Event Details

Event ID	Format	Type	Page
R3201-2000008034	Sell	RFx	1
Event Round	**Version**		
1	1		
Event Name			
MPCA PT RFP Remediation Master Contract			
Start Time		**Finish Time**	
02/28/2018 08:00:00		04/11/2018 14:00:00	

Event Currency: US Dollar
Bids allowed in other currency: No

In order to participate in this event YOU MUST BE REGISTERED as a vendor and have ACCEPTED the event electronically.

ENVIRONMENTAL TROUBLESHOOTERS
3825 GRAND AVE
DULUTH MN 55807
United States

Submit To: Pollution Control Agency
520 LAFAYETTE RD N
ST PAUL MN 55155-4194
United States

Contact: Heininger,Mary
Phone: 651/757-2418

Email: Contracts.pca@state.mn.us

Event Description

Questions and Answers - MPCA PT RFP Remediation Master Contract - March 19, 2018

Addendum 1 - MPCA PT RFP Remediation Master Contract - March 19, 2018

The Minnesota Pollution Control Agency ("MPCA" or "State") and the Minnesota Department of Agriculture ("MDA" or "State") request proposals from qualified experienced environmental contractors (Contractors) to perform environmental investigations and other response actions at sites throughout Minnesota. The State seeks multiple Contractors to provide environmental services, including risk assessments, sampling, investigations, feasibility studies, removal and response actions, remedial design, response action oversight, and long-term operation and maintenance activities statewide. The Scope of Services is divided into three Categories of Service:

- Category A – Petroleum, Superfund, MDA, Closed Landfill Program Environmental Services
- Category B - Petroleum Environmental Services
- Category C - Closed Landfill Program Environmental Services

Refer to attached RFP for additional information.

Proposals due: April 11, 2018
Questions due: March 12, 2018

The RFP and attachments are at the header level. Cost attachment not applicable.

Please note that the link to add or view comments throughout the solicitation is called ' Click here to add or view comments and/or documents related to this line.

VENDORS - DO NOT CLICK THE "NO BID" BOX.

General Comments

- Questions and Answers - Uploaded March 19, 2018

  Addendum 1 - Uploaded March 19, 2018

  See attached RFP and attachments for further details and application instructions.

  ATTENTION PROPOSERS - Attach your proposal and attachments in the Event Header location.

Event Details (cont.)

Event ID	Format	Type	Page
R3201-2000008034	Sell	RFx	2
Event Round	**Version**		
1	1		
Event Name			
MPCA PT RFP Remediation Master Contract			
Start Time		**Finish Time**	
02/28/2018 08:00:00		04/11/2018 14:00:00	

Event Currency: US Dollar
Bids allowed in other currency: No

In order to participate in this event YOU MUST BE REGISTERED as a vendor and have ACCEPTED the event electronically.

ENVIRONMENTAL TROUBLESHOOTERS
3825 GRAND AVE
DULUTH MN 55807
United States

Submit To: Pollution Control Agency
520 LAFAYETTE RD N
ST PAUL MN 55155-4194
United States

Contact: Heininger,Mary
Phone: 651/757-2418

Email: Contracts.pca@state.mn.us

Line Details

Line: 1 **Item ID:** **Line Qty:** 1.00 **UOM:** EACH **Bid Qty:** 1

Reserve Price: No

Description: not applicable - costs included in RFP
Comments:

- Attention Proposers: Your proposal and all attachments should be submitted in the Event Header location

Question	Response
What is the price per unit?	T & M

Response Comments

Time & mateials rate sheet attached

Event Details (cont.)

Event ID	Format	Type	Page
R3201-2000008034	Sell	RFx	3
Event Round	**Version**		
1	1		
Event Name			
MPCA PT RFP Remediation Master Contract			
Start Time		**Finish Time**	
02/28/2018 08:00:00		04/11/2018 14:00:00	

Event Currency: US Dollar
Bids allowed in other currency: No

In order to participate in this event YOU MUST BE REGISTERED as a vendor and have ACCEPTED the event electronically.

ENVIRONMENTAL TROUBLESHOOTERS
3825 GRAND AVE
DULUTH MN 55807
United States

Submit To: Pollution Control Agency
520 LAFAYETTE RD N
ST PAUL MN 55155-4194
United States

Contact: Heininger,Mary
Phone: 651/757-2418

Email: Contracts.pca@state.mn.us

Bidder Information

Firm Name: Environmental Troubleshooters, Inc.

Name: Craig Wilson **Signature:** **Date:** April 6, 2018

Phone #: (218) 722-6013 **Fax #:** (218) 722-6319

Street Address: 3825 Grand Ave

City & State: Duluth, MN **Zip Code:** 55807

Email: cwilson@etsmn.com

Event Details (cont.)

Event ID	Format	Type	Page
R3201-2000008034	Sell	RFx	4
Event Round	**Version**		
1	1		
Event Name			
MPCA PT RFP Remediation Master Contract			
Start Time		**Finish Time**	
02/28/2018 08:00:00		04/11/2018 14:00:00	

Event Currency: US Dollar
Bids allowed in other currency: No

In order to participate in this event YOU MUST BE REGISTERED as a vendor and have ACCEPTED the event electronically.

ENVIRONMENTAL TROUBLESHOOTERS
3825 GRAND AVE
DULUTH MN 55807
United States

Submit To: Pollution Control Agency
520 LAFAYETTE RD N
ST PAUL MN 55155-4194
United States

Contact: Heininger,Mary
Phone: 651/757-2418

Email: Contracts.pca@state.mn.us

Appendix A - Line Specifications

Line: 1 **Item ID:** **Line Qty:** 1 **UOM:** EACH
Description: not applicable - costs included in RFP

Item Specifications

Manufacturer:			
Mfg Item ID:			
Item Length:	0	**Item Height:**	0
Item Width:	0	**Dimension UOM:**	
Item Volume:	0	**Volume UOM:**	
Item Weight:	0	**Weight UOM:**	
Item Size:		**Item Color:**	

Shipping Information

Schedule:	1	**Ship To:**	MPCA REMEDIATION DIVISION
Quantity:	1		520 LAFAYETTE RD N
Due Date:	04/11/2018		ST PAUL MN 55155-4194
Freight Terms:			United States
Ship Via:			

Event Details (cont.)

Event ID	Format	Type	Page
R3201-2000008034	Sell	RFx	5
Event Round	**Version**		
1	1		
Event Name			
MPCA PT RFP Remediation Master Contract			
Start Time		**Finish Time**	
02/28/2018 08:00:00		04/11/2018 14:00:00	

Event Currency: US Dollar
Bids allowed in other currency: No

In order to participate in this event YOU MUST BE REGISTERED as a vendor and have ACCEPTED the event electronically.

ENVIRONMENTAL TROUBLESHOOTERS
3825 GRAND AVE
DULUTH MN 55807
United States

Submit To: Pollution Control Agency
520 LAFAYETTE RD N
ST PAUL MN 55155-4194
United States

Contact: Heininger,Mary
Phone: 651/757-2418

Email: Contracts.pca@state.mn.us

Appendix B - General Terms & Conditions

1. Please see attached RFP for General Terms and Conditions.

Last Updated: 11/06/2012

MINNESOTA POLLUTION CONTROL AGENCY
520 Lafayette Road North
St. Paul, MN 55155-4194

REQUEST FOR PROPOSAL (RFP) ADDENDUM

Addendum No.: 1 Date of Addendum: March 19, 2018

Due Date, Time: April 11, 2018, 2:00 PM

Title: MPCA PT RFP – REMEDIATION MASTER

SCOPE OF ADDENDUM

The Request For Proposal (RFP) is revised as follows with additions underlined, and deletions are ~~struck out~~:

Revision 1. RFP Section 2: Project Goals, Page 3, is amended as follows:

The total amount of money available for work under this Master Contract is approximately ~~$120,000,000.00 (One Hundred Twenty Million Dollars~~) $420,000,000.00 (Four Hundred Twenty Million Dollars) for five years between all Master Contracts issued under this RFP. No payments will be made except for work authorized by a Work Order that is issued from the State. No minimum payment is guaranteed by the State.

Revision 2. RFP Attachment C. Sample Contract, Page 2, Clause 4.1 Consideration. is amended as follows:

4.1 Consideration. The State will pay for all services satisfactorily performed by the Contractor for all Work Order Contracts issued under this Master Contract. The total compensation of all Work Orders may not exceed ~~$**120,000,000.00 (One Hundred Twenty Million Dollars)**~~ **$420,000,000.00 (Four Hundred Twenty Million Dollars)** for five (5) years between all Master Contracts

Revision 3. RFP Section 7. Proposal Content, Category A: Petroleum, Superfund, MDA, and Closed Landfill Program Environmental Services, A.3, Page 31, is amended as follows:

Provide a detailed description of the company's experience as it relates to the scope of services outlined in this RFP; specifically, describe the company's experience with each of the bullets listed in **Section 4 3** of this RFP. The Proposal shall contain the following additional details specific to Category A services:

- A summary of Proposer's experience with agricultural chemical investigation and cleanups.
- A list of remediation technologies with which the Proposer has experience.
- Provide a detailed description of the company's experience as it relates to the scope of services outlined in this RFP for Category A.

Revision 4. RFP Section 3: Scope of Services, Page 3, is amended as follows:

The Contractor shall submit a separate proposal for each Category of Service for which the Contactor would like to be considered. Proposals will be evaluated individually for each Category of Service for which they were submitted. Category B is a subset of Category A. If the Contractor submits Proposals for both Category A and Category B, Category A will be evaluated first for qualification. If the Contractor is not approved for Category A, they will then be evaluated for Category B. Category C will be evaluated individually. Contractors can submit Proposals for all three Categories if desired.

Should a Contractor be approved and selected for more than one Categories, the Contractor will receive only one Master Contract containing all the approved and selected Categories.

Joint ventures and teaming among groups of Contractors is not allowed.

Revision 5. RFP, Attachment C Sample Contract, Clause 38. C. Additional Insurance Conditions, Bullet #5, Page 21, is amended as follows:

- Contractor's policy(ies) shall include legal defense fees in addition to its liability policy limits, with the exception of ~~B.4~~ Professional/Technical, Errors and Omissions, and/or Miscellaneous Liability Insurance above;

Revision 6. RFP, Section 4. Personnel Classifications and Qualifications, Category C: Closed Landfill Program, Project Manager Qualifications,Second Bullet, Page 23, is amended as follows:

- Minimum of three years experience working with landfill, investigation and closure. ~~Minnesota Guidance and Policy with the Superfund/ Petroleum programs. https://www.pca.state.mn.us/waste/cleanup-guidance~~

Revision 7. RFP, Section 6. Supplies and Equipment Pricing, EQUIPMENT RATES, Pages 28 and 29, and RFP, Attachment C, Sample Contract, EQUIPMENT RATES, Pages 5,6,7, is amended as follows:

Equipment	Cost (per day)
Turbidity Meter	$52.00
Oxidation-reduction potential (ORP) Meter	$39.00
~~Hydrolab Quanta~~	~~$80.00~~
Dissolved Oxygen Meter	$46.00
Temperature, pH, conductivity, ORP meter	$68.00
Temperature, pH, conductivity	$35.00
~~YSI Multi Meter w/ Flow Cell~~	~~$117.00~~
Flow Cell	$77.00
Water Quality Meter (6 parameters)	$102.00
2" Trash Pump	$~~189~~75..00
Bladder pump	$118.00
Submersible Pump	$52.00
Peristaltic Pump	$43.00
Diaphram Pump	$53.00
Mechanical Pump Puller	$44.00
Water Level Indicator	$27.00
Hydrocarbon/Water Interface Probe	$55.00
Pump/Slug Testing Equipment	$110.00
Manual direct-push probe equip.	$165.00
X-ray Fluorescent (XRF) for Soil and Lead Paint	$468.00

Nuclear Density Gauge	$69.00
Multi Gas Meter (02/CO/LEL/Methane)	$123.00
O2/Combustible Gas Detector	$110.00
LEL/O2/CO2 Gas Meter	$66.00
LEL/O2Gas Meter	$55.00
Explosimeter	$52.00
Photoionization Detector (PID) 10.6	$99.00
Photoionization Detector (PID) 11.7	$138.00
Flame Ionization Detector (OVA)	$135.00
Velometer / Anemometer	$34.00
Micro Manometer	$64.00
Sound Level Meter	$53.00
Dust Meter	$70.00
Air Compressor	$54.00
Metal/Cable Detector	$47.00
Generator	$65.00
Sump Pump	$33.00
Pressure Washer	$69.00
Magnetometer	$151.00
Coreing Machine with Drill Bits	$110.00
Surveying Equipment - Rotary Laser	$104.00
GPS (Submeter)	$122.00
Laser Level/Lenker Rod	$127.00
Ground Penetrating Radar (GPR)	$426.00
EM-31 Ground Conductivity Meter	$440.00
EM-61 Ground Conductivity Meter	$688.00
55 gal Drums	$70.00
Sub-Slab Soil Gas Sampling Point Insert	$88.00
Screen for Soil Gas Monitoring Points	$51.00
Vapor Pin Installation Kit (per point)	$60.00
Lumex Mercury Monitoring	$187.00
Mercury Analyzer	$179.00
Canoe	$15.68
Boat (includes motor and trailer)	$58.24
ATV **(Hourly Rate)**	$16.80

Revision 8. RFP, Section 7. Proposal Content, Category B. Petroleum Only Remdiation Environmental Services B.5., Scenario 1: Petroleum Only Environmental Services, Page 39, is amended as follows:

5. Scenario ~~1~~ B: Petroleum Only Environmental Services

Scenario ~~1~~B:

Revision 9. RFP, Section 6. Supplies and Equipment Pricing, Item cc., Page 27 and RFP, Attachment C, Sample Contract, Clause 8, Page 5, is amended as follows:

cc. Tubing less than $100.00

Revision 10. RFP, Section 7. Proposal Content, 5. Scenario A., Page 33, is amended as follows:

The property owner conducted a limited investigation consisting of several push probes throughout the facility and adjacent property. This investigation identified chlorinated ethenes (most notably trichloroethylene [TCE]) and agricultural chemicals (nitrogen, dicamba, metolachlor, metribuzin, pendimethalin, and triclopyr) in soils and groundwater above agency-regulated cleanup goals. General geology was noted to generally consist of coarse grained sands with thin lenses of silt and clay. The investigation encountered shallow groundwater approximately 6-10 feet bgs, with an assumed flow direction heading into town. All groundwater samples (blue GW samples) were collected at 30 feet for domestic wells, and 15 feet for investigation borings. The investigation did not evaluate the stream.

A single round of vapor points were also advanced off-site as part of the property owner's investigation, with some of the detections exceeding the 33X ISV for TCE (Figure 1). Vapor samples (orange vapor samples) were collected above the water table. MPCA is aware there is a pregnant person at the property with the sub-slab point. A passive soil-gas sample collected in the vehicle/equipment maintenance garage was several orders of magnitude above screening criteria; however, additional characterization nor remediation occurred in the building by the property owner.

Revision 11. RFP, Section 7., Proposal Content, Category A..; Scenario A, 2nd Paragraph, Page 32, is amended as follows:

The site topography is mostly flat, however the elevation does dip downward toward a small stream running through the northern portion of the property. This stream continues into the town which is located in the west adjoining property (see Figure 1). Older portions of the town (situated closer to the former ag-chem plant) are on private well drinking water (blocks 3, 5, and 7) that are 30 feet deep. Newer portions of the town (farther from the former plant) are on community water from the local municipality (blocks 1, 2, 4, and 6).

Revision 12. RFP, Section 7., Proposal Content, Category B. #5. Scenario 1: Petroleum Only Environmental Sercices, 5th Paragraph , Page 39, is amended as follows:

Municipal services are available in the area; however, the lakeside homes are all on private wells. The wells are 80 feet deep. The fueling station is hooked up to municipal water and other utilities at the site include storm sewer, sanitary sewer, and water that run along main street.

This addendum shall become part of the RFP and MUST be returned with the RFP Response.

RESPONDER NAME: Craig Wilson

TITLE: President

DATE: April 6, 2018

MINNESOTA POLLUTION CONTROL AGENCY
REQUEST FOR PROPOSAL FOR
REMEDIATION MASTER CONTRACT

Environmental Troubleshooters, Inc.

Response To:

MPCA
Category B - Petroleum Only
Remediation and Environmental Services

April 2018

Table of Contents Category B Petroleum Only Remediation Environmental Services

Attachments

2. Non-Public/Trade Secret

3. Proposal Attachments

Example Workplan	Attachment A
Example Scenario Spreadsheet	Attachment B
Sample Contract	Attachment C
Affidavit of Non-collusion	Attachment D
Affirmative Action Certification of Compliance	Attachment E
Certification Regarding Lobbying	Attachment F
Equal Pay Certificate	Attachment G
Resident Vendor Form	Attachment H
Veteran Owned Small Business Preference	Attachment I

ENVIRONMENTAL TROUBLESHOOTERS, INC.

3825 GRAND AVENUE
DULUTH, MN 55807
TEL: (218) 722-6013
FAX: (218) 722-6319
TOLL FREE: 1-800-470-3536

April 11, 2018

Minnesota Pollution Control Agency
520 Lafayette Road North
St. Paul, MN 55155-4194

RE: MPCA PT RFP Master Contract
Event ID R3201-2000008034; Event Date February 28, 2018
Category B: Petroleum Only Remediation Environmental Services

Environmental Troubleshooters, Inc. (ET) is pleased to submit a response to the above-referenced State of Minnesota request for proposal (RFP) to provide Petroleum Only Remediation Environmental Services to the Minnesota Pollution Control Agency (MPCA). ET has a fifteen-year history of working with the MPCA on emergency response projects and we look forward to being considered for this contract. This proposal response addresses the criteria outlined in the RFP.

Category of Service for which Environmental Troubleshooters, Inc. is Submitting a Response

Category B - Petroleum Only Remediation Environmental Services

Acceptance of Classification Levels and Rates – Schedule 1 and 2

Environmental Troubleshooters, Inc. accepts the MPCA's Classification Levels and Rates (Schedule 1 and 2) outlined in the RFP.

Acceptance of Equipment and Supplies List

Environmental Troubleshooters, Inc. accepts the MPCA's Equipment and Supplies List and Pricing as outlined in the RFP. The prices listed include all costs including but not limited to applicable taxes, fees, insurance costs, direct costs, overhead and profit.

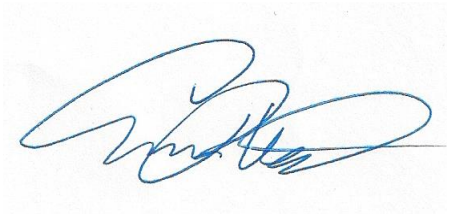
Proposer's Contact Information
Environmental Troubleshooters, Inc.
3825 Grand Avenue, Duluth, Minnesota 55807
Telephone: (218) 722-6013
Facsimile: (218) 722-6319
Website: www.environmentaltroubleshooters.com

Designated Person with the Company to Answer Questions this Proposal

Craig Wilson, CHMM.
President
3825 Grand Ave, Duluth, Minnesota 55807
Office: (218) 722-6013
E-mail: cwilson@etsmn.com.

Sincerely,

Environmental Troubleshooters, Inc.



Craig P. Wilson, CHMM
President
(218) 722-6013
cwilson@etsmn.com

7.B.2 Qualifications and Capabilities

7.B.2.1 Overall Company Capabilities, Experience and Organization Structure

Environmental Troubleshooters, Inc. (ET) is a comprehensive environmental consulting and contracting firm that has conducted over 2,000 projects regulated under Superfund, Voluntary Investigation and Cleanup (VIC), Petroleum Remediation and Brownfields, Underground and Aboveground Storage Tank (UST/AST) and Asbestos programs. The hazardous substances / contaminants that ET has experience working with include; petroleum products, volatile organic compounds (VOCs), heavy metals, polychlorinated biphenyls (PCBs), polynuclear aromatic hydrocarbons (PAHs), asbestos, agricultural and regulated building materials. ET has also performed project under Level B, C and D conditions.

ET owns unique site investigation equipment most consultants are unfamiliar with or have to rent for a project. This field equipment is a Site Lab UVF-3100D for field screening polynuclear aromatic hydrocarbons (PAHs) and diesel range organics (DRO) and the Olympus Innov-x XRF for field screening of up to 27 heavy metals in contaminated soils. This equipment allows ET to provide the best real time results and ultimately a more accurate field assessment with lower laboratory costs. This field equipment allows ET to collect laboratory samples more precisely from specific soil horizons and reduce the number of laboratory samples. This field screening equipment typically provides more soil data than using exclusively laboratory samples, which we incorporate into our site investigation and/or corrective action design (CAD). ET also utilizes this equipment for field screening contaminated soils during site remediation. Accurate field screening is critical for soil segregation, which can reduce the volume of contaminated materials disposed of at a landfill or other treatment destination.

ET is an MPCA Emergency Response Contractor and some of the projects performed under this contract originated as emergency response projects. According to our Limited Emergency Response contract, once the emergency nature of the project is completed it is typically transferred to this Petroleum Contract. ET has performed work on several past projects that were moved into this Petroleum Contract once the emergency nature of the project was mitigated by ET. This change in Contractors mid-project means the State of Minnesota and its new contractor are essentially staring over. The lack of continuity wastes resources, time and money better utilized by the State of Minnesota.

ET excels at working throughout the northern half of Minnesota and has in-depth knowledge regarding this regions geology, watersheds, bedrock and sensitive ecosystems. ET's knowledge of the northern region of the state allows for a more accurate and efficiently completed assessment and remediation projects. We also have an extensive database of past projects to refer to when conducting a background review of contaminated sites.

ET has 100% of its staff located in northern Minnesota to handle all aspects of this Petroleum contract. While some companies have satellite offices located out-state, most of these firms are not fully staffed or equipped to perform all the scope of work tasks listed in the RFP from their satellite office. With ET being headquartered in Duluth, we are located approximately five miles from the MPCA Duluth office and is available daily to discuss projects or visit a site.

Finally, being a small firm, we typically send out more qualified staff (Scientist, Project Managers, etc.) to sites than necessary. This means the level of expertise is greater than what many large firms would provide. This is an advantage to the MPCA because the State of Minnesota gets the experience and qualifications of a Senior Level professional at the cost of a lower level professional because we bill at the rate of the task not the rate of the person.

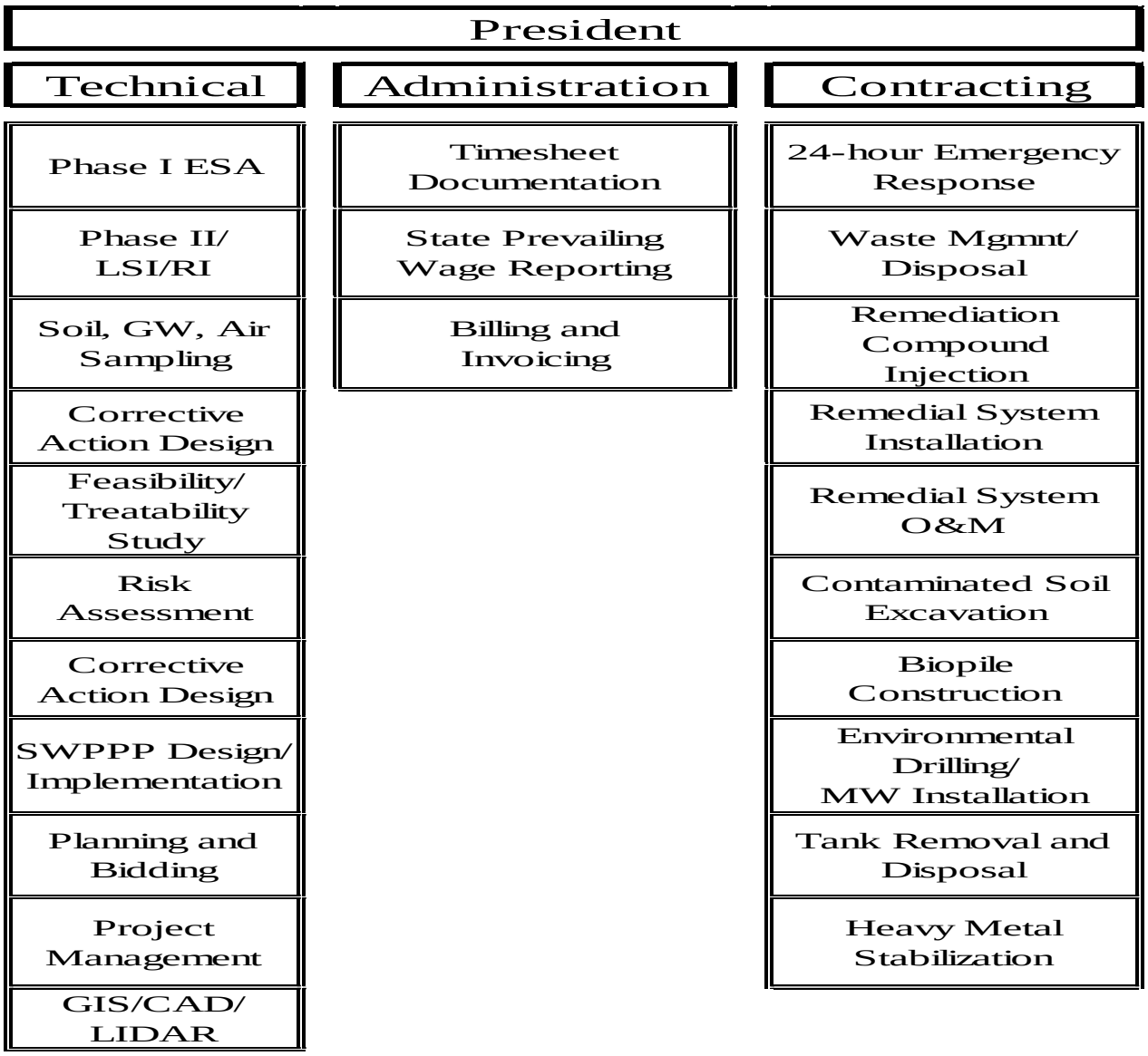
Experience

ET has over a century of combined staff experience in emergency response, environmental assessments, subsurface investigation, sample collection, remediation, and health and safety projects as it relates to petroleum releases. ET has provided petroleum environmental consulting and contracting services since 1995 (23 years) throughout Minnesota, Wisconsin, Michigan, North Dakota, South Dakota and Illinois for federal, state and local governmental entities.

ET also has a contractual relationship with the University of Minnesota (U of M) since 2000 to provide environmental consulting and contracting services for their Real Estate Group and with the Minnesota Pollution Control Agency (MPCA) since 2003 to provide Limited Emergency Response. We look forward to continuing this longstanding working relationship with the State of Minnesota with the award of the Petroleum Master Services Contract.

ET has on staff Certified Hazardous Material Managers, Professional Geologist, Construction Storm Water Designers and Installers, Certified Vapor Mitigation Specialist, Certified Wetland Delineator, and Stream Restoration Specialist.

Environmental Troubleshooters, Inc. Organizational Structure
ET has a staff comprised of three divisions: Technical, Administration and Contracting.



7.B.2.2 Environmental Troubleshooters, Inc. Key Staff Resumes Who Are Assigned To This Contract

ET has certified and trained personnel to execute and oversee investigation and remediation projects as outlined in the Petroleum Scope of Services. ET employs professional, technical and administrative staff. All ET staff are Occupational Safety and Health Administration (OSHA) HAZWOPER Certified with annual 8 - hour refresher training and have completed several levels of National Incident Management System (NIMS) training. ET key personnel resumes are provided below to detail our qualifications and experience. Staff resumes are provided below.

Environmental Troubleshooters, Inc. Project Resumes

Craig Wilson, CHMM

Primary Role
Primary Point of Contact/Project Manager

Experience
- 29 Years Total Environmental Experience
- 23 Years Environmental Consulting Service with Environmental Troubleshooters.
- 2 years Consulting Service with Institute for Environmental Assessment.
- 4 years Aquatic Toxicity Testing and Aquaculture experience with U.S. EPA

Education
- Master of Industrial Safety, University of Minnesota – Duluth, 1992.

- Bachelor of Science in Biology, Minor in Chemistry, University of Minnesota – Duluth, 1991.

Registrations
Institute of Hazardous Materials Management, Certified Hazardous Materials Manager (CHMM), Registration # 012789 (2004-present)

Licenses
EPA Asbestos Building Inspector (1993-present)
EPA Asbestos Project Designer (1995-present)
EPA Asbestos Site Supervisor (1993-present)
EPA Asbestos Management Planner (1996-present)

Trainings
MPCA Pre-Demolition Training (2007)
OSHA 40 Hour Training (2003)
Annual 8-Hour Refresher Training (2004-present)
FEMA NIMS IS-100, IS-200, IS-700, IS-800 (2007)
MN Safety Council Excavation Safety Training (1999)
NRCS Hydric Soil Classification (2004)

Project Experience

Point of Contact for MPCA Limited Emergency Response Contract. Mr. Wilson has managed this contract since 2003 (15 years) and during this time ET has completed approximately 60 sites totaling ~ $1.50 million dollars. Mr. Wilson is responsible for signing contracts, overseeing project work, issuing quarterly Usage Reports, insurance submittals, safety procedures and subcontractor management.

Project Manager, Bulk Plant Petroleum Release, Grand Marais, MN. Investigated a petroleum release that contaminated a potable well at a nearby residence. The residential potable well was drilled into a bedrock aquifer and had gasoline range organics contamination. ET placed a carbon filtration unit on the potable water supply and sampled all the potable wells within a half mile of the bulk plant for a period of one year. Mr. Wilson designed and bid the remediation project to remove the former non-compliant bulk plant, excavate the contaminated soil down to bedrock, and reconstruct a new compliant bulk plant on the site. Bedrock monitoring wells were also installed on site to monitor the effects of the remedial excavation within the bedrock aquifer. The MPCA closed the site.

Project Manager, Thomson Gas/East Central Energy Phase I and Phase II ESAs in Northern, MN and Northern, WI. Mr. Wilson conducted site walks, provided project oversight and quality control for a project involving a large corporate asset purchase of a bulk oil and propane company. The project consisted of completing 26 separate Phase I and Phase II ESAs. The results were conveyed to each party. The parties worked out an agreement where the original owner completed remediation on all open release sites and was responsible to bring any bulk fuel site deficiencies into compliance. ET also completed additional investigations on four bulk plant sites.

Mr. Wilson was the Fiscal Manager, Safety Manager and Point of Contact for the Duluth Air Guard Remediation project that excavated 50,000 cy of soil and performed on-site composting of 30,000 cy of petroleum contaminated soil. This project also injected ~100 points of remedial compound into multiple areas of a large petroleum contaminant plume. This project took two years to reach substantial completion.

Project Manager, Former Duluth Camera Exchange Phase I/Phase II ESA and Corrective Action, Duluth, MN. Conducted a Phase I ESA walk-through that concluded that potential contamination existed from a former gas station and photographic development chemicals. Mr. Wilson designed a Phase II ESA investigation that included a subsurface geophysical evaluation of the former gas station using ground-penetrating radar (GPR) to determine if the underground storage tanks (USTs) were removed. Once the GPR assessment confirmed the USTs were removed, soil borings were advanced in the former UST basin. High petroleum contamination existed within the UST basin, but the horizontal extent was minimal. The new prospective property owners (buyers) required the former UST basin be excavated. Contaminated soils were excavated. The Phase I ESA walk through also observed that photographic development chemicals had discharged into a wall cavity and onto the floor. Phase II ESA sampling confirmed that the wall sheetrock, studs and in the carpet contained an extremely high heavy metal silver concentrations. The buyer also required that this release be cleaned up and the residual photo-chemicals disposed. ET cut out the carpet, sheet rock and wall studs that were contaminated and properly disposed the material in a landfill. The residual chemicals were lab packed and properly disposed.

Project Manager for two Lessard/Sams Outdoor Heritage Council Grants totaling ~ $1,200,000. These grants involved the restoration of trout habitat in the Upper Knife River Watershed. Mr. Wilson delineated riparian wetlands, obtained project permits from Lake County, DNR Waters and Army Corp of Engineers and managed construction restoration activities. The first project restored a jumping pool at the base of a semi-barrier falls. This project placed two massive boulders to raise the water level, so fish could jump a four-foot waterfall.

The second project restored 2,200 linear feet of eroding slope, filled in streambed, and slumping streambanks. The rehabilitation project placed twelve instream structures to restore trout habitat, installed large woody debris along stream bends to reduce erosion, created floodplains to disperse floodwaters and planted over 500 trees and shrubs.

Qualifications

Primary Point of Contact – Mr. Wilson founded Environmental Troubleshooters 23 years ago and has been the principal in charge since that time. He has worked as the Primary Point of Contact with the MPCA Limited Emergency contract for the past 15 years and with the Duluth Air Guard for 14 years. Mr. Wilson is not just an office manager, he routinely goes on-site to perform Field activities and Project Manager tasks for tank release, asbestos and stream restoration projects.

ET Team Leader – Mr. Wilson oversees projects from a peripheral level to insure appropriate resources are allocated and the regulations are followed. Mr. Wilson also insures that the Client's expectations are met, and projects are completed on time and within budget.

Safety Officer – Mr. Wilson has a Master of Industrial Safety degree and is very familiar with OSHA regulations as they pertain to emergency response, environmental and construction projects. Mr. Wilson has also provided health and Safety consulting services for over 100 clients including coal fire power plants, colleges, school districts, construction companies, petroleum transport companies and insurance companies and oversees ET's health and safety program.

Communication Skills

Mr. Wilson has excellent written and verbal communication skills. This is evident by Mr. Wilson assisting clients in obtaining Brownfields grants. The three most prominent Brownfield grant projects Mr. Wilson helped obtain were for: Ikonics (redevelopment of the former Atlas Cement site in Duluth's Morgan Park neighborhood), the Canal Brew Pub (redevelopment of the former Duluth Springs site in Canal Park, Duluth) and Steve O'Neil Apartments (redevelopment of 4th street block in downtown Duluth). The Canal Brew Pub and One Roof Housing project were both nominated for MN Brownfield's ReScape awards.

Mr. Wilson performs public relations for ET and on ET projects. This has included published articles, newspaper reports and news outlet interviews. ET also has been using video to depict our projects. These videos include time lapse photography and drone aerial imagery.

Mr. Wilson is also a published author. He has been published on over 30 occasions and also assisted with regulation and policy changes for the Minnesota Department of Natural Resources and Petrofund.

Environmental Troubleshooters, Inc. Project Resumes

Thomas G. Muhich, PG, CHMM

Primary Role
Project Manager, Geologist

Experience
- 24 Years Total Environmental Experience
- 20 Years Environmental Consulting with Environmental Troubleshooters.
- 4 years Other Environmental Consulting Firm.

Education
- Masters of Science in Geology, University of Minnesota – Duluth, 1993.
- Bachelors of Arts in Geology, University of St. Thomas, 1991.

Registrations
Academy of Certified Hazardous Materials Managers, Certified Hazardous Materials Manager (CHMM), Registration # 015382 (2010-present)

Licenses
MDH Monitoring Well Contractor (Certified Person #1075)
MDH Asbestos Building Inspector (#AI9858, 2005-present)
Professional Geologist - MN (Lic. #30232)
Professional Geologist – WI (Lic. #1142-13)
Certified Site Assessor – WI (ID #47047)

Trainings
OSHA 40 Hour Training (1994)
Annual 8-Hour Refresher Training (1994-present)
MSHA New Miner Training (2008)
MSHA Annual Refresher Training (2009 – present)
FEMA NIMS IS-100, IS-200, IS-700, IS-800 (2007)
Advances in Site Characterization for Environmental & Engineering Projects at Glaciated Sites.
(2000)

Work Experience

Mr. Muhich is experienced conducting limited site and remedial investigations. He has experience preparing site investigation work plans for multiple sites in Minnesota and Wisconsin, with emphasis on complex characterization. Mr. Muhich has provided technical oversight to the completion of field activities including: soil vapor risk assessments, groundwater receptor surveys, soil and groundwater sampling, natural attenuation evaluations, soil classifications, surface water risk assessments, vapor intrusion soil gas investigations, LIF characterization of NAPL, rotosonic drilling oversight, monitoring well and piezometer installation oversight, and off-sight access agreement coordination. Mr. Muhich's current primary responsibilities include investigation coordination and reporting, however, he does have extensive experience performing essential field activities.

In addition, Mr. Muhich has managed VIC sites, several RCRA and Brownfields projects from release discovery through investigation, remediation completion and issuance of assurance letters. Project experience included hydrogeologic and contaminant characterization at PCB/transformer oil contaminated site at a former iron ore mine, assessment of treatment system performance and capture zones at a hexavalent chromium impacted industrial facility, numerous solvent contamination investigations and risk assessment of commercial site contaminated with heavy metals. He has experience with NPDES and air emissions permitting requirements in the region.

Mr. Muhich has also managed multiple emergency response projects, including petroleum and non-petroleum cleanup sites. Managed highway spill projects, emergency vapor impacts at residential and commercial properties, as well as spills at industrial sites. Managed an emergency response at a tank release site involving vapors migrating through bedrock, a vapor survey of 71 properties, mitigation of petroleum vapors in sewer system and buildings, UST removal, and complete LSI investigation. Project manager for sewer lining project at site with vapor and groundwater seepage into sanitary sewer at petroleum leaksite.

Qualifications

Project Manager – Mr. Muhich has provided oversight to over 125 environmental projects in his career. Mr. Muhich has provided design and startup oversight of in-situ remedial systems at numerous LUST sites. He has expertise in complete site hydrogeologic and contaminant characterization including monitoring well/piezometer design and installation, geologic and hydrogeologic characterization, and contaminant transport assessment. Mr. Muhich conducted pilot-scale point permeability testing and bioventing system design at pipeline facility. Experienced with application of a variety of remedial technologies including: SVE, groundwater extraction, air sparging, multiphase extraction, vapor mitigation, free product skimming/abatement, enhanced bioremediation injection, biopiles, landfarming/land treatment. He has considerable experience with all phases of project management, including guiding clients through the process of investigation, corrective action, file closure, and Petrofund reimbursement.

Geologist – Mr. Muhich has a masters degree in geology and functions as a resource for projects involving complex hydrogeologic characterization, contaminant fate and transport. Mr. Muhich functions as the principal contact for environmental projects on mining sites on the Mesabi Iron Range and manages ET's Eveleth office. He is the MDH certified person holding the Monitoring Well Contractor license for the company and provides expertise on well design and sealing.

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Mr. Muhich has prepared or provided technical oversight to feasibility studies and remedial/corrective/response action plans for numerous sites in Minnesota and Wisconsin. Prepared documentation has included natural attenuation evaluations, soil treatment and disposal documentation, groundwater pump and treat system feasibility studies, and feasibility studies for multiphase extraction systems, soil vapor extraction and air sparge systems, bioventing/biosparging systems, and enhanced biodegradation feasibility studies using magnesium peroxide and emulsified vegetable oil. Mr. Muhich also has experience with pilot testing/evaluation of various treatment systems, cost estimates and comparisons and construction specifications. He also has experience designing and calibrating computer models for groundwater flow and contaminant transport with applications in landfill siting/design, system feasibility/design and natural attenuation modeling.

Mr. Muhich has provided oversight to approximately forty (40) large-scale site cleanups and remedial responses in the past five (5) years. He has experience with design, construction, startup, and operations/maintenance of remediation systems, including groundwater pump & treat, soil vapor extraction, air sparging, bioventing/biosparging, multiphase extraction, enhanced biodegradation and free product recovery systems. In addition, Mr. Muhich has experience with large-scale excavations, and various soil treatment options, including composting/biopile design and land treatment.

Mr. Muhich has provided technical oversight to activities on several solid waste sites over his career. He has provided numeric modeling for a groundwater impact assessment in siting of a 150-acre landfill. He managed remediation of a mining dumpsite with asbestos and arsenic materials. Mr. Muhich has experience with waste characterization for landfill acceptance, as well as oversight of transport of waste to landfill, biopile and thermal treatment facilities.

Environmental Troubleshooters, Inc. Project Resumes

John McCarthy, CHMM

Primary Role
Senior Project Manager

Experience
- 25 Years Total Environmental Experience
- 11 Years Environmental Consulting with Environmental Troubleshooters.
- 14 years Other Environmental Consulting Firms

Education
- Bachelors of Science in Geology, University of Minnesota – Duluth, 1989.

Registrations
Institute of Hazardous Materials Management, Certified Hazardous Materials Manager (CHMM), Registration # 015383 (2010-present)

Trainings
OSHA Hazwoper 40 Hour Training (1989)
Annual 8-Hour Refresher Training (1990-present)
Project Management Training (1990)
Total Quality Management Training (1992)
FEMA NIMS IS-100, IS-200, IS-700, IS-800 (2007)
RCRA Hazardous Waste Generator Training (2010)
DOT Hazardous Waste Transportation Training (2010)

Work Experience

Mr. McCarthy's primary responsibility over the last decade has been Brownfields development for private and public entities. Services have included;
- Phase I ESAs & Grant writing,
- Pre-demolition hazardous materials assessments,
- Site investigation and response action plan design and implementation oversight..

Recent projects included a State University expansion, a former Spring Manufacturer, an historic unpermitted dumping site and a cement plant with large railyard.

Work Experience (continued)

Throughout his professional career, Mr. McCarthy has provided a wide range of environmental consulting services to private and public clients. He has completed these projects in MN, WI, WA, AK, and CA. Projects have ranged widely in scale from small residential projects to remediation projects exceeding $1,000,000. Contaminants investigated and addressed include petroleum products, chlorinated solvents, heavy metals, dioxins/furans, PCBs, and PAHs.

Mr. McCarthy has completed dozens of Phase I and II ESAs at industrial, commercial, rural and residential sites including former paper mills, plating facilities, railroad yards, machine shops, metal foundries, cement plants, petroleum bulk plants, service stations, dry cleaners, strip malls, office complexes and development corridors. Work has been done in compliance with EPA All Appropriate Inquiry 40 CFR Part 312, ASTM 1527-13 and 2247-08, SBA SOP 50 10 5, and HUD MAP guidance.

Phase II Site Investigations / Feasibility Studies have included technical oversight, soil vapor risk assessments, groundwater receptor surveys, soil and groundwater sampling, natural attenuation evaluations, soil classifications, surface water risk assessments, vapor intrusion soil gas investigations, LIF characterization of NAPL, air rotary drilling oversight, monitoring well and piezometer installation oversight, and off-sight access agreement coordination.

Response action projects have included in-situ technologies (i.e. SVE, bioventing and air sparging of VOCs) and ex-situ technologies including excavation, stabilization, characterization profiling and disposal of characteristically hazardous PCB and lead containing wastes.

Qualifications

Project Manager – Mr. McCarthy completed Project Management Training in Los Angeles in 1990, followed by Total Quality Management Training in San Antonio in 1992. These training courses included development of Gantt charts and use of project management software, including Harvard Project Manager to manage resources, task duration and effort and budgets. In the 20 years since he completed his training he has managed hundreds of environmental projects including the negotiation, management and tracking of labor loads and percent complete on time and materials and lump sum projects.

Mr. McCarthy has managed complicated, high visibility investigation and clean-up projects in dense cities from Los Angeles to Minneapolis, as well as remote Alaskan oil and gas pads that were only accessible by air and water requiring air lifting and barging large containers of equipment and personnel under difficult weather conditions.

Mr. McCarthy has significant experience in working with current metro area and out-state MPCA Project Managers and Hydrogeologists in the VIC and Petroleum Brownfields Programs. He has also worked with the Petroleum Remediation Program, but less intensively in recent years.

Mr. McCarthy also has good relationships with regulators in the Wisconsin Department of Natural Resources from working on projects in NW Wisconsin including interstate boundary projects along the St. Louis River that fall under both jurisdictions.

Geologist – Mr. McCarthy has a BS in Geology and has developed investigation plans for hundreds of sites with widely varying soil and groundwater conditions. He has expertise in hydrogeologic and contaminant characterization including monitoring well/piezometer design and installation, geologic and hydrogeologic characterization, and contaminant transport assessment. Mr. McCarthy is experienced with the application of a variety of remedial technologies including: SVE, groundwater extraction, air sparging, multiphase extraction, vapor mitigation, free product skimming/abatement, biopiles and land treatment.

A partial list of regulatory submittals frequently prepared by Mr. McCarthy include;

- Phase I and Phase II ESAs,
- Remedial Investigations (RIs),
- Development of Response Action Plans (DRAPs),
- Health & Safety Plans (HASPs),
- Construction Contingency Plans (CCPs),
- DRAP/CAD Implementation Reports and
- Quality Assurance / Quality Control (QA/QC) plans.

A partial list of Regulatory Assurances obtained from the MPCA on behalf of customers include:

- Petroleum Brownfields General Liability, Closure Verification and Tank Removal Confirmation Letters;
- VIC Program No Action, No Further Action, and No Association Determination Letters.

Environmental Troubleshooters, Inc. Project Resumes

Brice M. Wizner

Primary Roles
Scientist I
Field Technician
GIS/CADD Specialist

Experience
3 Years Environmental Consulting Service with Environmental Troubleshooters.
2 Years Department of Natural Resources Creel Census.

Education
Bachelors of Science in Cell and Molecular Biology and Minor in Chemistry, University of Minnesota - Duluth, 2013.

Certifications
U of MN Erosion and Stormwater Management Certification Program:
Construction Site Manager (2016)
SWPPP Design (2016)
Construction Installer (May 2018 pending)
Wildland Hydrology Consulting Certification Program:
Applied Fluvial Geomorphology (2016)
River Morphology and Application (2016)
River Assessment and Monitoring (2017)
River Restoration and Natural Channel Stream Design (2017)

Trainings
OSHA 40 Hour Training (2015)
Annual 8-Hour Refresher Training (2016-present)
MSHA 24 Hour Training (2017)
Annual MSHA 8-Hour Refresher (2018)

Work Experience
Limited Site investigations and Remedial Site Investigations. Mr. Wizner provides on-site supervision of drilling activities including push probe borings and monitoring well installation. Mr. Wizner also performs on-site soil identification, screening, and sampling using a photoionization detector (PID) and other handheld instrumentation per Minnesota Pollution Control Agencies (MPCA) soil sampling guidance documents.

Monitoring well, soil boring and surface water sampling. Mr. Wizner performs monitoring well sampling utilizing bailers, peristaltic pumps, low flow pumps and bladder pumps to obtain samples for analytical analysis per MPCA guidance documents.

Vapor sampling for Phase IIs, LSIs, and other contaminated sites. Mr. Wizner conducts sub slab vapor sampling, vapor risk sampling, and indoor vapor sampling for a variety of projects.

Mr. Wizner has performed sampling and excavation oversight on emergency response projects, including petroleum and non-petroleum cleanup sites. Mr. Wizner has also worked on highway spill projects, emergency vapor impacts and tank release site.

Performed Geoprobe soil boring advancement and hollow stem auger monitoring well installation for remedial investigations.

Responsible for installing silt fencing for large remedial excavation and construction projects. Perform stormwater design, construction oversight, and inspections during construction phase of project development. Inspections were conducted to ensure compliance with the Stormwater Pollution Prevention Plan (SWPPP).

Involved in planning, assessment and construction phases of large-scale trout stream restoration projects. Tasks included surveying, design, construction oversight, surface water monitoring, and data management. Mr. Wizner uses programs such as AutoCAD and RiverMorph for assessment and design specifics.

Qualifications

Scientist/Field Technician
Mr. Wizner oversees projects during field activities and also performs a wide range of field sampling procedures.

Project Management
Stream Restoration Specialist. Mr. Wizner has gone through extensive training for the assessment, design, construction, and management of stream restoration projects. Tasks include all field work, communication with clients and public entities (Department of Natural Resources, Soil and Water Conservation District, and Army Corp of Engineers), and data entry and analysis.

GIS/CADD Specialist
Mr. Wizner gathers, analyzes, and summarizes data associated with the Geographic Information System. He has several years of experience creating site maps, site plans, and boring logs. Mr. Wizner also uses AutoCAD to develop stream restoration models and produce computer-generated maps.

Operator
Mr. Wizner has operated heavy equipment including excavators, skid steers, backhoes, and front loaders at numerous emergency response, river restoration, and environmental remediation sites.

Communication Skills
Mr. Wizner has excellent written and verbal communication skills. Mr. Wizner supervises on-site field activities communicating the project purpose to the drilling staff, subcontractors, utility personnel, and clients.

Environmental Troubleshooters, Inc. Project Resumes

Nicole M. Torguson

Primary Roles
Scientist 1
Field Technician
GIS/CADD Specialist

Experience
3 Years Environmental Consulting Service with Environmental Troubleshooters.

Education
Bachelor of Science Environmental Science, University of Minnesota - Duluth, 2015.

Certifications
Certified Wetland Delineator
Radon and Vapor Measurement and Mitigation (Certification Pending – May 2018)

Trainings
OSHA 40 Hour Training (2015)
Annual 8-Hour Refresher Training (2017)
MSHA 24 Hour Training (2014)
MSHA Annual 8-Hour Refresher Training (2018)
Vapor Mitigation System Training (2016)

Work Experience
Ms. Torguson provides on-site supervision of drilling activities including push probe borings and monitoring well installation. During the soil boring advancement, Ms. Torguson performs the on-site soil identification and classification for ET's soil sampling projects. Ms. Torguson has classified and logged over 5,000 sampling cores from soil in the Duluth/Superior area. Ms. Torguson coordinates appropriate shipping and transportation of soil samples taken for analysis.

Ms. Torguson is experienced with monitoring petroleum soil treatment sites including compost/bio-pile facilities and land treatment sites, including moisture monitoring, assisting with dewatering, and treated soil sampling.

Ms. Torguson performs excavation oversight on emergency response projects, including petroleum and non-petroleum cleanup sites. Ms. Torguson has also worked on highway spill projects, emergency vapor

Ms. Torguson is experienced with conducting Phase I environmental site assessments to review a property's history and use prior to a transaction. The Phase I historic data sources that Ms. Torguson commonly refers to in her assessment includes: Sanborn Fire Maps, Aerial Photos and City Directories and MPCA release databases. These historical data sources assist in determining if there is a potential for an industrial or commercial site to have potentially discharged contaminants from past property uses. The Aerial photos can also depict areas where dumping may have occurred during historic operations. Ms. Torguson has experience in Phase I data management and reporting.

Ms. Torguson is experience conducting Phase II geologic and hydrogeologic investigations. These projects investigate for the potential release of petroleum and hazardous chemicals at commercial and industrial sites where recognized environmental conditions were noted in the Phase I Environmental Site Assessment. The typical Phase II scope of work includes soil and ground water sampling, characterization of sediments, glacial deposits and sampling soils, delineation of contaminant plume migration, assessment of the risk to groundwater, surface water and wetlands and determination of vapor risk to structures or residents. Ms. Torguson has experience in Phase II data management, reporting and state reimbursement fund application preparations.

Ms. Torguson is experienced with conducting limited site and remedial investigations. She provides technical oversight and field sampling activities including: soil vapor risk assessments, groundwater receptor surveys, soil and groundwater sampling, natural attenuation evaluations, soil classifications, surface water risk assessments, vapor intrusion soil gas investigations, monitoring well and piezometer installation oversight, and off-sight access agreement coordination. Ms. Torguson has experience in limited site and remedial investigation data management, reporting and state reimbursement fund application preparations.

Ms. Torguson conducts sub slab vapor sampling, vapor risk sampling, and indoor vapor sampling for Phase IIs, LSIs, and Dry Cleaning Sites.

impacts and tank release sites.
Ms. Torguson is experienced in gathering, analyzing, and summarizing data associated with the Geographic Information System. Ms. Torguson develops and implements special analysis models and produces computer-generated maps.

Ms. Torguson performs wetland delineation services for projects in northwestern Wisconsin and northeastern Minnesota, which includes field work, communication with clients, communication with public entities (Department of Natural Resources, Board of Water & Soil Resources, Army Corp. of Engineers, and Soil Water Conservation District), and reporting.

Qualifications

Scientist/Field Technician- Ms. Torguson oversees projects during field activities and also performs a wide range of field sampling procedures.

Project Management – Ms. Torguson has experience managing Phase I/II investigations. Tasks include all field work, reporting, communication with clients and public entities.

GIS/CADD Specialist – Ms. Torguson gathers, analyzes, and summarizes data associated with the Geographic Information System. She has several years of experience creating site maps, site plans, and boring logs. Ms. Torguson develops and implements special analysis models and produces computer-generated maps.

Vapor and Radon Measurement and Mitigation – Ms. Torguson will be completing training (May 2018) for licensure in radon and vapor measurement and mitigation. With this training Ms. Torguson will be licensed to measure vapor and radon impacts and design and install mitigation systems. Ms. Torguson has experience inspecting and maintaining current vapor mitigation systems.

Communication Skills - Ms. Torguson has excellent written and verbal communication skills. Ms. Torguson supervises on-site field activities communicating the project purpose to the drilling staff, subcontractors, utility personnel, and clients.

Environmental Troubleshooters, Inc. Project Resumes

Travis M. Tolaas

Primary Roles
Scientist 1
Field Technician

Experience
- 4 Year Environmental Experience
- 8 Years Equipment Operation for Landscaping

Education
- Bachelors of Science Environmental Science, University of Minnesota - Duluth, 2010.

Certifications
2014 Erosion and Stormwater Management Certification Program: Construction Installer

Trainings
OSHA 40 Hour Training (2013)
Annual 8-Hour Refresher Training (2014-present)

Work Experience
Limited Site investigations and Remedial Site Investigations. Mr. Tolaas provides on-site supervision of drilling activities including push probe borings and monitoring well installation. Mr. Tolaas also performs on-site soil identification, screening, and sampling using a photoionization detector (PID) and other handheld instrumentation per Minnesota Pollution Control Agencies (MPCA) soil sampling guidance documents.

Monitoring Well Sampling and Soil Vapor Extraction (SVE) System Sampling. Mr. Tolaas performs monitoring well sampling utilizing bailers, peristaltic pumps, low flow pumps and bladder pumps to obtain samples for analytical analysis per MPCA guidance documents. Mr. Tolaas samples SVE system parameters including influent sampling, effluent sampling, vapor sampling, extraction well sampling, and SVE system readings.

Vapor Sampling for Phase IIs, LSIs, and Dry Cleaning Sites. Mr. Tolaas conducts sub slab vapor sampling, vapor risk sampling, and indoor vapor sampling for a variety of projects.

Mr. Tolaas has performed sampling and excavation oversight on emergency response projects, including petroleum and non-petroleum cleanup sites. Mr. Tolaas has also worked on highway spill projects, emergency vapor impacts and tank release site.

Responsible for installing silt fencing for large remedial excavation and construction projects. Performed stormwater inspections during construction phase of project development. Inspections were conducted to ensure compliance with the Stormwater Pollution Prevention Plans (SWPPP).

Operated excavators, loaders and skid steers during remedial excavations, spill response and stream restoration projects.

Performed Geoprobe soil boring advancement and hollow stem auger monitoring well installations for remedial investigations.

Environmental Troubleshooters, Inc. Project Resumes

Jake Paulson

Primary Role
Field Technician

Experience
14 years Environmental Consulting and Contracting Experience with Environmental Troubleshooters.

Education
Heavy Equipment Operation Certificate, Central Lakes Technical College, 2005.

Licenses and Trainings
MPCA Underground Storage Tank Remover
Minnesota DOT Class A Driver's License
EPA Asbestos Contractor Supervisor
Minnesota Asbestos Air Sampler
OSHA 40-Hour HAZWOPER Training
Annual 8-Hour Refresher Training
FEMA NIMS IS-100, 200, 700, 800
NOAA Shoreline Cleanup and Assessment Training (SCAT)

Qualifications

Perform and Oversee Remedial Excavation
Mr. Paulson has managed all phases of remedial excavation work including: soil excavation, fuel containment, free product recovery, contaminated soil hauling, backfill placement and compaction, composting and land spreading of contaminated soils and heavy metal soil stabilization.

Ground Water Sampling
Mr. Paulson has performed monitoring well sampling utilizing bailers, peristaltic pumps, low flow pumps and bladder pumps to obtain samples for analytical analysis per MPCA guidance documents.

Vapor Sampling
Mr. Paulson has conducted sub slab vapor sampling, vapor risk sampling, and indoor vapor sampling for a variety of projects including Phase IIs, LSIs, and Dry-Cleaning Sites

Pre-Demolition Assessments
Mr. Paulson has conducted pre-demolition inspections for regulated waste, which include asbestos, solid wastes, waste fuels, batteries, mercury containing equipment, treated wood, white goods, old electronics, PCB containing equipment, lead paint, light tubes, old chemical products and household hazardous wastes. Removed various regulated wastes from the structures. Arranged for the transportation of locking and/or tarped roll-off containers to secure and temporarily store the segregated wastes from the buildings. Contacted various landfills and contract waste haulers to transport the various wastes to approved landfills. Performed overpacking of chemical products and hazardous wastes.

UST/AST Removal and Inspection
Mr. Paulson has managed the removal of aboveground and underground storage tanks (AST/UST) at industrial and commercial facilities. Managed all phases of tank removal including, tank inertion, atmospheric testing, confined space entry permitting, monitoring workers, sampling and waste disposal. Initiated free product recovery and excavation of petroleum saturated soil during tank removal. Past projects include the removal and abandonment of gasoline, diesel, heating oil, waste oil and alum tanks.

Asbestos Air Sampling and Abatement Oversight
Mr. Paulson has conducted air sampling and overseen the removal of asbestos during 40 asbestos abatement projects. These projects include: asbestos abatement prior to the demolition of houses, hotels and burnt structures, renovation of ten Schools, abatement of City Hall/Community Center, the sorting of demolition debris and abatement of asbestos from an unpermitted dump

Stream Restoration
Mr. Paulson has perfomed and overseen stream restoration project activities. These tasks include the installation of erosion control fencing, straw bales and fabrics, excavation of streambeds, pumping of water, placement of root wads and boulders, surveying bank elevations, sloping and stabilization of slumping stream banks, creation of in-stream trout habitat features, and planting trees and shrubs.

Environmental Troubleshooters, Inc. Project Resumes

Joe Fye

Primary Role
Field Technician

Experience
9 years Environmental Consulting and Contracting Experience with Environmental Troubleshooters.

Education
High School Diploma, Duluth, Minnesota

Licenses and Trainings
MPCA Underground Storage Tank Remover
Minnesota DOT Class A Driver's License
EPA Asbestos Contractor Supervisor
Minnesota Asbestos Air Sampler
OSHA 40-Hour HAZWOPER Training
Annual 8-Hour Refresher Training
FEMA NIMS IS-100, 200, 700, 800
NOAA Shoreline Cleanup and Assessment Training (SCAT)

Qualifications

Perform and Oversee Remedial Excavation
Mr. Fye has managed all phases of remedial excavation work including: soil excavation, fuel containment, free product recovery, contaminated soil hauling, backfill placement and compaction, composting and land spreading of contaminated soils and heavy metal soil stabilization.

Mr. Fye has sampled, manifested and coordinated waste disposal. Mr. Fye's waste disposal experience includes: free petroleum product, petroleum saturated soils, petroleum contaminated ground water and petroleum tank sludge.

Remedial Compound Injection
Mr. Fye has advanced over 500 boreholes for the injection of remedial compound at petroleum and chlorinated solvent sites. Mr. Fye has performed the injected four different remedial compounds at seven project sites in Minnesota and Illinois.

Pre-Demolition Assessments
Mr. Fye has conducted pre-demolition inspections for regulated waste, which include asbestos, solid wastes, waste fuels, batteries, mercury containing equipment, treated wood, white goods, old electronics, PCB containing equipment, lead paint, light tubes, old chemical products and household hazardous wastes. Removed various regulated wastes from structures. Arranged for the transportation of locking and/or tarped roll-off containers to secure and temporarily store the segregated wastes from the buildings. Contacted various landfills and contract waste haulers to transport the various wastes to approved landfills. Performed overpacking of chemical products and hazardous wastes.

Asbestos Air Sampling and Abatement Oversight
Mr. Fye has conducted air sampling and overseen the removal of asbestos during 25 asbestos abatement projects. These projects include: asbestos abatement prior to the demolition of houses, hotels and burnt structures, renovation of ten schools, abatement of City Hall/Community Center, the sorting of demolition debris and abatement of asbestos from an unpermitted dump

UST/AST Removal and Inspection
Mr. Fye has designed and managed the removal of aboveground and underground storage tanks (AST/UST) at industrial and commercial facilities. Managed all phases of tank removal including, tank inertion, atmospheric testing, confined space entry permitting, monitoring workers, sampling and waste disposal. Initiated free product recovery and excavation of petroleum saturated soil during tank removal. Past projects include the removal and abandonment of gasoline, diesel, heating oil, waste oil and alum tanks.

Ground Water Sampling
Mr. Fye has performed monitoring well sampling utilizing bailers, peristaltic pumps, low flow pumps and bladder pumps to obtain samples for analytical analysis per MPCA guidance documents.

Vapor Sampling
Mr. Fye has conducted sub slab vapor sampling, vapor risk sampling, and indoor vapor sampling for a variety of projects including Phase IIs, LSIs, and Dry-Cleaning Sites.

Environmental Troubleshooters, Inc. Project Resumes

Todd Schultz

Primary Role
Field Technician

Experience
3 years Environmental Consulting and Contracting Experience with Environmental Troubleshooters.
25 years heavy equipment operation and property maintenance.

Education
Automotive Service Tech, Wisconsin Indianhead Technical College, 1991.

Licenses and Trainings
Forest Industry Safety and Training Alliance Certification:
Best Management Practices
Equipment Operation
Chain Saw Safety
Michels Pipeline Union Operator Certification
Minnesota DOT Class A Driver's License
OSHA 40-Hour HAZWOPER Training
Annual 8-Hour Refresher Training
Mine Health and Safety Training

Qualifications

Perform and Oversee Remedial Excavation
Mr. Schultz has remedial excavation work including: soil excavation, fuel containment, free product recovery, contaminated soil hauling, backfill placement and compaction.

UST/AST Removal
Mr. Schultz has removed of aboveground and underground storage tanks (AST/UST) at industrial and commercial facilities. Managed all phases of tank removal including, tank inertion, atmospheric testing, confined space entry permitting, monitoring workers, sampling and waste disposal. Initiated free product recovery and excavation of petroleum saturated soil during tank removal. Past projects include the removal and abandonment of gasoline, diesel and heating oil.

Stream Restoration
Mr. Schultz has performed and overseen stream restoration project activities. These tasks include the installation erosion control fencing, straw bales and fabrics, excavation of streambeds, pumping of water, placement of root wads and boulders, surveying bank elevations, sloping and stabilization of slumping stream banks, creation of in-stream trout habitat features, and planting of trees and shrubs.

Logging Tree Removal
Mr. Schultz has 25 years logging experience. He is capable of operating all types of logging heavy equipment and is proficient with chain saw use.

7.B.2.3 Environmental Troubleshooters, Inc. Key Personnel Staff Matrix

Environmental Troubleshooters, Inc. Staff Matrix Table

Minnesota Pollution Control Agency Remediation Master Services Contract

Category B – Petroleum Only Remediation Environmental Services

Professional Staff						
Name and Location	**Personnel Classification**	**OSHA Hazwoper Refresher**	**Years of Experience with ET**	**Total Years of Experience**	**Education**	**Licenses Certifications and Trainings**
Craig Wilson CHMM Duluth, MN	Project Manager Scientist 2 Field Technician	4/10/17	23	29	Masters Industrial Safety B.S. Biology Univ. MN Duluth	CHMM EPA Asbestos Designer, Supervisor, Inspector, Man. Planner FEMA NIMS (100, 200,700, 800)
John McCarthy CHMM Duluth, MN	Project Manager Scientist 2 Field Technician	4/10/17	11	23	B.S. Geology Univ. MN Duluth	CHMM FEMA NIMS (100, 200,700, 800)
Travis Tolaas Duluth, MN	Scientist 1 Field Technician	4/10/17	4	12	B.S. Enviro. Science Univ. MN Duluth	Radon Sampling and Mitigation
Brice Wizner Duluth, MN	Scientist 1 Field Technician GIS/CADD Specialist	4/10/17	3	5	B.S. Biology Univ. MN Duluth	Erosion and Storm Water Management Construction Site Manager and SWPPP Design Rosgen Natural Channel Design Stream Restoration Level 1, 2, 3, 4 MSHA
Tom Muhich P.G./CHMM Eveleth, MN	Project Manager Scientist 2 Field Technician	4/10/17	20	24	M.S. Geology Univ. MN Duluth B.A. Geology St. Thomas	MN and WI Professional Geologist CHMM EPA Asbestos Inspector, MDH Monitoring Well Contractor MSHA FEMA NIMS (100,

						200,700, 800)
Nicole Torguson Eveleth, MN	Scientist 1 Field Technician GIS/CADD	4/10/17	3	4	B.S. Enviro. Science Univ. MN Duluth	Certified Wetland Delineator Vapor Mitigation Radon Sampling and Mitigation (May 2018) MSHA
Technical Staff						
Joe Fye Duluth, MN	Field Technician	4/10/17	9	9	High School Diploma, Duluth, Minnesota	MN UST Remover EPA Asbestos Supervisor MSHA FEMA NIMS (100, 200,700, 800)
Jake Paulson Duluth, MN	Field Technician	4/10/17	14	14	Heavy Equipment Operation Central Lakes Technical College, 2005	MN UST Remover EPA Asbestos Supervisor MSHA FEMA NIMS (100, 200,700, 800)
Todd Schultz Duluth, MN	Field Technician	4/10/17	3	25	Automotive Service Technician, Wisconsin Indianhead Technical College, 1991.	MSHA
Administrative Staff						
Amber Rautio Duluth, MN	Clerical	N/A	15	15	High School Diploma, Proctor, Minnesota	Excel Training

7.B.2.4 Location of Environmental Troubleshooters, Inc. Headquarters and Satellite Office

Headquarters
Environmental Troubleshooters, Inc.
3825 Grand Ave.
Duluth, Minnesota 55807

Regional Satellite Office
Environmental Troubleshooters, Inc.
416 Fayal Road, Suite A
Eveleth, Minnesota 55734

7.B.2.5 Describe Knowledge of the MPCA's Petroleum Remediation Program's Consultant guidance for UST/AST Release Investigation and Cleanup

ET has actively worked on projects in MPCA's Petroleum Remediation Program (PRP) since 1995. ET personnel have a thorough working knowledge of the MPCA PRP's *Petroleum Remediation Program: Guidance Documents for Underground Storage Tank and Aboveground Storage Tank Release Cleanup*, as well as Minn. Stat. 115C.01 – 115C.13, the statute covering Petroleum Tank Release Cleanup. The PRP Cleanup Guidance includes 56 documents in major categories of General Guidance, Release Reporting, Soil Excavation and Treatment, Site Investigation and Risk Evaluation and Corrective Action. A brief discussion and examples of company personnel experience in these areas is summarized below.

<u>General Guidance</u>
ET personnel refer to the MPCA Quality Assurance Program Plan (QAPP) for the sampling phases of leaksite projects and have worked with Tom Higgins regarding quality assurance sampling issues on several vapor intrusion projects. The PRP General Policy document applies to every PRP project ET has undertaken and provides a basis for site management decisions, such as when a full RI with monitoring well installation is necessary.

- ET personnel worked with MPCA personnel to conduct thorough investigations, construct detailed conceptual models, and implement a corrective action based on the updated C-PRP 1-01 at multiple leaksites. ET regularly conducts MPCA file reviews to gain valuable background information to aid in investigation scoping.
- ET worked with MPCA project manager Stephen Frye to accurately locate several off-site source leaksites, which were previously erroneously located with accurate spatial data reporting during the Aurora Lucky 7 LSI investigation.

<u>Release Reporting</u>
As a MPCA Limited Emergency Response Contractor, ET has been involved with the reporting of releases at multiple tank sites and semi-truck accidents and regularly convey these emergency situations to the State Duty Officer.

- In March 2018, ET managed reporting and response to a fuel oil release at the Polzin Residence on Stockholm Road in Duluth where free product was released to a property with an on-site potable well.
- In February 2018, ET managed the SDO reporting associated with an historic petroleum spill identified during a Phase II ESA at Zenith Spring in Duluth.
- ET conducted free product/non-aqueous phase liquid (NAPL) reporting at multiple sites, including the Hermantown Bus Garage leaksite, where the light NAPL Recovery Report was submitted.

Soil Excavation and Treatment

ET personnel have managed multiple projects involving soil excavation for tank removal and corrective action. ET projects have utilized soil disposal using thermal treatment, composting, land treatment and landfill disposal.

- At the Lake of the Woods Resort leaksite, ET personnel oversaw the excavation of approximately 530 cubic yards of contaminated soil, which was successfully land treated on property owned by the RP located 2 miles from the leaksite.
- ET personnel are currently involved in the design of a 50,000 cubic yard remedial excavation and construction of 30,000 cubic yard compost biopile for the MN Air National Guard in Duluth, Minnesota.
- ET personnel oversaw the excavation of 760 cubic yards of surface contaminated and petroleum saturated soils at the Duluth Airport Old SRE Garage leaksite.

Site Investigation and Risk Evaluation

ET personnel utilize the site investigation and risk evaluation guidance on a daily basis. A thorough evaluation of receptors is critical in order to make accurate site decisions.

- At the Eveleth Spur leaksite, emergency vapor conditions prompted ET to conduct a vapor receptor survey of 71 properties within 500 feet of the source, resulting in vapor monitoring at 20 sewer and utility locations as well as 31 buildings.
- At the BJ's Highway Express leaksite dissolved phase contamination in shallow and deeper Quaternary aquifers resulted in ET working closely with MPCA personnel Laurie Kania and Rose Tusa to conduct a complex remedial investigation including: installation of shallow and deep monitoring wells with rotosonic drilling, off-site potable well sampling, installation of point of use carbon filtration on potable water supply and natural attenuation monitoring.
- As we are based in northern Minnesota, ET has overseen multiple projects with shallow bedrock where GD 4-18 *Assessment of Sensitive Groundwater Conditions*.

Corrective Action

ET has conducted corrective action at multiple sites, using the guidance documents and working closely with MPCA staff.

- At the Duluth Tire leaksite, ET personnel worked to implement lining of a sewer where petroleum vapors were accumulating.
- At the Rosga Well Drilling site, ET oversaw a focused investigation using laser induced fluorescence (LIF) technology to delineate NAPL, followed by pilot testing, installation and operation of a multiphase extraction (MPE) system and leaksite file closure. ET personnel worked closely with Adam Sekely on the Rosga Well Drilling leaksite project throughout the corrective action design and implementation, which is an example of a Complex Corrective Action.
- Simple corrective action projects that ET has completed have included excavation of surface contaminated soils and paving projects, where corrective action design was limited to data included in the Conceptual Corrective Action Design document, such as the excavation of petroleum saturated gravel at the Como Oil Grand Marais Bulk Plant leaksite. This project involved removal of several large AST in order to access the saturated gravel, to remove the risk of surface runoff to surface water and nearby properties with domestic wells.

Chapter 115 C of Minnesota Statutes details Petroleum Tank Release Cleanup including statutes regarding responsible party requirements, consultant and contractor requirements and Petrofund reimbursement. The statute forms the basis behind cleanup requirements. ET has an excellent working relationship with Petrofund and has worked diligently to keep our cost structure within the framework of Petrofund reimbursable rates. ET personnel have regularly attended the MPCA Consultant Day conferences (including the May 2017 Conference), as well as the previous MPCA's Air Water & Waste Conferences and other associated workshops (e.g. ITRC) to keep up with on-going regulatory and technology changes.

ET is also familiar with the UST compliance rules Minn. Stat. Ch. 7105. These rules include General Guidance, Design and Construction, Operation and Maintenance, Release Detection and Out-of-Service UST Systems and Closure. ET has developed an excellent working relationship with the MPCA Duluth Region Emergency Response Project Manager (Mr. Kevin Mustonen), Duluth Region Petroleum Remediation Unit Project Manager (Ms. Laurie Kania) and MPCA Duluth Region Tank Inspector (Mr. Jeff Brandon). ET has performed numerous petroleum remediation projects, which they have reviewed and closed.

Because of our UST/AST and petroleum experience and knowledge, ET personnel have been selected to sit on several rule-making committees and have been invited to MPCA tank related trainings. Craig Wilson and John McCarthy of ET currently participate in and have provided seminars for the Emergency Response Port Area Committee (PAC). The PAC involves the joint participation of the U.S. Coast Guard, MPCA and the Wisconsin Department of Natural Resources (WDNR). In addition, ET has been involved in continuing educational training regarding MPCA UST/AST rules and the UST/AST rule making process.

- Joe Fye and Jacob Paulson have been an MPCA-certified UST remover completed an EPA/MPCA Sponsored UST/AST compliance training class. Craig Wilson has been a MPCA certified UST remover since 1996 and was one of five environmental consultants selected to be on the MPCA rules advisory committee to review draft MPCA rule changes for underground storage tank program in 2000. ET was the only non-metro consultant selected to serve on the MPCA rules advisory committee.

7.B.2.6 Experience with MPCA Petroleum Remediation Program

Environmental Troubleshooters, Inc. Years of Experience
ET has 23 years of experience with the MPCA Petroleum Remediation Program.

Environmental Troubleshooters, Inc. Petroleum Remediation Governmental Client List
ET has extensive petroleum remediation program experience working on petroleum remediation projects with Federal, Tribal, State and Local governmental entities including, but not limited to:

- U. S. Air National Guard
- U.S. General Services Admin.
- Minnesota Pollution Control Agency
- Minnesota Department of Natural Resources
- Minnesota Department of Transportation
- University of Minnesota
- Red Lake Nation

- Duluth International Airport
- City of Two Harbors
- City of Eveleth
- City of Grand Marais
- City of Duluth
- City of Grand Rapids
- City of Proctor

Summary of Noteworthy Petroleum Remediation Projects and Clients

- ET performed a 50,000 cubic yard remedial excavation, a 30,000 cubic yard biopile remediation and advanced over remedial injection points for the National Air Guard Base in Duluth, MN.
- ET advanced over 100 ORC injection point at the National Air Guard Base in Duluth, MN to remediate the former jet fuel depot release.
- Red Lake Nation has contracted with ET to provide petroleum remediation consulting and contracting services for multiple UST sites on and off tribal land.
- The MPCA has contracted with ET since 2003 to provide Limited Emergency Response services to the State of Minnesota. ET has performed approximately 60 projects totaling over $1.50 million dollars.
- The University of Minnesota and University of Minnesota - Duluth has contracted with ET since 2002. ET has performed over 20 Phase I ESAs, 18 Phase II site investigations, six VIC/Petroleum Brownfields DRAPs, five remedial excavations during / prior to construction and four emergency response projects involving the release of petroleum.

Petroleum Remediation Program Projects Environmental Troubleshooters has performed during the last 10 years

Petroleum Service Task	Number of Projects
Limited Site Assessments (LSIs) / Remedial Investigations (RIs)	88
Vapor Mitigation	13
Free Product Recovery/ER	52
System Installation and O&M Activities	6
Remedial Injection (715 total injection points)	7
Tank Removal Oversight and Sampling	59
Bulk Fuel Tank Contaminated Soil Excavation	49
Waste Disposal	54
Phase I ESA	153
Phase II ESA Subsurface Sampling	99
Laser Induced Fluorescence (LIF) Sampling	3

7.B.3 Project Descriptions

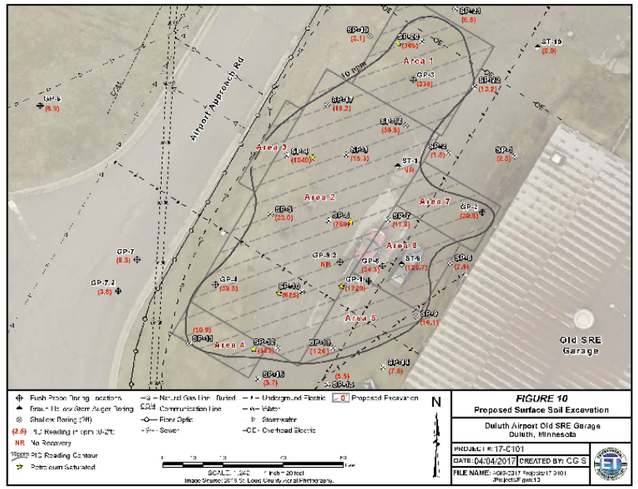
Describe two limited site investigations or remedial investigations conducted by the Proposer in the past two years.

The following are two projects that Environmental Troubleshooters, Inc. has conducted within the past two years. These projects were selected because they involved unique situations, large contaminant plumes and involved aspects of the MPCA Petroleum LSI, RI, and CAD Guidance Documents.

Category B Project Example
Investigation/Corrective Action – Duluth Airport Authority Old SRE Garage

MPCA/MDA Remediation Master Contract
Category B Petroleum Only Environmental Services

Site Description: The Old SRE Garage is used for servicing airport vehicles at the Duluth International Airport. While advancing geotechnical borings for a parking lot expansion, petroleum contamination was encountered. The source of this contamination was associated with a former aviation gas and diesel/jet fuel underground storage tanks (USTs) that were removed in the 1970's. Investigation results indicated a large zone of grossly contaminated surface soils, as well as, petroleum saturated soils in the source area. Petroleum contaminated soil extended to the groundwater table, which was present in interbedded clay and sandy silt soils. Significant underground utility lines also transected the site near the area of the former tank basis.



Project Description: A limited site investigation (LSI) was conducted at the site including: advancing multiple shallow borings to delineate surface soil contamination, advancing multiple off-site borings to delineate the contaminant extent, conducting a utility vapor survey, installing vapor intrusion borings, completing a Conceptual Corrective Action Design (CCAD), and overseeing excavation of surface and petroleum saturated soils.

Project Investigation/Remediation Tasks Performed

January 2017 through April 2017

- Prepared HASP outlining potential site hazards and appropriate measures to protect personnel during all phases of site investigation work.
- Reviewed and utilized geotechnical boring data for contaminant plume delineation.
- Advanced 10 push probe borings: both on-site and in the right of way
- Delineated site surface soil contamination using 24 shallow borings in accordance with PRP Guidance Document (GD) 4-01 Soil and Groundwater Assessments Performed During Site Investigations.
- Soil and groundwater were sampled for GRO, DRO and PVOC/VOC sampling completed per PRP GD 4-04 and 4-05.
- Site soils consisted of sandy silt and clay from the surface to 18 feet, where igneous bedrock was encountered. Although constituting a sensitive groundwater condition per PRP GD 4-18 due to shallow bedrock, the soils were not an aquifer, and no water supply wells were present in the area.
- Receptor survey completed per PRP GD 4-02 revealing multiple storm and sanitary sewer lines potentially at risk to vapor accumulation. ET performed a vapor survey of utilities revealing no impacts.
- Prepared LSI Report (PRP GD 4-06) detailing the extent of impacts at the site. Based on direct contact and runoff risk posed by surface contaminated soil, corrective action was recommended, and a CCAD was completed as an appendix to the LSI Report. This CCAD recommended the excavation of surface soils.

May 2017

- The MPCA approves excavation of 650 cubic yards of surface contaminated soil as a corrective action.

September 2017

- ET prepared bid specifications, solicited contractor bids, reviewed contractor bid submittals, obtained Petrofund bid approval, and oversaw the excavation of surface and petroleum saturated contaminated soils.
- During excavation activities, additional petroleum saturated soils were encountered that required further excavation based on field screening (sheen test). ET obtained approval from MPCA PM Laurie Kania to excavate this additional 110 cubic yards contaminated soil. The excavated contaminated soils were removed and hauled to a licensed landfill for disposal.
- Soil gas borings were also conducted near the building, which show vapor concentrations below industrial ISVs.

November 2017

- ET personnel prepared PRP GD-302a Corrective Action Excavation Report documenting successful grossly contaminated soil removal.

Outcomes Achieved

- A total of 760 cubic yards of surface soil contamination and petroleum saturated soils were successfully removed from the site, removing the risk posed by direct contact or contaminated surface runoff.
- Soil gas concentrations from vapor probes adjacent to the on-site building were below industrial ISVs.
- MPCA granted leaksite file closure on February 23, 2018.
- ET personnel prepared the Petrofund reimbursement application on behalf of the Airport Authority. Petrofund reimbursed over 85% of project costs.

Project Staff:

Tom Muhich, PG, CHMM	Project Manager, Reporting
John McCarthy, CHMM	Senior Project Geologist
Craig Wilson, CHMM	Health & Safety Officer
Nicole Torguson	Scientist
Brice Wizner	Scientist
Joe Fye	Driller, Field Technician
Jake Paulson	Driller Assistant, Field Technician

Client Contact:

Steve Wabrowetz
Manager – Duluth Airport Authority
Phone: 218-625-5051
swabrowetz@duluthairport.com

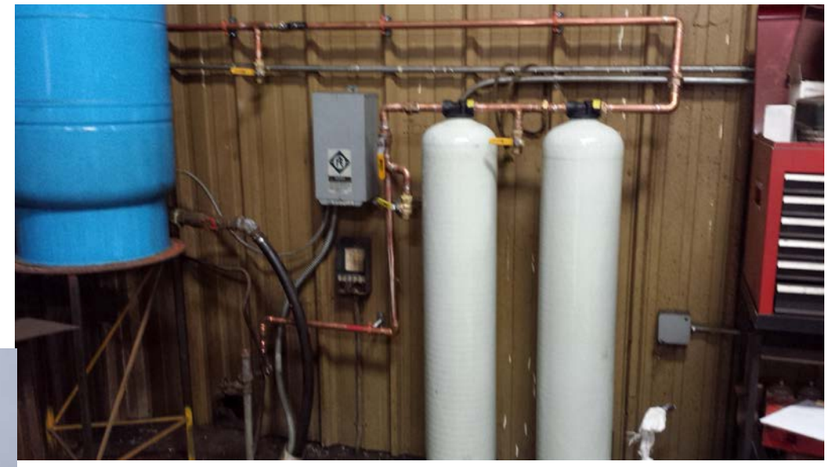
Subcontracted Tasks:

Laboratory Analysis: Pace Analytical Services
Excavating: Twin Ports Environmental Construction
Hauling: J&B Trucking
Contaminated Soil Disposal: Vonco V Landfill
Private Utility Locating: MCI

Category B Project Example
Remedial Investigation – BJ's Highway Express

MPCA/MDA Remediation Master Contract
Category B Petroleum Only Environmental Services

Site Description: BJ's Highway Express is approximately 47 miles west of Duluth in the northeastern portion of Minnesota. The site is a former gas station and is surrounded by a church to the north, residential property to the east, and wooded areas to the south and west. The site and surrounding properties have private potable water supply wells.



Project Description: A release was documented during removal of gasoline and diesel underground storage tanks (USTs) and associated dispensers. The site is currently used as a shop and for storage. ET subsequently conducted a remedial investigation, including push probe drilling, hollow stem auger and roto-sonic monitoring well installation, and drinking water supply sampling. Delineation included conducting work in the MnDOT right of way. Due to the presence of petroleum detections in the on-site water supply, a point of use carbon filtration system was installed as a emergency action. Through the life of the project, ET worked closely with the MPCA Petroleum Remediation staff including project manager Laurie Kania and hydrogeologist Rose Tusa.

Project Investigation/Remediation Tasks

August 2014 through May 2015:

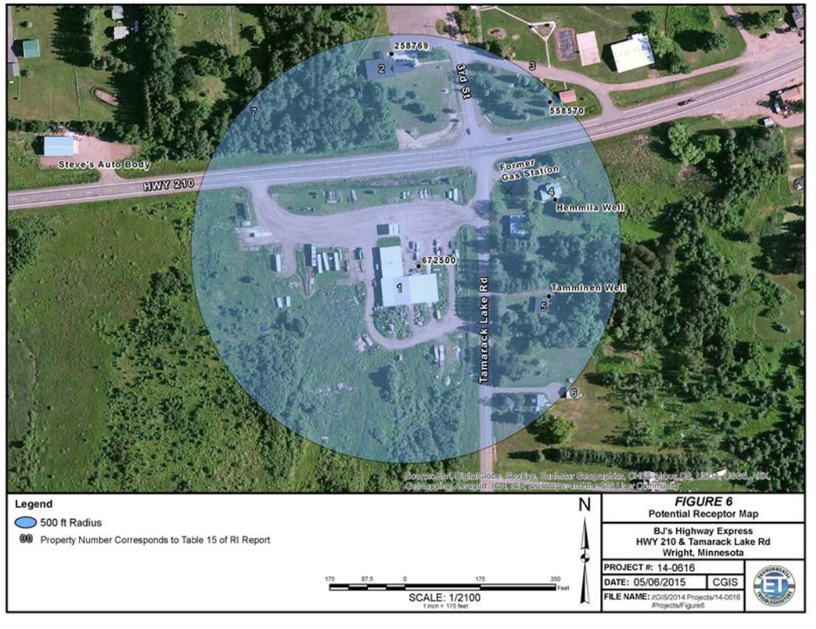
- Prepared HASP outlining potential site hazards and appropriate measures to protect personnel during all phases of site investigation work
- ET conducted an LSI to evaluate the extent and magnitude of soil, groundwater and assess the risk to nearby water well receptors.
- Grain size analysis and hydraulic conductivity calculations indicated site soils constituted an aquifer, and 5 monitoring wells were installed using hollow stem auger.
- The water supply was sampled from the on-site well and 4 surrounding properties within 500 feet. Off-site property water supplies had no detections. However, benzene and GRO were detected in the on-site water supply.
- ET submited a Remedial Investigation Report (PRP GD 4-06) recommending installation of a new/replacement potable well.
- ET subcontracted to a local plumber to install a point of use carbon filtration system for the on-site water supply. Initial sampling indicated the carbon system is successfully removing petroleum contaminants and providing safe drinking water.

October 2015 – April 2018:

- Based on the on-going detections in the on-site potable water supply, the MPCA requested installation of monitoring wells within the deeper portion of the aquifer, and additional monitoring. ET worked closely with MPCA staff to design a deep aquifer monitoring well network.
- ET subcontracted a roto-sonic well drilling company, and 3 deeper monitoring wells were installed to depths ranging from 84 to 90 feet, similar to the screened interval of the on-site water supply well.
- ET personnel conducted monitoring of the shallow and deep monitoring well network, as well as sampling of the on-site water supply carbon treatment system.
- Groundwater contaminant concentration data, groundwater elevations, natural attenuation data and potable sampling results were reported annually to the MPCA on PRP GD 4-08 Monitoring Report forms.
- Groundwater monitoring was conducted in order to establish plume stability trends as part of monitored natural attenuation.

Outcomes Achieved

- The on-site point of use carbon filtration system continues to remove petroleum contaminants from the water supply, providing safe drinking water. Based on usage and owner's wishes, the carbon filtration system will be left in place and no replacement well will be installed.
- Sampling of the monitoring well network currently indicates stable to decreasing contaminant trends. ET anticipates conducting the final round of groundwater sampling in May 2018 and recommending leaksite file closure, commensurate with leaving in place the carbon filtration system.



Client Contact:

Ms. Jodi Schatz – Property Owner
(218) 357-2911 warmhomesinc@frontiernet.net

Project Staff:

Tom Muhich, PG, CHMM	Project Manager
John McCarthy, CHMM	Senior Project Scientist
Nicole Torguson	Project Scientist
Brice Wizner	Project Scientist
Joe Fye	Lead Driller/Field Technician
Jake Paulson	Equipment Operator/Field Tech.

Subcontracted Tasks:

Laboratory Analysis: Pace Analytical Services
Rotosonic Drilling: Stevens Drilling

7.B.4 Scope of Services

Oversee site investigation services for soil boring advancement and monitoring well installation using both standard drilling methods and push probes.

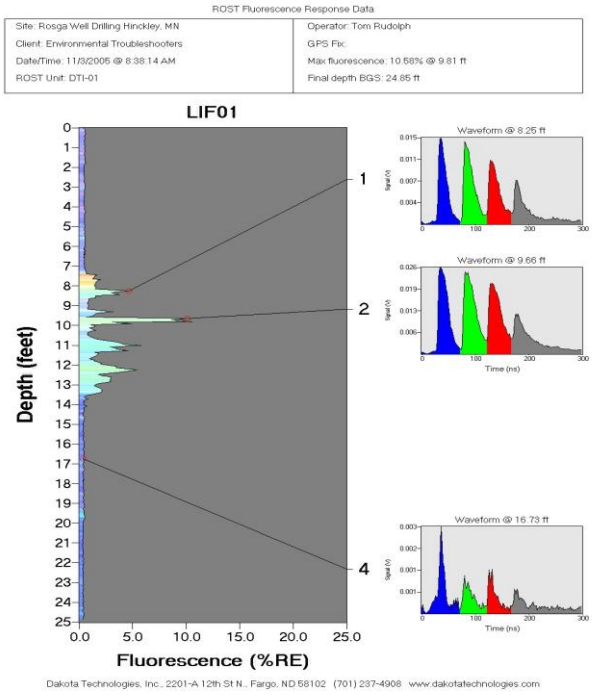
ET is a Minnesota Department of Health (MDH) licensed monitoring well contractor. This contractor license allows us to perform site investigation drilling in-house. ET also has multiple professional personnel who routinely perform site investigations using standard and push probe drilling technology. ET's professional staff includes a Professional Geologists, three Certified Hazardous Material Managers and three scientist experienced with conducting site investigations and sample collection procedures in accordance with MPCA Guidance Documents. ET also has three Field Technicians who are experienced drill rig operators.

Prior to drilling at a site, the ET Professional Geologist or Certified Hazardous Material Manager will design a sampling plan including drilling locations, depths, and sampling strategy based on previous investigation work, well records and published data, in accordance with PRP GD 4-01 *Soil sand Groundwater Assessments Performed During Site Investigations*. Once anticipated sampling points are determined, Gopher State One Call is notified of the pending drilling job and a utility meet is conducted. During this meet, ET verifies where utilities are located and determines how this may impact the proposed drilling locations. We also evaluate if the release may come into contact with the utility corridor. Once the utilities are located, ET finalizes the drilling plan for the site. If utility locations may be compromised by the initial drilling plan, ET has some options to modify the drilling plan. These options include moving the drilling locations or using an air knife or hand auger to bore to the utility depth and clear the location. ET has used air knife technology when drilling at military bases to ensure utilities or unexploded ordnances are not present.

The next step is to determine the drilling equipment to be utilized. Drilling equipment selection typically falls into five general categories.

- Push Probe: Used for most projects. Positives - typically quickest, easiest and cheapest method of drilling. Especially good for the initial round of subsurface sampling. Provides excellent discrete sampling when dual tube technology is used, as with ET's 6620 DT rig. Also generates the least amount of waste (soil cuttings). Negatives - limitations for deep drilling and difficulty when sampling in boulder deposits.

- Push Probe with Laser Induced Fluorescence (LIF): Positives – Great for identifying areas of free product/NAPL. Also allows for the advancement of many drill holes to gather large amounts of subsurface data. Can be used along with electrical conductivity to provide additional stratigraphic data. Negatives – Not a substitute for lab sampling, higher cost. Typically used for focused investigations where significant NAPL is evident. MPCA typically requires this technology prior to a large-scale remediation project.

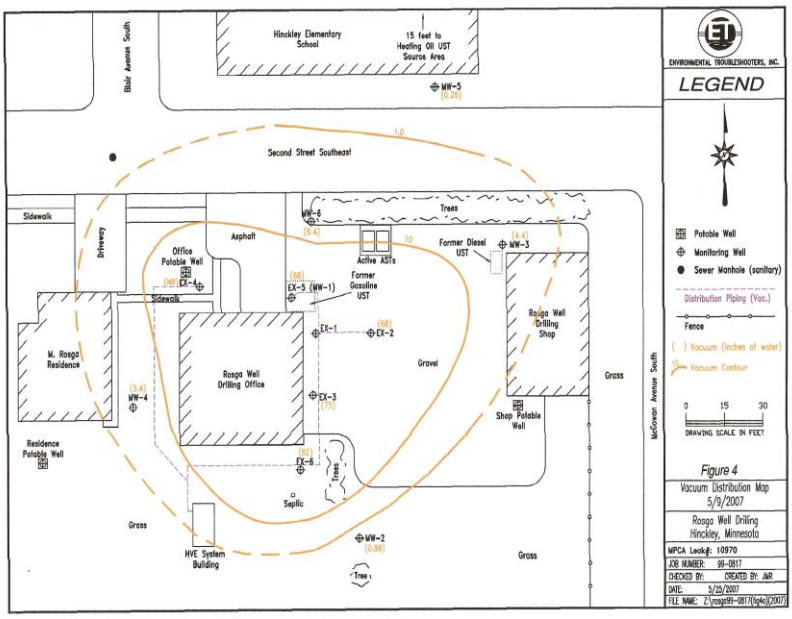


- Hollow Stem Auger: standard equipment until the 1990s. Positives - good for deeper drilling and to install wells with 2" diameter casing or greater. Also can advance through cobble areas better than geoprobes. Negatives - typically more expensive than geoprobe, has trouble with boulder deposits and tend to generate more soil cuttings.
- Rotosonic: Positives - good for soils with large boulders or accessing deeper sampling depths. Provides larger (4" to 6"-diameter) continuous core samples. Also possible to core bedrock. Negatives – large rigs, not practical for most LSIs, and expensive.
- Other Traditional Methods: Air Rotary, Mud Rotary, Cable Tool and other drilling methods are traditionally associated with water supply well installation and are not as conducive for sampling. Positives – good for drilling through bedrock and installation of deeper wells. Negatives – typically not used for collection of soil samples and may introduce fluids or drilling mud into the formation.

After mobilizing to the site, ET discusses the site safety plan during a tailgate safety meeting with the drillers and others involved in sample collection. All on-site personnel are required to wear DOT safety vests and place cones/barricades/signage in traffic areas to ensure vehicle safety requirements are followed. ET has a policy of collecting continuous sample cores when possible, to ensure no soil horizon is missed. Borehole soil samples are typically collected at the highest PID value, ground water table and/or bottom of the boring. Monitoring wells are screened in the saturated zone with adequate screen length to account for water table fluctuation. Borehole water samples are typically collected using temporary wells to allow for sufficient ground water recharge providing adequate water volume for sample collection, although discrete sampling below the water table is occasionally required using retractable screens/hydropunch. ET personnel have significant experience with development of permanent monitoring wells, to allow for removal of any drilling fluids and provide representative samples in accordance with MPCA and MDH requirements. All boring and monitoring well decontamination procedures are followed to ensure no cross-contamination exists during drilling and sample collection.

Drilling Project Experience Example

Rosga Well Drilling UST Release



Two 500-gallon gasoline USTs and one 500-gallon diesel UST were removed from a contractor's shop located in a primarily residential area near a school in Hinckley, MN. ET conducted push probe soil borings and installed a network of monitoring wells using hollow stem auger drilling to delineate the extent of contamination. The results of the remedial investigation indicated free product on-site and a large dissolved contamination plume extending off-site. The impacted aquifer and underlying bedrock aquifer were locally used as a potable water source by domestic and municipal wells. Active remediation was required by the MPCA to remove the free product, reduce dissolved contamination and reduce the threat to the potable water source.

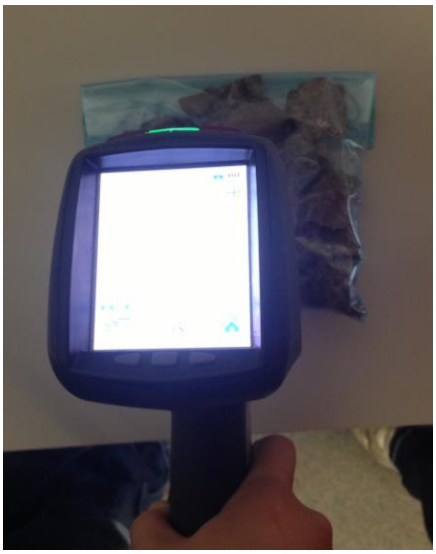
Prior to installation of the high vacuum extraction (HVE) technology, ET personnel oversaw the advancement of multiple LIF borings to better delineate the extent of free product. The LIF borings provided a detailed understanding of the NAPL extent and allowed for a more accurate contaminant mass estimate calculation. The LIF data was used for extraction well and HVE system design. Following two years of HVE system operation and follow-up monitoring, leaksite file closure was granted by the MPCA.

Conduct ground water, soil, surface water, sediment and air sampling and monitoring.
ET personnel have collected thousands of soil, water and/or air samples for monitoring, screening and/or laboratory analysis. ET staff is familiar with MPCA PRP Guidance Documents 4-01, 4-01a, 4-04 and 4-05 regarding vapor, soil and groundwater sample collection.

Soil samples are regularly collected using push probe, HSA split-spoon or Shelby tube, hand-augers and excavator buckets. When collecting soil samples from sampling cores, representative soil is collected from the length of the core utilizing the cut syringe or encore method for volatile samples. When collecting soil samples from excavations or test pits, ET collects the soil sample from the excavation buckets. Laboratory soil samples collected from excavation buckets also use the cut syringe or Encore sampling method for volatile compounds. For safety and to avoid potential cross-contamination, ET does not enter excavations to collect soil samples. ET geologists characterize soils in accordance with ASTM guidance. Grain size analysis samples are collected from within saturated zones and analyzed by sieve analysis in coarse soils and sieve and hydrometer analysis in soils containing appreciable fines by ASTM D422. Grain size analysis samples are used to calculate hydraulic conductivity.

ET uses screening instrumentation to provide on-site data and facilitate making field decisions. ET has purchased various hand-held, direct-read screening instruments to be used when various contaminates are encountered. By using the correct screening instrumentation, more accurate data can be collected allowing for real time decision making in the field. The following chart provides our field instrumentation with the appropriate the contaminants.

Contaminant	Field Screening Instrumentation
Gasoline Range Organics (GROs), Volatile Organic Compounds (VOCs)	Photoionization Detectors (PIDs)
Flammable Liquids, Carbon Monoxide, Hydrogen Sulfide and Oxygen	Four Gas Meter
Diesel Range Organics (DRO) Polynuclear aromatic hydrocarbons (PAHs)	Site Lab UVF-3100D 
Heavy metals	Olympus Innov-x XRF
OSHA Compliance Air Sampling	Low Flow Pump
Methane	Combustible Gas Detector



ET personnel have experience collecting ground water samples from push probe temporary wells and from monitoring wells. Temporary well/push probe groundwater sampling can be conducted using a peristaltic pump, check valve & tubing, or disposable bailer. ET personnel have experience collecting water in low permeability conditions, bedrock wells, confined aquifers and flowing wells. ET typically purges permanent monitoring wells prior to sampling using the standard purge method.

Sediment samples in shallow water zones are collected by driving or pushing clean, 1-inch diameter PVC well casing directly into the sediment. The casing is carefully withdrawn and the standing water is decanted. The sediment sample is then collected from the casing.

Air samples are collected primarily using Summa Canisters for vapor intrusion sampling. ET has experience collecting soil gas samples from push probes, collecting sub-slab soil gas samples, and indoor air quality sampling. ET has also sampled soil gas from monitoring wells and vapor emissions from remedial systems. Samples are typically laboratory analyzed by EPA Method TO-15. The scope of vapor intrusion sampling depends on the number of receptors present (e.g.

inhabited dwellings). Vapor intrusion sampling is conducted following a detailed review of the receptors present, with special focus on construction, heating and ventilation of occupied buildings near the leaksite. If a release site requires personal air sampling, personal low flow air pumps are set up to collect air from the workers breathing zone to determine OSHA exposure levels.

Personnel understand the importance of representativeness in sampling and the need to limit cross-contamination. Personnel closely follow decontamination procedures and the collection of field / equipment blanks, as necessary. Typical PRP program parameters include gasoline range organics (GRO), diesel range organics (DRO), benzene, toluene, ethylbenzene, xylenes (BTEX), methyl-tert-butyl-ether (MTBE), and volatile organic compounds (VOCs). In addition, Resource Conservation Recovery Act (RCRA) metals, polynuclear aromatic hydrocarbons (PAHs) and polychlorinated biphenyls (PCB) are analyzed on used oil sites. ET does not provide laboratory analytical services and will utilize a preferred State of Minnesota contracted laboratory avoiding any conflict of interest. Our project managers have experience reviewing laboratory data and managing quality assurance issues such as detections in trip blank analyses, diluted high concentration samples / elevated reporting limits, and matrix spike analysis issues.

Natural attenuation parameters sampling in monitoring well groundwater samples can include both field parameters and laboratory analysis. Field parameters are collected in each monitoring well following purging of the well. Field parameters include dissolved oxygen (DO), pH, oxidation-reduction potential (ORP), conductivity and temperature using direct reading instrumentation. Field parameters provide data regarding aquifer heterogeneity and the degree of connection between aquifers, as well as natural attenuation. ET also has experience collecting natural attenuation parameter samples for laboratory analysis, which at petroleum leaksites may include: nitrate, sulfate, sulfide and dissolved ferrous iron. Although field parameters are collected from every monitoring well, analysis of natural attenuation data is typically not required if the site follows the standard model.

Sample Collection Project Example

Spring Street Subsurface and Sediment Sampling

ET completed a Phase II sample collection project at a former shipyard. Based on the Phase I recognized environmental conditions (RECs), ET created a sampling plan that would collect samples from each of the following locations.

- Former Shipbuilding Operations
- Recent Petroleum Usage
- Meteorological Products
- Former Riverside Salvage
- Tate & Lyle Ingredients Americas

Former Ship Building Operation

The subject site was used to manufacture ships from approximately 1900 to the 1950's. This REC involved investigating whether marina sediment and shoreland soils were contaminated with RCRA metals or PAHs during these operations. Soil borings were drilled to assess soil and groundwater quality related to former operations. Soil samples were collected from each boring at the apparent historic surface horizon, when encountered. Specifically, samples were collected below current

finished grade materials, typically characterized by a change in construction materials one to three feet below the current grade. Soil samples were analyzed for RCRA metals and PAHs to assess historic impacts. As borings also served to assess other RECs noted below, samples were also analyzed for DRO, GRO and VOCs, though the presence of these compounds may not have been attributable to historic shipbuilding activities. Groundwater samples were also collected from each boring and analyzed for the same compounds. In addition, two sediment cores were collected from the marina slips and analyzed for the same compounds as soil and groundwater, except GRO and VOCs.

Petroleum Storage Tanks

The subject site has had multiple petroleum storage tanks used on site over its history, including one active fuel oil AST and one used oil ASTs currently in operation at the site.

This REC involved investigating whether soils or groundwater were contaminated with hydrocarbons. One boring was drilled in the vicinity of the machine shop where these tanks were located and the other boring was drilled adjacent to the down-gradient property that also had a history of petroleum storage tank use. Soil and ground water samples were analyzed for DRO, GRO and VOCs. Heavy metals and PAHs were also analyzed for because of existence of the shop.

Meteorological Products

Chlorinated solvents had been previously used at the subject site by a tenant. This REC involved investigating whether soils and/or groundwater were contaminated with VOCs during these operations. One boring was drilled outside the backdoor in the vicinity of the building where these products could have been used or discharged. Soil and ground water samples were analyzed for VOCs.

Former Riverside Salvage

This upgradient heavy metals contaminated site has been under investigation by the MPCA for more than 10 years. This REC is still an active release site and the potential exists for contaminants to have migrated in groundwater to the subject site. This REC involved investigating whether groundwater has been contaminated with RCRA metals from this upgradient site. One boring was down-gradient of the salvage yard. A ground water sample was collected from the water table and was analyzed for RCRA metals.

Tate & Lyle Ingredients of Americas

Tate & Lyle is a food products manufacturer that stores large volumes of regulated materials, including petroleum products and is located up-gradient from the subject property. Investigation of this potential REC involved investigating whether ground water had been contaminated with DRO, GRO and/or VOCs. One boring was advanced along the property boundary of the site to the ground water table. Soil and ground water samples were analyzed for DRO, GRO and VOCs.

Findings, Conclusions and Recommendations

The Phase II soil and sediment sampling identified widely distributed low-level contaminant concentrations. Ground water laboratory results indicated; RCRA metals and PAHs are present above drinking water standards (i.e. MDH HRLs or EPA MCLs); VOCs are below MDH HRLs and EPA MCLs; and DRO is present at up to 3,300 ug/L.

Based on the results presented above, ET recommended notifying the State Duty Office and entering the MPCA VIC Program to obtain guidance and letters of assurance protecting the new owner.

Conduct vapor/air monitoring for health and safety and air quality criteria.

ET typically performs air monitoring to determine atmospheric contaminant concentrations for four situations, which are vapor surveys, personal exposure monitoring, confined space entry and remedial system emissions monitoring.

Vapor surveys or building occupant exposure surveys typically collect air samples using a hand-held direct reading PID. PID sampling works well for gasoline and some VOC vapor concentrations, but not as well for diesel fuel or heating oil releases as it does not capture the heavy/ late eluting hydrocarbons. In most cases, if ET suspects the presence of diesel/fuel oil vapors we will use Summa Canister to obtain an accurate measurement. ET also uses summa canisters when sampling sites some chlorinated VOCs or SVOCs. ET has performed summa canister sampling on several occasions when dealing specifically with chlorinated solvent sites also.

Air monitoring is performed to determine OSHA permissible exposure limits (PEL). In some cases, a PID can be used for personal air monitoring, but a more typical method is to use a low flow air pump to collect air in a person's breathing zone. These air samples use a contaminant-specific detector tube or cassette and attach to the person's shirt collar to sample the air a person breathes during the work shift. Additional air samples can be collected during high exposure work to determine a short-term exposure level (STEL).

ET always conducts air monitoring using a four-gas meter prior to entering any confined space. ET will lower the sampling tube of the four-gas meter into the confined space to obtain readings. Air readings are collected at various interval depths within the space to insure heavy air contaminants near the bottom of the space have been evacuated prior to entry. This is especially important during tank removal projects when residual dry ice vapor maybe present near the bottom of the tank. ET's confined space policy requires continuous air monitoring for oxygen, flammable vapors, carbon monoxide and sulfur dioxide while personnel are in the confined space. As a secondary safety precaution, ET vents confined spaces with explosion-proof blowers prior to entry. This provides additional fresh air and provides a cooler work environment.

The final air samples ET collects are remedial system discharge sampling. These air samples are collected to insure ET's remedial systems do not exceed air quality standards or to verify carbon

systems are working properly. System air samples are collected using a tedlar bag and sent to a laboratory.

Vapor Air Monitoring Project Example

Bagley Bank

ET performed a vapor assessment as part of a fuel oil UST and chlorinated solvent release investigation. Because initial vapor samples collected in the basement commons and sump areas of the basement were high for chlorinated solvents, Dave Pena, Project Manager for the MDH requested summa canister air sampling (24-hour) be collected in the basement commons and main floor work area to evaluate the workplace indoor air quality. ET used summa canisters to collect the air samples. The laboratory analytical reports confirmed that:

- PCE and TCE were detected in the air samples collected from the basement commons at concentrations ranging from 9.65 micrograms per meter cubed (ug/m^3) to 558 ug/m^3 and 60.1 ug/m^3 to 546 ug/m^3, respectively.
- PCE and TCE were also detected in the air samples collected from the sump areas at concentrations ranging from 19.3 ug/m^3 to 600 ug/m^3 and 98.3 ug/m^3 to 819 ug/m^3, respectively.

At the request of the MDH, analytical results of the air monitoring were compared to the established Interim Screening Values (ISVs). The potential exposure to the employees of the bank is considered a non-work related occupational situation, therefore, the ISV was multiplied by 2.8 and compared to the standards. The resulting ISVs for PCE (22.71 ug/m^3) and TCE (0.62 ug/m^3) were exceeded. As a result, the MPCA required active remediation at the site, as well as additional soil gas sampling and on-going indoor air vapor monitoring.

Remedial action included sealing of the basement sumps, design, installation and operation of an HVE system, and bioremediation injection to remove additional contaminant mass in the shallow aquifer. After two years of operation, the HVE system reduced vapor levels below the ISVs and the system was shut down. Indoor air vapor concentrations have remained low and the site is currently in monitored natural attenuation (MNA) prior to closure.

Conduct and/or oversee site assessment activities (Phase I & II), LSIs and RIs.
ET has completed hundreds of Phase I, Phase II and LSI/RIs. Phase I ESAs are performed following ASTM E 1527-13, EPA's All Appropriate Inquiry Requirements and the MPCA Petroleum Brownfields Guidance Fact Sheet 5-02 and 5-03. Phase II ESAs follow ASTM E1903-11 Standard Practice for Environmental Site Assessments (as necessary), MPCA PRP Guidance documents and the MPCA VIC Program Risk-based site evaluation (RBSE) process guidance documents. ET has also performed other non-traditional Phase II project work, including wetland delineation, radon testing, asbestos sampling, lead paint sampling and indoor air quality investigations often required for Housing and Urban Development (HUD) and federal multi-family housing projects. LSIs and RIs are typically conducted according to PRP guidance documents Remedial Investigation and Corrective Action Section 4-01 through 4-08. ET has performed a modified scope of work on LSIs and RIs, but only upon the request of the MPCA Project Manager and those requests were site-specific.

Phase I & II, LSI, RI Project Example

Lutsen Ski Resort

Lutsen Ski Resort (Lutsen) is a winter destination located along the Poplar River in northeastern MN. The site consists of multiple properties including the ski hill, lodge, condos, restaurant and nightclub. Over the past six years, ET has performed the following projects activities: Phase I & II ESAs, LSIs / RIs and oversight of petroleum contaminated soil excavation for a new utility corridor.

ET was contracted to perform an LSI after a fuel oil release was confirmed during an UST removal project. ET advanced five initial soil borings to investigate if petroleum migrated to the Poplar River. These borings were advanced using ET's track-mounted push-probe to access the steep terrain. Due to the presence of a surface water receptor (i.e. the Poplar River), multiple rounds of soil borings were advanced to delineate the contamination and six monitoring wells were installed to more accurately determine the ground water impacts. The monitoring well results indicated approximately 1/8" of free product at the water table. Several years of quarterly ground water monitoring were conducted to measure the extent of ground water contamination and the stability of the plume. Ultimately, the site was closed by the MPCA.

After site closure, Lutsen refinanced their operation. To facilitate the financing, ET was contracted to perform a Phase I ESA. The Phase I recommended advancing soil borings to investigate the extent of a petroleum release from a petroleum drum storage shed floor drain at the equipment maintenance area of the site. ET advanced soil borings and documented a petroleum release. ET performed an LSI that delineated the extent and magnitude of the release and the site was closed by the MPCA in 2012 and the bank refinancing was finalized after MPCA site closure.

In 2013, Cook County was constructing a new storm sewer utility corridor at Lutsen. During construction activities, Cook County encountered petroleum-contaminated soils. ET was contracted to provide soil screening, contaminated soil disposal permitting and MPCA regulatory coordination for the project. ET ultimately obtained approval and performed on-site screening for the removal of 426 CY of contaminated soil to accommodate the utility project. ET also bid out and was present to oversee the vacuum pumping of 75 gallons of petroleum-contaminated water. The soils were permitted and transported to a MPCA permitted compost facility for treatment.

Conduct surface water, ground water and vapor receptor surveys.
ET is a MPCA Limited Emergency Response Contractor who is routinely called to emergency situations that require the assessment and mitigation of petroleum vapors and releases of petroleum products to surface and ground water. A quick and accurate site assessment and analysis is an essential aspect of a release investigation. Based on the hazard, PPE is assigned for level B, C or D work (ET does not perform Level A services) and a health and safety plan (HASP) can be completed. Once the HASP has been reviewed and the appropriate PPE is donned, ET assesses the release site to determine potential receptors and free product migration pathway. During our site assessment, we look for sumps, drains, culverts, utility vaults, surface water, wetlands and wells. By identifying these receptors, ET can place berms, booms and absorbents to protect these critical areas from being impacted.

ET also performs surface, ground water and vapor assessment during non-emergency projects such as Phase II ESAs and LSIs/RIs. Typically, these projects require background review of city directories, aerial photographs and Sanborn fire maps because potential impacts are not as readily obvious as during emergency responses. Phase I & II ESAs and RIs also involve a detailed on-site evaluation for lakes, streams, wetlands, potable wells, utility corridors, etc. Accurate site assessment and analysis is critical to locate potential receptors, understand contamination plume migration and evaluate health and safety risks. Once this background information is obtained, health and safety plans can be created, a work plan can be devised and proper PPE can be utilized.

Assessment of the Minnesota slip outfall after a truck accident.

Reassessment of the same Minnesota slip outfall, 3 hours after initial assessment.

Surface Water, Ground Water and Vapor Risk Assessments Project Example

US Coast Guard Flood/MPCA Assessment of the St. Louis Bay for Cooking Grease

A truck carrying cooking grease rolled over in downtown Duluth. The truck landed on the City storm sewer rupturing both the bulk grease storage tank and diesel fuel tank. ET cleanup crew

responded and recovered the lost grease and diesel fuel that discharged on to the street. ET then worked with the City of Duluth, MPCA and US Coast Guard to pull the sewer maps to locate the sewer discharge location. After several hours of monitoring the sewer system outfalls, grease was observed discharging to the surface water of Slip C located on the St. Louis Bay in Canal Park. Surface water was assessed for free product and floating grease was contained so recovering could commence. Birds were hazed from the area so their feathers would not become coated with grease and Charter Fisherman were excluded from docking boats so the grease would not migrate out of Slip C. Over the next ten days, grease was recovered, the sewer was flushed and the William A. Irving Ore Boat, Pier and Floating Dock was cleaned with a power washer, steam and absorbents. Once no visible signs of grease remained in the slip, cleanup materials were decontaminated and the site was restored for Charter Fishing boats use.

Oversee construction to mitigate vapors and conduct non-construction mitigation measures such as using fans, etc.

As an MPCA and USCG ER Contractor, ET has often responded to mitigate vapors impacts. There are two methods to address and mitigate vapors. One method is to remove the free product and excavate the saturated soils from under a structure, followed by installing vapor barriers and exhaust piping to remove residual sub-slab vapors. There are some important aspects of this approach. First, it is important to remove the free product and saturated soils from under the structure as the sub-slab venting systems are not designed to act as a remedial system to remediate free product. Second, a good vapor barrier is important to seal as much of the subsurface/basement building shell interface as possible. A good seal results in better performance of the piping/vent recovery system. Third, the soil needs to be porous, such as medium sand, pea rock or class V. The system is of little value in dense clay soils. Fourth, a passive system does not work very well because it may not be able to overcome the chimney affect of most buildings. To overcome this effect, a blower is necessary.

The second vapor mitigation technique is the use of portable blowers. Portable blowers are used for emergency use only and are not adequate for permanent use. For gasoline releases only explosion-proof blowers should be used. Blowers work well for removing vapors in sewers, crawl spaces and occupied areas of residential and commercial structures. These blowers are designed to run for several days but are not intended to be a permanent solution. ET also uses portable blowers when cleaning petroleum storage tanks. ET typically vents tanks to insure residual petroleum vapors and carbon monoxide levels (from dry ice) have dissipated and oxygen levels are restored to acceptable levels prior to entry. Even though ET always has a four-gas meter to monitor air prior to entering a tank, we always leave the blower running for the duration of the project to provide fresh air and to prevent overheating.

Project Example using Non-Construction Vapor Mitigation Measures

The Eveleth Spur Convenience Store Gasoline Release

The Eveleth Spur Convenience store (Spur) is located in the downtown business district of Eveleth, MN. The Spur had a gasoline inventory discrepancy on one of their gasoline tanks. As the owner was investigating the cause of the discrepancy, neighboring business owners reported gasoline odors in their buildings.

ET was called to investigate the cause of the vapor impacts. ET conducted a receptor survey of 71 properties, and a vapor survey including 31 buildings and 16 sewer locations during the emergency response. Vapor samples were collected from each location using a PID and (where required) an explosimeter to measure the lower explosive limit (LEL). Petroleum odors were present in four businesses and the highest building PID reading was 117 ppm. The sanitary sewer survey yielded a maximum PID reading of 243 ppm. Explosion-proof blowers were installed in both the business basement and closest sanitary manhole to remove accumulating vapors. After operating the blowers for approximately 12 days, vapor readings were reduced to less than 1 ppm.

After the vapor assessment was complete and the blowers were installed, ET removed the UST in question. The tank was a 10,000-gallon fiberglass UST. The bottom of the UST was in close proximity to fractured bedrock. A small crack was observed during the tank removal operation. An LSI was conducted at the site, revealing only limited soil contamination. Groundwater was not encountered, and the water table was estimated to be present within fractured bedrock. Based on the available evidence, it appears the loss of product migrated directly to the fractured bedrock where the vapors discharged into nearby sewer piping and basements. Based on the LSI and emergency vapor mitigation conducted at the site, the MPCA closed the leaksite file.

Conduct or oversee operations and maintenance on remedial systems

ET has extensive experience conducting system O&M including: equipment testing/startup; system component maintenance (e.g. belt replacement, greasing blowers, filter replacement); system component upgrades; cleaning air strippers; carbon filtration change-out; system winterization and wellhead maintenance.

O&M personnel are experienced with vacuum and water level monitoring, air and water sampling, and technical instrumentation; such that O&M is conducted during scheduled monitoring events, saving site trips and cost. ET personnel are expert at balancing of vacuum among distribution lines, troubleshooting water treatment system upsets and optimizing system performance. ET also has extensive experience completing system decommissioning and well abandonment.
ET designs, installs and performs O&M activities in-house. ET has provided O&M for:

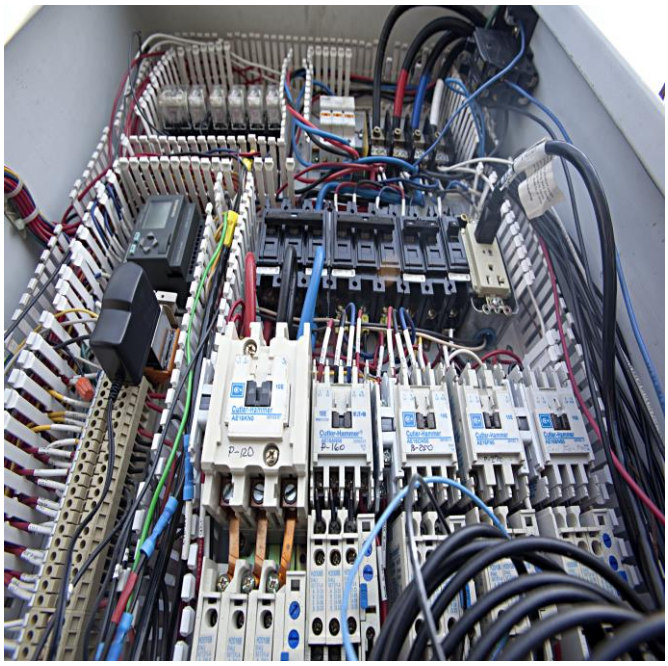
- An SVE remedial system for a petroleum release that covered two city blocks in size within the City of Babbitt.
- An HVE system to remediate a petroleum release in the City of Hinckley (this was the first HVE system used in MN).
- An HVE system to remediate a chlorinated release in the City of Bagley (this was the first HVE system used for chlorinated solvents in MN).
- Two HVE systems to remediate bulk-fueling at the 148th Fighter Wing of the MN Air National Guard, Duluth.

Operation and Maintenance of a Remedial System Project Example

Babbitt Short Stop

ET was contracted by C&B Warehouse Distributing to conduct a remedial investigation of a LUST site in Babbitt, Minnesota. Several thousand gallons of gasoline had been released into an unconfined sand aquifer, resulting in significant NAPL at the site. Groundwater contamination had migrated over 700 feet within the sand aquifer and impacted the municipal water supply wells.

ET conducted an RI, including the installation oversight of 18 monitoring wells, including nested deep wells to delineate the contaminant plume. A soil vapor extraction (SVE) and air sparge (AS) system was installed at the site to remediate source area contamination. ET personnel conducted two and a half years of O&M work on an SVE/AS system, which focused on improving system performance. ET also conducted system monitoring that included air emissions, vacuum influence, groundwater elevation and contaminant plume monitoring.



The groundwater monitoring well network was designed with twelve 12 monitoring wells to evaluate horizontal contaminant migration and six piezometers / deep monitoring wells to evaluate vertical contaminant migration. Post-remedial monitoring focused on plume stability relative to natural attenuation and the influence of new municipal wells on groundwater flow dynamics.

Post-remediation monitoring indicated no observed NAPL and a significant reduction in the dissolved plume mass and extent. Municipal well sampling indicated no further petroleum detections. The MPCA granted site closure in 2008.

Arrange for transportation, storage and proper management of wastes.
One of the primary responsibilities on our emergency response projects is dealing with waste that is generated from release sites. ET has performed lab packing for industrial laboratories, school districts and commercial clients.

ET has profiled and overseen the disposal of hazardous wastes, acids/bases, PCBs, heavy metals, fuels, sludge, oil/water mixtures, grease, cooking oil, asbestos, regulated building waste, solid waste, demolition waste, purge water, soil cores and used absorbents. ET has experience in:

- Sampling drums, transformers, purge water and tanks using bailers and colowassas.
- Treating petroleum contaminated soils by biopiling and land spreading.
- In-situ stabilization of heavy metals.
- Disposal of drug wastes from clandestine labs.

For most projects, ET bids out the disposal costs to appropriate landfills or recyclers and selected the lowest qualified bidder. ET does some small-scale waste hauling, but most waste hauling projects are subcontracted. ET will use any preferred or specified State of Minnesota landfill or waste hauler.

Arrange for Transportation, Storage and Proper Management of Wastes Project Example

Gander Mountain Development Project
In preparation for the Hermantown Gander Mountain Store Development, ET was contracted to conduct environmental assessments of a mobile home park, commercial business and private residence. The environmental assessments consisted of a Phase I ESA, asbestos and peeling lead paint inspection and regulated waste assessment. As a result of the assessments, ET determined that there was a significant number of home heating aboveground storage tanks (ASTs), friable and non-friable asbestos containing materials (ACMs), limited exterior peeling lead paint and large quantities of household regulated waste.

ET prepared for the development activities by removing, cleaning and disposing of 18 ASTs, coordinating the abatement of ACM and stabilization of lead paint. In addition, ET performed the removal of regulated and solid waste materials from 37 former mobile homes, the private residence and the commercial building. Materials were removed, segregated, inventoried, containerized, manifested and disposed of at various disposal facilities that handle household chemical products,

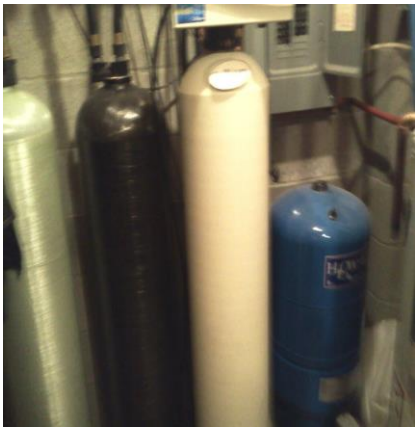
mercury switches, fluorescent light tubes, PCB oil containing light ballasts, white goods, tires, car batteries, etc.

To evaluate the RECs identified in the Phase I ESA, ET conducted a Phase II ESA by advancing soil borings in the areas underlying the removed ASTs and completed a Development Response Action Plan (DRAP) to proceed with the development project. Ultimately, ET excavated approximately 320 cubic yards of petroleum-impacted soil associated with the ASTs and other areas encountered during the site development process. The soils were placed on and covered with plastic for temporary storage until the appropriate soil characterization and landfill disposal approval was conducted. Once disposal approval was achieved, ET arranged for the loading and transport of the soils to the designated disposal facility.

Evaluate the need for and oversee the implementation of alternative drinking water, including point-of-use treatment (i.e. carbon filtration).
ET has had several sites that required evaluation, sampling and filtration of potable water that were contaminated or potentially impacted, including single user potable wells, irrigation wells and municipal potable water supply wells.

To mitigate well impacts, ET has overseen the use of carbon filtration of single user wells, as well as established connections to existing municipal water supplies and re-drilling municipal wells. ET has referred to MPCA Cleanup/Superfund document #1.05 regarding basic guidance regarding granular activated carbon (GAC) filter systems. ET has experience working with contractors to install GAC filter systems. ET personnel have also conducted carbon filter backflushing and change-out for remediation systems.

Evaluate and Supply Alternative Drinking Water Project Example



<u>Bulk Plant Emergency Response MPCA Bid Waiver to Sample and Install Carbon Filtration at Grand Marais Residence</u>
Petroleum tainted water was reported to the MPCA by a residence near the bulk plant. An MPCA inspection of the bulk plant confirmed that significant petroleum contamination existed from current and historic overfills at the loading rack. Due to surrounding shallow bedrock, it was suspected the released petroleum product migrated down to fractured bedrock where the neighboring potable wells were drilled. The bulk plant owner obtained a MPCA emergency bid waiver to sample all the neighboring wells with in a ½ mile radius. ET was hired to perform the sampling activities. The potable well in question contained petroleum VOC detections, but was the only impacted well. The ET project manager communicated the results immediately to the MPCA and the resident. The well use was restricted temporarily and bottled water was supplied to the residence. ET contracted with a local plumber/well contractor to install a GAC filtration system. The water supply was sampled following GAC installation and post-filtration water was below MDH HRLs.

Coordinate and cooperate with other State-contracted services such as sampling and analytical emergency response contractors, and hazardous waste services.
ET works with many diverse contractors and sub-contractors on various projects. ET currently provides services to and has worked with other State-contractors. On our emergency response contracts our roles change frequently from prime to sub as dictated by the job task. All of our projects currently use an MPCA state contract laboratory so we are familiar with their role and service within the framework of the project.

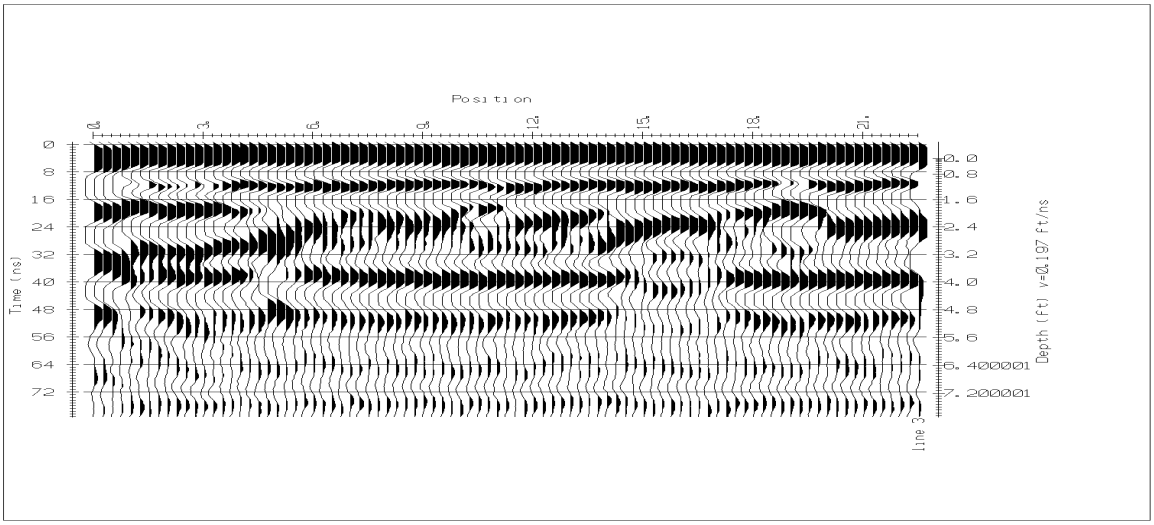
When ET is the prime contractor on any project will insure our staff and subcontracted staff perform work in a safe manner according to the HASP. All subcontracted staff must be hazwoper trained, sign and follow the HASP and be present at each on-site tailgate safety meeting. Subcontractor quality control is also an important aspect of the project. ET oversees that the scope of work on the project is followed and work is performed in a professional efficient manner.
ET has worked on many State funded remediation projects as subcontractor to several firms that the State currently contracts. ET has specifically provided drilling, excavating and remedial system decommissioning as subcontractor on MPCA projects with Bay West, STS, AECOM and Terracon. As a subcontractor, ET has participated in the Prime Contractor's HASP and tailgate safety meetings. We will work with any other State office, State contractor or sub-contractor identified or preferred.

Project example of ET Coordinating with other State Contractors

Subcontracted by Bay West for Geoprobe Drilling at the Former Reserve Mining

ET was subcontracted to perform drilling services by Bay West at the former Reserve Mining site. ET was contracted because we had the only locally owned track-mounted Geoprobe. ET worked for three days drilling off-road in grassy and brush filled areas. Sampling finished on time and budget.

Arrange for geophysical activities.
ET has used geophysical techniques for subsurface assessments. We have designed, bid and overseen the use of a magnetometer and ground penetrating radar (GPR) to survey sites to locate if there were any abandoned USTs.



Geophysical Project Example

Ground Penetrating Radar (GPR) to Evaluate the Location of a UST for Charter Films

ET conducted a magnetometer and GPR survey at a film manufacturing site to determine if USTs identified on Sanborn maps during a Phase I ESA were still present at the site. Since the area where the USTs were suspected to exist had been recently paved, the current owner would not allow any subsurface excavating prior to verify the existence of USTs.
ET subcontracted a Geophysical firm to survey the suspected tank area. The magnetometer survey measures the total magnetic field strength at various measurement locations. These measurement locations were based on a coordinate grid system of the subject search area. Magnetometer data was collected with a Geonics G-858 Cesium magnetometer. Data, consisting of total magnetic field and vertical magnetic gradient, were collected at a rate of 10 readings per second as the operator walked along each axis of the coordinate grid, resulting in approximately 3 to 4 readings per foot. Grid lines were 2.5 feet apart.

The GPR method was used to provide information in the form of vertical cross-sections along survey grid axis. GPR transmits high-frequency electromagnetic waves into the soil that are reflected back to the surface and picked up by a receiver antenna. Reflections result when the transmitted radar pulses encounter contacts between materials with different electrical properties. As the antenna pair (transmitter and receiver) is pulled across the ground surface, a two-dimensional plot of the subsurface is created from the radar reflections. The results of magnetometer and GPR data did not reveal any subsurface anomalies indicative of USTs.

Oversee Subcontractors and State Contractors during investigations and cleanups and tank removals.
ET has designed work specifications and oversees sub-contractors for excavation projects, vacuum truck NAPL pumping, asbestos abatement, bedrock drilling and other project phases. ET creates work specifications, conducts site pre-bid meetings, obtains insurance information and checks references before the work is awarded. ET has used several subcontractors for both MPCA Emergency Response projects and our other non-governmental projects.

ET Project example of Overseeing Subcontractors during Investigations and Cleanups

30,000-Gallon UST UTAC South Crusher Site

ET has overseen multiple subcontractors during LSI/RI and corrective action projects. ET has conducted four LSI/RI projects at leaksites on a mining property. For each of these projects, initial push probe borings allowed ET to gather some source area data, however we continued to hit refusal at depth. To access greater drilling depths at each site, ET designed work specifications and bid out the drilling projects to various rotosonic drilling companies. In each project, ET awarded the bid to the lowest cost provider. As these projects were on mining property, all personnel were required to have completed current mine safety health administration (MSHA) training and follow MSHA safety regulations. The projects were completed on-time and within the scope, and costs were reimbursed by Petrofund following project completion.

Prepare and evaluate reports (e.g. investigation reports, monitoring reports, free product recovery reports).
ET has prepared a multitude of LSI, RI, QMR, AMR, Free Product Recovery and other reports. Our philosophy is to provide detailed and complete reports. In order to achieve the project objective, ET project managers discuss field and laboratory data with the MPCA prior to report submittal. This allows for the decision to complete additional borings or collect the additional vapor samples and subsequently produce a complete report. ET takes pride in preparing detailed CAD maps and comprehensive data tables, including appropriate QA/QC data. Report recommendations are based on laboratory data, site-specific information, hydrogeologic principals and common sense. ET also has an extensive review process to insure report accuracy, but also insure proper use of grammar, spelling, word choice and punctuation.

We have prepared reports for federal agencies including the USEPA, U.S. National Air Guard, USCG, U.S. National Forest Service and Army Corp of Engineers. The State agencies we have prepared reports for are MPCA, MDH, MN-DNR, Board of Water and Soil Resources (BWSR) and Soil and Water Conservation District (SWCD).

Prepare Health & Safety Plans (HASPs).
ET takes health and safety very seriously. Craig Wilson, President of ET is the Health and Safety Officer. Mr. Wilson has a Master of Industrial Safety and is a Certified Hazardous Materials Manager (CHMM). ET prepares HASPs for our emergency response and remediation projects. All

personnel on our contamination jobsites must first and foremost have received initial and annual refresher hazwoper training. Prior to starting work, it is ET's policy to have a site-specific HASP be completed for the site. The HASP is reviewed with the employees and subcontractors during a tailgate safety meeting and the on-site personnel are allowed to comment and discuss the safety procedures for the job and sign-off on the HASP.

For many jobsites that ET works on, hazwoper training with a HASP is not enough to access the site. For example, asbestos projects require employees to be EPA asbestos trained and licensed by the MDH and mining sites require MSHA training.

ET also conducts in-house OSHA training prior to performing work on many of our project sites. This in-house OSHA training includes excavation safety training, confined space entry, working around utilities, PPE requirements, decontamination procedures and hazard communication training.

HASP Project Example

US National Air Guard Project Example

ET worked on a subsurface injection project at a US National Air Guard in Springfield, Illinois. The project consisted of injecting remediation compound into the subsurface to increase the rate of biodegradation/natural attenuation. The HASP developed procedures for safely using the remediation compound, drilling equipment safety, information regarding the chemical hazards present, MSDS review, determining the level and type of PPE for the site, setting an exclusion work zone, decontamination area and a zone for equipment storage and Guard Base security issues.

Arrange for Site Access

With increased security concerns, access to governmental, industrial and even school sites have become more scrutinized. For Port clients, ET has TWIC security clearance, for the Guard bases and airports ET has security badges or is escorted into sites, for mines MSHA training is required and industrial facilities require sign ins at a guard house with site specific in-house safety training prior to accessing the property. Due to all the new security requirements, all ET's employees follow our client's specific access requirements (i.e. signing in, watching in-house training videos, etc). ET employees have also received background checks to facilitate easier access to the secure jobsites.

Another access problem can be off-site access. Arranging off-site access generally requires a phone call and a site meeting to discuss the nature of the project and how it will affect the property. ET always attempts to get a our in-house access agreement signed for our own insurance and liability purposes, but some clients, such as the railroad have their own access procedures that can take weeks to obtain.

The final access issue is public right-of-ways. For most highway or street right-of-ways, a street obstruction permit/bond is required. ET obtains four or five street obstruction bonds and/or permits each year for public right-of-way projects.

Arrange for Site Access Project Example

State Highway 2 Truck Roll Over, Warba, MN

ET responded to a fuel transport truck roll over on State Highway 2 on December 31st. The truck drove off the highway in blizzard conditions and the fuel discharged into the Mn/DOT and BNSF railroad right of way. ET responded and was granted permission to remove the truck and contain the area. Once the area was contained Mn/DOT and the railroad required the necessary permits and site-specific bonds and insurances prior to commencing further work. This project required the partial shutdown of the west bound lane of Highway 2, the excavation of the ditch, excavation into the railroad right of way and restoration of the highway shoulder. ET worked concurrently with Mn/DOT officials and BNSF's access consultant to obtain the necessary access agreements and permits in half the standard turn around time. ET subcontracted traffic control and mobilized to the site. ET also worked with the railroad to provide a watchman when excavating in the BNSF right of way. The petroleum-saturated soils were removed and transported to Lamb's Compost facility.

Coordinate utility locates by contacting the appropriate entity and, if applicable, coordinate traffic control.

Utility Locates

ET personnel clear utilities by contacting Gopher-One Call (MN State Requirement) and clear the property owner's private utilities by subcontracting a private utility locator prior to the start of site work. A private locator is necessary because Gopher One Call is not responsible for marking private utilities.

ET typically schedules a utility "meet" so we can discuss the project with the various utility companies and determine if utilities are present in the work area footprint. Some spill projects, require an emergency locate so the utilities can be marked the same day. ET typically uses the emergency locate process three or four times a year.

Traffic Control

When working on public roads or highway, ET closely follows Mn/DOT rules for traffic control. For small projects, ET uses in-house signage, but for most highway projects or Mn/DOT right of ways projects, ET subcontracts to a signage rental provider. These signage rental companies not only provide the signage, but also perform setup and teardown.

Coordinate utility locates by contacting the appropriate entity and if applicable coordinate traffic control Project Example

Truck Roll-Over Emergency Response Project

A truck accident occurred on the westbound lane of State Highway 61 near Beaver Bay and released diesel fuel from the truck's fuel tank into the roadside ditch. The released fuel discharged into the westbound lane ditch on State Highway 61. Free product extended approximately 80 feet from the crash terminus along the ditch. Down-gradient from the product source, petroleum sheen and saturated soils were present.

ET was contacted as a State of MN Emergency Response contractor and was on-site working within two hours. Because this was an emergency, ET was able to use the Minnesota State Highway Patrol for traffic control to partially shutdown the west bound lane. Within three hours on site, ET had contained the spill and placed absorbents to recover the remaining free product.

Prior to remobilizing to the site to excavate the petroleum-saturated soils, the ET Construction Site Supervisor contacted Gopher One Call for an emergency utility meet at the site and contracted with a local private utility provider to clear private utilities along connecting driveways. Concurrently, the ET Project Manager obtained a Mn/DOT permit and bond to partially close the west bound lane of State Highway 61. The highway traffic control plan involved signage supplied and installed by Highway Technologies and the use of two flagman for the partial west bound lane closure.

ET now under contract with the oil transport company, set up silt fencing and began the excavation of petroleum saturated soils from the ditch. ET used a PID for soil screening during excavation. As petroleum-saturated soils were excavated, it was apparent that two culverts needed to be removed to access the soils. These culverts were removed and the petroleum saturated contaminated soil removed. Based on the PID readings and visible sheen observed while excavating, approximately 40 cubic yards of petroleum-impacted soils were removed. Contaminated materials were placed in dump trucks and hauled to Lamb's Compost Facility in Schroeder, Minnesota. Mn/DOT provided ET with two replacement culverts and ET reinstalled the culverts per Mn/DOT construction specifications. ET also restored the highway shoulder and ditch per Mn/DOT construction and erosion control specifications. ET left the silt fence in place until vegetation re-established. Silt fencing was removed in June the following year.

Prepare and Evaluate Bid Specifications

ET has designed and bid numerous projects. ET does a lot of contract work and has a unique understanding of how to design and bid projects. ET also has a good sense of the construction market and knows what a reasonable budget is for contract work in northern Minnesota. ET designs project specifications based on the project size and complexity. An ET bid specification may be a simple two-page scope of work or a two-inch thick document.

ET provides the project specification for the Client to review prior to the site walk-through. ET may require a bid, performance and/or payment bond(s) and prevailing wage rates depending on the size, scope and complexity of the project. ET also has contractor insurance and bonding requirements in the project plans to protect the Client from liability. For large-scale projects, ET conducts pre-bid meetings on the site to allow contractors to ask questions regarding the project. The pre-bid outlines the specifications, discusses the project, reviews the bonding, wage and insurance requirements and outlines the schedule. After the pre-bid, we typically sit down with the Client to review the bids to insure the bids are accurate.

If a bid that is unusual, we contact the bidder to verify the bid is accurate or obtain clarification from the Contractor. If the bids are all acceptable, then we review the proposal and cost and recommend the best bid/contractor for the project.

Bid Specification Project Example

Grand Marais Bulk Plant

ET was contracted to perform the investigation of a bulk plant. Several years of product overfills from the transport loading rack migrated down to fractured bedrock and into the bedrock aquifer.

One local potable well was impacted. The only option to close the site was to excavate down to bedrock in the loading area and under the AST. ET designed a work specification to remove the AST and loading rack, excavate the contaminated soil and reinstall the bulk plant in the same location. Extra design parameters were developed into the scope of the project to insure the backfilled soils would not settle causing a piping failure or collapse of the tank system. The project was completed ahead of schedule and on budget. The tank farm and surrounding buildings remain intact as reconstructed on the site.

Evaluate Invoices

ET has a policy in place for Project Managers to review and evaluate all invoices prior to client submittal. Invoices are prepared by ET Accounting, compiling each employee's time and expenses for the project. The ET Project Manager reviews the invoice, verifies the correct work tasks, checks the billing rates and compares it to the project's budget. ET Project Managers have one unique feature that most companies do not have and that is the ability to adjust invoices. Most companies have a policy that will not allow Project Managers to write off time or change invoices. ET lets the project managers not only manage the project, but also manage the budget. This system insures the Project Manager is responsible for the project's budget and the efficiency of work. Ultimately the end product is a project that meets the proposed budget and is completed in an efficient manner.

Evaluate Invoices

Non-profit Review of Phase I Report

ET was contracted to review several Phase I reports for a large non-profit, low-income housing project. ET audited the invoice and found the Consultant charged for preparing eight Phase I reports instead of one corridor-type report for all eight sites, which is customary. The non-profit negotiated an invoice reduction and one new report was provided. This not only resulted in significant additional cost, but also eight reports for lenders and regulators to review.

Assist with providing training as requested by the MPCA.

ET has provided training and presented at conferences and public meetings. ET is well versed with giving training and informational presentations. We routinely provide OSHA trainings to schools, asbestos training to power plants and informational seminars to the Lessard-Sams Council, Clean Water Council, Knife River TMDL and the Knife River Citizens Committee and MN DNR regarding the Knife River study and habitat rehabilitation work we are performing.

ET has also attended several MPCA training sessions, either as invitees or in workshops. We are familiar with the MPCA's presentations and seminars and feel very comfortable we could add to these events if requested.

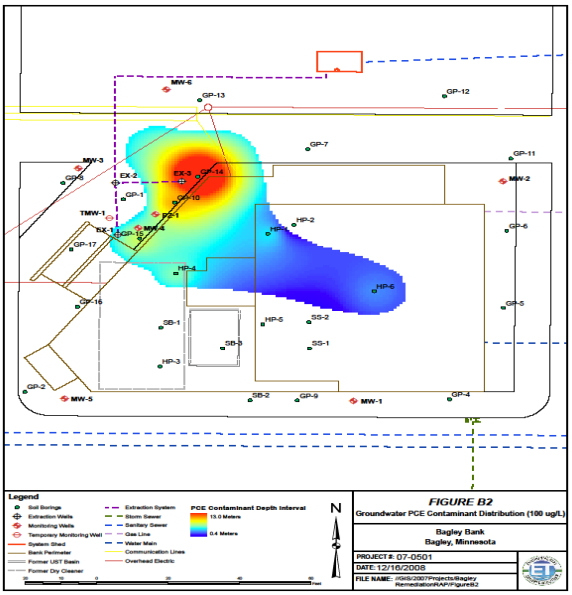
Assist with providing trainings as requested by the MPCA Project Example

HVE Seminar

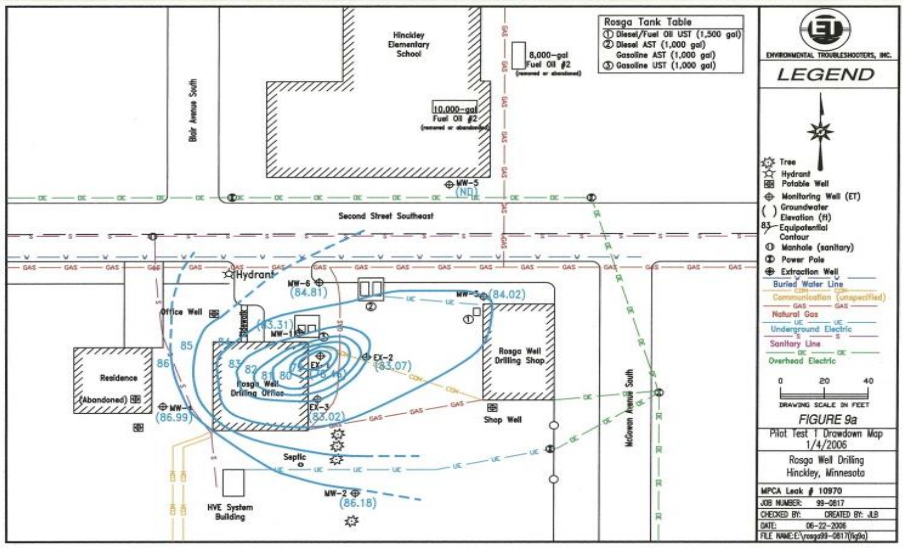
ET provided an informal training at the MPCA in Duluth for the use of a High Vacuum Extraction (HVE) Remedial System for chlorinated solvents releases in clay and silt till soils. This informational training was a power point presentation showing three sites we had worked on, how the system worked, and result tables and figures depicting the sites. After the presentation, there was approximately 15 minutes of question and answer regarding the equipments applicability to some existing MPCA chlorinated sites.

Follow MPCA Green practices/procedures relative to remediation projects.
Green and sustainable remediation (GSR) is considered by ET personnel during the various stages of investigation and remediation projects. GSR incorporates methods and technologies to reduce the environmental, social and economic impacts of investigation and remediation. During the initial phase of investigation, ET personnel incorporate Best Management Practices (BMPs) such as limiting site trips (and fuel usage) and conduct initial contact with local units of government (LUGs) regarding the scope and impact of investigation work, consistent with Level I GSR. Level II GSR involves BMPs along with a simple GSR evaluation. Level III GSR involves BMPs along with an advanced GSR evaluation, with a tool such as the Sustainable Remediation Tool (SRT). ET project managers utilize an increased level of stakeholder engagement for larger, more complex remediation projects. ET personnel have attended the MPCA Green Day Conference in December 2012. In some cases, ET has implemented less intensive remediation technologies such as in-situ bioremediation, in order to avoid higher cost, higher energy consumption remediation systems (e.g. pump & treat systems). ET worked with the RP and local officials at the Lake of the Woods Resort leaksite to permit a land treatment site within 2 miles of the release site to limit the cost and energy of hauling petroleum contaminated soil to the nearest permitted land treatment site located 100 miles from the leaksite.

Oversee Hydrogeologic Investigations including Fate & Transport Modeling.
ET personnel have extensive experience with hydrogeologic investigations, including sites with shallow fractured bedrock and leaksites where the hydrogeology has been significantly altered by mining activities. ET personnel conducted natural attenuation modeling of dissolved phase contamination at a pipeline release site near Grand Rapids, MN (Stemwedel Residence) as part of a third party review of site remediation. Geologists on staff have experience completing groundwater flow modeling with MODFLOW and contaminant transport modeling with MT3D. ET conducted review of hydrogeology and potential well yield at a commercial/industrial site in Parkland, WI. During the Marble City Garage leaksite investigation, the investigation included sonic drilling to 70 feet within a boulder till unit, and included evaluation of vertical leaching of contaminants using VLEACH software to establish the risk to the underlying aquifer within the City's wellhead protection area (WPA). ET personnel have contributed to contaminant fate and transport evaluation at LUST sites in Wisconsin, and have conducted groundwater modeling as part of permitting of a landfill in northern Illinois.



Capture Zone Analysis.
Analysis of capture zones on remedial systems is key to evaluating pilot test data, placement of extraction wells and extraction system design. ET personnel have utilized capture zone analysis for traditional groundwater extraction systems as well as for multiphase extraction (MPE) systems. ET geologists have experience conducting capture zone analysis with MODPATH, including evaluation of remediation system capture zones at multiple LUST remediation system sites in Wisconsin and a hexavalent chromium recovery system in Texas. Capture zone analysis calculations were conducted following MPE pilot testing at a chlorinated solvent impacted site in Bagley, MN.

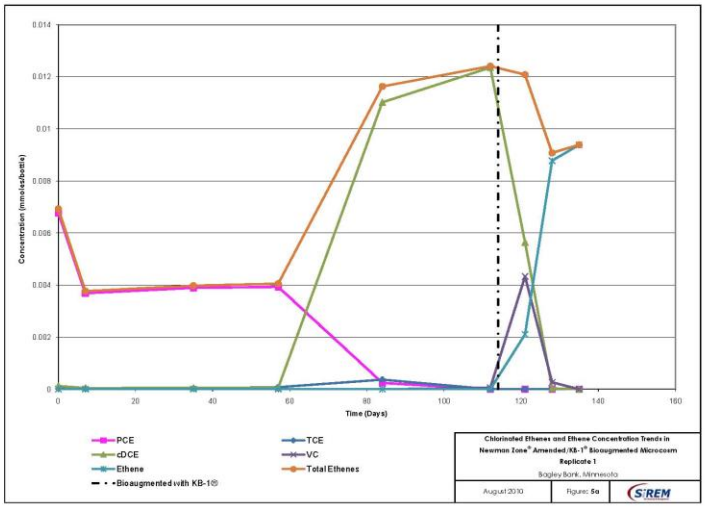


Perform Aquifer Pump Tests.
Aquifer pump tests can provide critical data regarding hydraulic conductivity, well yield and other hydrogeologic parameters. Methods to estimate hydraulic conductivity can include grain size analysis, slug testing and aquifer pump tests. Each of these methods, can provide hydraulic conductivity information over a progressively larger zone of the aquifer. For most leaksites, hydraulic conductivity data provided by grain size analysis or slug testing is sufficient and more cost effective. However, aquifer pump tests can provide invaluable data for larger scale remediation sites, groundwater extraction system sites and sites requiring fate and transport modeling. ET personnel have conducted aquifer pump test at multiple leaksites in the Midwest, including multiple day pump tests in unconfined aquifers as part of pilot testing at the Rosga Well Drilling leaksite (Hinckley, MN), the First National Bank of Bagley chlorinated solvent site (Bagley, MN) along with multiple sites in unconfined and confined aquifers in Wisconsin. ET owns multiple pressure transducers and a data logger for automated collection of groundwater elevation data at observation wells during pump testing, and are experienced using multiple methods of data analysis (e.g. Theis, Cooper-Jacob methods).

Prepare Engineering Evaluation Cost Analysis (EECA).
Engineering Evaluation/Cost Analysis is a framework for evaluating and selecting alternative technologies for a given task, typically remediation. An EECA can include focused investigation, pilot testing and risk assessment data, but focuses on the remedial action objective and the effectiveness, implementability and cost of a given remedial alternatives. The EECA presents the analysis of the alternatives and recommends a remedial action alternative. ET prepared an alternative analysis as part of a Focused Feasibility Study and Pilot Test Work Plan for the First National Bank of Bagley remediation site. Alternatives considered in the report included multiple types of remedial systems (SVE, MPE, etc.), enhanced bioremediation and natural attenuation, with the chosen alternative being MPE followed by EBR injection.

Oversee bench-scale lab treatability studies and pilot-tests/field demos.

Bench-scale lab treatability studies are conducted to assess remediation techniques on a small scale prior to site remediation. By performing these bench tests prior to implementing a full-scale remediation project, ET ensures the technology works and can be customized to the site.



2% EnviroBlend	5 mg/l	--	--	--	0.77	<0.05	--	--	--	--	--	
4% EnviroBlend	5 mg/l	--	--	--	<0.05	0.86	--	--	--	--	--	
pH Effects												
Initial pH	12.5	9.7	10.8	7.9	7.7	7.6	7.1	--	--	--	--	
3% Hydrated Lime	12.5	12.38	12.39	12.47	12.36	12.21	--	--	--	--	--	
6% Hydrated Lime	12.5	12.38	12.33	12.42	12.42	12.26	--	--	--	--	--	
9% Hydrated Lime	12.5	12.38	12.27	12.18	12.45	12.36	--	--	--	--	--	
2-4% EnviroMag	Ranged from 8.70 - 9.42							--	--	--	--	
2-4% EnviroBlend	Ranged from 8.10 - 8.66							--	--	--	--	

--	Not analyzed
58.6	Exceeds regulatory threshhold
*	Soil samples were 2.5 gallon volumes that were shaken and tumbled, but not sieved or further homogenized.
**	XRF screening was conducted in "as is" condition using a moderatly homogenized sample in a ziplock bag.

At the former Zenith Spring/Canal Park Brewing brownfield site (Duluth, MN), ET personnel conducted a bench-scale treatability study for the stabilization of soils with hazardous concentrations of lead and a soils screening bench scale test to correlate XRF / UVA screening values to laboratory sample analysis.

ET conducted the first bench-scale study to determine which lead stabilization powder blends would work best for the site conditions. The bench-scale results compared the ability of the two blends to:

- Stabilize the lead in soil,
- Determine the application ratio of media (i.e. 2% or 4%) necessary to complete the stabilization process, and
- Maintain a neutral pH so the new soil mixture would not fail TCLP hazardous waste limits.

The second bench scale test ET conducted for this site was to evaluate the accuracy of soil screening equipment relative to laboratory derived results. By correlating the screening data with laboratory analysis, more accurate on-site field decisions could occur during soil segregation in the excavation phase of the project. ET collected split samples to compared UVA screening equipment to laboratory analysis for PAH contaminated soils and XRF screening data to laboratory analysis for lead and arsenic contaminated soils.

ET personnel oversaw the bench-scale treatability study of enhanced bioremediation of chlorinated solvent impacts at the First National Bank of Bagley site. Bench-scale testing of saturated soils and groundwater was conducted at SiREM labs (Geulph, Ontario) where electron donors (lactate, emulsified vegetable oil) were evaluated for use in reductive dechlorination. ET implemented enhanced bioremediation injections based on results of the bench-scale test. ET has also conducted pilot testing of MPE systems at the Rosga Well Drilling leaksite (Hinckley, MN) and the First National Bank of Bagley site (Bagley, MN).

Oversee equipment start-up and work out problems with Contractor/Vendor
ET has six staff members who have technical/construction background and have vast experience with regards to remedial systems, vapor intrusion, water treatment and filtration and other construction related environmental tasks. As part of our MPCA Limited Emergency Response contract we are responsible for setup of these systems and working with other contractors to oversee and assist with various construction related tasks.

Oversight of Contractor Startup of Equipment Project Example

ET conducted a crawlspace ambient vapor sampling at the subject site. The sampling was performed at the request of a Lending Institution to facilitate the transfer of the property. The laboratory results from TO-15 volatile organic compound (VOC) analysis indicated that the sampling exceeded residential intrusion screening values (R-ISVs).

Based on the results of the crawlspace sampling, the property owners contracted with a certified vapor mitigation company to install a vapor mitigation system at the site to reduce contaminant concentrations to below residential standards. ET oversaw and assisted a Subcontractor install a sub-membrane depressurization (SMD) system at the site. The process included digging suction pits and installing PVC extraction piping and polyethylene sheeting over the earthen floor of the crawlspace. A blower was attached to the extraction piping and vented above the structure roof line.

After the installation of the system, two indoor post mitigation ambient air vapor samples and one outdoor background air sample were collected by an ET sampling technician. Samples were collected using Summa canisters pre-fitted by Pace Laboratories with 24-hour regulators. After approximately 24 hours, the technician returned to the site to record final pressure readings, close the canister valves and recover the canisters. The canisters were sent via courier to Pace Laboratories in Minneapolis under chain of custody for TO-15 VOC analysis.

The vapor sampling results were below R-ISVs. A project summary report (PSR) documenting the SMD system installation, pressure field extension readings, system operation and maintenance

guidance and the laboratory report was provided to the MPCA and regulatory site closure was obtained.

Prepare and Determine if Stormwater Pollution Prevention Plan (SWPPP) is being followed and make recommendations if revisions are needed during the life of the construction project
ET is very familiar with Stormwater Pollution Prevention Plans (SWPPP) because of our Brownfields redevelopment, emergency response and stream restoration construction projects typically require a plan. Due to this need, ET has a certified Construction SWPPP Designer and Site Manager on staff. Our certified professional designs plans, monitor sites and installs erosion control silt fencing. The construction SWPPP requirement regulates site that 1 acre or greater of soil. ET also has equipment to dig in silt fencing.

SWPPP Design, permitting, monitoring and erosion control fencing Project Example

ET performed the restoration of 2,200 linear feet of eroding stream bank. This project disturbed greater than 1 acre of soil. To avoid construction runoff from the stream bank, ET erected silt fencing and other best management practices (BMPs) to minimize the discharge of silt from the sloping bank. BMPs were checked every seven days and after each rainfall. The DNR also came out and inspected our BMPs as part of their project oversight.

Install stainless steel soil gas sampling ports using an electric drill to bore through floor slabs

ET routinely installs temporary and permanent soil gas vapor ports in slabs. ET has been installing these ports for Phase II property transactions and limited site investigations. In some cases, ET

collects both sub-slab air samples and ambient air sample for comparison. The sub-slab soil vapor points will be drilled through the concrete floor and samples will be collected using 1-liter or 6-liter Summa canisters fitted with 200 ml/minute regulators. If crawlspace ambient vapor is required, the sampling will involve sealing all significant wall penetrations between the finished and unfinished portions of the basement with polyethylene sheeting. After sealing, one penetration will be opened to place the sample collection canister in the crawl space and the valve will be opened before resealing the penetration. This sample will be collected using a 1-liter or 6-liter Summa canister fitted with a 24-hour regulator. ET will visit the site the following day to recover the crawlspace ambient vapor sample. Vapor samples are submitted under chain of custody procedures to a certified Laboratory and analyzed for TO-15 analysis.

Phase I / Phase II / Installation of Vapor Point for Property Transaction Project Example

Environmental Troubleshooters, Inc. (ET) conducted a Phase I and II Environmental Site Assessments (ESAs) at the subject site. The Phase I ESA identified historic on-site printing operations as a recognized environmental condition (REC) and nearby auto sales and repair listings as an off-site risk.

Based on this REC, ET proposed a Phase II ESA including three push-probe soil borings with analysis of soil samples for diesel range organics (DRO), volatile organic compounds (VOCs), Resource Conservation and Recovery Act (RCRA) metals and polynuclear aromatic hydrocarbons (PAHs). Laboratory results reported detectable contaminant concentrations, including DRO above 100 mg/kg in two borings, and lead and PAHs above the Minnesota Pollution Control Agency (MPCA) default Commercial Soil Reference Values (C-SRVs) in one boring.

On January 17, 2017, the MPCA Brownfields program issued a No Association Determination (NAD) for the subject site. In addition to the standard NAD boilerplate language, this NAD requested the performance of sub-slab soil vapor testing below the restaurant to confirm that it is safe for occupancy. The request also included submittal of a work plan for MPCA review prior to implementation.

The structure's basement consists of a 600 square foot finished basement connected to a 480 square foot unfinished crawlspace (for a total of 1080 square feet). Based on the 1,080 square footage, three vapor samples were collected in accordance with Appendix C of the MPCA Best Management Practices for Vapor Investigation and Building Mitigation Decisions (October 2016). The work plan was submitted for the collection of three vapor samples and approved by the MPCA.

ET collected two sub-slab vapor samples in the finished basement and one ambient sample in the crawlspace. The two sub-slab soil vapor points were collected by drilling through the concrete floor. Air samples were collected by using 1-liter or 6-liter Summa canisters fitted with 200 ml/minute regulators. The crawlspace ambient vapor sampling involved sealing all significant wall penetrations between the finished and unfinished portions of the basement with polyethylene sheeting. After sealing, one penetration was opened to place the sample collection canister in the crawl space and the valve will be opened before resealing the penetration. This sample was collected using a 1-liter or 6-liter Summa canister fitted with a 24-hour regulator. ET visited the site the following day to recover the crawlspace ambient vapor sample.

The three vapor samples were submitted under chain of custody procedures to Pace Laboratories in Minneapolis for TO-15 analysis. Upon receipt of the laboratory report, ET prepared an addendum to the Phase II ESA report documenting the procedures and results of the testing. The testing results satisfied the MPCA NAD vapor requirements.

Collect and manage field and laboratory data for electronic submittal in a format specified by MPCA

ET collects field data either in analog or digital form, and has capabilities of direct field entry via lap top or tablet. All investigation, monitoring, CAD and other reports are submitted to the MPCA in electronic format, typically as a .pdf. ET reduces report size where appropriate. If report size exceeds that which is deliverable via email, an ftp site is utilized, or other delivery means are employed.

For remedial investigations, monitoring data is submitted using electronic data deliverables (EDDs), in order for submittal to the EQuIS. ET typically subcontracts laboratory services to Pace Analytical, a laboratory familiar with direct EDD submittal to the MPCA using Lab MN. ET has capability of utilizing the MPCA chain of custody for these projects.

7.B.5 Example Scenario: PRP Scenario 1 and Cost Proposal

Attached is ET's methodology, response and costs to address the MPCA's proposed project scenario.

7.B.5.1 Example Workplan

The Example Workplan is provided in Section 3 - Attachment A

7.B.5.2 Example Scenario Spreadsheet

The Example Scenario Spreadsheet is provided in Section 3 - Attachment B

Section 8 – Proposal Instructions

8.B.1 Sample Contract

The Sample Contract is provided in Section 3 - Attachment C. ET has no issue with any of the Sample Contract requirements, language or terms and conditions.

8.B.2 Affidavit of Non-collusion

The Affidavit of Non-collusion has been signed and is provided in Section 3 - Attachment D.

8.B.3 Affirmative Action Certification of Compliance

The Affirmative Action Certification of Compliance has been signed and is provided in Section 3 - Attachment E.

8.B.4 Certification Regarding Lobbying

The Certification Regarding Lobbying has been signed and is provided in Section 3 - Attachment F.

8.B.5 Equal Pay Certificate

The Equal Pay Certificate has been signed and is provided in Section 3 - Attachment G. The Equal Pay provision is applicable to firms with over forty employees. Since ET does not have more than 40 full time employees we are exempt from this requirement.

8.B.6 Resident Vendor Form

The Resident Vendor Form is signed and provided in Section 3 - Attachment H.

8.B.7 Veteran – Owned Small Business Preference

The Veteran's Preference Form has been provided in Section 3 - Attachment I. ET is not a Veteran Owned Company so we would not qualify for any preference, but provided the form as requested.

Section 10 – General Requirements

10.B.1 Affidavit of Noncollusion

The Affidavit of Non-collusion has been signed and is provided in Section 3 - Attachment D.

10.B.2 Conflicts of Interest

ET does not have any conflicts of interest in performing work on this project. ET staff is also not aware of relationships or relatives that are working for the State of Minnesota that could create a Conflict of Interest.

10.B.3 Proposal Contents
ET certifies that this proposal is true, correct and reliable for the purposes of evaluation for a potential award.

10.B.4 Disposition of Responses
ET has no trade secrets submitted in this proposal. ET submitted a statement to this affect in Section 2.

10.B.5 Contingency Fee Prohibited
No person connected with ET has lobby for this contract and we are in compliance with Minnesota Statute Section 10A.06

10.B.6 Sample Contract
Environmental Troubleshooters, Inc. has read the State of Minnesota Master Contract for the Petroleum Only Professional and Technical Services and agrees to the requirements attached below in the Sample Contract.

10.B.7 Reimbursement
ET understands the Reimbursement requirements for this contract and will comply with the "Commissioners Plan".

10.B.8 Organizational Conflicts of Interest
ET does not have any Organizational Conflict of Interest that would preclude us from being awarded this contract.

10.B.9 Preference to Targeted Group and Economically Disadvantaged Business and Individuals
ET is classified as a Small Business. Our organization does not have an Disadvantage Business Status other than a Small Business.

10.B.10 Veteran-Owned Small Business Preference
ET is not a veteran owned small business and does not qualify for this preference.

10.B.11 Foreign Outsource of Work Prohibited
ET will perform all services, storage and processing of information in the United States. ET understands that this provision also applies to subcontractors of all tiers.

10.B.12 Work Force Certification
ET has completed and signed the Affirmative Action Page. This form is provided in Attachment E.

10.B.13 Equal Pay Certification
ET has less than 40 fulltime employees and is exempt from this requirement.

10.B.14 Certification Regarding Lobbying
The Certification of Lobbying form is completed and provided in Section 3, Attachment F.

10.B.15 Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion

ET is not debarment, suspension, ineligibility, and voluntary exclusion from performing work and certifies that the company is in compliance with executive order 12549.

10.B.16 Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion – Lower Tier Covered Transactions

ET will comply with the nine points of this section and not use lower tier participates who are debarment, suspension, ineligibility, and voluntary exclusion from performing work. We will also require lower tier participates to certify that their company is in compliance with executive order 12549.

10.B.17 Insurance

The MPCA currently has a copy of ET's insurance certificate on file for our MPCA Emergency Response Contract. ET will provide the MPCA with a copy of the required insurance within 24-hours after receiving notice that we have been awarded this contract. Our insurance will comply with the Sample Contract provide in the RFP.

10.B.18 E-Verify Certification

ET will comply with the E-Verify requirements for its employees and all subcontractors as required for the project**.**

10.B.19 Certificate of Nondiscrimination

ET will comply with the non-discrimination requirements set forth in Minn. Stat 16C.075.