



February 13, 2017

Ms. Jessica Chambers
West Virginia Department of Environmental Protection
Department of Administration, Purchasing Division
2019 Washington Street East
Charleston, WV 25305-0130

Re: SOLICITATION NO.: CRFO DEP 1700000013
WVDEP Vienna PCE

Dear Ms. Chambers:

EHS Support LLC (EHS Support) is pleased to provide this proposal to the West Virginia Department of Environmental Protection (WVDEP), to meet the project objectives, as presented in your Request for Quotation (RFQ) issued November 30, 2016. EHS Support developed our proposal based on information provided in the RFQ, the response to questions issued on January 25, 2017 (Contract Manager Signature page provided in **Attachment A**), and EHS Support's familiarity with the site after the Site Visit and WVDEP's expectations for obtaining superior, well qualified operation and maintenance and high-quality groundwater monitoring data to support the specific remedial strategies being implemented at the Vienna Perchloroethylene (PCE) Superfund Site in Vienna, West Virginia.

As outlined in your RFQ, the attached proposal describes our firm's proposed scope of work to drive the project forward, meet the WVDEP objectives, reduce the overall risk, liability and cost. This proposal also presents our capabilities, talents, and expertise in completing similar work to demonstrate our ability to meet the project requirements.

EHS Support has prepared this offering to provide WVDEP with the following benefits:

- A strong team of environmental professionals with relevant experience to cost effectively support the on-going groundwater monitoring programs. Experienced staff complete tasks in a shorter amount of time (typically half the time) and therefore shorten the project length and save costs.
- A client-focused partner company that is committed to meeting WVDEP's objectives for safety, quality and efficiency.
- A partner who will use our new organizational network analysis (ONA) tools (Meyers Briggs, Strengths Finders, and OrgMapper) working with your Remediation Manager to build a team that drives efficiency, innovation, and quality from data collection through reporting.

EHS Support appreciates the opportunity to serve the WVDEP at the Vienna PCE Site. We look forward to the opportunity to speak with you further and discuss our qualifications and approach on how we can drive this project forward, maximize cost savings, and make your day-to-day involvement with this project easier. Should you have any questions or require additional information, please feel free to contact me at (304) 942-7985.

Sincerely,

Brock Tucker
Sr. Project Manager

02/14/17 09:55:08
Purchasing Division

• Commitment • Feasibility •

PROPOSAL



EHS  **Support**
consider it done

consider it done

• Integrity • Fairness • Respect • Compassion • Cooperation • Excellence • Innovation •

Prepared For:
West Virginia Department of Environmental
Protection – Vienna Perchloroethylene
(PCE) Superfund Site Vienna, West Virginia

Solicitation NO.: CRFQ DEP1700000013

February 2017

TABLE OF CONTENTS

Purpose and Scope of Work..... 1
 Task 1. O&M of the AS/SVE System..... 1
 Task 2. Air Sampling of the SVE Well Heads..... 1
 Task 3. Groundwater Sampling 1
 Task 4. Reporting and Mandatory Record Keeping Requirements 2
Qualifications and Experience 2
Project Team 6
 Field Work 6
 Reporting and Management..... 7
Schedule..... 7
Business Proposal 7
Limitations 8
Proposal Acceptance..... 9

APPENDICES

- Attachment A – Signature Pages
- Attachment B – Project Summaries
- Attachment C – Staff Qualifications
- Attachment D – Certificate of Insurance
- Attachment E – Pricing



PURPOSE AND SCOPE OF WORK

EHS Support understands West Virginia Department of Environmental Protection's intent is to select a vendor for the operation and maintenance of the groundwater remediation system at the Vienna Perchloroethylene (PCE) Superfund site in Vienna, West Virginia. As outlined in the Request for Qualifications (RFQ), the remediation system is comprised of two active air sparge/soil vapor extraction (AS/SVE) systems, a groundwater hydraulic control system and an air sparge treatment system on standby. System performance will need to be evaluation by the period collection of contaminate concentrations for a network of soil vapor monitoring points and groundwater monitoring wells.

It is our understanding that the equipment associated with the remediation system will require operation and maintenance (O&M) at various defined intervals as dictated in the RFQ. Sampling and reporting are also a part of the scope of work under this RFQ. The selected vendor will be responsible for the following tasks:

Task 1. O&M of the AS/SVE System

- Weekly, monthly, quarterly, semi-annual, annual and as needed O&M events that cover the tasks outlined in "Exhibit A – Pricing Page" Line Items 6 through 54, Section 4.2.3 of the RFQ Specifications, and Attachment 5 – Routine and Preventative Maintenance Schedule.
- Expenses included replacement parts outlined in "Exhibit A – Pricing Page Line Items 55 through 78.
- Under Item 44 – "Change out or backwash liquid phase when GAC becomes spent", EHS Support has assumed the unit cost for removing carbon from liquid phase vessels, replace with virgin carbon, and having carbon removed for off-site regeneration assuming the spent carbon is non-hazardous by determination.

Task 2. Air Sampling of the SVE Well Heads

Air Sampling of the SVE well heads (26) using summa canisters as outlined in Sections 4.1.2 and 4.1.3 and Attachment 1 – Standard Operating Procedure Vapor Sample Collection.

- EHS Support has included costs for analysis via EPA Method TO-15, summa rentals, and other charges associated with obtaining soil gas data from the SVE wells.
- EHS Support, with approval from the WVDEP, plans to utilize TestAmerica out of Savannah, Georgia for the TO-15 analysis of the soil gas samples.

Task 3. Groundwater Sampling

Groundwater sampling utilizing low-flow purge and sample techniques conducted on various wells across the monitoring network on a Semi-annual, annual, and biennial basis according to the scope as dictated in the Standard Operating Procedure 0110, Groundwater Sampling Procedures, § 7.3 of the QAPP (Attachment 2).

It is EHS Support's understanding that the sampling schedule (Attachment 4 of RFQ) is to include:

- Twenty-four wells (24) sampled on a biannual basis
- Fifteen wells (15) sampled on an annual basis
- Thirteen (13) wells sampled on a biennial basis
- EHS Support assumes that wells will yield sufficient water and will not require recharging. wells are accessible without out restrictions except that traffic control and coordination with the City of Vienna will be required during sampling.

EHS Support intends to combine the various sampling events (when possible) to be more cost efficient.

Task 4. Reporting and Mandatory Record Keeping Requirements

- O&M Reporting as follows:
 - Weekly Reporting per Section 4.2.8.1 of the RFQ Specifications
 - Monthly Reporting per Section 4.2.8.2 of the RFQ Specifications
 - Quarterly Reporting per Section 4.2.8.3 of the RFQ Specifications
 - Quarterly Summary Reporting per Section 4.2.8.4 of the RFQ Specifications
 - Sampling Report will be submitted 45 days following receipt of the analytical that cover items listed in Section 4.1.24 of the RFQ Specification.

This is a brief overview of our understanding of the scope of services under this RFQ. EHS Support intends to complete the tasks according to the protocols outlined in the RFQ in a manner that prevents as little downtime as possible and is cost-effective. EHS Support understands that any work tasks beyond that outlined in this RFQ (e.g. system optimization, tying in other wells to the system, further plume characterization) may be addressed with a change order at the time those services are needed.

During the site walk on January 18, 2017, EHS Support conducted a brief review of the operation and maintenance controls of the current system. Upon inspection and clarification of system and well field data, EHS Support feels that further evaluation on the performance of the system is warranted to ensure that the maximum radius of influence is being achieved, the source zones are adequately being targeted, and that the full benefits of the technology are being obtained. We feel that there are opportunities for immediate positive influences that would increase the performance as well as efficiencies that would reduce costs. EHS Support would be willing to discuss these opportunities and how best to evaluate further efficiencies of the current system.

QUALIFICATIONS AND EXPERIENCE

EHS Support is strongly suited with many highly technical resources that included project engineers, project managers, and competent field staff that have been accustomed to working on chlorinated solvent sites for many different clients that utilize air sparge and/or soil vapor extraction as a means to achieve remediation goals. Below you will find a short list of several of the many project sites where EHS Support have chlorinated solvent experience and have worked with AS and/or SVE.

| Project Sites with Relevant Chlorinated & AS/SVE Experience | | | | | | | | | | | | |
|---|----------------------|-------------------|------------------|----------------|--------------------------------------|-----------------------|-----------------|----------|---------------------|----------------|------|-------------------------------|
| Project Site/Location | Regulatory Framework | Regulatory Agency | Chlorinated VOCs | Petroleum VOCs | Groundwater Monitoring and Reporting | Soil Vapor/Indoor Air | Risk Assessment | Modeling | In-Situ Remediation | AS, SVE or MPE | NAPL | Monitored Natural Attenuation |
| Akron, Ohio | RCRA | USEPA Reg 5 | ✓ | | ✓ | | ✓ | | ✓ | ✓ | ✓ | ✓ |
| Carteret, NJ | SRP/ISRA | NJDEP | | | ✓ | | ✓ | | | | | |
| Port Ewen, NY | RCRA | USEPA | | | ✓ | ✓ | | | | | | |

| Project Site/Location | Project Sites with Relevant Chlorinated & AS/SVE Experience | | | | | | | | | | | |
|-----------------------|---|-----------------------|------------------|----------------|--------------------------------------|-----------------------|-----------------|----------|---------------------|----------------|------|-------------------------------|
| | Regulatory Framework | Regulatory Agency | Chlorinated VOCs | Petroleum VOCs | Groundwater Monitoring and Reporting | Soil Vapor/Indoor Air | Risk Assessment | Modeling | In-Situ Remediation | AS, SVE or MPE | NAPL | Monitored Natural Attenuation |
| Norwich, NY | AOC | NYDEP | ✓ | | | ✓ | | ✓ | | | | ✓ |
| Utica, NY | Class 2 | NYSDEC | ✓ | | | | | | | | | |
| Western, NY | CERCLA | NYSDEC | | | ✓ | | | | | | | |
| Renselear, NY | RCRA | NYSDEC | ✓ | ✓ | | ✓ | ✓ | | | ✓ | ✓ | |
| Indianapolis, IN | RCRA | IDEM | ✓ | | ✓ | | ✓ | ✓ | ✓ | | | ✓ |
| Twinsburg, Ohio | VAP | OEPA NEDO | ✓ | | ✓ | | | ✓ | | | | ✓ |
| Bellaire, Ohio | AOC | OEPA NEDO | ✓ | | ✓ | | ✓ | ✓ | | ✓ | | ✓ |
| Columbus, Ohio | RCRA | OEPA CDO/ USEPA Reg 5 | ✓ | | ✓ | ✓ | ✓ | | | ✓ | | |
| Cincinnati, Ohio | RCRA | OEPA SWDO | ✓ | | ✓ | ✓ | ✓ | ✓ | | ✓ | | |
| Dayton, Ohio | RCRA | OEPA SWDO | ✓ | | ✓ | ✓ | ✓ | ✓ | | ✓ | | |
| Findlay, Ohio | RCRA | OEPA NEDO | ✓ | | ✓ | | | | | | | |
| Heath, Ohio | AOC | OEPA CDO | ✓ | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Miami, FL | RCRA | FDEP | ✓ | | ✓ | ✓ | ✓ | | | ✓ | | |
| Orlando FL | RCRA | FDEP | ✓ | | ✓ | ✓ | ✓ | | | ✓ | | |
| Tampa, FL | RCRA | FDEP | ✓ | | ✓ | ✓ | ✓ | | | ✓ | | |
| Jacksonville FL | RCRA | FDEP | ✓ | | ✓ | ✓ | ✓ | | | | | |
| Mobile, AL | RCRA | ADEQ | ✓ | | ✓ | ✓ | ✓ | | | | | |

| Project Site/Location ¹ | Project Sites with Relevant Chlorinated & AS/SVE Experience | | | | | | | | | | | |
|------------------------------------|---|-------------------|------------------|----------------|--------------------------------------|-----------------------|-----------------|----------|---------------------|----------------|------|-------------------------------|
| | Regulatory Framework | Regulatory Agency | Chlorinated VOCs | Petroleum VOCs | Groundwater Monitoring and Reporting | Soil Vapor/Indoor Air | Risk Assessment | Modeling | In-Situ Remediation | AS, SVE or MPE | NAPL | Monitored Natural Attenuation |
| Providence RI | CERCLA | USEPA | ✓ | | ✓ | ✓ | ✓ | | | ✓ | | |
| Los Angeles, CA (4 sites) | AOC | RWQCB | ✓ | | ✓ | ✓ | ✓ | ✓ | | ✓ | | |
| Santa Fe Springs CA | AOC | RWQCB | ✓ | | ✓ | ✓ | ✓ | ✓ | | ✓ | | |
| Newark, CA | AOC | RWQCB | ✓ | | ✓ | ✓ | ✓ | ✓ | | ✓ | | |
| Dallas, TX | VAP | TCEQ | ✓ | | ✓ | ✓ | ✓ | | | | | |
| Houston, TX (3 sites) | VAP | TCEQ | ✓ | | ✓ | ✓ | ✓ | | | ✓ | | |
| Kenova, WV | VRP | WVDEP | | ✓ | ✓ | ✓ | ✓ | ✓ | | ✓ | ✓ | ✓ |
| Louisville, KY | RCRA | KDEP | | ✓ | ✓ | | ✓ | | | ✓ | ✓ | |
| Ashland, KY | UST | KDEP | | ✓ | ✓ | | | | | ✓ | ✓ | ✓ |
| Lansing, MI (2 sites) | RCRA | USEPA Reg 5 | ✓ | | ✓ | ✓ | ✓ | | | ✓ | ✓ | ✓ |
| South Bend, IN | RCRA | USEPA Reg 5 | ✓ | | | | | | | ✓ | | |
| Willow Springs, IL | RCRA | USEPA Reg 5 | ✓ | | ✓ | | ✓ | | | | ✓ | ✓ |

Of the many projects EHS Support has either closed or are currently working to achieve closure, a list of key projects that highlight some of our work with PCE and AS/SVE systems are listed below and project summaries of each can be found in **(Attachment B)**:

- **Louisville, KY** (Major Petrochemical Company) – Characterization of dissolved petroleum plume, pilot test AS/SVE technology, design, construct, install and operate an AS/SVE system with a treatment area of over five acres.
- **Ashland, KY** (Test Engine Facility for Major Automotive Products Retailer) - Characterization of free product and dissolved petroleum plumes, pilot test AS/SVE technology, design, construct, install and operate an AS/SVE system. Use AS technology to “steer” remaining free product to co-located SVE wells. Project was closed after successfully achieving remediation goals.
- **South Bend, IN** (Major Petrochemical/Specialty Chemical Supplier) – Use of AS/SVE to treat COCs released at this historical site. An upgraded AS/SVE system was installed along with

additional AS wells to target “hot spots” identified via a passive soil gas survey and horizontal SVE wells (trenches) to more effectively liberate vapor-phase COCs.

- **Glenrose, MI** (Major Specialty Chemical Supplier) –Evaluation of ground water extraction well configurations to expedite off-site groundwater restoration timeframes.
- **Mobile, AL** (Major Specialty Chemical Supplier) – Implementation of an aggressive remediation strategy that included installation of additional groundwater extraction wells within the primary source zone to target remaining contaminant mass and to reduce the remedial time frame. A robust assessment of natural attenuation was completed showing strong indicators for sequential biodegradation of CVOC occurring at the site.

The depth and breadth of our resources provides for technically superior teams that continue to provide successful project solutions to our clients. Our technical engineers have drafted pilot test plans, conducted and evaluated pilot test data, evaluated system and formation response data to provide key strategic system optimization decisions for our clients, completed design evaluations and enhancement for new and existing remediation systems, and designed and installed effective, high performance and reliable AS/SVE systems. These AS/SVE systems have been installed for sites where broad contaminant source removal is required, vapor mitigation under scenarios where vapor intrusion are human health issues at both industrial and residential sites, and intercept of plume is needed to avoid impacts to sensitive receptors (i.e. sparge curtains ahead of drinking water supply wells, potable water sources, or sensitive receptors). Specific to chlorinated and petroleum sites, our technical engineers have evaluated groundwater geochemistry, microbial responses, and other groundwater data to establish trends in system performance and decision analysis that may support system optimization or other remedial approaches.

Intercept of plume is needed to avoid impacts to sensitive receptors (i.e. sparge curtains ahead of drinking water supply wells, potable water sources, or sensitive receptors).

EHS Support will supply the WVDEP with three (3) highly qualified and effective operation and maintenance (O&M) technicians that have over 55 years of combined experience working in the environmental remediation industry. Specific to the scope of this RFQ, they have conducted multimedia sampling, worked on chlorinated solvent sites at various stages of life cycles, and have been involved with O&M on AS/SVE systems around the country. The protocols developed within EHS Support help facilitate effective collection of data and communication that transcends from the technician all the way up to the project managers. This structure allows for effective resolution of issues in the field with little down time and allows our clients to be quickly informed.

Our reputation is based on safety, delivery, effective communication, quality, and efficiency at all levels of our organization. We effectively resource projects without applying multiple layers of management to a project so that the speed, quality, and cost of delivery is important. Our entire focus is on cost effectively delivering the work product on time and under budget without sacrificing quality or safety.

Resumes for key project personnel that would assist on this project and provide a value-added service to this WVDEP project are included (**Attachment C**).

In addition to project quality and efficiency, compliance with health and safety are core to EHS Support's delivery of work products and solutions. Ensuring safe project delivery in compliance with all regulatory requirements is critical to our beliefs. Our safety protocols, standards, and performance are second to none and every day we seek to complete work safely and ensure that our employees return home to their families. Copies of current OSHA 40 hour HAZWOPER Certification for key personnel can be found in **Attachment C**.

Also, as required in the RFQ, a certificate of insurance is included that shows EHS Support LLC's insurance coverages (**Attachment D**).

PROJECT TEAM

The EHS Support team brings an outstanding track record with the execution of multi-task projects of similar size, scope and complexity to this project. Our diverse team and specialized expertise ensure that each project is matched with appropriate resources and proficiency. Through technical skill, self-performance capability and environmental knowledge, we anticipate project challenges, develop solutions that meet clients' objectives and provide excellent project delivery. Our team is fully equipped to manage the requirements for this site.

Integral to the success of the technical aspects of this project is strong leadership, vision and utilizing highly technical personnel efficiently to deliver highly effective solutions.

Brock Tucker will serve as acting Senior Project Manager. For over 18 years, he has been effectively managing large complex remediation projects and has been involved with piloting, design, construction and installation of AS/SVE systems. He will be responsible for coordinating the various project elements. He will ensure that project schedules and budgets are met and that your expectations are exceeded on all portions of the project. He will work in close concert with EHS Support senior engineer, Mr. Willard Harms to resolve performance or other technical issues. Together, the two have over 50 years of experience in remediation technologies. Mr. Brock Tucker also is a Licensed Remediation Specialist (LRS) in the State of West Virginia (LRS #184).

The project field team includes three fully dedicated and well educated O&M operators that are all capable of providing excellent service and effective skill sets. Mike Burge and Greg Sowder are the primary operators whom have over 25 years of experience each with O&M of various remediation system including AS/SVE systems. They also specialize in evaluating systems for optimization and increased performance. Gregg Hicks will serve as the secondary operator and primary sampling technician for the various groundwater sampling events. He has over 5 years of multimedia sampling experience at various sites throughout the local and regional area, including experience in O&M of various remediation systems.

EHS Support will utilize other resources such as draftsman, staff scientists, and administrative professionals to complete report writing and as other specialized tasks arise may utilize any of their highly technical project engineers, hydrogeologists, groundwater chemists and modelers, any other specialties as required.

Resumes and current HAZWOPER certifications for key project personnel that would assist on this project and provide a value-added service to this WVDEP project are included (**Attachment C**).

EHS SUPPORT VALUE ADDS

Consistent with the core operating principles and commitment to quality and exemplary service to this project, EHS Support will be able to provide the following project efficiencies and value adds:

Field Work

1. Laboratory and Rental Procurement - Based on EHS Support's extensive history at similar sites and strong relationships with field equipment vendors and TestAmerica, procurement time for sampling events will be minimal and include negotiated volume rates.
2. Field Notes and Forms - EHS Support will utilize electronic field forms, data collection software (e.g. Fulcrum), and proprietary management tools (e.g. Project Map created in Microsoft OneNote)

for providing unencumbered information to the field staff (e.g. Work Plans, SAP, HASP, and previous O&M and monitoring data) and recording field notes and gauging/sampling data that (1) reduces time for field staff to provide the information; (2) eliminate versioning issues by eliminating outdated hard copy information; (3) eliminate inefficiencies associated with double-handling of field forms; (4) eliminate errors with transcription of field notes; and (5) directly import electronic data into tables and databases.

Reporting and Management

1. Enterprise Data Management System (EDMS) – Our database system will utilize for this project to warehouse data and expedite the generation of tables and figures to support the development of reports and decisions on remedial performance and optimization. The use of the electronic forms (described above) provides further efficiencies in integrating field data into the EDMS. Likewise, EHS Support and TestAmerica have developed a specific electronic data deliverable (EDD) format that streamlines the data management process and allows for expedited data verification/validation, graphical interpretations, site screening, review, and analysis.
2. SharePoint – A Microsoft cloud based infrastructure that allows ease of workflow, a central repository of working files, and safe and secure file storage that eliminate multiple versions on desktop computers. Coupled with Microsoft Office365, SharePoint file storage and resourcing makes accessing and utilizing files at your fingertips regardless of your location. Benefits are that field forms and files can be saved or viewed essentially real-time and prevents multiple versions and errors in transcribing of field notes and provides for one central location of working files. EHS Support can also allow WVDEP personnel access to this secure site project folder.

SCHEDULE

EHS Support is able to initiate work on this WVDEP PCE project as soon as appropriate contracting and project setup has been completed.

BUSINESS PROPOSAL

The services in the project scope outlined above can be accomplished for the anticipated cost of **\$240,904**. The costs associated with each task are outlined on the completed Pricing Page found in (**Attachment E**).

Only those unit costs incurred will be charged, but they will not exceed the anticipated quantity or unit costs without your prior approval. The unit costs are a blended rate factoring all labor, travel, expenses, and other direct costs notwithstanding the line item expenses provided for Line Items 55 through 78 which will be billed separately. The anticipated cost is a budget estimate based on the present knowledge and understanding of this project. Should issues arise beyond the scope of the effort outlined above, EHS Support will prepare a detailed cost proposal for WVDEP's consideration and approval prior to completing these activities. The cost proposal will be based on a time and material basis, billing only the time and expenses incurred to complete the additional tasks. Out-of-scope issues will not be initiated without your express consent.

The anticipated costs were based on the following assumptions:

- The information needed is readily available and will be provided both prior to and during the site visit.
- The scope is based on our current understanding of the project. Any additional manpower, expenses, or effort required due to unforeseen changes will be discussed with you for approval prior to completion.

Invoices will be submitted every month for work performance during that month, with payment expected within 30 days as governed by the WVDEP Purchasing Contract.

LIMITATIONS

We are relying on information provided by the WVDEP and information made available through the Purchasing Division of the State of West Virginia and other information as obtained and viewed during the January 18, 2017 site walk/pre-bid meeting to identify any material liabilities and to model the environmental liability associated with the target company. EHS Support may in part rely on sources, either written or oral, that EHS Support considers reliable, but which are not guaranteed or independently verified by us. Any party wishing to rely on the information and opinions contained herein do so at their own risk. We cannot guarantee that these reviews will necessarily yield complete or usable information based on the information provided. Lack of knowledge of historical uses may affect our ability to completely assess risks or hazards at the site. Further, we assume no liability for existing conditions on the site.

To the extent that the services require judgment, there can be no assurance that fully definitive or desired results will be obtained, or if any results are obtained, that they will be supportive of any given course of action. The services may include the application of judgment to scientific principles; to that extent, certain results of this work may be based on subjective interpretation.

The contents of reports or other information provided by EHS Support in connection with this effort shall not be construed as legal advice.

PROPOSAL ACCEPTANCE

| | |
|--|----------------------------------|
| <i>Proposal for WVDEP PCE Project – Vienna, WV</i> | |
| <input type="checkbox"/> O&M, Sampling, Reporting, Project Management | Estimated Cost: \$240,904 |

If the described scope of services and estimated budget are acceptable, please indicate your agreement by electronic signature in the space provided below and return the executed copy electronically and forward it to Brock.Tucker@ehs-support.com.

EHS Support thanks you for the opportunity to provide this proposal. Should you have any questions or require additional information, please feel free to contact Brock Tucker at (304) 942-7985. We appreciate the opportunity to work with you on this project.

Agreed and accepted:

Signature

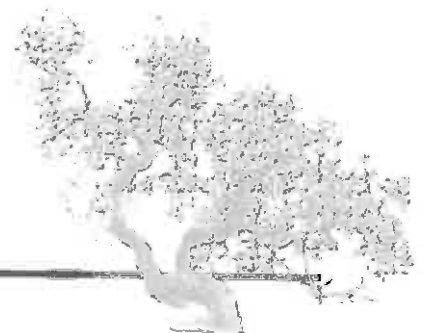
Title

Printed Name

Date



ATTACHMENT A – SIGNATURE PAGES



STATE OF WEST VIRGINIA
Purchasing Division

PURCHASING AFFIDAVIT

MANDATE: Under W. Va. Code §5A-3-10a, no contract or renewal of any contract may be awarded by the state or any of its political subdivisions to any vendor or prospective vendor when the vendor or prospective vendor or a related party to the vendor or prospective vendor is a debtor and: (1) the debt owed is an amount greater than one thousand dollars in the aggregate; or (2) the debtor is in employer default.

EXCEPTION: The prohibition listed above does not apply where a vendor has contested any tax administered pursuant to chapter eleven of the W. Va. Code, workers' compensation premium, permit fee or environmental fee or assessment and the matter has not become final or where the vendor has entered into a payment plan or agreement and the vendor is not in default of any of the provisions of such plan or agreement.

DEFINITIONS:

"Debt" means any assessment, premium, penalty, fine, tax or other amount of money owed to the state or any of its political subdivisions because of a judgment, fine, permit violation, license assessment, defaulted workers' compensation premium, penalty or other assessment presently delinquent or due and required to be paid to the state or any of its political subdivisions, including any interest or additional penalties accrued thereon.

"Employer default" means having an outstanding balance or liability to the old fund or to the uninsured employers' fund or being in policy default, as defined in W. Va. Code § 23-2c-2, failure to maintain mandatory workers' compensation coverage, or failure to fully meet its obligations as a workers' compensation self-insured employer. An employer is not in employer default if it has entered into a repayment agreement with the Insurance Commissioner and remains in compliance with the obligations under the repayment agreement.

"Related party" means a party, whether an individual, corporation, partnership, association, limited liability company or any other form or business association or other entity whatsoever, related to any vendor by blood, marriage, ownership or contract through which the party has a relationship of ownership or other interest with the vendor so that the party will actually or by effect receive or control a portion of the benefit, profit or other consideration from performance of a vendor contract with the party receiving an amount that meets or exceeds five percent of the total contract amount.

AFFIRMATION: By signing this form, the vendor's authorized signer affirms and acknowledges under penalty of law for false swearing (W. Va. Code §61-5-3) that neither vendor nor any related party owe a debt as defined above and that neither vendor nor any related party are in employer default as defined above, unless the debt or employer default is permitted under the exception above.

WITNESS THE FOLLOWING SIGNATURE:

Vendor's Name: EHS Support LLC

Authorized Signature: [Signature] Joseph D. Biss Date: 2/9/2017

State of Pennsylvania

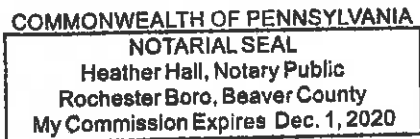
County of Beaver, to-wit:

Taken, subscribed, and sworn to before me this 9 day of February, 2017.

My Commission expires December 1, 2020.

AFFIX SEAL HERE

NOTARY PUBLIC [Signature]





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

State of West Virginia
 Request for Quotation
 34 — Service - Prof

Proc Folder: 254223

Doc Description: Operation, Maintenance and Monitoring of the Vienna PCE Site

Proc Type: Central Master Agreement

| Date Issued | Solicitation Closes | Solicitation No | Version |
|-------------|------------------------|-------------------------|---------|
| 2017-02-03 | 2017-02-14 13:30:00 | CRFQ 0313 DEP1700000013 | 2 |

BID RECEIVING LOCATION

BID CLERK
 DEPARTMENT OF ADMINISTRATION
 PURCHASING DIVISION
 2019 WASHINGTON ST E
 CHARLESTON WV 25305
 US

VENDOR

Vendor Name, Address and Telephone Number:

*EHS Support LLC
 4855 McKnight Rd. #100
 Pittsburgh, PA 15237
 724-888-2290*

FOR INFORMATION CONTACT THE BUYER

Jessica S Chambers
 (304) 558-0246
 jessica.s.chambers@wv.gov

Signature X

FEIN #

46-1124727

DATE

2/8/2017

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

State of West Virginia
VENDOR PREFERENCE CERTIFICATE

Certification and application is hereby made for Preference in accordance with *West Virginia Code, §5A-3-37*. (Does not apply to construction contracts). *West Virginia Code, §5A-3-37*, provides an opportunity for qualifying vendors to request (at the time of bid) preference for their residency status. Such preference is an evaluation method only and will be applied only to the cost bid in accordance with the *West Virginia Code*. This certificate for application is to be used to request such preference. The Purchasing Division will make the determination of the Vendor Preference, if applicable.

1. **Application is made for 2.5% vendor preference for the reason checked:**
 Bidder is an individual resident vendor and has resided continuously in West Virginia for four (4) years immediately preceding the date of this certification; or,
 Bidder is a partnership, association or corporation resident vendor and has maintained its headquarters or principal place of business continuously in West Virginia for four (4) years immediately preceding the date of this certification;
 Bidder is a resident vendor partnership, association, or corporation with at least eighty percent of ownership interest of bidder held by another entity that meets the applicable four year residency requirement; or,
 Bidder is a nonresident vendor which has an affiliate or subsidiary which employs a minimum of one hundred state residents and which has maintained its headquarters or principal place of business within West Virginia continuously for the four (4) years immediately preceding the date of this certification; or,
2. **Application is made for 2.5% vendor preference for the reason checked:**
 Bidder is a resident vendor who certifies that, during the life of the contract, on average at least 75% of the employees working on the project being bid are residents of West Virginia who have resided in the state continuously for the two years immediately preceding submission of this bid; or,
3. **Application is made for 2.5% vendor preference for the reason checked:**
 Bidder is a nonresident vendor that employs a minimum of one hundred state residents, or a nonresident vendor which has an affiliate or subsidiary which maintains its headquarters or principal place of business within West Virginia and employs a minimum of one hundred state residents, and for purposes of producing or distributing the commodities or completing the project which is the subject of the bidder's bid and continuously over the entire term of the project, on average at least seventy-five percent of the bidder's employees or the bidder's affiliate's or subsidiary's employees are residents of West Virginia who have resided in the state continuously for the two immediately preceding years and the vendor's bid; or,
4. **Application is made for 5% vendor preference for the reason checked:**
 Bidder meets either the requirement of both subdivisions (1) and (2) or subdivision (1) and (3) as stated above; or,
5. **Application is made for 3.5% vendor preference who is a veteran for the reason checked:**
 Bidder is an individual resident vendor who is a veteran of the United States armed forces, the reserves or the National Guard and has resided in West Virginia continuously for the four years immediately preceding the date on which the bid is submitted; or,
6. **Application is made for 3.5% vendor preference who is a veteran for the reason checked:**
 Bidder is a resident vendor who is a veteran of the United States armed forces, the reserves or the National Guard, if, for purposes of producing or distributing the commodities or completing the project which is the subject of the vendor's bid and continuously over the entire term of the project, on average at least seventy-five percent of the vendor's employees are residents of West Virginia who have resided in the state continuously for the two immediately preceding years.
7. **Application is made for preference as a non-resident small, women- and minority-owned business, in accordance with *West Virginia Code §5A-3-59* and *West Virginia Code of State Rules*.**
 Bidder has been or expects to be approved prior to contract award by the Purchasing Division as a certified small, women- and minority-owned business.

Bidder understands if the Secretary of Revenue determines that a Bidder receiving preference has failed to continue to meet the requirements for such preference, the Secretary may order the Director of Purchasing to: (a) rescind the contract or purchase order; or (b) assess a penalty against such Bidder in an amount not to exceed 5% of the bid amount and that such penalty will be paid to the contracting agency or deducted from any unpaid balance on the contract or purchase order.

By submission of this certificate, Bidder agrees to disclose any reasonably requested information to the Purchasing Division and authorizes the Department of Revenue to disclose to the Director of Purchasing appropriate information verifying that Bidder has paid the required business taxes, provided that such information does not contain the amounts of taxes paid nor any other information deemed by the Tax Commissioner to be confidential.

Bidder hereby certifies that this certificate is true and accurate in all respects; and that if a contract is issued to Bidder and if anything contained within this certificate changes during the term of the contract, Bidder will notify the Purchasing Division in writing immediately.

Bidder: EHS Support LLC

Signed: 

Date: 2/8/2017

Title: COO

*Check any combination of preference consideration(s) indicated above, which you are entitled to receive.

ADDENDUM ACKNOWLEDGEMENT FORM

SOLICITATION NO.: DEP 1700000013
CRFQ

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:

(Check the box next to each addendum received)

- | | |
|--|--|
| <input checked="" 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.

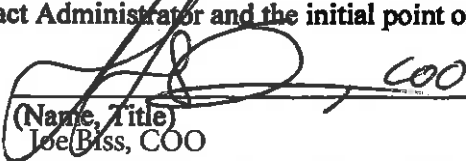
EHS Support LLC
Company

[Signature]
Authorized Signature

2/8/2017
Date

NOTE: This addendum acknowledgement should be submitted with the bid to expedite document processing.
Revised 6/8/2012

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.

 COO

(Name, Title)
Joe Biss, COO

(Printed Name and Title)
EHS Support LLC, 4885 McKnight Road, #188, Pittsburgh, PA 15237

(Address)
(724) 544-4874

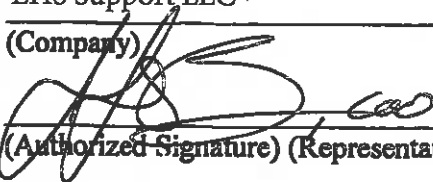
(Phone Number) / (Fax Number)
Joe.Biss@ehs-support.com

(email address)

CERTIFICATION AND SIGNATURE: By signing below, or submitting documentation through wvOASIS, I certify that I have reviewed this Solicitation 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 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 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.

EHS Support LLC

(Company)

 COO

(Authorized Signature) (Representative Name, Title)

Joe Biss, COO

(Printed Name and Title of Authorized Representative)

2/8/2017

(Date)

724-888-2290

(Phone Number) (Fax Number)

ATTACHMENT B -- PROJECT SUMMARIES



CONFIDENTIAL CLIENT FORMER REFINERY

CLIENT DESCRIPTION

This client is a large chemical manufacturer that provides chemicals, technologies, and expertise to worldwide clients. They are an industry leader in key markets including personal care, pharmaceutical, food and beverage, coatings and energy.



PROJECT OBJECTIVE

The objective of this project was to thoroughly characterize and provide a remedy for the cleanup of a large gasoline release at this former oil refinery site within the City of Louisville, Kentucky on property owned by the client.

PROJECT BACKGROUND

The property encompasses approximately 40 acres, is generally square in shape, and borders the Ohio River to the west, Chickasaw Park to the north, with residential and light industry to the east, and Anderson Packaging to the south. The refinery was built in 1912 and acquired by the client in 1959. Site investigation was initiated by the United States Coast Guard (USCG) in 1981 after a petroleum contaminated seep was discovered along the bank of the Ohio River adjacent to the site. Product was recovered between 1981 and 1983. When the USCG closed the case in 1983, recovery operations ceased. Since 1983, recoverable product has not been detected in site wells, and no visible free product petroleum seeps to the river have been observed. Currently, some dissolved petroleum constituents have been detected in

the naturally occurring hydrologic seeps along the Ohio River next to the facility and continue to be monitored.

Due to a decrease in demand, client operations ceased in 1983. Demolition of the refinery buildings and associated structures was initiated in 1995 and completed in 1996. Four aboveground storage tanks (ASTs) and associated piping remain on site and they are currently leased from the client. Access to the site is restricted by a locked gate and employees from the leasing company located at the neighboring terminal, monitor and maintain the site. The current investigation was initiated after a November 1995 letter from the Kentucky Department for Environmental Protection (KYDEP) requested information on the demolition activities and inquired into the environmental status of the site. The client conducted several site assessment activities since in 1997 that found some petroleum constituents and metals on-site above an acceptable human health standard. The client chose to address the impacts through a risk based approach. Following subsequent investigations on-site and adjacent to the Ohio River, the preparation of a Human Health Ecological Risk Assessment (HHERA), and the client addressing KYDEP comments to the HHERA, the HHERA was approved in 2009 that allowed for impacted soil to

remain on-site with environmental covenants restricting the site to Industrial land use only and a soil management plan was required. The client still had to address groundwater impacts across the site and dissolved constituents in the seeps to the Ohio River.

A Corrective Action Plan (CAP) to address the groundwater and seeps was prepared and submitted to KYDEP in 2010 that proposed pilot testing using sulfate amendment. The CAP was approved later in 2010. EHS Support took over the project on 2011. A Conceptual Site Model (CSM) and additional details on the pilot testing were provided to KYDEP and approved in 2012. Pilot testing using an anaerobic amendment showed positive results at site. However, during pilot testing of the sulfate amendment in 2013 and 2014, some additional groundwater delineation was conducted within the interior of the site by EHS Support as part of the scoping for the sulfate injection. Dissolved petroleum constituents were found to extend further into the interior of the former site than previously known. Based on the larger area of impacts, the piloting of the sulfate amendment was abandoned due to cost of the remedy and sheer volume of sulfate that would be required. An alternative pilot test evaluation plan was prepared and submitted to KYDEP in February 2015 that proposed air sparging (AS) and soil vapor extraction (SVE). KYDEP approved that plan in March 2015. EHS Support installed

AS and SVE wells in a portion of the plume that had high dissolved petroleum constituents and mobilized an AS/SVE pilot test trailer to the site. Pilot was performed in late 2015 and showed to have effective results in recovering hydrocarbon mass from the groundwater and reducing dissolved constituents. A plan to remediate the site via AS/SVE with evaluation of assimilative capacity (AC) parameters to monitor system efficiencies was approved by KYDEP later in 2015. EHS Support completed a design for a permanent AS/SVE system, procured the construction, and will be installing it in February 2017.

WORK SCOPE

EHS Support was retained to implement cost effective remedial approaches at the site to further the site to closure. EHS Support conducted additional investigations at the site to further delineate a petroleum hydrocarbon plume, worked with agency to develop an approach to increase dialogue on the progress of the site, developed a remedy to meet site remediation goals, designed and constructed an effective AS/SVE system to carry the site to closure, and have been conducting groundwater and seep monitoring at the facility. Installation of the AS/SVE system is expected to take place in February 2017 with closure anticipated in four to five years.

PROJECT RESULT

The site has now been adequately characterized, all human health and ecological risks have been identified and an approved closure remedy has been implemented. Piloting of AS and SVE technology was completed and the concept was approved by KYDEP for full scale implementation. Design of an AS/SVE was completed. AS and SVE is currently being installed with expected closure of site in four to five years. Applicable engineering and administrative controls will be implemented to address human health and ecological receptors as well.



CONFIDENTIAL CLIENT FORMER REFINERY

CLIENT DESCRIPTION

This client is a large chemical manufacturer that provides chemicals, technologies, and expertise to worldwide clients. They are an industry leader in key markets including personal care, pharmaceutical, food and beverage, coatings and energy.



PROJECT OBJECTIVE

The objective of this project was to thoroughly characterize and provide a remedy for the cleanup of a large gasoline release at this former oil refinery site within the City of Louisville, Kentucky on property owned by the client.

PROJECT BACKGROUND

The property encompasses approximately 40 acres, is generally square in shape, and borders the Ohio River to the west, Chickasaw Park to the north, with residential and light industry to the east, and Anderson Packaging to the south. The refinery was built in 1912 and acquired by the client in 1959. Site investigation was initiated by the United States Coast Guard (USCG) in 1981 after a petroleum contaminated seep was discovered along the bank of the Ohio River adjacent to the site. Product was recovered between 1981 and 1983. When the USCG closed the case in 1983, recovery operations ceased. Since 1983, recoverable product has not been detected in site wells, and no visible free product petroleum seeps to the river have been observed. Currently, some dissolved petroleum constituents have been detected in

the naturally occurring hydrologic seeps along the Ohio River next to the facility and continue to be monitored.

Due to a decrease in demand, client operations ceased in 1983. Demolition of the refinery buildings and associated structures was initiated in 1995 and completed in 1996. Four aboveground storage tanks (ASTs) and associated piping remain on site and they are currently leased from the client. Access to the site is restricted by a locked gate and employees from the leasing company located at the neighboring terminal, monitor and maintain the site. The current investigation was initiated after a November 1995 letter from the Kentucky Department for Environmental Protection (KYDEP) requested information on the demolition activities and inquired into the environmental status of the site. The client conducted several site assessment activities since in 1997 that found some petroleum constituents and metals on-site above an acceptable human health standard. The client chose to address the impacts through a risk based approach. Following subsequent investigations on-site and adjacent to the Ohio River, the preparation of a Human Health Ecological Risk Assessment (HHERA), and the client addressing KYDEP comments to the HHERA, the HHERA was approved in 2009 that allowed for impacted soil to

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WORK SCOPE

EHS Support was retained to implement cost effective remedial approaches at the site to further the site to closure. EHS Support conducted additional investigations at the site to further delineate a petroleum hydrocarbon plume, worked with agency to develop an approach to increase dialogue on the progress of the site, developed a remedy to meet site remediation goals, designed and constructed an effective AS/SVE system to carry the site to closure, and have been conducting groundwater and seep monitoring at the facility. Installation of the AS/SVE system is expected to take place in February 2017 with closure anticipated in four to five years.

PROJECT RESULT

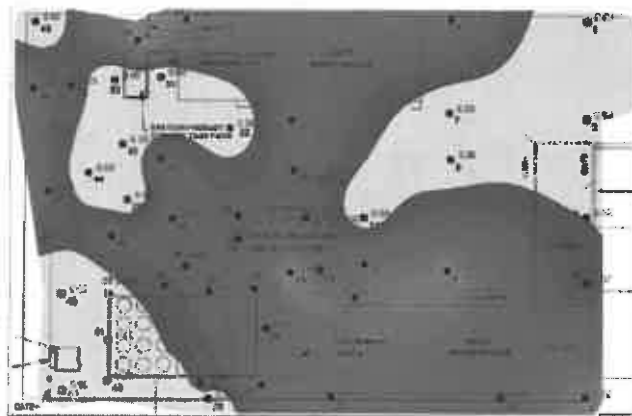
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CONFIDENTIAL CLIENT SOUTH BEND, IN -- REMEDIATION

CLIENT DESCRIPTION

Confidential client is a specialty chemical manufacturer that provides chemicals, technologies, and expertise to worldwide clients. With overall global sales of nearly eight billion dollars, client remains an industry leader in key markets including personal care, pharmaceutical, food and beverage, coatings, and energy.



PROJECT OBJECTIVE

The project objective is to complete cleanup activities, both on and offsite, and obtain regulatory closure for impacted soil and groundwater associated with historical operations at the former Site in South Bend, Indiana. Corrective action at the Site is being implemented in accordance with the Resource Conservation and Recovery Act (RCRA) Corrective Action Program under Indiana Department of Environmental Management (IDEM) oversight.

PROJECT BACKGROUND

The Site is a former distribution facility located in South Bend, Indiana. The Site has been inactive since 2001, with the exception of warehousing and handling of containerized waste, operation of the onsite air sparge and soil vapor extraction system (AS/SVE), and other corrective action activities.

Soil and groundwater impacts at the Site are associated with operation of former tanks farms, bulk loading/unloading racks, and drumming facilities.

The constituents of concern (COCs) related to the historical releases from the Site are volatile organic compounds and include:

- Aromatic hydrocarbons
- Chloroalkenes
- Chloroalkanes

WORK SCOPE

A Corrective Measures Study and Corrective Measure Implementation Workplan (CMS/CMI) was submitted to U.S. EPA Region V in January 2010, proposing implementation of final corrective measures including expanded AS/SVE onsite and natural attenuation and groundwater capture and treatment via a City of South Bend well field offsite.

In 2012, EHS Support assisted the Client in negotiating an Agreed Order with IDEM, transitioning the project from federal to state oversight. IDEM subsequently approved the CMS/CMI and EHS Support completed AS/SVE upgrades that included installation of additional AS wells to target "hot spots" identified via a passive soil gas survey and horizontal SVE wells (trenches) to more effectively liberate vapor-phase COCs. The upgraded AS/SVE system operated in various configurations to optimize COCs removal from 2012 to 2016 when EHS

Support petitioned to suspend the system and evaluate potential rebound as mass extraction rates had reached asymptotic levels and groundwater COCs concentrations at all onsite monitoring wells were approaching or had achieved cleanup levels.

PROJECT RESULT

The AS/SVE system has been suspended for almost a year and rebound effects appear to be minimal or not observed based on stable or decreasing groundwater COCs concentrations. In addition, EHS Support conducted a post-AS/SVE passive soil gas survey in 2016 which indicated that the "hot spots" had been addressed. EHS Support is currently working with the Client and IDEM to terminate AS/SVE operations permanently and revise the groundwater monitoring program commensurate with a remedial lifecycle change from active to passive remediation. Annual cost savings associated with the transition from active to passive remediation is on the order of \$120K.



CONFIDENTIAL CLIENT, LANSING MI - SITE REMEDIATION

CLIENT DESCRIPTION

Confidential client is a specialty chemical manufacturer that provides chemicals, technologies, and expertise to worldwide clients. With overall global sales of nearly eight billion dollars, the client remains an industry leader in key markets including personal care, pharmaceutical, food and beverage, coatings, and energy.



PROJECT OBJECTIVE

The project objective is to complete cleanup activities, both on- and off-site, and obtain regulatory closure for impacted soil and ground water associated with historical operations at the former site in Lansing, Michigan. Corrective action at the site is being implemented in accordance with the Resource Conservation and Recovery Act (RCRA) Corrective Action Program.

PROJECT BACKGROUND

The site is a former distribution facility located in Lansing, Michigan. The site has been inactive since 1985 with the exception of the operation of an on-site ground water recovery and treatment system and other corrective action activities.

Soil and ground water impacts at the site are associated with operation of former tanks farms, tanker truck loading racks, and drumming facilities, which were removed as part of site closure activities in 1985. The constituents of concern related to the historical releases from the site are volatile organic compounds and include:

- Aromatic hydrocarbons
- Chloroalkenes
- Chloroalkanes.

Significant contaminant mass removal via on-site soil vapor extraction and ground water recovery and treatment have been achieved through interim measures activities at the site.

Contaminant mass reduction in off-site ground water is occurring through natural means and the United States Environmental Protection Agency (USEPA); the client, and EHS Support are currently evaluating ground water extraction well configurations to expedite off-site ground water restoration timeframes.

WORK SCOPE

A Corrective Measures Study (CMS) was submitted to USEPA Region V in January 2006 providing regulatory, investigative, and remedial information and proposing corrective measures for the site. USEPA conditionally approved the CMS selected a final remedy.

USEPA, the client, and EHS Support revisited the components of the selected remedy and have submitted a revised Corrective Measure Implementation (CMI) Work Plan to address additional candidate corrective measures for the site.

PROJECT RESULT

USEPA, the client, and EHS Support are currently working through comments and responses on the Revised CMI Work Plan with proposed corrective measures for the facility conceptually approved. It is anticipated that USEPA will submit a Statement of Basis in 2013 with final remedy implementation potentially occurring in 2014.

CONFIDENTIAL CLIENT SITE CLOSURE -- MOBILE, AL

CLIENT DESCRIPTION

The client is a specialty chemical manufacturer that provides chemicals, technologies, and expertise to worldwide clients. With overall global sales of nearly eight billion dollars, the client remains an industry leader in key markets including personal care, pharmaceutical, food and beverage, coatings, and energy.



PROJECT OBJECTIVE

The main objectives for the project were to:

- Maintain optimal system performance and compliance of the Corrective Action Plan.
- Manage risk to human health and environment.
- Close the site through the Alabama Risk-Based Corrective Action process.

PROJECT BACKGROUND

The site is an active commercial chemical distribution facility that was developed in 1961. Historical and current onsite operations include bulk chemical storage, drumming, and packaging of industrial chemicals and solvents for customers. Site investigations indicated the presence of chlorinated volatile organic compounds (CVOCs) in groundwater and the presence of limited dense non-aqueous phase liquids (DNAPL). Geology beneath the site is characterized as alluvial deposits and consists of discontinuous beds and lenses of fine to coarse gravel, fine- to coarse-grained sand, sandy silt, sandy clay, soft to stiff clay, and carbonaceous material (low-terrace and coastal deposits). A continuous confining clay unit underlies the site, which divides the aquifer into the upper perched zone and underlying sand and gravel aquifer units. High resolution site characterization work indicated CVOCs entrained in fine-

grained deposits that have produced persistent CVOC concentrations in groundwater.

An interim corrective action and monitoring program was implemented in 1990 to maintain hydraulic control of the groundwater plume, and actively remove and treat source groundwater, and remove NAPL. In 2016, EHS Support implemented a more aggressive remedial strategy that included installation of additional groundwater extraction wells within the primary source zone to target remaining contaminant mass and to reduce the remedial time frame. In addition, a robust assessment of natural attenuation was completed that showed strong indicators for sequential biodegradation of CVOC occurring at the site. Negotiations with the agency culminated in a remedial strategy that identifies practical endpoints for active source treatment and transition to monitored natural attenuation will be implemented as the long-term remedial approach.

WORK SCOPE

Project activities for the last few years have consisted primarily of routine operation and maintenance of the groundwater remediation system, semi-annual groundwater monitoring and associated reporting.

Current active remediation consists of operation of the nine-well groundwater recovery and treatment system. Recovered groundwater is treated using air stripping and pH neutralization, and is discharged to the City of Mobile sanitary sewer system pursuant to the contract permit issued by the Mobile Area Water & Sewer System (MAWSS).

PROJECT RESULT

EHS Support will continue to operate the existing groundwater recovery and treatment system, enhancing it as necessary, until the site is remediated to a point where it is realistic to compare site concentrations to ARBCA cleanup levels developed by ADEM or to achieve risk-based closure. Enhancements likely include source abatement and/or enhanced attenuation. Anticipated savings associated with lifecycle change from active to passive remediation is \$120,000/year.



SITE CLEANUP AND CHARACTERIZATION - COMMERCE, CA

CLIENT DESCRIPTION

The client is a specialty chemical manufacturer that provides chemicals, technologies, and expertise to worldwide clients. With overall global sales of nearly eight billion dollars, the client remains an industry leader in key markets including personal care, pharmaceutical, food and beverage, coatings, and energy.



PROJECT OBJECTIVE

The project objective has been to complete the cleanup and site characterization, both on and offsite, of impacted groundwater, soil, and soil vapor pursuant to the Resource Conservation and Recovery Act (RCRA) process and under regulatory guidance of the California Department of Toxic Substances Control (DTSC). Meeting the objective will also conform to the client's overall goal of relieving its long-term environmental liabilities for the site.

PROJECT BACKGROUND

The project site is a 5.6-acre parcel of property located in an industrial and commercial area of Commerce, California. The facility was constructed by Archer Daniels Midland circa 1950 and acquired by the client in 1967. The facility formerly produced alkyl resins and now produces unsaturated polyester resins marketed to manufacturers of plastics and composites. The property is fully developed with eight buildings, aboveground storage tanks, and rail spurs used in the production, testing, storage, and transportation of product materials. A municipal groundwater production well is located upgradient to the site. Historical operations at the site have led to subsurface impacts of primarily mineral

spirit-range hydrocarbons in the soil matrix, soil vapor, free-phase product on groundwater, and dissolved in groundwater.

In 1989, the facility was issued two hazardous waste permits for distillate wastewater and off-specification resins. The plant distillate was treated by an onsite incinerator under a RCRA Part B permit. The permits were closed out in 2003; however, ongoing investigations and cleanup operations are being driven by the RCRA process under regulatory oversight of the DTSC.

WORK SCOPE

Project activities have been driven by seven phases of RCRA Facility Investigations (RFI) and Interim Measures (IM). Site investigations included the characterization and delineation of constituents of concern (COCs) in soil matrix, soil vapor, and groundwater, along with the determination of upgradient COCs migrating onsite in dissolved groundwater from a regional plume of chlorinated compounds.

IM for remediation related to historical releases of light non-aqueous phase liquid (LNAPL) has been ongoing since 1995. Given the residual state of the LNAPL, the

composition of the LNAPL, and the relatively low volatile constituent concentrations in groundwater, soil, and soil gas, SVE was determined to be an effective means of further stripping remaining volatile constituents to the extent possible. The SVE system consists of four, triple-completion vapor extraction wells ranging from 30 to 90 feet below ground surface. The vapor extraction system is comprised of a single air blower and the extracted vapors are treated using the existing thermal destruction afterburner unit used by the facility.

The current decrease in groundwater elevation within the shallow aquifer provides ideal conditions for SVE. To date, soil vapor extraction initiatives have removed more than 54 tons of detectible volatile organic carbons (VOCs). The SVE system is currently off-line for a rebound and assessment period related to the investigation activities, but is expected to be restarted in 2017. Once the system is placed back into operation, it will operate until vapor concentrations appear to be approaching asymptotic conditions. Upon achieving an asymptotic condition, the system will be taken off-line to evaluate vapor rebound, once conditions have equilibrated, a final round of vapor samples will be collected and reported to DTSC.

The current scope of work is being implemented as a Phase 6 Addendum RFI Investigation that has included a final determination of COCs, a detailed soil vapor

investigation, an indoor air investigation, and a human health risk assessment. Ongoing IM activities include groundwater monitoring, soil vapor extraction (turned off for the soil vapor study), and free-phase product recovery.

PROJECT RESULTS

Milestones reached during the ongoing investigation and cleanup actions were as follows:

- A Hazardous Waste Facility Closure Certification was approved for the RCRA Part B permit.
- Soil, soil vapor, and groundwater impacts have been delineated.
- “No further action” was issued regarding further assessment and mitigation measures to the adjacent municipal groundwater production well.
- The limits to free-phase product impacts and potential migration have been assessed.
- The IM for free-phase product removal and soil vapor extraction have been optimized.
- Soil vapor and indoor air investigations have been completed to support a detailed risk assessment demonstrating that there is no apparent risk to indoor air from vapor intrusion.

ATTACHMENT C - STAFF QUALIFICATIONS





*Quote to Live By
"Example is not the main thing in influencing others, it is the only thing."
Albert Schweitzer*

BROCK TUCKER, LRS

BROCK.TUCKER@EHS-SUPPORT.COM TEL: 304-942-7985 HUNTINGTON, WEST VIRGINIA

EXPERTISE

- UST, Landfill, RCRA and CERCLA Investigations and Remediation
- PRP
- Permitting and Compliance
- Remedial System Design
- Remedial System Installation, Operation, and Maintenance
- Groundwater and Soil Sampling
- Air Monitoring
- Biological and Ecological Assessments and Species Inventories

EDUCATION

- MS, Biological Sciences, Marshall University, 1998
- BS, Biological Sciences, Minors in Chemistry and Botany, Marshall University, 1995

CERTIFICATIONS AND TRAINING

- WVDEP NPDES Permit Course, 2014
- West Virginia Licensed Remediation Specialist
- OSHA Hazardous Waste Site Worker (HAZWOPER) 40-hour training
- OSHA HAZWOPER 8-hour Annual Refresher
- Basic First Aid and CPR
- U.S. DOT and Hazardous Materials Transportation Training
- OSHA Fall Protection, 8-hour course
- OSHA 8-hour Supervisor Training
- SCBA and SAR Training
- Level B Supplied Air Respirator Training
- TSA, Transportation Worker Identification Credentials (TWIC)
- Marathon Basic Orientation Plus Training

As a project manager and environmental scientist, Brock Tucker has over 18 years of experience with managing and working with a variety of voluntary remediation program (VRP) sites, underground storage tank (UST) and RCRA Facility investigations, landfill closures and post-closure monitoring/compliance, remedial design and remedial system implementation/installation projects, NPDES permitting, sampling, and reporting, Leak Detection and Repair (LDAR) testing, risk assessment, MACT air permitting/compliance, waste delisting and management, report writing, and UST compliance audits.

Brock has managed, prepared various types of environmental reports, scheduled work, and developed remedial strategies for over 80 underground storage tank (UST) and other industrial sites in various stages of environmental investigation from initial assessment, corrective action, and final site closure in Kentucky, West Virginia, Ohio, and Virginia.

He coordinated fieldwork, monitored various types of drilling (hollow stem auger, mud and air rotary, direct push, and hand auger) and environmental related field activities, conducted, managed, and coordinated multiple groundwater and soil sampling events, conducted soil vapor and indoor air testing, and logged soil data during drilling activities. He is knowledgeable of state and federal environmental laws and regulations and has worked with reimbursement agencies in Kentucky and Ohio to reclaim corrective action costs on qualified UST projects.

Design, engineered, performed troubleshooting, and installed various types of remediation equipment and systems. He has expertise with various remediation technologies including soil excavation, recovery trenching, pump and treat technologies, free product recovery systems, nutrient injection, accelerated and monitored natural attenuation, multiphase vacuum extraction and treatment, and air sparge and soil vapor extraction. He has experience in pilot testing dual phase and air sparge and soil vapor extraction systems, wastewater treatment, and amendment injection to determine feasibility as a remedial option on the project.

Brock has significant experience associated with UST compliance, environmental assessments, ecological and human health risk assessments, and animal and plant identification for biological assessments and impact studies.

KEY EXPERIENCE

Constructed a mobile air sparge and soil vapor extraction system for a large petrochemical company in which many of the controls and features allow the user to operate and monitor the system from a remote location saving on operation and maintenance mobilization costs. The system also has a unique pulsing capability that reduces unnecessary air sparging that is sometimes an issue with traditional systems. The system is capable of logging operations and system readings over time that can be viewed. The system was installed at a UST site in Kentucky and was able to do much of the monitoring and operations remotely. This AS portion of the system was utilized in the initial site cleanup phases to “steer” residual free product laying beneath buildings to nearby SVE wells for recovery with great success. The system was effective at cleaning up the site and at reduced operation and maintenance costs to the client. The site was closed after reaching remediation goals.

Conducted an expanded site characterization at a bulk petroleum terminal in Louisville, KY to further understand the distribution of petroleum constituents after a chosen remedy was selected by a previous consultant. Based on new site data obtained by Brock Tucker and the larger than expected plume, the chosen remedy was terminated and a new alternative pilot remedy (AS/SVE) was proposed. Mr. Tucker’s insight and efforts saved the client from a likely lengthy project remediation life cycle utilizing a technology that would not have been cost effective. Mr. Brock Tucker piloted, help design, and construct a new AS/SVE system for the project site that ended up saving the client many costs and shortened the project life cycle.

Managed field staff in a RCRA Facility Investigation (RFI) at a former landfill in Kentucky for a major oil company, prepared a Conceptual Site Model (CSM), and assisted in presenting CSM to KDEP. Also, presented remedy which included capping using an asphalt cap and monitored natural attenuation of groundwater showing that risks were acceptable and product could be left in place. Remedy was accepted by KDEP and project is now in post closure. This approach resulted in significant cost savings to project versus installing a traditional

cap, more extensive corrective actions, and a more involved monitoring program and the client is able to utilize the “cap” (asphalt lot) for storage and warehouse space. The potential cost savings for the client was estimated between \$125,000 and \$200,000.

Managed a Kentucky landfill in post closure care in which F039 landfill leachate is treated and discharged to a permitted KPDES outfall. System redesign was accomplished that allowed a reduction in the number of spent filters that are classified as F039 hazardous waste. The spent filters were then sampled under a no longer Contained-In Determination (CID) and were declassified by the KDEP. The result of the reduction in spent filters and CID approval saved the client over \$25,000. On the same project, Mr. Tucker, worked with state environmental officials to develop a leachate sampling plan that will support a delisting petition and spray irrigation of leachate onto landfill cap. He successfully demonstrated the value of spray irrigation of ammonia-laden leachate as a cap fertilizer and that the leachate no longer contains the constituents for which it became listed. The delist petition was approved in early 2017 and has ended up saving the client over \$3MM in waste disposal costs.

Successfully demonstrated to state agency on a petroleum pipeline release site in West Virginia that monitored natural attenuation (MNA) was warranted as the selected remedy. Mr. Tucker was able to use Stable Isotope Probing (SIP) data in conjunction with attenuation modeling, MNA sampling, and assimilative capacity data to demonstrate that MNA was a viable option. This was the first time in West Virginia that SIP data was used to bolster the argument for MNA at a site. MNA was awarded for the project.

Served as a project field coordinator for an Interim Measures study for a former surface impoundment area in Kentucky. Coordinated and implemented approved investigation work plans and prepared and assisted in the IM Report that involved a CSM that would allow product to be left in place. No additional corrective action required as product in place was not migrating and human health risks were acceptable. CSM was approved by KDEP and no further product recovery was

required and capping followed by groundwater and MNA monitoring was approved.

Managed a comprehensive Site Assessment project at a petroleum terminal site and surrounding property in West Virginia which Rapid Optical Screening Tool (ROST) and Cone Penetration Testing (CPT) was implemented as an initial screening tool. Given the large area of investigation, ROST/CPT allowed for cost effective identification of impacts and subsurface geological conditions over a broad portion of the properties so that other types of subsurface investigations could be more focused in key areas. He then presented that data and supplemental data to the WVDEP in Work Plans that involved reduced number of soil borings and sampling that was approved by the agency.

In the same investigation, Brock was able to demonstrate to the agency that the free product at the site (a major risk driver) was contained in place through hydrogeologic features of the site and that the product plume was essentially not migrating and that product could very well be left in place and effectively monitored under a scheduled program. This allowed for the agency to understand the site subsurface conditions and free product to a greater extent. Initially, the agency was not amicable to product left in place but after investigation results were presented to the agency their stance on product left in place has since relaxed and it appears that they will tentatively allow a monitoring phase followed by closure for the properties. As a result of the agency's stance, product recovery may also be suspended. As part of the same project, Brock reviewed the facility's existing product recovery pumping operations. He overhauled and updated it to be more effective at capturing product. The outcome of the product recovery system upgrades resulted in a recovery system recovering nearly 1,500 gallons more over a 6-month period with less maintenance. The upgrades saved the client nearly \$40,000 a year in operation and maintenance costs.

Completed NPDES Stormwater and General Permit applications and assisted clients in following and implementing best management practices and discharge treatment designs to come in compliance with NPDES discharges.

Identified various project aspects on PRP projects that demonstrated that the client was not involved or responsible

for cleanup or remediation and in doing so reduced liability for the client.

Managed field support staff on over 80 UST projects in Kentucky, Ohio, West Virginia, Pennsylvania, and Virginia for a major petrochemical company in which many UST field investigations, closures, groundwater and soil WVDEP sampling events, and system installations were conducted.



Safety Compliance Management
is proud to award this
Certificate of Completion

to

Brock Tucker

for successfully completing 8 hours of instruction in

OSHA 8hr Hazwoper Refresher Training #936

29 CFR 1910.120 (e)(p)

Presented this 27 day of December, 2016.



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Laura Gutz
Safety Compliance Management, Inc.



WILLARD "WILL" HARMS JR.

WILL.HARMS@EHS-SUPPORT.COM TEL: 850-408-0023 TALLAHASSEE, FLORIDA

EXPERTISE

- Remediation
- Chlorinated Solvents
- Environmental Engineering
- Chemistry
- Biology
- Remediation Feasibility
- Remediation Design
- Remediation O&M
- Remediation Performance Monitoring
- Remediation Performance Optimization
- In Situ Treatment
- Natural/Enhanced Attenuation
- Environmental Forensics
- Emerging Technologies
- Molecular Biological Tools (Bacteria DNA)
- Stable Isotopes

EDUCATION

- M.S., Environmental Engineering, University of Tennessee, 1989
- B.S., Chemistry and Biology, Tennessee Wesleyan College, 1982

CERTIFICATIONS AND TRAINING

- Project Manager Certification
- 40 Hour OSHA Health and Safety Certification (29 CFR 1910.120)
- 8-Hour OSHA Health and Safety
- 8-Hour OSHA Site Supervisor's Certification
- First Aid/CPR Certifications
- American Society of Civil Engineers
- American Water Works Association
- Water Pollution Control Federation
- Chi Epsilon National Civil Engineering Honor Society

Will Harms has over 35 years' experience in environmental restoration. He focuses on remedial design, implementation, operation & maintenance, performance monitoring and reporting services for Superfund sites, chemical plants, petroleum refineries, chemical/fuel distribution terminals, military bases, and other public and private sector clients.

He specializes in remediation of chlorinated solvents (like tetrachloroethene) and other recalcitrant compounds in groundwater, surface water, soil, and sediment like 1,4-dioxane. Will is also experienced with remediation of petroleum products, pesticides, terpenes, phthalates, organic-phase liquids, chlorofluorocarbons (CFCs; Freon), and other compounds.

His design capabilities include air sparging, soil vapor extraction, pump-and-treat, advanced physicochemical and biological treatment process, chemical oxidation, bioremediation, natural attenuation, and other remedies. He is skilled with interpretation of chlorinated solvents remediation performance records and with how to optimize performance accordingly.

Will has performed numerous remedial systems' performance evaluations and Remedial Process Optimization (RPO) studies.

Will is experienced in environmental emergency response and has extensive experience with sampling and analytical techniques, including molecular biological tools (microbial quantitation and speciation) and stable isotope forensic assessment techniques.

He has authored and contributed to many remediation feasibility studies (FS) under CERCLA (Superfund), corrective measures studies (CMS) under RCRA, and other remediation feasibility documents with various titles such as focused feasibility study, streamlined corrective measures study, remedial options evaluation, and comprehensive feasibility study.

Will has established himself as an interdisciplinary remediation subject matter expert. His ability to significantly contribute to the success of multi-located teams is well demonstrated. He excels in establishing achievable and approvable objectives, goal-oriented problem solving, designing efficient and effective remedies, performance optimization, and demonstration of success.

KEY EXPERIENCE

REMEDIAL DESIGN, IMPLEMENTATION, PERFORMANCE MONITORING, PERFORMANCE OPTIMIZATION, REPORTING, AND PROJECT MANAGEMENT

Mr. Harms has designed and implemented remediation systems for customers like Ashland, BASF, BP, Brunswick, Colgate Palmolive, ConocoPhillips, DuPont, First Chemical, Kinder Morgan, Marathon Petroleum, McKenzie Tank Lines, Millennium Specialty Chemicals, Occidental Chemical, Olin, PepsiCo, Pet Chemicals, Ryder Truck Rentals, SCM Glidco Organics, State of Florida, THAN, Unocal, US Air Force, W.R. Grace, and confidential clients in states such as Alabama, Florida, Georgia, Indiana, Kansas, Kentucky, Louisiana, Michigan, Minnesota, Ohio, Oklahoma, Tennessee, Texas, and other states.

Representative remedial technologies include source zone depletion remedies, air sparging with soil vapor extraction (SVE), biosparging (without SVE), bioaugmentation, bioremediation, bioventing, cap/covers, carbon dioxide sparging, chemical oxidation, DNAPL recovery, dewatering, engineering controls, excavation and disposal, institutional controls, LNAPL recovery, migration barriers, multiphase extraction, natural attenuation, neutralization, pump and treat, recirculation wells, soil flushing, soil vapor extraction, and solidification/stabilization.

These remediation projects have included activated carbon adsorption units, acid gas scrubbers, air strippers, thermal/catalytic oxidizers, chemical metering, directional drilling, filtration, neutralization, gas infusion, horizontal wells, and other processes.

Performance monitoring and optimization tools include attention to immediate interpretation of performance results (instead of waiting until a report is due), automated monitoring, data management, electrical/mechanical

condition monitoring, remote telemetry units (RTUs), molecular biological tools, stable isotope enrichment, and establishing meaningful and achievable metrics for site closure.

REMEDIAL DESIGN, IMPLEMENTATION, PERFORMANCE MONITORING, PERFORMANCE OPTIMIZATION, REPORTING, AND PROJECT MANAGEMENT

Mr. Harms has designed and implemented remediation systems for customers like Ashland, BASF, BP, Brunswick, Colgate Palmolive, ConocoPhillips, DuPont, First Chemical, Kinder Morgan, Marathon Petroleum, McKenzie Tank Lines, Millennium Specialty Chemicals, Occidental Chemical, Olin, PepsiCo, Pet Chemicals, Ryder Truck Rentals, SCM Glidco Organics, State of Florida, THAN, Unocal, US Air Force, W.R. Grace, and confidential clients in states such as Alabama, Florida, Georgia, Indiana, Kansas, Kentucky, Louisiana, Michigan, Minnesota, Ohio, Oklahoma, Tennessee, and Texas.

Representative remedial technologies include variations on air sparging, bioaugmentation, bioremediation, bioventing, cap/covers, carbon dioxide sparging, chemical oxidation, DNAPL recovery, dewatering, engineering controls, excavation and disposal, institutional controls, LNAPL recovery, migration barriers, multiphase extraction, natural attenuation, neutralization, pump and treat, recirculation wells, soil flushing, soil vapor extraction, and solidification/stabilization.

These remediation projects have included acid gas scrubbers, activated carbon adsorption units, air strippers, catalytic oxidizers, chemical metering, directional drilling, filtration, neutralization, gas infusion, horizontal wells, thermal oxidizers, and other processes.

Performance monitoring and optimization tools include attention to immediate interpretation of performance results

(instead of waiting until a report is due), automated monitoring, data management, electrical/mechanical condition monitoring, molecular biological tools, remote telemetry units (RTUs), stable isotope enrichment, and establishing meaningful and achievable metrics for site closure.

REPRESENTATIVE SUPERFUND EXPERIENCE

City Chemicals Superfund Site (University Blvd), Orlando, FL; Project Manager for Design and construct air sparge/SVE remediation system for chlorinated solvents in groundwater.

City Chemicals Superfund Site (Airport Blvd), Sanford, FL; Project Manager for Design and construct hydraulic control remediation system for chlorinated solvents in groundwater.

Davis Liquid Waste Disposal Superfund Site, Smithfield, RI; Remediation Engineer for Remedial Design/Remedial Action (RD/RA) upgrades at liquid waste disposal site.

PICCO Resin Disposal Superfund Site, West Elizabeth, PA; Remediation Engineer for Remedial Design/Remedial Action (RD/RA) upgrades at liquid resins disposal site.

Scientific Chemical Processing Superfund Site, Carlstadt, NJ; Remediation Engineer and Forensic Scientist in support of allocation distribution among PRPs.

Sprague Electric Company Superfund Site, Longwood, FL; Coordinator for Remedial Investigation and Feasibility Study (RI/FS) for remediation of chlorinated solvents.

St. Paul Refinery Superfund Site, St. Paul, MN; Remediation Engineer for cleanup of petroleum in fractured bedrock.

W.R. Grace & Co. Pesticide Plant, Ft. Pierce, FL; Project Manager for characterization and demolition of former pesticide plant.

REPRESENTATIVE PUBLICATIONS

Harms, W. D. & R. W. Henterly (2015). *Bioremediation of Chloroethenes in Groundwater by Mixing Anaerobic Bacteria Directly Into Fermentable Substrate*. In Proceedings for the 30th Annual Conference on Soils, Sediments, Water, and Energy (Editors P.T. Kostecki, C. Teaf, E. Calabrese, & D.

Ludwig), 2014, Vol. 20, 37-66. Amherst Scientific Publishers, Amherst, MA.

Harms, Willard D., Jr. (2015). *Chloroethenes Degradation in Microcosms Containing Fermentable Substrate, Neat ZVI, or Fermentable Carbon-ZVI Mixture*. In Proceedings for the 30th Annual Conference on Soils, Sediments, Water, and Energy (Editors P.T. Kostecki, C. Teaf, E. Calabrese, & D. Ludwig), Vol. 20, 36-56. Amherst Scientific Publishers, Amherst, MA. 2015.

Harms, Willard D. Jr. and Henterly, R. W. (2015). *Optimal Treatment Zone Moves During Enhanced Reductive Dechlorination in Fractured Bedrock*. Remediation Journal, 25(4), 82-88.

Schmidt, M.L. and Harms, Willard (Will) D., Jr. (2014). *Application of Mass Flux and Mass Discharge Relationships for Chloroethenes-Impacted Groundwater Remedial Decisions*. In Proceedings of the Ninth International Conference on Remediation of Chlorinated and Recalcitrant Compounds, Manuscript No. A-025, May 2014.

Harms, Willard D., Jr., et al. (2010). *Passive Soil Gas Survey to Locate Source of Tetrachloroethene (PCE) Dissolution in Groundwater*. Proceedings 7th Intl. Conf. Remediation of Chlorinated and Recalcitrant Compounds, Battelle Press, Columbus, 2010.

Harms, Willard D. Jr., et al. (2000). *HRC Enhanced Reductive Dechlorination of Source TCE in an Unconfined Aquifer. Bioremediation. and Phytoremediation of Chlorinated and Recalcitrant Compounds*, ed. G. B. Wickramanayake, et al., Battelle Press, Columbus, 2000.

Harms, W. D., et al. (1992). *Softening by Fluidized Bed Crystallizers*. Journal of Environmental Engineering, ASCE. Vol. 118, No. 4, Jul/Aug 1992. pp. 513 - 529.



Will Harms



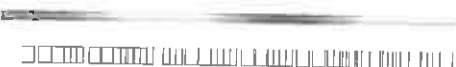
OSHA 8hr Hazwoper Refresher Plus #1088



5/13/2016



RG





MICHAEL S. BURGE

FIELD SERVICE TECHNICIAN

MIKE.BURGE@EHS-SUPPORT.COM TEL: 614-354-7612 GALLOWAY, OHIO

EXPERTISE

- Remediation Project Manager
- Operations & Maintenance of Groundwater Remediation Systems
- Soil Vapor Extraction and Air Spurge System
- Monitoring Well Sampling
- Health & Safety

EDUCATION

Environmental Management, Muskingum Area Technical College, 1985-1987

CERTIFICATIONS AND TRAINING

- Class K Treatment System Operator, IL
- Class A Waste Water Treatment Operator, MI
- OSHA 40-hour Safety Training, in compliance with 29 CFR 1910.120
- OSHA Site Supervisor Training, in compliance with 29 CFR 1910.120
- OSHA Confined Space Entry Training, in compliance with 29 CFR 1910.120

Mike has over 29 years of diverse experience providing field services and operation and maintenance oversight of groundwater remediation systems for clients throughout Ohio, Illinois, Michigan and Indiana. His expertise includes annual inspections with regulatory authorities, securing discharge permits, compliance sampling and associated discharge reporting.

KEY EXPERIENCE

SOIL VAPOR EXTRACTION AND AIR SPARGE SYSTEM

CONFIDENTIAL CLIENT – SOUTH BEND, IN

Mike provided operation and maintenance of a groundwater recovery system at this distribution facility including:

- Soil Vapor Extraction and Air Spurge System.
- Vapor sampling of discharge air from 1999 to 2015.
- Onsite Project Team leader for system upgrade to new Program Logic Controller system and sensors.
- Installation oversight of the new air compressor start-up used for enhanced air sparging.
- Installation oversight of air compressor heat recovery system.

CONFIDENTIAL CLIENT – DAYTON, OH

Operated AS/SVE at a facility to achieve ground water treatment information for the future system upgrades.

Assisted with the design of the on-upgrade AS/SVE to be installed after Agency and Client approval.

Summa canister air sampling.

Ground water using low flow sampling techniques

CONFIDENTIAL CLIENT – CINCINNATI, OH

Operation of interim measures SVE dual phase removal system with regenerative carbon units until the system removed over 4,000 lbs. of material to be shipped off as boiler feed stock. Reuse of the waste.

SUMMA Canister sampling.

CONFIDENTIAL CLIENT – FINDLAY, OH

Mike upgraded a stormwater containment basin to pump automatically to the city sewer when the basin reached set water level - instead of requiring someone turning on the pump and watching it pump for 8 hours a day and then turning it off. This resulted in saving the client thousands of dollars a year.

CONFIDENTIAL CLIENT DISTRIBUTION FACILITY – EVANDALE, OH

Provided closure of less than 90-day hazardous waste storage tank and overflow sump and RCRA storage pad closure. Mike was the field team leader in charge of all field personnel and equipment and compiled the closure report.

CONFIDENTIAL CLIENT – DUBLIN, OH

Hazardous waste storage pad closures at this Corporate Research and Development facility. Mike served as the Field Team leader overseeing the pad cleaning and soil excavation around the edge of the pad. He was also the site safety officer.

OPERATION & MAINTENANCE EXPERIENCE

CONFIDENTIAL CLIENT – AKRON, OH

O&M ABANDONED FACILITY

Mike provided operation and maintenance of a groundwater recover system at the client's abandoned facility. Work at the site included:

- Pump and Treat system using electric pumps, air stripping, and bio remediation before discharge.
- Reduced O&M requirements from 40 hours per week down to 14 hours per week.
- Project lead system upgrade to EOS Program Logic Controller from old ice cube style controls. New remote site control allowed the system to be monitored remotely, which reduced site visits and helped control O&M cost. Required site visits were preplanned to increase efficiency by scheduling subcontractors ahead of time.
- Prepare monthly flow report for City of Akron and Semi-Annual Discharge report.
- Annual inspections with City of Akron IPP Personnel.

CONFIDENTIAL CLIENT – CLEVELAND, OH

Provided operation and maintenance of groundwater recovery system at the client's abandoned facility. This included securing yearly discharge permits for system was shut off and providing ongoing facilities management.

CONFIDENTIAL CLIENT – COLUMBUS, OH

Provided operation and maintenance of groundwater recovery system at the distribution facility including:

- Pump and Treat system consisting of sump pump, collection trench and low profile air stripper.
- Preparation of Bi-Monthly Discharge report for submittal to the City of Columbus.
- Requested and obtained new discharge permit for the treatment system.
- Removing PCB's and VOC sampling reduced client sampling costs from the permit.

CONFIDENTIAL CLIENT – LANSING, MI

Mike provided operation and maintenance of a groundwater recovery system at this abandoned facility. This included:

- Pump and treat system using recovery wells and shallow tray stripper.
- Assisted with securing the discharge permit renewal.
- Advised on the upgrade of the system to meet USEPA discharge guidelines.
- Telemetry monitoring of the remediation system allows for better planning of site visits.
- Prepared quarterly air emissions discharge report for submittal to the State of Michigan DEQ.
- Annual inspections with City of Lansing IPP Personnel.

CONFIDENTIAL CHEMICAL CLIENT - NEW JERSEY

Mike provided oversight of geoprobe borings for this client's site in New Jersey.

CONFIDENTIAL CLIENT – MULTIPLE LOCATIONS

FIELD SERVICE TECHNICIAN

Mike has provided groundwater services support at multiple sites for this client including construction oversight, system data monitoring, bacteria injections, and system design review.

Safety Compliance Management
is proud to award this
Certificate of Completion

to

Mike Burge

for successfully completing 8 *hours of instruction in*
OSHA 8hr Hazwoper Refresher Training #936
29 CFR 1910.120 (e)(p)

Presented this 15 *day of* December, 2016.



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Laura Gutt
Safety Compliance Management, Inc.



GREGORY SOWDER

GREG.SOWDER@EHS-SUPPORT.COM TEL: 304-634-1424 HUNTINGTON, WEST VIRGINIA

EXPERTISE:

- UST Removals
- Multi-Media Environmental Sampling
- Vapor Sampling
- Operations & Maintenance of Groundwater Remediation Systems
- Operations & Maintenance of Soil Vapor Extraction and Air Sparge Systems
- Remedial System Installation
- LNAPL and DNAPL Recovery Operations

EDUCATION

- Northern Wayne County Vocational School: Mechanical Drafting Classes, 1985–1987
- Vinson High School: Vocational Diploma, 1987

CERTIFICATIONS AND TRAINING

- OSHA 40-Hour HAZWOPER Training, in compliance with 29CFR 1910.120
- OSHA Annual 8-Hour HAZWOPER training, in compliance with 29CFR 1910.120
- Containment Boom Deployment of Oil Spills Workshop
- U.S. DOT and Hazardous Waste Transportation Training
- Annual Boating and Water Safety training (USCG), with Annual Refreshers
- OSHA Fall Protection 8-hour, with Annual Refreshers
- OSHA Site Supervisor Training
- Annual Fresh Air Training (Scott 4.5 SCBA, Scott Ska-Pak, Cascade Bottle Watch)
- Fire Safety and Extinguisher Use (NFPA 10)

Gregory Sowder has been an environmental technician for over 26 years with extensive field experience and AutoCAD drawing expertise. He is an experienced Task Leader and Supervisor. His experience includes responsibility for operation and maintenance of hydrocarbon recovery operations at a major oil refinery including Benzene Waste NESHAP data collection, record keeping, and reporting to the facility representative of routine data collection, quarterly and annual inspections.

Greg was the lead field technician and prepared the reporting documentation for over 40 underground storage tank (UST) removals in West Virginia, Kentucky, Ohio, Virginia, Indiana, and Kansas. He has installed and sampled monitoring, vapor, and recovery wells and has performed soil-gas surveys. He has experience in sampling groundwater, soil, free product, and air. He has sampled for PCBs, heavy metals, petroleum constituents, and other analytes at construction demolition debris landfills, former gas stations, and bulk petroleum facilities.

He has experience on more than 35 projects involving remediation equipment and system design, construction, implementation, operation, and maintenance. He has installed and maintained vapor recovery and air sparge systems during pilot testing and for the full-scale permanent system.

He has performed emergency response on over 25 sites, including installation of temporary FAP pump remediation systems. He has performed asbestos inspections for more than 50 sites and has prepared Asbestos Management Plans for more than 30 sites.

KEY EXPERIENCE

Design, Construct, Install and Lead Operator for AS/SVE system within a major oil refinery.

Performed air, soil, free product, and groundwater sampling. Performed gauging, purging, surging and free product removal and abatement in monitoring wells.

Prepare and submit monthly and annual progress report for various remediation systems to be submitted to client and state agencies

Telemetry monitoring of various remediation system allowing for better optimization

Install and troubleshoot EOS ProControl remote telemetry systems

Maintained sampling equipment, FAP pumps, and petroleum-hydrocarbon-remediation equipment

Performed all field-related tasks during UST removals in West Virginia, Kentucky, Ohio, Virginia, Indiana, and Kansas

Responsible for the design, operation and maintenance and for troubleshooting remediation systems and associated equipment

Lead Operator for a 100+ well remediation system network within a major oil refinery

Collected vapor samples from numerous sites using Summa Canisters and performed leak testing for vapor sampling using test shield with Helium tracer

Installed and maintained several groundwater and/or free product pumping systems (e.g., FAPP, Ferret)

Performed and collected data for slug tests

Stormwater Best Management Plan Inspection for post closure inspections Hazardous Waste Landfill

Stormwater Best Management Plan Inspection for post closure inspections at a former waste impoundment site

Stormwater Best Management Plan Inspections during construction activities for an underground butane cavern

Surveyed and mapped monitoring well locations including mapping site characteristics for a variety of projects

Worked with off-site telemetry and SCADA

Site coordination during monitoring well plug and abandonment

Used hand augering equipment during assessment activities and monitoring well installations

Performed asbestos inspections and created Asbestos Management Plans

Drafted AutoCAD drawings for a wide variety of projects

Oversaw the construction and installation of underground cross-country and inner-city fiber optics installation. Created plot maps on AutoCAD for use by AT&T right-of-way agents to purchase property.

Waste management oversight during maintenance turnaround activities at a major oil refinery

BWON compliance monitoring and reporting related to groundwater and LNAPL recovery operations at a major oil refinery

Experienced in the installation and maintenance of skirted containment systems and absorbent booms within a high-traffic river system.



Safety Compliance Management

is proud to award this

Certificate of Completion

to

Greg Sowder

for successfully completing 8 hours of instruction in

OSHA 8hr Hazwoper Refresher Training #936

29 CFR 1910.120 (e)(p)

Presented this 13 day of January, 2017.



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Laura Gutt
Safety Compliance Management, Inc.



GREGORY HICKS

FIELD SERVICE TECHNICIAN

GREGG.HICKS@EHS-SUPPORT.COM • TEL: 606-922-5585 • HUNTINGTON, WEST VIRGINIA

Quote to Live By
"I think life is too short not to be doing something which you really believe in."
- Steve McCurry

EXPERTISE

- Environmental training
- Environmental management systems
- Waste disposal activities
- Storm water sampling

EDUCATION

United States Navy, Military Courses, 1989-1998

CERTIFICATIONS AND TRAINING

- First Aid/CPR/AED Training, 2017
- Hazardous Materials Transportation Training, 2015
- Method 9 Visible Emission Evaluator, 2015
- Safe Start – TTT, 2012
- OSHA 30-Hour General Industry, 2011
- 8-Hour HAZWOPER Tech, 2017

Gregg has over 12 years of experience working in the environmental management field for the transportation and manufacturing industries. His responsibilities have included environmental management activities, environmental training, as well as permitting and sample collection. Gregg is committed to providing clients with responsive and timely service.

KEY EXPERIENCE

CONFIDENTIAL CLIENT – WEST VIRGINIA

FIELD SERVICE TECHNICIAN

Gregg provided groundwater and soil sampling for this client's site in West Virginia.

CONFIDENTIAL CLIENT - VIRGINIA

FIELD SERVICE TECHNICIAN

Gregg conducted stream sediment and surface water sampling for this site located in Virginia.

CONFIDENTIAL CHEMICAL CLIENT – MULTIPLE LOCATIONS

FIELD SERVICE TECHNICIAN

Gregg conducted groundwater sampling and associated post closure items for multiple sites. He also supported the SVE/Sparge system install.

CONFIDENTIAL POWER COMPANY - KENTUCKY

FIELD SERVICE TECHNICIAN

Provided State and Federal Coal Combustion Residuals (CCR) Rule sampling at the client's groundwater monitoring wells as part of our project support for this power plant in Kentucky.

Safety Compliance Management

is proud to award this

Certificate of Completion

to

Greg Hicks

for successfully completing 8 hours of instruction in

OSHA 8hr Hazwoper Refresher Training #936

29 CFR 1910.120 (e)(p)

Presented this 16 day of January, 2017.



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Laura Gutt
Safety Compliance Management, Inc.



JAMES (JAY) REID, PE

JAY.REID@EHS-SUPPORT.COM TEL: 614-348-8751 WORTHINGTON, OH

EXPERTISE:

- Closure Strategy Development
- Remedial Design
- Regulatory Negotiations
- Project Management
- Health and Safety

EDUCATION:

- BS, Civil Engineering, University of Massachusetts, Amherst, MA

CERTIFICATIONS AND TRAINING:

- Licensed Professional Engineer: Maryland, Michigan, Ohio
- 40-Hour HAZWOPER Certified

*Quote to Live By:
Success is the sum
of small efforts,
repeated day in
and day out.
-Robert Collier*

Jay Reid is a licensed professional engineer with over 35 years' experience in design and construction of environmental systems, project management, and plant operations and maintenance management. His previous roles have included Vice President and serving as Principal in Charge (PIC) for multi-national clients, operations and project management, and technical implementation on a wide range of projects. In his PIC role, he has worked closely with these major companies to understand their business objectives and develop strong project team relationships. These client relationships provided significant value in regards to helping control environmental expenditures, supporting acquisition/divestiture due diligence, and ensuring day-to-day compliance through application of environmental health and safety services.

As a Project Manager Jay has successfully implemented small to large scale environmental projects focused on compliance, assessment/characterization, remediation and closure of sites impacted with hazardous substances and petroleum. He serves a diverse stakeholder base including commercial, industrial, municipal and institutional entities in brownfield, plant closure, redevelopment, divestment, and mergers and acquisitions scenarios. His Project Manager responsibilities include: developing strategies and implementation plans for site characterization and remediation; compliance; cost estimating; reserve analysis; risk and remedial alternatives assessment; liability evaluation; scope negotiation; maintaining client and regulatory agency contact; health and safety management; coordination of staff, subcontractors, supplies, and equipment; and budget tracking, cost control and invoicing.

Jay has served as project director, project manager or project engineer on numerous federal and state lead Resource Conservation and Recovery Act (RCRA), Comprehensive Environmental Response Compensation and Liability Act (CERCLA), wastewater treatment, and hydrocarbon related projects, including projects that were designed to allow for reuse or divestiture of the property. He has specific brownfield remediation experience with projects being conducted under the Ohio Voluntary Action Program (VAP) and Pennsylvania Land Recycling Program (Act 2). Through this broad regulatory experience, he has substantial experience with agency negotiations on behalf of his clients. Additionally, Jay has led and participated in public meetings to present project strategies and details, and supported public outreach programs on behalf of his clients.

Jay has directed many environmental system design, installation, permitting, and operation projects. His experience includes the implementation of several innovative remedial strategies, including intrinsic bioattenuation, in-situ enhanced reductive dechlorination, and in-situ oxidation to remediate chlorinated compounds in groundwater, and phytoremediation to remediate soils and groundwater containing petroleum hydrocarbons and chlorinated solvents. By applying this remedial expertise Jay successfully negotiated modifications to the scopes of work for implementing remedial designs at several National Priorities List (NPL) sites, which provided significant cost savings to his clients.

KEY EXPERIENCE

RCRA EXPERIENCE

CONFIDENTIAL CHEMICAL MANUFACTURING, SITES ACROSS
NORTHEAST AND SOUTHEAST UNITED STATES

CLIENT MANAGER/TECHNICAL LEAD

Support management of a portion of client's U.S. environmental remediation portfolio, which includes many sites that have RCRA obligations. These sites generally involve the investigation, risk assessment and/or remediation of chlorinated solvents and inorganic compounds in soil and groundwater. Provide overall coordination of resources, as well as detailed technical and regulatory strategy support for these projects spread across ten states and three U.S. EPA Regions. Involved in their environmental reserve management process and supports due diligence projects when they arise.

CONFIDENTIAL CHEMICAL MANUFACTURING, NORTH CAROLINA

OFFICER

Provide senior technical direction and regulatory negotiation support on the cleaning of a lined pond within a closed loop recycle system. While the facility was proceeding to complete the lined pond clean-out under a NC Division of Water permit, significant RCRA waste issues were identified that could dramatically increase the cost of the remedial action. Led negotiations with the NC Divisions of Hazardous Waste and Water to gain concurrence that the material in question met the de minimus exemption rules and, therefore, was not a listed hazardous waste. This successful negotiation saved the client well over \$1 million in disposal costs.

CONFIDENTIAL AUTOMOTIVE MANUFACTURING, SOUTHWEST,
OHIO

PROJECT OFFICER (FORMERLY PROJECT MANAGER)

RCRA Corrective Action program being implemented at a three-plant automotive manufacturing complex in Ohio. Provided both technical and regulatory support to successfully negotiate a reduced list of units requiring further action. Provided senior review and support for the DOCC report,

which was accepted by U.S. EPA with no comments. Of the 36 units evaluated, only 6 were recommended for further action. Provided engineering and technical support for the interim measures work plan (U.S. EPA approved this plan without comment) that recommended implementing innovative remedial technologies to address chlorinated VOCs in groundwater (enhanced reductive dechlorination and Fenton's reagent oxidation). These technologies were successfully tested at the site and have been implemented full scale as the final site-wide remedy, precluding the need for a formal CMS. Completed numerous presentations and negotiations with U.S. EPA Region V throughout this project. Completed the Environmental Indicator Form 750 for this site and assisted with a client-developed guidance document on how to complete the Environmental Indicator Form 725, which was provided to U.S. EPA Region V to facilitate/standardize their review of these forms at this client's many sites.

OWENS CORNING, GRANVILLE, OHIO

PROJECT OFFICER

RCRA Corrective Action project being undertaken at a research and development facility in central Ohio. Assisted with preparing a Current Conditions Report that effectively used available data and an exposure pathway analysis to eliminate SWMUs and negotiate a reduced scope of work in the RFI. The RFI Work Plan received Ohio EPA approval, and the RFI field investigation and preparation of the RFI Report, including both human health and ecological risk assessments were completed successfully. The RFI Report, which contains a site-wide no further action recommendation, has been approved by Ohio EPA.

STATE VOLUNTARY ACTION PROGRAMS EXPERIENCE

LORD CORPORATION, CAMBRIDGE SPRINGS, PENNSYLVANIA

PROJECT OFFICER (FORMERLY PROJECT MANAGER)

Implementation of a voluntary investigation being conducted at an active manufacturing facility under Pennsylvania's Act 2. This site is ranked as a high-priority RCRA site with a PA/VSI previously conducted in U.S. EPA Region III. Instrumental in developing and presenting the site strategy to PADEP for evaluating the SWMUs identified in the PA/VSI, and gaining

their insight on how best to proceed. Oversaw completion of the phased investigative approach, which has been used successfully to control the investigations scope and costs. Based on the presence of a DNAPL, identified during the investigations, developed a risk-based corrective action strategy that was successfully negotiated with the PADEP under the Act 2 regulations. Evaluated the site using U.S. EPA's Environmental Indicator (EI) Forms. Based on the evaluation of site-specific conditions, a "Yes" determination was achieved for both the Human Exposure Under Control and Migration of Groundwater Under Control Forms. A groundwater to surface water mixing zone analysis was also conducted to allow a thorough evaluation of the situation. A phytoremediation barrier with groundwater elevation monitoring to mitigate potential impacts of VOC discharges to a creek was accepted as the final remedy.

ALCATEL/LUCENT TECHNOLOGIES, COLUMBUS, OHIO

PROJECT OFFICER

Implementation of a voluntary investigation being conducted at an active manufacturing facility under Ohio's VAP. This 253-acre facility had a RCRA PA/VSI previously conducted that identified 22 SWMUs and 1 AOC (VOCs in groundwater). Oversaw the completion of a VAP Phase I Property Assessment that evaluated current and historical site conditions. During this process, it was determined that the SWMUs identified in the PA/VSI do not require additional investigation. Subsequently developed and implemented a focused sampling and analysis plan to further evaluate the presence of VOCs in groundwater within the bedrock, as well as verify that a release of hazardous materials or petroleum constituents had not occurred within several localized areas. During completion of this project, the property was sold for mixed-use redevelopment, including residential and commercial end-uses. The VAP strategy for achieving No Further Action status was developed to support this brownfield redevelopment, greatly enhancing the client's sale price for the property.

CERCLA PROGRAM EXPERIENCE

LORD CORPORATION, SAEGERTOWN, PENNSYLVANIA

PROJECT OFFICER (FORMERLY PROJECT MANAGER)

Implementation of a remedial design at an active industrial facility that is an operable unit at a federal NPL site in Region III. Identified that technologies selected in the Record of Decision (ROD) were inappropriate for site conditions and developed a creative remedial strategy to utilize in-situ enhanced reductive dechlorination of chlorinated VOCs in groundwater as the most appropriate cost-effective remedial strategy. Based on the results of an effective pilot study, successfully negotiated a ROD modification to implement the innovative in-situ remedial strategy, which was implemented in 2004. This ROD modification saved the client over \$5,000,000. This remedial effort has been successfully implemented and active in-situ remediation halted in 2010 and site moved into a monitoring only phase as this NPL site moves toward closure.

LORD CORPORATION, SAEGERTOWN, PENNSYLVANIA, WEST TANK FARM

PROJECT MANAGER

Design of a bioremediation system to address VOCs in soil detected beneath a tank farm undergoing secondary containment upgrading. Negotiated with PADEP - Meadville Office to gain approval of the strategy, then designed the aboveground-engineered biopile for remediating excavated soils. This treatment system successfully met cleanup criteria within four quarters and allowed the Client to avoid off-site disposal of 800 cubic yards of soil. Negotiated and designed an in-situ bioventing system to address residual VOCs in soil beneath the tank foundation that could not be removed. This system successfully met cleanup goals within three quarters, and approval was received to shut the system off.

CONFIDENTIAL CHEMICAL CLIENT, NORTHERN AND SOUTHERN CALIFORNIA SITES

PROJECT OFFICER

Developed innovative remedial strategies to address VOCs in soil and groundwater at one facility being prepared for divestiture and another that had previously been sold and was being operated by another company. In both instances led a technical team in developing enhanced conceptual site models which were used to develop a more comprehensive remediation strategy and support negotiations with the appropriate state regulatory agencies. The remedial strategy for the site to be divested provided for an expedited clean-up that would allow re-development to occur during the remedial timeframe, while the remedial strategy for the site being actively operated by a 3rd party owner provided a more comprehensive clean-up strategy focused on using interim measures to move the site toward closure. Each of these projects is currently in the remedial implementation phase.

PETROLEUM HYDROCARBON EXPERIENCE

THREE MAJOR PETROLEUM MARKETERS, ACROSS OHIO

PROJECT MANAGER

Remediation of petroleum hydrocarbon release sites in Ohio using a range of active remedial technologies, including vapor extraction to address residual benzene, toluene, ethylbenzene, and xylenes (BTEX) and total petroleum hydrocarbons (TPH) contamination in the vadose zone, total fluids recovery and treatment using aerators, carbon adsorption and an innovative technology referred to as "reverse air stripping", and dual-phase extraction using high vacuum liquid-ring pumps to remediate soil vapor and groundwater simultaneously. Responsible for the successful operation of these systems, which allowed the Bureau of Underground Storage Tank Regulations (BUSTR) to approve shutdown of these systems, and the modification of the remedial action plans to monitoring only, prior to receiving a determination of No Further Action.

PROJECT MANAGER

Multiple bioattenuation assessments and development of remedial action plans for active gasoline station sites in Ohio.

Based on experience with bioremediation, identified these sites as candidates for using intrinsic bioattenuation as the most cost-effective remedial alternative. Site-specific, cost-effective sampling programs were developed to obtain data to define the level of intrinsic bioattenuation occurring at the site. The sampling results generally indicated the sites were under a definable level of biological control, both horizontally and vertically. Remedial action plans calling for groundwater monitoring only, or limited enhancement of aerobic conditions, were developed. These creative approaches were approved by the BUSTR and eliminated the need to design, install, and operate more costly active remediation systems.

PROJECT MANAGER

Development of risk assessments at former gasoline station sites to evaluate the potential for obtaining "No Further Action" status of these sites from BUSTR. Risk-based soil cleanup goals for BTEX and TPH were developed that showed no potential risks, and groundwater pathways were proven to be incomplete, which allowed BUSTR to issue notices of "No Further Action" for these sites.

INTERNATIONAL EXPERIENCE

CONFIDENTIAL INTERNATIONAL CHEMICAL MANUFACTURING CLIENTS, U.S. BASED, (PARTIAL LIST BELOW)

PROJECT MANAGER/CLIENT LIAISON

Facilitated the set-up and management of these projects for several different multi-national chemical clients by helping create the "best team" ensuring they were properly contracted in-country.

- Sao Paulo, Brazil – Phase I/Phase II due diligence for site acquisition.
- Shanghai, China – Remedial Action designed to remediate former underground storage tank release of volatile organic compounds and TPH.
- Querétaro, México – Environmental assessment to support property acquisition.
- Northern Italy - Remedial action designed to remediate VOC impacts in soil from an on-site drainage system.

- Antwort, Germany – Engineering Design support as a subconsultant to Client's Project Architect for expansion of their manufacturing facility.
- British Columbia, Canada – On-going investigation and remediation project designed to address nitrogenous compounds in soil and groundwater.
- Molndal, Sweden – Provide on-site Environmental, Health and Safety (EHS) management services and regulatory guidance.
- Hamburg, Germany – Advise on environmental issues associated with closing and transferring the site.

PUBLICATIONS AND PRESENTATIONS

Reid, J.J., J. Berk, and N.A. Gillotti, 1996. Intrinsic Bioattenuation of Chlorinated Volatile Organic Compounds. HAZWASTE WORLD Superfund XVII Conference Proceedings. October. Paper presented at the HAZWASTE Superfund XVII Conference, Washington, D.C., October 15 - 17, 1996.

Reid, J.J., 1998. Groundwater Modeling to Support Bioattenuation Strategy for Chlorinated Volatile Organic Compounds. Department of Defense Modeling and Simulation Conference, Alexandria, Virginia, May 4, 1998.

Reid, J.J. and D. Balcer, 1999. Pilot Study for Enhanced Biodegradation of Chlorinated VOCs. Engineered Approaches for In Situ Bioremediation of Chlorinated Solvent Contamination. The Fifth International In Situ and On-Site Bioremediation Symposium, San Diego, California, April 19-22, 1999.

Golla, W. M. and Reid, J.J., 2000. Phytoremediation for Hydraulic Control of Shallow Groundwater Impacted by Petroleum Hydrocarbons. The 16th Annual International Conference on Contaminated Soils, Sediments, and Water Proceedings. October 2000.



Safety Compliance Management
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Jay Reid

for successfully completing 8 *hours of instruction in*
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29 CFR 1910.120 (e)(p)

Presented this 10 *day of* December *, 20*16*.*



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EXPERTISE

- Environmental site assessments and remedial design investigations
- Soil and groundwater remedial design, implementation, and operation and maintenance
- Vapor intrusion evaluation and mitigation
- Feasibility evaluation and cost estimating
- Compliance documentation and reporting
- Oversight of risk evaluation and modeling

EDUCATION

- Civil Engineering, M.S., Georgia Institute of Technology, 2001
- Civil Engineering, B.S., Georgia Institute of Technology, 1999

CERTIFICATIONS AND TRAINING

- Registered Professional Engineer
Georgia / PE037262
Illinois / 62.068184
Kentucky / 31526
New Jersey / GE5230800
North Carolina / 039318
South Carolina / 31072
Wisconsin / 44282-6
Virginia / 047632
NCEES Record Holder / 49831
- OSHA 40-hour Health and Safety Training, and 8-hour Annual Refresher Training
- Trained in the P3 Method by Brian P. Flynn
- Trained in Project Management and Construction Administration
- USGS Water Quality and Report Planning, Writing, and Colleague Review training

Jonathan Waddell has fifteen years of environmental engineering and consulting experience. During this time, Jonathan has managed large projects for Industrial and Specialty Chemical Clients across the eastern portion of the United States. He has also provided senior engineering support, review, and certification to projects within the Industrial and Petroleum and Natural Gas sectors.

Jonathan has experience with managing large, complex Industrial projects from initial assessment to closure. He has managed the preparation and design of Environmental Site Assessment Work Plans, and the implementation and reporting thereof. Furthermore, he has directly managed remedial investigation and design efforts to address soil and/or groundwater impacts by diverse constituents of interests (COIs). Jonathan has served as the primary author for Remedial Action Plans, Construction Completion Reports, and Performance Monitoring Reports, as well as No Further Action (NFA) Letters. He is also experienced in managing human health and ecological risk assessments, vapor intrusion evaluations, and vapor mitigation activities. Given his work across different states, Jonathan is knowledgeable of varied USEPA regulations (e.g., CERCLA, RCRA, TSCA, OSHA, etc.) and the auspices of several different state regulatory programs. Jonathan practices strict cost and schedule control methods including conformance with annual reserves.

As an Engineer, Jonathan has overseen soil and groundwater modeling efforts and led remedial design, costing, installation, and operation and maintenance (O&M) activities. For a remedial design in 2007, Jonathan received an internal Technology Innovation Award. He has routinely prepared technical specifications and bid documents for remedial construction activities, led bid meetings, and conducted bid evaluations. He has also prepared permit applications (e.g., RCRA, air, NPDES, underground injection control (UIC), etc.), Remedial Feasibility Evaluations, and O&M plans. For large petroleum terminals and other oil containing facilities, Jonathan has prepared, reviewed, and provided PE certification for compliance documents (e.g., SPCC Plans, SWPPPs, O&M Plans, permit applications, etc.).

Jonathan has a strong understanding of groundwater flow and contaminant migration processes, innovative site characterization techniques, remediation and injectant delivery technologies, bio-geochemical processes within complex geologic systems, and proper waste determinations and management. He is also experienced with Conceptual Site Model (CSM) preparation, and has been involved in the successful characterization and remediation of impacted sites underlain by complex geologic media (i.e. fractured rock, glacial tills, heterogeneous alluvial deposits, etc.). Jonathan utilizes his knowledge and experience to proactively progress complex sites along a pathway to closure.

KEY EXPERIENCE

INDUSTRIAL SECTOR EXPERIENCE

HOLDING COMPANY CLIENT, CROZET, VA

PROJECT MANAGER/LEAD ENGINEER

Jonathan worked to guide this Client through the state-led RCRA Corrective Action process and implement successful interim remedial applications within a fractured crystalline rock aquifer. The purpose of interim remedial measures was to address exceedances of industrial screening levels in soil and to facilitate groundwater concentrations that would allow environmental indicators (EIs) to be "under control".

Initially, Jonathan prepared the Phase I RCRA Facility Investigation (RFI) Work Plan, managed the soil and groundwater characterization activities, and prepared the Phase I RFI Report. Subsequently, he prepared the Phase II RFI Work Plan, managed the implementation thereof, and prepared the Phase II RFI Report. RFI work identified chlorinated ethene and petroleum impacts in underlying saprolite and deep fractured bedrock at the site, which resulted in groundwater exceedances and unacceptable trends at the property line.

Jonathan prepared an Interim Measures Work Plan. Upon Virginia Department of Environmental Quality approval, he managed Interim Measures at the site, which included the design and construction of a large-scale, source-area treatment system combining soil vapor extraction (SVE) in saprolite and an Enhanced Bioremediation recirculation system in underlying fractured rock. Innovative fractured-rock hydrologic tests (i.e., pulse interference tests and tracer tests) and biogeochemical evaluations were conducted and evaluated to support the remedial design. Jonathan also designed and managed in situ chemical oxidation (ISCO) to remediate petroleum and chlorinated solvent impacts in

saprolite at a second identified source area via shallow injection of hydrogen peroxide and ozone, and deep injection of permanganate.

Performance monitoring results from Interim Measures indicated successful SVE removal of PCE and TCE in the unsaturated overburden, progress of the anaerobic reductive dechlorination process in deep fractured rock, and significant decreases in petroleum and chlorinated solvent concentrations from ISCO injection. These results were used to re-evaluate EIs and move the site forward within the RCRA Corrective Action process.

FORMER CHLOR-ALKALI MANUFACTURING CLIENT, RIEGELWOOD, NC

ENGINEER

As a result of historical mercury cell operations from 1963 to 2000, this site was characterized by widespread surficial and subsurface impacts by mercury and other metals. Jonathan worked to upgrade the existing industrial wastewater treatment system, which primarily treated storm water collected within site boundaries and former process pits. The system consisted of storm water storage within retention basins, feed pumping systems, equalization, pH modification/precipitation, coagulation and flocculation, inclined plate settling, filtration, and a filter press.

System initiatives spearheaded by Jonathan included preparation of a comprehensive operation and maintenance (O&M) Plan for the treatment system, identification and proper maintenance of critical safety devices and all instrumentation, updates to system drawings to depict all processes and associated instrumentation, optimization of the feed water pumping and equalization process, and refinement of coagulant/flocculant amendments. Jonathan also conducted system inspections for the purpose of identifying components that required repair or replacement, and proctored the conduct of these activities.

FAUCET AND FIXTURE MANUFACTURING CLIENT, ELYRIA, OH

PROJECT MANAGER/LEAD ENGINEER

Jonathan worked to progress this site, with more than 100-years of manufacturing history, from initial Environmental Site Assessment (ESA) to No Further Action (NFA) under the auspices of the Ohio EPA – Voluntary Action Program.

Based on the results of Phase I and Phase II ESA investigations, several identified areas were determined within site boundaries. Jonathan managed site investigation activities to confirm and delineate existing soil and groundwater impacts and prepared the corresponding Phase I and Phase II ESA Reports.

Identified areas with impacted soil and groundwater were targeted for remediation. As part of this, Jonathan prepared a Remedial Feasibility Evaluation and recommended focused soil removal with Enhanced Bioremediation as a polishing step. Jonathan conducted waste classifications and determinations, prepared technical specifications to support large-scale soil removal, and managed the soil removal activities. He also designed and oversaw three (3) separate applications of Enhanced Bioremediation in fractured sandstone underlying and downgradient of the removed soil. Post remediation, Jonathan evaluated soil and groundwater data to evaluate remedial performance and to gauge microbial reductive dechlorination potential. Establishment of reducing conditions, order of magnitude decreases in chlorinated ethene concentrations, and continued reductive dechlorination potential have been observed and support no further remedial action at the site.

Following remediation, Jonathan managed vapor intrusion evaluations inside an active building at the site, which yielded unacceptable risk in indoor air. Thus, Jonathan utilized a soil gas survey to identify areas of elevated chlorinated solvent impacts in sub-slab, and subsequently managed diagnostic testing, sub-slab depressurization system (SSDS) design, SSDS installation, and successful operation of the SSDS.

A NFA letter, which is supported by an Ohio EPA-approved urban setting designation (USD), was submitted for the site in late 2014. NFA (with institutional and engineering controls) is anticipated to be achieved in the near future.

CONNECTOR AND INTERCONNECT SYSTEM MANUFACTURING CLIENT, COLUMBIA, SC

PROJECT MANAGER/LEAD ENGINEER

Upon request by the South Carolina Department of Health and Environmental Control (SCDHEC), Jonathan worked with the Client to evaluate the feasibility of additional source remediation to meet applicable standards in groundwater. To accomplish this, Jonathan prepared a Feasibility Study Work Plan that incorporated high-resolution, site characterization techniques to identify any sequestered chlorinated solvent impacts in underlying heterogeneous alluvial materials. Jonathan managed the successful implementation of the Work Plan. Following implementation, the results of Waterloo Profiling and high-resolution soil characterization/sampling confirmed that low levels of trichloroethylene (TCE) were sequestered in underlying clays, and that low-permeability gradational materials were supporting transport of elevated TCE concentrations to downgradient receptors. A Feasibility Study Report was prepared, which evaluated the efficacy of various remediation alternatives to target these low-permeability units.

In addition, Jonathan managed periodic groundwater monitoring and remediation system operation at this site under the auspices of a SCDHEC consent order and an active NPDES permit. As part of system O&M, he managed the construction permit application process, design and installation, and permit approval for a telemetry system, which was approved and installed, and effectively decreases inspection frequencies, associated exposure hours, and O&M costs.

FAUCET AND FIXTURE MANUFACTURING CLIENT, SANFORD, NC

PROJECT MANAGER/LEAD ENGINEER

Jonathan worked to guide this Client from a prescriptive North Carolina Department of Environment and Natural Resources (NCDENR) regulatory program into a risk-based program, which would facilitate a more cost-effective and timely route to closure.

Initially, Jonathan prepared and implemented Phase I and Phase II Remedial Investigation (RI) Work Plans to investigate chlorinated solvent, petroleum, and metal impacts. As part of

RI, membrane interface probe (MIP), soil boring, and soil gas survey evaluations were utilized to identify existing source areas underlying the building. A vapor intrusion evaluation was conducted to evaluate potential risk to facility personnel and to identify areas for focused remediation. No unacceptable risk was determined in indoor air. In addition, an ecological risk assessment was conducted to demonstrate that metal impacts do not adversely affect the ecology of an on-site stream. Jonathan prepared RI Reports, which volumetrically delineated residual impacts in soil and groundwater, and that removed sediments/surface water impacts and vapor intrusion from further consideration.

To help reduce mass flux and produce groundwater concentrations amenable to entry into NCDENR's Risk Based Program, Jonathan prepared a Remedial Action Plan (RAP) to address a residual source of chlorinated ethane and 1,4-dioxane underlying the active manufacturing Facility. Jonathan managed RAP implementation, which included injection of activated persulfate within the impacted vadose and saturated zones. Performance monitoring and groundwater modeling are being utilized to evaluate the effects of activated persulfate injection, and the results thereof are in the process of being leveraged to demonstrate eligibility for moving the site into the Risk Based Program.

SECURITY PRODUCT MANUFACTURING CLIENT, MILWAUKEE, WI

PROJECT MANAGER/LEAD ENGINEER

In the interest of directing this site to closure under the auspices of Wisconsin Department of Natural Resources (WDNR), Jonathan worked with the Client to assemble historical characterization and remediation documentation, identify and evaluate data gaps, and evaluate potential remedial action options to produce acceptable data trends.

Following historical soil and groundwater remediation efforts, groundwater data trends did not facilitate closure. To better understand these trends, Jonathan identified data gaps and implemented remedial design investigation activities to evaluate them. Further evaluation confirmed that residual chlorinated solvent and 1,4-dioxane impacts were sequestered within the tight glacial till, underlying and surrounding where previously remediated, and continued to

leach into groundwater at concentrations above enforcement standards. Based on an updated Conceptual Site Model, Jonathan worked to identify and evaluate remedial action options (RAOs) to address these residual impacts. Scopes and estimates of probable costs were prepared for each RAO, and each RAO was evaluated against specific WDNR criteria. RAO selection is currently in progress with the Client.

Furthermore, Jonathan conducted vapor intrusion evaluations within the active wastewater treatment building on the property and along the down-gradient property lines. Risk assessment was conducted and used to confirm the lack of risk in indoor air within the building. However, off-site vapor intrusion evaluation is required and is in process in accordance with WDNR guidance.

BUILDING PRODUCT MANUFACTURER, ROCKY MOUNT, VA

ENGINEER

Jonathan provided engineering support to a Client who desired to determine the magnitude of their existing liability at a site that they no longer owned and was undergoing USEPA RCRA Corrective Action. Jonathan prepared the preliminary remedial design and developed estimated probable costs for an interception trench for recovery of free-phase mineral oil with dioxins, furans, and pentachlorophenol. In addition, Jonathan scoped and prepared estimated probable costs for removal of approximately 1,500 feet of impacted sediment from a receiving stream, proper sediment waste management and disposal, and stream restoration activities. Where applicable, Jonathan worked with qualified Subcontractors to generate reliable costs. The estimated probable cost was provided to the Client and was used for internal discussion between the Client and the property owner, and to better direct the progression of the project.

CHEMICAL SECTOR EXPERIENCE

SPECIALTY CHEMICAL CLIENT, EAST BRUNSWICK, NJ

ENGINEER

Jonathan provided internal engineering support for source area investigation and remediation at an active industrial facility underlain by residual tetrachloroethylene (PCE)

impacts. As part of this support, he provided guidance regarding soil sample constituents and geotechnical parameters to be collected, review of proposed soil boring and new monitoring wells locations, and proposed groundwater sample collection suites. He has also supported remedial feasibility evaluation, remedy selection, preparation of technical specifications and bid documents, and the bidding process. Focused soil excavation followed by Enhanced Bioremediation is in the process of being implemented to meet New Jersey Department of Environmental Protection requirements.

SPECIALTY CHEMICAL CLIENT, COVINGTON, VA

PROJECT MANAGER/LEAD ENGINEER

Following successful Corrective Action; Jonathan is working with the Client, the Virginia DEQ, and City Officials to transfer this project from a rigid regulatory program into a voluntary program, which will allow the site to be redeveloped as a local, outdoor recreational park.

Initially, Jonathan successfully managed the implementation of a Virginia DEQ-approved Corrective Action Plan (CAP) at the site. Prior to implementation, Jonathan worked to update the CAP to promote successful Enhanced Bioremediation for remediation of localized carbon tetrachloride impacts in shale. In addition, prior to implementation, Jonathan managed remedial design investigations to focus injection (of pH buffer and long-term emulsified electron donor) into impacted shale and alluvial deposits. Following CAP implementation, three (3) years of subsequent performance monitoring results have yielded decreases in carbon tetrachloride and associated reductive dechlorination products to non-detect concentrations, and establishment of reducing conditions amenable to chlororespiration. Jonathan has coordinated between the Client and multiple regulatory programs, to leverage these successful results and move this site towards a pathway for closure and reuse.

PRESSURE-TREATED WOOD PRODUCTS MANUFACTURING CLIENT, BANGOR, WI

ENGINEER

Jonathan and a team of professionals are working with this Client to upgrade the existing wastewater treatment system to

mitigate elevated metals in boiler and cooling tower blowdown, ensure compliance with applicable permit limits, and facilitate WPDES permit renewal. Following a site visit and meeting, pertinent site information and documentation was obtained, and a conceptual roadmap to meet permit limits and facilitate renewal was prepared.

System initiatives spearheaded by Jonathan and the team included understanding the existing treatment train and regulatory environment, evaluation of feed water sources for the boiler system, development and implementation of jar testing to evaluate applicable remedy options, and coordination of laboratory treatability tests and pilot scale implementation by Evoqua for applicable adsorbent media. Data from feed source testing, jar test results, and Evoqua laboratory treatability tests were evaluated and recommendations were provided to the Client for path forward. The Client is in the process of reviewing the recommendations, conducting additional testing, and selecting the optimal remedy.

GLOBAL CHEMICAL AND MATERIALS COMPANY (VARIOUS LOCATIONS IN USA, UK, AUSTRALIA, AND NEW ZEALAND)

ENGINEER

Jonathan and a team of professionals are helping this client manage a large portfolio of recently-acquired properties characterized with historical and existing environmental liabilities. To this end, properties within the portfolio have been ranked in risk, via use of subjective and quantitative factors, and prioritized accordingly. High-risk properties have been targeted for immediate actions including preparation of executive summaries, preparation of estimated probable costs for property-specific pathways to closure, review and development of conceptual site models, identification of data gaps and key risks, and coordination of field assessments to address data gaps, and reduce associated risks and estimated probable costs.

PETROLEUM AND NATURAL GAS SECTOR EXPERIENCE

PIPELINE TRANSPORTATION AND ENERGY STORAGE COMPANY
(VARIOUS LOCATIONS IN VA)

ENGINEER

The Client had several active petroleum storage terminals within the Commonwealth of Virginia that required updates to compliance documentation. As part of this, Jonathan directed and reviewed terminal inspections, determined required documentation for each terminal as permitted, managed the preparation of updated compliance documents (i.e., SPCC Plans, SWPPPs, O&M Manuals, Slug Control Plans, and permit applications), and reviewed and certified these documents. During regulatory facility visits, these compliance documents were subjected to regulatory auditing and review, and were approved without comment.

RETAIL CLIENTS (VARIOUS LOCATIONS)

ENGINEER

Jonathan has internally supported several Retail Clients with site investigation and remedial design. Jonathan has employed fingerprinting analyses to determine whether commingling from adjacent retail stations was affecting the Client's site, as well as recommended innovative site investigational tools (e.g., laser-induced fluorescence (LIF) survey) to characterize areas of greatest petroleum impacts. In addition, Jonathan has prepared remedial designs (e.g., in situ chemical oxidation, dual-phase extraction, etc.) to remediate identified petroleum impacts.

REAL ESTATE INVESTMENT TRUST CORPORATION (VARIOUS
LOCATIONS IN MD, TX, AND VA)

ENGINEER

The Client had several oil-containing facilities, for which compliance documentation was either unknown or non-existent. Jonathan managed inspections at each facility to identify the characteristics of oil-containing tanks and equipment and to confirm the presence or absence of appropriate compliance documentation. Based on facility visits and review of existing documentation, where obtainable,

Jonathan prepared a comprehensive descriptive summary of each facility, along with a concise outline of required documentation. Based on this information, the Client is in the process of bringing these oil-handling facilities into compliance with applicable Federal and State regulations.

FEDERAL SECTOR EXPERIENCE

AIR FORCE CENTER OF ENVIRONMENTAL EXCELLENCE (AFCEE),
MARIETTA, GA

ENGINEER IN TRAINING

Under the direction of AFCEE and under the auspices of the Georgia Environmental Protection Division; Jonathan participated in several innovative USGS investigations in a chlorinated solvent-impacted fractured rock aquifer.

Jonathan supported the fabrication of a borehole straddle-packer system, which he utilized to investigate chlorinated ethane impacts and hydraulic properties in discrete fractures as deep as 600 feet beneath land surface. As part of this investigative work, Jonathan analyzed borehole geophysical logs to identify yielding fractures and determine straddle packer placement, collected water-quality and hydraulic data within discrete fractures, and evaluated straddle packer results. This evaluation was used to determine the volumetric characterization of contamination in deep fractured bedrock and which fracture zones actively promoted off-site migration at high concentrations and flux. These results were also used to assess the applicability of Enhanced Bioremediation in the fractured rock aquifer.

Jonathan also provided remediation technology review to AFCEE and participated in other fractured rock aquifer investigations, which included: determination of discrete zones of chlorinated ethene discharge into an off-site creek using diffusion samplers; statistical analysis of water-quality data to determine temporal trends with respect to degradation of chlorinated ethenes and bio-geochemical processes; and investigation of the hydraulic response of a heterogeneous, anisotropic fractured rock body to a three-step, constant-rate pumping test.

PUBLICATIONS AND PRESENTATIONS

Waddell, J., R. Evans, and M. Bennett, 2014, Lessons Learned: ISCO Treatment of a TCA/1,4-Dioxane Source in Low-Permeability Media. Ninth International Conference on Remediation of Chlorinated and Recalcitrant Compounds, May 19-22, 2014, Monterey, California.

Waddell, J.P., R. Evans, J. Keller, and B. Elkins, 2013, Focused Bioremediation of Carbon Tetrachloride in Groundwater. Second International Symposium on Bioremediation and Sustainable Environmental Technologies, June 10-13, 2013, Jacksonville, Florida, Platform and Poster Presentation Abstracts.

Waddell, J.P., M.S. Bennett, and J.R. Field, 2009, Source Zone Removal followed by Enhanced Bioremediation in Chlorinated Ethene-Impacted Fractured Sandstone. The Tenth International In-Situ and On-Site Bioremediation Symposium, May 5-8, 2009, Baltimore, Maryland.

Holloway, O.G., and J.P. Waddell, 2008, Design and Operation of a Borehole Straddle Packer for Groundwater Sampling and Hydraulic Testing of Discrete Intervals at US Air Force Plant 6, Marietta, Georgia. USGS Open-File Report 2008-1349, 24 pp., web-only publication available at <http://pubs.usgs.gov/of/2008/1349>.

Parcher, M.A., J.P. Waddell, E. Nugent, M.S. Bennett, and W. Benni, 2008, Site-Specific Modeling to Target Remediation of Industrial Impacts. Sass, B.M., Conference Chair, Remediation of Chlorinated and Recalcitrant Compounds, Proc. of the Sixth International Conference on Remediation of Chlorinated and Recalcitrant Compounds, Monterey, California, May 2008, ISBN 1-57477-163-9, publ. by Battelle, Columbus, Ohio.

Waddell, J.P., J.R. Field III, M.S. Bennett, and K.S. Novakowski, 2008, Remediation of Chlorinated Ethene Impacts within Fractured Crystalline Rock. Sass, B.M., Conference Chair, Remediation of Chlorinated and Recalcitrant Compounds, Proc. of the Sixth International Conference on Remediation of Chlorinated and Recalcitrant Compounds, Monterey, California, May 2008, ISBN 1-57477-163-9, publ. by Battelle, Columbus, Ohio.

Bennett, M.S., J.R. Field III, J.P. Waddell, and K.S. Novakowski, 2007, Investigation and Identification of a Chlorinated Ethene

Source Zone in a Fractured Crystalline Rock. Proc. of the 2007 US EPA/NGWA Fractured Rock Conference: State of the Science and Measuring Success in Remediation, Portland, Maine, September 24-26, 2007, pp. 207-208.

Bennett, M.S., J.P. Waddell, J.R. Field III, and K.S. Novakowski, 2007, Preparation for Enhanced Bioremediation in a Chlorinated Ethene-Contaminated Fractured Crystalline Rock. Proc. of the 2007 US EPA/NGWA Fractured Rock Conference: State of the Science and Measuring Success in Remediation, Portland, Maine, September 24-26, 2007, pp. 77-78.

Bennett, M.S., J.P. Waddell, and K.S. Novakowski, 2006, Site Characterization in Preparation for Application of Interim Remedial Technologies in a Chlorinated Ethene-Contaminated Fractured Crystalline Rock. Abstracts of 15th Annual Davis S. Snipes/Clemson Hydrogeology Symposium, Clemson, South Carolina, April 16-18, 2006, pp. 2-3.

Waddell, J.P. and G.C. Mayer, 2003, Effects of Fenton's Reagent and Potassium Permanganate Applications on Indigenous Subsurface Microbiota: A Literature Review. Hatcher, K.J., ed., Proc. of the 2003 Georgia Water Resources Conference, University of Georgia, Athens, Georgia, April 23-24, 2003.

Waddell, J.P., K.D. Pennell, and F.E. Löffler, 2002, Microbial Study on Chlorinated Ethene Biodegradation within Rottenwood Creek Sediments Affected by Low-Flow Groundwater Discharge. Abstracts of Tenth Annual Davis S. Snipes/Clemson Hydrogeology Symposium, Clemson, South Carolina, April 18, 2002, pp.36-45.

Gonthier, G.J. and J.P. Waddell, 2000, Trichloroethene Presence in Rottenwood Creek near Air Force Plant 6, Marietta, Georgia, Summer 2000. Hatcher, K.J., ed., Proc. of the 2001 Georgia Water Resources Conference, Institute of Ecology, University of Georgia, Athens, Georgia (2001), pp .586-589.



Safety Compliance Management
is proud to award this
Certificate of Completion

to

Jonathan Waddell

for successfully completing 8 hours of instruction in
OSHA 8hr Hazwoper Refresher Training #936
29 CFR 1910.120 (e)(p)

Presented this 09 day of December, 2016.



**SAFETY
COMPLIANCE
MANAGEMENT**
INCORPORATED
611 SAN RAMON VALLEY BLVD.
DANVILLE, CA 94526
800-974-1419

Laura Gutz
Safety Compliance Management, Inc.



JEFF ENGELS, PG

JEFF.ENGELS@EHS-SUPPORT.COM TEL: 949-877-9398 SAN JUAN CAPISTRANO, CALIFORNIA

EXPERTISE

- Environmental Investigation
- Well Installation/Abandonment
- Groundwater Aquifer Testing
- Soil Excavation
- Indoor Air Vapor Intrusion
- Project Management

CERTIFICATIONS AND TRAINING

- Registered Professional Geologist - California
- OSHA 29 CFR 1910.120 Health and Safety Training
- OSHA 29 CFR 1910.120 Health and Safety Training (Site Supervisor)

EDUCATION

- B.S., Hydrologic Sciences (Geology Emphasis), University of California, Santa Barbara, 1996

Quote to Live By: "A pessimist sees the difficulty in every opportunity; an optimist sees the opportunity in every difficulty." - Winston Churchill

Jeff Engels has over 17 years of experience managing and performing environmental assessments and remedial actions at industrial properties throughout the United States. He has conducted environmental investigations at properties impacted by petroleum and chlorinated-hydrocarbons. His primary duties have included project management, proposal and budget generation, property investigation planning and implementation, report preparation, and client and regulatory interaction.

He has performed soil and groundwater characterizations, feasibility studies, and aquifer testing and monitoring. He has supervised subsurface drilling, sampling, installation, and abandonment of soil borings and remediation monitoring wells throughout the United States. He has also performed water-supply related work including municipal supply well installation and sampling. He has extensive experience with hollow stem auger, rotary (air and mud), rotasonic, direct push, and Cone Penetrometer (CPT)/Rapid Optical Screening Tool™ (ROST) drilling and sampling techniques.

His remediation experience includes the management of groundwater assessment programs and groundwater/soil vapor extraction (SVE) systems. He has supervised numerous impacted soil excavation projects that have included on-site soil treatment or off-site soil waste disposal. He has conducted numerous underground storage tank (UST) and above ground storage tank (AST) closures, overseen industrial chemical facility demolitions, and managed worker health and safety monitoring.

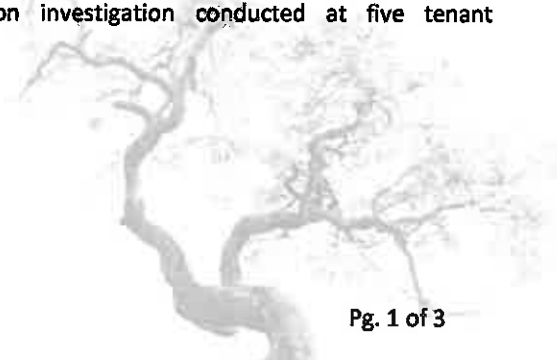
KEY EXPERIENCE

FORMER ASHLAND CHEMICAL COMPANY: SANTA FE SPRINGS, CA

PROJECT MANAGER, TASK MANAGER

Managed soil, soil vapor, and groundwater site assessment activities. Assisted with the implementation of the off-site groundwater assessment. Managed groundwater treatment and re-injection system. Field geologist and health and safety

representative during site demolition which included the removal of 117 USTs and ASTs. Managed the installation of SVE and groundwater monitoring wells during site re-development. Managed field and reporting tasks during the vapor intrusion investigation conducted at five tenant buildings.



SHELL OIL/MOBIL OIL: LA MIRADA, CA,

PROJECT MANAGER

Project manager of groundwater assessment, monitoring, and remediation activities associated with light-non-aqueous phase liquid (LNAPL) removal at three former gasoline service station sites. Managed Dual-Phase Extraction (DPE) and SVE remediation and data reporting to the Regional Water Quality Control Board (RWQCB). Prepared cost proposals and work scopes for RELLC project managers. Coordinated site access agreements with offsite property owners.

ASHLAND SPECIALTY CHEMICAL COMPANY: COMMERCE, CA

TASK MANAGER

Responsible for soil and groundwater investigations, groundwater monitoring, and LNAPL recovery and SVE systems. Field geologist for aquifer testing that included installation of a deep groundwater monitoring well by air-rotary casing hammer drilling method. Completed groundwater aquifer step-testing and 48-hour tests in both the shallow and deep zones at the site. Assisted with groundwater data analysis and reporting.

SHELL OIL PRODUCTS: CARSON, CA

INVESTIGATION OVERSIGHT MANAGER

Responsible for field oversight of environmental investigation conducted at a former oil storage facility that was redeveloped into a subdivision containing 285 single-family homes. Performed field oversight of staff and subcontractors conducting soil, soil vapor, and indoor air sampling at individual residences. Coordinated site assessment activities with homeowners and third-party consultants. Reviewed and certified environmental assessment reports for submittal to the RWQCB.

FORMER ASHLAND CHEMICAL COMPANY: NEWARK, CA

PROJECT MANAGER

Managed soil, groundwater, and soil vapor investigation activities conducted at the former chemical distribution facility. Managed the groundwater sampling program and

data reporting to the RWQCB. Oversaw permitting, monitoring, and reporting activities associated with the former on-site groundwater treatment system. Field geologist for chlorinated hydrocarbon soil investigations and aquitard assessment. On-site manager for facility demolition, impacted soil excavations in excess of 15,000 cubic yards, and construction of a soil stockpile vapor extraction treatment system.

ASHLAND DISTRIBUTION COMPANY: MENASHA, WI

PROJECT MANAGER

Developed a long-term remedy for groundwater impacted by chlorinated hydrocarbons. Revised and negotiated the groundwater monitoring program with the Wisconsin Department of Natural Resources (WDNR). Implemented quarterly groundwater monitoring to assess chlorinated impacts and aquifer monitored natural attenuation (MNA) conditions. Prepared the Remedial Action Options Report which included an extensive MNA feasibility study conducted in accordance with Environmental Protection Agency (EPA) and WDNR published guidance. Successfully negotiated annual MNA groundwater sampling of and installation of surface pavement cap.

FORMER SCURLOCK PERMIAN CORPORATION: STERLING, CO;
GILLETTE/WAMSUTTER, WY

PROJECT MANAGER

Managed three sites as part of a portfolio of former crude oil transferring and truck maintenance facilities. Conducted soil and groundwater monitoring for petroleum hydrocarbons. Prepared monitoring reports that were submitted to the Colorado Department of Public Health and Environment (CDPHE) and Wyoming Department of Environmental Quality (WDEQ). Assisted with negotiation of a no further action (NFA) ruling for the Sterling, CO site. Negotiated with the WDEQ to reduce groundwater monitoring parameter suite for the Wamsutter, WY site.

LOS ANGELES COUNTY DEPARTMENT OF PUBLIC WORKS: LOS ANGELES, CA

FIELD GEOLOGIST

Responsible for installation a water supply well capable of producing 1,000-gpm (completed to 380 ft. bgs). Oversaw installation of the sanitary seal conductor casing. Conducted soil logging during the pilot borehole drilling, well construction, well development, and groundwater sampling activities.

ACTIVE CHEMICAL DISTRIBUTION FACILITY: BINGHAMTON, NY

PROJECT MANAGER

Responsible for investigation and monitoring activities associated with an active chemical distribution facility. Assisted with preparation of work plans and reports for soil, groundwater, soil vapor, and indoor air vapor intrusion studies. Task leader for off-site soil vapor and indoor air sampling investigations. Collected indoor air samples at 15 residential properties. Conducted oversight of indoor air mitigation system installations.

FORMER ASHLAND SPECIALTY CHEMICAL COMPANY: MILWAUKEE, WI

PROJECT MANAGER

Responsible for site phytoremediation system and groundwater monitoring program. Supervised staff and subcontractors that monitored phytoremediation system tree health, LNAPL recovery, and groundwater monitoring for chlorinated hydrocarbons and MNA conditions. Prepared remediation and monitoring reports that were submitted to the WDNR and EPA Region 5.

FORMER ASHLAND SPECIALTY CHEMICAL COMPANY: RENSSALEAR, NY

PROJECT MANAGER

Assisted with preparation of a RCRA Corrective Measures Study (CMS) Report. Prepared and evaluated remedial costs and technologies associated with proposed remedies.

Managed off-site investigation activities that included soil vapor and indoor air sampling at offsite properties.

LOS ANGELES COUNTY METROPOLITAN TRANSPORTATION AUTHORITY: LOS ANGELES COUNTY, CA

FIELD GEOLOGIST

Responsible for soil and groundwater investigations at active bus maintenance facilities throughout Los Angeles, California. Performed soil and groundwater investigations for petroleum hydrocarbon impacts. Installed and sampled soil borings and groundwater monitoring wells. Abandoned over 50 groundwater monitoring and soil gas vapor monitoring wells as part of the Mid-City Redline Subway Assessment Project. Performed well abandonment work under Level B, C, and D health and safety levels of worker protection. Prepared investigation and monitoring reports.

SOIL AND GROUNDWATER INVESTIGATIONS: LONG BEACH, CA

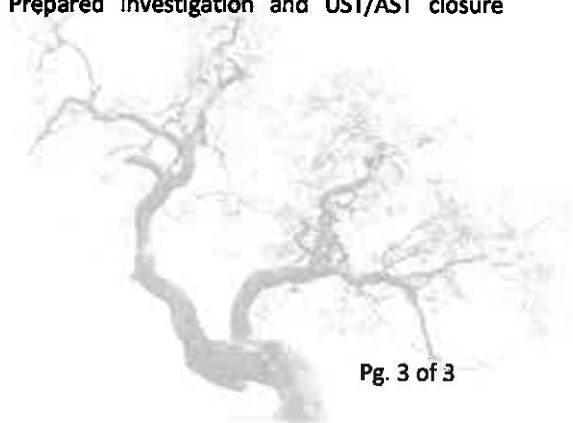
TASK MANAGER, FIELD GEOLOGIST

Responsible for soil and groundwater investigations, groundwater monitoring well abandonments, and groundwater aquifer and tidal studies. Field task leader for groundwater aquifer step-testing and 48-hour test. Managed and assisted with groundwater aquifer data analysis and reporting.

SOIL AND GROUNDWATER INVESTIGATIONS: LOS ANGELES, CA

TASK MANAGER, FIELD GEOLOGIST

Responsible for UST and AST installation and removal activities, soil and groundwater investigations, groundwater monitoring well installation and abandonment, and operation of a Geoprobe soil, groundwater, and soil vapor sampling drilling rig. Prepared investigation and UST/AST closure reports.



Safety Compliance Management

is proud to award this

Certificate of Completion

to

Jeff Engels

for successfully completing 8 hours of instruction in

OSHA 8hr Hazwoper Refresher Training #936

29 CFR 1910.120 (e)(p)

Presented this 13 day of January, 2017.



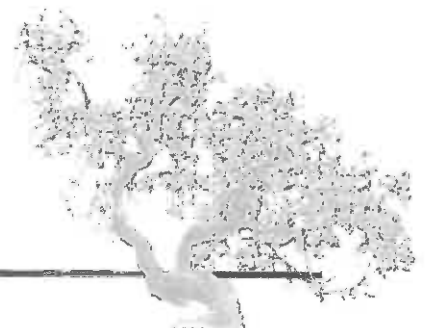
**SAFETY
COMPLIANCE
MANAGEMENT**

INCORPORATED
811 SAN RAMON VALLEY BLVD.
DANVILLE, CA 94526
800-974-1419

Laura Gutt

Safety Compliance Management, Inc.

ATTACHMENT D - CERTIFICATE OF INSURANCE





EHSSUPP-01

BOMARBR

CERTIFICATE OF LIABILITY INSURANCE

DATE (MM/DD/YYYY)
2/1/2017

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 Willis of Pennsylvania, Inc. c/o 26 Century Blvd P.O. Box 305191 Nashville, TN 37230-5191 | CONTACT NAME: Willis Towers Watson Certificate Center PHONE (A/C, No, Ext): (877) 945-7378 FAX (A/C, No): (888) 467-2378 E-MAIL ADDRESS: certificates@willis.com | |
| | INSURER(S) AFFORDING COVERAGE INSURER A : Admiral Insurance Company | NAIC # 24856 |
| INSURED EHS Support, Inc.; EHS Support, LLC; EHS Support Engineering, PL; EHS Support of NC, PLLC EHS Support PTY, LTD; Conscentia LLC 110 Kentzel Road Pittsburgh, PA 15237 | INSURER B : | |
| | INSURER C : | |
| | INSURER D : | |
| | INSURER E : | |
| | INSURER F : | |

COVERAGES **CERTIFICATE NUMBER:** **REVISION NUMBER:**

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 | <input checked="" type="checkbox"/> COMMERCIAL GENERAL LIABILITY <input type="checkbox"/> CLAIMS-MADE <input checked="" type="checkbox"/> OCCUR GEN'L AGGREGATE LIMIT APPLIES PER: <input checked="" type="checkbox"/> POLICY <input type="checkbox"/> PROJECT <input type="checkbox"/> LOC <input type="checkbox"/> OTHER | | | FEI-ECC-16307-03 | 07/07/2016 | 07/07/2017 | EACH OCCURRENCE \$ 2,000,000 DAMAGE TO RENTED PREMISES (Ea occurrence) \$ 2,000,000 MED EXP (Any one person) \$ 10,000 PERSONAL & ADV INJURY \$ 2,000,000 GENERAL AGGREGATE \$ 2,000,000 PRODUCTS - COMP/OP AGG \$ 2,000,000 \$ |
| A | AUTOMOBILE LIABILITY <input type="checkbox"/> ANY AUTO OWNED AUTOS ONLY <input type="checkbox"/> SCHEDULED AUTOS <input checked="" type="checkbox"/> HIRED AUTOS ONLY <input checked="" type="checkbox"/> NON-OWNED AUTOS ONLY | | | FEI-ECC-16307-03 | 07/07/2016 | 07/07/2017 | COMBINED SINGLE LIMIT (Ea accident) \$ 2,000,000 BODILY INJURY (Per person) \$ BODILY INJURY (Per accident) \$ PROPERTY DAMAGE (Per accident) \$ \$ |
| A | <input type="checkbox"/> UMBRELLA LIAB <input checked="" type="checkbox"/> OCCUR <input checked="" type="checkbox"/> EXCESS LIAB <input type="checkbox"/> CLAIMS-MADE DED \$ RETENTION \$ | | | FEI-EXS-16308-03 | 07/07/2016 | 07/07/2017 | EACH OCCURRENCE \$ 8,000,000 AGGREGATE \$ 8,000,000 \$ |
| | WORKERS COMPENSATION AND EMPLOYERS' LIABILITY ANY PROPRIETOR/PARTNER/EXECUTIVE OFFICER/MEMBER EXCLUDED? (Mandatory in NH) <input type="checkbox"/> Y/N N/A If yes, describe under DESCRIPTION OF OPERATIONS below | | | | | | <input type="checkbox"/> PER STATUTE <input type="checkbox"/> OTHER E.L. EACH ACCIDENT \$ E.L. DISEASE - EA EMPLOYEE \$ E.L. DISEASE - POLICY LIMIT \$ |
| A | Pollution Liab. | | | FEI-ECC-16307-03 | 07/07/2016 | 07/07/2017 | Occurrence Basis: 2,000,000 |
| A | Professional Liab. | | | FEI-ECC-16307-03 | 07/07/2016 | 07/07/2017 | See Attached |

DESCRIPTION OF OPERATIONS / LOCATIONS / VEHICLES (ACORD 101, Additional Remarks Schedule, may be attached if more space is required)

| | |
|---|---|
| CERTIFICATE HOLDER WV Department of Environmental Protection Division of Land Restoration/ Office of Environmental Remediation 601 57th St. SE Charleston, WV 25304 | CANCELLATION 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  |

ADDITIONAL COVERAGE SCHEDULE

| COVERAGE | LIMITS |
|---|--|
| POLICY TYPE: Professional Liability CARRIER: Admiral Insurance Company POLICY TERM: 7/7/2016 - 7/7/2017 POLICY NUMBER: FEI-ECC-16307-03 | Professional Liability is on a claims made basis Professional Liability: \$2,000,000 |
| POLICY TYPE: Executive Risk CARRIER: Federal Insurance Company POLICY TERM: 1/1/2017 - 1/1/2018 POLICY NUMBER: 8225-6284 | Directors & Officers: Limit of Liability: \$2,000,000; Retention: \$10,000 for Individual Indemnified Liability and Corporate Liability Coverage. Crime - Employee Theft: Limit: \$5,000,000; Retention: \$25,000. Employment Practices Liability: Limit: \$2,000,000; Retention: \$5,000. Fiduciary Liability: Limit: \$2,000,000; Retention: \$0. |
| POLICY TYPE: Directors and Officers CARRIER: Great Northern Insurance Company POLICY TERM: 1/1/2017 - 1/1/2018 POLICY NUMBER: 93310524 | D&O Coverage Limits: \$1,000,000 Each Loss \$1,000,000 Each Policy Period/ Aggregate |
| POLICY TYPE: International Package CARRIER: Great Northern Insurance Company POLICY TERM: 7/7/2016 - 7/7/2017 POLICY NUMBER: 9949-01-96PIT | Coverages: Accident, Automobile, Property, and Workers Compensation |

ATTACHMENT E – PRICING

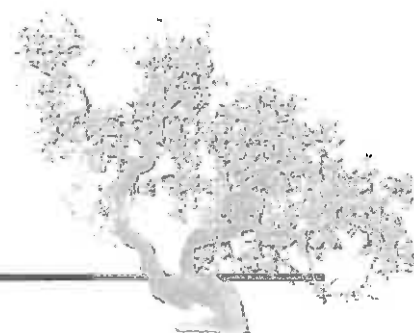


Exhibit "A" Pricing Page
West Virginia Department of Environmental Protection
Operation, Maintenance, and Monitoring of Vienna PCE

| Item | Specification | Description | (Or Equal)Brand Bid | Unit of Measure | Unit Cost | Est.Qty | Extended Cost |
|-------------|----------------------|--|----------------------------|------------------------|------------------|----------------|----------------------|
| 1 | 4.1.2 | Sampling of groundwater monitoring wells | | Per Well | 149 | 39 | 5811.00 |
| 2 | 4.1.2 | Sampling of AS/SVE monitoring wells | | Per Well | 239 | 26 | 6214.00 |
| 3 | 4.2.2 | Project Manager (for tasks not listed) | | Hour | 79 | 750 | 59250.00 |
| 4 | 4.2.3 | System Operator (for tasks not listed) | | Hour | 50 | 1,100 | 55000.00 |
| 5 | 4.2.8 | Report Writing | | Hour | 75 | 500 | 37500.00 |
| 6 | 4.2.3 | Check/record readings from all instruments, meters, and gauges | | Each | \$ 100.00 | 52 | 5200.00 |
| 7 | 4.2.3 | Check overall plant operations | | Each | \$ 75.00 | 52 | 3900.00 |
| 8 | 4.2.3 | Check Operator Interface Terminal/Programmable Logic Controller for alarm conditions (per event) | | Each | \$ 25.00 | 52 | 1300.00 |
| 9 | 4.2.3 | Check all valve positions | | Each | \$ 50.00 | 52 | 2600.00 |
| 10 | 4.2.3 | Check oil levels on all blowers and air compressors | | Each | \$ 50.00 | 52 | 2600.00 |
| 11 | 4.2.3 | Check differential pressure across inline air inlet filters (SVE blowers) | | Each | \$ 25.00 | 52 | 1300.00 |
| 12 | 4.2.3 | Check differential pressure across bag filters Treatment Unit 3 | | Each | \$ 25.00 | 52 | 1300.00 |
| 13 | 4.2.3 | Check differential pressure across liquid-phase Granular Activated Carbon vessels Treatment Unit 3 | | Each | \$ 25.00 | 52 | 1300.00 |
| 14 | 4.2.3 | Check DD range (coalescing) and PDX (particulate) filter service indicators on air compressors | | Each | \$ 50.00 | 52 | 2600.00 |
| 15 | 4.2.3 | Check oil temperature on all equipment | | Each | \$ 25.00 | 52 | 1300.00 |

| | | | | | | |
|----|-------|---|------|-----------|----|---------|
| 16 | 4.2.3 | Log system flow rates air sparge system, vacuum system, groundwater | Each | \$ 100.00 | 52 | 5200.00 |
| 17 | 4.2.3 | Clean inside and outside of unit building | Each | \$ 100.00 | 52 | 5200.00 |
| 18 | 4.2.3 | Start system for maintenance and readiness | Each | \$ 100.00 | 52 | 5200.00 |
| 19 | 4.2.3 | Check air compressors for possible leaks | Each | \$ 50.00 | 52 | 2600.00 |
| 20 | 4.2.3 | Check off-gas treatment vessels and stacks for moisture collection, and drain as necessary | Each | \$ 32.00 | 12 | 384.00 |
| 21 | 4.2.3 | Check SVE sumps and drains (pump out) as necessary | Each | \$ 250.00 | 12 | 3000.00 |
| 22 | 4.2.3 | Grease SVE blower drive shaft bearings with National Lubricating Grease Institute (NLGI) #2 | Each | \$ 32.00 | 12 | 384.00 |
| 23 | 4.2.3 | Inspect air filter, oil cooler, condenser, and air cooler, and clean as necessary (air compressors) | Each | \$ 32.00 | 12 | 384.00 |
| 24 | 4.2.3 | Inspect the condensate trap and clean flow valve as necessary (air compressors) | Each | \$ 17.00 | 12 | 204.00 |
| 25 | 4.2.3 | Check tension and condition of belts and adjust as necessary (SVE blower and air compressor) | Each | \$ 17.00 | 12 | 204.00 |
| 26 | 4.2.3 | Restart computers | Each | \$ 17.00 | 12 | 204.00 |
| 27 | 4.2.3 | Turn all valves | Each | \$ 38.00 | 4 | 152.00 |
| 28 | 4.2.3 | Grease all motors with NLGI #2 (SVE blower and air compressors) | Each | \$ 75.00 | 4 | 300.00 |
| 29 | 4.2.3 | Lubricate air conditioner fan motors | Each | \$ 38.00 | 4 | 152.00 |
| 30 | 4.2.3 | Change gear-box oil (SVE blowers)-every 1,000 hours | Each | \$ 50.00 | 2 | 100.00 |
| 31 | 4.2.3 | Lubricate exhaust fan motors with SAE20 non- detergent oil | Each | \$ 12.00 | 2 | 24.00 |
| 32 | 4.2.3 | Lubricate roll up doors | Each | \$ 12.00 | 2 | 24.00 |
| 33 | 4.2.3 | Change eye wash liquid | Each | \$ 12.00 | 2 | 24.00 |

| | | | | | | | |
|----|-------|--|--|------|-------------|---|---------|
| 34 | 4.2.3 | Clean / drain moisture separator (SVE) | | Each | \$ 12.00 | 2 | 24.00 |
| 35 | 4.2.3 | Grease fittings on SVE blowers | | Each | \$ 60.00 | 1 | 60.00 |
| 36 | 4.2.3 | Grease transfer pump motors with NLGI #2, disassemble and inspect and clean impeller housing as needed | | Each | \$ 20.00 | 1 | 20.00 |
| 37 | 4.2.3 | Have safety relief valves tested on air compressors (separator tank) | | Each | \$ 20.00 | 1 | 20.00 |
| 38 | 4.2.3 | Perform comprehensive test on air compressors by certified service technician | | Each | \$ 5,000.00 | 1 | 5000.00 |
| 39 | 4.2.3 | Replace DD and PDX, oil/air filters on air compressors | | Each | \$ 84.00 | 1 | 84.00 |
| 40 | 4.2.3 | Change oil in air compressors (separator tank) | | Each | \$ 40.00 | 1 | 40.00 |
| 41 | 4.2.3 | Clean air compressors | | Each | \$ 40.00 | 1 | 40.00 |
| 42 | 4.2.3 | Inspect fire extinguishers | | Each | \$ 20.00 | 1 | 20.00 |
| 43 | 4.2.3 | Change bag filters when DP reaches 12 psig | | Each | \$ 20.00 | 1 | 20.00 |
| 44 | 4.2.3 | Change out or backwash liquid phase when GAC media becomes spent | | Each | \$ 9,000.00 | 1 | 9000.00 |
| 45 | 4.2.3 | Check EW-1 well vault for leaks | | Each | \$ 40.00 | 1 | 40.00 |
| 46 | 4.2.3 | Check pull boxes for leaks | | Each | \$ 40.00 | 1 | 40.00 |
| 47 | 4.2.3 | Clean or replace blower inlet air filers | | Each | \$ 40.00 | 1 | 40.00 |
| 48 | 4.2.3 | Clean AC intake filter | | Each | \$ 40.00 | 1 | 40.00 |
| 49 | 4.2.3 | Empty condensate collection drums at TU2 | | Each | \$ 84.00 | 1 | 84.00 |
| 50 | 4.2.3 | Pull and check extraction well pump for bio-fouling | | Each | \$ 165.00 | 1 | 165.00 |
| 51 | 4.2.3 | Shock chlorinate extraction well as needed | | Each | \$ 40.00 | 1 | 40.00 |
| 52 | 4.2.3 | Clean transformers | | Each | \$ 40.00 | 1 | 40.00 |
| 53 | 4.2.3 | Clean exhaust fan blades and motor | | Each | \$ 21.00 | 1 | 21.00 |
| 54 | 4.2.3 | Clean or replace SVE blower filter element | | Each | \$ 21.00 | 1 | 21.00 |
| 55 | 4.2.6 | Oil filter for air sparge systems | | Each | 50 | 2 | 100.00 |

| | | | | | | | |
|----|-------|---|-------------------------------|------------|------|----|---------|
| 56 | 4.2.6 | Air filter for air sparge systems | | Each | 50 | 2 | 100.00 |
| 57 | 4.2.6 | Belts for air sparge systems | | Each | 125 | 2 | 250.00 |
| 58 | 4.2.6 | Solenoid Valve for Air Sparge Systems | *H2K Model 8210G94 | Each | 200 | 2 | 400.00 |
| 59 | 4.2.6 | Flow meter for Air Sparge Systems | *King Instruments Model 7450 | Each | 396 | 2 | 792.00 |
| 60 | 4.2.6 | Demister pad for SVE Systems | *H2K Model 4x23-SST | Each | 290 | 2 | 580.00 |
| 61 | 4.2.6 | Vacuum Gauge (0-60" wc vacuum) for SVE Systems | *H2K model 611.10 | Each | 51 | 2 | 102.00 |
| 62 | 4.2.6 | 32-inch level switch assembly for SVE Systems | *H2K | Each | 380 | 2 | 760.00 |
| 63 | 4.2.6 | Differential pressure gauge for SVE Systems | *H2K model 2-5003NPT | Each | 102 | 2 | 204.00 |
| 64 | 4.2.6 | 2"B+ venturi for SVE Systems | *H2K | Each | 323 | 2 | 646.00 |
| 65 | 4.2.6 | Belt set for SVE Systems | | Each | 125 | 2 | 250.00 |
| 66 | 4.2.6 | Filter element for SVE Systems | *H2K model 235P | Each | 178 | 2 | 356.00 |
| 67 | 4.2.6 | Oil for SVE Systems | | Per Gallon | 100 | 20 | 2000.00 |
| 68 | 4.2.6 | Screen 18x18 mesh for VC Vessels | *H2K model SST | Each | 150 | 2 | 300.00 |
| 69 | 4.2.6 | 23" Gasket for VC Vessels | *H2K | Each | 48 | 2 | 96.00 |
| 70 | 4.2.6 | Mechanical shaft seal Transfer pumps | *H2K model CT-SEAL | Each | 90 | 2 | 180.00 |
| 71 | 4.2.6 | Oil-food grade for air sparge systems | | Per Gallon | 125 | 20 | 2500.00 |
| 72 | 4.2.6 | SST Lateral for TU 3 liquid phase carbon | *H2K model LC-007SSTLAT | Each | 150 | 2 | 300.00 |
| 73 | 4.2.6 | SST Hub for TU 3 liquid phase carbon | *H2K model LC-007SSTHUB | Each | 1900 | 2 | 3800.00 |
| 74 | 4.2.6 | Manway gasket for TU 3 liquid phase carbon | *H2K model 12x16GAS | Each | 45 | 2 | 90.00 |
| 75 | 4.2.6 | 25 micron bag filter for TU 3 Bag Filters | *H2K model KE25 | Each | 7 | 2 | 14.00 |
| 76 | 4.2.6 | O-ring for bag filter housing lid for TU 3 Bag Filters | *H2K model KK-ORING 2 | Each | 25 | 2 | 50.00 |
| 77 | 4.2.6 | Differential pressure switch (4-80 PSI) TU3 Bag Filters | *Barksdale model DPD1T-GH80SS | Each | 360 | 2 | 720.00 |
| 78 | 4.2.6 | Filter basket for TU3 Bag Filter | | Each | 270 | 2 | 540.00 |

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