years of Experience // 48

Years with ATLAS // 5

TRAININGS AND CERTIFICATIONS

Atlas Level 2 O&M Electrical Safety Certification

29 CFR 1910-120 OSHA 8-hour HAZWOPER Refresher Training

29 CFR 1910-120 OSHA 40-hour HAZWOPER Training

EXPERIENCE HIGHLIGHTS

Remediation System Operation and Maintenance

Mechanical System Troubleshooting and Repairs

WORK EXPERIENCE

Operation and Maintenance Technician at Vienna Tetrachloroethene Site, Vienna WV

Primary O&M Field Technician providing ongoing operations and maintenance at a remediation facility in Vienna, WV. Primary responsibilities include:

- Implements routine maintenance of 30-40 HP rotary screw compressors and 5-15 HP rotary lobe vacuum blowers and other key equipment of Air Sparge and Soil Vapor Extraction systems.
- Overseeing two remediation system sites and associated network of groundwater monitoring wells used recovery and treatment of PCE impacted water
- Performing maintenance work, onsite mechanical repairs, and well repairs including plumbing, gauge replacement, and measuring depth to water readings.
- Completing O&M documentation, including reporting results, site readings, and weekly tasks.

ASE-Certified Automotive Technician

Spent most of his life working hands-on and mechanically, building a strong foundation in troubleshooting and repair. Gained extensive experience in diagnostics, problem-solving, and mechanical repair. Responsibilities include:

- Using gauges, diagnostic scanners, and precision tools
- Operating lathes and other shop equipment
- Repairing and replacing components to ensure safe, reliable operation
- Identifying and preventing future mechanical issues





ANDREW FROST

O & M / REPORTING

Years of Experience // 12

Years with ATLAS // 5

EDUCATION

MS, Environmental Science and Management, Duquesne University, 2015

BS, Biology, Gannon University, 2011

TRAININGS AND CERTIFICATIONS

29 CFR 1910-120 OSHA 8-hour HAZWOPER Refresher Training

29 CFR 1910-120 OSHA 40-hour HAZWOPER Training

Emergency Care & Safety Institute Adult CPR, AED, and Standard First Aid Certification

EXPERIENCE HIGHLIGHTS

Management of CERCLA Site Monitoring program

NPDES Permitting and DMR Reporting

UST site closure oversight and documentation

Mr. Frost is a Senior Scientist for the Pittsburgh office in the Environmental Management Division. Mr. Frost has over twelve years of experience with projects in the environmental industry. His current areas of focus include environmental remediation, environmental regulatory compliance, environmental due diligence. Over the past five years, he has been responsible for the planning and oversight of field investigations and compliance monitoring, report preparation and technical review, and communications with clients, regulators, contractors, and other partners.

PROJECT EXPERIENCE

Vienna Tetrachloroethene Site, Vienna, WV

Manage field schedule, data assessment and deliverables for a Tetrachloroethene Superfund Site in West Virginia. Site contains multiple remedial treatments systems (air sparge/soil vapor extraction and groundwater extraction) and requirements include groundwater and system performance sampling activities. Additional project responsibilities include tabulation of data for delivery to agency, communication with the agency regarding project activities and progress, and technical report writing and development. Conducted a review of remedial strategies to assess potential change in selected remedy for site.

Underground Storage Tank Release Remediation, Various Sites, PA

Project Manager overseeing the remediation of sites through the Pennsylvania Storage Tank and Spill Prevention Program (Chapter 245). Responsibilities include initial release reporting, site characterization planning, execution, and oversight, collaboration with Professional Engineers to design remedial action plans based on site characterization, implementation of remedial actions, compliance monitoring, and remedial action completion reporting. Throughout the characterization and remediation process, coordinated with regulators, clients, and the Pennsylvania Underground Storage Tank Indemnification Fund (USTIF) to close sites as efficiently as possible, while limiting the clients' cleanup costs.

NPDES/POTW Compliance Monitoring, Various Sites, PA

Project Manager overseeing routine discharge monitoring for multiple commercial facilities throughout Pennsylvania to ensure compliance with National Pollutant Discharge Elimination System (NPDES) and Publicly Owned Treatment Works (POTW) discharge permits. Responsibilities include permit review and development of a sampling plan; preparation and review of standard operating procedures (SOPs) and field scope documents; maintenance of project schedules to ensure sampling and reporting deadlines are met; coordination with field staff, clients, laboratory management, and regulators; analytical results review; and preparation, review, and submittal of Discharge Monitoring Reports (DMRs) and sample summary letter reports.

Underground Storage Tank Closure Oversight and Assessment, Various Sites, PA

Project Manager overseeing the removal or closure-in-place of underground storage tanks (USTs) following the regulatory closure process. Responsibilities include coordination of proposed schedule with client, subcontractors, and state licensed UST removal contractor; preparation of all required permits and closure notification documents; oversight of tank cleaning and removal or filling; soil and groundwater sampling in accordance with state regulations; and preparation of UST closure documentation and summary letter report interpreting analytical results. In cases where analytical results indicated impacts to soil or groundwater, a release was reported to the state agency, a reimbursement claim was filed (if applicable), and the release characterization and remediation would go through the appropriate regulatory process to obtain relief of liability or "no further action" status. Project Manager was responsible for clear and effective communication with clients and regulators throughout the UST closure to ensure all mandatory notification and reporting deadlines were met, and the project remained on-schedule and on-budget.





JAMES GILLIGAN

SENIOR CIVIL DESIGNER - CAD / GIS SERVICES

Years of Experience // **37**

Years with ATLAS // **3**

EDUCATION

Associate in Specialized
Technology Degree Computer
Aided Drafting and Design 1988
Triangle Tech, Greensburg PA

TECHNICAL SKILLS

AutoCAD

AutoCAD Civil 3D

Carlson Civil Suite

Bluebeam

Mr. Gilligan is a Senior Civil Designer for Atlas Technical Consultants, LLC in our Engineering and Environmental divisions. Mr. Gilligan is a seasoned design professional with 37 years of experience with a 30-year focus in the Civil and Environmental consulting industry. His experience centers around a diverse array of layout and designs for environmental, geologic, reclamation / remediation, and civil projects within the coal and aggregate mining, sanitary and residual waste, and oil and gas industries.

PROJECT EXPERIENCE

S3 West Virginia AML Projects, WV

Conceptual Design, layout, and permitting for (13) AML sites located in the State of West Virginia for the West Virginia Department of Environmental Protection Office of Abandoned Mine Lands and Reclamation. Design work included erosion and sedimentation control, site grading for dangerous highwall reclamation, dangerous impoundments, open mine portals, and earthwork quantity calculations for overburden and required fill placement to restore site to pre mining conditions utilizing AutoCAD Civil 3D software.

Conifers Coupon East AML Project, PA

Conceptual and final Design, layout, and permitting for AML site located in Logan Township, Blair County Pennsylvania for the Commonwealth of Pennsylvania Department of Environmental Protection Bureau of Abandoned Mine Reclamation. Design work included erosion and sedimentation control, site grading for dangerous highwall, and earthwork quantity calculations for overburden and required fill placement to restore site to pre mining conditions utilizing AutoCAD Civil 3D software.

Johnstown Inclined Plane Hillside AML Remediation Project, PA

Conceptual and final Design layout, for hiking trail located near the Historic Johnstown Inclined Plane Above Downtown Johnstown for the Conemaugh Valley Conservancy under the Bureau of Abandoned Mine Reclamation. Design work included erosion and sedimentation control, site grading for trail redesign, rockfall mitigation, capping vertical mine shaft, and installation of bat gates utilizing AutoCAD Civil 3D software.

Coal and Aggregate Mining Projects, PA

Design, layout, and permitting for surface and underground coal and aggregate mining facilities including layout and design of coal refuse disposal facilities, active surface mining operations, and underground mine workings. Design work included erosion and sedimentation control, site grading, and earthwork quantity calculations for overburden and required fill placement utilizing AutoCAD Civil 3D software.

Remediation and Reclamation Projects, PA

Design and layout for the remediation of abandoned mine lands to include restoring site to post mining topographic conditions with required erosion and sedimentation controls. Design work included earthwork quantity calculations, proposed grading layout, and geologic cross-sections utilizing AutoCAD Civil 3D software.

Municipal and Residual Solid Waste Landfills, PA, KY, MD, and TN

Design, layout, and permitting for various Landfill sites including conceptual layout and design, grading plans, geologic cross-sections, construction level grading plans, earthwork quantity calculations, 3D topographic modeling, piping plans, leachate detection and collection systems, landfill liner and capping system design and layout, and construction quality monitoring.

Coal Fired Power Plant Coal Stockpile Inventory Projects, PA

Calculate quarterly coal stockpile volume utilizing AutoCAD Civil 3D, and Carlson Civil Suite software by creating 3D topographic models derived from UAV (unmanned aerial vehicle). Volume quantities were calculated by comparing the most recent model to the pile base to determine the amount in tons of coal in current inventory.

Oil and Gas Industry Projects, PA

Design and layout of well drilling pads utilizing AutoCAD Civil 3D software to create grading and balance earthwork volumes to reduce overburden and required fill material. Layout of pipeline alignment sheet sets including all grading, erosion and sedimentation controls, and details.





WILLIAM EARLE, PE

SENIOR TECHNICAL CONSULTANT / ENVIRONMENTAL REMEDIATION ADVISORY

Years of Experience // **36**

Years with ATLAS // **11**

EDUCATION

BS, Civil Engineering, Union College, Schenectady, NY

REGISTRATION AND CERTIFICATIONS

Professional Engineer:

- WI #35407

TRAININGS AND CERTIFICATIONS

29 CFR 1910-120 OSHA 8-hour HAZWOPER Refresher Training

29 CFR 1910-120 OSHA 40-hour HAZWOPER Training

40-hour Radiation Safety Training

EXPERIENCE HIGHLIGHTS

CERCLA Site Identification and Assessment

Governmental Client Manager on CERCLA projects

CERCLA Process Strategy Development

Remedial Technology Evaluation

Environmental Compliance Consulting on a wide variety of sites.

Mr. Earle has 36 years of environmental engineering and consulting experience in the areas of hazardous waste; regulatory compliance; underground storage tanks; Brownfields redevelopment; water quality; and environmental site management including regulatory strategy, investigation, remediation, remedial construction, and monitoring. He has additional experience in civil/site development work, including site planning, storm water planning, and materials testing. He has environmental experience in the complete CERCLA process, including site assessment; HRS scoring package; remedial investigations and feasibility studies; decision documents; remedial design; remedial action; and site closure. Experienced in providing clients with support during litigation and negotiations on both federal and non-federal projects. Mr. Earle also has extensive non-federal experience, including all phases of property transactions, site cleanup under various state petroleum / underground storage tank and voluntary cleanup programs, and site development and redevelopment. Mr. Earle also has experience coordinating remedial actions with site development. He has also assisted clients in maintaining compliance with environmental reporting, air permitting, wastewater and storm water projects.

PROJECT EXPERIENCE

Program Manager and Senior Engineer Garvey Elevator Site, Hastings NE (2020-Current)

Mr. Earle is currently serving as Program Manager for Atlas in a joint venture under which Atlas is providing Operations and Maintenance Services to EPA Region 7 for a Groundwater Extraction and Treatment System and Soil Vapor Extraction System at the Garvey Elevator Site. Mr. Earle provides technical support to ongoing activities as needed, and has written the Unified Federal-Program Quality Assurance Project Plan (UFP-QAPP) for the site.

Senior Engineer and Project Manager, Lusher Street Groundwater Contamination Site / EPA Region 5 (12/2009 – 06/2021; 12/2023-Present)

Mr. Earle is presently the project manager for the current task order providing oversight of remedial design and implementation activities of vapor intrusion mitigation systems by the settling defendants. Previously, Mr. Earle was the sole project manager for a fund-lead RI/FS project for USEPA. The site is an 800-acre, mixed use area located in Elkhart Indiana. Mr. Earle developed a sampling approach to achieve objectives of identifying active exposure pathways potentially requiring early mitigation while defining the overall extent of contamination at this large, complex, multiple-source site. The project involved vertical aquifer sampling, monitoring wells installed to 150+ foot depths; ground-water sampling, an investigation regarding potential vapor intrusion, along with the preparation of RI and FS Reports. An interim ROD was signed in September 2014. Recent activities include supporting EPA with consent decree negotiations and other post RI/FS technical support. Contaminants of concern are chlorinated VOCs in groundwater

Project Manager and Senior Engineer, Gary Development Landfill, Gary, IN / EPA Region 5 (06/2014 – 06/2021)

Mr. Earle was the project manager and technical lead for this abandoned municipal waste landfill located in Gary, IN. As part of assisting EPA with PRP-oversight, Mr. Earle worked with the EPA to develop a strategy for managing the site under a presumptive remedy approach, while addressing potential hot-spots, including NAPL identified during field work for the RI. As part of the RI, a limited investigation for PFAS was performed, out of concern both for the history of the site and its proximity to a likely source of PFAS (Gary-Chicago Airport). Contaminants of concern at the site include PAHs, metals, VOCs, PCBs, 1,4-dioxane, and PFAS in soil, sediment, surface water, and groundwater.

Project Manager and Senior Engineer Cam-Or Site, Westville IN / EPA Region 5 (07/2014 – 12/2020)

Mr. Earle was the Project Engineer and Project Manager providing oversight of the Remedial Design and Remedial Action implementation of soil, LNAPL, and groundwater remedies at the CAM-or Site. The Site was a former waste oil refinery. Contaminants of concern include metals and PCBs in soil, an LNAPL which contains PCBs, and groundwater with 1,4-dioxane as the primary contaminant, along with other VOCs. Before Mr. Earle's involvement, the facility had been demolished and partially remediated, with two on-site containments for PCB- and lead-contaminated soil. Some lead-contaminated soil remained; this was placed in an expansion of the existing on-site repositories. After the part of the LNAPL recovery system was installed; it was not performing as well as anticipated. A further investigation was performed where the transmissivity of the LNAPL was evaluated,



and concluded that due to changed site conditions, little of the LNAPL was going to be recoverable. Part of the LNAPL plume extended off-site into a residential area, therefore the 12-year old vapor intrusion investigation was updated with new sampling. Extensive studies were done as part of the design effort to treat the 1,4-dioxane plume which extends over 1 mile from the site. A pup-and-treat system, using advanced oxidation processes has been selected for design. The previously preferred synthetic medial approach was evaluated as being uneconomical due to the presence of significant concentrations of dissolved organic carbon in the groundwater adversely affecting the sorption of 1,4-dioxane on the synthetic media. Mr. Earle has also supported the development and implementation of institutional controls at the site.

Engineer, Estech General Chemical Site / EPA Region 5, (12/2018 -04/2021)

As project engineer, Mr. Earle provided technical support to the project team by reviewing the history of the site, identifying data gaps, and providing advice on overall sampling strategy, sampling approach, analytes, and media for the phase 1 sampling event. The objective was to maximize the use of existing data (some of which was more than 20 years old and collected with different objectives), while starting to obtain the data necessary to complete a comprehensive RI/FS for the site. A multi-stage approach was planned, with the first phase having been completed in 2021. Contaminants of interest or concern include VOCs, SVOCs, PAHs, organochlorine and organo-phosphate pesticides, asbestos in soil, autoluff, and PCBs in soil, groundwater, surface water, and sediment.

Senior Engineer and Project Manager, Sandoval Zinc Site, Sandoval, IL, EPA Region 5, (08/2011 – 06/2021). EPA Region 5 (08/2011 – 06/2021)

Mr. Earle served as the project engineer, and later on project manager for this fund-lead RI/FS work assignment, providing technical support for the fund-lead RI/FS investigation at the Sandoval Site, a former zinc smelter. Mr. Earle was involved with identifying both state and Federal ARARs for the site. As part of ARARs development and discussion for the FS, the applicability of the Bevill Exclusion, selection of closure ARARs (including use of TCLP/SPLP testing, potential use of 35 IAC Part 807 closure requirements for mining wastes, the Area of contamination concept, along with Illinois groundwater classification and groundwater cleanup goals were considered. Mr. Earle provided ongoing support assisting EPA headquarters and Region 5 to evaluate alternate cleanup strategies, using an updated approach to assessing lead hazards and cleanups of the residential areas at the site until the end of the contract he was working under. Primary contaminants of concern were metals in soil and groundwater.

Senior Engineer, EPA Region 5, Matthiessen and Hegeler Zinc Company NPL Site, LaSalle, IL (12/2006 – 08/2019)

As senior engineer, Mr. Earle provided technical support to the project team for the planning and implementation of the joint EPA (for OU2) –PRP (OU1) RI-FS for this former zinc smelter with two former coal mines, located in LaSalle, LaSalle, County Illinois, along the banks of the Little Vermillion River about one mile from the Illinois River. Mr. Earle's involvement included both providing oversight to PRP efforts and assisting with the fund lead portion of the project. Contaminants at the M&H Site include arsenic, lead, zinc, PAHs, PCBs is soil, groundwater and sediment. OU2 contains an estimated 900,000 cubic yards of contaminated soil located on the former M&H zinc property and in the residential areas. OU1 includes a slag pile, located partially within the Little Vermillion River, estimated to contain about 1.2 million cubic yards of slag contaminated with arsenic, lead, and other metals.

Mr. Earle's involvement included planning and scoping the RI, identifying and evaluating ARARs for both on-site (including a slag pile located in the Little Vermillion River and the main plant area) and residential areas. ARARs considered included the Abandoned Mined Lands and Water Reclamation Act, Landfill Cover and closure performance standards, soil and groundwater standards, water quality standards, and the design and operation of staging piles. Mr. Earle was also involved with developing and evaluating potential remedial approaches used in the FS.

Project Manager and Senior Engineer Fields Brook NPL Site, Ashtabula, OH / EPA Region 5 (08/2006 – 06/2021)

Mr. Earle served as project manager and Technical Lead for this RA oversight project under the EPA Region 5 RAC2 Contract. Mr. Earle has been providing technical assistance and document reviews to EPA in support of ongoing Remedial Action activities at this multi-PRP site. Concerns at the site include sediment, PCB contamination (including DNAPL); and a mixed PCE, TCE, hexachlorobenzene, hexachlorobutadiene DNAPL. Other activities which have been performed at the site was the design and installation of two interceptor trenches; the design and installation of an isolation remedy for Fields Brook, ongoing troubleshooting of a DNAPL recovery system (recovering the multi-component DNAPL), and additional investigations. Mr. Earle worked with EPA to implement remedial actions at this site, including enhanced DNAPL recovery. Under this work assignment, Mr. Earle prepared work plans, FSPs, QAPPs, and HASPs. Mr. Earle is the lead technical reviewer of PRP documents and has provided technical support to EPA for an ESD to revise the DNAPL recovery system and a CERCLA 5-year review.

Senior Engineer and Project Manager, Allied Chemical & Ironton Coke Plant Site, Ironton, OH / EPA Region 5. (10/2006 – 12/2019)

Mr. Earle served as the project manager and technical lead for this FS, RA, and RD oversight project for a former coke plant located on the bank of the Ohio River. Contaminated media include soil, sediment, and groundwater; contaminants included arsenic, VOCs, PAHs, and DNAPL. Over 900,000 cubic yards of arsenic, VOC, PAH, and DNAPL contaminated soils were present on the site, located adjacent to the Ohio River, an active railroad main line, and a street. Mr. Earle both coordinated and provided review services to support EPA's oversight of activities at this site. Documents reviewed included human health and ecological risk assessments, feasibility study, pre-design investigation documents, design documents for soil and sediment remediation, as well as coordinating oversight of remedial construction activities. Due to the depth, location (relative to street, railroad, and river) and volume of contaminated soils, a landfill cap was installed on the site, with lower grades than usual to allow for potential redevelopment. Sediment remediation activities included capping sediments in-place, and providing a reinforced mat and soil cover to address areas of the riverbank which are within the floodplain and flood on an annual basis.

CERCLA Site Identification through Listing Experience

Project engineer for performing over 150 CERCLA Preliminary Assessments, 12 Site Investigations, and Two HRS Scoring packages.

Senior Engineer, Remediation Design and Implementation, Oasis Redevelopment Project, Illinois State Toll Highway Authority, 7 locations in northeastern Illinois.

Senior Engineer responsible for the design and implementation of remedial efforts in conjunction with a \$100,000,000 redevelopment of the Tollway Oases. This project involved the use of SVE, air sparging, and enhanced bioremediation for the treatment of soil and groundwater. Developed the final design and performed construction oversight.



CHRISTOPHER BALE

SENIOR TECHNICAL CONSULTANT / ENVIRONMENTAL REMEDIATION ADVISORY

Years of Experience // 39
Years with ATLAS // 12

TRAININGS AND CERTIFICATIONS

29 CFR 1910-120 OSHA 8-hour HAZWOPER Refresher Training

29 CFR 1910-120 OSHA 40-hour HAZWOPER Training

OSHA 29 CFR 1910.332 & 1926.416 Electrical Safety Training

OSHA CFR 1926 Excavation & Trenching Safety Regulations

American Red Cross Standard CPR & First Aid

OSHA 1910.147 Lock-out/Tag-out Training

Valid Transportation Workers Identification Credential (TWIC)

EXPERIENCE HIGHLIGHTS

Petrochemical and Manufacturing Client Management

Remediation Equipment Design, Selection, and Installation Experience

Electrical controls troubleshooting experience

Industrial, Refining, and petrochemical client sector experience

Safety Training Related to Remedial System Operations

Chris Bale is a Senior Technical Consultant with over 39 years of experience in environmental remediation, with a strong focus on the selection, operation, and optimization of groundwater and NAPL recovery systems, treatment technologies, and automated control systems. He provides national technical leadership across a portfolio of more than 150 active remediation systems serving petrochemical, industrial, and retail petroleum clients. His expertise includes mechanical and electrical system design, process troubleshooting, automation integration, and remote system monitoring. Mr. Bale is actively involved in the development of standard operating procedures, performance optimization plans, and regulatory compliance strategies for systems operating under RCRA, CERCLA, and state-led programs. He also leads site evaluations, cold-eye reviews, and technical audits to support long-term system performance and integrity. In addition to his technical responsibilities, Mr. Bale mentors junior and mid-level technical staff, provides training in system operations and electrical safety, and supports internal initiatives related to asset management, resiliency, and best operational practices. He serves as National Client Manager for several key petrochemical accounts, where he is known for delivering cost-saving solutions, improving system reliability, and building strong client relationships through strategic guidance and hands-on support.

PROJECT EXPERIENCE

System Technical Lead – National Remediation Support (2008 – Current)

Provides senior-level technical leadership and nationwide support for the operation, maintenance, and optimization of over 150 active remediation systems across industrial, petrochemical, and retail petroleum portfolios. In this role, Mr. Bale performs site-specific process evaluations, troubleshooting guidance, and system diagnostics to improve runtime, treatment effectiveness, and operational efficiency. He plays a central role in mentoring junior and mid-level technical staff, delivering hands-on and remote training in areas such as electrical safety, pump and process troubleshooting, SCADA interface, and regulatory compliance. Mr. Bale also leads the development of internal procedures, standard operating practices, and safety protocols to ensure consistency and best-in-class performance across Atlas' remediation projects. He conducts mechanical integrity reviews, participates in system audits, and works directly with project teams and clients to resolve technical challenges and support long-term system performance and sustainability.

Project Technical Lead – Chemical Refinery, Deer Park, TX

Leads the day-to-day operations and strategic management of a 31-well groundwater recovery system addressing a large chlorinated solvent plume at an active chemical manufacturing facility. The system recovers groundwater from three discrete water-bearing zones and operates under the Texas Voluntary Cleanup Program (TX VCP). Mr. Bale provides senior technical oversight for all extraction, conveyance, and treatment components, ensuring consistent performance, regulatory compliance, and alignment with long-term remedial objectives. He directs planning and execution of process and control system upgrades, including integration of new treatment equipment, electrical improvements, and SCADA modernization to enhance system reliability and remote monitoring capabilities. Mr. Bale developed system maintenance, startup, and troubleshooting procedures and oversaw the transition from a catalytic oxidizer to vapor-phase carbon treatment as a cost-effective off-gas management solution. In addition to technical leadership, he manages proposal development, scope, and ongoing client communications. His role includes evaluating operational trends, coordinating with internal staff, and identifying opportunities to streamline operations and reduce lifecycle costs. Mr. Bale routinely participates in strategic planning meetings with the client, providing guidance on system optimization, regulatory reporting, and long-term remedial strategy.

Remediation System Senior Technical Consultant – RCRA Facility/ Chemical Plant, Wichita, KS

Provides senior-level technical and strategic support for multiple groundwater remediation systems addressing chlorinated solvent impacts at an active industrial facility. Mr. Bale oversees system operations performed by local Atlas personnel and supports optimization of recovery, conveyance, and treatment components to maintain effective plume control. Responsibilities include preparation of standard operating procedures, development of O&M manuals, and integration of PLC/SCADA and remote monitoring capabilities to improve system reliability, data visibility, and operational performance. He also provides design input for system upgrades and treatment enhancements, evaluates performance trends to identify cost-effective



improvements, and supports troubleshooting of mechanical, electrical, and controls issues. Mr. Bale works closely with the client, regulatory stakeholders, and internal project teams to ensure remediation systems operate within established design parameters and meet long-term compliance and corrective action objectives. His role includes ongoing client management, planning of capital improvements, and participation in technical review meetings to guide remediation strategy and project execution.

Remediation System Senior Technical Consultant – RCRA Site / Former Chemical Manufacturing Facility, OH (2018 – Current)

Provides senior technical oversight for two groundwater remediation programs at a former chemical manufacturing facility operating under a long-term RCRA corrective action program. One system targets legacy chromium impacts, while the second addresses a separate chlorinated solvent plume. Both systems include groundwater extraction, conveyance, and storage components supported by locally staffed O&M personnel. Mr. Bale provides technical guidance on system performance, operational troubleshooting, and process optimization to ensure effective plume control and system efficiency. He led the design and implementation of the pilot groundwater extraction study, overseeing conceptual design, equipment selection, SCADA integration, and field deployment to evaluate remedial effectiveness in a complex hydrogeologic setting. Mr. Bale has also driven multiple modernization efforts across the sites, including upgrades to control system architecture, instrumentation, electrical reliability, and remote monitoring capabilities. His responsibilities include development of site-specific SOPs and an O&M manual, evaluation of performance trends, and identification of cost-effective improvements to support long-term corrective action goals. Mr. Bale works closely with the client and internal project team, providing routine status updates, strategic planning input, and ongoing client management to maintain alignment with compliance objectives, schedule expectations, and budget constraints.

Project Manager - Petroleum Refinery, Lake Charles, LA

Manages all aspects of a total fluids recovery system at an active petroleum refinery, designed to address LNAPL and dissolved-phase hydrocarbons under an active remediation program. Mr. Bale oversaw the 2011 expansion of the system, which included installation of additional recovery wells, upgraded conveyance piping, and new system controls. His ongoing responsibilities include process troubleshooting, performance optimization, and development of site maintenance strategies. He coordinates with site environmental staff and refinery operations to ensure system integration with plant infrastructure and compliance with operational safety protocols. He supports budget forecasting and supervises local technical personnel to ensure the system meets design specifications and regulatory obligations. TWIC clearance is maintained for all on-site activities. Mr. Bale also provides recommendations for future upgrades to extend system life and minimize downtime.

Project Technical Lead – Acid Mine Drainage Project, Johnstown, PA (2020 – Current)

Provides senior technical leadership for a complex acid mine drainage (AMD) management program at a legacy mining property operating under long-term environmental corrective action. Since 2020, Mr. Bale has supported the site's recovery, conveyance, and treatment operations, which include a multi-stage reaction tank system, solids settling basins, and iron/manganese removal processes.

Mr. Bale evaluates system performance, supports day-to-day operations troubleshooting, and identifies opportunities to improve reliability, treatment efficiency, safety, and environmental compliance. Mr. Bale plays a key role in planning and implementing major upgrades to the site's 2,500 gallon-per-minute AMD treatment plant, including process design assistance for new treatment systems, improved chemical feed and mixing configurations, and enhanced flow management and controls. His work includes development and review of P&IDs, process flow strategies, and instrumentation and electrical architecture to support modernization efforts and long-term plant resiliency. Mr. Bale collaborates closely with client managers, operations staff, and design consultants to ensure upgrades integrate seamlessly with ongoing treatment operations. His responsibilities include field troubleshooting, remote monitoring support, and participation in strategy meetings to guide capital planning, operational optimization, and compliance reporting.

Project Manager - Former Tank Battery Site, Felda, FL

Conducts senior-level technical support and operational oversight for a 14-well groundwater recovery and disposal system targeting brine-impacted groundwater resulting from historical oil and gas operations. Mr. Bale led a sitewide process evaluation that revealed multiple points of failure in the control panel logic, process settings, and instrumentation, all of which contributed to reduced system performance. He directed short-term corrective actions, including repair of failed sensors, reconfiguration of pump controls, and recalibration of flow and pressure transmitters. Within two months, system operations stabilized, and key performance metrics improved. Mr. Bale continues to provide remote and field-based support, including planning for future system resiliency improvements, and implementation of best practices related to process operations, power quality management, and preventive maintenance. He plays an active role in long-term planning for system rehabilitation, including chemical cleaning of the injection well and integration of wireless remote monitoring tools.

Senior Technical Consultant, Groundwater Recovery System Chemical Plant, Genk, Belgium

Provides remote technical support and strategic guidance for the operation and optimization of a groundwater recovery system at an active industrial site in Genk, Belgium, impacted by chlorendic acid and low concentrations of monochlorobenzene. The system includes multiple low-yield electric submersible pumping wells equipped with VFDs and submersible level transmitters. Mr. Bale assists with performance evaluation, pump control adjustments, and troubleshooting recurring well fouling and reduced recovery rates. He has led efforts to evaluate pump sizing, VFD settings, and well construction details to reduce heat generation and improve long-term well efficiency. In addition, Mr. Bale provides recommendations for well rehabilitation methods, including chemical and mechanical cleaning strategies, and has assessed alternative filter pack materials such as glass beads to enhance well development and reduce fouling potential. His role supports both short-term system stabilization and long-term optimization of plume capture.



CHRISTOPHER J. BARRETT, PE

SENIOR ENGINEER – REMEDIAL OPERATIONS SPECIALISTS GROUP (ROS) /
ENVIRONMENTAL REMEDIATION ADVISORY

Years of Experience // 14

Years with ATLAS // 14

EDUCATION

BS, Mechanical Engineering,
University of South Florida, 2009

REGISTRATION AND CERTIFICATIONS

Professional Engineer:

- FL License #86504

TRAININGS AND CERTIFICATIONS

29 CFR 1910-120 OSHA 8-hour
HAZWOPER Refresher Training

29 CFR 1910-120 OSHA 40-hour
HAZWOPER Training

EXPERIENCE HIGHLIGHTS

Remediation System Design,
Installation, Operation and
Maintenance

Large Scale Remediation System
O&M Oversight

Mechanical, Electrical and
PLC Systems Expertise and
Troubleshooting

CERCLA and Regulatory Project
Support

Remediation O&M and Electrical
Safety Training Officer

Christopher Barrett is a Senior Engineer with 14 years of experience performing engineering services within the Environmental Services division. He is a member of Atlas's Remedial Operations Specialists Group (ROS), providing engineering and technical support as well as electrical safety instruction for the Atlas environmental/remediation division countrywide. Professional services for projects include providing direction for remedial strategies, cleanup design plans, supervision and mentoring of staff; oversight for preparation of technical proposals and reports, and QA/QC of deliverables. Engineering design experience includes development of site-specific remediation plans utilizing soil vapor extraction, air sparging, biosparging, multiphase extraction, source removal, DNAPL and LNAPL recovery, groundwater recovery and treatment, air stripping technology, vapor phase catalytic oxidation and thermal destruction, overpurge high vacuum extraction, chemical injection, and source removal. Other engineering services include providing programming and support for system programmable logic controllers (PLCs), electrical integration and troubleshooting support, and remote monitoring of system operations.

PROJECT EXPERIENCE

60 Florida Sites – FDEP, Phillips 66, & Speedway Portfolios (2019 – Current)

Mr. Barrett serves as the principle engineer for multiple FL sites providing oversight of project management, reporting, and field activities, and provides development of site specific remedial design plans and direction for remedial strategies. Sites consist of various remediation technologies including soil vapor extraction, air sparging, biosparging, multiphase extraction, source removal, DNAPL and LNAPL recovery, groundwater recovery and treatment, air stripping technology, vapor phase catalytic oxidation and thermal destruction, chemical injection, and source removal. Site impacts primarily include dissolved and absorbed phase petroleum hydrocarbons, lead, and other metals.

Remedial Operations Specialists Group (ROS) (2019 – Current)

Mr. Barrett is a key member of Atlas' ROS group, providing engineering support for multiple sites around the country. Activities include support with peer review of remedial design strategies, system operational technical issues, health and safety standards, equipment specifications review, recommendations for system installation/construction techniques, best practice data management, PLC programming updates or changes for system operations, and mechanical/electrical troubleshooting. Some of the various sites and locations of recent or ongoing activities include:

- Drayton Plains, MI – Groundwater recovery with multi-phase extraction – O&M
- Natchitoches, LA – High vacuum multi-phase extraction – O&M/design mods
- Woodstock, GA – Multiple SVE/MPE systems, PLC programming support
- North East, PA – LNAPL recovery / MPE system – design phase
- Fort Littleton, PA - GW recovery / MPE system – design / O&M
- Texas City, TX – PFAS containment and treatment
- Kansas City, MO – ASVE – Safety evaluation support

RCRA Facility/Chemical Plan, Wichita, KS (January 2019 – Current)

Project Engineer. Mr. Barrett provides technical support to remedial activities associated with operation of multiple groundwater recovery and treatment systems (~1000 GPM) at an active industrial facility. The remediation system addresses DNAPL, carbon tetrachloride, beta-BHC, and chloroform impacted groundwater and related soils, which span approximately 2 square miles encompassing the active chemical manufacturing plant and surrounding properties. Mr. Barrett works with the Atlas project team consisting of geologists, engineers, remediation specialists, scientists, and technicians to provide engineering support for treatment system expansion & construction, implementation of CMI tasks, on-going operation and treatment system equipment upgrades/replacements, and data modeling & analytics. His regular duties consist of preparing client updates, participation in regular meetings with project team, and assisting with reporting operation and remedial progress.



Petroleum Refinery, Lake Charles, LA (2021 – Current)

Project Engineer & Manager. The Lake Charles refinery is a major, high-capacity petroleum complex with a history of environmental challenges—most notably the 2006 slop oil spill—but has since undertaken extensive remediation of soil, sediments, and groundwater via containment, dredging, and remedial wells/pump-and-treat systems. Concurrently, it has improved air and wastewater controls, reflecting increased focus on environmental stewardship and community safety. Atlas provides O&M services for active ongoing remediation across several areas of the site including recovery of LNAPL, DNAPL, and groundwater via use of bailers and a network of recovery wells fitted with pneumatic submersible pumps. Mr. Barrett's roles for this site include providing data management, technical support, and regular client updates for a total fluids recovery system, addressing LNAPL and dissolved plume. Assisting with operation and maintenance equipment design and upkeep, and management assistance of the Atlas field technical staff to ensure system is operating per schedule and within regulatory limitations. Onsite activities include O&M within areas of the active port/dock, therefore TWIC clearance is required for all site work.

Chemical Refinery, Deer Park, TX (2019 – Current)

Project Engineer as part of a confidential company's network of industrial sites producing vinyl chloride monomer (VCM) and related products. The site utilizes 31 recovery wells for groundwater recovery from 3 discrete water-bearing zones, supported by a slurry wall and sheet pile barrier wall to prevent offsite plume migration. Groundwater is treated by a packed tower air stripper, with the treated water sent to the plant's wastewater treatment plant (WTP) for processing. Previously, stripped vapors were treated with a catalytic oxidizer; however, the oxidizer was decommissioned, and offgas treatment is now provided through vapor-phase carbon, offering a cost-saving alternative. The site operates under the Texas Voluntary Cleanup Program (TX VCP). Contributions to this team include engineering design support for proposed system modifications and ongoing site investigations, as well as data management, technical assistance, and monthly operational client reporting for site operations and management of an extensive DNAPL plume beneath the facility. Offer technical support with operational procedure documents, maintenance plans, process drawings, and upkeep of onsite process labeling and regulatory requirements. The extent of the remediation system and equipment area is onsite within the active plant area; TWIC clearance is required for all site work.

Feasibility Study and Pilot Testing, Irvington, NJ (2020-2022)

Provided project support for feasibility study of in-situ oxygen injection and activated carbon injection for treatment of BTEX and TICs present in overburden and bedrock zone groundwater. Project required Underground Injection Control (UIC) permitting and adherence to Permit-By-Rule (PBR) requirements. Following feasibility studies, in-situ treatment via activated carbon and nutrients was selected to facilitate accelerated biodegradation of dissolved phase impacts. Post-remediation sampling has demonstrated sustained reduction in dissolved concentrations and a site closure request is being prepared currently.

Tank Battery 32 - Brine Recovery & Injection, Felda, FL (2022 – Current)

Project Engineer & Manager. TB-32 remediation system is located within the former footprint of a petroleum exploration tank battery site. Remedial efforts utilize fourteen (14) groundwater recovery wells and thirty-eight (38) monitoring wells installed in four hydrogeologic zones representing three aquifers. Recovered GW/brine is pumped into a manifold system at the transfer pump station and discharges into a 5,000-gallon groundwater storage tank (Tank #1), which is then pumped through a 3,300-foot-long underground pipeline into a second 5,000-gallon storage tank (Tank #2) at the injection station. The extracted groundwater is subsequently pumped into a Class II injection well and discharged through the injection zone (1,028 ft interval from 2,134 to 3,162 ft) into the Boulder Zone of the Lower Floridan aquifer. Role includes project management for O&M services; engineering support for site maintenance tasks and operations; updates to site specific documents including panel prints, manuals, and maintenance plans; onsite technical support for O&M as well as major system overhaul/updates to system controls, instruments, and automation. Current project developments include injection well study for potential chemical or mechanical cleaning, full replacement of Allen Bradley PLC and HMI touchscreen interfaces, installation of high level surge blocking protection, replacement and upgrade of instrumentation devices, failsafe sensor/switch relocation modifications, engineering integrity review of system piping & controls, system safety and identification labeling, and providing engineering redlines of electrical and piping drawings.

Engineering Support – Bird Mine Site – Tire Hill, PA (2021 – Current)

The Bird Mine site, located in Tire Hill, Pennsylvania, is a legacy underground coal mining complex impacted by acid mine drainage (AMD). To prevent uncontrolled discharges and manage water elevation within the mine workings, the site operates an active mine water extraction and treatment system. The process includes pumping from Strayer Boreholes 2 and 3, lime slaking and polymer addition, settling ponds for solids removal, and final discharge under a Pennsylvania NPDES permit to Kaufman Run. A new treatment facility is currently under construction to enhance system reliability and long-term compliance. Contributions include providing technical support with site-wide operational procedure documents, maintenance plans, and process drawings.

Engineering Support – Former Chemical Manufacturing Facility – Ohio (2021-Current)

The former chemical manufacturing facility spanning 1,100 acres with over a mile of Lake Erie frontage. The facility historically produced chemicals such as soda ash, carbon tetrachloride, chromium, and polyvinyl chloride. The site is undergoing remediation under the oversight of the Ohio EPA, with operations split into 22 Operable Units (OUs). Atlas has been involved in assessing and improving temporary groundwater remediation systems and providing comprehensive support for the ongoing cleanup efforts. Contributions include providing engineering support for revising construction plans for confined space entry areas for streamlined functionality, regulatory support and correspondence for potential investigation into revised process efficiency improvements, and technical support with onsite operations and system monitoring.



KEN PASTERAK, PG, LRS

ENVIRONMENTAL REMEDIATION ADVISORY

Years of Experience // 30

Years with ATLAS // 6

EDUCATION

MBA, University of Pittsburgh,
Katz Graduate School of
Business

MS, Earth Science (Hydrology),
Adelphi University

BS, Geology, West Virginia
University

REGISTRATION AND CERTIFICATIONS

Professional Geologist

- PA #3733E
- NY #1342

Licensed Remediation Specialist

- WV #243

TRAININGS AND CERTIFICATIONS

29 CFR 1910-120 OSHA 8-hour
HAZWOPER Refresher Training

29 CFR 1910-120 OSHA 40-hour
HAZWOPER Training

EXPERIENCE HIGHLIGHTS

Superfund VOC Remedial
Investigation, Feasibility Study,
and Remediation Planning/
Implementation in Multiple EPA
Regions

Litigation Support Experience
Including PRP Dispute
Resolution Technical Support
for Commingled Groundwater
Plumes

Vapor Intrusion Evaluation
and Mitigation Design/
Implementation Experience

Managed Environmental Multi-
Site Portfolios for Railroad and
Petroleum Clients

NAPL Characterization and
Recovery Experience at
Numerous Sites

With over 30 years of industry experience, Mr. Pasterak is a recognized site characterization remediation subject matter expert. He has achieved regulatory closure for hundreds of releases of hazardous substances and petroleum constituents to the environment at properties throughout the Mid-Atlantic, Midwest, and Northeast US, including risk-based closures using innovative approaches.

He served as Senior Hydrogeologist for 2014 spill response, site characterization, human health risk assessment, and remediation activities associated with the Freedom Industries MCHM chemical release to the Elk River in Kanawha County under contract to WVDEP. The aboveground tank failure which resulted in the release of MCHM to the Elk River left over 200,000 residents in multiple counties without potable water.

He has performed surface geophysical investigation to map DNAPL, groundwater plumes, buried tanks and drums, waste disposal pits, archaeological structures, and bedrock fracture lineaments.

He has successfully achieved regulatory closure for dozens of sites through State voluntary clean-up programs and storage tank regulations, negotiated cost-effective assessment and remediation strategies for property owners and industrial concerns, has provided litigation support for potentially responsible party disputes, and developed creative liability transfer solutions to support property transactions and land development projects. His experience includes Superfund and RCRA Corrective Action efforts in Kansas, Wisconsin, and New York. He has designed and operated remedial technologies for soil and groundwater including ozone sparge in situ chemical oxidation, dual phase extraction, multi-phase extraction, soil vapor extraction, ex situ chemical oxidation, and enhanced in situ biodegradation, including activated carbon and electron acceptor injection (over 100 injection locations) at multiple sites. He has designed and implemented vapor intrusion to indoor air mitigation using sub-slab depressurization, passive barrier, and hybrid technologies at residential and commercial facilities. He has served as technical speaker on vapor intrusion to indoor air and RCRA topics, and provided RCRA training in environmental management leaders at six DOD facilities across the US as part of a DOD contract.

He has supported commercial, residential and mixed use land development projects to overcome environmental obstacles, including development of innovative remedial approaches to satisfy project stakeholders. He has provided hydrology and contaminant (solute) transport subject matter expert testimony in Federal district court, including jury trial testimony, on behalf of a mining company defendant faced with agricultural salt pollution and financial loss claims from multiple plaintiffs, and has assisted in resolving comingled groundwater plume responsible party disputes at multiple sites. He has managed multi-site portfolios, including assessment/remediation efforts for Chevron, CSX, and other Fortune 500 companies. He has led vapor (and methane) intrusion assessment and mitigation design and construction oversight for multiple clients, including sub-slab depressurization system design for new and existing buildings, as well as crawl space ventilation, and vapor barrier vapor intrusion mitigation design.

He has completed risk-based cleanup and obtained PADEP liability relief for property owners through the PA Act 2 Land Recycling Program (voluntary cleanup program), including Act 2 closure of the first multi-parcel industrial site bisected by a public roadway in PA, significantly reducing cleanup costs and expediting land development. He has supported over 100 UST closure efforts, over 500 Phase I/II ESAs, has performed human health risk assessment and solute transport modelling for multiple sites, and has successfully managed and closed out retail petroleum and railroad sites using both innovative and traditional remedial technologies including dual phase extraction, enhanced bioremediation (including powdered carbon and electron acceptor injection), ozone injection, and bioventing. He has experience supporting environmental efforts and/or delivering environmental solutions to clients for properties in over 20 US states from New York to California and Hawaii, as well as outside the US (bauxite mine groundwater impact) in Jamaica.

He currently directs site characterization and remediation activities at PA Chapter 245 storage tanks, vapor intrusion assessment/mitigation, water supply permitting, and spill response activities for multiple clients. He also currently provides support, mentoring, and direction to environmental staff providing wetland delineation, ecological, NPDES and stream/wetland permitting, due diligence, and assessment/remediation services.



PROJECT EXPERIENCE

PCE VRP Site Remediation, Nassimi Realty, Clarksburg, WV

WV Licensed Remediation Specialist responsible for designing and managing Site Assessment and Preliminary Remedial Alternatives Analysis for a former dry cleaner site (VRP#25002) where one or more release of PCE to the environment occurred over 30 years ago. Submitted a Site Characterization Report and VRP Application to enter the site into the WV VRRP, and submitted a Site Assessment Report following completion of Site Assessment activities. Delineated the nature and extent of PCE and daughter products in soil and groundwater, and evaluated 1,4-Dioxane and PFAS/PFOA presence. Remedial feasibility analysis and remedial design characterization planning are underway.

Surface Geophysical Investigation to Map Bedrock Fracture Zones, Elk County, PA

Senior Geologist responsible for field investigation, data evaluation and interpretation for VLF induction (EM) and mag survey of potential preferential pathways for landfill constituents migrating from a 250 acre pond.

Surface Geophysical Investigation to Map Buried Tanks, Allegheny County, PA

Senior Geologist supporting field investigation, data evaluation and interpretation for GPR and EM study to identify buried tanks.

Surface Geophysical Investigation to Identify Waste Disposal Pits, Wichita, KS

Senior Geologist responsible for field investigation, data evaluation and interpretation for VLF induction (EM) survey to identify waste disposal pits and high conductivity groundwater plume at a lindane and PCP manufacturing plant.

Surface Geophysical Investigation to Identify Waste Disposal Pits, Gloversville, NY

Senior Geologist responsible for field investigation, data evaluation and interpretation for VLF induction (EM) survey to identify waste disposal pits.

Soil and Groundwater Assessment, Soil Vapor Extraction System O&M/Optimization, Bulk Petroleum Storage Facility; Chevron Environmental Management; Allegheny County, PA

PG responsible for operation and maintenance of a soil vapour extraction system to address chlorinated solvents in the subsurface. Conducted quarterly groundwater monitoring and reporting.

Soil and Groundwater Assessment, Remedial Alternatives Analysis, Ozone Sparge In Situ Chemical Oxidation Remedial Design/Installation/O&M/Optimization, Rebound Evaluation, Risk-Based Clean-up, Comingled Plume Responsible Party Negotiation, and Regulatory Closure, Gasoline Release; Snyder Brothers; Allegheny County, PA

PG responsible for 25 lb/day, five-zone, ozone sparge system design to remediate soil and groundwater contamination, O&M, optimization, rebound monitoring, RAPR/RACR preparation, EC preparation and site close-out at a gasoline release site with off-property impact. System was operated for 3 years, followed by rebound evaluation, and regulatory closure. Remedial progress reporting, and RACR/EC preparation. Performed human health risk assessment. Negotiated AULs with adjacent landowner on behalf of Client. Obtained an EC waiver for soil and groundwater contamination in public right-of-way, based on acceptable risk

receptor demonstration. PADEP approved the Site Specific Standard attainment demonstration and RACR, and conferred liability relief to responsible party.

Soil and Groundwater Assessment, Remedial Alternatives Analysis, Feasibility Study, Dual-Phase Extraction System Design/Installation/O&M/Optimization, Rebound Evaluation, Risk-Based Clean-up and Regulatory Closure; Retail Petroleum Distribution Facility, Prima Marketing, IN, PA

As Senior Hydrogeologist, implemented a dual-phase extraction pilot test and prepared a Remedial Action Plan in response to petroleum hydrocarbons in soil and groundwater in accordance with 25 Pa Code Chapter 245. Conducted site characterization activities and identified the presence of a comingled dissolved phase petroleum hydrocarbon plume in groundwater associated with multiple on-site releases. Assisted in negotiating a Remediation Agreement to define roles and responsibilities in response to multiple site releases and multiple responsible parties. Designed and operated a dual phase extraction system. Provided technical negotiation support for three-party remediation agreement execution on behalf of Client. Negotiated an acceptable cost-sharing agreement with Shell Oil Products of US, in response to comingled plume due to historical gasoline release by other responsible party. Conducted quarterly groundwater monitoring and reporting, performed rebound and soil and groundwater attainment monitoring, prepared a Remedial Action Completion Report, and an Environmental Covenant. PADEP approved the report and granted liability relief to the UST owner/operator.

Spill Response, Soil Removal, and Subsurface Characterization, Freedom Industries Elk River Chemical Spill, Charleston, WV

In response to a nationally publicized AST failure and 10,000-gallon release of a coal processing chemical (MCHM) to surface water which contaminated the Charleston WV water supply, Mr. Pasterak served as Senior Scientist/Hydrogeologist to support spill response and assessment activities for WVDEP to replace ineffective strategies deployed by previous consultants.

Soil and Groundwater Assessment, Source Removal Remediation, and Quarterly Groundwater Attainment Monitoring; Former Dry Cleaning Property; Pittsburgh, PA

As Project Manager, entered retail plaza property into the PA Land Recycling and Environmental Remediation Standards Act (Act 2) voluntary clean-up program on behalf of Client in response to the discovery of dry cleaning solvent and degradation products in soil and groundwater associated with an historical dry cleaning operation on the property and an off-property, up-gradient source. Executed access agreements with down-gradient property owners, and performed on-property and off-property delineation of chlorinated contaminants of concern in soil and groundwater, fate and transport analysis, vapor intrusion to indoor air evaluation, and human health risk assessment. Delineated a contaminant plume in groundwater extending over 1/8 mile from the property. Performed remedial alternatives analysis, and provided technical support to negotiate a path to closure and regulatory approval acceptable to stakeholders. Submitted a Notice of Intent to Remediate, performed public notice, and prepared a Remedial Investigation Report and Clean-up Plan for regulatory agency review. Performed hotspot soil remediation to address the contaminant source, and initiated soil and groundwater attainment monitoring to satisfy remedial goals.



ASHLEY MW OFFER, PG

ENVIRONMENTAL REMEDIATION ADVISORY

Years of Experience // 17

Years with ATLAS // 17

EDUCATION

BS, Geology, North Carolina University, 2008

TRAININGS AND CERTIFICATIONS

Professional Geologist

- NC #2291

29 CFR 1910-120 OSHA 8-hour HAZWOPER Refresher Training

29 CFR 1910-120 OSHA 40-hour HAZWOPER Training

American Red Cross Standard CPR & First Aid

PUBLICATIONS

Evaluation of Non-Residential Soil Gas to Indoor Air Attenuation Factors: A Review of Statistics Based on Extensive Data Collected by the NC DSCA Program, Air and Waste Management Association (AWMA) Vapor Intrusion, Remediation, and Site Closure Conference, July 2014.

EXPERIENCE HIGHLIGHTS

Remediation Selection and Equipment Installation

Hydrogeological Assessments

Vapor Intrusion Assessments and Mitigation

Fate and Transport Modeling

Hazardous Waste Management

Ms. Offer is a Senior Project Manager in ATC's Raleigh, NC office and has 17 years of experience in the fields of environmental hydrogeology and contamination assessment and remediation. She currently manages the contract with the North Carolina Department of Environmental Quality (NCDEQ) Dry-Cleaning Solvent Cleanup Act (DSCA) Program which includes 120+ sites impacted by dry-cleaning solvents (primarily tetrachloroethylene [PCE]) that ranges from initial assessments to long-term remediation. Ms. Offer has strong hydrogeological and technical skills and has expertise in monitoring, assessment, and remediation. She has experience in the use of innovative technologies for soil and groundwater remediation (chemical oxidation, bioremediation, reductive dechlorination), as well as more traditional remedial technologies (air sparge, vapor extraction, pump and treat), and risk-based approaches (risk assessment, modeling, statistical analysis). Ms. Offer also has expertise in the area of vapor intrusion and has conducted vapor intrusion assessments, data modeling, and/or mitigation at over 100 sites to date.

PROJECT EXPERIENCE

NCDEQ DSCA Program (2023 – Current); Site Project Manager – NCDEQ DSCA Program (2011 – Current)

Program Manager. Manages assessment and remediation program for over 120 sites under contract to NCDEQ DSCA Program. Scope of work includes all phases of assessment, remediation, monitoring, risk assessment, and closure for sites impacted by chlorinated or petroleum based dry-cleaning solvents. Implemented multiple innovative approaches related to assessment, remediation, and vapor intrusion. Ms. Offer has been the Program Manager and primary point-of-contact for the DSCA Program for the past two years. During this time period, the DSCA Program awarded ATC a consecutive contract totalling \$15 million in fees.

Soil Vapor Extraction System in City and Railroad Right-of-Way

Installed a soil vapor extraction (SVE) system to address site-specific target level exceedances for PCE in soil for the protection of surface water. While the system was installed on the site property, SVE extraction points and trenching was performed in the municipality Right-of-Way (ROW) as well as in the North Carolina Railroad ROW.

Soil Excavation with In-Situ Groundwater Remediation Concurrent with Redevelopment

Conducted a soil excavation alongside site redevelopment activities to remove grossly impacted soils from a historical chlorinated solvent release. After excavation but prior to backfilling, placed Provectus-IR into the pit to aide in long-term groundwater remediation.

Indoor Soil Excavation with In-Situ Remediation

Conducted an indoor excavation to remove approximately 200 tons of chlorinated solvent impacted soil in order to mitigate indoor vapor intrusion issues. In order to ensure structural integrity of the building, engineering controls were implemented. In addition, in-situ remediation was performed by applying emulsified zero valent iron in the excavation pit prior to backfilling.

Vapor Intrusion Mitigation in Children's Dance Studio

Significant levels of PCE detected in soil and groundwater causing vapor intrusion impacts in three tenant spaces, including a children's dance studio. Performed extensive, complex vapor intrusion assessment including "traditional" and high-volume sub-slab soil-gas sampling, and indoor air sampling using both summa canisters and Radiello® passive samplers. Design and installation of a sub-slab depressurization system (SSDS) to mitigate immediate vapor intrusion risk. SSDS was expanded/modified to assure SSDS effectiveness during variable site conditions, including groundwater depth variations.



Environmental Due Diligence, Various Sites, PA, NY, OH, and WV

Responsible for the coordination and implementation of due diligence related projects for a variety of sites—residential, commercial, and industrial—in support of real estate or financial transactions. For Phase II ESAs, responsible for development of an appropriate environmental sampling plan based on Phase I ESA conclusions or historical property usage, coordination with clients and subcontractors to prepare for field activities, oversight of Phase II field activities and field sampling, report preparation, and/or review, and stakeholder correspondence.

Emergency Responses, Various Sites, PA and WV

Managed environmental response efforts for releases resulting from vehicle overfills, malfunctioning equipment, and fuel tanker accidents at retail fuel stations. These efforts have included initial on-site release assessment, initial clean-up, coordination with emergency response contractors, and communication with clients to provide guidance on regulatory requirements. Following initial environmental response work, provide follow-up reporting to state environmental agencies, along with additional sampling and characterization, as needed.

REFERENCES



Atlas encourages the Agency to contact the following references to discuss our previous performance on similar projects.

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 Indiana Department of Natural Resources
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CLINT SPERRY

US EPA Region 7,
 Remedial Project Manager
 918-551-7157



A1 ATTACHMENT - CONSULTANT QUESTIONNAIRE SUPPLEMENTAL ANSWERS



CONSULTANT QUESTIONNAIRE 12B

Are the individuals supporting this project experienced in performing environmental site assessments according to USEPA Guidance for Performing Preliminary Assessments under CERCLA, Site Inspection (SI) Guidance Manual, Risk Assessment Guidelines for Superfund (RAGS), Hazard Ranking System (HRS) Guidance Manual, and using Dynamic Field Activities for On-Site Decision Making?

Response: YES

The scope of work as discussed in **Section 3 of the Solicitation** indicates the work is to operate and maintain remedial systems, with associated reporting. The Project Description does not describe any tasks requested related to the information requested in item 12b. A review of the EPA web sites for these projects (Ravenswood PCE and Vienna Tetrachloroethene) indicates that both sites are past the CERCLA Site assessment phase, having been listed on the NPL with completed RI/FS and existing RODS, pursuant to which the remedial systems are operating. However, Atlas exposure to the Vienna and Ravenswood Sites does suggest that future efforts may involve environmental investigation methods associated with site assessment and delineation. The use of **Dynamic Field Activities** can be a cost-effective way of augmenting site knowledge to allow for better operation of the remedial systems or for adjusting the remedial strategy.

Atlas has employed **Dynamic Field Activities** at sites to inform on-site decisions that pertain to locations of soil borings and monitoring wells and screening intervals for monitoring wells. Select examples include a retail gasoline station (North East, PA) where Laser Induced Fluorescence (LIF) was used for LNAPL delineation and the Fields Brook NPL Site (Ashtabula, OH) where Membrane Interface Probe (MIP) was used for DNAPL delineation. Additionally, Atlas frequently uses mobile laboratory services to generate near real-time data that has been used to inform on-site decisions related to monitoring well locations and LUST delineation at multiple retail gasoline station sites with LNAPL releases and associated tank removals. Mobile lab services were also used at the Lusher Street Groundwater Contamination Site for the selection of monitoring well screen intervals. Atlas has also used hand-held X-ray Fluorescence (XRF) units to aid in soil sample selection.

While not anticipated to be required, individuals on the Atlas project team have experience performing over 150 Preliminary Assessments under CERCLA, over 12 Site Inspections, and prepared three HRS scoring packages; have extensive experience with RAGS having performed over 10 Risk Assessments and provided technical review for an additional 15.

Example of projects performing PAs under CERCLA:

- Geminhardt facility (Elkhart, IN) which subsequently lead to the discovery of the Lusher Street Groundwater Contamination (Lusher) Site.
- National Presto Industries Superfund Site (Eau Claire, WI) including Site Investigation, HRS, and subsequent Remedial Investigation and Feasibility study.
- A team member has performed a PA at the Figgie International Site in WV under a former employer on behalf of WVDEP.

Examples projects utilizing RAGS:

- Human Health Risk Assessment (HHRA) at National Presto Industries Superfund Site (WI)
- HHRA for M&H Zinc (IL); Sandoval Zinc (IL); Lane Street (IN); Lusher Street (IN) fund-lead Superfund sites
- Reviews of HHRA prepared by PRPs: Allied Chemical/Ironton-Coke Plant (OH); Gary Development Landfill (IN), Becks Lake Site (IN)

Examples of HRS scoring packages:

- DeWel Site (Michigan)
- New Carlile Landfill Site (Ohio)
- National Presto Industries Superfund Site (WI)

CONSULTANT QUESTIONNAIRE 12E

Are the individuals supporting this project experienced with WVDEP OER SOPs?

Response: YES

1. Vienna WV PCE Superfund Site (aka Vienna Tetrachloroethene)

Routine groundwater monitoring well sampling performed at this site utilized the following SOPs:

- General Decontamination Procedures for Non-Disposable Field Sampling Equipment (SOP-OER-100)
- Groundwater Well Sampling Procedures (SOP-OER-110)
- Passive Diffusion Bag Sampling (SOP OER-135)

Operations work at this site periodically generated waste that required the use of the following SOP:

- SPLP and TCLP Sampling (SOP-OER-134)

While not WVDEP OER SOPs, Atlas assisted WVDEP in the development of two additional SOPs for this site that were included in this site's 2024 SAP update:

- SOP 017 Air Sampling Canister Leak Testing
- SOP 018 Air Sampling of Remediation Systems

2. Rose Bud Plaza, Clarksburg, West Virginia; Voluntary Remediation Program #25002

Site characterization soil boring soil sampling and groundwater monitoring well sampling utilized the following SOPs:

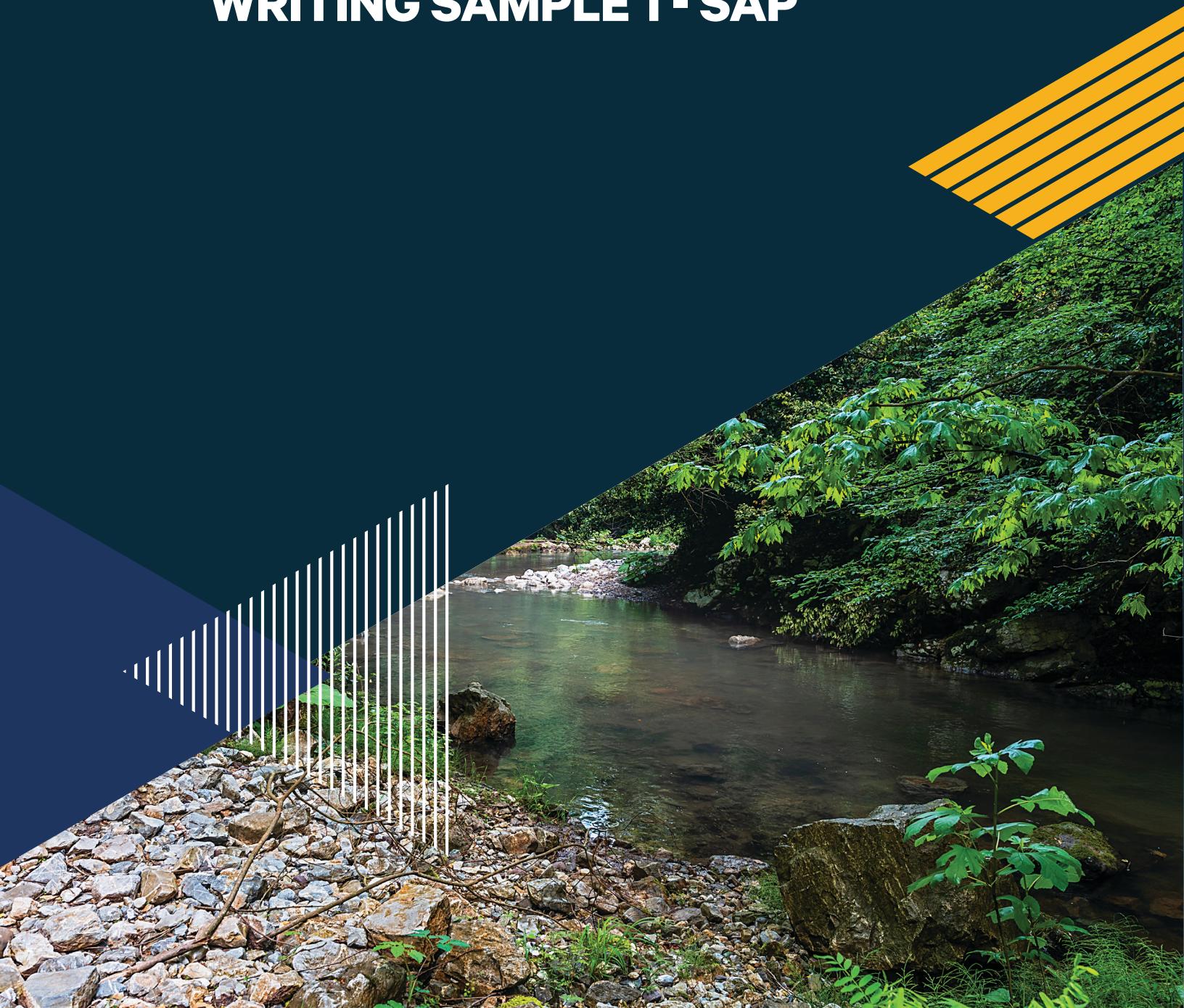
- General Decontamination Procedures for Non-Disposable Field Sampling Equipment (SOP-OER-100)
- PID/FID Field Screening (SOP OER-101)
- Soil Sampling (SOP OER-120)
- Soil Sampling Using Direct-Push Drilling (SOP OER-121)
- Groundwater Well Sampling Procedures (SOP-OER-110)
- Soil Gas Sampling (SOP OER-130)

3. Former Petroleum Retail, WVDEP UECA-LUST Program, Glasgow, WV

Site characterization soil boring soil sampling and groundwater monitoring well sampling utilized the following SOPs:

- General Decontamination Procedures for Non-Disposable Field Sampling Equipment (SOP-OER-100)
- Soil Sampling (SOP OER-120)
- Groundwater Well Sampling Procedures (SOP-OER-110)

A2 ATTACHMENT - WRITING SAMPLE 1 - SAP



August 6, 2024

Mr. William F. Huggins, Jr.
West Virginia Department of Environmental Protection
131A Peninsula Street
Wheeling, West Virginia 26003

SUBJECT: **Sampling and Analysis Plan, 2024**
Response to Comments
Vienna PCE Superfund Site
Vienna, West Virginia
USEPA SEMS ID# WVD988798401

Dear Mr. Huggins:

Atlas Technical Consultants LLC, (Atlas) received the West Virginia Department of Environmental Protection (WVDEP) comment letter dated June 26, 2024 for the Sampling and Analysis Plan for Operations and Maintenance and Long Term Remedial Action Monitoring (originally submitted May 6, 2024). Atlas has incorporated WVDEP's comments and the revised report is attached.

Atlas has prepared the following responses to comments requiring a more detailed discussion outside the structure of the report. The WVDEP comments are presented below in *italics* and are followed by Atlas's response.

COMMENTS

1. *6. Project Implementation: Monitoring and Sampling, Page 12: "CERCLA" is misspelled as "CECRLA" in the last line of the first paragraph of this section.*

Response: Plan has been revised to correct this spelling error.

2. *6.1 Project Tasks and Schedule, Page 12: The Plan states, "While there is no established schedule for the collection of process vapor samples, Atlas recommends a minimum frequency of once per quarter." WVDEP agrees that the vapor samples should be collected at least once per quarter to account for seasonal variability, especially since temperature may greatly impact the results in winter and summer. Thus, the frequency should be established as at least once per quarter, rather than just a recommendation.*

Response: Edit has been made to update the sampling frequency of the process vapor samples at once per quarter. Please refer to page 12 of the plan.

3. *6.2.3 Groundwater Analytical Methods, Page 13: The analyte list should include all breakdown products of PCE, which means that cis-1,2-Dichloroethene and trans-1,2-Dichloroethene should be added to the analyte list.*

Response: Edit has been made to include both cis-and trans-1,2-Dichloroethene in the analyte list. Please refer to Page 13 of the plan.

4. *6.2.4 Groundwater Quality Assurance / Quality Control Protocols, Page 14; and 6.5.4 Soil Quality Assurance / Quality Control Protocols, Page 21: The QA/QA Total Samples for Duplicates, Equipment Rinsate Blanks, Field Blanks and MS/MSD are stated as “One per 20 samples” in Section 6.2.4. Similarly, Section 6.5.4 states, “as a general practice, Atlas will collect one duplicate sample per twenty samples and one rinsate blank per twenty samples.” However, the QA samples should be “One per 20 samples or one per day, whichever is greatest.”*

Response: The text in Section 6.2.4 includes this specification but has been italicized for additional emphasis. The text in Section 6.5.4 on Page 23 has been edited to remain consistent on this point.

5. *6.3.2 Vapor Analytical Methods, Page 18: The list of vapor analytes only included PCE, but the list should include all breakdown products of PCE as well. Please update.*

Response: Report has been revised to reflect comment. Please refer to page 18 for change.

6. *6.4.3 Process Water Analytical Methods, Page 19: The list of process water analytes only included PCE, but the list should include all breakdown products of PCE as well.*

Response: Report has been revised to reflect comment. Please refer to pages 20 and 21 for changes.

7. *6.5.2 Soil Sample Collection Protocols, Page 20: Soil screening using Direct-Push Drilling methods also requires one of three options listed in SOP OER-0121. Please specify which option will be used for any soil screening during Direct-Push Drilling operations.*

Response: Soil sample collection protocols has been updated to reflect compliance with the first option (f, I) of SOP OER-0121. Please refer to page 22 for edits.

8. *6.5.3 Soil Analytical Methods, Page 21: The list of analytes should include all PCE breakdown products as well.*

Response: Analyte list has been updated to reflect request. Please refer to page 22 for edits.

9. *11.1 Quality Assurance Objectives, Page 28; and 11.8 Quality Assessment and Data Validation, Page 32-38: The QA Objectives need to include all the PARCCS DQIs. Section 11.1 mentions Precision, Accuracy, Completeness, Comparability but does not give specific objectives for them, only to “maximize the confidence in the data” and “use standardized methods...” However, there should be specific goals for Precision, Accuracy, Completeness and Sensitivity. Section 11.8 provides the specific PARCCS goals, but the reader of Section 11.1 does not see this information. Please add a statement in Section 11.1 that directs the reader to Section 11.8 for specific PARCCS goals.*

Response: Directory statement has been included in Section 11.1.

10. *11.5 Data Reporting, Validation, and Reduction, Page 30: The Plan states, “In accordance with QA/QC protocols and Title 60 of the West Virginia Code of State Regulations, Series 3, Section 8.2.d., analytical results for analysis of all assessment samples will be reported as Level*

4 Electronic Data Deliverables so that Atlas can perform a random check of approximately 10% of the analytical results and accompanying QA/QC data utilizing a qualified analytical chemist." However, CSR60, Series 3 is specific to the Voluntary Remediation Program and not Superfund activities. While Stage 4 data validation is acceptable to WVDEP, USEPA generally requires 100% data validation. WVDEP is checking with USEPA on the expected validation requirement as it may not be as rigid given the purpose (O&M). WVDEP will update Atlas once an answer from EPA is received. For future reference note that data validation nomenclature uses the term "level" to describe IM1 for inorganics and M2 for organics, whereas the term "stage" is used to describe the level of the data validation (1,2,3, or 4).

Response: Based on email communications on August 1, 2024 with the WVDEP team, following discussions with the EPA, data validation is currently necessary at this time. This may be revised at the EPA's discretion, as the EPA reserves the right to require data validation at any point in the contract.

11. 11.6 Internal Quality Control Checks, Page 31: Trip Blanks should be included in each cooler that contains samples for VOC analysis.

Response: Section 11.6 has been updated to include clarity about trip blanks being included in each cooler used for sampling.

12. 11.8.6 Sensitivity, Page 38: The table of measurement quality objectives will need to include any additional analytes based on the above comments.

Response: This table has been updated in accordance with previous table edits to include cis-1,2-Dichloroethene and trans-1,2-Dichloroethene.

If you have any questions or concerns regarding this report or the monitoring well conditions, please contact the undersigned at (412) 826-3120.

Respectfully submitted,

ATLAS TECHNICAL CONSULTANTS, LLC



Mait Walker, PE
Project Manager



Nick Ciccotelli
Project Manager

Distribution: Mr. Alan McCreary, WVDEP
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Ms. Sara Kirk, WVDEP
Mr. Andrew Frost, Atlas
Mr. Ben Staud, Atlas



SAMPLING AND ANALYSIS PLAN OPERATIONS AND MAINTENANCE LONG TERM REMEDIAL ACTION MONITORING

VIENNA PCE SUPERFUND SITE

ATLAS PROJECT NO. 252ENG2310

405 29th Street
Vienna, West Virginia 26105

PREPARED FOR:

West Virginia Department of Environmental Protection
Mr. William F. Huggins, Jr.
Project Manager
WVDEP – Division of Land Restoration
Office of Environmental Remediation
131A Peninsula Street
Wheeling, WV 26003

PREPARED BY:

Atlas Technical Consultants LLC
270 William Pitt Way
Pittsburgh, PA 15238

August 6, 2024

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- Appendix I Personnel Qualifications
- Appendix II Eurofins Analytical SOP DOcumentation
- Appendix III Field Forms
- Appendix IV Standard Operating Procedures
- Appendix V Laboratory Certifications

LIST OF ACRONYMS

°C	Degrees Celsius
µg/L	Micrograms per Liter
AST	Aboveground Storage Tank
AS	Air Sparge
bgs	below ground surface
CSM	Conceptual Site Model
DO	dissolved oxygen
DQO's	data quality objectives
EET	Eurofins Environment Testing
HASP	Health and Safety Plan
HAZWOPER	Hazardous Waste Operations and Emergency Response
IDW	Investigation-Derived Waste
KEMRON	KEMRON Environmental Services, Inc.
kg	Kilogram
LGAC	Liquid Phase Granular Activated Carbon
LTRA	Long Term Remedial Action
MCL	Maximum Contaminant Level
MD	Matrix Duplicate
MS/MSD	Matrix Spike/Matrix Spike Duplicate
MW	Monitoring Well
NIST	National Institute of Standards and Technology
O&M	Operations and Maintenance
OD	outer diameter
OER	Office of Environmental Remediation
P&ID	Process and Instrumentation Diagram
PCE	Tetrachloroethene
PDB	Passive Diffusion Bag
PID	Photoionization Detector
PPE	Personal Protective Equipment
PSQ	Principal study questions
QA/QC	Quality Assurance/Quality Control
RAO	Remedial Action Objectives
RCRA	Resource Conservation and Recovery Act
RI	Remedial Investigation
ROD	Record of Decision
RPD	Relative Percent Difference
SAP	Sampling and Analysis Plan
SDS	Safety Data Sheets
SESD	Science and Ecosystem Support Division (USEPA)
SGS	SGS North America Inc.
SOP	Standard Operating Procedures
SVE	Soil Vapor Extraction
SVOC	Semivolatile Organic Compound
TCL	Target Compound List
TOC	Top of Casing
TU	Treatment Units
UFP	Uniform Federal Policy
UST	Underground Storage Tank
USEPA	United States Environmental Protection Agency
VMP	Vapor Monitoring Points
VOC	Volatile Organic Compound
VGAC	Vapor Phase Granular Activated Carbon
WVDEP	West Virginia Department of Environmental Protection

1. INTRODUCTION

Atlas Technical Consultants (Atlas) has been retained by West Virginia Department of Environmental Protection (WVDEP) via contract 0313-DEP24000006-1 to operate and maintain the existing remediation system at the Vienna Superfund Site (United State Environmental Protection Agency [USEPA] SEMS ID# WVD988798401), located at 405 29th Street in Vienna, Wood County, West Virginia (Site). The location of the Site property is depicted in **Figure 1**.

In addition to operations and maintenance (O&M) activities, Atlas will also be responsible for environmental monitoring at the Site. This Sampling and Analysis Plan (SAP) has been updated from the previous version to adequately summarize the procedures for collection and analysis of groundwater, vapor, and discharge samples as part of the environmental monitoring activities at the Vienna PCE Superfund Site. This SAP has been prepared to incorporate the requirements specified in the Quality Assurance Program Plan (QAPP) for the WVDEP Division of Land Restoration, Office of Environmental Remediation, Superfund Program dated October 11, 2022 (WVDEP-OER-CERCLA-001). This SAP will be revised as necessary to reflect any future modifications made to the QAPP. Additionally, this SAP will outline Atlas's approach to data collection necessary to evaluate overall remediation system performance in conjunction with the ongoing long-term remedial action (LTRA) being conducted at the Site. A Monitoring Well Location Map is provided as **Figure 2**.

2. SITE DESCRIPTION AND BACKGROUND

2.1 Site Location and Source History

The Vienna Superfund Site consists of areas impacted by two separate and distinct sources of contamination that have been confirmed (identified as Vienna Cleaners and Busy Bee Cleaners), as well as a suspected third source that has not yet been confirmed. The Site is located in the City of Vienna, West Virginia, which is a residential, commercial, and industrial community situated along the eastern (left-descending) bank of the Ohio River, as depicted on **Figure 1**. A mountain ridge is located north and east of the City of Vienna; the city of Parkersburg, West Virginia is located to the south of Vienna.

Vienna Cleaners operated from the late 1940s through the mid-1990s and was located at the intersection of 30th Street and 5th Avenue. In 1992, during a WVDEP inspection, the Vienna Cleaners property owner stated that past practices included pouring tetrachloroethylene (PCE), a drycleaning solvent, directly onto the ground behind the facility. Spillage of PCE while filling outdoor, aboveground storage tanks (ASTs) had also been reported. The quantity of PCE released at Vienna Cleaners is unknown. A 1992 WVDEP Compliance Evaluation Inspection Report classified Vienna Cleaners as a small quantity generator under the Resource Conservation and Recovery Act (RCRA), producing 121 kilograms (kg) of PCE waste each month.

Busy Bee Cleaners operated from the 1960s to the early 2000s and was located at the intersection of 27th Street and Grand Central Avenue. The circumstances resulting in the release of PCE from the Busy Bee Cleaners facility (including quantity, pathways, and time frame of release) are unknown.

The third suspected source (a former drycleaning facility) was reportedly located along 29th Street, between Grand Central Avenue and 3rd Avenue; the presence of this drycleaning facility was not able to be confirmed using county records. It may have operated during the 1930's and ceased operations by 1940. The quantities of PCE released, if any, from this possible third source area are unknown.

Residents and most businesses in Vienna currently receive their water from the Vienna municipal water supply, which consists of eight production wells located in clusters distributed throughout the City. The municipal water supply originally consisted of 12 wells, but four wells were abandoned in 1992 due to PCE contamination. The Vienna Cleaners and Busy Bee Cleaners were identified as the probable sources of the groundwater contamination. PCE has been detected at elevated levels in surface and subsurface soils at the Vienna Cleaners facility, in groundwater beneath the vicinity of the facility, and in City sewers in the immediate vicinity of the former Vienna Cleaners facility. Lower concentrations of PCE were detected in the groundwater near the Busy Bee Cleaners facility.

2.2 Site History & Previous Assessment Activities

City of Vienna municipal production wells PW-V1 through PW-V4 were shut down in June 1992 due to the identified PCE contamination. This shutdown followed the 1991 closure of PW-V5 and PW-V6, which occurred because of gasoline-related contamination from an underground storage tank (UST). Municipal wells PW-V7 and PW-V8 (screened between 60 and 75 feet below ground surface [bgs]) are located downgradient of the dissolved-phase PCE plume, north of the City, adjacent to the Ohio River.

Before 1995, the water supply for Vienna's residents was drawn from 12 municipal wells located in five clusters throughout the City, with no treatment facility for water from other sources (i.e. surface water from Ohio River) available. In 1992, with production discontinued at six municipal wells due to contamination, the City faced a potential water supply shortage. As a result, two additional municipal wells (PW-V13 and PW-V14) were installed in 1995 using USEPA emergency funds to serve as a backup water supply. To meet water supply demands, the two wells were activated for full-time service on March 10, 1997.

On April 22, 1999, the Site was proposed to be added to the National Priorities List, and the listing was finalized on October 22, 1999.

In 2000, the USEPA Removal Program designed a pilot Unterdruck Verdampfer Brunnen system to remove subsurface contamination in the area of the Vienna Cleaners facility using a single air sparge/soil vapor extraction (AS/SVE) well. The system was located in a small building adjacent to Vienna Cleaners and began removing contamination from an approximately 1,500-square foot area of soil in March 2001.

USEPA contracted CDM Smith to perform a Remedial Investigation (RI) that included the installation of 37 monitoring wells. In 2002, CDM Smith submitted three documents for the Site:

- Final RI Report documenting the nature and extent of groundwater contamination (CDM Smith 2002a);
- Final Feasibility Study Report, which provided a detailed evaluation of remedial alternatives to address the PCE contamination (CDM Smith 2002b);
- A groundwater model to predict advective transport and travel times of contaminants (CDM Smith 2002c).

USEPA's Record of Decision (ROD), dated September 27, 2002, selected AS/SVE as the groundwater remedy. The remedial action objectives (RAOs) were developed to mitigate, restore, and/or prevent existing and future potential threats to human health and the environment. The RAOs for the selected remedy included reducing the PCE concentrations in groundwater to or below the drinking water standard (maximum contaminant level [MCL]) of 5 micrograms per liter ($\mu\text{g/L}$); prevent/minimize human exposure to contaminated groundwater; and minimize the migration of contaminated groundwater into the Ohio River.

USEPA contracted CDM Smith to prepare the remedial design, which was finalized in April 2004 (CDM Smith 2004). CDM Smith completed construction of the treatment system for USEPA in July 2005. A baseline sampling event including groundwater and vapor sampling was conducted in June 2005 prior to treatment system startup.

CDM Smith operated and maintained the Vienna treatment system for USEPA from system start up in July 2005 until turnover of O&M to WVDEP in May 2017; WVDEP subsequently retained KEMRON Environmental Services, Inc. (KEMRON) to continue O&M activities, including biannual groundwater sampling and overall system performance monitoring. In May 2021, Atlas was retained by WVDEP to continue with groundwater monitoring and system O&M activities. Periodic groundwater and vapor samples have been collected on-Site beginning in 2001 through the present to evaluate groundwater quality and assess whether vapor intrusion poses a threat to human health.

2.3 Conceptual Site Model and Remedial Design

The remediation approach for the Vienna PCE Site uses AS/SVE to remove volatile organics from the groundwater and vadose zone. These systems are combined with a hydraulic control system that is designed to maintain the historic gradient of the Vienna Cleaners groundwater plume while the plume is undergoing remediation.

Air sparging (AS) is a groundwater remediation technology that involves the injection of air under pressure into wells screened in the groundwater plume. Generally, air sparging is more effective for contaminants with greater volatility and lower solubility and for soils with higher permeability. Air sparging is well suited for the Site given PCE's low vapor pressure and the highly permeable, relatively homogeneous sandy subsurface conditions found at the Site.

At the Site, air is injected (sparged) below the water table, and the injected air volatilizes dissolved-phase PCE in groundwater. The volatilized PCE migrates upward into the vadose zone and is removed from the subsurface by the SVE system, which is comprised of blowers, air/water separators, pressure/vacuum gauges, bleeder valves, and sample ports for collecting vapor samples for analysis. The rate at which the contaminant mass is removed decreases as air sparging operations proceed and concentrations of dissolved contaminants are reduced.

The air sparging systems at the Site have been designed with air flow rates and pressures to treat the extent of the contaminant plume, while minimizing the potential for uncontrolled releases of contaminated vapors to the atmosphere, houses, or industrial buildings. In addition, portions of the air sparging systems were designed to act as barriers to prevent contamination from further migration. These barriers, referred to as sparge curtains in this report, consist of multiple air sparge wells located in series perpendicular to groundwater flow direction. Two sparge curtains were installed at the Site.

SVE is a remediation technology where a vacuum is applied to vapor extraction wells installed in the vadose zone. This vacuum creates a negative pressure gradient in the unsaturated zone causing the movement of vapors toward these SVE wells. The extracted vapors are then treated by vapor phase granular activated carbon (VGAC) units and discharged to the atmosphere.

Until 2002, two production wells at a former manufacturing facility, located downgradient and west of the Vienna Cleaners source area, exerted a controlling influence on the hydraulic gradient of the Vienna Cleaners PCE plume. These two production wells, which produced approximately 30,000 gallons of water per day, were taken out of service in October 2002 when the manufacturing facility closed. The groundwater flow model developed by CDM Smith indicated that shutting off the manufacturing facility's production wells would likely cause the hydraulic gradient to shift northwest toward the City's municipal production wells. The Site hydraulic control system was designed to offset the effects of the manufacturing facility well shutdown and to minimize groundwater plume migration toward the City's municipal wells by restoring the historic gradient at the Site. The hydraulic control system consists of a single groundwater extraction well (EW-1) removing groundwater at a rate of approximately 20 gallons per minute (gpm) over a 40-foot screened interval. Bag filters and liquid phase granular activated carbon (LGAC) units are used to treat the extracted groundwater prior to discharge to the City storm sewer, which then flows into the Ohio River.

The simple Conceptual Site Model (CSM) of groundwater contamination presented in the 2017 Vienna PCE Site Remediation System O&M and Groundwater Report prepared by KEMRON shows the center of the PCE plume concentrated south of 29th Street. The highest PCE

concentrations have been observed in MW-27S, which is located within the vicinity of the suspected third source. The PCE plume extends west onto the former production plant property, and east towards Vienna Cleaners.

Based upon groundwater sample results from November 2023, the highest concentrations of PCE are in the vicinity of monitoring wells MW-28 S, MW-10 S, and MW-27 S which are located south of 29th Street, north of 28th Street, east of 3rd Avenue, and west of Grand Central Avenue. These relative elevated concentrations continue to be consistent with the suspected former third source location.

The remediation system for the Site originally consisted of four discrete Treatment Units (TUs), with three of the TUs still present. **Figures 4, 5, and 6** identify the overall layout of the TUs and their relationship to the Site; **Figure 4** serves as an overall legend for **Figures 5 and 6**, and **Figures 5 and 6** are Process and Instrumentation Diagrams (P&ID) for systems TU1 and TU3, respectively.

2.3.1 Treatment Units

2.3.1.1 Vienna Cleaners Source Area – TU1

This area is located east of Grand Central Avenue and the objective of the unit is to remove the highest percentage of the contaminant mass located under and near the former Vienna Cleaners building (now razed) and to minimize further migration away from this source area. TU1 consists of air sparging and SVE systems, with 23 air sparge wells and nine SVE wells, including the two existing SVE wells previously installed by the USEPA Removal Program. The AS/SVE process equipment includes two air compressors, an air sparge well manifold header to distribute the pressurized air to the sparge wells, an SVE well manifold header to collect the vapors, an air/water separator to remove water from vapor extraction, an SVE blower, and two VGAC units operating in series to remove contaminants from the extracted vapor prior to discharge to the atmosphere through an exhaust stack. The equipment is housed in a metal building on the former Vienna Cleaners property located on the southwest corner of the intersection of 30th street and 6th Avenue.

2.3.1.2 Vienna Cleaners Well Protection Area – TU2 – Provisionally Offline

This area is located directly southeast of City of Vienna production wells, PW-V7 and PW-V8. The objective of TU2 was to provide a sparge curtain on the downgradient edge of the Vienna Cleaners plume to protect the City of Vienna production wells. TU2 consists of an AS system, with 15 air sparge wells located perpendicular to the plume gradient along River Road and 32nd Street. Given the low concentration of contaminants expected to migrate into this area, no SVE is required, as there would be very little contaminant mass present to be captured in the vapor phase.

The air compressor and AS well manifold headers are located in a wooden building on the west side of River Road near PW-V7 and PW-V8. TU2 is currently not operational and remains on

standby until needed. The standby status of TU2 includes periodic startup and run testing to ensure viability should system operation be deemed necessary in the future.

2.3.1.3 Vienna Well Protection Area – TU3

This area is located west of Grand Central Avenue, downgradient of the Vienna Cleaners source area. The objective of TU3 is to address the high levels of contaminant mass in the central portion of the Vienna Cleaners plume. TU3 consists of AS and SVE with 37 AS wells, 17 SVE wells, and one groundwater extraction well (EW-1) for hydraulic control. The TU3 AS/SVE process equipment includes two air compressors, an AS well manifold header, an SVE well manifold header, an air/water separator, an SVE blower, two VGAC units operating in parallel, and an exhaust stack. Groundwater pumped from EW-1 passes through a treatment train consisting of bag filters and two LGAC units in series. Treated groundwater is discharged to the City storm drain system adjacent to the treatment building that drains to the west and empties into the Ohio River. The treatment building is located on the north side of 29th Street, west of and adjacent to a church parking lot.

The groundwater extraction well shut down in October 2022 on an electrical fault alarm. The extraction well has remained offline since that date based upon the potential for the well to be decommissioned. A review of hydrological data is ongoing to determine the effectiveness of the extraction well in influencing the groundwater gradient. The WVDEP decision is pending a data review by USEPA as part of the USEPA 5-year review process for 2024.

2.3.1.4 Busy Bee Cleaners Source Area – TU4 – Decommissioned in 2009

This area is located adjacent to the Busy Bee Cleaners building and along 27th Street. The objective of TU4 was to address the Busy Bee Cleaners plume, which is separate from the Vienna Cleaners plume. Because the plume had largely decreased, TU4 was decommissioned and relocated in 2009. TU4 previously consisted of AS and SVE systems, with six AS wells and three SVE wells. The process equipment included an air compressor, an AS well manifold header, an SVE well manifold header, an air/water separator, an SVE blower, two VGAC units operating in series, and an exhaust stack.

3. PROJECT ORGANIZATION

As discussed in **Section 1**, the objectives of this plan are to outline the protocols to monitor groundwater, vapor, and overall system performance in conjunction with the ongoing LTRA conducted at the Site. The following project organization and structure has been prepared to ensure project objectives are achieved and reporting on activities is completed in a timely fashion.

3.1 Project Organization and Distribution List

As WVDEP's contractor, Atlas will manage and perform all sampling described herein. Deliverables will be submitted to WVDEP according to the project's distribution list, which is listed



below. The Atlas project team is presented below, and a copies of resumes showing personnel qualifications are included in **Appendix I**.

Project Manager

A supervisory position directing the overall operation, maintenance, monitoring, and management of the TUs as well as groundwater sampling events, client/agency communications, and financial review/invoicing. Primary responsibilities include the following:

- Supervise and direct on-site operation of the remediation systems.
- Ensure competency and safety of operations.
- Ensure compliance with all permit requirements (if applicable).
- Ensure that routine inspection, maintenance, record management, and reporting are performed.
- Oversee and ensure repair of system(s) equipment once approved.
- Perform other related administrative and management work, as required.

Environmental Scientist

This position is responsible capable of completing highly technical work, such as but not limited to field investigation management, borehole logging (soil sample description, organic vapor monitoring, and data interpretation), soil vapor sample collection, low-flow groundwater sampling, health and safety monitoring, and sample documentation/management.

Environmental Technician (System Operator)

This individual is in charge of daily operation, maintenance, monitoring, and management of the treatment systems, extraction well system, and associated facilities, attainment of effluent and air discharge requirements, record maintenance, reporting, waste disposal, and other associated on-site operations. Responsibilities include the maintenance of accurate and orderly O&M records, the performance of other related work including administrative and routine office duties, as required.

Electrician

This individual is responsible for performing installation, repair, and troubleshooting of electrical components as they relate to the remediation system equipment and treatment unit buildings.

CAD/GIS Technician

This individual is responsible for producing site drawings and figures using computer aided design (CAD) or graphic information software (GIS). Figures and drawings produced are to include but not limited to Site Location and Feature Figures, Site Drawings, Cross Sections, Layouts, As-builts, site monitoring/sampling data, and graphical representations of the CSM.

At this time, Atlas understands the distribution list for this project to include the following:

Name	Title	E-mail Address
Jason McDougal	CERCLA Program Manager	jason.s.mcdougal@wv.gov
Alan McCreary	ERS 3 Project Manager	alan.f.mccreary@wv.gov
Sara Kirk	Project Support Specialist	sara.kirk@wv.gov
William Huggins Jr.	ERS 3 Project Manager	william.huggins@wv.gov
Drew Waggener	Project Hydrogeologist	drew.waggener@wv.gov

4. PROJECT / DATA QUALITY OBJECTIVES

4.1 Problem Definition

Based upon the 2002 USEPA ROD, the current remedial action selected for the Site was AS/SVE as a groundwater remedy. The RAOs were developed to mitigate, restore, and/or prevent existing and future potential threats to human health and the environment. The RAOs for the selected remedy included reducing the PCE concentrations in groundwater to or below the drinking water standard (MCL) of 5 µg/L, prevent/minimize human exposure to contaminated groundwater; and minimize the migration of contaminated groundwater into the Ohio River.

Ultimately, this problem includes the need for maintenance and testing of the on-site remediation systems until COC concentrations have been demonstrated to have decreased below the MCL.

4.2 Goals of the Study

The objective of this LTRA is to operate and maintain the treatment systems and collect data to monitor current Site conditions and to confirm and evaluate remedy performance. The principal study questions (PSQs) developed to define decision statements and to aid the WVDEP to ultimately resolve the contamination problem are as follows:

PSQ #1: Are COCs at concentrations exceeding MCLs?

PSQ #2: Is the presence or absence of COCs stable over the monitoring periods, or changing due to installed remedial systems?

PSQ #3: Are all systems functioning efficiently and as intended?

4.3 Data Acquisition Goals

Atlas has considered the following specific informational inputs to serve as the basis for decisions during the execution of this project:

- Chemical Data:
 - Groundwater samples are collected to monitor the both the migration of the COC plume and changes in COC concentrations.
 - Vapor samples are collected from the SVE wells in order to assess the effectiveness of the remediation systems relative to the groundwater plume.
 - Process vapor samples are collected from the remediation systems to estimate the individual TU efficiency of COC removal.
 - Process water samples are collected from the TU3 groundwater extraction system to estimate the efficiency of COC removal and monitor the COC concentration of the discharge into the municipal stormwater system.
- Field Measurements: Field parameters, including pH, temperature, specific conductivity, oxidation-reduction potential, dissolved oxygen, and turbidity will be used to confirm groundwater samples are representative of the formation being investigated. (Note: Field parameters will not be collected from the monitoring wells that are sampled with passive diffusion bags (PDB) due to water volume issues.)
- Water Level Measurements: Prior to sampling, the depth to the static water level will be measured in wells using an electronic water level meter. The depth will be measured in units of feet (to the nearest 0.01 foot), with respect to the top of the well casing to measure the depth-to-water below ground surface.
- Established Cleanup Levels: The cleanup levels are defined in **Section 6** and include the following:
 - Groundwater Screening Criteria
 - USEPA Safe Drinking Water MCLs
 - National Primary Drinking Water Regulations
 - Effluent Process Water Screening Criteria
 - USEPA Safe Drinking Water MCLs
 - Soil Screening Criteria
 - WVDEP De Minimis Residential Soil Screening Levels

Vapor Screening Criteria are not applicable for this project, as vapor data is used only for evaluation and does not trigger any action.

4.4 Study Boundaries

The activities detailed herein are generally constrained to the vicinity of the network of monitoring wells and the active remediation systems. Changes to the proposed study area will be addressed in a future SAP update.

4.5 Analytical Approach

The objective of the LTRA is to evaluate the performance, progress, and effectiveness of the existing treatment units in stabilizing contaminant concentrations and ultimately reducing COCs to below applicable cleanup levels.

5. MEASUREMENT PERFORMANCE CRITERIA

5.1 Performance of Acceptance Criteria

This SAP specifies sample collection, handling, data analysis and interpretation, and reporting requirements that are designed to control uncertainties related to all aspects of the project. To limit uncertainty, performance criteria is discussed below, as described in Worksheets 12, 24, and 28 of the Intergovernmental Data Quality Task Force *Uniform Federal Policy for Quality Assurance Project Plans (UFP-QAPP) Manual*, dated March 2005. Site-specific versions of all UFP-QAPP laboratory worksheet documentation are attached as Tables in **Appendix III**.

The objective of this section is to complete the following:

- Identify potential sources of study error (e.g., field error, analytical error);
- Establish and identify the methods used to reduce potential sources of error; and
- Determine how decision errors will be managed during the project.

5.2 Sources of Error

Sources of error may be divided into two main categories: sampling errors and measurement errors. A sampling error occurs when the sampling design, planning, and implementation do not provide for a representative range of heterogeneity at the Site. A measurement error occurs because of performance variance from laboratory instrumentation, analytical methods, or operator error. USEPA identifies the combination of all these errors as a “total study error”. One objective of the investigation is to reduce the “total study error” so that decision-makers can be confident that the data collected accurately represent the chemical characteristics of the Site.

5.3 Managing Decision Error

Possible decision errors will be minimized during the proposed sampling activities by using the following methods:

- Use standard field sampling methodologies (as discussed in **Section 6** and **Appendix IV**).

- Use applicable analytical methods and standard operating procedures (SOPs) for sample analysis in accordance with the WVDEP CERCLA QAPP (WVDEP-OER-CERCLA-001; effective date October 11, 2022).
- Confirm analytical data to identify and control potential laboratory error and sampling error by using quality control (QC) samples including matrix spikes/matrix spike duplicates (MS/MSD), blanks, and duplicate samples.

5.4 Analytical Laboratory Sample Management

The sample matrix, number of samples, and number and type of laboratory quality assurance (QA)/quality control (QC) samples are summarized in **Section 6** and **Appendix IV**. Table III.3 in **Appendix III** details the analytical groups, sample volumes, sample container specifications, preservation requirements, and maximum and holding times. In accordance with the WVDEP CERCLA QAPP (WVDEP-OER-CERCLA-001; effective date October 11, 2022), the subcontracted analytical laboratory will analyze the samples and validate the data. The laboratory will provide electronic data deliverable files, portable document format files of the data deliverables for all project data, and a hard copy of data deliverables for all results. Designated samples will be used to obtain necessary subsamples for laboratory QC measurements (e.g., analytical sample duplicate and sample matrix spike/matrix spike duplicate). Tasks will be completed using the laboratory SOPs. Atlas will evaluate the usability of the data as described in **Section 11.8** of this report.

5.5 Sample Collection and Data Generation

The sampling program was developed to optimize resources and generate data to satisfy the project objectives and goals. The critical objective is to obtain a high-quality dataset. The sampling design, rationale, and locations are summarized in **Section 6** of this report. These identify where groundwater samples will be collected and the analyses to be conducted for each sample. **Section 6** also specifies analysis design requirements. Environmental samples will be collected by the Atlas field sampling team personnel. Laboratory analytical data will be generated and validated by a laboratory approved for WVDEP certified parameters. Specific sample preparation and analytical procedures to be used are provided in **Appendix III**, as well as throughout **Section 6** and **Section 11** of this SAP.

6. PROJECT IMPLEMENTATION: MONITORING AND SAMPLING

All sampling will be completed utilizing the various SOPs detailed in the WVDEP *Field Activities Standard Operating Procedures* (WVDEP-OER-VRP-002; effective date February 28, 2022) for the Comprehensive Environmental Response, Compensation, and Liabilities Act (Superfund) and Federal Facilities Program, as well as the WVDEP *Quality Assurance Program Plan* for the CERCLA (Superfund) Program (WVDEP-OER-CERCLA-001; effective date October 11, 2022).

Copies of applicable standard operating procedures are included in **Appendix IV**.

6.1 Project Tasks and Schedule

Site monitoring wells are sampled on a biannual basis typically in the spring and the fall. The selected monitoring wells identified for sampling are based upon a review of the historical results. Some wells have a reduced sampling frequency if trend analysis indicates that contaminants of concern (COCs) continue to not be detected in that well. A sampling schedule documenting Spring of 2022 through Spring of 2024 is presented in **Table 1**. The list of wells selected for sampling is reviewed, adjusted, and approved by WVDEP prior to each sampling event. Any changes will be documented in a subsequent version of this SAP.

Vapor samples are collected from the SVE wells typically from sample ports located at the manifold of active remediation systems. Vapor samples may also be collected from sample ports located at the SVE wellheads. There is currently no established schedule for this sample collection.

Process vapor samples are collected from sample ports before the VGAC units as Influent, between VGAC units as Midfluent (if VGAC units are operated in series), and after the VGAC units as Effluent. Process vapor samples will be collected on a quarterly basis within the first month of each quarter.

Process water samples are collected from the TU3 groundwater remediation system sample ports before the LGAC units as Influent, between the LGAC units as Midfluent, and after the LGAC units as Effluent. Process water samples are collected monthly.

Currently the project maintains a semi-annual reporting frequency (January through June and July through December). Unless otherwise directed by WVDEP, all sampling results collected within each semi-annual period will be included in the Semiannual Sampling Report provided as a draft to WVDEP within 45 days following the receipt of laboratory reports.

6.2 Groundwater Sampling

6.2.1 Groundwater Gauging and Sample Collection Protocols

Groundwater gauging and sampling will be accomplished using low-flow sampling techniques in a manner that is consistent with the USEPA publication *Low-Flow (Minimal Drawdown) Ground-Water Sampling Procedures* (published April 1996), the USEPA Science and Ecosystem Support Division (SESD) Operating Procedure for Groundwater Sampling (effective November 1, 2007), and with the most-recent WVDEP-approved Standard Operating Procedures (WVDEP SOP OER-VRP-002, effective February 28, 2022). Copies of applicable standard operating procedures are included in **Appendix IV**.

All water level measurements will be collected in accordance with marking on top of casing (TOC); in the event no marking is present, water level measurements will be collected from the north side of TOC. Water levels will be recorded on a Groundwater Sampling Field Sheet; a blank copy of the Groundwater Sampling Field Sheet is included in **Appendix II**.

Field equipment will be calibrated daily per factory specifications and calibration logs will be maintained. A blank calibration log is included with other field forms in **Appendix II**.

6.2.2 Passive Diffusion Bag Sampling

PDBs have been used as part of groundwater sampling activities for the Site as directed by WVDEP and detailed on **Table 1**. PDB use was temporarily suspended by WVDEP following the Fall 2022 sampling event. In the event that WVDEP elects to resume the use of PDB for groundwater sampling, the work will be completed in accordance with WVDEP *Passive Diffusion Bag (PDB) Sampling* (SOP OER-0135; effective February 28, 2022). Copies of applicable standard operating procedures are included in **Appendix IV**.

6.2.3 Groundwater Analytical Methods

The groundwater samples will be analyzed for specific VOC analytes by USEPA Method 8260 on a standard turnaround basis. Atlas will collect groundwater samples from all monitoring wells associated with the Site as listed in **Table 1**. The following analytes will be sampled for the corresponding groundwater monitoring wells:

Analyte	CAS RN	Method	MCL (µg/L)	Laboratory Detection Limit (µg/L)	Laboratory Quantitation Limit (µg/L)
Tetrachloroethene	127-18-4	8260	5	1.00	0.467
Trichloroethene	79-01-6	8260	5	1.00	0.688
1,2-Dichloroethane	107-06-2	8260	5	1.00	0.574
cis-1,2-Dichloroethene	156-59-2	8260	5	1.00	0.707
trans-1,2-Dichloroethene	156-60-5	8260	5	1.00	0.670
Vinyl Chloride	75-01-4	8260	2	1.00	0.407
Methylene Chloride	75-09-2	8260	5	1.00	0.886

The COCs included are those directly listed in the 2002 RI Report referenced in **Section 2.2** of this report and the addition of (cis-/trans-) 1,2-dichloroethene.

At this time, there are no formal action limits (other than MCLs), as contamination on-site is known and being addressed via remediation systems.

The samples will be collected in certified clean bottleware supplied by Eurofins Analytical (Eurofins) in Pittsburgh, Pennsylvania. The bottleware will contain preservative and be handled as indicated in the table below:

Analyte	Method	Sample Container	Volume	Holding Time	Preservative
Tetrachloroethene	8260	Glass, Teflon septum	(3) 40 mL	14 Days	Cool ≤ 6°C; HCl to pH < 2
Trichloroethene	8260	Glass, Teflon septum	(3) 40 mL	14 Days	Cool ≤ 6°C; HCl to pH < 2
1,2-Dichloroethane	8260	Glass, Teflon septum	(3) 40 mL	14 Days	Cool ≤ 6°C; HCl to pH < 2
(cis- and trans-) 1,2-Dichloroethene	8260	Glass, Teflon septum	(3) 40 mL	14 Days	Cool ≤ 6°C; HCl to pH < 2
Methylene Chloride	8260	Glass, Teflon septum	(3) 40 mL	14 Days	Cool ≤ 6°C; HCl to pH < 2
Vinyl Chloride	8260	Glass, Teflon septum	(3) 40 mL	14 Days	Cool ≤ 6°C; HCl to pH < 2

All analytes will be analyzed by Eurofins in accordance with the WVDEP CERCLA QAPP (WVDEP-OER-CERCLA-001; effective date October 11, 2022). A copy of the state-level laboratory certification (WVDEP Certification #142) is included in **Appendix V**.

6.2.4 Groundwater Quality Assurance / Quality Control Protocols

In accordance with Quality Assurance/Quality Control (QA/QC) protocols, the following samples will be collected and analyzed for the above-referenced VOC list by USEPA Method 8260. *Samples will be collected at the intervals indicated below or at a minimum of one QA/QC set per day, whichever is greatest.*

QA/QC Sample	Method	Matrix	Estimated Quantitation Limit	Total Samples
Duplicate	8260	Groundwater	5 µg/L	One per 20 Samples
Equipment Rinsate Blank	8260	Groundwater	5 µg/L	One per 20 Samples
Field Blank	8260	Groundwater	5 µg/L	One per 20 Samples
MS/MSD	8260	Groundwater	5 µg/L	One per 20 Samples
Trip Blank	8260	Groundwater	5 µg/L	One per cooler

6.3 Vapor Sampling

6.3.1 Vapor Sampling Protocols

The purpose of this standard operating procedure (SOP) is to outline the methods used to collect samples of the soil vapor created by the AS systems action in the groundwater. Vapor samples

can be collected using 1-Liter (L) Summa® canisters or Tedlar bags. Summa® canisters are preferred and the SOP is written accordingly.

6.3.1.1 General Overview

There are nine SVE wells associated with TU1 and 17 SVE wells associated with TU3. Vapor Monitoring Points (VMPs) with ball valves are installed on each dedicated line for the SVE wells immediately before the connection to the influent manifold. VMPs are also located at influent, intermediate, and effluent points of the VGAC treatment vessels. Each individual SVE wellhead is fitted with a pressure gauge and a sample port with a hose barb fitting. Locations of the SVE wellheads are depicted on **Figure 3** which displays the layout of the TUs and their relationship to the Site. Manifold VMPs are the default location for vapor samples. Wellhead VMPs may be used in tandem with Manifold VMPs for comparison purposes, or in place of manifold VMPs with WVDEP approval.

Air-tight connections to the sample ports will be achieved through the use of ¼-inch push-to-connect fittings or silicone tubing (where appropriate) and ¼-inch Teflon™ coated tubing. In an effort to collect consistent and representative samples, the treatment units will be operated in manual mode for each cycle (pulse) as appropriate for each SVE well.

Vapor samples will be collected from the VMPs using either certified pre-cleaned, 1-L Summa canisters using regulators laboratory set to 200 milliliters per minute (mL/min) or 1-L Tedlar® bags provided by the analytical laboratory. This SAP is written under the assumption that Summa canisters will be the default sampling technology for this project.

Applicable SOP documentation, including Air Sampling Canister Leak Testing (Atlas **SOP 017**) and Air Sampling of Remediation Systems (Atlas **SOP 18**) are included in **Appendix IV**.

6.3.1.2 SVE Well Sampling (Wellhead)

Vapor samples will be collected from currently-active SVE wells in accordance with the vapor extraction cycles for each system. In order to increase consistency with field personnel, these systems will be manually engaged as necessary during sampling activities. Measures will be taken to ensure that the VMPs are properly purged by connecting the sealed summa canister and regulator to the sampling port, opening the sampling port for a minimum of ten seconds prior to sample collection, and then opening the summa canister valve for sample collection. In general, all vapor sampling will follow the above methodology.

At TU-1, vapor sampling is to be completed at VMPs SP-01W through SP-09W, the ¼-inch sampling ports at the wellheads located inside the roadbox.

At TU-3, vapor sampling is to be completed at VMPs SP-01W through SP-17W, the ¼-inch sampling ports at the wellheads located inside the roadbox.

Refer to **Figure 5** and **Figure 6** for the P&ID for systems TU1 and TU3 and location of these valves.

6.3.1.3 SVE Well Sampling (Manifold)

Vapor samples will be collected from currently-active SVE wells in accordance with the vapor extraction cycles for each system. In order to increase consistency with field personnel, these systems will be manually engaged as necessary during sampling activities. Measures will be taken to ensure that the VMPs are properly purged by connecting the sealed summa canister and regulator to the sampling port, opening the sampling port for a minimum of ten seconds prior to sample collection, and then opening the summa canister valve for sample collection. In general, all vapor sampling will follow the above methodology.

In order to prevent cross contamination from the manifold, the valve that connects the SVE line to the manifold (for TU-1: VLV 01 through 09; for TU-3: VLV 01 through VLV 17) will be closed immediately prior to sample collection. The SVE system will remain operational throughout the sampling period and supervised by the Operator.

At TU-1, vapor sampling is to be completed at VMPs SP-01 through SP-09, the ¼-inch sampling points located prior to the manifold.

At TU-3, vapor sampling is to be completed at VMPs SP-01 through SP-17, the ¼-inch sampling points located prior to the manifold.

6.3.1.4 Vapor Pin Sampling (Exterior)

Vapor pin sampling will be completed upon request by WVDEP in accordance with the Vapor Pin methodology outlined for sampling in **Section 2.2** of the 2022 WVDEP-OER-VRP-002 Soil Gas Sampling SOP included in **Appendix IV**. Sample mass will be collected by connecting tubing between a summa canister and the vapor point, after which the summa canister valve will be opened for sample collection.

6.3.1.5 Performance Sampling

As part of the routine operating activities to be performed on the remediation systems at the Site, Atlas will collect, at a minimum, an influent sample and an effluent sample from the operational SVE systems. Based on the observed change in contaminant concentration between influent and effluent, Atlas may draw conclusions and evaluate system performance.

Atlas notes in review of project goals and contract documents that there are no performance vapor sampling requirements identified for this project.

Prior to performance sampling, it is important to establish whether the VGAC units are operating in series or in parallel. Please see subsections below for further detail. TU1 SVE system utilizes two VGAC units piped in series. TU3 SVE System utilizes two VGAC units typically piped in parallel but may be modified to operate in series.

Please see **Section 8.1** for discussion of appropriate sampling nomenclature.

Instructions for performance sampling for both configurations are as follows:

Both in-parallel and in-series performance sampling will include the same influent sampling points; this portion of the system is entirely unaffected by sequence changes with the VGAC units.

Influent sampling is to be completed at VMP SP-101, a 1/4-inch sampling point off the 2.5-inch galvanized steel piping portion of the system immediately prior to crossing the enclosure limits. Vapor passes through four-inch PVC piping into the opened VLV 100 and through the MS-100 moisture separator unit into an inlet silencer and then into the four-inch galvanized steel portion of the manifold. From here, the vapor travels into a vapor extraction blower before traveling through a 2.5-inch discharge silencer into the 2.5-inch galvanized steel piping.

In-Parallel

When operating in-parallel, there is a single influent VMP, no midpoint VMP, and dual effluent VMP.

Effluent sampling is to be completed at VMP SP-201, a 1/4-inch sampling point located near the top/exit of VGAC-201, and VMP SP-202, a 1/4-inch sampling point located near the top/exit of VGAC-202.

In-Series

When operating in-series, there is a single influent VMP, a single midfluent VMP, and a single effluent VMP. The correct selection of the midfluent and effluent VMP is identified as follows:

Leading Unit	Midfluent	Effluent
VGAC-201	SP-201	SP-202
VGAC-202	SP-202	SP-201

6.3.1.6 Field Sampling Procedures

Prior to collecting samples, all vapor sampling canisters must be subjected to and pass leak testing as detailed in Air Sampling Canister Leak Testing SOP (Atlas **SOP 017**). All vapor sampling will be conducted in accordance with Air Sampling of Remediation Systems SOP (Atlas **SOP 18**) and under with the consultation with the remediation system operator. These SOPs are included in **Appendix IV**.

6.3.2 Vapor Analytical Methods

The vapor samples will be analyzed for specific VOC analytes by USEPA Method TO-15 on a standard turnaround basis. Vapor samples will be analyzed for the following analytes for all VMPs:

Analyte	CAS RN	Method	Reporting Limit (µg/m³)	Laboratory Detection Limit (µg/m³)	Laboratory Quantitation Limit (µg/m³)
Tetrachloroethene	127-18-4	TO-15	1.36	0.24	0.22
Trichloroethene	79-01-6	TO-15	3.21	0.813	0.813
1,2-Dichloroethane	107-06-2	TO-15	2.427	0.732	0.732
cis-1,2-Dichloroethene	156-59-2	TO-15	2.379	1.392	1.392
trans-1,2-Dichloroethene	79-00-5	TO-15	2.379	0.765	0.765
Vinyl Chloride	75-01-4	TO-15	1.533	0.48	0.48
Methylene Chloride	75-09-2	TO-15	5.22	1.398	1.398

The samples will be collected in laboratory supplied certified clean containers. The containers will be handled as indicated in the table below:

Analyte	Method	Sample Container	Volume	Holding Time	Preservative
Tetrachloroethene	TO-15	Summa Canister	1-L	30 Days	Ambient Temperature; Keep out of light
Trichloroethene	TO-15	Summa Canister	1-L	30 Days	Ambient Temperature; Keep out of light
1,2-Dichloroethane	TO-15	Summa Canister	1-L	30 Days	Ambient Temperature; Keep out of light
cis-1,2-Dichloroethene	TO-15	Summa Canister	1-L	30 Days	Ambient Temperature; Keep out of light
trans-1,2-Dichloroethene	TO-15	Summa Canister	1-L	30 Days	Ambient Temperature; Keep out of light
Vinyl Chloride	TO-15	Summa Canister	1-L	30 Days	Ambient Temperature; Keep out of light

Methylene Chloride	TO-15	Summa Canister	1-L	30 Days	Ambient Temperature; Keep out of light
Tetrachloroethene	TO-15	Tedlar®	1-L	48 Hours	Ambient Temperature; Keep out of light
Trichloroethene	TO-15	Tedlar®	1-L	48 Hours	Ambient Temperature; Keep out of light
1,2-Dichloroethane	TO-15	Tedlar®	1-L	48 Hours	Ambient Temperature; Keep out of light
cis-1,2-Dichloroethene	TO-15	Tedlar®	1-L	48 Hours	Ambient Temperature; Keep out of light
trans-1,2-Dichloroethene	TO-15	Tedlar®	1-L	48 Hours	Ambient Temperature; Keep out of light
Vinyl Chloride	TO-15	Tedlar®	1-L	48 Hours	Ambient Temperature; Keep out of light
Methylene Chloride	TO-15	Tedlar®	1-L	48 Hours	Ambient Temperature; Keep out of light

6.3.3 Vapor Quality Assurance / Quality Control Protocols

In accordance with QA/QC protocols, the following samples will be collected and analyzed for the above-referenced VOC list by USEPA Method TO-15.

QA/QC Sample	Method	Matrix	Estimated Quantitation Limit	Total Samples
Duplicate	TO-15	Vapor	0.3 µg/m ³	One per 20 Samples

A minimum of one duplicate sample per TU will be collected. Following completion of vapor sampling, vapor samples will be logged on an appropriate chain-of-custody form and submitted to the selected laboratory for analytical analysis.

6.4 Process Water Sampling

6.4.1 Process Water Sampling Schedule

At TU3, groundwater extracted from EW-1 is treated with dual LGAC units before being discharged into the City of Vienna storm drain system. To monitor the effectiveness of the LGAC units, process water samples will be collected from three points (influent, mid-carbon, and effluent) in the treatment system on a monthly basis.

6.4.2 Process Water Sample Collection Protocols

Please see **Figures 4** and **Figure 6** for P&IDs associated with TU3; TU1 does not operate with a groundwater extraction system.

In brief, an influent sample is collected prior to the two LGAC treatment vessels, an intermediate (midfluent) sample is collected between the two vessels, and a discharge sample is collected at an effluent port.

These LGAC vessels always operate in series but the order of the vessels may change based on performance data. It is critical that the field technician consult the remediation system operator prior to sampling and reference existing signage to confirm current system configuration and determine appropriate sampling locations, as follows:

Leading Unit	Influent	Midfluent	Effluent
LGAC-600	SP-605	SP-604	SP-606
LGAC-601	SP-603	SP-606	SP-604

6.4.3 Process Water Analytical Methods

The process water samples will be analyzed for specific VOC analytes by USEPA Method 8260 on a standard turnaround basis. The following analyte will be sampled:

Analyte	CAS RN	Method	MCL (µg/L)	Process Water Sampling Locations
Tetrachloroethene	127-18-4	8260	5	Influent, Mid-Carbon, Effluent
Trichloroethene	79-01-6	8260	5	Influent, Mid-Carbon, Effluent
1,2-Dichloroethane	107-06-2	8260	5	Influent, Mid-Carbon, Effluent
cis-1,2-Dichloroethene	156-59-2	8260	5	Influent, Mid-Carbon, Effluent
trans-1,2-Dichloroethene	107-06-2	8260	5	Influent, Mid-Carbon, Effluent
Vinyl Chloride	75-01-4	8260	5	Influent, Mid-Carbon, Effluent

Methylene Chloride	75-09-2	8260	5	Influent, Mid-Carbon, Effluent
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At this time, there are no formal action limits (other than MCLs), as contamination on-site is known and being addressed via remediation system with the involvement and management of WVDEP.

These three sampling locations (Influent, Mid-Carbon, and Effluent) are to be collected monthly and to be analyzed for PCE via USEPA Method 8260 on a standard turn around basis, will be placed in an ice-filled cooler with the appropriate chain-of custody documentation, and submitted to Eurofins Analytical (Eurofins) in Pittsburgh, Pennsylvania (WVDEP Certification #142). A copy of the state-level laboratory certification is included in **Appendix V**.

The bottleware will contain preservative and be handled as indicated in the table below:

Analyte	Method	Sample Container	Volume	Holding Time	Preservative
Tetrachloroethene	8260	Glass, Teflon septum	(3) 40 mL	14 Days	Cool ≤ 6°C; HCl to pH < 2
Trichloroethene	8260	Glass, Teflon septum	(3) 40 mL	14 Days	Cool ≤ 6°C; HCl to pH < 2
1,2-Dichloroethane	8260	Glass, Teflon septum	(3) 40 mL	14 Days	Cool ≤ 6°C; HCl to pH < 2
cis-1,2-Dichloroethene	8260	Glass, Teflon septum	(3) 40 mL	14 Days	Cool ≤ 6°C; HCl to pH < 2
trans-1,2-Dichloroethene	8260	Glass, Teflon septum	(3) 40 mL	14 Days	Cool ≤ 6°C; HCl to pH < 2
Methylene Chloride	8260	Glass, Teflon septum	(3) 40 mL	14 Days	Cool ≤ 6°C; HCl to pH < 2
Vinyl Chloride	8260	Glass, Teflon septum	(3) 40 mL	14 Days	Cool ≤ 6°C; HCl to pH < 2

6.4.4 Process Water Quality Assurance / Quality Control Protocols

In general, Atlas considers the typical process water sampling set to be too small to be appreciable for substantial QA/QC efforts. However, as a general practice, Atlas will submit one trip blank per sampling event for QA/QC.

6.5 Soil Sampling

6.5.1 Soil Sampling Schedule

Soil sampling is not completed herein as a recurring task; Atlas is prepared to collect shallow or surficial soil samples upon request and is prepared to collect soil samples as part of any additional

well drilling activities that may be requested at a later date. As such, no formal schedule or proposed sample locations are presented at this time.

6.5.2 Soil Sample Collection Protocols

Soil sampling will be conducted in accordance with WVDEP *Soil Sampling* (SOP OER-0120), and/or WVDEP *Soil Sampling Using Direct-Push Drilling* (SOP OER-0121), both effective February 28, 2022. As necessary, soils screening via photoionization detector (PID) will be conducted in accordance with WVDEP *PID/FID Field Screening* (SOP OER-0101; effective February 28, 2022). All field screening activities will be additionally conducted in accordance with the first option (f, i) identified in SOP OER-0121, which details the option of immediate core sampling via Method 5035 during sampling activities and post-sampling PID/FID usage. These documents are included in **Appendix IV**.

6.5.3 Soil Analytical Methods

The soil samples will be analyzed for specific VOC analytes by USEPA Method 8260 on a standard turnaround basis. Analytes will be determined on a case-by-case basis, but the following contaminants of concern for the Site are listed herein for general benefit of field technicians. In the event such sampling is requested, it is likely that Atlas will develop an additional SAP specifically for that request.

Analyte	CAS RN	Method	MCL
Tetrachloroethene	127-18-4	8260	25 mg/kg
Trichloroethene	79-01-6	8260	1 mg/kg
1,2-Dichloroethane	107-06-2	8260	0.5 mg/kg
cis-1,2-Dichloroethene	156-59-2	8260	17 mg/kg
trans-1,2-Dichloroethene	156-60-05	8260	75 mg/kg
Methylene Chloride	75-09-2	8260	58 mg/kg
Vinyl Chloride	75-01-4	8260	0.061 mg/kg

The samples will be collected in certified clean bottleware supplied by Eurofins Analytical (Eurofins), in Pittsburgh, Pennsylvania (WVDEP Certification #142). Copies of the certifications are included in **Appendix V**. The bottleware will contain preservative and be handled as indicated in Table III.3 in **Appendix III**.

6.5.4 Soil Quality Assurance / Quality Control Protocols

Currently, soil sampling is only proposed as a theoretical activity. QA/QC for soil sampling will be reviewed further based upon any new scope of work request from WVDEP. In general, Atlas considers the typical soil sampling set, based upon the installation of one monitoring well, to be too small to be require QA/QC efforts. However, as a general practice, Atlas will collect one duplicate sample per twenty samples and one rinsate blank per twenty samples (if the selected sampling method is determined to warrant this), or one per day, whichever is greatest.

In the event a large soil sampling project is requested of Atlas, further consideration will be given as to the need for additional QA/QC sampling.

7. DECONTAMINATION PROCEDURES

Decontamination procedures to be employed for personnel and equipment during sampling and other related activities at the Site are summarized below. The decontamination process is designed to remove any contamination acquired during sampling and to keep the spread of contaminated materials from migrating off-site. Care must be exercised to ensure that contaminants are removed from personnel and equipment before the personnel or equipment leaves the Site.

Decontamination of equipment will be accomplished in a manner that is consistent with the USEPA publication *Field Equipment Cleaning and Decontamination* (ID LSASDPROC-205-R4; effective date June 22, 2020) and with WVDEP-approved *General Decontamination Procedures for Non-Disposable Field Sampling Equipment* (WVDEP SOP OER-0100, dated February 28, 2022).

7.1 Personnel Decontamination

Dry decontamination is the preferred method utilized by Atlas. This method of decontamination involves the removal and containment of contaminated layers of personal protective clothing. Personal protective equipment, such as nitrile gloves, will be removed and properly disposed of after sampling at each groundwater monitoring well.

All field sampling technicians will wash hands and face before leaving the site for the day to reduce transferring potential contamination from groundwater sampling activities. In the event of an emergency, site personnel may assist with the emergency decontamination only if they are protected from exposure. An emergency eyewash and first aid kit will be located within each Atlas vehicle in the event that emergency decontamination is needed. Additionally, Atlas will keep these materials stocked at each TU for emergency use.

7.2 Equipment Decontamination

This procedure is applicable for any equipment that will be used to collect a sample for chemical analysis. Whenever feasible, field equipment will be pre-cleaned (using this procedure) at the

equipment maintenance area, wrapped in aluminum foil, and dedicated to a particular sampling point. In instances where this is not feasible, field decontamination will be performed as follows:

1. Non-phosphate detergent wash;
2. Distilled water rinse, and
3. Air dry.

Note: All wastewater generated will be collected, placed in a properly labeled 55-gallon drum, and temporarily staged on-Site pending being processed through the TU3 treatment system.

8. HEALTH AND SAFETY

OSHA regulations should be adhered when working with potentially hazardous materials. Personnel performing environmental work at OER sites should have their 40 Hour Hazardous Waste Operations and Emergency Response (HAZWOPER) with 8 Hour refreshers as appropriate. Some level of Personal Protective Equipment (PPE) is generally required for all sampling and decontamination activities. The appropriate level of PPE for these activities may be found in the Site Health and Safety Plan (HASP). Personnel should adhere to the safety requirements outlined in the site-specific plans. The following is a summary of just some of the hazards associated with well sampling:

- Exposure to unknown contaminants.
- Lifting injuries associated with moving equipment, coolers with samples, and retrieving pumps and bailers.
- Heat/cold stress as a result of exposure to extreme temperatures and the use of PPE.
- Slips, trips, and fall hazards.
- Potential electrical shocks associated with use of submersible pumps.
- Biohazards, such as snakes, biting insects, and poison ivy.
- Vehicle traffic.

Safety data sheets (SDS) should be readily available on-site for all decontamination solvents or solutions, as well as known contaminants, as required by the Hazard Communication Standard requirements set forth in the OSHA regulations. Investigation-derived waste (IDW) generated from decontamination activities requires proper handling, storage, and disposal. Refer to **Section 9** for IDW procedures.

9. INVESTIGATION-DERIVED WASTE MANAGEMENT

Investigation-derived wastes generated during sampling and other related activities at the Site will be containerized and managed in accordance with the procedures specified below.

The majority of anticipated investigation-derived wastes are liquids associated with groundwater sampling, particularly in the forms of purge water and decontamination water.

9.1 Purge Water

Purge water generated during groundwater sampling and other related activities at the Site will be temporarily containerized in 5-gallon buckets during purge activities and transferred to 55-gallon drums for temporary storage in the vicinity of TU3. All drums will be labeled as non-hazardous.

The purge water will be treated in the existing groundwater treatment system in TU3.

9.2 Decontamination Water

Decontamination water generated during sampling and other related activities at the Site will be temporarily containerized in 5-gallon buckets and transferred to 55-gallon drums for temporary storage in the vicinity of TU3 following completion of daily decontamination activities. All drums will be labeled as non-hazardous.

The decontamination water will be treated in the existing groundwater treatment system in TU3.

10. SAMPLE HANDLING, STORAGE, AND SHIPMENT

10.1 Sample Numbering System

10.1.1 Scope and Application

This procedure is applicable to samples collected during the field work at the Site by Atlas as required by WVDEP. An accurate sample numbering system is important for sample tracking and matching of results with sample locations.

10.1.2 Summary of Method

A unique number is assigned to each sample collected according to a predetermined set of criteria.

10.1.3 Procedure

The sample numbering system will be used to identify each sample taken and to provide a tracking procedure for retrieval of information.

The sample ID code for groundwater and vapor samples will consist of three (or four) parts:

- Site identifier (VPCE, for Vienna PCE Site);
- Sample Location ID (MW-02-S, V-C1, etc.); and
- Sampling Date (240514) (YYMMDD - Year, Month, Day).
- Wellhead vapor samples will be identified with -WH at the end.

The sample ID code for process vapor and water sampling will consist of four parts:

- Site identifier (VPCE, for Vienna PCE Site);
- Treatment Unit Number (TU1 or TU3);

- Process Sample Location (Influent, Midfluent, and Effluent {or 201/600 Effluent and 202/601 Effluent if GAC units are operated in parallel}); and
- Sampling Date (240514) (YYMMDD - Year, Month, Day).

QA/QC samples would be identified as follows:

Duplicate:	VPCE-MW-DUP-A-240514 or VPCE-VMP-DUP-A-240514
MS/MSD:	VPCE-MW-16-S-240514MS and VPCE-MW-16-S-240514MSD
Equipment Blank:	VPCE-MW-EB-1-240514
Field Blank:	VPCE-MW-FB-1-240514

A sample label will be affixed to each container prior to sample collection. The sample label will contain the following information:

- Sample identification
- Sample location;
- Analyses required;
- Preservatives added
- Date and time collected;
- Sampler's initials;
- Bottle type; and
- Project Number.

Immediately following sample collection, each sample container will be sealed and packed in a cooler prepared for shipment or pickup by the laboratory. The samples will be properly relinquished on the field Chain-of-Custody record by the field team. These record forms will be sealed in a re-sealable plastic bag to protect them against moisture.

10.1.4 Precautions

It is critical that the sample numbers be recorded correctly on the sample label, the blank field record sheets in **Appendix II**, and the chain-of-custody record. This risk may be mitigated in part by use of pre-printed chain of custody documents and pre-printed sampling labels which allow for the completion of the date sampled.

10.2 Storage and Handling

The sample holding time begins to elapse immediately following sample collection.

Once a sample has been collected, the sample will be secured in a locked vehicle, locked trailer, custody-sealed cooler or in a visual sight of the person(s) assuming the chain-of-custody until hand delivery to the laboratory, shipment to the laboratory, or transfer to the laboratory courier.

Groundwater samples will be placed on ice and stored at $\leq 6^{\circ}\text{C}$ prior to analysis. Following laboratory analytical report delivery, the laboratory will store the samples at room temperature in a secure area for 30 days.

10.3 Shipping

This procedure is applicable to packing and shipping the environmental samples that will be collected during the field activities at the Site. Proper packing/shipping is critical to the sample chain-of-custody, as well as protection of the shipper and carrier. The following applies to samples not suspected to contain potentially hazardous constituents. For all other shipping, consult applicable guidance documents. If samples are discolored, odorous, or contain non- aqueous phase materials, applicable shipping guidance should be considered.

In general, WVDEP Superfund Program sample packaging, preservation, and shipping will be conducted in accordance with *Contract Laboratory Program Guidance for Field Samplers, EPA Publication 540-R-014-013, Final (October 2014)*. This document should also be consulted for the above atypical shipping conditions.

Prompt and proper packaging of samples will achieve the following:

- Protect the integrity of samples from changes in composition or concentration caused by bacterial growth or degradation from increased temperatures.
- Reduce the chance of leaking or breaking of sample containers that would result in loss of sample volume, loss of sample integrity, and exposure of personnel to toxic substances.
- Help ensure compliance with shipping regulations.

10.3.1 Shipping – Water and Soil Samples

At present, Atlas directly delivers aqueous field samples to the analytical laboratory. Atlas anticipates similar procedure for any potential soil sampling events.

In the event that another laboratory is chosen which requires shipping, the following procedures will be used:

1. Prepare containers for shipment.
 - Affix appropriate shipping labels on each of the shipping containers.
 - Assign chain-of-custody records and corresponding custody seals to respective shipping containers.
2. Prepare sample bottles.
 - Check to see that lids are on tight and that bottle labels are firmly affixed and labeled.
 - As needed, spray the bottles with tap water and wipe with a paper towel.
3. Arrange the sample containers in front of their assigned shipping containers.
4. Seal each sample container set in a separate sealable padded (bubble-wrap) storage plastic bag and place the sample containers in their designated shipping containers.

Appropriately sized commercially available plastic bags may be used in the event that the sample bottle will not fit in a sealable zipper storage bag.

5. Place ice directly on and around the sample containers.
6. A temperature blank shall be added in each cooler.
7. Sign the chain-of-custody form (or obtain the signature) and indicate the time and date the samples are relinquished to the overnight carrier or laboratory courier.
8. Seal the proper chain-of-custody copy in a sealable zipper storage bag and tape it to the inside lid of the container.
9. Close the lid and latch the container.
10. Carefully peel the custody seals from their backings and place them intact over the front and back edges of the shipping container. Cover the seals with clear protection tape.
11. Tape the container shut on both ends, making several complete revolutions with strapping tape (do not obscure the custody seals).
12. Address the shipment and relinquish the shipping container(s) to the overnight carrier or laboratory courier.
13. Telephone the laboratory on the day of shipment. Provide the following information:
 - Sampler name;
 - Number of samples sent to the laboratory for analysis; and
 - Airbill numbers (if applicable).

10.3.2 Shipping – Vapor Samples

1. Prepare containers for shipment.
 - Affix appropriate shipping labels on each of the containers.
 - Assign chain-of-custody records and corresponding custody seals to respective shipping containers.
2. Prepare sample canisters or bags.

For summa canisters:

- Remove the flow regulator using a wrench and re-install the brass plug on the canister, tightening the plug with a wrench. Keep the flow regulator with the corresponding canister until label/tag preparation is completed, as below.
- Sample number, sample location, date collected, sampler name, and any other pertinent sample information must be recorded on a blank tag attached to each canister.

For Tedlar bags:

- Close the valve, then record the date, time, sample location ID, name of sampler, and any other pertinent information on the sample bag label and on data sheets or in logbooks. Do not write directly on bags or apply adhesive labels to bags, as inks or adhesives may diffuse through the bag material and contaminate the sample. Labels should be tied to the metal eyelets provided on the bags.

3. Arrange the sample containers in front of their assigned shipping containers.
4. Package the samples in laboratory-provided shipping materials and into the assigned shipping containers.
5. Sign the chain-of-custody form (or obtain the signature) and indicate the time and date the samples are relinquished to the overnight carrier or laboratory courier.
6. Seal the proper chain-of-custody copy in a sealable zipper storage bag and tape it to the inside lid of the container.
7. Close the lid and latch the container.
8. Carefully peel the custody seals from their backings and place them intact over the front and back edges of the shipping container. Cover the seals with clear protection tape.
9. Tape the container shut on both ends, making several complete revolutions with strapping tape (do not obscure the custody seals).
10. Address the shipment and relinquish the shipping container(s) to the overnight carrier or laboratory courier.
11. Telephone the laboratory on the day of shipment. Provide the following information:
 - Sampler name;
 - Number of samples sent to the laboratory for analysis; and
 - Airbill numbers (if applicable).

11. QUALITY ASSURANCE / QUALITY CONTROL

11.1 Quality Assurance Objectives

Data Quality Objectives define the total uncertainty in the data that is acceptable for each specific activity during the investigation. This uncertainty includes both sampling error and analytical error. The data collected during the investigation will be used to monitor and evaluate the efficacy of the ongoing O&M of the LTRA.

The parameters that will be used to specify data quality requirements and to evaluate the analytical system performance are precision, accuracy, representativeness, completeness,

comparability, and sensitivity (PARCCS). Specific PARCCS goals and requirements are discussed in **Section 11.8**.

The objective with respect to the field investigation is to maximize the confidence in the data in terms of precision and accuracy. **Section 6** presents the frequency with which trip blanks, field duplicates, field blanks, and matrix spike/matrix spike duplicate (MS/MSD) will be collected. The data quality objective for field duplicates is to achieve precision equal to or greater than that specified in the analytical methods and the laboratory quality assurance plan.

Precision will be calculated as the relative percent difference (RPD) if there are only two analytical points and as relative standard deviation if there are more than two analytical points. The submission of blanks will monitor potential contaminants introduced during the sampling, preservation, handling, shipping, and the analytical processes. Through the submission of field QC samples and review of resultant analytical data, the distinction can be made between laboratory problems, sampling technique, and sample matrix variability.

Every effort will be made to obtain complete and valid data for all sampling points. To establish a degree of comparability, Atlas will use standardized methods of field analysis, sample collection, and preservation, as well as adhering to established holding time requirements.

Groundwater samples will be submitted to Eurofins Analytical for analytical services to be provided at their facility in Pittsburgh, Pennsylvania. Vapor samples will be submitted to a selected laboratory with an applicable Summa canister and TO-15 analysis capabilities. The laboratories will be expected to document all analytical problems encountered during the course of the investigation and communicate any problems as soon as they become apparent. Communication will be maintained with the laboratory so that, should analytical problems be encountered, ample opportunity will be available to recollect these samples, if necessary.

In the event QC problems are detected by the lab (e.g., calibration standardization, machine failure, or detections in method blanks); Atlas will be notified prior to analysis of the samples. No samples that have exceeded method holding times are to be analyzed without prior authorization. If spike recoveries are found to be outside the method specified range, then the data will be reviewed and qualified or rejected.

The overall data management objective is to provide a complete database with a high degree of confidence using a phased approach of sampling, analysis, data assessment (data review), data qualification, and feedback.

11.2 Sampling Procedures

Sampling will be performed in accordance with the procedures outlined in **Section 6**.

11.3 Sample Custody

The primary objective of these sample custody procedures is to create an accurate written record that can be used to trace the possession and handling of all samples from the moment of their

collection, through analysis, until their final disposition. Chain-of-Custody documentation for samples collected during this investigation will be maintained by the Project Manager or field team collecting the sample. The field team will be responsible for documenting each sample transfer and maintaining custody of all samples until they are shipped to the laboratory.

A WVDEP contracted laboratory will supply all necessary sample containers and preservatives per the state contract. Custody of the sample bottles will be maintained by the Project Manager who will verify the integrity of the containers and ensure that the proper containers have been assigned to the task to be conducted.

Upon receipt of the samples, the laboratory will store the samples in a secure sample storage cooler maintained at 4°C and maintain custody until the sample is assigned to an analyst for analysis. Custody will be maintained until disposal of the analyzed samples.

The laboratory will note any damaged sample containers or discrepancies between the sample label and information on the field Chain-of-Custody record and will document any discrepancies. This information will be communicated to the Project Manager within 48 hours so that proper action can be taken. The Chain-of-Custody form will be signed by both the relinquishing and receiving parties, each time the sample changes hands and the reason for transfer indicated.

All chain-of-custody information will be supplied with the data packages for inclusion in the document control file. This information will be retained for a period of at least three years.

11.4 Calibration Procedures and Frequency

The SOP for calibrating field-monitoring instruments are included in **Appendix IV**. A blank Instrument Calibration Log is included with other field forms in **Appendix II**.

11.4.1 Calibration Frequency

By default, calibration of field-monitoring instruments will occur at the beginning of each day, prior to sampling activities.

The frequency of field calibration procedure will, at a minimum, include the following:

- The pH and specific conductance meters will be calibrated a minimum of once daily and documented in the using the blank copy of the Calibration Log included in **Appendix II**. Calibration will be checked at the end of each day or additionally as necessary to ensure proper measurements are recorded;
 - pH meters will be calibrated using specific techniques according to the sensor manufacturer's instructions and two standard buffer solutions (either pH 4 and 7, or 7 and 10) obtained from chemical supply houses;
 - The specific conductance meter will be calibrated using a potassium chloride solution according to manufacturer specifications; and

- Dissolved oxygen calibration must be corrected for local barometric pressure readings and elevation (USEPA, *Low-Flow (Minimal Drawdown) Ground-water Sampling Procedures*, published April 1996).

11.5 Data Reporting, Validation, and Reduction

Based on communications received from the WVDEP on August 1, 2024, data validation is not a requirement for submitted reports at this time. EPA reserves the right to require data validation, to whatever stage they see fit, at any point in the contract for this Superfund site.

Data validation practices will be followed to ensure that raw data is not altered and that an audit trail is developed for those data that require reduction. The field data will be entered directly into a bound field notebook or onto pre-generated blank field record forms (**Appendix II**). In absence of the requisite field record forms, this notebook will contain documentation of times, dates, driller's names, sampling method used, sampling locations, number of samples taken, name of person taking samples, types of samples, results of field measurements, soil logs, observations, field instrument calibrations, and any problems encountered during sampling.

Each project team member will be responsible for proofing all data transfer made and the Project Manager will proof at least 10% of all data transfers. Upon receipt of the sample data packages, the laboratory data will be qualitatively inspected by the Project Manager.

It is anticipated that data reduction for this investigation will be minimal and will consist primarily of tabulating analytical results onto summary tables. Blank results will not be subtracted from analytical results but will be reviewed for possible effects. All reduced data will be placed in the central file maintained by the Project Manager.

All analytical data obtained during the course of the investigation for groundwater will be reported in units of micrograms per liter ($\mu\text{g/L}$). Data packages associated with the analyses of samples collected during the investigation will contain lab QA/QC information, in addition to tabulated results. The laboratories will archive all raw analytical data for any future needs and evidentiary considerations. The Project Manager is responsible for maintaining a central file in which all project documents will be inventoried.

11.6 Internal Quality Control Checks

The project quality control checks are included in this SAP. Sampling frequencies are discussed in **Section 6** of this report.

Field Internal QC checks will be utilized during these monitoring activities through the use of the following:

Trip Blanks -Trip blanks will be analyzed for volatile organics. The trip blanks will serve as a QC check on container cleanliness and will indicate if volatile contamination in the environment of the container/sample handling is affecting the associated volatile samples. The trip blanks will consist of a VOA vial filled with deionized water and any preservatives required for that analysis. The vial

will be capped, retain no air bubbles, and will be transported with the sample kit to the field and to the laboratory for VOC analysis. Each cooler that contains samples identified for VOC analysis will have a dedicated trip blank, to be run in accordance with above specified sampling requirements.

Field Blanks – Field blanks will be collected to assess potential contamination from field conditions during sampling. A sample of analyte free water poured into the container in the field, preserved and shipped to the laboratory with field samples. The field blank will be analyzed for the parameters of concern.

Equipment Rinsate Blank - Equipment rinsate blanks will be collected to ensure that sampling equipment is clean and that the potential for cross contamination has been minimized by the equipment decontamination procedures. These blanks will be collected by decontaminating the sampling device and then pouring deionized water over the portions of the sampling device that contacts the sample. This rinsate water will be collected into a clean stainless steel bowl and then transferred to the appropriate sample containers. The equipment rinsate blank will be analyzed for the parameters of concern.

Duplicate Samples - Blind duplicate samples will be collected to allow determination of analytical precision.

Matrix Spike Sample – Matrix Spike/Matrix Spike Duplicate (MS/MSD) samples will also be submitted as further QC checks. These samples will be spiked at the laboratory. These will allow accuracy to be determined by calculating the recovery rates of compounds (the matrix spike and/or surrogate spike compounds defined in the analytical methods). Precision will also be assessed by comparison of matrix spike duplicate recoveries. The purpose of these laboratory spikes is to monitor any possible matrix effects specific to samples collected from the Site. The addition of known concentrations of compounds/constituents into the sample also monitors extraction/digestion efficiency.

MS/MSD sample aliquots will be acquired for groundwater by providing triple the necessary sample volume for the location identified for three QC samples. The specific sample location that will be used for MS/MSD will be chosen by the Project Manager.

11.7 Field Equipment Maintenance

When Atlas field equipment, including field monitoring equipment for water quality monitoring and photoionization detection is damaged or in need of repair, it will be returned to the equipment room, and appropriately marked for the required maintenance to be performed. This process ensures that only operable and maintained equipment enters the field. Routine daily maintenance procedures conducted in the field will include the following:

- Removal of surface dirt and debris from exposed surfaces of the sampling equipment and measurement systems;
- Storage of equipment away from the elements;

- Daily inspection of sampling equipment and measurement systems for possible problems (e.g., cracked or clogged lines for tubing or weak batteries);
- Daily instrument calibrations and calibration checks; and
- Charging any rechargeable batteries or battery packs for equipment when not in use.

11.8 Quality Assessment and Data Validation

Overall data quality will be ensured by maintaining thorough documentation of all decisions made during each phase of sampling, thoroughly reviewing the analytical data as it is generated by the laboratory, and providing appropriate feedback as problems arise in the field or at the laboratory.

As the analytical data generated from the proposed monitoring activities are validated, qualified and submitted to the Project Manager, the quality of the data will be assessed from an overall management perspective by direct comparison of analytical results obtained from previous samplings (where available). Information that can be obtained includes comparison of results obtained from samples taken within the same general vicinity, and the identification of missing data points. By examination of the data at the "back-end" of the process, the data quality can be assessed with respect to representativeness, precision, comparability, and completeness.

To ensure that all field data are collected accurately and correctly, specific instructions will be issued to all personnel involved in field data acquisition by the Project Manager through a detailed Field Task Order.

The evaluation (data review) of field QC samples will provide definitive indications of the data quality. If a problem arises which can be isolated, corrective actions can be instituted for future field efforts. A preliminary review will be performed to verify all necessary paperwork (chain-of-custodices, analytical reports, laboratory personnel signatures) is present.

11.8.1 Precision

Precision is a measure of the reproducibility of analyses under a given set of conditions. Precision examines the spread of data about their mean. The spread presents how different the individual reported values are from the average reported values. Precision is thus a measure of the magnitude of errors and will be expressed as the relative percent difference (RPD) or the relative standard deviation (RSD). The lower these values are, the more precise that data. Field measures of precision are typically field duplicates, matrix spikes/matrix spike duplicates, matrix duplicates, and using the appropriate sampling procedure. Conversely, laboratory measures of precision include laboratory control samples/laboratory control sample duplicates, matrix spike duplicates, and historical data trends. The applicable RPD and RSD quantities are defined as follows:

$$\text{RPD (\%)} = 100 \times \frac{(S - D)}{(S + D)/2}$$

or

$$\text{RPD (\%)} = \frac{100 \times 2(S - D)}{(S + D)}$$

Where:

S = Analyte or compound concentration in a sample

D = Analyte or compound concentration in a duplicate sample

Or, when there are more than two measurements:

$$\text{RSD (\%)} = \frac{100(s)}{X}$$

Where:

s = Standard deviation of replicate measurements

x = Mean of replicate measurements

The samples utilized to evaluate precision include laboratory matrix duplicate (MD), matrix spike (MS), matrix spike duplicate (MSD), and field duplicates samples. The goal is to maintain a level of analytical and sampling precision consistent with the objectives of the sampling event. To maximize precision, consistent sampling and analytical procedures are to be followed as presented in the October 11, 2022 WVDEP Division of Land Restoration, Office of Environmental Remediation QAPP (WVDEP-OER-CERCLA-001).

Percent recoveries are used to evaluate a single sample for matrix spike recoveries and for surrogate recoveries to determine laboratory accuracy. Low recoveries may result in qualifying of groups of data or possibly rejecting groups of sample analysis results.

11.8.2 Accuracy

Accuracy is a measure of the bias that exists in a measurement system determined by comparing the analysis of a known standard or reference to its true value. Accuracy measures the average or systematic error of a measurement method or sampling method. This measure is defined as the difference between the average of reported values and the actual value, which can be influenced by both field and laboratory procedures. Measurements of field accuracy include matrix spikes/matrix spike duplicates, “blind” samples, appropriate sampling procedures, appropriate sampling containers, appropriate sample preservation, handling and holding times, and equipment/field blanks. Measurements of laboratory accuracy include laboratory control samples, matrix spikes/matrix spike duplicates, internal standards, surrogate recovery, initial calibration, continuing calibration, and standard reference material. Each of these measurements can impact accuracy in different ways and may have different methods of assessment. The DQI acceptance criteria or goals for accuracy are somewhat dependent on the analyte and methods used to measure the analytical concentration. Measurements of field accuracy are difficult to define and usually based on the needs of the project.

WVDEP-OER primarily expresses measurements of laboratory accuracy as the percent bias for standard reference samples. The closer this value is to zero, the more accurate the data. This quantity is defined as follows:

$$\text{Bias (\%)} = \frac{(\text{MC} - \text{SC})}{\text{SC}} \times 100$$

Where:

SC = Known analyte or compound (i.e., reference) concentration

MC = Measured analyte or compound concentration

The site-specific accuracy goals when measuring the percent bias are variable, usually specified within the analytical method or laboratory SOP, but generally $\pm 20\%$. Data with percent bias greater than $\pm 20\%$ are not necessarily rejected but should have their usability assessed using a multiple lines of evidence approach as outlined in the *Data Quality Assessment and Data Usability Evaluation Technical Guidance* from the New Jersey Department of Environmental Protection (2014), including potential corrections.

Additionally, data percent bias should meet the requirements of the *USEPA National Functional Guidelines for Organic Superfund Methods Data Review* (SOM02.4), as applicable. However, any measurement of percent bias exceeding $\pm 50\%$ should automatically be rejected or qualified.

In cases where accuracy is determined from spiked samples, such as the laboratory control sample (LCS) or surrogate compounds, accuracy is expressed as the percent recovery. The closer the value is to 100, the more accurate the data. Recovery is calculated as follows:

$$\text{Recovery (\%)} = \frac{(\text{MC})}{\text{SC}} \times 100$$

Where:

SC = Known analyte or compound (i.e., spike) concentration

MC = Measured analyte or compound concentration

The site-specific accuracy goals when measuring percent recovery are variable, usually specified within the analytical method or laboratory SOP, but generally 80-120%. Data with percent recovery less than 80% or greater than 120% are not necessarily rejected but should have their usability assessed using a multiple lines of evidence approach as outlined in the *Data Quality Assessment and Data Usability Evaluation Technical Guidance* from the New Jersey Department of Environmental Protection (2014), including potential corrections. Additionally, data percent bias should meet the requirements of the *USEPA National Functional Guidelines for Inorganic Superfund Methods Data Review* (ISM02.4) and the *USEPA National Functional Guidelines for Organic Superfund Methods Data Review* (SOM02.4), as applicable. However, any measurement of percent recovery below 50% or greater than 150% should automatically be rejected or qualified.

Matrix spike percent recovery will be calculated as follows:

$$\text{Recovery (\%)} = \frac{(\text{MC} - \text{USC})}{\text{SC}} \times 100$$

Where:

SC = Known analyte or compound (i.e., spike) concentration

MC = Measured analyte or compound concentration

USC = Unspiked sample concentration

The site-specific accuracy goals when measuring matrix spike percent recovery are the same as the percent recovery goals above.

For investigations conducted in accordance with this SAP, accuracy is also defined as the percent recovery of QA/QC samples that are spiked with a known concentration of an analyte of interest. The QA/QC samples used to evaluate analytical accuracy include instrument calibration, internal standards, ICP serial dilution analysis, laboratory control samples, MS/MSD samples, and surrogate compound recoveries. Control limits for instrument calibration, internal standards, ICP serial dilution analysis, laboratory control samples, MS/MSD samples, and surrogate compound recoveries are provided in the applicable USEPA approved methods or determined by the laboratory's internal QA plan.

11.8.3 Representativeness

Representativeness qualitatively expresses the degree to which data accurately and precisely represent the environmental condition. Representativeness is primarily accomplished through the chosen sample locations, quantities, and analyses to properly assess potential exposures along all pathways developed in the CSM.

Field measures of representativeness include using appropriate SOPs, appropriate sample containers, appropriate sample preservation, appropriate number of samples, and incorporating field screening data. Laboratory measures of representativeness include laboratory homogenization, appropriate sub-sampling, and appropriate dilutions. Representativeness is also accomplished by maintaining sample integrity with appropriate preservation and meeting technical holding times. Those data from samples either inappropriately preserved or failing to meet technical holding times will be qualified per the current USEPA Region 3 data validation guidelines. Sample preservation requirements and technical holding times should follow the requirements of the USEPA *Sampler's Guide: Contract Laboratory Program Guidance for Field Samplers* (2014), as summarized in USEPA *Table 2, Sample Containers, Preservation, Volumes and Holding Times* and in the WVDEP-OER-CERCLA-001 *Table 1 - Sample Containers, Preservation, Volumes, and Holding Times*.

11.8.4 Completeness

Completeness is the measurement of the amount of valid data obtained from a measurement system compared to the amount that was expected to be obtained under "normal" conditions.

Completeness establishes whether a sufficient number of valid measurements were obtained. The closer this value is to 100, the more complete the measurement process. In accordance with typical practices, the minimum level of completeness expected for this project is 90%. Data rejected, whether due to sampling design error or measurement error, during the data validation process will be considered invalid measurements. If applicable, the site-specific SAP should provide a discussion of critical samples that would trigger resampling if data were rejected, such as hotspots or samples that assess exposures to sensitive receptors. Completeness will be calculated as follows:

$$\text{Completeness (\%)} = \frac{V}{P} \times 100$$

Where:

V = Number of valid measurements

P = Number of planned measurements

Field measures of completeness include the percent planned samples collected and having all critical samples collected. Laboratory measures of completeness include the percent sample per batch analyzed and reported, and having all critical samples reported and unqualified.

11.8.5 Comparability

Comparability expresses the confidence with which one set of data can be compared to another. Field measures of comparability include comparisons of previous data points, comparison to similar data points, and ensuring similar methods are used each time samples are collected at a site. Laboratory measures of comparability include Gas Chromatography/Mass Spectrometry tuning, calibration, and using the same analytical methods for each round of samples. Laboratory measures of comparability are also quantitative measurements to ensure sampling and analytical procedures are consistent within and between data sets.

When traceable standards are used, such as single blind performance evaluation samples, the analytical results can be compared to the known concentration and its acceptable range. If the laboratory reports any standard outside the acceptance range, there is little confidence in the result and the result should be qualified.

Analytical comparability can also be made with split samples sent to a secondary laboratory. At the discretion of WVDEP, the collection of split samples may also be performed at a frequency of up to 50 percent, typically limited to a frequency of 10 percent. In accordance with typical practices, any RPD of 40 or greater should be investigated further by either data validation or an audit of the laboratory quality system.

A third analytical comparability can be made by comparing field screening data with confirmatory results. In accordance with typical practices, any RPD of 40 or greater should result in the qualification of the field screening data.

Sampling procedure comparability can be made by collecting field duplicate samples. In accordance with typical practices, the control limit for field duplicate sample results is 40 RPD. An RPD of 40 or greater should result in the qualification of all data collected by the same methodology.

11.8.6 Sensitivity

Sensitivity refers to the ability of an analytical procedure to detect and quantify an analyte at a given concentration and is related to the Reporting Limit (RL). The RL is usually synonymous with the Limit of Quantitation (LOQ) and Sample Quantitation Limit (SQL), although a Practical Quantitation Limit (PQL) may also be acceptable (see Section 3.3.4.1 of the October 2022 WVDEP-OER-CERCLA-001 for more details). Field measures of sensitivity include equipment blanks/field blanks and collecting the appropriate sample volume or mass. Laboratory measures of sensitivity include method blanks, instrument blanks, reporting limits, and using the appropriate analytical method. Generally, the instrument or method should be able to detect and provide an accurate analyte concentration that is not greater than the applicable standards and/or screening levels listed in Section 3.2.4.4 of the October 2022 WVDEP-OER-CERCLA-001. Since the RL cannot be specifically determined ahead of time, it is acceptable to use the Method Detection Limit (MDL) as a preliminary goal for Sensitivity, but the lab should have a reasonable estimate of their RLs that are preferable. Additionally, the relevant RL should be used to determine if the Sensitivity goals have been met for the site. Analytical results that are non-detect and have RLs greater than the applicable standards cannot confidently demonstrate compliance with those standards. Every reasonable effort should be made to improve the RLs as necessary to meet the sensitivity requirement by using different analytical methods, sample preparation, etc. to increase sensitivity. However, exceedances of the standards by the RLs may not be possible to rectify and may also be insignificant in situations where other compounds are driving the remediation decisions such that the RL issue is moot.

To assess if environmental monitoring measurements are of an appropriate quality, the general PARCCS requirements above and any site-specific measurements for precision, accuracy and completeness will be compared to the quality objectives and measurement performance criteria. Due to the nature of the assessment work performed, the potential consequences for decision error near the screening levels are low.

The table below provides measurement quality objectives that must be provided in each site-specific SAP; this table has been specifically prepared in consideration of groundwater analytical data quality. In the absence of site-specific project measurements quality objectives, the minimal DQOs outlined above will apply.

Compound	Matrix	Screening Level ¹	Project Required Quantitation Limit ^{1*}	Precision	Accuracy	Completeness
Tetrachloroethene	Ground Water	5 µg/L	0.467 µg/L	30%	20%	90%
Trichloroethene	Ground Water	5 µg/L	0.688 µg/L	30%	20%	90%
1,2-Dichloroethane	Ground Water	5 µg/L	0.574 µg/L	30%	20%	90%
cis-1,2-Dichloroethene	Ground Water	5 µg/L	0.574 µg/L	30%	20%	90%
trans-1,2-Dichloroethene	Ground Water	5 µg/L	0.574 µg/L	30%	20%	90%
Methylene Chloride	Ground Water	5 µg/L	0.886 µg/L	30%	20%	90%
Vinyl Chloride	Ground Water	2 µg/L	0.407 µg/L	30%	20%	90%

¹ Include the concentration units. The Project Required Quantitation Limits should follow the WV Certified Environmental Laboratory Required Quantitation Limits for organic, inorganic, and dioxins/furans/PCBs/congeners.

11.9 Data Management Plan

The overall data management objective is to provide a complete database with a high degree of confidence. This will be accomplished by the design of data management at four levels: field data; sample management and tracking; data validation; and document control and inventory.

Field data collection will constitute the taking and recording of four types of data: raw measurements; observations or logs; procedural descriptions; and sample documentation (Chain-of-Custody). All data other than the chain-of-custody will be recorded in the bound field notebook. Should simultaneous data collection activities occur, multiple field notebooks would be utilized, all of which will be dedicated solely to this investigation.

Upon validation, all data, field reports, sample custody documentation and raw data will be placed in a file to be maintained by the Project Manager. This file will also contain any photographs, computer disks and other non-paper items that were used in the development of the report. All support documentation and raw data will be maintained in-house for the duration of the

investigation. Following the completion of the investigation, these data will be stored in a secure location.

The Project Manager will identify and document significant quality assurance problems discovered and corrective actions taken. This quality assurance evaluation will be submitted to the WVDEP as part of the Semi-Annual Sampling Report.

11.10 Analytical SOP References

Atlas contacted Eurofins to request analytical SOP references in tabular format, pursuant to Section 3.2.1 and Worksheet #23 of the Intergovernmental Data Quality Task Force *UFP-QAPP Manual*, dated March 2005.

This information has been included as Table III.4 in **Appendix III**.

11.11 Analytical Instrument Calibration

Atlas contacted Eurofins to request analytical instrument calibration information in tabular format, pursuant to Section 3.2.2 and Worksheet #24 of the March 2005 *UFP-QAPP Manual*.

This information has been included as Table III.5 in **Appendix III**.

11.12 Analytical Instrument Equipment Maintenance, Testing, and Inspection

Atlas contacted Eurofins to request analytical instrument maintenance, testing, and inspection information in tabular format, pursuant to Section 3.2.3 and Worksheet #25 of the March 2005 *UFP-QAPP Manual*.

This information has been included as Table III.6 in **Appendix III**.

Figure 1 – Site Location Map

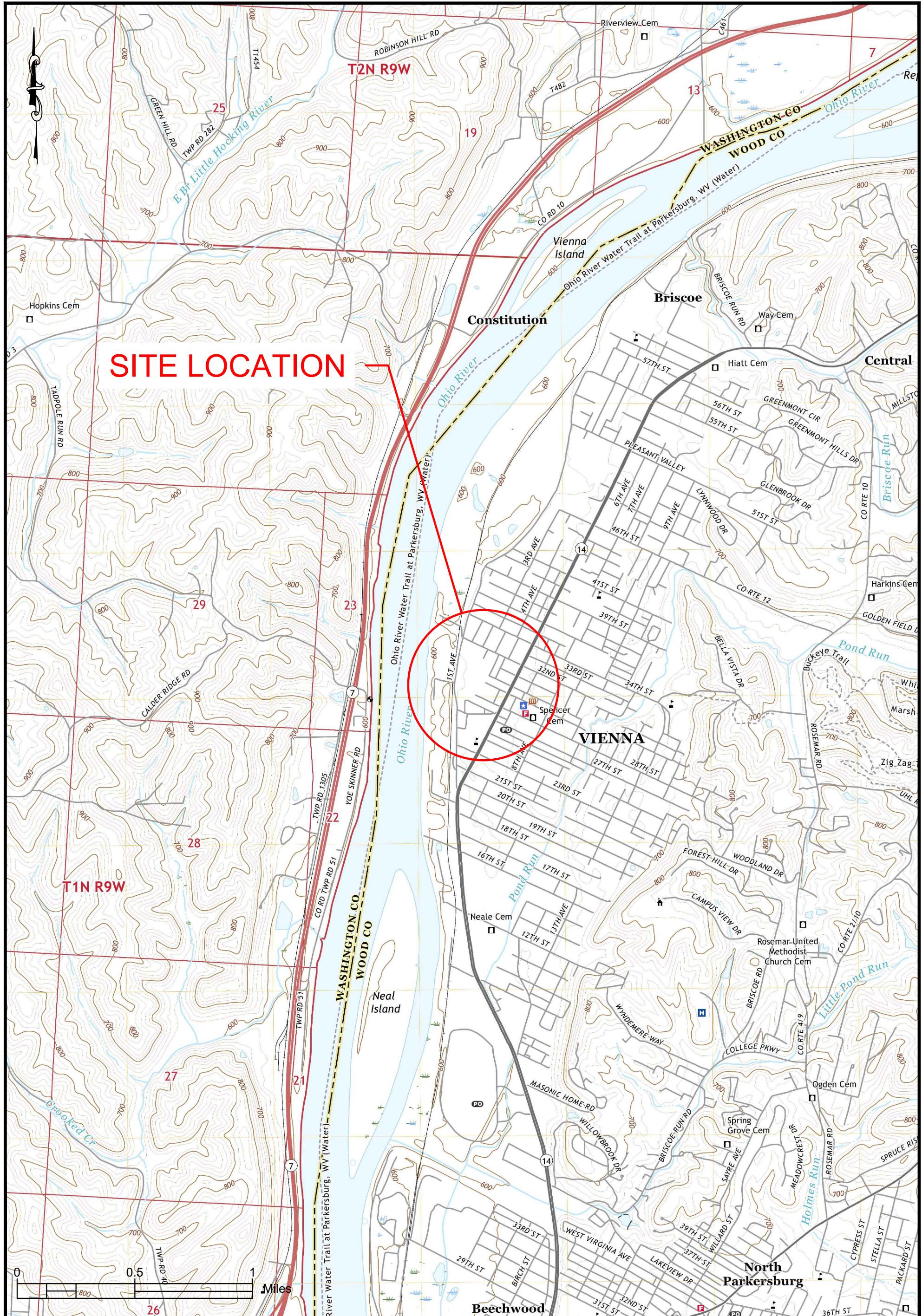
Figure 2 – Site Monitoring Location Map

Figure 3 – TU1 and TU3 System Piping Layout

Figure 4 – Legend & Symbology – Process and Instrumentation

Figure 5 – Treatment Unit 1 (TU1) Process and Instrumentation Diagram

Figure 6 – Treatment Unit 3 (TU3) Process and Instrumentation Diagram

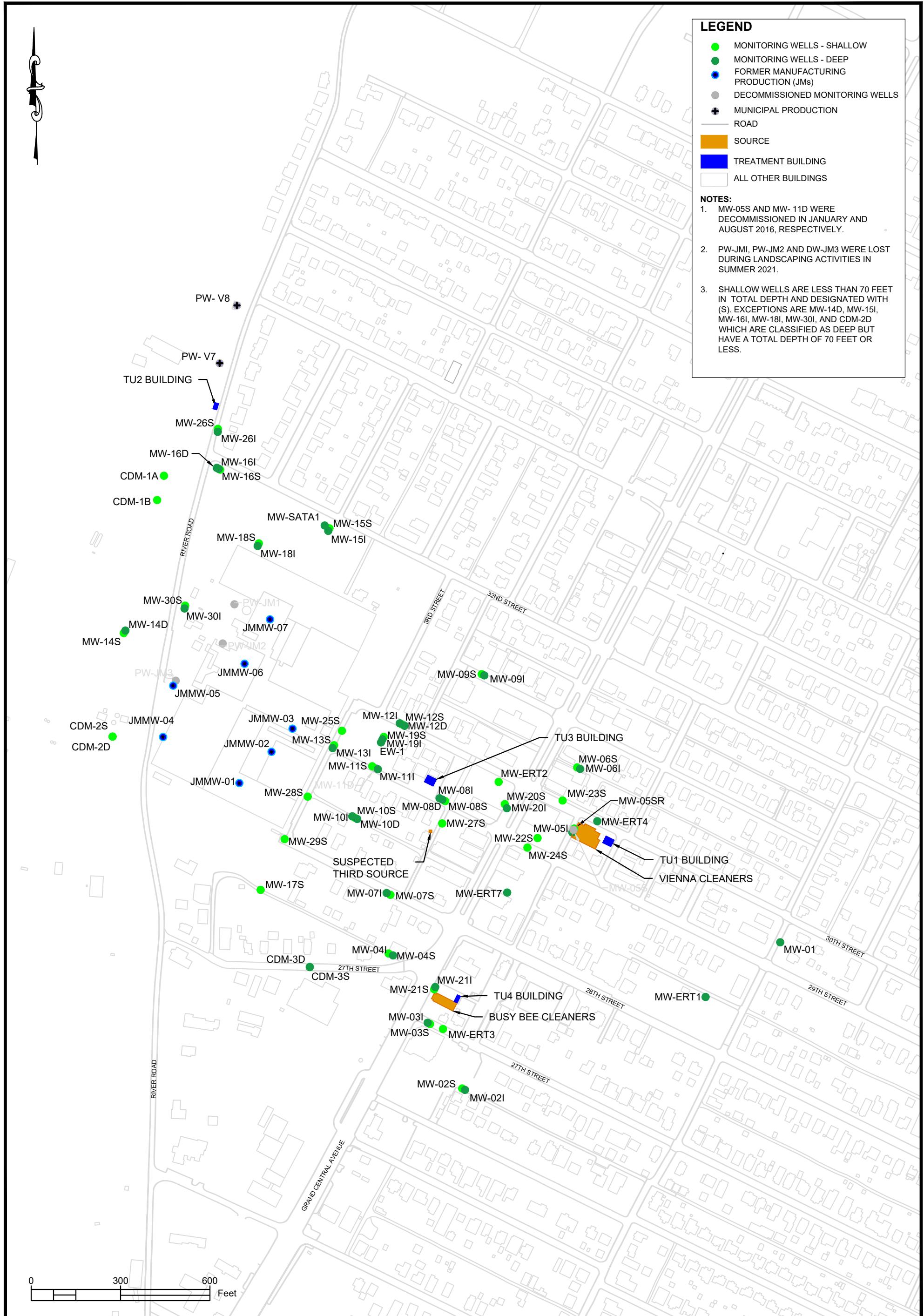


SITE LOCATION MAP

VIENNA PCE SUPERFUND SITE, VIENNA, WEST VIRGINIA
WEST VIRGINIA DEPARTMENT OF ENVIRONMENTAL PROTECTION
405 29TH STREET
VIENNA, WV

ATLAS

Figure:

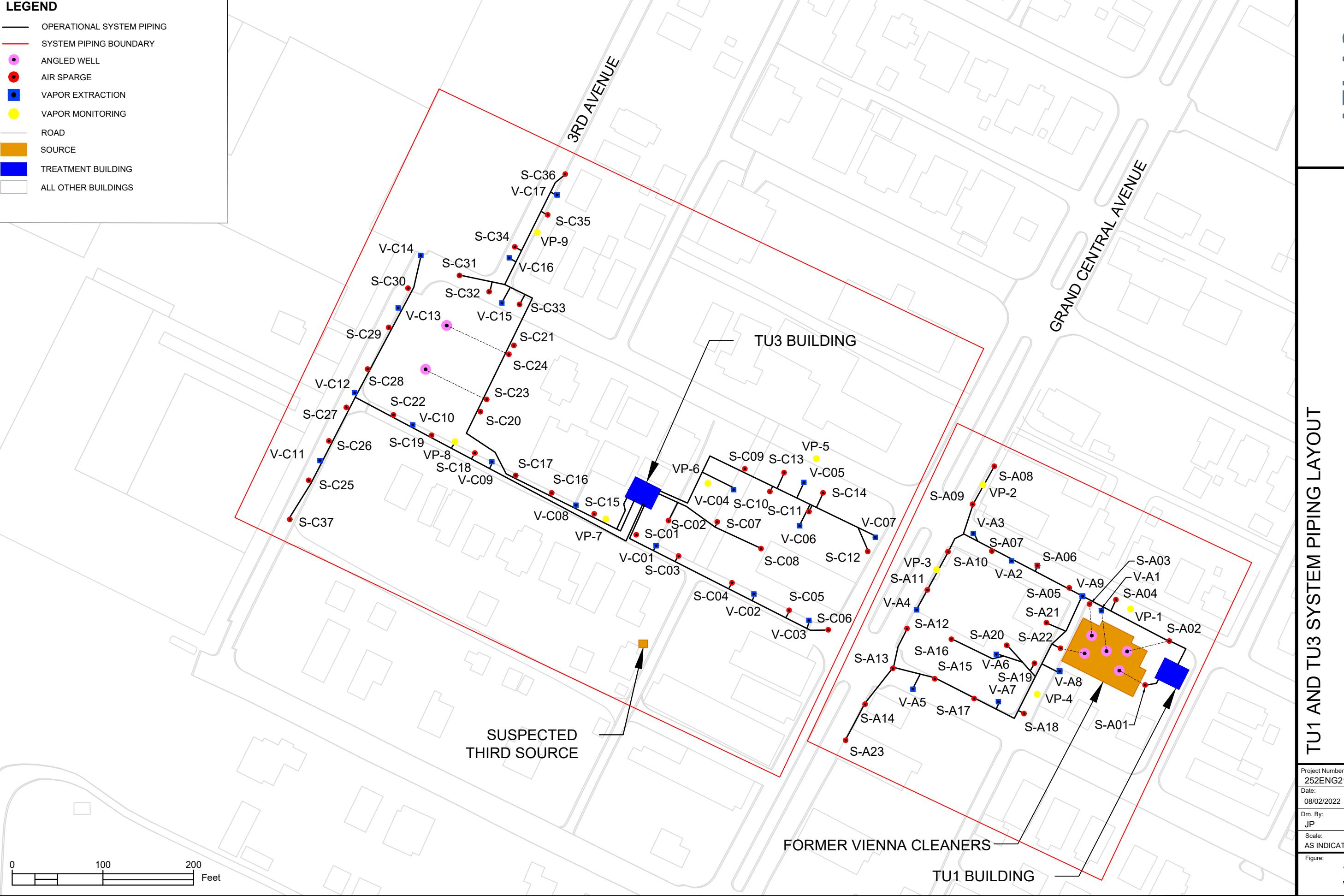


MONITORING WELL LOCATION MAP

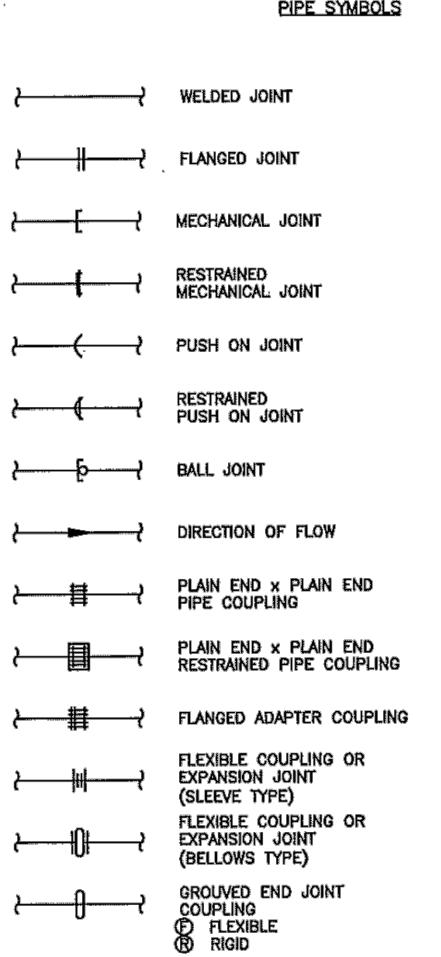
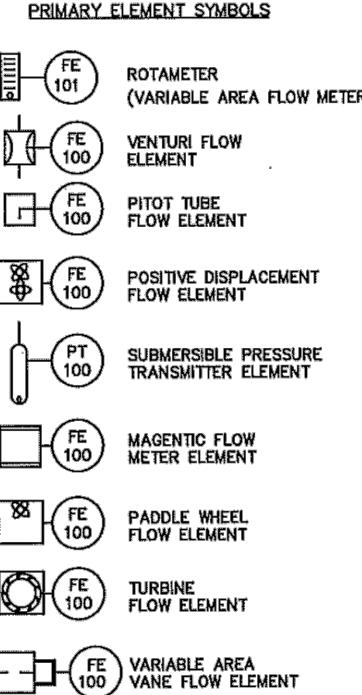
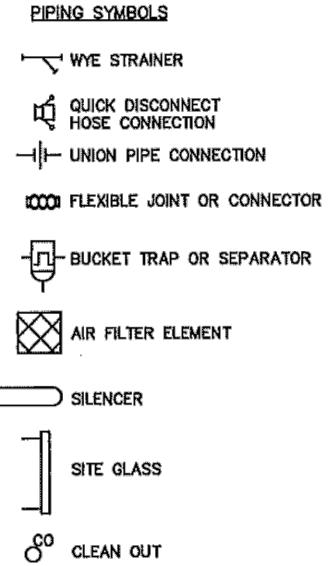
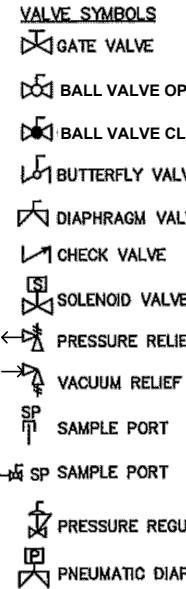
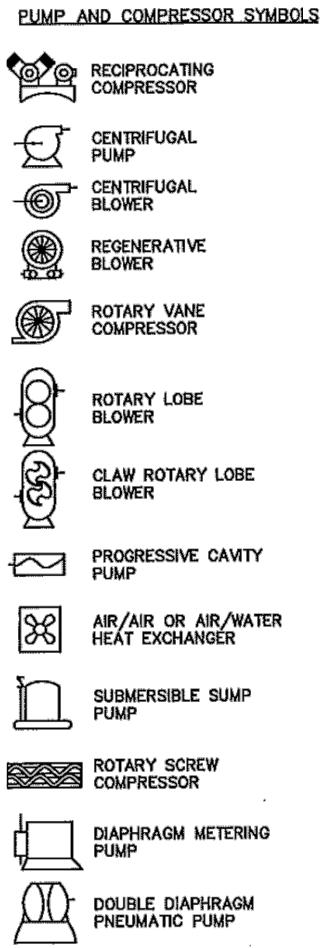
VIENNA PCE SUPERFUND SITE, VIENNA, WEST VIRGINIA
WEST VIRGINIA DEPARTMENT OF ENVIRONMENTAL PROTECTION
405 29TH STREET
VIENNA, WV

ATLAS

Figure:
2
Project Number:
252ENG2310
Date:
10/30/2023
Dra. By:
JF
Scale:
1" = 300'
Cld. By:
AV



LEGEND



INSTRUMENT SYMBOL LEGEND

FIRST	SECOND	THIRD	FOURTH
C - CONDUCTIVITY	A - ALARM	C - COMMON	H - HIGH
dp - DIFFERENTIAL PRESSURE	E - ELEMENT	H - HIGH	L - LOW
F - FLOW	I - INDICATOR	L - LOW	
H - HAND	P - PROBE	T - TRANSMITTER	
L - LEVEL	S - SWITCH	I - INDICATOR	
P - PRESSURE	T - TRANSMITTER		
T - TEMPERATURE	D - DIFFERENTIAL		
V - VACUUM			

LINE THRU INSTRUMENT SIGNIFIES PANEL MOUNTED INSTRUMENT (NO LINE INDICATES FIELD MOUNTED INSTRUMENT)
INDICATES INSTRUMENT TAG NUMBER

Project Number:
252ENG2105

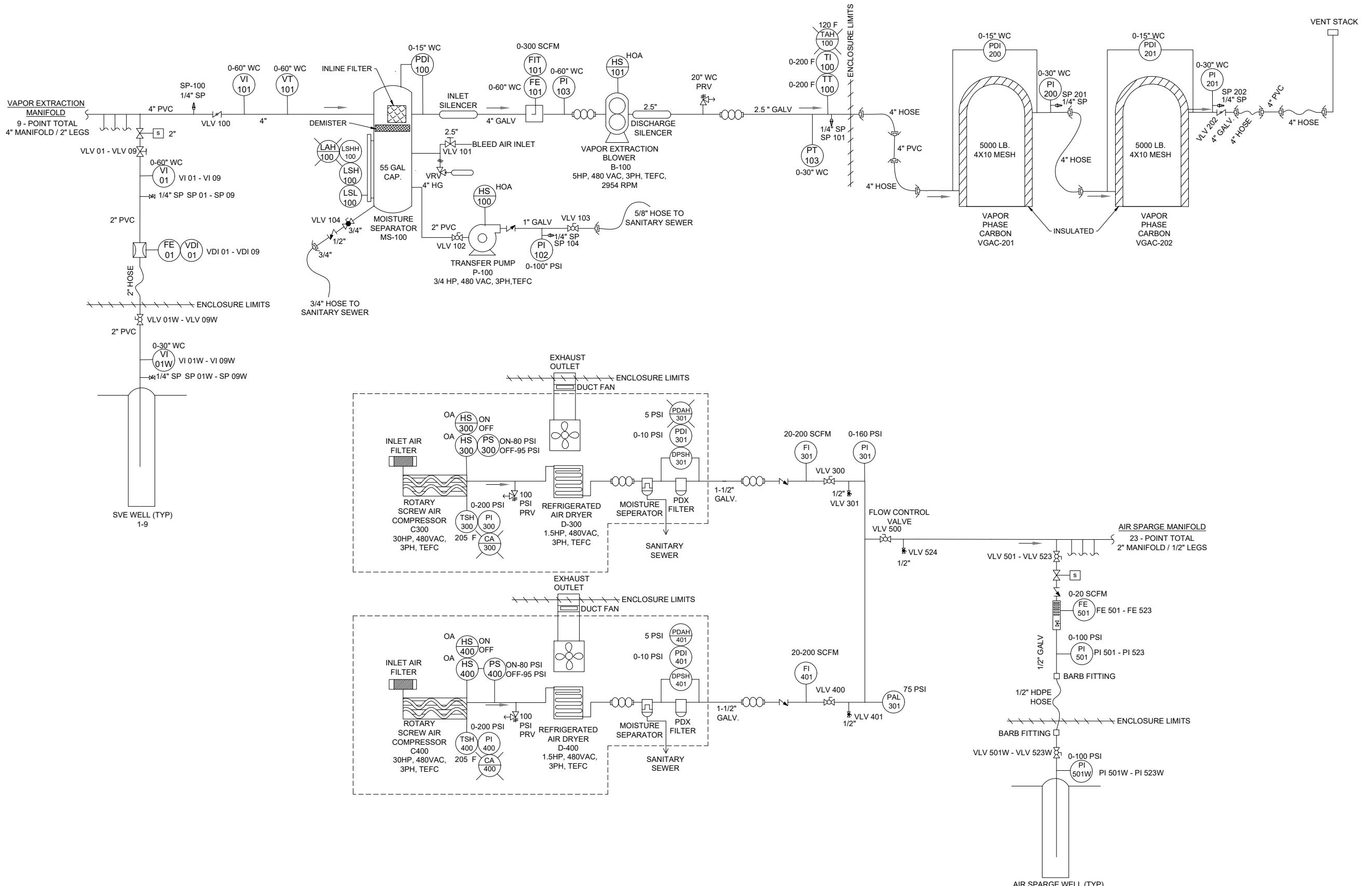
Date:
04/18/2023

Dr. By:
JP

Ckd. By:
MW

Scale:
N.T.S.

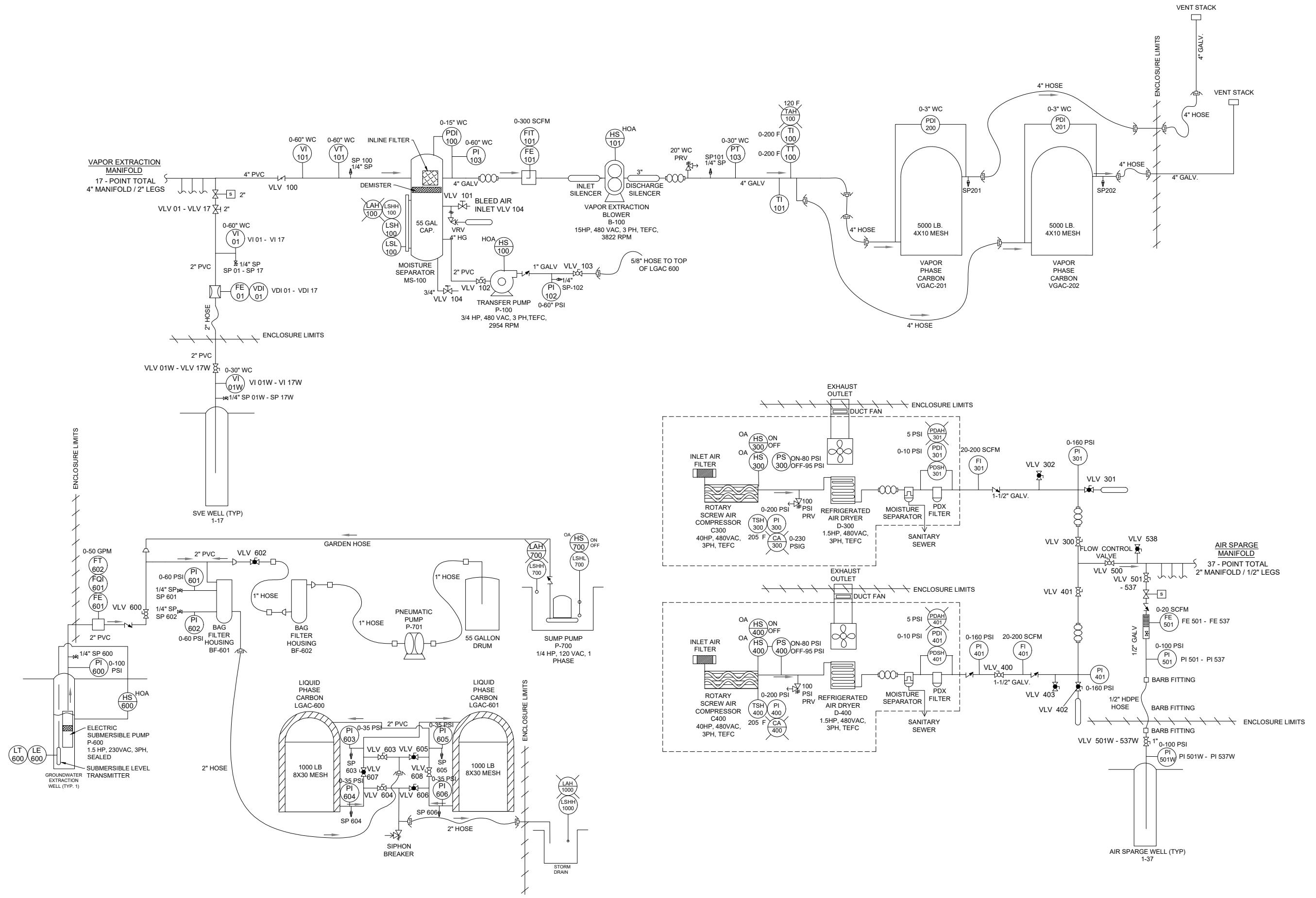
Figure:



VIENNA PCE SUPERFUND SITE- TREATMENT UNIT 1 (TU1)
PROCESS AND INSTRUMENTATION DIAGRAM

WEST VIRGINIA DEPARTMENT OF ENVIRONMENTAL PROTECTION
405 29TH STREET
VIENNA, WV

Project Number:	252ENG2105
Date:	04/18/2023
Dr. By:	JP
Ckd. By:	MW
Scale:	N.T.S
Figure:	

VIENNA PCE SUPERFUND SITE - TREATMENT UNIT 3 (TU3)
PROCESS AND INSTRUMENTATION DIAGRAMWEST VIRGINIA DEPARTMENT OF ENVIRONMENTAL PROTECTION
405 29TH STREET
VIENNA, WV

Project Number: 252ENG2105
Date: 04/18/2023
Dr. By: JP Ckd. By: MW
Scale: N.T.S
Figure: 6

Table 1 – Groundwater Sampling Schedule, Spring 2022 – Spring 2024

Table 1
Monitoring Well Sampling Schedule
Spring 2022 - Spring 2024
Vienna PCE Superfund Site
405 29th Street, Vienna, West Virginia

Well ID	Spring 2022	Fall 2022	Planned Spring 2023	Modified "Spring" (August) 2023	Modified Fall 2023	Spring 2024	Notes
EW-1							
GC-1							
MW-01							
MW-02 S	X - even					X - even	Sample on even years
MW-02 I	X - even					X - even	Sample on even years
MW-03 S	X	PDB	X	X	X	X	
MW-03 I	X	PDB	X		X	X	
MW-04 S	X	PDB	X	X	X	X	
MW-04 I	X - even					X - even	Sample on even years
MW-05 SR	X / PDB	PDB	X / PDB	X	X	X	
MW-05 I	X		X		X ¹	X	
MW-06 S	X - even					X - even	Sample on even years
MW-06 I	X - even					X - even	Sample on even years
MW-07 S	X / PDB		X / PDB	X		X	
MW-07 I	X		X		X ¹	X	
MW-08 S	X / PDB	PDB	X / PDB	X	X	X	
MW-08 I	X		X		X ¹	X	
MW-08 D	X		X		X ¹	X	
MW-09 S	X - even					X - even	Sample on even years
MW-09 I	X - even					X - even	Sample on even years
MW-10 S	X / PDB	PDB	X / PDB	X	X	X	
MW-10 I	X / PDB	PDB	X / PDB	X	X	X	
MW-10 D	X / PDB	PDB	X / PDB	X	X	X	
MW-11 S	X / PDB	PDB	X / PDB	X	X	X	
MW-11 I	X	PDB	X	X	X	X	
MW-12 S	X / PDB	X / PDB	X / PDB	X	X	X	
MW-12 I	X	PDB	X	X	X	X	
MW-12 D	X	PDB	X		X	X	
MW-13 S	X / PDB	PDB	X / PDB	X	X	X	
MW-13 I	X	PDB	X	X	X	X	
MW-14 S	X / PDB	X / PDB	X / PDB	X	X	X	
MW-14 D	X / PDB	X / PDB	X / PDB	X	✗	X	
MW-15 S	X - even					X - even	Sample on even years
MW-15 I	X - even					X - even	Sample on even years
MW-SATA1							
MW-16 S	X	X	X	X	X	X	
MW-16 I	X	X	X	X	X	X	
MW-16 D	X	X	X	X	X	X	
MW-17 S	X / PDB		X / PDB	X	X ²	X	
MW-18 S	X - even					X - even	Sample on even years
MW-18 I	X - even					X - even	Sample on even years
MW-19 S	X / PDB	PDB	X / PDB		X	X	
MW-19 I	X / PDB	X / PDB	X / PDB	X	X	X	
MW-20 S	X		X		X ¹	X	
MW-20 I	X		X		X ¹	X	
MW-21 S	X / PDB	X / PDB	X / PDB	X	X	X	
MW-21 I	X		X		X ¹	X	
MW-22 S	X - even					X - even	Sample on even years
MW-23 S	X		X		X ¹	X	
MW-24 S	X / PDB	PDB	X / PDB	X	X	X	
MW-25 S	X	PDB	X	X	X	X	
MW-26 S	X	X	X		X	X	
MW-26 I	X	X	X		X	X	
MW-27 S	X / PDB	PDB	X / PDB	X	X	X	



Table 1
 Monitoring Well Sampling Schedule
 Spring 2022 - Spring 2024
 Vienna PCE Superfund Site
 405 29th Street, Vienna, West Virginia

Well ID	Spring 2022	Fall 2022	Planned Spring 2023	Modified "Spring" (August) 2023	Modified Fall 2023	Spring 2024	Notes
MW-28 S	X / PDB	PDB	X / PDB	X	X	X	
MW-29 S	X / PDB	PDB	X / PDB	X	X	X	
MW-30 S	X	PDB	X	X	X	X	
MW-30 I	X	PDB	X	X	X	X	
JM MW-01	X	X	X	X	X	X	May lose access
JM MW-02	X	X	X	X	X	X	May lose access
JM MW-03	X	X	X	X	X	X	May lose access
JM MW-04					X ³		Added to schedule - may lose access
JM MW-05					X ²	X ³	Added to schedule - may lose access
JM MW-06					X ²	X ³	Added to schedule - may lose access
JM MW-07				X		X ³	Added to schedule - may lose access
MW-ERT-1							
MW-ERT-2	X	PDB	X	X	X	X	
MW-ERT-3							
MW-ERT-4	X - even				X - even		Sample on even years
MW-ERT-7							
CDM-1 A	X		X		X ¹	X	
CDM-1 B	X		X	X		X	
CDM-2 S	X	PDB	X		X	X	
CDM-2 D	X	PDB	X	X	X	X	
CDM-3 S	X	X / PDB	X	X	X	X	
CDM-3 D	X		X		X ¹	X	

Total 65 39 52 37 52 69

Notes:

X - Location scheduled for low flow sample collection. **X** = contingent on repair

PDB - Location scheduled for passive diffusion bag sample collection.

even - Location scheduled for sampling every-other year on even years.

1 - Scheduled for 1st half 2023 event, skipped

2 - Added for trend evaluation

3 - Added to Spring 2024 in case future access is lost

Additional Attachments Available Upon Request

A3 ATTACHMENT - WRITING SAMPLE 2 - REPORT





SEMI-ANNUAL O&M REPORT

JANUARY – JUNE 2024

VIENNA PCE SUPERFUND SITE

USEPA SEMS ID# WVD988798401

Vienna, West Virginia

PREPARED FOR:

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WEST VIRGINIA DEPARTMENT OF ENVIRONMENTAL PROTECTION
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Subject: Semi-Annual 1 O&M Report
Vienna PCE Superfund Site
405 29th Street
Vienna, West Virginia

Reference: USEPA SEMS ID# WVD988798401

Dear Mr. Huggins:

Atlas Technical Consultants LLC, (Atlas) is pleased to submit this *Semiannual Operation and Maintenance (O&M) Report* for January through June 2024 for the Vienna PCE Superfund Site (Site) project located in Vienna, West Virginia. This report contains a table for each treatment system (TU1 and TU3) that presents the summary of weekly operational recordings for the reporting period as specified in the Vienna PCE Superfund Site contract number DEP2400000006.

If you have any questions, please contact the undersigned.

Respectfully submitted,
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Figure 1 – TU1 Soil Vapor Extraction Sample Results

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Table 2 – Soil Vapor Extraction and Performance Sampling Analytical Results – TU1

Table 3 – Vapor Extraction System Estimated Recovery Rate – TU3

Table 4 – Performance Sampling Analytical Results – TU3



ATTACHMENTS

Attachment A - TU1 & TU3 P&ID

Attachment B - Pulse Diagram and TU1 & TU3 AS/SVE Sequencing

Attachment C - Laboratory Analytical Data

Attachment D - Vapor Field Sampling Data Sheets

1. TU1 SYSTEM

The Treatment Unit 1 (TU1) Air Sparge (AS) and Soil Vapor Extraction (SVE) systems operate on an active-idle sequence, in which the active sequences are referred to as Pulses. Each Pulse consist of 6-8 AS wells and 6 SVE wells that activate. The AS system utilizes four Pulses that operate for 10 minutes each and the sequence concludes with a 20 minute idle period. The SVE system utilizes two Pulses that operate for 20 minutes each and the sequence concludes with a 20 minute idle period. 24 cycles activate over the course of a day. This correlates to 16 hours of active AS and SVE operations and 8 hours of idle operation in one day. The Process and Instrumentation Diagrams (P&ID) for TU1 and TU3 are included for reference as **Attachment A**. The Pulse Sequence Diagram and corresponding TU1 & TU3 AS/SVE Sequencing maps are included for reference as **Attachment B**.

1.1 System Uptime and Hours of Operation

TU1 AS System was operational for 90 percent (%) of the reporting period and the SVE System was operational for approximately 94% of the reporting period.

AS compressor C300 was operational until 4/19/2023, when a general compressor fault caused the compressor to shut down. An evaluation was performed on compressor C300 on 10/10/2023, which determined the air side bearings are failing. The evaluation determined that it is not cost effective to continue repairs on this unit. The C300 compressor is considered retired and has been removed from service indefinitely.

All AS operations for this reporting period were conducted with the C400 compressor. The C400 unit was generally operational but experienced some downtime in order to complete repairs. The C400 compressor was taken offline on 2/1/2024 due to an oil leak caused by a worn seal. The seal was replaced on 2/12/2024 and the compressor was returned to service. The TU1 AS/SVE system experienced several shutdowns thought to be caused by power fluctuations which may be related to storms that occurred close to the time of shutdown. These shutdowns occurred from 5/3/2024 to 5/6/2024, from 5/9/2024 to 5/11/2024 and from 5/26/2024 to 5/27/2024 often occurring over weekends when there is typically no scheduled technician visits. Atlas responded to this pattern by instituting a technician visit during the weekend to reduce the potential amount of downtime.

Additionally, the AS/SVE system experienced a shutdown from 6/2/2024 to 6/3/2024 when the AS C400 compressor shut down and required repairs to the unloader valve. The C400 compressor was taken offline on 6/5/2024 for repair work on the compressor fan. It was brought back online on 6/7/2024. Details on the repair history of the C400 unit will be included in the updated version of The Compressor Status Report (CSR) which will be submitted as a separate report. This document tracks previous investigations and repairs to the site AS compressors and is updated when significant evaluations or repairs to the compressors occur.

The operational uptime percentage for TU1 was calculated by dividing the 2,617.5 operational hours that are attributed to compressor C400 based on the operational trends on the SCADA and technician notes by the total 2,912 operational hours the compressors would be required to function for each day under normal operating conditions, at 16 hours per day, for the reporting period. Based on these assumptions, the TU1 AS system was calculated to be operational for 90% of this reporting period.

The downtime hours for the SVE system were estimated using a combination of data retrieved from the Human Machine Interface (HMI) logs and the local technician's field notes. Uptime for the SVE system was calculated using the total number of downtime hours (see Table in **Section 1.6** for more details) subtracted from the total hours in the reporting period and expressed as a percentage of the total hours in the reporting period. Therefore, uptime for the TU1 SVE System was calculated as 2,748 hours of the total 2,912 hours of the reporting period, resulting in 94% uptime.

1.2 Analytical Results for Vapor Samples

Atlas collected vapor samples from the vapor extraction system on 1/4/2024, 3/26/2024 and 5/28/2024 in order to monitor performance. Vapor samples were collected at the influent and the effluent sampling ports on all three dates. Vapor samples were collected at the midfluent sample port on 1/4/2024 and 5/28/2024. Leak testing in preparation for the 3/26/2024 sampling event resulted in a reduction in the number of Summa™ canisters available for use. The TU1 midfluent sample was not collected, as a result. Also on 1/4/2024, vapor samples were collected from the individual vapor extraction lines in order to evaluate the effectiveness of the remediation system. A sample was collected from the individual SVE well sample ports located at the wellheads for 7 of the 9 SVE wells: V-A1 and V-A4 through V-A9. Two of the wellhead samples were unable to be collected due to a broken sampling port valve at V-A3 and V-A2 was submerged under ponded surface water. Manifold samples were collected from all 9 SVE wells for comparison to their respective wellhead samples. Analytical results from the vapor samples are presented in **Table 2** and the vapor plume is illustrated on **Figure 1**.

Note that V-A1 and V-A9 are mislabelled at the manifold. To remain consistent with previous data reporting Atlas will continue to present the concentrations consistent with their sample location identifications. However, evaluation and graphical depictions of the plume concentrations will accommodate for this mislabelling. As this report represents the first time that wellhead and manifold sampling has occurred for both V-A1 and V-A9, the following table is presented to correctly describe the results from vapor sampling at these points for evaluation.

Corrected VA-1 and VA-9 Concentrations for Evaluation Purposes		
TU1 SVE Well	Wellhead Concentration	Corrected Manifold Concentration
V-A1	<1.4 µg/m³	1,100 µg/m³
V-A9	830 µg/m³	240 µg/m³

All vapor sampling activities were performed in accordance with the *Quality Assurance Program Plan* (WVDEP-OER-CERCLA-001), *Standard Operating Procedure SUMMA Canister Sampling* (SERAS SOP Number 1704, Rev. 1.0) and the *Atlas Site Sampling and Analysis Plan* (June 2021). The samples were collected using laboratory-evacuated Summa™ Canisters and regulators over a 5-minute interval. The samples were analyzed for PCE using EPA Method TO-15. The 1/4/2024 samples were analyzed by Eurofins Air Laboratory, the 3/26/2024 samples were analyzed by Pace Analytical and the 5/28/2024 samples were analyzed by Alpha Analytical. The laboratories reported TU1 Influent sample results as 770 µg/m³ on 1/4/2024, 97.8 µg/m³ on

3/26/2024 and 618 $\mu\text{g}/\text{m}^3$ on 5/28/2024. The laboratories reported TU1 Effluent samples results as <1.4 $\mu\text{g}/\text{m}^3$ on 1/4/2024, <1.36 $\mu\text{g}/\text{m}^3$ on 3/26/2024 and <7.46 $\mu\text{g}/\text{m}^3$ on 5/28/2024. The laboratory analytical reports are included for reference as **Attachment C**. The Vapor Field Sampling Data Sheets are included for reference as **Attachment D**.

1.3 Mass of PCE Removed in the Vapor Phase

The TU1 SVE blower consistently operated at an average flow rate of 235 cubic feet per minute (CFM) during this reporting period. The average calculated volume of air and vapor recovered each month is approximately 6.5 million cubic feet (ft^3) for a total of 38.6 million ft^3 for the reporting period. For the months when no vapor sampling took place, the PCE concentration from the previous month was used for the calculation. The average PCE recovery is calculated to be 0.0065 pounds per day (lb./day) resulting in 1.18 cumulative pounds for this reporting period. These calculated estimates on a monthly basis are presented in **Table 1**.

1.4 Pressure or Vacuum Losses between the Manifold and Wellhead

An AS and SVE system evaluation was not performed during this reporting period.

1.5 Maintenance Adjustments Performed

Atlas completed all of the required monthly maintenance O&M tasks each month as described in the Monthly O&M Reports. In addition, the following required quarterly maintenance activities were performed during this operational period in accordance with the Contract:

- On 1/17/2024 and 6/25/2024, SVE blower gearbox oil was changed.
- On 3/18/2024 and 6/25/2024, all manual valves were exercised by opening and closing them one or more times, as needed.
- On 2/12/2024 and 6/17/2024, SVE blower motor bearings were greased.

The following additional maintenance tasks or repairs were performed during this operational period:

- On 3/19/2024, made multiple repairs to the differential pressure gauges on the VGAC vessels during this reporting period due to condensation accumulation. DPI-201 was replaced on 1/16/2024 and DPI-200 was replaced on 2/19/2024. Condensation was cleaned out of both of the new gauges.
- Over 1/29-30/2024, replaced a faulty vacuum gauge and leaking pipe on the SVE manifold for V-A9.
- On 1/30/2024, located and marked the location of paved-over wells S-A9, and S-A18. These well locations were later uncovered by the City of Vienna and access has been fully restored.
- On 1/30/2024 and 2/12/2024, 2 worn seals causing oil leaks on the C400 compressor.
- On 1/31/2024, cleaned C400 dryer cooler.
- On 2/7/2024, and 6/17/2024, replaced C400 coalescing filter.

- On 5/29/2024, repaired 2 leaks at AS wellheads during this reporting period. A leak at the S-A4 wellhead was repaired by re-installing the pressure gauge with new thread tape. On 6/24/2024 leak at the S-A12 wellhead was repaired by replacing broken pipes.
- On 6/3/2024, replaced C400 separator filter.
- Multiple repairs to the C400 exhaust fan were made during this reporting period. On 1/16/2024, the exhaust fan motor was replaced with the unit from the retired C300 compressor. On 6/11/2024, the power switch for the exhaust fan was replaced. On 6/22/2024, the exhaust fan assembly was rebuilt with motor shaft bearings from the retired C300 compressor. On 6/25/2024, the bearings from C300 failed and new bearings (discovered in stock) were installed on the fan motor shaft of the fan assembly. On 6/26/2024, the fan assembly with new bearings was installed on the C400 compressor.
- Replaced 12 faulty AS manifold pressure gauges during this reporting period.
- Repaired 5 AS rotameters during this reporting period. These repairs included cleaning off accumulated moisture and fouling, replacing worn rubber tubing and replacing faulty float stops.
- Made repairs to 21 AS and SVE roadboxes and hand holes during this reporting period. These repairs included removing sediment, replacing lid seals, repainting lids, tapping new threads, and replacing bolts and washers for the lids.
- Made repairs to 30 of the monitoring wells and the roadboxes containing them near the TU1 treatment unit during this reporting period. These repairs included replacing J-Plugs, replacing roadbox lid seals, repainting lids, tapping new threads and replacing bolts and washers for lids.

Repairs to monitoring wells and system well locations were consistent with the findings and recommendations presented in the Well Inventory and Condition Report (WICR) dated April 9, 2024, and updated August 22, 2024 but also included a number of repairs to roadbox bolts attributed to plow activity that occurred after the inspections detailed in the WICR.

1.6 Shutdown Events, Operational Problems, and Resolutions

The downtime for the TU1 remediation system is attributed a mixture of routine maintenance activities, shutdowns for repairs, or other events such as shutdowns attributed to effects of weather.

Compressor C300 remains offline indefinitely after the evaluation on 10/10/2023 which determined the air-side bearings are failing. The repairs are not considered economical and warrant full replacement, which is not currently recommended. Atlas has been sourcing parts from C300 to replace faulty parts on the C400 unit.

A summary of the SVE shutdowns is presented in the table below. The compressor is offline whenever the SVE system shuts down.

A summary of the approximate SVE system downtime is provided in the following table:

TU1 Soil Vapor Extraction System Downtime Hours			
	Routine Maintenance	Shutdowns for Repairs	Other
January	1	5	4.5
February	1	3	--
March	4	--	--
April	4	--	--
May	--	--	94
June	9	55	--
Total Downtime Hours			163.75
Total Hours of Reporting Period			2,912.00
Total Hours of Operation			2,748.25
Uptime			94.4%

The following is a brief description of the noted shutdown periods:

- On 1/22/2024, AS/SVE system was offline for 4.5 hours due to high discharge pressure caused by ice accumulation.
- The AS/SVE System was offline for a total of 94 hours in May due to power fluctuations assumed to be caused by storms from 5/3/2024 to 5/6/2024, from 5/9/2024 to 5/11/2024 and from 5/26/2024 to 5/27/2024.

In addition to these shutdowns in this reporting period, the TU1 C400 compressor was also offline for:

- 2/1/2024 to 2/12/2024, the compressor was shut down for 124 hours due to repairs of an oil leak.

Full details on these repairs will be discussed in the CSR.

1.7 Additional Biannual or Annual O&M Items Addressed

The following Biannual O&M tasks were performed:

- On 6/24/2024, the building exhaust fan motors were lubricated.
- On 6/24/2024, the garage door wheels and chain sprocket were lubricated.
- On 6/25/2024, the eye wash fluid was replaced based upon manufacturer's recommendations.

No annual O&M tasks were performed during this reporting period.

1.8 Health and Safety Update

All sitework was performed in accordance with the site-specific Health and Safety Plan (HASP). Atlas has also developed an updated lock-out/tag-out (LOTO) program that was delivered and implemented on 7/25/2024.

The HASP and updated LOTO plan apply to both the TU1 and TU3 remediation systems. There are printed copies of the HASP and updated LOTO plan available on site within the TU building office rooms.

1.9 General Observations and Future Maintenance Recommendations

During this reporting period, the following observations were made and were discussed during weekly O&M Meetings with WVDEP.

- As a standing reminder, Atlas has previously identified that vacuum hoses for VA-1 and VA-9 are transposed at the manifold, which may result in mismatched wellhead and manifold readings for these SVE Wells. It is not recommended to change the hose arrangement at this time as it will create a mismatch with all historical data. However, Atlas evaluations of the TU1 SVE system will take this into account.
- Leak testing between the manifold and wellhead of the AS and SVE systems of TU1 should be performed, based upon the operational status of the compressor. The vapor sampling collected from TU1 in January provided unusual variances between the wellhead and the manifold which suggest there may be integrity issues.

2. TU2 SYSTEM

The TU2 AS system is kept offline except for a thirty-minute test run once a month to ensure operational capability. There were no operational issues observed during the operation of this unit.

3. TU3 SYSTEM

The TU3 AS and SVE systems operate on a similar sequencing as TU1 with the primary differences being the number and duration of the Pulses. Each Pulse consists of 10-12 AS wells and 7-9 SVE wells that activate. The AS system utilizes four Pulses that operate for 15 minutes each and the sequence concludes with a 30-minute idle period. The SVE system utilizes three Pulses that operate for 20 minutes each and the sequence concludes with a 30-minute idle period. 16 cycles activate over the course of a day. This correlates to 16 hours of active AS and SVE operations and 8 hours of idle operation in one day. The Process and Instrumentation Diagrams (P&ID) for TU1 and TU3 are included for reference as **Attachment A**. The Pulse Sequence Diagram and corresponding TU1 & TU3 AS/SVE Sequencing maps are included for reference as **Attachment B**.

3.1 System Uptime and Hours of Operation

TU3 AS System was operational for approximately 92% of the reporting period and the SVE System was operational for approximately 97% of the reporting period.

The uptime for the AS system is calculated based upon hour meter readings collected from the compressor units in operation. The AS system at TU3 consists of two identical compressors identified as C300 and C400, which under normal operating conditions are intended to be on an operational rotation. Compressor C300 has been removed from service since June 2022 due to significant required repairs. Repair efforts to C300 were performed during this reporting period consisting of the methodical replacement of the electrical starting relays. At the end of the reporting period, the C300 compressor was operational, but only in Hand mode and would not operate in Automatic sequence.

The operational uptime percentage for TU3 was calculated by dividing the adjusted 2,673 operational hours for compressor C400 and divided by the total number of 2,912 operational hours the compressors would be required to function for each day at 16 hours per day under normal operating conditions. The compressor shut down on 6/17/2024 on a general compressor fault and was unable to be restarted. Atlas performed comprehensive diagnostics on 6/27/2024 on both C300 and C400 units but was unsuccessful in identifying the source of the faults. The C400 compressor remained offline for the remainder of June as additional service was scheduled.

Atlas believes that the hour meter on the C400 compressor may be demonstrating signs of failure. The hours recorded near the end of December do not properly coincide with other records of the compressor service time. The net hours recorded are deficient by approximately 255 hours. Using the values from the hour meter, the TU3 AS system was calculated to be operational for 83% of this reporting period.

The uptime hours for the SVE system were estimated using a combination of data pulled from the HMI and the local technician's field notes. Uptime for the SVE system was calculated using the total number of downtime hours (see Table in **Section 3.8** for more details) subtracted from the total hours reporting in the period and expressed a percentage of the total hours in the reporting period. Uptime for the TU3 SVE System was calculated as 2,818 hours of the total 2,912 hours of the reporting period resulting in approximately 97% uptime.

The groundwater treatment system has been offline due to an alarm condition that triggered a system shutdown on 10/11/2022. Atlas' investigations at that time determined that the pump must be removed from the extraction well to determine the root cause of the failure. Atlas has recommended the decommission of the groundwater extraction pump. The decision is pending approval from WV DEP and no repairs have been authorized. The uptime of the groundwater treatment system for this reporting period is therefore 0%.

3.2 Analytical Results for Extraction Well and Vapor Samples

Atlas collected vapor samples from the vapor extraction system in order to monitor performance on 1/4/2024, 3/26/2024 and 5/28/2024. Vapor samples were collected at the influent sample port (TU3 Influent) and the effluent sampling ports from each of the VGAC units that operate in parallel, identified as 201 Effluent and 202 Effluent. Analytical results from the vapor samples are presented in **Table 4**.

All vapor sampling activities were performed in accordance with the *Quality Assurance Program Plan* (WVDEP-OER-CERCLA-001), *Standard Operating Procedure SUMMA Canister Sampling* (SERAS SOP Number 1704, Rev. 1.0) and the *Atlas Site Sampling and Analysis Plan* (June 2021). The samples were collected using laboratory-evacuated Summa™ Canisters and regulators over a 5-minute interval. The 1/4/2024 samples were analyzed by Eurofins Air Laboratory, the 3/26/2024 samples were analyzed by Pace Analytical and the 5/28/2024 samples were analyzed by Alpha Analytical. The laboratories reported TU3 Influent sample results as 910 $\mu\text{g}/\text{m}^3$ on 1/4/2024, 114 $\mu\text{g}/\text{m}^3$ on 3/26/2024 and 561 $\mu\text{g}/\text{m}^3$ on 5/28/2024. The laboratories reported TU3 VGAC 201 Effluent sample results as 28 $\mu\text{g}/\text{m}^3$ on 1/4/2024, <1.36 $\mu\text{g}/\text{m}^3$ on 3/26/2024 and <3.19 $\mu\text{g}/\text{m}^3$ on 5/28/2024. The laboratories reported TU3 VGAC 202 Effluent sample results as 2.2 $\mu\text{g}/\text{m}^3$ on 1/4/2024, <1.36 $\mu\text{g}/\text{m}^3$ on 3/26/2024 and 3.24 $\mu\text{g}/\text{m}^3$ on 5/28/2024. The laboratory analytical report is included for reference as **Attachment C**. The Vapor Field Sampling Data Sheets are included for reference as **Attachment D**.

No extraction well samples were taken due to the extraction well remaining offline.

3.3 Volumes of Groundwater Extracted

The groundwater treatment system has been offline since 10/11/2022, due to an alarm condition. No groundwater was extracted and treated during the reporting period.

3.4 Mass of PCE Removed in the Vapor Phase

The TU3 SVE blower consistently operated at an average flow rate of 408 CFM during this reporting period. The average calculated volume of air and vapor recovered each month is approximately 11.4 million cubic feet ft³ for a total of 68.5 million ft³ for the reporting period. For the months when no vapor sampling took place, the PCE concentration from the previous month was used for the calculation. The average PCE recovery is therefore calculated to be 0.012 lb./day and 2.25 cumulative pounds for this reporting period. These calculated estimates on a monthly basis are presented in **Table 3**.

3.5 Mass of PCE Removed in Groundwater

The groundwater treatment system remained offline throughout the entirety of the reporting period; therefore, no PCE removal occurred.

Investigation-Derived Waste (IDW) consisting of purge water and decontamination water generated during the Spring 2024 groundwater sampling activities was processed and discharged through the TU3 groundwater treatment system on 5/17/2024.

Influent, intermediate, and effluent system process treatment samples were collected on that date and are summarized below:

	05/17/24
Influent	<0.47 µg/L
Intermediate	<0.47 µg/L
Effluent	0.65J µg/L

Copies of the laboratory analytical reports are included in **Attachment C**. Atlas has previously recommended the decommissioning of the extraction pump. The extraction pump has not been repaired or decommissioned to date.

3.6 Pressure or Vacuum Losses between the Manifold and Wellhead

An AS and SVE system evaluation was not performed during this reporting period.

3.7 Maintenance Adjustments Performed

Atlas completed all of the required monthly maintenance O&M tasks each month as described in the Monthly O&M Reports. In addition, the following required quarterly maintenance activities were performed during this operational period in accordance with the Contract:

- On 1/17/2024 and 6/24/2024, SVE blower gearbox oil was changed.

- On 3/18/2024 and 6/24/2024, all manual valves were exercised by opening and closing them one or more times, as needed.
- On 1/22/2024 6/17/2024, SVE blower and operational compressor motor bearings were greased.

The following additional maintenance tasks or repairs were performed during this operational period:

- On 1/8/2024, installed new compressor emergency stop switch on C400.
- On 1/11/2024, installed new coupler on DPI-401 filter housing.
- On 1/30/2024, located and marked the location of paved over wells, MW-14D, S-A9, and S-A18.
- On 2/6/2024, changed the PDX filter and the float valve #WSD 80 on the C400 compressor.
- On 2/6/2024 and 2/7/2024, installed 4" clamps that were missing on the hoses on the VGAC tank.
- On 3/6/2024, removed the faulty P-100 transfer pump from operation and on 3/29/2024, installed a new pump, which began operation.
- On 4/30/2024, replaced manifold solenoid diaphragm assembly and most of the wellhead piping on S-C19 to repair leak.
- On 6/10/2024, changed float valve on C300 compressor.
- On 6/17/2024, made multiple repairs to the C400 compressor after it shutdown and was unable to be restarted. These repairs include changing the float valve, reconnecting loose wires and testing fuses/relays. The compressor remained offline for the remainder of June for parts procurement and repair scheduling.
- On 6/10/2024, installed new 4-inch flex hoses and reconfigured the two VGAC vessels from parallel to series operation.
- On 6/19/2024 - 6/20/2024, exchanged the carbon in the VGAC-202 vessel.
- Repaired 7 AS rotameters during this reporting period. These repairs included cleaning off accumulated moisture and fouling, replacing worn rubber tubing and replacing faulty float stops.
- Installed shut off valves and protective valve caps in 9 of the hand holes.
- Replaced 15 faulty AS manifold pressure gauges during this reporting period.
- Replaced 2 faulty SVE manifold vacuum gauges, V-C10 and V-C12, during this reporting period.
- Made repairs to 61 AS and SVE roadboxes, hand holes and pullboxes during this reporting period. These repairs included cleaning off debris, replacing lid seals, repainting lids, tapping new threads and replacing bolts and washers for lids.

- Made repairs to 60 of the monitoring wells and the roadboxes containing them near the TU3 treatment unit during this reporting period. These repairs included replacing J-Plugs, replacing roadbox lid seals, repainting lids, tapping new threads and replacing bolts and washers for lids.

Repairs to monitoring wells and system well locations were consistent with the findings and recommendations presented in the WICR but also included a number of repairs to roadbox bolts attributed to plow activity that occurred after the inspections detailed in the WICR.

3.8 Shutdown Events, Operational Problems, and Resolutions

The downtime for the TU3 remediation system is attributed a mixture of routine maintenance activities, shutdowns for repairs, or other events such as power loss to the treatment building, troubleshooting of specific equipment, and sampling events performed that required system shutdown.

A summary of the SVE shutdowns is presented in the table below. The compressor is offline whenever the SVE system shuts down.

A summary of the approximate SVE system downtime is provided in the following table:

TU3 Soil Vapor Extraction System Downtime Hours			
	Routine Maintenance	Shutdowns for Repairs	Other
January	--	16.5	4
February	1	1	1
March	--	--	--
April	10	--	--
May	--	5	32
June	4	--	18.5
Total Downtime Hours			93.5
Total Hours of Reporting Period			2,912.0
Total Hours of Operation			2,818.5
Uptime			96.8%

The following is a brief description of the noted shutdown periods:

- From 5/14/2024 to 5/16/2024, system was offline for 16 hours for groundwater sampling.
- From 5/26/2024 to 5/27/2024, system was offline for 16 hours due to a power outage caused by storm.
- From 6/19/2024 to 6/20/2024, system was offline for 18.5 hours for the VGAC vessel carbon exchange.

In addition to these shutdowns in this reporting period, the TU3 C400 compressor was also offline for:

- 6/18/2024 to the end of this reporting period for a total of approximately 153 hours due to it shutting down on a general fault and being unable to be restarted. An Atlas technician investigated the compressor but was unable to find the cause of the issue, although the problem appears to be within the electronics of the compressor. Atlas and a compressor specialist contractor have an additional troubleshooting event scheduled in early July to continue to address the issues with both C300 and C400 compressors. A detailed memo was provided to WVDEP on 6/27/2024 describing the results of the ongoing investigation. Full details on this repair will be discussed in the CSR.

3.9 Additional Biannual or Annual O&M Items Addressed

The following Biannual O&M tasks were performed:

- On 6/11/2024, the inside and outside of the air compressors were cleaned.
- On 3/12/2024, replaced air compressor air filters.
- On 6/24/2024, the building exhaust fan motors were lubricated.
- On 6/24/2024, the garage door wheels and chain sprocket were lubricated.
- On 6/24/2024, the eye wash fluid was replaced based upon manufacturer's recommendations.

No annual O&M tasks were performed during this reporting period.

3.10 Health and Safety Update

All sitework was performed in accordance with the Site-Specific HASP. Atlas has also developed an updated LOTO program that was delivered and implemented on 7/25/2024. The HASP and updated LOTO plan apply to both the TU1 and TU3 remediation systems. There are printed copies of the HASP and updated LOTO plan available on site within the TU building office rooms.

3.11 General Observations and Future Maintenance Recommendations

On 6/10/2024, the VGAC vessels were reconfigured from parallel to series operation and again on 6/20/2024 following the carbon exchange in the VGAC-202. All of the SVE wells recorded a decrease in vacuum and changes in flow rates on 6/24/2024 as a result of these changes. The wells typically had vacuum pressures ranging from -15 to -35 in. WC. The vacuum pressures were recorded between -13 and -18 in. WC on 6/24/2024. Many of the SVE wells experienced a flow rate decrease up to 10 CFM. However, several SVE wells were recorded with increased flow rates. There is insufficient data at the end of this reporting period to make a determination on the effects of the new VGAC configuration. An evaluation and a recommendation will be provided in a forthcoming O&M report.

3.11.1 Continued Recommendations

- Atlas maintains the recommendation of the decommissioning of the ground water extraction pump. The groundwater elevations recorded and presented in the Groundwater and Vapor Bi-annual Sampling Report (October – December 2023) continue to demonstrate that the current elevation

trends are similar to the elevation trends when the extraction pump was online. This continues the line of evidence that the extraction pump did not significantly impact the local groundwater elevation.

- Prior to any AS/SVE testing, Atlas recommends the installation of quick-connect fittings to replace the pressure/vacuum gauges at the wellheads. Wellhead inspections have documented that that gauges continue to suffer damage resulting from surface water infiltration into the roadbox at numerous locations. Many of the gauges, which were replaced almost 2 years ago, are displaying various levels of rust or water interference that appear to be influencing the accuracy of the gauge readings. Atlas has documented this recommendation as part of the findings of the WICR
- Atlas maintains the recommendations for repairs that were identified during the investigations performed to develop the TU3 Air Sparge and Soil Vapor Extraction System Leak Test Report (April 24, 2024) and the WICR. These efforts are recommended with the intent of increasing the operation efficiency of the existing system and are outline here as:
 - Repair of the leaks identified at the TU3 SVE manifold requiring the replacement of portions of the flex hose and resealing of a number of threaded fittings.
 - AS Wellhead piping repairs where leak testing indicated 10-30% pressure loss (S-C9, S-C13, S-C25, and S-C30). Portions of the wellhead piping have been identified with leaks, most notably on the ¼-inch PVC pipes and at connections to the well casing.
 - Repairs to the wells identified as High Priority during the WICR, favoring any repairs to the wells along 29th Street and lower 3rd Avenue where efforts may provide higher returns relative to the location of the center of the plume.

The scope of work for the leak repairs was submitted to WVDEP via email on 4/25/2024 and the repairs associated with the WICR recommendations were submitted as a supplemental memo on 8/22/2024.

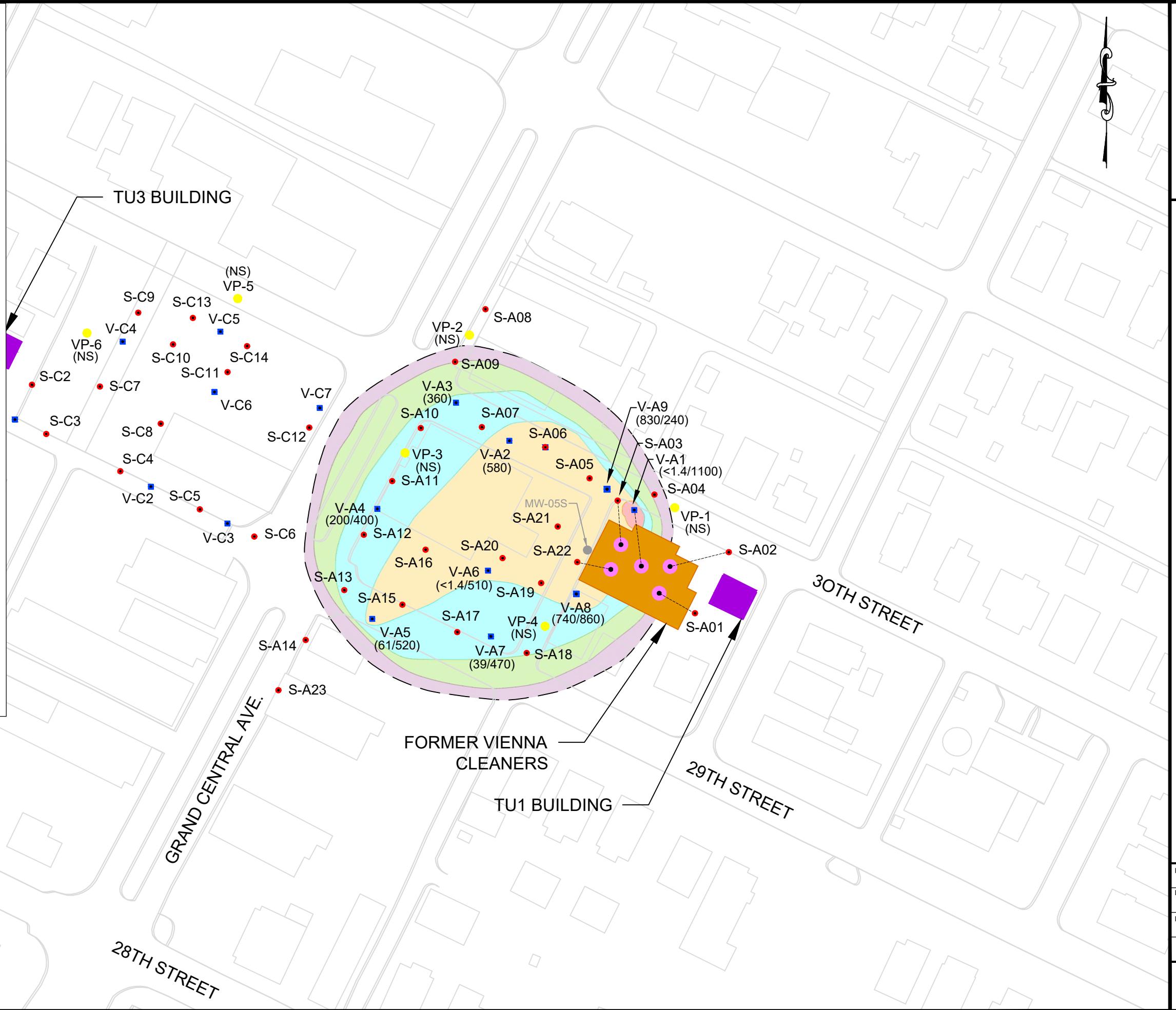
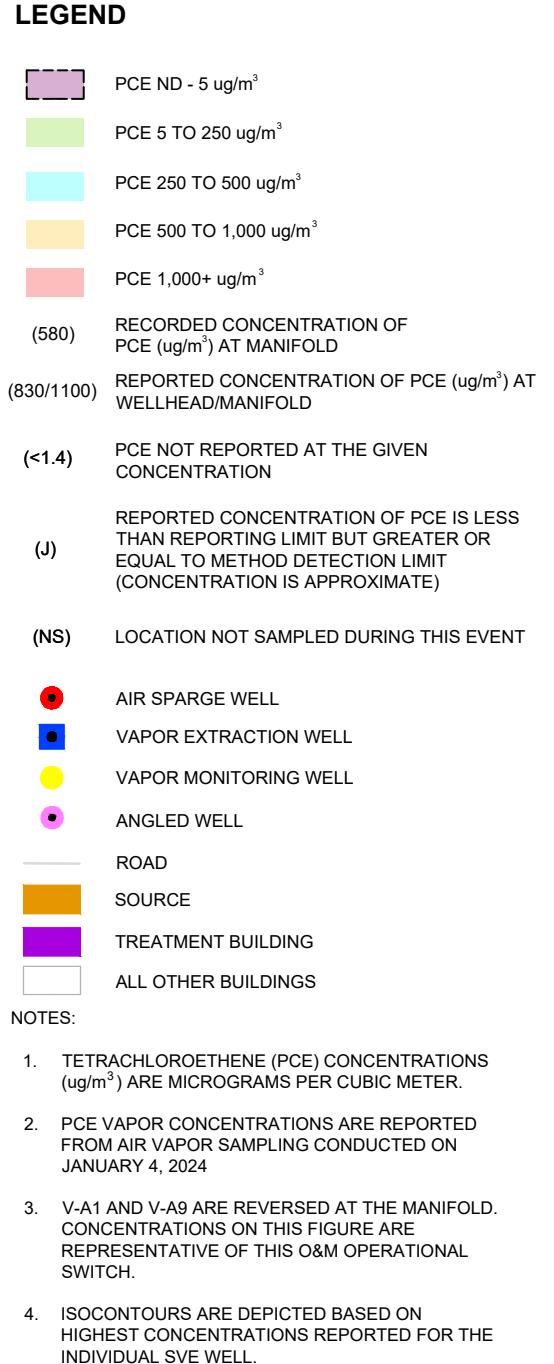
3.11.2 Additional Recommendations

- Atlas has performed repair activities on both the C300 and C400 compressors during this reporting period. The procurement of parts and associated repair activities have been submitted and approved by email. Upon the successful repair of both compressors, Atlas recommends the rotation of operation of the compressors on a monthly basis.
- As a follow-up to the observations and recommendations presented in the *Groundwater and Vapor Biannual Sampling Report* (January 1 – June 13, 2024) Atlas recommends modification to the TU3 operations to attempt to increase remedial action on the AS/SVE wells located near 29th Street and 3rd Avenue by decreasing the operating pressures and vacuums of AS/SVE wells as follows:

AS/SVE Wells Selected for Reductions in Operational Pressure/Vacuum							
AS				SVE			
Pulse 1	Pulse 2	Pulse 3	Pulse 4	Pulse 1	Pulse 2	Pulse 3	
S-C9, S-C14, S-C31, S-C33, S-C36	S-C10, S-C12, S-C20, S-C28, S-C30, S-C35	S-C7, S-C11, S-C21, S-C29, S-C34	S-C2, S-C8, S-C13, S-C24, S-C28, S-C32	V-C4, V-C7	V-C5, V-C15, V-C16	V-C6, V-C13, V-C17	

Atlas Recommends performing a study to evaluate the effects of iterations of reductions in pressure and vacuum in these selected wells. Based upon WVDEP response, Atlas can provide this a separate scope of work.

FIGURES



TU1 TETRACHLOROETHENE VAPOR CONCENTRATION MAP
JANUARY 4, 2024

VIENNA PCE SUPERFUND SITE, VIENNA, WEST VIRGINIA
WEST VIRGINIA DEPARTMENT OF ENVIRONMENTAL PROTECTION
405 29TH STREET
VIENNA, WV

Project Number:	252ENG2310
Date:	08/14/2024
Drn. By:	JP
Ckd. By:	AF
Scale:	1" = 80'
Figure:	1

TABLES

Table 1
 Vapor Extraction System Estimated Recovery - TU1
 January - June 2024
 Vienna PCE Superfund Site
 405 29th Street
 Vienna, West Virginia

Month	Vapor Sample Date	TU1 Influent PCE ($\mu\text{g}/\text{m}^3$)	TU1 Intermediate PCE ($\mu\text{g}/\text{m}^3$)	TU1 Effluent PCE ($\mu\text{g}/\text{m}^3$)	Average Flow Rate (CFM)	SVE Operational Time (%)	Days in Month	Volume of Vapor Extracted (ft^3)	PCE Recovery (lb/day)	PCE Removed (lb/Month)	Cumulative PCE Removed (lb)	Carbon Utilization (lb/month)	Cumulative Carbon Utilization (lb)	SVE Emissions (lb/day)	Cumulative SVE Air Emissions (tons)	VPGAC Removal Efficiency (%)
January	1/4/2024	770	11	<1.4	237	97.88%	31	6,912,549	0.0107	0.3321	10.2303	1.139	34.8	0.000019	0.0000369	99.82%
February	NS	770^A	11^A	<1.4 ^A	236	99.14%	29	6,510,150	0.0108	0.3128	10.5431	1.072	35.9	0.000020	0.0000370	99.82%
March	3/26/2024	97.8	11^A	<1.36	235	99.19%	31	6,940,890	0.0014	0.0424	10.5855	0.145	36.1	0.000019	0.0000370	98.61%
April	NS	97.8^A	11^A	<1.36 ^A	235	99.17%	30	6,705,888	0.0014	0.0409	10.6264	0.140	36.2	0.000019	0.0000370	98.61%
May	5/28/2024	618	<3.35	<7.46	236	81.05%	31	5,683,275	0.0071	0.2192	10.8455	0.751	36.9	0.000085	0.0000370	98.80%
June	NS	618^A	<3.35 ^A	<7.46 ^A	234	87.19%	30	5,875,740	0.0076	0.2266	11.0721	0.777	37.7	0.000090	0.0000370	98.80%

Notes:

$\mu\text{g}/\text{m}^3$ - micrograms per cubic meter

CFM - cubic feet per minute

ft^3 - cubic feet

PCE - Tetrachloroethene

lb - pound

Bold - Indicates analyte was detected by laboratory at given concentration.

Recovery Rate = Concentration ($\mu\text{g}/\text{m}^3$) x CFM X $1\text{m}^3/35.3\text{ ft}^3$ x $1\text{mg}/1000\text{ug} \times 1\text{g}/1000\text{mg} \times 1\text{lb}/454\text{g} \times 60\text{min/hr} \times 16\text{hr/day} \times \text{Operational Time (%)}$

VPGAC Removal Efficiency = Influent PCE ($\mu\text{g}/\text{m}^3$) - Effluent PCE ($\mu\text{g}/\text{m}^3$) / Influent PCE ($\mu\text{g}/\text{m}^3$)

Cumulative values are based upon measurements beginning in Q1 2022.

NS - Not Sampled. Monthly sampling not required. Typically sampled quarterly.

A - PCE Concentrations assumed to equal to previous sampled concentration for estimation purposes

SVE - Soil Vapor Extraction

TU1 vapor carbon vessels operate in series (lead and lag positions)

Last vapor carbon exchange at TU1 occurred on November 3, 2016.

Table 2
 Soil Vapor Extraction and Performance Sampling
 Analytical Results – TU1
 January through June 2024
 Vienna PCE Superfund Site
 405 29th Street
 Vienna, West Virginia

Sample ID	Sample Location	Collection Date	PCE Concentration ($\mu\text{g}/\text{m}^3$)	PCE Concentration (ppbv)
VPCE-V-A1-240104-WH	V-A1-WH	1/4/2024	<1.4	<0.21
VPCE-V-A1-240104	V-A1	1/4/2024	240	36
VPCE-V-A2-240104	V-A2	1/4/2024	580	85
VPCE-V-A3-240104	V-A3	1/4/2024	360	53
VPCE-V-A4-240104-WH	V-A4-WH	1/4/2024	200	30
VPCE-V-A4-240104	V-A4	1/4/2024	400	58
VPCE-V-A5-240104-WH	V-A5-WH	1/4/2024	61 J+	9.1 J+
VPCE-V-A5-240104	V-A5	1/4/2024	520	77
VPCE-V-A6-240104-WH	V-A6-WH	1/4/2024	<1.4	<0.21
VPCE-V-A6-240104	V-A6	1/4/2024	510	76
VPCE-V-A7-240104-WH	V-A7-WH	1/4/2024	39	5.7
VPCE-V-A7-240104	V-A7	1/4/2024	470	69
VPCE-V-A8-240104-WH	V-A8-WH	1/4/2024	740	110
VPCE-V-A8-240104	V-A8	1/4/2024	860	130
VPCE-V-A9-240104-WH	V-A9-WH	1/4/2024	830	120
VPCE-V-A9-240104	V-A9	1/4/2024	1100	170
VPCE-V-TU1 Influent-240104	TU1 Influent	1/4/2024	770	110
VPCE-V-TU1 Midfluent-240104	TU1 Midfluent	1/4/2024	11 J	1.7 J
VPCE-V-TU1 Effluent-240104	TU1 Effluent	1/4/2024	<1.4	<0.21
VPCE-V-TU1 Influent-240326	TU1 Influent	3/26/2024	97.8	14.4
VPCE-V-TU1 Effluent-240326	TU1 Effluent	3/26/2024	<1.36	<0.200
VPCE-V-TU1 Influent-240528	TU1 Influent	5/28/2024	618	91.1
VPCE-V-TU1 Midfluent-240528	TU1 Midfluent	5/28/2024	<3.35	<0.494
VPCE-V-TU1 Effluent-240528	TU1 Effluent	5/28/2024	<7.46	<1.10

Notes:

Units of concentration are reported in micrograms per cubic meter($\mu\text{g}/\text{m}^3$) or parts per billion vapor (ppbv).

Bold - Indicates analyte was detected by laboratory at given concentration.

< - Indicates the analyte was not detected at the given concentration.

J - Result is less than the Reporting limit but greater than or equal to the Method Detection Limit; the concentration is an approximate value.

J+ - Result is an estimated quantity, but may be biased high.

WH - Soil Vapor Extraction analytical result taken at well head.

VGAC - Vapor Phase Granular Activated Carbon

V-A1 and V-A9 labels are reversed on the Manifold but are presented here in accordance with sample IDs for consistency of reporting. Evaluations of wellhead and manifold concentrations must accommodate for this mis-labeling.

Table 3
 Vapor Extraction System Estimated Recovery - TU3
 January - June 2024
 Vienna PCE Superfund Site
 405 29th Street
 Vienna, West Virginia

Month	Vapor Sample Date	TU3 Influent PCE ($\mu\text{g}/\text{m}^3$)	TU3 VPGAC 201 Effluent ($\mu\text{g}/\text{m}^3$)	TU3 VPGAC 202 Effluent ($\mu\text{g}/\text{m}^3$)	Average Flow Rate (CFM)	SVE Operational Time (%)	Days in Month	Volume of Vapor Extracted (ft^3)	PCE Recovery (lb/day)	PCE Removed (lb/month)	Cumulative PCE Removed (lb)	Carbon Utilization (lb/month)	Cumulative Carbon Utilization (lb)	SVE Emissions (lb/day)	Cumulative SVE Air Emissions (tons)	VPGAC Removal Efficiency (%)
January	1/4/2024	910	28	2.2 J	410	95.87%	31	11,705,003	0.0214	0.6646	15.0983	2.279	51.3	0.000356	0.0000350	96.92%
February	NS	910^A	28^A	2.2 J^A	409	99.35%	29	11,317,551	0.0222	0.6426	15.7409	2.203	53.5	0.000368	0.0000352	96.92%
March	3/26/2024	114	<1.36	<1.36	410	95.56%	31	11,672,251	0.0027	0.0830	15.8240	0.285	53.8	0.000032	0.0000352	98.81%
April	NS	114^A	<1.36 ^A	<1.36 ^A	408	97.92%	30	11,518,761	0.0027	0.0819	15.9059	0.281	54.1	0.000033	0.0000352	98.81%
May	5/28/2024	561	<3.19	3.24	406	92.54%	31	11,169,764	0.0126	0.3910	16.2969	1.341	55.4	0.000072	0.0000353	99.43%
June	NS	561^A	<3.19 ^A	3.24^A	407	95.21%	30	11,150,891	0.0130	0.3903	16.6873	1.338	56.8	0.000075	0.0000353	99.43%

Notes:

$\mu\text{g}/\text{m}^3$ - micrograms per cubic meter

CFM - cubic feet per minute

ft^3 - cubic feet

PCE - Tetrachloroethene

lb - pound

Bold - Indicates analyte was detected by laboratory at given concentration.

Recovery Rate = Concentration ($\mu\text{g}/\text{m}^3$) x CFM X $1\text{m}^3/35.3\text{ ft}^3$ x $1\text{mg}/1000\text{ug}$ x $1\text{g}/1000\text{mg}$ x $1\text{lb}/454\text{g}$ x $60\text{min}/\text{hr}$ x $16\text{hr}/\text{day}$ x Operational Time (%)

VPGAC Removal Efficiency = Influent PCE ($\mu\text{g}/\text{m}^3$) - Effluent PCE ($\mu\text{g}/\text{m}^3$) / Influent PCE ($\mu\text{g}/\text{m}^3$)

Cumulative values are based upon measurements beginning in Q1 2022. Due to operational issues, no vapor data was collected in 2021.

NS - Not Sampled. Monthly sampling not required. Typically sampled quarterly.

A - PCE Concentrations assumed to equal to previous sampled concentration for estimation purposes

TU3 vapor carbon vessels operate in parallel. Emissions calculated using both effluent values

Last vapor carbon exchange in VGAC-201 occurred on November 3, 2016.

Vapor carbon exchange occurred in VGAC-202 on June 20, 2024.

Table 4
 Soil Vapor Extraction
 Analytical Results – TU3
 January through June 2024
 Vienna PCE Superfund Site
 405 29th Street
 Vienna, West Virginia

Sample ID	Sample Location	Collection Date	PCE Concentration ($\mu\text{g}/\text{m}^3$)	PCE Concentration (ppbv)
VPCE-V-TU3 Influent-240104	TU3 Influent	1/4/2024	910	130
VPCE-V-TU3 201 Effluent-240104	VGAC 201 Effluent	1/4/2024	28	4.2
VPCE-V-TU3 202 Effluent-240104	VGAC 202 Effluent	1/4/2024	2.2 J	0.33 J
VPCE-V-TU3 Influent-240326	TU3 Influent	3/26/2024	114	1.36
VPCE-V-TU3 201 Effluent-240326	VGAC 201 Effluent	3/26/2024	<1.36	<0.200
VPCE-V-TU3 202 Effluent-240326	VGAC 202 Effluent	3/26/2024	<1.36	<0.200
VPCE-V-TU3 Influent-240528	TU3 Influent	5/28/2024	561	82.7
VPCE-V-TU3 201 Effluent-240528	VGAC 201 Effluent	5/28/2024	<3.19	<0.471
VPCE-V-TU3 202 Effluent-240528	VGAC 202 Effluent	5/28/2024	3.24	0.478

Notes:

Units of concentration are reported in micrograms per cubic meter($\mu\text{g}/\text{m}^3$) or parts per billion vapor (ppbv).

Bold - Indicates analyte was detected by laboratory at given concentration.

< - Indicates the analyte was not detected at the given concentration.

J - Result is less than the Reporting limit but greater than or equal to the Method Detection Limit; the concentration is an approximate value.

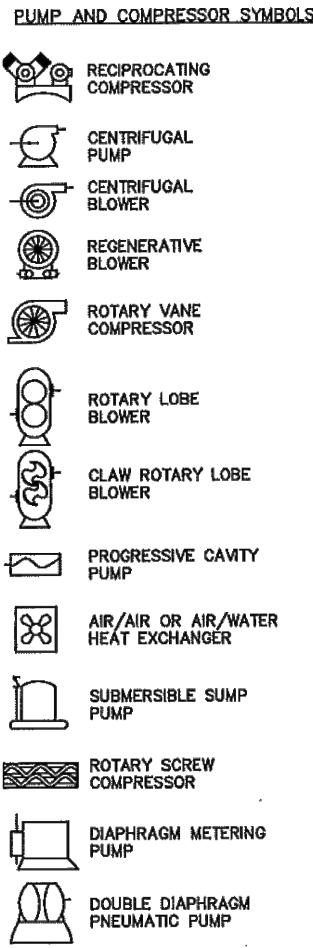
VGAC - Vapor Phase Granular Activated Carbon



Semiannual O&M Report
Vienna PCE Superfund Site
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ATTACHMENT A

TU1 & TU3 P&ID



INSTRUMENT SYMBOL LEGEND			
FIRST	SECOND	THIRD	FOURTH
C - CONDUCTIVITY	A - ALARM	C - COMMON	H - HIGH
dp - DIFFERENTIAL PRESSURE	E - ELEMENT	H - HIGH	L - LOW
F - FLOW	I - INDICATOR	L - LOW	
H - HAND	P - PROBE	T - TRANSMITTER	
L - LEVEL	S - SWITCH	I - INDICATOR	
P - PRESSURE	T - TRANSMITTER		
T - TEMPERATURE	D - DIFFERENTIAL		
V - VACUUM			

LINE THRU INSTRUMENT SIGNIFIES PANEL MOUNTED INSTRUMENT (NO LINE INDICATES FIELD MOUNTED INSTRUMENT)
INDICATES INSTRUMENT TAG NUMBER

PUMP AND COMPRESSOR SYMBOLS

Icons for various valves:

- GATE VALVE
- BALL VALVE OPEN
- BALL VALVE CLOSED
- BUTTERFLY VALVE
- DIAPHRAGM VALVE
- CHECK VALVE
- SOLENOID VALVE
- PRESSURE RELIEF VALVE
- VACUUM RELIEF VALVE
- SP SAMPLE PORT
- SP SAMPLE PORT
- PRESSURE REGULATOR
- PNEUMATIC DIAPHRAGM VALVE

VALVE SYMBOLS

Icons for piping symbols:

- WYE STRAINER
- QUICK DISCONNECT HOSE CONNECTION
- UNION PIPE CONNECTION
- FLEXIBLE JOINT OR CONNECTOR
- BUCKET TRAP OR SEPARATOR
- AIR FILTER ELEMENT
- SILENCER
- SITE GLASS
- CLEAN OUT

PIPING SYMBOLS

Icons for primary element symbols:

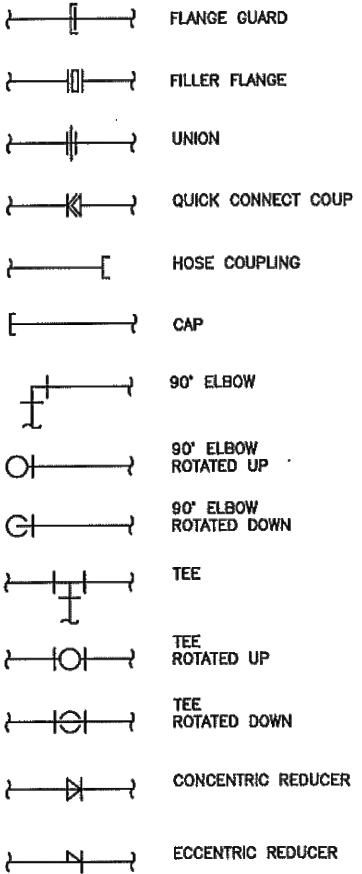
- ROTAMETER (VARIABLE AREA FLOW METER)
- VENTURI FLOW ELEMENT
- PITOT TUBE FLOW ELEMENT
- POSITIVE DISPLACEMENT FLOW ELEMENT
- SUBMERSIBLE PRESSURE TRANSMITTER ELEMENT
- MAGNETIC FLOW METER ELEMENT
- PADDLE WHEEL FLOW ELEMENT
- TURBINE FLOW ELEMENT
- VARIABLE AREA VANE FLOW ELEMENT

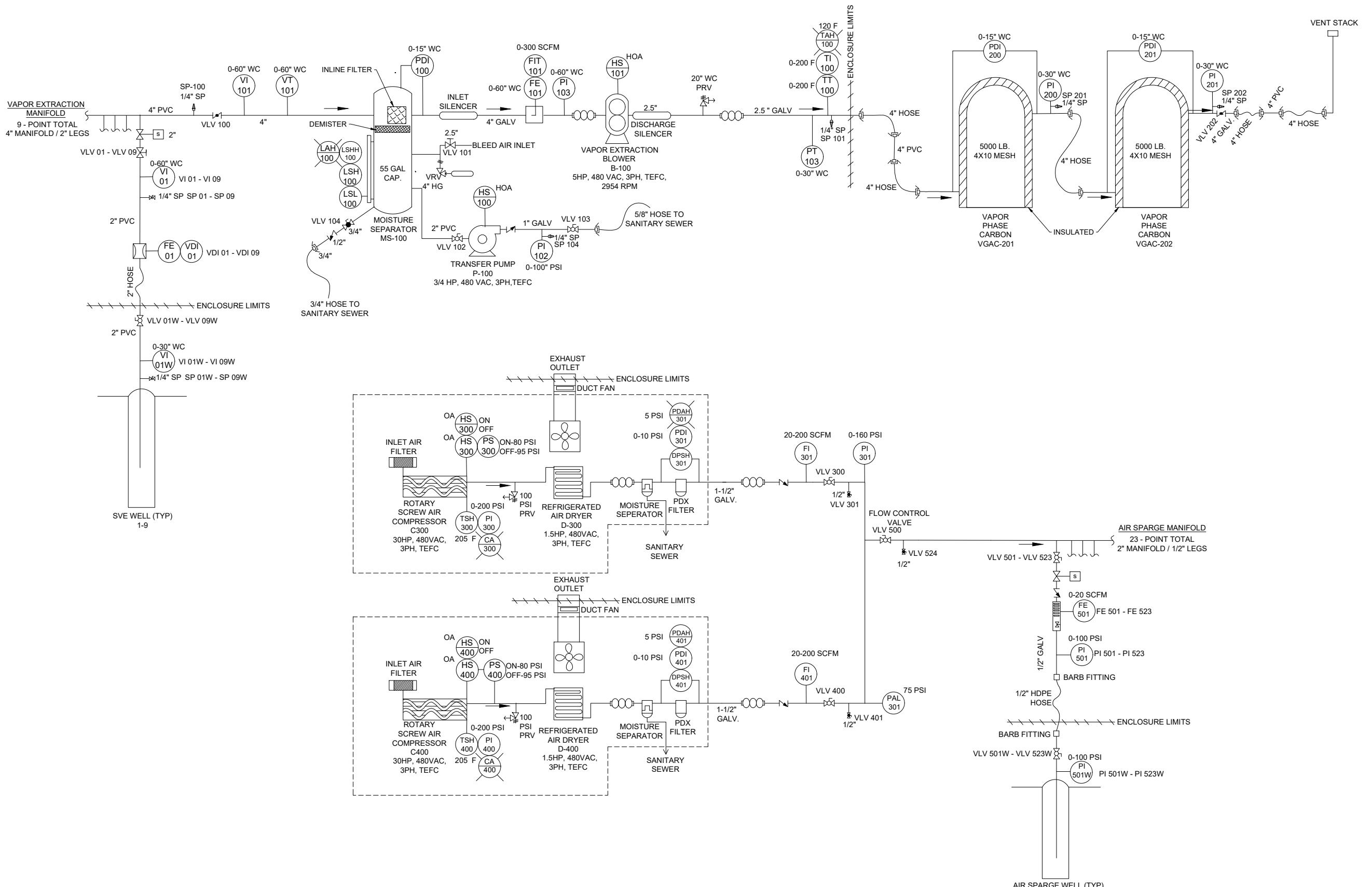
PRIMARY ELEMENT SYMBOLS

Icons for pipe symbols:

- WELDED JOINT
- FLANGED JOINT
- MECHANICAL JOINT
- RESTRAINED MECHANICAL JOINT
- PUSH ON JOINT
- RESTRAINED PUSH ON JOINT
- BALL JOINT
- DIRECTION OF FLOW
- PLAIN END x PLAIN END PIPE COUPLING
- PLAIN END x PLAIN END RESTRAINED PIPE COUPLING
- FLANGED ADAPTER COUPLING
- FLEXIBLE COUPLING OR EXPANSION JOINT (SLEEVE TYPE)
- FLEXIBLE COUPLING OR EXPANSION JOINT (BELLows TYPE)
- GROUNDED END JOINT COUPLING
- FLEXIBLE RIGID

PIPE SYMBOLS

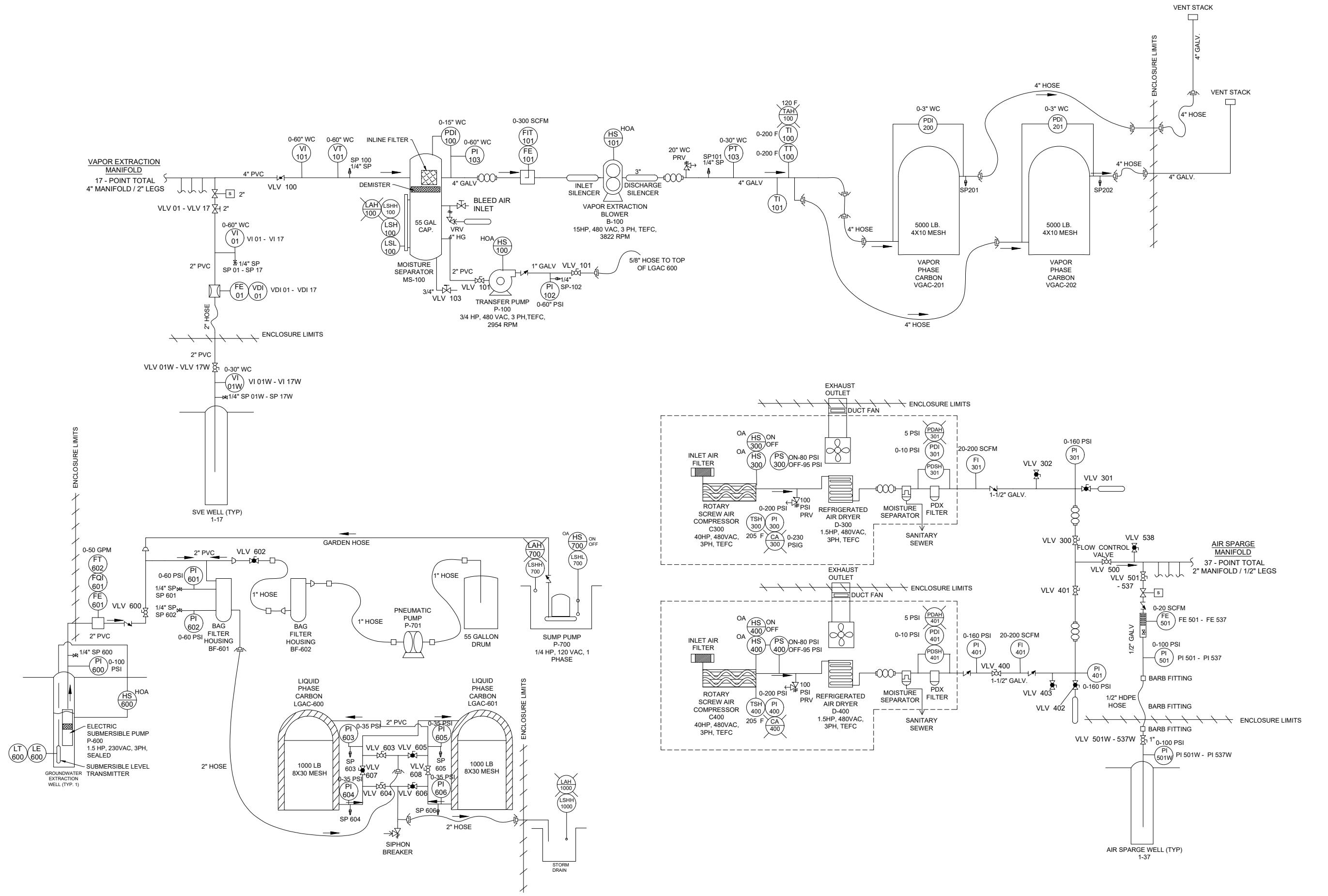




VIENNA PCE SUPERFUND SITE- TREATMENT UNIT 1 (TU1)
PROCESS AND INSTRUMENTATION DIAGRAM

WEST VIRGINIA DEPARTMENT OF ENVIRONMENTAL PROTECTION
405 29TH STREET
VIENNA, WV

Project Number:	252ENG2105	
Date:	03/09/2023	
Dr. By:	JP	Ckd. By:
Scale:	N.T.S	
Figure:	1	



VIENNA PCE SUPERFUND SITE - TREATMENT UNIT 3 (TU3)
PROCESS AND INSTRUMENTATION DIAGRAM

WEST VIRGINIA DEPARTMENT OF ENVIRONMENTAL PROTECTION
405 29TH STREET
VIENNA, WV

Project Number:
252ENG2105

Date:
03/09/2023

Dr. By:
JP

Ckd. By:
MW

Scale:
N.T.S

Figure:
2

ATT-AS

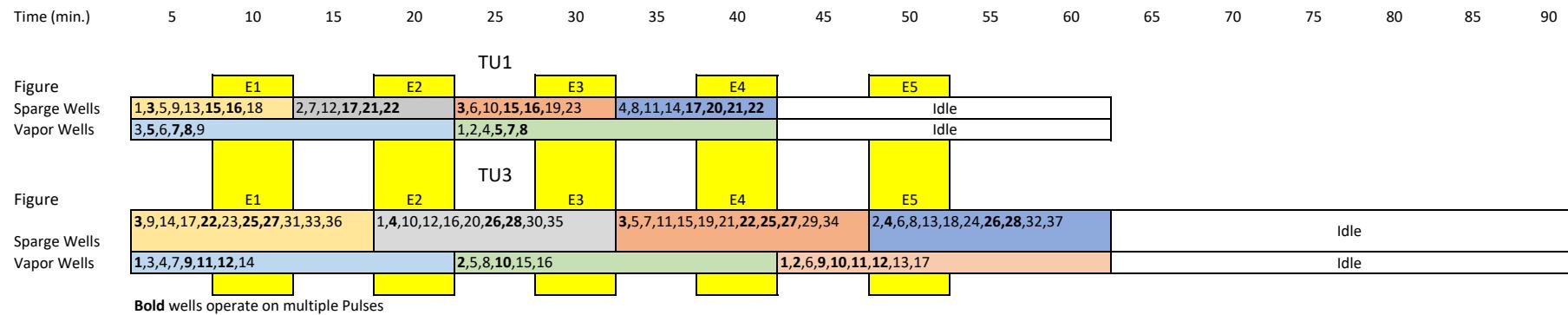


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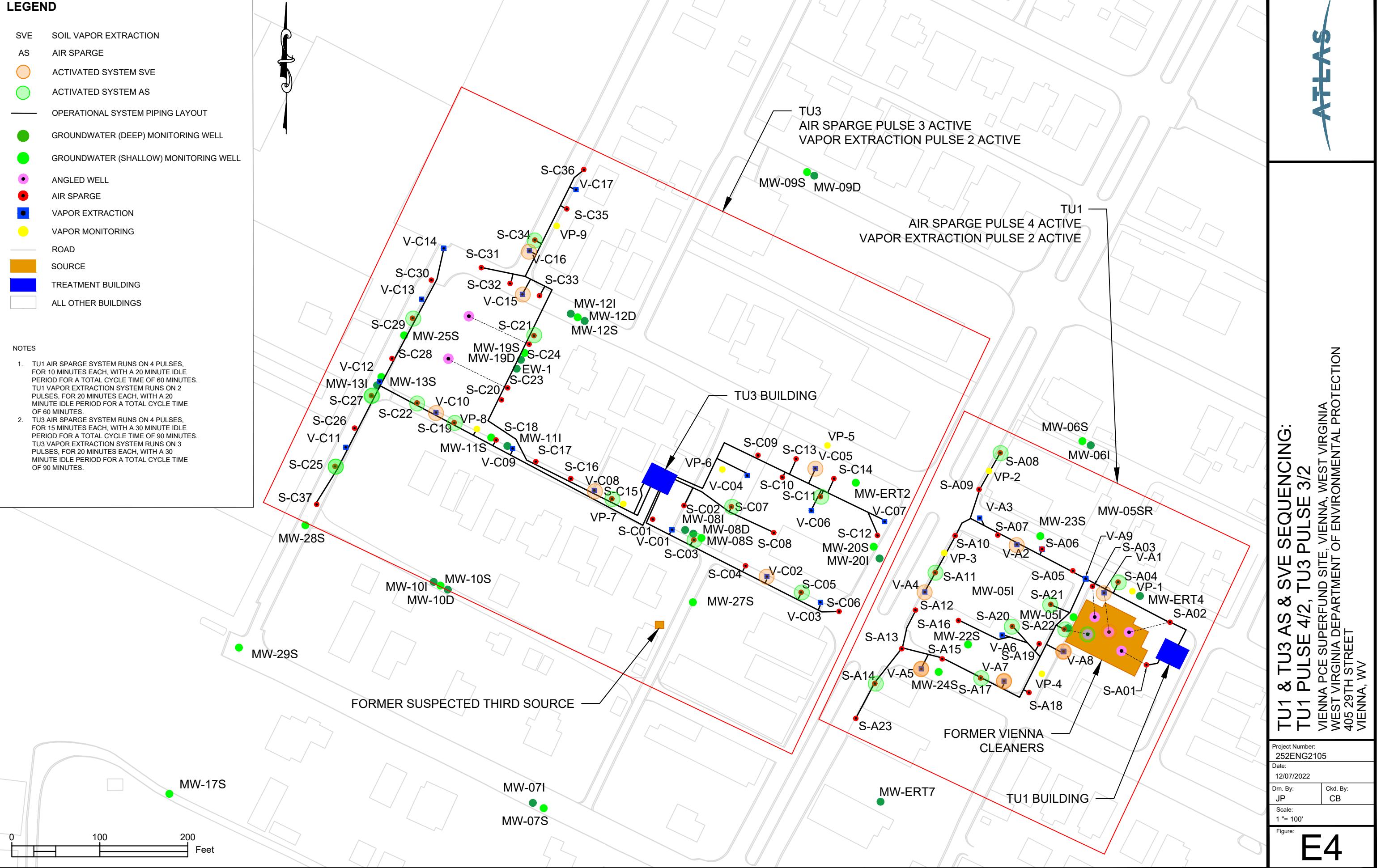
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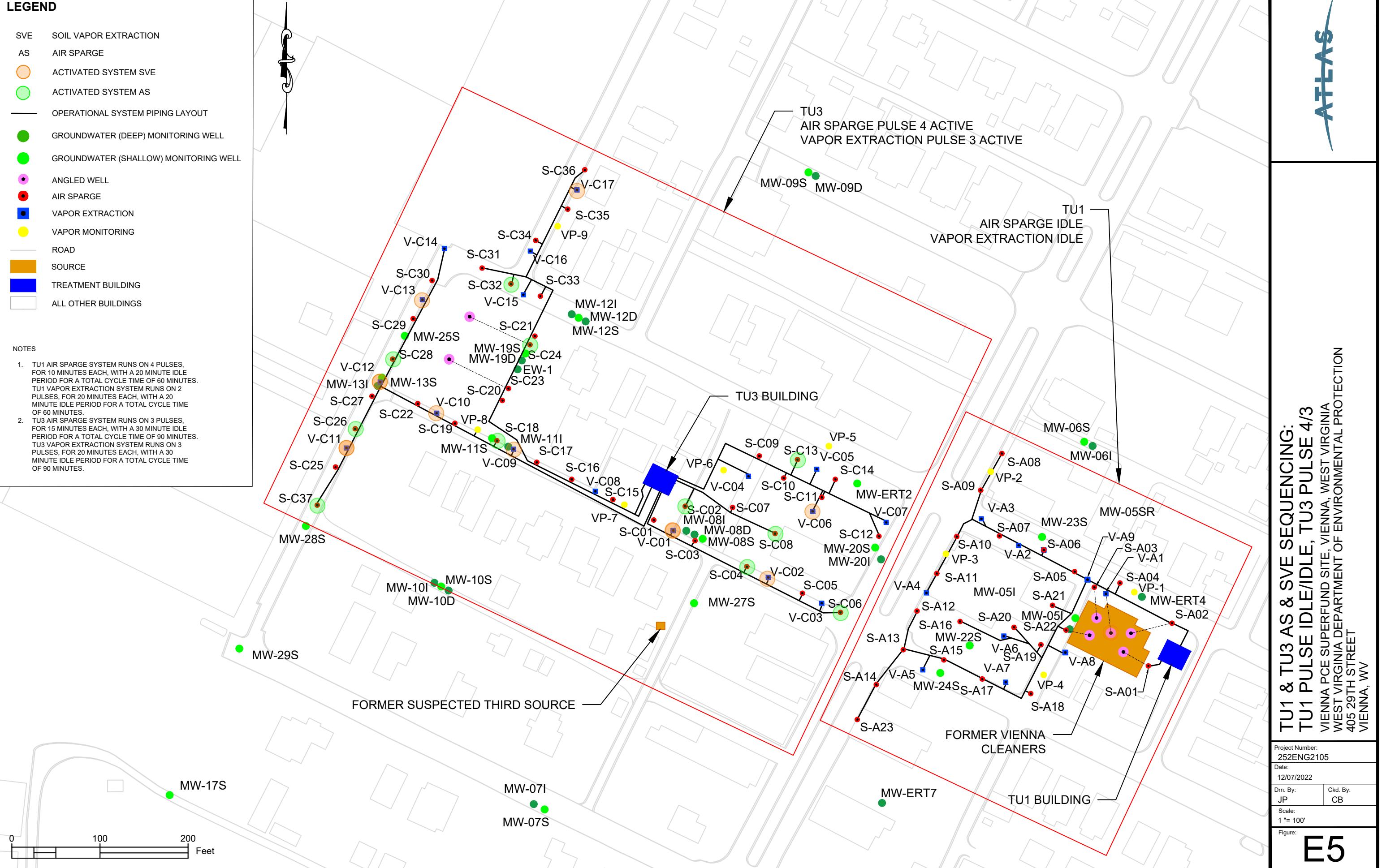
PULSE DIAGRAM AND TU1 AND TU3 AS & SVE SEQUENCING

Vapor and Sparge Well Activation Order by Pulse Sequence



The treatment systems TU1 and TU3 are not synchronized. For purposes of graphical depiction, it is assumed that TU1 and TU3 operations begin at the same time.





Additional Attachments Available Upon Request

A4 ATTACHMENT - CERTIFICATE OF INSURANCE





CERTIFICATE OF LIABILITY INSURANCE

10/31/2026

DATE (MM/DD/YYYY)

12/22/2025

THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERs NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AFFIRMATIVELY OR NEGATIVELY AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW. THIS CERTIFICATE OF INSURANCE DOES NOT CONSTITUTE A CONTRACT BETWEEN THE ISSUING INSURER(S), AUTHORIZED REPRESENTATIVE OR PRODUCER, AND THE CERTIFICATE HOLDER.

IMPORTANT: If the certificate holder is an ADDITIONAL INSURED, the policy(ies) must have ADDITIONAL INSURED provisions or be endorsed. If SUBROGATION IS WAIVED, subject to the terms and conditions of the policy, certain policies may require an endorsement. A statement on this certificate does not confer rights to the certificate holder in lieu of such endorsement(s).

PRODUCER	Lockton Companies, LLC DBA Lockton Insurance Brokers, LLC in CA CA license #0F15767 8110 E Union Ave., Ste. 100 Denver CO 80237 denver-certs@lockton.com	CONTACT		
		NAME: PHONE (A/C, No. Ext): E-MAIL: ADDRESS:	FAX (A/C, No):	
INSURED 1530203	Atlas Technical Consultants, LLC 5050 South Syracuse St., Suite 1150 Denver, CO 80237	INSURER(S) AFFORDING COVERAGE		NAIC #
		INSURER A : Starr Surplus Lines Insurance Company		13604
		INSURER B : Starr Indemnity & Liability Company		38318
		INSURER C :		
		INSURER D :		
		INSURER E :		
INSURER F :				

COVERAGES

CERTIFICATE NUMBER: 22811416

REVISION NUMBER: XXXXXXX

THIS IS TO CERTIFY THAT THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED. NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.

INSR LTR	TYPE OF INSURANCE	ADDL INSD	SUBR WVD	POLICY NUMBER	POLICY EFF (MM/DD/YYYY)	POLICY EXP (MM/DD/YYYY)	LIMITS		
A	COMMERCIAL GENERAL LIABILITY CLAIMS-MADE <input checked="" type="checkbox"/> OCCUR <input checked="" type="checkbox"/> X,C,U Included <input checked="" type="checkbox"/> Contractual Liab GEN'L AGGREGATE LIMIT APPLIES PER: POLICY <input checked="" type="checkbox"/> PRO- JECT <input type="checkbox"/> LOC OTHER:	Y	N	1000068086251	11/13/2025	10/31/2026	EACH OCCURRENCE	\$ 2,000,000	
							DAMAGE TO RENTED PREMISES (Ea occurrence)	\$ 1,000,000	
							MED EXP (Any one person)	\$ 10,000	
							PERSONAL & ADV INJURY	\$ 2,000,000	
							GENERAL AGGREGATE	\$ 4,000,000	
							PRODUCTS - COMP/OP AGG	\$ 4,000,000	
B	AUTOMOBILE LIABILITY <input checked="" type="checkbox"/> ANY AUTO OWNED AUTOS ONLY <input type="checkbox"/> SCHEDULED AUTOS HIRED AUTOS ONLY <input type="checkbox"/> NON-OWNED AUTOS ONLY	N	N	1000686046251 (AOS) 1000686045251 (MA)	11/13/2025 11/13/2025	10/31/2026 10/31/2026	COMBINED SINGLE LIMIT (Ea accident)	\$ 1,000,000	
							BODILY INJURY (Per person)	\$ XXXXXX	
							BODILY INJURY (Per accident)	\$ XXXXXX	
							PROPERTY DAMAGE (Per accident)	\$ XXXXXX	
								\$ XXXXXX	
								\$ XXXXXX	
A	UMBRELLA LIAB EXCESS LIAB DED <input type="checkbox"/> RETENTION \$	X	N	1000338002251	11/13/2025	10/31/2026	EACH OCCURRENCE	\$ 1,000,000	
							AGGREGATE	\$ 1,000,000	
								\$ XXXXXX	
								\$ XXXXXX	
B	WORKERS COMPENSATION AND EMPLOYERS' LIABILITY ANY PROPRIETOR/PARTNER/EXECUTIVE OFFICER/MEMBER EXCLUDED? (Mandatory in NH) If yes, describe under DESCRIPTION OF OPERATIONS below	Y / N <input checked="" type="checkbox"/> N	N / A	100 1243446 00 (AOS) 100 1243447 00	11/13/2025 11/13/2025	10/31/2026 10/31/2026	X PER STATUTE	OTH-ER	
							E.L. EACH ACCIDENT	\$ 1,000,000	
							E.L. DISEASE - EA EMPLOYEE	\$ 1,000,000	
							E.L. DISEASE - POLICY LIMIT	\$ 1,000,000	
								\$ 1,000,000	
A	Env Contr Poll Prof Liab.	N	N	1000068086251 1000068086251	11/13/2025 11/13/2025	10/31/2026 10/31/2026	Per Occur/Agg:\$2,000,000/\$4,000,000 Per Claim/Agg:\$2,000,000/\$4,000,000		

DESCRIPTION OF OPERATIONS / LOCATIONS / VEHICLES (ACORD 101, Additional Remarks Schedule, may be attached if more space is required)

General Liability, Contractors Pollution Liability, Professional Liability package total policy aggregate \$4,000,000.

States under WC policy# 100 1243447 00 - AK, FL, MA, NC, MO, OK, NE & WI. RE: EOI Ravenswood PCE (OER). State of West Virginia is Additional Insured(s) as per the attached endorsement or policy language.

CERTIFICATE HOLDER

CANCELLATION See Attachments

22811416 State of West Virginia Attn: Josh Hagger III 2019 Washington St. E. Charleston, WV 25305	SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, NOTICE WILL BE DELIVERED IN ACCORDANCE WITH THE POLICY PROVISIONS.
	AUTHORIZED REPRESENTATIVE

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ADDITIONAL REMARKS SCHEDULE

The Excess Liability policy is excess of the underlying General Liability, Automobile Liability, Employers' Liability, Professional Liability, and Contractor's Pollution Liability. Excess Liability policy is following form of the underlying policies.

The General Liability, Contractor's Pollution Liability and Professional Liability are part of a package policy. The Package General Aggregate reflected for these coverages is a combined aggregate and not separate aggregates for each coverage.

The General Liability policy includes blanket additional insured and Waiver of Subrogation and Primary and Noncontributory endorsements that provide additional insured status to the certificate holder and Waiver of Subrogation only as required by a written contract between the named insured and the Certificate, as permitted by law. Primary and Noncontributory wording is also included.

The Business Auto policy includes blanket additional insured and Waiver of Subrogation endorsements that provide additional insured status to the certificate holder and Waiver of Subrogation only when there is a written contract between the named insured and the Certificate Holder that requires it, as permitted by law. Primary and Noncontributory wording is also included.

Contractor's Pollution Liability policy includes blanket additional insured Primary and Non-contributory and Waiver of Subrogation endorsements that provides coverage to the certificate only as required by written contract between the named insured and the Certificate Holder, as permitted by law.

The Workers Compensation policy includes a blanket automatic waiver of subrogation endorsement when required by written contract between the named insured and the certificate holder, as permitted by law.

States under WC policy# 100 1243446 00 (AOS) - CO, AL, AZ, AR, CA, CT, DE, DC, GA, ID, IL, IN, IA, KS, KY, LA, ME, MD, MI, MN, MS, MT, NV, NH, NJ, NM, NY, OR, PA, RI, SC, SD, TN, TX, UT, VT, VA, WV, HI

Stop Gap coverage included. ND, OH, WA, WY.

Atlas Technical Consultants, Inc. Schedule of Named Insureds

1 Alliance Geomatics, LLC	Long Engineering, Inc.
Alta Vista Engineering Services AG	Long Engineering, LLC
Alta Vista Solutions Inc.	Materials Testing & Inspection, LLC
Arrow ATC Holdings, LLC	O'Neill Service Group, LLC
Arrow Environmental Holdings LP	Oris Solutions, LLC
Arrow Environmental Holdings, GP LLC	Pavetex Engineering, LLC fka PaveTex Engineering & Testing
ATC Associates of North Carolina, PC	Piedmont Geotechnical Consultants, LLC
ATC Associates of Ohio, LP	Pipeline Environmental Services
ATC Associates, Inc.	Plant Services
ATC Construction Services, Inc.	Quality Assurance Engineering, Inc.
ATC Engineering of Michigan, LP	Quality Assurance Engineering, Inc. dba Consolidated
ATC Engineering, LLP	Engineering Laboratories
ATC Environmental, Inc.	Rocky Mountain PSI, LLC
ATC Group Holdings LLC	Sage ATC Environmental Consulting LLC
ATC Group Partners LLC	Sage ATC Environmental Holdings LLC
ATC Group Services LLC	Sage Engineering, Inc.
ATC Group Services, LLC dba Atlas Technical Consultants, LLC	Sage Environmental Consulting, LP
ATC Holding, Inc.	Sage Environmental Holdings, LLC
ATC Leasing Company, LLC	SCST, LLC
ATC New England Corporation	Southwest Geophysics, LLC
ATC Sole Member LLC	The Environmental Institute
Atlantic Engineering Laboratories of New York, Inc.	Transmart Technologies, LLC
Atlantic Engineering Laboratories, Inc.	TransSmart, Inc.
Atlantic Engineering Laboratories, LLC	TransSmart, LLC
Atlas ATC Engineering, Inc.	United Testing, LLC fka United Testing Corporation
Atlas Consulting Services	WesTest, LLC
Atlas Engineering West, Inc.	Wilkins Environmental Consulting, Inc.
Atlas Intermediate Holdings LLC	WSP- Atlas
Atlas TC Holdings LLC	Midtown Engineers LLC
Atlas Technical Consultants Holdings, LP	Atlas Technical Consultants (CA), Inc
Atlas Technical Consultants LLC	
Atlas Technical Consultants Sole Member LLC	
Atlas Technical Consultants, Inc.	
Bananza Industries, Inc.	
BCM Engineering, Inc.	
Beest Express, LLC	
Caitcon, LLC	
Cardno ATC (MA), Inc.	
CEL Consulting, LLC	
Consolidated Engineering Laboratories	
Dexter ATC Field Services LLC	
Dexter Field Services, LP	
Engineering & Testing Services LLC	
Engineering Services, LLC	
Environmental Compliance Services, Inc.	
ETS-ESC Holdings LLC	
Geosphere Consultants, Inc.	
HES Testing, LLC	



Starr Surplus Lines Insurance Company

THIS ENDORSEMENT CHANGES THE POLICY. PLEASE READ IT CAREFULLY.

ADDITIONAL INSURED – OWNERS, LESSEES OR CONTRACTORS – COMPLETED OPERATIONS

Policy Number: 1000068086251

Effective Date: 11/13/2025 at 12:01 A.M.

Named Insured: Atlas Technical Consultants, Inc

This endorsement modifies insurance provided under the following:

COMMERCIAL GENERAL LIABILITY COVERAGE PART

SCHEDULE

Name of Person or Organization: Where Required By Written Contract
Location And Description of Completed Operations: Where Required By Written Contract
Additional Premium: Included

(If no entry appears above, information required to complete this endorsement will be shown in the Declarations as applicable to this endorsement.)

Section II – Who Is An Insured is amended to include as an insured the person or organization shown in the Schedule, but only with respect to liability arising out of "your work" at the location designated and described in the schedule of this endorsement performed for that insured and included in the "products-completed operations hazard".

All other terms and conditions of this Policy remain unchanged.



Starr Surplus Lines Insurance Company

THIS ENDORSEMENT CHANGES THE POLICY. PLEASE READ IT CAREFULLY.

**ADDITIONAL INSURED - OWNERS, LESSEES OR
CONTRACTORS - SCHEDULED PERSON OR
ORGANIZATION**

Policy Number: 1000068086251

Effective Date: 11/13/2025 at 12:01

A.M. Named Insured: Atlas Technical Consultants, Inc

This endorsement modifies insurance provided under the following:

COMMERCIAL GENERAL LIABILITY COVERAGE PART

SCHEDULE

Name of Person or Organization:

Where Required By Written Contract

(If no entry appears above, information required to complete this endorsement will be shown in the Declarations as applicable to this endorsement.)

A. Section II - Who Is An Insured is amended to include as an insured the person or organization shown in the Schedule, but only with respect to liability arising out of your ongoing operations performed for that insured.

B. With respect to the insurance afforded to these additional insureds, the following exclusion is added:

2. Exclusions

This insurance does not apply to "bodily injury" or "property damage" occurring after:

- (1) All work, including materials, parts or equipment furnished in connection with such work, on the project (other than service, maintenance or repairs) to be performed by or on behalf of the additional insured(s) at the site of the covered operations has been completed; or
- (2) That portion of "your work" out of which the injury or damage arises has been put to its intended use by any person or organization other than another contractor or subcontractor engaged in performing operations for a principal as a part of the same project.

All other terms and conditions of this Policy remain unchanged.

THIS ENDORSEMENT CHANGES THE POLICY. PLEASE READ IT CAREFULLY.

ADDITIONAL INSURED, PRIMARY AND NONCONTRIBUTORY AND WAIVER OF SUBROGATION AMENDATORY ENDORSEMENT

Policy Number: 1000068086251

Effective Date: 11/13/2025 at 12:01 A.M.

Named Insured: Atlas Technical Consultants, Inc

This endorsement modifies the insurance coverage form(s) listed below that have been purchased by you and evidenced as such on the Declarations page. Please read the endorsement and respective policy(ies) carefully.

COMMERCIAL GENERAL LIABILITY COVERAGE FORM

SCHEDULE

Name Of Person(s) Or Organization(s):

Where Required By Written Contract

It is hereby agreed as follows:

1. SECTION II - WHO IS AN INSURED is amended to include the following:

- a. Any person(s) or organization(s) that you are required to include as an additional insured under this policy by written contract or written agreement or that is listed in the **SCHEDULE** above is an additional insured under this policy. Such additional insured status applies only with respect to liability arising out of "your work" for or on behalf of that person(s) or organization(s) pursuant to such written contract or written agreement.

However, the insurance afforded to such additional insured(s):

- (1) only applies to the extent permitted by law; and
- (2) will not be broader than that which you are required by the written contract or written agreement to provide for such additional insured(s).

- b. With respect to the insurance afforded to the additional insured(s), **SECTION III – LIMITS OF INSURANCE** is amended to include the following:

The most we will pay on behalf of the additional insured(s) is the amount of insurance:

- (1) Required by the contract or agreement; or
- (2) Available under the applicable limits of insurance;

whichever is less.

This endorsement shall not increase the applicable limits of insurance.

2. SECTION IV – COMMERCIAL GENERAL LIABILITY CONDITIONS, 4. Other Insurance is amended to

include the following, which supersedes any provision to the contrary:

Primary And Noncontributory Insurance

This insurance is primary to, and will not seek contribution from, any other insurance available to an additional insured under your policy provided that:

- a. The additional insured is a Named Insured under such other insurance; and
- b. You have agreed in writing in a contract or agreement that this insurance would be primary and would not seek contribution from any other insurance available to the additional insured.

3. SECTION IV – COMMERCIAL GENERAL LIABILITY CONDITIONS, 8. Transfer Of Rights Of Recovery Against Others To Us is amended to include the following:

We waive any right of recovery against any person or organization, because of any payment we make under this policy, to whom the insured has waived its right of recovery in a written contract or agreement. Such waiver

by us applies only to the extent that the insured has waived its right of recovery against such person or organization prior to loss.

THIS ENDORSEMENT CHANGES THE POLICY. PLEASE READ IT CAREFULLY.

NOTICE OF CANCELLATION – CERTIFICATE HOLDERS

Policy Number: 1000068086251 **Effective Date:** 11/13/2025 at 12:01 A.M.

Named Insured: Atlas Technical Consultants, Inc

This endorsement modifies the insurance coverage form(s) that have been purchased by you and evidenced as such on the Declarations page. Please read the endorsement and respective policy(ies) carefully.

All Coverage Parts included in this policy are subject to the following conditions.

It is agreed that in the event the insurer cancels the policy for any reason other than non-payment of premium, the insurer will provide sixty (60) days' notice of cancellation to the retail broker designated below, who in turn assumes any and all responsibility to notify the certificate holders.

The retail broker will mail or deliver to the appropriate certificate holders a copy of the written notice of cancellation that the insurer has provided.

The retail broker's notification of cancellation of the policy is intended as a courtesy only. The retail broker's failure to provide such notification to the person(s) or organization(s) will not extend any policy cancellation date nor impact or negate any cancellation of the policy. This endorsement does not entitle the certificate holders to any benefit, rights or protection under this policy.

The retail broker's failure to provide this notice of cancellation to the certificate holders will not impose liability of any kind upon the insurer or the retail broker.

For purposes of this endorsement, retail broker means Lockton Companies, LLC.

THIS ENDORSEMENT CHANGES THE POLICY. PLEASE READ IT CAREFULLY.

**ADDITIONAL INSURED – AUTOMATIC STATUS
AMENDATORY ENDORSEMENT**

Policy Number: 1000686046251 (AOS) & 1000686045251 (MA)

Effective Date: 11/13/2025

Named Insured: Atlas Technical Consultants, Inc

This endorsement modifies the insurance coverage form(s) listed below that have been purchased by you and evidenced as such on the Declarations page. Please read the endorsement and respective policy(ies) carefully.

AUTO DEALERS COVERAGE FORM
BUSINESS AUTO COVERAGE FORM
MOTOR CARRIER COVERAGE FORM

It is hereby agreed that **SECTION II – COVERED AUTOS LIABILITY COVERAGE, A. COVERAGE, 1. Who Is An Insured** of the Business Auto Coverage Form and Motor Carrier Coverage Form, and **SECTION I – COVERED AUTOS COVERAGES, D. Covered Autos Liability Coverage, 2. Who Is An Insured** of the Auto Dealers Coverage Form are amended to include the following:

Any person or organization whom you become obligated to include as an additional insured under this policy, as a result of any written contract or written agreement you enter into which requires you to furnish insurance to that person or organization of the type provided by this policy, but only with respect to liability for "bodily injury" or "property damage" caused, in whole or in part, by your use of a covered "auto". However, the insurance

afforded only applies to the extent permitted by law, and will not exceed the lesser of:

- (1) The coverage and/or limits of this policy, or
- (2) The coverage and/or limits required by such written contract or written agreement.

THIS ENDORSEMENT CHANGES THE POLICY. PLEASE READ IT CAREFULLY.

**INSURANCE PRIMARY AS TO CERTAIN ADDITIONAL INSUREDS
AMENDATORY ENDORSEMENT**

Policy Number: 1000686046251 (AOS) & 1000686045251 (MA)

Effective Date: 11/13/2025

Named Insured: Atlas Technical Consultants, Inc

This endorsement modifies the insurance coverage form(s) listed below that have been purchased by you and evidenced as such on the Declarations page. Please read the endorsement and respective policy(ies) carefully.

BUSINESS AUTO COVERAGE FORM

SECTION IV – BUSINESS AUTO CONDITIONS, B. General Conditions, 5. Other Insurance, c., is amended by the addition of the following:

The insurance afforded under this policy to an additional insured will apply as primary insurance for such additional

insured where so required under an agreement executed prior to the date of accident. We will not ask any insurer that has issued other insurance to such additional insured to contribute to the settlement of loss arising out of such accident.

THIS ENDORSEMENT CHANGES THE POLICY. PLEASE READ IT CAREFULLY.

**WAIVER OF TRANSFER OF RIGHTS OF RECOVERY AGAINST
OTHERS TO US (BLANKET WAIVER OF SUBROGATION)
AMENDATORY ENDORSEMENT**

Policy Number: 1000686046251 (AOS) & 1000686045251 (MA)
11/13/2025

Effective Date:

Named Insured: Atlas Technical Consultants, Inc.

This endorsement modifies the insurance coverage form(s) listed below that have been purchased by you and evidenced as such on the Declarations page. Please read the endorsement and respective policy(ies) carefully.

AUTO DEALERS COVERAGE FORM
BUSINESS AUTO COVERAGE FORM
MOTOR CARRIER COVERAGE FORM

A. It is hereby agreed that **SECTION IV – BUSINESS AUTO CONDITIONS, A. Loss Conditions, 5. Transfer Of Rights Of Recovery Against Others To Us** of the Business Auto Coverage Form, and **SECTION V – MOTOR CARRIER CONDITIONS, A. Loss Conditions, 5. Transfer Of Rights Of Recovery Against Others To Us** of the Motor Carrier Coverage Form are deleted in their entirety and replaced with the following:

If any person or organization to or for whom we make payment under this Coverage Form has rights to recover damages from another, those rights are transferred to us. That person or organization must do everything necessary to secure our rights and must do nothing after "accident" or "loss" to impair them.

However, we waive any right of recovery we may have against any person or organization to the extent required of you by a written contract executed prior to any "accident" or "loss", provided that the "accident" or "loss" arises out of the operations contemplated by such contract. The waiver applies only to the person or organization designated in such contract.

B. It is hereby agreed that **SECTION IV – CONDITIONS, A. Loss Conditions, 5. Transfer Of Rights Of Recovery Against Others To Us** of the Auto Dealers Coverage Form is deleted in its entirety and replaced by the following:

If any person or organization to or for whom we make payment under this Coverage Form has rights to recover damages from another, those rights are transferred to us. That person or organization must do everything necessary to secure our rights and must do nothing after "accident" or "loss" to impair them.

However, we waive any right of recovery we may have against any person or organization to the extent required of you by a written contract executed prior to any "accident" or "loss", provided that the "accident" or "loss" arises out of the operations contemplated by such contract. The waiver applies only to the person or organization designated in such contract.

This condition does not apply to damages under Paragraph **C. Locations And Operations Medical Payments Coverage** of Section **II – General Liability Coverages**.

All other terms and conditions of this Policy remain unchanged.

THIS ENDORSEMENT CHANGES THE POLICY. PLEASE READ IT CAREFULLY.

**EARLY NOTICE OF CANCELLATION PROVIDED BY US
AMENDATORY ENDORSEMENT**

Policy Number: 1000686046251 (AOS) & 1000686045251 (MA) **Effective Date:**
11/13/2025

Named Insured: Atlas Technical Consultants, Inc

This endorsement modifies the insurance provided under the following:

COMMERCIAL AUTO COVERAGE PART

It is hereby agreed that except with respect to fraud, material misrepresentation, or a material change in the nature or extent of the risk insured against, the number of days required for notice of cancellation, as provided in **COMMON POLICY CONDITIONS, A. Cancellation**, sub-paragraph 2., or as amended by an applicable state cancellation endorsement is increased to the number of days shown below:

- a. (60)* days before the effective date of cancellation if we cancel for nonpayment of premium; or
- b. (60)* days before the effective date of cancellation if we cancel for any other reason.

*** The notice period provided shall not be less than that required by applicable state law.**

WAIVER OF OUR RIGHT TO RECOVER FROM OTHERS ENDORSEMENT

We have the right to recover our payments from anyone liable for an injury covered by this policy. We will not enforce our right against the person or organization named in the Schedule. (This agreement applies only to the extent that you perform work under a written contract that requires you to obtain this agreement from us.)

This agreement shall not operate directly or indirectly to benefit anyone not named in the Schedule.

Schedule

Any person or organization to whom you become obligated to waive your rights of recovery against, under any contract or agreement you enter into prior to the occurrence of loss.

This endorsement changes the policy to which it is attached and is effective on the date issued unless otherwise stated.

(The information below is required only when this endorsement is issued subsequent to preparation of the policy.)

Endorsement Effective: 11/13/2025

Policy No.: 100 1243446 00 (AOS) & 100 1243447 00

Endorsement No.:

Insured: Atlas Technical Consultants, Inc

Premium:

Insurance Company: Starr Indemnity & Liability Company

Countersigned by: _____



Starr Surplus Lines Insurance Company

Other Insurance – Primary and Noncontributory for Additional Insured Amendatory Endorsement

Policy Number: 1000338002251 **Effective Date:** 11/13/2025 at 12:01 A.M.

Named Insured: Atlas Technical Consultants, Inc.

This endorsement modifies insurance provided under the following:

EXCESS LIABILITY POLICY

It is hereby agreed that **SECTION IV. CONDITIONS, I. Other Insurance** is deleted in its entirety and replaced by the following:

I. Other Insurance

If other insurance applies to "Ultimate Net Loss" that is also covered by this Policy, this Policy will apply excess of, and will not contribute to, the other insurance. Nothing herein will be construed to make this Policy subject to the terms, conditions and limitations of such other insurance. However, other insurance does not include:

1. "Underlying Insurance";
2. Insurance that is specifically written as excess over this Policy; or
3. Insurance held by a person(s) or organization(s) qualifying as an additional insured in "Underlying Insurance," but only when the written contract or agreement that mandates such additional insured status:
 - a. Requires a specific limit of insurance that is in excess of the Underlying Limits of Insurance;
 - b. Requires that your insurance be primary and not contribute with that of the additional insured; and
 - c. Is executed prior to the loss.

In such case as described in subparagraph 3. above, we shall not seek contribution from the additional insured's primary or excess insurance for which they are a named insured for amounts payable under this insurance.

The Limits of Insurance afforded the additional insured pursuant to subparagraph 3. above shall be the lesser of the following:

- a. The minimum limits of insurance required in the contract or agreement; or
- b. The Limits of Insurance shown in the Declarations of this Policy.

Other insurance includes any type of self-insurance or other mechanism by which an Insured arranges for the funding of legal liabilities.

SL-373 (0219)

Page 1 of 1

THIS ENDORSEMENT CHANGES THE POLICY. PLEASE READ IT CAREFULLY.

NOTICE OF CANCELLATION – CERTIFICATE HOLDERS

Policy Number: 1000068086251 **Effective Date:** 11/13/2025 at 12:01 A.M.

Named Insured: Atlas Technical Consultants, Inc.

This endorsement modifies the insurance coverage form(s) that have been purchased by you and evidenced as such on the Declarations page. Please read the endorsement and respective policy(ies) carefully.

All Coverage Parts included in this policy are subject to the following conditions.

It is agreed that in the event the insurer cancels the policy for any reason other than non-payment of premium, the insurer will provide sixty (60) days' notice of cancellation to the retail broker designated below, who in turn assumes any and all responsibility to notify the certificate holders.

The retail broker will mail or deliver to the appropriate certificate holders a copy of the written notice of cancellation that the insurer has provided.

The retail broker's notification of cancellation of the policy is intended as a courtesy only. The retail broker's failure to provide such notification to the person(s) or organization(s) will not extend any policy cancellation date nor impact or negate any cancellation of the policy. This endorsement does not entitle the certificate holders to any benefit, rights or protection under this policy.

The retail broker's failure to provide this notice of cancellation to the certificate holders will not impose liability of any kind upon the insurer or the retail broker.

For purposes of this endorsement, retail broker means Lockton Insurance Brokers, LLC.

THIS ENDORSEMENT CHANGES THE POLICY. PLEASE READ IT CAREFULLY.

**ADDITIONAL INSURED, PRIMARY AND NONCONTRIBUTORY AND
WAIVER OF SUBROGATION AMENDATORY ENDORSEMENT**

Policy Number: 1000068086251

Effective Date: 11/13/2025 at 12:01 A.M.

Named Insured: Atlas Technical Consultants, Inc

This endorsement modifies the insurance coverage form(s) listed below that have been purchased by you and evidenced as such on the Declarations page. Please read the endorsement and respective policy(ies) carefully.

CONTRACTORS' POLLUTION LIABILITY COVERAGE FORM
PROFESSIONAL LIABILITY COVERAGE FORM
SITE POLLUTION LIABILITY COVERAGE FORM

SCHEDULE

Where Required By Written Contract

It is hereby agreed as follows:

1. SECTION II - WHO IS AN INSURED is amended to include the following:

a. Any person(s) or organization(s) that you are required to include as an additional insured under this policy by written contract or written agreement or that is listed in the **SCHEDULE** above is an additional insured under this policy. Such additional insured status applies only with respect to liability arising out of "your work" for or on behalf of that person(s) or organization(s) pursuant to such written contract or written agreement.

However, the insurance afforded to such additional insured(s):

(1) only applies to the extent permitted by law; and
(2) will not be broader than that which you are required by the written contract or written agreement to provide for such additional insured(s).

b. With respect to the insurance afforded to the additional insured(s), **SECTION III – LIMITS OF INSURANCE** is amended to include the following:

The most we will pay on behalf of the additional insured(s) is the amount of insurance:

(1) Required by the contract or agreement; or
(2) Available under the applicable limits of insurance;
whichever is less.

This endorsement shall not increase the applicable limits of insurance.

2. SECTION IV – CONDITIONS, 4. Other Insurance is amended to include the following, which supersedes any provision to the contrary:

Primary And Noncontributory Insurance

This insurance is primary to, and will not seek contribution from, any other insurance available to an additional insured under your policy provided that:

- a. The additional insured is a Named Insured under such other insurance; and
- b. You have agreed in writing in a contract or agreement that this insurance would be primary and would not seek contribution from any other insurance available to the additional insured.

3. SECTION IV – CONDITIONS, 7. Transfer Of Rights Of Recovery Against Others To Us is amended to include the following:

We waive any right of recovery against any person or organization, because of any payment we make under this policy, to whom the insured has waived its right of recovery in a written contract or agreement. Such waiver by us applies only to the extent that the insured has waived its right of recovery against such person or organization prior to loss.

All other terms and conditions of the policy remain unchanged.

STARR INDEMNITY & LIABILITY COMPANY**A MEMBER OF STARR COMPANIES**

Dallas, TX 1-866-519-2522

WORKERS COMPENSATION AND EMPLOYERS LIABILITY INSURANCE POLICY**WC 99 06 18**

(Ed.)

AMENDMENT – 30 DAY NOTICE OF CANCELLATION FOR THIRD PARTIES

We agree to give thirty (30) days' notice of cancellation to the following certificate holder(s) in the event that we cancel the policy for any reason other than non-payment of premium:

SCHEDULE

ON FILE WITH COMPANY
 NO PHYSICAL LOCATION
 NO PHYSICAL LOCATION
 CO

We will endeavor to provide advice of cancellation (the "Advice") to the certificate holders listed in the schedule by e-mail. Certificate holders include only those entities for which thirty (30) days' notice of cancellation is required by an "insured contract" but only with respect to an entity for which you are directly or indirectly performing your work.

This advance notification of a pending cancellation of coverage is intended as a courtesy only. Our failure to provide such Advice will neither extend the policy cancellation nor negate cancellation of the policy; nor will such failure result in obligation or liability of any kind upon us, our agents or representatives.

This endorsement does not affect, in any way, coverage provided under this policy, the cancellation of this policy or the effective date of cancellation.

This endorsement changes the policy to which it is attached and is effective on the date issued unless otherwise stated.

(The information below is required only when this endorsement is issued subsequent to preparation of the policy.)

Endorsement Effective: 11/13/2025

Policy No.: 100 1243446

Endorsement No.: 0001

Insured: ATLAS TECHNICAL CONSULTANTS, I

Premium: _____

Insurance Company: STARR INDEMNITY & LIABILITY CO

Countersigned by: _____


WC 99 06 18

(Ed. 4-15)

STARR INDEMNITY & LIABILITY COMPANY**A MEMBER OF STARR COMPANIES**

Dallas, TX 1-866-519-2522

WORKERS COMPENSATION AND EMPLOYERS LIABILITY INSURANCE POLICY**WC 99 06 18**

(Ed.)

AMENDMENT – 30 DAY NOTICE OF CANCELLATION FOR THIRD PARTIES

We agree to give thirty (30) days' notice of cancellation to the following certificate holder(s) in the event that we cancel the policy for any reason other than non-payment of premium:

SCHEDULE

ON FILE WITH COMPANY
 NO PHYSICAL LOCATION
 NO PHYSICAL LOCATION
 CO

We will endeavor to provide advice of cancellation (the "Advice") to the certificate holders listed in the schedule by e-mail. Certificate holders include only those entities for which thirty (30) days' notice of cancellation is required by an "insured contract" but only with respect to an entity for which you are directly or indirectly performing your work.

This advance notification of a pending cancellation of coverage is intended as a courtesy only. Our failure to provide such Advice will neither extend the policy cancellation nor negate cancellation of the policy; nor will such failure result in obligation or liability of any kind upon us, our agents or representatives.

This endorsement does not affect, in any way, coverage provided under this policy, the cancellation of this policy or the effective date of cancellation.

This endorsement changes the policy to which it is attached and is effective on the date issued unless otherwise stated.

(The information below is required only when this endorsement is issued subsequent to preparation of the policy.)

Endorsement Effective: 11/13/2025

Policy No.: 100 1243447

Endorsement No.: 0001

Insured: ATLAS TECHNICAL CONSULTANTS

Premium: _____

Insurance Company: STARR INDEMNITY & LIABILITY CO

Countersigned by: _____


WC 99 06 18

(Ed. 4-15)



Department of Administration
Purchasing Division
2019 Washington Street East
Post Office Box 50130
Charleston, WV 25305-0130

**State of West Virginia
Centralized Expression of Interest
Architect/Engr**

Proc Folder:	1828803	Reason for Modification:	
Doc Description: EOI: OER- Ravenswood PCE and Vienna Tetrachloroethene			
Proc Type: Central Purchase Order			
Date Issued	Solicitation Closes	Solicitation No	Version
2025-12-15	2026-01-13 13:30	CEOI 0313 DEP2600000003	1

BID RECEIVING LOCATION

BID CLERK
DEPARTMENT OF ADMINISTRATION
PURCHASING DIVISION
2019 WASHINGTON ST E
CHARLESTON WV 25305
US

VENDOR

Vendor Customer Code: 189555

Vendor Name : ATC Group Services, LLC dba Atlas Technical Consultants, LLC

Address :

Street : 270 William Pitt Way

City : Pittsburgh

State : PA

Country : U.S.A.

Zip : 15238

Principal Contact : Jeff Rossi, Branch Manager

Vendor Contact Phone: 412-826-3120

Extension:

FOR INFORMATION CONTACT THE BUYER

Joseph (Josh) E Hager III
(304) 558-2306
joseph.e.hageriii@wv.gov

**Vendor
Signature X** *Kelly Hurstak*

FEIN# 460399408

DATE 1/13/2026

All offers subject to all terms and conditions contained in this solicitation

ADDITIONAL INFORMATION

The Acquisitions and Contract Administration Section of the Purchasing Division is soliciting Expression(s) of Interest for the West Virginia Department of Environmental Protection Office of Environmental Remediation from qualified firms to provide architectural/engineering services as defined herein for Maintaining and troubleshooting environmental treatment systems as appropriate, conducting technical performance investigations and reporting, drafting periodic status reports that include detailed descriptions, analytical data, statistical evaluations and/or technical figures as appropriate, conducting environmental sampling including, but not limited to groundwater and vapor media, data validation, investigation-derived waste ("IDW") characterization and disposal, oversight activities, or any other necessary activity as described in future work directives per the attached specifications and terms and conditions.

INVOICE TO	SHIP TO
ENVIRONMENTAL PROTECTION OFFICE OF ENVIRONMENTAL REMEDIATION 601 57TH ST SE CHARLESTON US	STATE OF WEST VIRGINIA VARIOUS LOCATIONS AS INDICATED BY ORDER No City US

Line	Comm Ln Desc	Qty	Unit Issue
1	EOI Ravenswood PCE (OER)		

Comm Code	Manufacturer	Specification	Model #
81100000			

Extended Description:

EOI Ravenswood PCE (OER)

INVOICE TO	SHIP TO
ENVIRONMENTAL PROTECTION OFFICE OF ENVIRONMENTAL REMEDIATION 601 57TH ST SE CHARLESTON US	STATE OF WEST VIRGINIA VARIOUS LOCATIONS AS INDICATED BY ORDER No City US

Line	Comm Ln Desc	Qty	Unit Issue
2	EOI Vienna Tetrachloroethene (OER)		

Comm Code	Manufacturer	Specification	Model #
81100000			

Extended Description:

EOI Vienna Tetrachloroethene (OER)

SCHEDULE OF EVENTS

Line	Event	Event Date
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EXPRESSION OF INTEREST

Ravenswood PCE and Vienna Tetrachloroethene

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- 1. Table of Contents**
- 2. Section One: General Information**
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- 4. Section Three: Project Specifications**
- 5. Section Four: Vendor Proposal, Evaluation, and Award**
- 6. Section Five: Terms and Conditions**
- 7. Certification and Signature Page**

SECTION ONE: GENERAL INFORMATION

- 1. PURPOSE:** The Acquisitions and Contract Administration Section of the Purchasing Division (“Purchasing Division”) is soliciting Expression(s) of Interest (“EOI”) for the West Virginia Department of Environmental Protection Office of Environmental Remediation (“WVDEP,” “OER,” or “Agency”), from qualified firms to provide architectural/engineering services (“Vendors”) as defined herein.

This EOI is for two separate CERCLA (Comprehensive Environmental Response, Compensation, and Liability Act of 1980) project sites requiring both similar and unique attention. While they are separate sites with their own specific needs, both project sites utilize similar CERCLA remedies (pump and treat via air sparging and soil vapor extraction) for dry cleaner sources of groundwater contamination. Each project site will be treated as separate, and each project site has its own WVDEP Project Manager that will serve as the official point of contact.

Engineering capabilities are required due to the complexity of the remedial systems and the potential requirements to not only troubleshoot the complex systems as they are, but also to provide recommendations on optimization of existing systems and/or submitting ideas for subsequent remedies that may or may not be similar in nature to the existing systems.

- 2. PROJECT:** The purpose of the projects for which EOIs are being solicited is to provide professional environmental services including, but not limited to: Maintaining and troubleshooting environmental treatment systems as appropriate, conducting technical performance investigations and reporting, drafting periodic status reports that include detailed descriptions, analytical data, statistical evaluations and/or technical figures as appropriate, conducting environmental sampling including, but not limited to groundwater and vapor media, data validation, investigation-derived waste (“IDW”) characterization and disposal, oversight activities, or any other necessary activity as described in future work directives (“Project”).

EXPRESSION OF INTEREST

Ravenswood PCE and Vienna Tetrachloroethene

SECTION TWO: INSTRUCTIONS TO VENDORS SUBMITTING EOI

In order to be considered for this contract, the Vendor must provide the following information:

1. Completed Consultant Qualifications Questionnaire
2. A *Conflict-of-Interest* disclosure, as per the requirements of 40 CFR Part 35.6550 (Subpart O).
3. An example of technical writing with figures and tables.
4. A summary of the following:
 - a. Corporate/Personal Experience as it relates to the potential tasks outlined in Section Three of this EOI.
 - b. Uniquely Qualifying Examples or Qualifying Information.
 - i. This section can include unique projects, circumstances, sampling challenges, or other non-routine situations.
 - c. Proposed Project Management Plan (individual plan for both project sites)
 - i. This may include how the Vendor will approach the various tasks specifically or generically, with the following elements required to be included:
 1. Regular maintenance of antiquated and highly technical remediation systems.
 2. Environmental sampling
 3. Reporting
 4. Technical investigations and assistance as directed.
 - ii. This section should include current project capacity and anticipated capabilities to respond in an expedited and timely manner. Note that both project sites require emergency response capabilities every day of the year.
 - iii. This section should include all Vendor office locations and number of staff per location.
 - d. Key Personnel Available
 - e. Product Quality Control/Project Cost Control
 - f. Experience (years and/or number of projects) in which Vendor and/or Vendor's firm utilized WVDEP Standard Operating Procedures.
 - g. Experience (years and/or number of projects) in which Vendor and/or Vendor's firm utilized WVDEP Quality Assurance Program Plan.
 - h. Experience (years and/or number of projects) in which Vendor and/or Vendor's firm has been involved with WVDEP remediation programs (i.e. CERCLA, RCRA Corrective Action, VRP, UECA-LUST, Brownfields).

INSTRUCTIONS TO VENDORS SUBMITTING BIDS

1. REVIEW DOCUMENTS THOROUGHLY: The attached documents contain a solicitation for bids. Please read these instructions and all documents attached in their entirety. These instructions provide critical information about requirements that if overlooked could lead to disqualification of a Vendor's bid. All bids must be submitted in accordance with the provisions contained in these instructions and the Solicitation. Failure to do so may result in disqualification of Vendor's bid.

2. MANDATORY TERMS: The Solicitation may contain **mandatory** provisions identified by the use of the words "**must**," "**will**," and "**shall**." Failure to comply with a mandatory term in the Solicitation will result in bid disqualification.

3. PRE-BID MEETING: The item identified below shall apply to this Solicitation.

A pre-bid meeting will not be held prior to bid opening

A **MANDATORY PRE-BID** meeting will be held at the following place and time:

All Vendors submitting a bid must attend the **mandatory** pre-bid meeting. Failure to attend the **mandatory** pre-bid meeting shall result in disqualification of the Vendor's bid. No one individual is permitted to represent more than one vendor at the pre-bid meeting. Any individual that does attempt to represent two or more vendors will be required to select one vendor to which the individual's attendance will be attributed. The vendors not selected will be deemed to have not attended the pre-bid meeting unless another individual attended on their behalf.

An attendance sheet provided at the pre-bid meeting shall serve as the official document verifying attendance. Any person attending the pre-bid meeting on behalf of a Vendor must list on the attendance sheet his or her name and the name of the Vendor he or she is representing. It is the Vendor's responsibility to locate the attendance sheet and provide the required information. Failure to complete the attendance sheet as required may result in disqualification of Vendor's bid.

Vendors who arrive after the starting time but prior to the end of the pre-bid will be permitted to sign in but are charged with knowing all matters discussed at the pre-bid.

Any discussions or answers to questions at the pre-bid meeting are preliminary in nature and are non-binding. Official and binding answers to questions will be published in a written addendum to the Solicitation prior to bid opening.

4. VENDOR QUESTION DEADLINE: Vendors may submit questions relating to this Solicitation to the Purchasing Division. Questions must be submitted in writing. All questions **must be submitted on or before the date listed below and to the address listed below to be considered.** A written response will be published in a Solicitation addendum if a response is possible and appropriate. Non-written discussions, conversations, or questions and answers regarding this Solicitation are preliminary in nature and are non-binding.

Submitted emails should have the solicitation number in the subject line. Question

Submission Deadline:

Submit Questions to:

2019 Washington Street, East Charleston, WV 25305

Fax: (304) 558-3970

Email:

5. VERBAL COMMUNICATION: Any verbal communication between the Vendor and any State personnel is not binding, including verbal communication at the mandatory pre-bid conference. Only information issued in writing and added to the Solicitation by an official written addendum by the Purchasing Division is binding.

6. BID SUBMISSION: All bids must be submitted on or before the date and time of the bid opening listed in section 7 below. Vendors can submit bids electronically through wvOASIS, in paper form delivered to the Purchasing Division at the address listed below either in person or by courier, or in facsimile form by faxing to the Purchasing Division at the number listed below. Notwithstanding the foregoing, the Purchasing Division may prohibit the submission of bids electronically through wvOASIS at its sole discretion. Such a prohibition will be contained and communicated in the wvOASIS system resulting in the Vendor's inability to submit bids through wvOASIS. The Purchasing Division will not accept bids or modification of bids via email.

Bids submitted in paper, facsimile, or via wvOASIS must contain a signature. Failure to submit a bid in any form without a signature will result in rejection of your bid.

A bid submitted in paper or facsimile form should contain the information listed below on the face of the submission envelope or fax cover sheet. Otherwise, the bid may be rejected by the Purchasing Division.

VENDOR NAME:

BUYER:

SOLICITATION NO.:

BID OPENING DATE:

BID OPENING TIME:

FAX NUMBER:

Any bid received by the Purchasing Division staff is considered to be in the possession of the Purchasing Division and will not be returned for any reason.

Bid Delivery Address and Fax Number:

Department of Administration, Purchasing Division 2019 Washington Street East
Charleston, WV 25305-0130
Fax: 304-558-3970

7. BID OPENING: Bids submitted in response to this Solicitation will be opened at the location identified below on the date and time listed below. Delivery of a bid after the bid opening date and time will result in bid disqualification. For purposes of this Solicitation, a bid is considered delivered when confirmation of delivery is provided by wvOASIS (in the case of electronic submission) or when the bid is time stamped by the official Purchasing Division time clock (in the case of hand delivery or via delivery by mail).

Bid Opening Date and Time:

Bid Opening Location:
Department of Administration, Purchasing Division
2019 Washington Street East
Charleston, WV 25305-0130

8. ADDENDUM ACKNOWLEDGEMENT: Changes or revisions to this Solicitation will be made by an official written addendum issued by the Purchasing Division. Vendor should acknowledge receipt of all addenda issued with this Solicitation by completing an Addendum Acknowledgement Form. Failure to acknowledge addenda may result in bid disqualification. The addendum acknowledgement should be submitted with the bid to expedite document processing.

9. BID FORMATTING: Vendor should type or electronically enter the information onto its bid to prevent errors in the evaluation. Failure to type or electronically enter the information may result in bid disqualification.

10. ALTERNATE MODEL OR BRAND: Unless the box below is checked, any model, brand, or specification listed in this Solicitation establishes the acceptable level of quality only and is not intended to reflect a preference for, or in any way favor, a particular brand or vendor. Vendors may bid alternates to a listed model or brand provided that the alternate is at least equal to the model or brand and complies with the required specifications. The equality of any alternate being bid shall be determined by the State at its sole discretion. Any Vendor bidding an alternate model or brand **shall** clearly identify the alternate items in its bid and should include manufacturer's specifications, industry literature, and/or any other relevant documentation demonstrating the equality of the alternate items. Failure to provide information for alternate items **may** be grounds for rejection of a Vendor's bid.

This Solicitation is based upon a standardized commodity established under W. Va. Code § 5A-3-61. Vendors are expected to bid the standardized commodity identified. Failure to bid the standardized commodity will result in your firm's bid being rejected.

11. COMMUNICATION LIMITATIONS: In accordance with West Virginia Code of State Rules §148-1-6.6.2, communication with the State of West Virginia or any of its employees regarding this Solicitation during the solicitation, bid, evaluation or award periods, except through the Purchasing Division, is strictly prohibited without prior Purchasing Division approval. Purchasing Division approval for such communication is implied for all agency delegated and exempt purchases.

12. REGISTRATION: Prior to Contract award, the apparent successful Vendor **must** be properly registered with the West Virginia Purchasing Division and must have paid the \$125 fee, if applicable.

13. UNIT PRICE: Unit prices **shall** prevail in cases of a discrepancy in the Vendor's bid.

14. PREFERENCE: Vendor Preference may be requested in purchases of motor vehicles or construction and maintenance equipment and machinery used in highway and other infrastructure projects. Any request for preference must be submitted in writing with the bid, must specifically identify the preference requested with reference to the applicable subsection of West Virginia Code § 5A-3-37, and must include with the bid any information necessary to evaluate and confirm the applicability of the requested preference. A request form to help facilitate the request can be found at: www.state.wv.us/admin/purchase/vrc/Venpref.pdf.

15A. RECIPROCAL PREFERENCE: The State of West Virginia applies a reciprocal preference to all solicitations for commodities and printing in accordance with W. Va. Code § 5A-3-37(b). In effect, non-resident vendors receiving a preference in their home states, will see that same preference granted to West Virginia resident vendors bidding against them in West Virginia. Any request for reciprocal preference must include with the bid any information necessary to evaluate and confirm the applicability of the preference. A request form to help facilitate the request can be found at: www.state.wv.us/admin/purchase/vrc/Venpref.pdf.

15. SMALL, WOMEN-OWNED, OR MINORITY-OWNED BUSINESSES:

For any solicitations publicly advertised for bid, in accordance with West Virginia Code §5A-3-37 and W. Va. CSR § 148-22-9, any non-resident vendor certified as a small, women-owned, or minority-owned business under W. Va. CSR § 148-22-9 shall be provided the same preference made available to any resident vendor. Any non-resident small, women-owned, or minority- owned business must identify itself as such in writing, must submit that writing to the Purchasing Division with its bid, and must be properly certified under W. Va. CSR § 148-22-9 prior to contract award to receive the preferences made available to resident vendors.

16. WAIVER OF MINOR IRREGULARITIES: The Director reserves the right to waive minor irregularities in bids or specifications in accordance with West Virginia Code of State Rules § 148-1-4.7.

17. ELECTRONIC FILE ACCESS RESTRICTIONS: Vendor must ensure that its submission in wvOASIS can be accessed and viewed by the Purchasing Division staff immediately upon bid opening. The Purchasing Division will consider any file that cannot be immediately accessed and viewed at the time of the bid opening (such as, encrypted files, password protected files, or incompatible files) to be blank or incomplete as context requires and are therefore unacceptable. A vendor will not be permitted to unencrypt files, remove password protections, or resubmit documents after bid opening to make a file viewable if those documents are required with the bid. A Vendor may be required to provide document passwords or remove access restrictions to allow the Purchasing Division to print or electronically save documents provided that those documents are viewable by the Purchasing Division prior to obtaining the password or removing the access restriction.

18. NON-RESPONSIBLE: The Purchasing Division Director reserves the right to reject the bid of any vendor as Non-Responsible in accordance with W. Va. Code of State Rules § 148-1- 5.3, when the Director determines that the vendor submitting the bid does not have the capability to fully perform or lacks the integrity and reliability to assure good-faith performance.”

19. ACCEPTANCE/REJECTION: The State may accept or reject any bid in whole, or in part in accordance with W. Va. Code of State Rules § 148-1-4.6. and § 148-1-6.3.”

20. WITH THE BID REQUIREMENTS: In instances where these specifications require documentation or other information with the bid, and a vendor fails to provide it with the bid, the Director of the Purchasing Division reserves the right to request those items after bid opening and prior to contract award pursuant to the authority to waive minor irregularities in bids or specifications under W. Va. CSR § 148-1-4.7. This authority does not apply to instances where state law mandates receipt with the bid.

21. EMAIL NOTIFICATION OF AWARD: The Purchasing Division will attempt to provide bidders with e-mail notification of contract award when a solicitation that the bidder participated in has been awarded. For notification purposes, bidders must provide the Purchasing Division with a valid email address in the bid response. Bidders may also monitor wvOASIS or the Purchasing Division's website to determine when a contract has been awarded.

22. EXCEPTIONS AND CLARIFICATIONS: The Solicitation contains the specifications that **shall** form the basis of a contractual agreement. **Vendor shall clearly mark any exceptions, clarifications, or other proposed modifications in its bid.** Exceptions to, clarifications of, or modifications of a requirement or term and condition of the Solicitation may result in bid disqualification.

EXPRESSION OF INTEREST

Ravenswood PCE and Vienna Tetrachloroethene

SECTION THREE: PROJECT SPECIFICATIONS

1. Site Location and Description

1.1. Ravenswood PCE

The Ravenswood PCE Superfund site (Ravenswood PCE) is a National Priorities List (Superfund) site located in the City of Ravenswood, Jackson County, West Virginia. The site is generally comprised of the downtown area of Ravenswood, which is underlain by groundwater contaminated with tetrachloroethylene, which is also known as perchloroethylene or PCE. The contamination is known to have emanated from at least one former dry cleaner location. The Superfund Enterprise Management System (SEMS) Identification Number (ID) for the site is WVSFN0305428.

The area encompassing the Site is approximately three miles long by one mile wide. It is bound on its western edge by the Ohio River. Sandy Creek, which flows into the Ohio River, bounds the City to the south. The plume extends from the intersection of Broadway Street and Walnut Street approximately 1,400 feet northeast to the City of Ravenswood water supply well field located adjacent to Virginia Street. The City of Ravenswood water supply well field currently includes seven production wells (PW-1 to PW-7), which supply water to approximately 6,000 people. There are currently two operational treatment units (TS-1 and TS-2). Each of the treatment units involves an Air Sparge/Soil Vapor Extraction (AS/SVE) system.

1.2. Vienna Tetrachloroethene

The Vienna Tetrachloroethene National Priorities List (Superfund) site (Vienna PCE) occupies an area of approximately 82 acres in the City of Vienna, Wood County, West Virginia. There are currently two operational treatment units (TU-1 and TU-3) as well as a standby unit (TU-2) whose purpose is to serve as a final sparge curtain for the City's production wells; historically, a fourth unit operated in the vicinity of the Busy Bee Cleaners (TU-4), but that unit was decommissioned and relocated to the Ravenswood PCE Superfund Site and currently is in operation as the Ravenswood Treatment System 1 (TS-1). The SEMS ID for the site is WVD988798401.

- 2. Project and Goals:** As a condition of the Superfund State Contract for both the Ravenswood PCE and Vienna Tetrachloroethene sites, continual Operations and Maintenance (O&M) activities are required until the Remedial Action Objective(s) (RAOs) are met. General requirements are highlighted in Section One and with specifics discussed more during the Oral Presentations/Interviews.

EXPRESSION OF INTEREST

Ravenswood PCE and Vienna Tetrachloroethene

- 3. Oral Presentations/Interviews:** The Agency will conduct individual interviews with the three vendors that are determined to be the most qualified to provide the required service. During oral presentations/interviews, vendors may not alter or add to their submitted proposal, but only clarify information already submitted. Materials and information to be discussed during oral interviews include the following:
 - 3.1. Any information submitted through this solicitation.
 - 3.2. Any information or experience alluded to, either explicitly or implicitly, in the information submitted through this solicitation.
 - 3.3. Anticipated site work and proposed methods of approach.
 - 3.4. Any other information, as deemed by WVDEP, that may be relevant to site work.

EXPRESSION OF INTEREST

Ravenswood PCE and Vienna Tetrachloroethene

SECTION FOUR: VENDOR PROPOSAL, EVALUATION, & AWARD

1. **Economy of Preparation:** EOIs should be prepared simply and economically, providing a straight-forward, concise description of the firm's abilities to satisfy the requirements and goals and objectives of the EOI. Emphasis should be placed on completeness and clarity of content. The response sections should be labeled for ease of evaluation.
2. **EOI MUST NOT CONTAIN PRICE INFORMATION:** The State shall select the best value solution according to W. Va. Code §5G-1-3. In accordance with Code requirements, no "price" or "fee" information is permitted in the Vendor's EOI response.
3. **Evaluation and Award Process:** Expressions of Interest for projects estimated to cost \$250,000 or more will be evaluated and awarded in accordance with W.Va. Code §5G-1-3. That Code section requires the following related to evaluation and award:
 - 3.1. **Selection Committee Evaluation and Negotiation:** A committee comprised of three to five representatives of the agency initiating the request shall:
 - 3.1.1. Evaluate the statements of qualifications and performance data and other material submitted by the interested firms and select three firms which in their opinion are the best qualified to perform the desired service; and
 - 3.1.2. Conduct interviews with each of the three firms selected; and
 - 3.1.3. Rank the three selected firms in order of preference; and
 - 3.1.4. Commence scope of service and price negotiations with the highest qualified professional firm.

If negotiations are successful, the contract documents will be forwarded to the WV Purchasing Division for review and approval, and then to the WV Attorney General's office for review and approval as to form. Once approved, a formal contract will be issued to the Vendor.

Should the agency be unable to negotiate a satisfactory contract with the professional firm considered to be the most qualified at a fee determined to be fair and reasonable, the agency will then commence negotiations with the second most qualified firm, and so on, until an agreement is reached or the solicitation is cancelled.

EXPRESSION OF INTEREST

Ravenswood PCE and Vienna Tetrachloroethene

3.2. **Three Firm Evaluation Rankings:** The Agency will evaluate the three firms that have been determined most qualified to perform the desired service. The evaluation criteria are defined in the Procurement Specifications section and based on a 100-point total score. Points shall be assigned based upon the Vendor's response to the evaluation criteria as follows:

• Understanding the Project Scope	20 Points Possible
• Relevant Experience and Technical Ability	20 Points Possible
• Available Resources	
○ Current Staffing	
○ Location of Offices (and relevant headcounts)	
○ Current and Future Workload Commitments	20 Points Possible
• Experience with WVDEP and EPA (CERCLA & NCP) Guidance Documents	
○ Standard Operating Procedures (SOPs)	
○ Quality Assurance Program Plan (QAPrP)	20 Points Possible
• <u>Oral Interview</u>	<u>20 Points Possible</u>
	Total
	100

EXPRESSION OF INTEREST

Ravenswood PCE and Vienna Tetrachloroethene

SECTION FIVE: TERMS AND CONDITIONS

Terms and conditions begin on the next page.

GENERAL TERMS AND CONDITIONS:

1. CONTRACTUAL AGREEMENT: Issuance of an Award Document signed by the Purchasing Division Director, or his designee, and approved as to form by the Attorney General's office constitutes acceptance by the State of this Contract made by and between the State of West Virginia and the Vendor. Vendor's signature on its bid, or on the Contract if the Contract is not the result of a bid solicitation, signifies Vendor's agreement to be bound by and accept the terms and conditions contained in this Contract.

2. DEFINITIONS: As used in this Solicitation/Contract, the following terms shall have the meanings attributed to them below. Additional definitions may be found in the specifications included with this Solicitation/Contract.

2.1. "Agency" or "Agencies" means the agency, board, commission, or other entity of the State of West Virginia that is identified on the first page of the Solicitation or any other public entity seeking to procure goods or services under this Contract.

2.2. "Bid" or "Proposal" means the vendors submitted response to this solicitation.

2.3. "Contract" means the binding agreement that is entered into between the State and the Vendor to provide the goods or services requested in the Solicitation.

2.4. "Director" means the Director of the West Virginia Department of Administration, Purchasing Division.

2.5. "Purchasing Division" means the West Virginia Department of Administration, Purchasing Division.

2.6. "Award Document" means the document signed by the Agency and the Purchasing Division, and approved as to form by the Attorney General, that identifies the Vendor as the contract holder.

2.7. "Solicitation" means the official notice of an opportunity to supply the State with goods or services that is published by the Purchasing Division.

2.8. "State" means the State of West Virginia and/or any of its agencies, commissions, boards, etc. as context requires.

2.9. "Vendor" or "Vendors" means any entity submitting a bid in response to the Solicitation, the entity that has been selected as the lowest responsible bidder, or the entity that has been awarded the Contract as context requires.

3. CONTRACT TERM; RENEWAL; EXTENSION: The term of this Contract shall be determined in accordance with the category that has been identified as applicable to this Contract below:

Term Contract

Initial Contract Term: The Initial Contract Term will be for a period of one (1) year. The Initial Contract Term becomes effective on the effective start date listed on the first page of this Contract, identified as the State of West Virginia contract cover page containing the signatures of the Purchasing Division, Attorney General, and Encumbrance clerk (or another page identified as _____), and the Initial Contract Term ends on the effective end date also shown on the first page of this Contract.

Renewal Term: This Contract may be renewed upon the mutual written consent of the Agency, and the Vendor, with approval of the Purchasing Division and the Attorney General's office (Attorney General approval is as to form only). Any request for renewal should be delivered to the Agency and then submitted to the Purchasing Division thirty (30) days prior to the expiration date of the initial contract term or appropriate renewal term. A Contract renewal shall be in accordance with the terms and conditions of the original contract. Unless otherwise specified below, renewal of this Contract is limited to three (3) successive one (1) year periods or multiple renewal periods of less than one year, provided that the multiple renewal periods do not exceed the total number of months available in all renewal years combined. Automatic renewal of this Contract is prohibited. Renewals must be approved by the Vendor, Agency, Purchasing Division and Attorney General's office (Attorney General approval is as to form only)

Alternate Renewal Term – This contract may be renewed for _____ successive _____ year periods or shorter periods provided that they do not exceed the total number of months contained in all available renewals. Automatic renewal of this Contract is prohibited. Renewals must be approved by the Vendor, Agency, Purchasing Division and Attorney General's office (Attorney General approval is as to form only)

Delivery Order Limitations: In the event that this contract permits delivery orders, a delivery order may only be issued during the time this Contract is in effect. Any delivery order issued within one year of the expiration of this Contract shall be effective for one year from the date the delivery order is issued. No delivery order may be extended beyond one year after this Contract has expired.

Fixed Period Contract: This Contract becomes effective upon Vendor's receipt of the notice to proceed and must be completed within _____ days.

Fixed Period Contract with Renewals: This Contract becomes effective upon Vendor's receipt of the notice to proceed and part of the Contract more fully described in the attached specifications must be completed within _____ days. Upon completion of the work covered by the preceding sentence, the vendor agrees that:

- the contract will continue for _____ years;
- the contract may be renewed for _____ successive _____ year periods or shorter periods provided that they do not exceed the total number of months contained in all available renewals. Automatic renewal of this Contract is prohibited. Renewals must be approved by the Vendor, Agency, Purchasing Division and Attorney General's Office (Attorney General approval is as to form only).

One-Time Purchase: The term of this Contract shall run from the issuance of the Award Document until all of the goods contracted for have been delivered, but in no event will this Contract extend for more than one fiscal year.

Construction/Project Oversight: This Contract becomes effective on the effective start date listed on the first page of this Contract, identified as the State of West Virginia contract cover page containing the signatures of the Purchasing Division, Attorney General, and Encumbrance clerk (or another page identified as _____), and continues until the project for which the vendor is providing oversight is complete.

Other: Contract Term specified in _____

4. AUTHORITY TO PROCEED: Vendor is authorized to begin performance of this contract on the date of encumbrance listed on the front page of the Award Document unless either the box for "Fixed Period Contract" or "Fixed Period Contract with Renewals" has been checked in Section 3 above. If either "Fixed Period Contract" or "Fixed Period Contract with Renewals" has been checked, Vendor must not begin work until it receives a separate notice to proceed from the State. The notice to proceed will then be incorporated into the Contract via change order to memorialize the official date that work commenced.

5. QUANTITIES: The quantities required under this Contract shall be determined in accordance with the category that has been identified as applicable to this Contract below.

Open End Contract: Quantities listed in this Solicitation/Award Document are approximations only, based on estimates supplied by the Agency. It is understood and agreed that the Contract shall cover the quantities actually ordered for delivery during the term of the Contract, whether more or less than the quantities shown.

Service: The scope of the service to be provided will be more clearly defined in the specifications included herewith.

Combined Service and Goods: The scope of the service and deliverable goods to be provided will be more clearly defined in the specifications included herewith.

One-Time Purchase: This Contract is for the purchase of a set quantity of goods that are identified in the specifications included herewith. Once those items have been delivered, no additional goods may be procured under this Contract without an appropriate change order approved by the Vendor, Agency, Purchasing Division, and Attorney General's office.

Construction: This Contract is for construction activity more fully defined in the specifications.

6. EMERGENCY PURCHASES: The Purchasing Division Director may authorize the Agency to purchase goods or services in the open market that Vendor would otherwise provide under this Contract if those goods or services are for immediate or expedited delivery in an emergency. Emergencies shall include, but are not limited to, delays in transportation or an unanticipated increase in the volume of work. An emergency purchase in the open market, approved by the Purchasing Division Director, shall not constitute of breach of this Contract and shall not entitle the Vendor to any form of compensation or damages. This provision does not excuse the State from fulfilling its obligations under a One-Time Purchase contract.

7. REQUIRED DOCUMENTS: All of the items checked in this section must be provided to the Purchasing Division by the Vendor as specified:

LICENSE(S) / CERTIFICATIONS / PERMITS: In addition to anything required under the Section of the General Terms and Conditions entitled Licensing, the apparent successful Vendor shall furnish proof of the following licenses, certifications, and/or permits upon request and in a form acceptable to the State. The request may be prior to or after contract award at the State's sole discretion.

The apparent successful Vendor shall also furnish proof of any additional licenses or certifications contained in the specifications regardless of whether or not that requirement is listed above.

8. INSURANCE: The apparent successful Vendor shall furnish proof of the insurance identified by a checkmark below prior to Contract award. The insurance coverages identified below must be maintained throughout the life of this contract. Thirty (30) days prior to the expiration of the insurance policies, Vendor shall provide the Agency with proof that the insurance mandated herein has been continued. Vendor must also provide Agency with immediate notice of any changes in its insurance policies, including but not limited to, policy cancelation, policy reduction, or change in insurers. The apparent successful Vendor shall also furnish proof of any additional insurance requirements contained in the specifications prior to Contract award regardless of whether that insurance requirement is listed in this section.

Vendor must maintain:

Commercial General Liability Insurance in at least an amount of: \$1,000,000.00 per occurrence.

Automobile Liability Insurance in at least an amount of: \$1,000,000.00 per occurrence.

Professional/Malpractice/Errors and Omission Insurance in at least an amount of: \$1,000,000.00 per occurrence. Notwithstanding the forgoing, Vendor's are not required to list the State as an additional insured for this type of policy.

Commercial Crime and Third Party Fidelity Insurance in an amount of: _____ per occurrence.

Cyber Liability Insurance in an amount of: _____ per occurrence.

Builders Risk Insurance in an amount equal to 100% of the amount of the Contract.

Pollution Insurance in an amount of: _____ per occurrence.

Aircraft Liability in an amount of: _____ per occurrence.

9. WORKERS' COMPENSATION INSURANCE: Vendor shall comply with laws relating to workers compensation, shall maintain workers' compensation insurance when required, and shall furnish proof of workers' compensation insurance upon request.

10. VENUE: All legal actions for damages brought by Vendor against the State shall be brought in the West Virginia Claims Commission. Other causes of action must be brought in the West Virginia court authorized by statute to exercise jurisdiction over it.

11. LIQUIDATED DAMAGES: This clause shall in no way be considered exclusive and shall not limit the State or Agency's right to pursue any other available remedy. Vendor shall pay liquidated damages in the amount specified below or as described in the specifications:

_____ for _____.

Liquidated Damages Contained in the Specifications.

Liquidated Damages Are Not Included in this Contract.

12. ACCEPTANCE: Vendor's signature on its bid, or on the certification and signature page, constitutes an offer to the State that cannot be unilaterally withdrawn, signifies that the product or service proposed by vendor meets the mandatory requirements contained in the Solicitation for that product or service, unless otherwise indicated, and signifies acceptance of the terms and conditions contained in the Solicitation unless otherwise indicated.

13. PRICING: The pricing set forth herein is firm for the life of the Contract, unless specified elsewhere within this Solicitation/Contract by the State. A Vendor's inclusion of price adjustment provisions in its bid, without an express authorization from the State in the Solicitation to do so, may result in bid disqualification. Notwithstanding the foregoing, Vendor must extend any publicly advertised sale price to the State and invoice at the lower of the contract price or the publicly advertised sale price.

14. PAYMENT IN ARREARS: Payments for goods/services will be made in arrears only upon receipt of a proper invoice, detailing the goods/services provided or receipt of the goods/services, whichever is later. Notwithstanding the foregoing, payments for software maintenance, licenses, or subscriptions may be paid annually in advance.

15. PAYMENT METHODS: Vendor must accept payment by electronic funds transfer and P-Card. (The State of West Virginia's Purchasing Card program, administered under contract by a banking institution, processes payment for goods and services through state designated credit cards.)

16. TAXES: The Vendor shall pay any applicable sales, use, personal property or any other taxes arising out of this Contract and the transactions contemplated thereby. The State of West Virginia is exempt from federal and state taxes and will not pay or reimburse such taxes.

17. ADDITIONAL FEES: Vendor is not permitted to charge additional fees or assess additional charges that were not either expressly provided for in the solicitation published by the State of West Virginia, included in the Contract, or included in the unit price or lump sum bid amount that Vendor is required by the solicitation to provide. Including such fees or charges as notes to the solicitation may result in rejection of vendor's bid. Requesting such fees or charges be paid after the contract has been awarded may result in cancellation of the contract.

18. FUNDING: This Contract shall continue for the term stated herein, contingent upon funds being appropriated by the Legislature or otherwise being made available. In the event funds are not appropriated or otherwise made available, this Contract becomes void and of no effect beginning on July 1 of the fiscal year for which funding has not been appropriated or otherwise made available. If that occurs, the State may notify the Vendor that an alternative source of funding has been obtained and thereby avoid the automatic termination. Non-appropriation or non-funding shall not be considered an event of default.

19. CANCELLATION: The Purchasing Division Director reserves the right to cancel this Contract immediately upon written notice to the vendor if the materials or workmanship supplied do not conform to the specifications contained in the Contract. The Purchasing Division Director may also cancel any purchase or Contract upon 30 days written notice to the Vendor in accordance with West Virginia Code of State Rules § 148-1-5.2.b.

20. TIME: Time is of the essence regarding all matters of time and performance in this Contract.

21. APPLICABLE LAW: This Contract is governed by and interpreted under West Virginia law without giving effect to its choice of law principles. Any information provided in specification manuals, or any other source, verbal or written, which contradicts or violates the West Virginia Constitution, West Virginia Code, or West Virginia Code of State Rules is void and of no effect.

22. COMPLIANCE WITH LAWS: Vendor shall comply with all applicable federal, state, and local laws, regulations and ordinances. By submitting a bid, Vendor acknowledges that it has reviewed, understands, and will comply with all applicable laws, regulations, and ordinances.

SUBCONTRACTOR COMPLIANCE: Vendor shall notify all subcontractors providing commodities or services related to this Contract that as subcontractors, they too are required to comply with all applicable laws, regulations, and ordinances. Notification under this provision must occur prior to the performance of any work under the contract by the subcontractor.

23. ARBITRATION: Any references made to arbitration contained in this Contract, Vendor's bid, or in any American Institute of Architects documents pertaining to this Contract are hereby deleted, void, and of no effect.

24. MODIFICATIONS: This writing is the parties' final expression of intent. Notwithstanding anything contained in this Contract to the contrary no modification of this Contract shall be binding without mutual written consent of the Agency, and the Vendor, with approval of the Purchasing Division and the Attorney General's office (Attorney General approval is as to form only). Any change to existing contracts that adds work or changes contract cost, and were not included in the original contract, must be approved by the Purchasing Division and the Attorney General's Office (as to form) prior to the implementation of the change or commencement of work affected by the change.

25. WAIVER: The failure of either party to insist upon a strict performance of any of the terms or provision of this Contract, or to exercise any option, right, or remedy herein contained, shall not be construed as a waiver or a relinquishment for the future of such term, provision, option, right, or remedy, but the same shall continue in full force and effect. Any waiver must be expressly stated in writing and signed by the waiving party.

26. SUBSEQUENT FORMS: The terms and conditions contained in this Contract shall supersede any and all subsequent terms and conditions which may appear on any form documents submitted by Vendor to the Agency or Purchasing Division such as price lists, order forms, invoices, sales agreements, or maintenance agreements, and includes internet websites or other electronic documents. Acceptance or use of Vendor's forms does not constitute acceptance of the terms and conditions contained thereon.

27. ASSIGNMENT: Neither this Contract nor any monies due, or to become due hereunder, may be assigned by the Vendor without the express written consent of the Agency, the Purchasing Division, the Attorney General's office (as to form only), and any other government agency or office that may be required to approve such assignments.

28. WARRANTY: The Vendor expressly warrants that the goods and/or services covered by this Contract will: (a) conform to the specifications, drawings, samples, or other description furnished or specified by the Agency; (b) be merchantable and fit for the purpose intended; and (c) be free from defect in material and workmanship.

29. STATE EMPLOYEES: State employees are not permitted to utilize this Contract for personal use and the Vendor is prohibited from permitting or facilitating the same.

30. PRIVACY, SECURITY, AND CONFIDENTIALITY: The Vendor agrees that it will not disclose to anyone, directly or indirectly, any such personally identifiable information or other confidential information gained from the Agency, unless the individual who is the subject of the information consents to the disclosure in writing or the disclosure is made pursuant to the Agency's policies, procedures, and rules. Vendor further agrees to comply with the Confidentiality Policies and Information Security Accountability Requirements, set forth in www.state.wv.us/admin/purchase/privacy.

31. YOUR SUBMISSION IS A PUBLIC DOCUMENT: Vendor's entire response to the Solicitation and the resulting Contract are public documents. As public documents, they will be disclosed to the public following the bid/proposal opening or award of the contract, as required by the competitive bidding laws of West Virginia Code §§ 5A-3-1 et seq., 5-22-1 et seq., and 5G-1-1 et seq. and the Freedom of Information Act West Virginia Code §§ 29B-1-1 et seq.

DO NOT SUBMIT MATERIAL YOU CONSIDER TO BE CONFIDENTIAL, A TRADE SECRET, OR OTHERWISE NOT SUBJECT TO PUBLIC DISCLOSURE.

Submission of any bid, proposal, or other document to the Purchasing Division constitutes your explicit consent to the subsequent public disclosure of the bid, proposal, or document. The Purchasing Division will disclose any document labeled "confidential," "proprietary," "trade secret," "private," or labeled with any other claim against public disclosure of the documents, to include any "trade secrets" as defined by West Virginia Code § 47-22-1 et seq. All submissions are subject to public disclosure without notice.

32. LICENSING: In accordance with West Virginia Code of State Rules § 148-1-6.1.e, Vendor must be licensed and in good standing in accordance with any and all state and local laws and requirements by any state or local agency of West Virginia, including, but not limited to, the West Virginia Secretary of State's Office, the West Virginia Tax Department, West Virginia Insurance Commission, or any other state agency or political subdivision. Obligations related to political subdivisions may include, but are not limited to, business licensing, business and occupation taxes, inspection compliance, permitting, etc. Upon request, the Vendor must provide all necessary releases to obtain information to enable the Purchasing Division Director or the Agency to verify that the Vendor is licensed and in good standing with the above entities.

SUBCONTRACTOR COMPLIANCE: Vendor shall notify all subcontractors providing commodities or services related to this Contract that as subcontractors, they too are required to be licensed, in good standing, and up-to-date on all state and local obligations as described in this section. Obligations related to political subdivisions may include, but are not limited to, business licensing, business and occupation taxes, inspection compliance, permitting, etc. Notification under this provision must occur prior to the performance of any work under the contract by the subcontractor.

33. ANTITRUST: In submitting a bid to, signing a contract with, or accepting a Award Document from any agency of the State of West Virginia, the Vendor agrees to convey, sell, assign, or transfer to the State of West Virginia all rights, title, and interest in and to all causes of action it may now or hereafter acquire under the antitrust laws of the United States and the State of West Virginia for price fixing and/or unreasonable restraints of trade relating to the particular commodities or services purchased or acquired by the State of West Virginia. Such assignment shall be made and become effective at the time the purchasing agency tenders the initial payment to Vendor.

34. VENDOR NON-CONFLICT: Neither Vendor nor its representatives are permitted to have any interest, nor shall they acquire any interest, direct or indirect, which would compromise the performance of its services hereunder. Any such interests shall be promptly presented in detail to the Agency.

35. VENDOR RELATIONSHIP: The relationship of the Vendor to the State shall be that of an independent contractor and no principal-agent relationship or employer-employee relationship is contemplated or created by this Contract. The Vendor as an independent contractor is solely liable for the acts and omissions of its employees and agents. Vendor shall be responsible for selecting, supervising, and compensating any and all individuals employed pursuant to the terms of this Solicitation and resulting contract. Neither the Vendor, nor any employees or subcontractors of the Vendor, shall be deemed to be employees of the State for any purpose whatsoever. Vendor shall be exclusively responsible for payment of employees and contractors for all wages and salaries, taxes, withholding payments, penalties, fees, fringe benefits, professional liability insurance premiums, contributions to insurance and pension, or other deferred compensation plans, including but not limited to, Workers' Compensation and Social Security obligations, licensing fees, etc. and the filing of all necessary documents, forms, and returns pertinent to all of the foregoing.

Vendor shall hold harmless the State, and shall provide the State and Agency with a defense against any and all claims including, but not limited to, the foregoing payments, withholdings, contributions, taxes, Social Security taxes, and employer income tax returns.

36. INDEMNIFICATION: The Vendor agrees to indemnify, defend, and hold harmless the State and the Agency, their officers, and employees from and against: (1) Any claims or losses for services rendered by any subcontractor, person, or firm performing or supplying services, materials, or supplies in connection with the performance of the Contract; (2) Any claims or losses resulting to any person or entity injured or damaged by the Vendor, its officers, employees, or subcontractors by the publication, translation, reproduction, delivery, performance, use, or disposition of any data used under the Contract in a manner not authorized by the Contract, or by Federal or State statutes or regulations; and (3) Any failure of the Vendor, its officers, employees, or subcontractors to observe State and Federal laws including, but not limited to, labor and wage and hour laws.

37. NO DEBT CERTIFICATION: In accordance with West Virginia Code §§ 5A-3-10a and 5-22-1(i), the State is prohibited from awarding a contract to any bidder that owes a debt to the State or a political subdivision of the State. By submitting a bid, or entering into a contract with the State, Vendor is affirming that (1) for construction contracts, the Vendor is not in default on any monetary obligation owed to the state or a political subdivision of the state, and (2) for all other contracts, neither the Vendor nor any related party owe a debt as defined above, and neither the Vendor nor any related party are in employer default as defined in the statute cited above unless the debt or employer default is permitted under the statute.

38. CONFLICT OF INTEREST: Vendor, its officers or members or employees, shall not presently have or acquire an interest, direct or indirect, which would conflict with or compromise the performance of its obligations hereunder. Vendor shall periodically inquire of its officers, members and employees to ensure that a conflict of interest does not arise. Any conflict of interest discovered shall be promptly presented in detail to the Agency.

39. REPORTS: Vendor shall provide the Agency and/or the Purchasing Division with the following reports identified by a checked box below:

Such reports as the Agency and/or the Purchasing Division may request. Requested reports may include, but are not limited to, quantities purchased, agencies utilizing the contract, total contract expenditures by agency, etc.

Quarterly reports detailing the total quantity of purchases in units and dollars, along with a listing of purchases by agency. Quarterly reports should be delivered to the Purchasing Division via email at purchasing.division@wv.gov.

40. BACKGROUND CHECK: In accordance with W. Va. Code § 15-2D-3, the State reserves the right to prohibit a service provider's employees from accessing sensitive or critical information or to be present at the Capitol complex based upon results addressed from a criminal background check. Service providers should contact the West Virginia Division of Protective Services by phone at (304) 558-9911 for more information.

41. PREFERENCE FOR USE OF DOMESTIC STEEL PRODUCTS: Except when authorized by the Director of the Purchasing Division pursuant to W. Va. Code § 5A-3-56, no contractor may use or supply steel products for a State Contract Project other than those steel products made in the United States. A contractor who uses steel products in violation of this section may be subject to civil penalties pursuant to W. Va. Code § 5A-3-56. As used in this section:

- a. "State Contract Project" means any erection or construction of, or any addition to, alteration of or other improvement to any building or structure, including, but not limited to, roads or highways, or the installation of any heating or cooling or ventilating plants or other equipment, or the supply of and materials for such projects, pursuant to a contract with the State of West Virginia for which bids were solicited on or after June 6, 2001.
- b. "Steel Products" means products rolled, formed, shaped, drawn, extruded, forged, cast, fabricated or otherwise similarly processed, or processed by a combination of two or more or such operations, from steel made by the open hearth, basic oxygen, electric furnace, Bessemer or other steel making process.
- c. The Purchasing Division Director may, in writing, authorize the use of foreign steel products if:
 1. The cost for each contract item used does not exceed one tenth of one percent (.1%) of the total contract cost or two thousand five hundred dollars (\$2,500.00), whichever is greater. For the purposes of this section, the cost is the value of the steel product as delivered to the project; or
 2. The Director of the Purchasing Division determines that specified steel materials are not produced in the United States in sufficient quantity or otherwise are not reasonably available to meet contract requirements.

42. PREFERENCE FOR USE OF DOMESTIC ALUMINUM, GLASS, AND STEEL: In Accordance with W. Va. Code § 5-19-1 et seq., and W. Va. CSR § 148-10-1 et seq., for every contract or subcontract, subject to the limitations contained herein, for the construction, reconstruction, alteration, repair, improvement or maintenance of public works or for the purchase of any item of machinery or equipment to be used at sites of public works, only domestic aluminum, glass or steel products shall be supplied unless the spending officer determines, in writing, after the receipt of offers or bids, (1) that the cost of domestic aluminum, glass or steel products is unreasonable or inconsistent with the public interest of the State of West Virginia, (2) that domestic aluminum, glass or steel products are not produced in sufficient quantities to meet the contract requirements, or (3) the available domestic aluminum, glass, or steel do not meet the contract specifications. This provision only applies to public works contracts awarded in an amount more than fifty thousand dollars (\$50,000) or public works contracts that require more than ten thousand pounds of steel products.

The cost of domestic aluminum, glass, or steel products may be unreasonable if the cost is more than twenty percent (20%) of the bid or offered price for foreign made aluminum, glass, or steel products. If the domestic aluminum, glass or steel products to be supplied or produced in a “substantial labor surplus area”, as defined by the United States Department of Labor, the cost of domestic aluminum, glass, or steel products may be unreasonable if the cost is more than thirty percent (30%) of the bid or offered price for foreign made aluminum, glass, or steel products. This preference shall be applied to an item of machinery or equipment, as indicated above, when the item is a single unit of equipment or machinery manufactured primarily of aluminum, glass or steel, is part of a public works contract and has the sole purpose or of being a permanent part of a single public works project. This provision does not apply to equipment or machinery purchased by a spending unit for use by that spending unit and not as part of a single public works project.

All bids and offers including domestic aluminum, glass or steel products that exceed bid or offer prices including foreign aluminum, glass or steel products after application of the preferences provided in this provision may be reduced to a price equal to or lower than the lowest bid or offer price for foreign aluminum, glass or steel products plus the applicable preference. If the reduced bid or offer prices are made in writing and supersede the prior bid or offer prices, all bids or offers, including the reduced bid or offer prices, will be reevaluated in accordance with this rule.

43. INTERESTED PARTY SUPPLEMENTAL DISCLOSURE: W. Va. Code § 6D-1-2 requires that for contracts with an actual or estimated value of at least \$1 million, the Vendor must submit to the Agency a disclosure of interested parties prior to beginning work under this Contract. Additionally, the Vendor must submit a supplemental disclosure of interested parties reflecting any new or differing interested parties to the contract, which were not included in the original pre-work interested party disclosure, within 30 days following the completion or termination of the contract. A copy of that form is included with this solicitation or can be obtained from the WV Ethics Commission. This requirement does not apply to publicly traded companies listed on a national or international stock exchange. A more detailed definition of interested parties can be obtained from the form referenced above.

44. PROHIBITION AGAINST USED OR REFURBISHED: Unless expressly permitted in the solicitation published by the State, Vendor must provide new, unused commodities, and is prohibited from supplying used or refurbished commodities, in fulfilling its responsibilities under this Contract.

45. VOID CONTRACT CLAUSES: This Contract is subject to the provisions of West Virginia Code § 5A-3-62, which automatically voids certain contract clauses that violate State law.

46. ISRAEL BOYCOTT: Bidder understands and agrees that, pursuant to W. Va. Code § 5A-3-63, it is prohibited from engaging in a boycott of Israel during the term of this contract.

ADDITIONAL TERMS AND CONDITIONS **(Architectural and Engineering Contracts Only)**

1. PLAN AND DRAWING DISTRIBUTION: All plans and drawings must be completed and available for distribution at least five business days prior to a scheduled pre-bid meeting for the construction or other work related to the plans and drawings.

2. PROJECT ADDENDA REQUIREMENTS: The Architect/Engineer and/or Agency shall be required to abide by the following schedule in issuing construction project addenda. The Architect/Engineer shall prepare any addendum materials for which it is responsible, and a list of all vendors that have obtained drawings and specifications for the project. The Architect/Engineer shall then send a copy of the addendum materials and the list of vendors to the State Agency for which the contract is issued to allow the Agency to make any necessary modifications. The addendum and list shall then be forwarded to the Purchasing Division buyer by the Agency. The Purchasing Division buyer shall send the addendum to all interested vendors and, if necessary, extend the bid opening date. Any addendum should be received by the Purchasing Division at least fourteen (14) days prior to the bid opening date.

3. PRE-BID MEETING RESPONSIBILITIES: The Architect/Engineer shall be available to attend any pre-bid meeting for the construction or other work resulting from the plans, drawings, or specifications prepared by the Architect/Engineer.

4. AIA DOCUMENTS: All construction contracts that will be completed in conjunction with architectural services procured under Chapter 5G of the West Virginia Code will be governed by the attached AIA documents, as amended by the Supplementary Conditions for the State of West Virginia, in addition to the terms and conditions contained herein. The terms and conditions of this document shall prevail over anything contained in the AIA Documents or the Supplementary Conditions.

5. GREEN BUILDINGS MINIMUM ENERGY STANDARDS: In accordance with West Virginia Code § 22-29-4, all new building construction projects of public agencies that have not entered the schematic design phase prior to July 1, 2012, or any building construction project receiving state grant funds and appropriations, including public schools, that have not entered the schematic design phase prior to July 1, 2012, shall be designed and constructed complying with the ICC International Energy Conservation Code, adopted by the State Fire Commission, and the ANSI/ASHRAE/IESNA Standard 90.1-2007: Provided, That if any construction project has a commitment of federal funds to pay for a portion of such project, this provision shall only apply to the extent such standards are consistent with the federal standards.

DESIGNATED CONTACT: Vendor appoints the individual identified in this Section as the Contract Administrator and the initial point of contact for matters relating to this Contract.

(Printed Name and Title) Jeff Rossi, Branch Manager

(Address) 270 William Pitt Way, Pittsburgh, PA 15238

(Phone Number) / (Fax Number) 412-826-3120 (office), 412-297-1794 (cell)

(email address) jeff.rossi@oneatlas.com

CERTIFICATION AND SIGNATURE: By signing below, or submitting documentation through wvOASIS, I certify that: I have reviewed this Solicitation/Contract in its entirety; that I understand the requirements, terms and conditions, and other information contained herein; that this bid, offer or proposal constitutes an offer to the State that cannot be unilaterally withdrawn; that the product or service proposed meets the mandatory requirements contained in the Solicitation/Contract for that product or service, unless otherwise stated herein; that the Vendor accepts the terms and conditions contained in the Solicitation, unless otherwise stated herein; that I am submitting this bid, offer or proposal for review and consideration; that this bid or offer was made without prior understanding, agreement, or connection with any entity submitting a bid or offer for the same material, supplies, equipment or services; that this bid or offer is in all respects fair and without collusion or fraud; that this Contract is accepted or entered into without any prior understanding, agreement, or connection to any other entity that could be considered a violation of law; that I am authorized by the Vendor to execute and submit this bid, offer, or proposal, or any documents related thereto on Vendor's behalf; that I am authorized to bind the vendor in a contractual relationship; and that to the best of my knowledge, the vendor has properly registered with any State agency that may require registration.

By signing below, I further certify that I understand this Contract is subject to the provisions of West Virginia Code § 5A-3-62, which automatically voids certain contract clauses that violate State law; and that pursuant to W. Va. Code 5A-3-63, the entity entering into this contract is prohibited from engaging in a boycott against Israel.

Atlas Technical Consultants

(Company)

Kelly Hurstak

(Signature of Authorized Representative)

Kelly Hurstak, Senior Vice President, 1/13/26

(Printed Name and Title of Authorized Representative) (Date)

781-404-1303 (office), 781-428-0363 (cell)

(Phone Number) (Fax Number)

kelly.hurstak@oneatlas.com

(Email Address)

ADDENDUM ACKNOWLEDGEMENT FORM
SOLICITATION NO.: 0313 DEP2600000003

Instructions: Please acknowledge receipt of all addenda issued with this solicitation by completing this addendum acknowledgment form. Check the box next to each addendum received and sign below. Failure to acknowledge addenda may result in bid disqualification.

Acknowledgment: I hereby acknowledge receipt of the following addenda and have made the necessary revisions to my proposal, plans and/or specification, etc.

Addendum Numbers Received: No Addendums Issued

(Check the box next to each addendum received)

<input type="checkbox"/> Addendum No. 1	<input type="checkbox"/> Addendum No. 6
<input type="checkbox"/> Addendum No. 2	<input type="checkbox"/> Addendum No. 7
<input type="checkbox"/> Addendum No. 3	<input type="checkbox"/> Addendum No. 8
<input type="checkbox"/> Addendum No. 4	<input type="checkbox"/> Addendum No. 9
<input type="checkbox"/> Addendum No. 5	<input type="checkbox"/> Addendum No. 10

I understand that failure to confirm the receipt of addenda may be cause for rejection of this bid. I further understand that any verbal representation made or assumed to be made during any oral discussion held between Vendor's representatives and any state personnel is not binding. Only the information issued in writing and added to the specifications by an official addendum is binding.

Atlas Technical Consultants

Company

Kelly Hurstak

Authorized Signature

1/13/2026

Date

NOTE: This addendum acknowledgement should be submitted with the bid to expedite document processing.