

Tripp Fischer, P.G.

Vice President, Principal Hydrogeologist



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Areas of Specialization

- Light Non-Aqueous Phase Liquid (LNAPL) assessment and remediation
- Conceptual site model development
- Corrective action decision making
- Risk Based Corrective Action
- Project Management
- Regulatory compliance
- Regulatory policy
- Brownfield redevelopment
- Environmental site assessments
- Contaminant fate and transport modeling

Qualifications

- Environmental Professional since 1995
- Over ten years (1998-2009) of regulatory experience including environmental regulation and policy development
- Chair and Team Leader for multiple Industry Standard Organization (ISO) projects such as ASTM and ITRC
- Registered Professional Geologist in PA and DE
- Instructor for continuing higher education courses and professional courses (LNAPL, Geographic Information Systems, survey grade Global Positioning Systems)

Overview of Project Experience

- Managed, and successfully closed, over 200 projects through risk-based corrective action programs as an environmental regulator and consultant.
- Direct project experience on RCRA, CERCLA, AST, UST, VCP, and Brownfield sites as a regulator *and* consultant.

Education

M.E., Engineering Science
(Environmental)
Pennsylvania State University, 2002

B.S., Geology
West Chester University of
Pennsylvania, 1996

Yellowstone Bighorn Research
Association Geologic Field Course
University of Pennsylvania, 1995

Registration/Certification

Delaware Registered Professional
Geologist S4-0001149

Pennsylvania Registered
Professional Geologist PG004915

OSHA certified Hazardous
Waste Operations and
Emergency Response
(HAZWOPER per 29 CFR 1910.120)

Affiliations

American Society for Testing and
Materials (ASTM) - Chair of the
E50.04 Subcommittee on
Environmental Corrective
Action

Interstate Technology and
Regulatory Council (ITRC) -
Former LNAPL Team Leader



Overview of Project Experience (continued)

- Project manager for multiple indoor air, sub-slab vapor, and soil-gas vapor studies including risk analyses and risk modeling.
- Experience in environmental decommissioning and demolition.
- Performed LNAPL mobility analyses through transmissivity testing, API LDRM modeling, recoverability analysis and decline curve analyses.
- Utilize innovative and aggressive site characterization tools such as laser induced fluorescence, membrane interface probes, conductivity probes, and ground penetrating radar.
- Expertise with Phase I and Phase II environmental assessments and property transaction negotiations.
- Lead and/or developed numerous industry standards related to LNAPL assessment, LNAPL remediation, petroleum vapor intrusion, and environmental assessment.
- Litigation support.

Key Environmental Projects

- **LNAPL Assessment and Management Industrial Site, South Philadelphia (2015)**
Performed LNAPL assessment including fingerprinting, age dating, mobility analysis and typing to demonstrate historic conditions, thus, relieving client of responsibility for cleanup.
- **LNAPL recovery and migration analysis, Sussex Co. Delaware (2010-Current)**
Part of an internal project team responsible for optimizing and operating LNAPL hydraulic recovery methods at a power plant in southern Delaware. Performed LNAPL Transmissivity analyses, estimated recoverability rates, coordinated numerical MODFLOW modeling to estimate pumping effects on groundwater.
- **PCB trackback study for New Castle County, Delaware (2012-current)**
Collaborated with colleague Dr. Nicholas Santella to identify sources of PCBs to large, complex, sanitary sewer network.
- **Former manufacturing site vapor intrusion assessment (2012)**
Performed soil gas sampling, indoor air sampling, and vapor intrusion risk assessments using J&E model at a former automobile manufacturing plant, Newark, DE.
- **Large scale SVE/AS system design, installation, and operation (2010-2012)**
Designed and installed a 43 point soil vapor extraction (SVE) and air sparging (AS) system at a former automobile manufacturing plant in Newark, DE.
- **Environmental decommissioning and demolition of manufacturing plant (2009-current)**
Managed the decommissioning and demolition of a 35,000 square foot manufacturing plant containing boilers, pipes, asbestos, residual oil, and household hazardous wastes. Also included in this project was the disassembly of historic structures and the recycling of 400-700 tons of material (Baltimore, MD).

Key Environmental Projects (continued)

- **LNAPL remediation of a former manufacturing plant (2009-present)**
Analyzed fingerprint analyses performed on multiple petroleum based (hydraulic oil and heating oil) products to determine source locations of petroleum observed at natural seeps along a pristine waterway. Determined source and implemented remedial strategy. Baltimore, MD.
- **Evaluation of the Hazard Ranking System (HRS) scoring for a proposed National Priorities Listing (NPL) (2012)**
Evaluated spatial data used in scoring a proposed NPL site. Detected errors in background computations, and submitted comments to the USEPA declaring the listing as inaccurate.
- **Review of the groundwater monitoring network, flow, and recovery data at a New Jersey Superfund Site (2011-2012)**
Developed spatial contaminant contouring of multiple aquifers within the 34-acre project. Optimized sampling strategies to evaluate effectiveness of pump and treat remediation system. Reported to USEPA.
- **Closed a RCRA 2020 initiative site in Newark, DE (2008-2012)**
Performed site assessment activities including analysis of groundwater, soil, and soil gas. Developed and implemented corrective action culminating with an Environmental Covenant with Activity and Use limitations (Newark, DE).
- **Metals analysis at a municipal golf course (2011)**
Performed data analysis for metals in soils at a golf course planned for residential use. Analysis involved determining which metals were likely native to the soils versus which may be due to historic applications of chemicals.
- **Provided NAPL expertise during the redevelopment of the Wilmington Riverfront (2004-2008)**
Served as the regulatory expert for the redevelopment projects along the Wilmington Riverfront which were impacted with petroleum based NAPL. Self performed environmental assessments and reviewed area wide ground water models. Participated in the design of engineering controls for buildings.
- **Peer review of an analytical fate and transport model for a large dissolved phase petroleum plume (2007)**
Retail outlet in Dover, DE required analysis of a Tier II risk based corrective action program model to evaluate the risk of dissolved phase MtBE and benzene.
- **Cleanup of four large Aboveground Storage Tanks under the Oil Pollution Act (2004-2006)**
Responsible for coordinating the cleanup of four 10,000-gallon aboveground storage tanks which leaked and caused a direct impact to navigable waters. Served as the project lead for a state-lead site and coordinated clean up with oversight by the United States Coast Guard, USEPA, and state regulators.

Key Special Projects

- Developer and Instructor of the ASTM Training Course for LNAPL Transmissivity
- Team Leader and co-author of the Interstate Technology and Regulatory Council (ITRC) document *Evaluating LNAPL Remedial Technologies for Achieving Project Goals*. (2009)
- Co-author of the ITRC document; *Evaluating Natural Source Zone Depletion at Sites with LNAPL*. (2009)
- Provided International Support on Light Non-Aqueous Phase Liquid (LNAPL) issues to the Department of Environmental Health Services of the Bahamas. (2006)



Key Special Projects (continued)

- Member of a technical advisory committee (TAC) in the state of Delaware for reviewing land development applications under the Land Use Planning Act (LUPA). (1999-2004)
- Co-developed a Risk ranking tool with the EPA to prioritize Underground Storage Tanks Inspections. The model used a Visual Basic Application to calculate a Risk Ranking for each UST site. The rankings were subsequently plotted in GIS for prioritizing UST inspections (2006).
- Member of a multi-agency award winning team that was involved with redeveloping the Wilmington, DE waterfront. Participated in, and commented on, several years' worth of hydrogeologic data including a large numerical modeling effort to assess the effects of historic petroleum and chemical releases on the Christina River.
- Member of the Delaware Geographic Data Committee (DGDC) and actively participated in GPS/GIS training for the Education subcommittee. (2007-2009)
- Instructor for Environmental Use of Global Positioning Systems (GPS) and Geographic Information Systems (GIS) at the Environmental Training Center - Delaware Technical Community College (2005-2009).
- Participated in the Legislative Compendiums. Utilized Geographic Information System to develop spatial database queries on environmental data to supply to State Representatives in Delaware.
- GIS for Brownfields Toolkit. Contributed a re-use presentation to the GIS Brownfields Toolkit published by ESRI and the International City/County Management Association (ICMIA). Released at the 2006 Brownfields Conference in Boston, MA.

Peer Reviewed Publications

ITRC. 2009. *Evaluating Source Zone Depletion at Sites with LNAPL*. LNAPL-1. www.itrcweb.org/Documents/LNAPL-1.pdf.

ITRC (Interstate Technology & Regulatory Council). 2009. *Evaluating LNAPL Remedial Technologies for Achieving Project Goals*. LNAPL-2. Washington, D.C: Interstate Technology & Regulatory Council, LNAPLs Team. www.itrcweb.org

ASTM International. 2006. ASTM E2531 - 06e1 *Standard Guide for Development of Conceptual Site Models and Remediation Strategies for Light Non-aqueous Phase Liquids Released to the Subsurface*. West Conshohocken, PA.

Delaware's Experience with tertiary butyl alcohol. 2004. *Underground Tank Technology Update*. Volume 18, No. 1. January- February.

Fischer, W.P. 2003. *An Evaluation of tertiary-Butyl Alcohol for the Development of a Drinking Water Action Level in Delaware*. *Groundwater Monitoring and Remediation*. National Ground Water Association. Volume 23. No. 2. Spring 2003.

W.B. Barnes, D.C. Baum, R. Laljani, W. Fischer, and D. Ochs. *Integrated Approach to Remediate a Large MTBE Groundwater Plume*. Third International Conference on Remediation of Chlorinated and Recalcitrant Compounds. Battelle 2002.



Peer Reviewed Publications (continued)

Fischer, W.P. 2001. *An Evaluation of tertiary-Butyl Alcohol for the Development of a Drinking Water Action Level in Delaware*. Master of Engineering Final Paper for the Research Institute. The Pennsylvania State University. Fall 2001.

Fischer, W.P., and Ellis, P.M. 2001. *An Application of Delaware's Risk-Based Corrective Action Program: To a Site with MTBE Contamination*. Soil and Sediment Contamination: An International Journal. 10 (4) 405-421.

Other Publications

Fischer, W.P. (2008) *Changes to the Corrective Action Process*. DNREC-TMB Think Tank Cover Story.

Fischer, W.P. (2008) *New Requirements for Sites with LNAPL*. DNREC-TMB Think Tank.

Herlihy, P and Fischer, W (2006), *Optimization of Full-Scale Chemical Oxidation Systems to Improve Performance*. The Annual International Conference on Soils, Sediments and Water, University of Massachusetts, Amherst. October 19, 2006.

Fischer, W.P (2004) *ASTM to Tackle Risk-Based Approach for Evaluating Non-Aqueous Phase Liquids*. Think Tank. A publication by the Delaware DNREC UST Branch. Fall – Spring 2004 issue.

Fischer, W.P. (2003) *Aggressive Remedial Technology Benefits Town of Kenton*. Think Tank. A publication by the Delaware DNREC Tank Management Branch. Spring 2003 issue.

Fischer, W.P. (2001) *Underground Injection Control (UIC) Permit Procedure*. Think Tank. A publication by the Delaware DNREC UST Branch. Fall - Winter 2001 issue.

Fischer, W.P. (2000) *MtBE: Time is Money*. Think Tank. A publication by the Delaware DNREC UST Branch. Winter 2000-2001 issue.

Presentations

10/23/14 – ***Avoiding and Handling Environmental Incidents*** – Knovel Webinar Series.

10/21/14 – ***The Evolution of LNAPL Risk Based Decision Making*** - AEHS Soils, Sediments, Water and Energy Conference, Amherst, MA.

10/21/14 – ***Estimation of LNAPL Transmissivity Workshop*** – AEHS Soils, Sediments, Water and Energy Conference, Amherst, MA.

6/17/14 – ***Preventing Hazardous Catastrophes in a Changing World*** – Cozen O'Connor Seminar – Energy, Environmental, & Public Utility Group, Philadelphia, PA.

4/10/14 – ***Workshop on Estimating LNAPL Transmissivity*** – ASTM International Committee Week, Toronto, Ontario.

4/9/14 – ***International use of E50 Environmental Standards***- ASTM International Committee Week, Toronto, Ontario.



Presentations (continued)

- 3/25/14 – **Remedial Strategies for a Structurally Complex Industrial Facility** – Geologic Society of America Conference, Lancaster, PA.
- 9/29/11 - **LNAPL Transmissivity** - USEPA Region III Technical Workshop, Rehoboth Beach, DE.
- 9/10/09 - **New Tools for Managing Sites with LNAPL** - USEPA Region III Technical Conference, Elkins, WV
- 10/2/08 – **A New Approach to Managing Sites with LNAPL** - Groundwater and Environmental Services Technologies & Trends Conference, Sept. 30th-Oct. 2nd, Marriott Waterfront, Annapolis, MD
- 8/10/06 – **Inspection Ranking Tool**. ESRI International Conference, San Diego, CA. Presented a GIS based model that was created to prioritize Underground Storage Tank inspections based on risk.
- 3/21/06 – **Re-Development Pilot**. UST/LUST National Conference, Memphis, TN.
- 3/21/06 – **Risk Ranking Tool**. Presented a GIS based model that was created to prioritize Underground Storage Tank inspections based on risk. UST/LUST National Conference, Memphis, TN.
- 9/28/05 – **ASTM Standard Guide for LNAPL Conceptual Site Model Development and Remediation Decision-Making: A Summary**. GES Technologies and Trends Conference, Annapolis, MD.
- 9/28/05 – **Case Study: Aggressive remediation of a large dissolved-phase BTEX, MtBE and TBA plume**. GES Technologies and Trends Conference, Annapolis, MD.
- 5/24/05 – **Understanding NAPL**. EPA Region III Technical Conference. Rocky Gap, MD
- 11/7/04 – **What's new with LNAPL?** – Presentation delivered to EPA Region 3 technical conference in Rocky Gap Maryland on creating site conceptual models of LNAPL and designing remedial strategies from such models.
- 5/20/04 – **DNREC Light Non-Aqueous Phase Liquid Seminar** – Organized and presented a technical seminar for DNREC staff on the assessment, modeling and remediation of LNAPL.
- 10/10/03 – **5th Annual Statewide Staff Development Day – All Things GPS**. Instructed a eight hour course for the Delaware Center for Educational Technology Center in Smyrna, DE on using GPS and GIS
- 3/27/01 – **MtBE Impacts in the State of Delaware**. Presented before the USEPA for the Region 3 MtBE Workgroup. Philadelphia, PA. March 27-28.
- 3/21/01 – **Water Supply Replacements at MtBE Sites: Case Studies**. Presented at the 13th Annual UST/LUST National Conference. Albuquerque, NM. March 19-21, 2001.
- 3/7/01 – **Modeling in DERBCAP**. Presented at the DNREC 2001 Storage Tank Conference 2001 “A Tank Odyssey”. New Castle, DE.
- 10/19/00 – **Small State, Big Plume, Big Problem: MtBE in Delaware's Risk-Based Corrective Action Program**. Presented results of an extensive numerical groundwater/fate and transport model at the 17th Annual International Conference on Contaminated Soils, Sediments and Water. October 16-19, 2000. University of Massachusetts.
- 3/21/00 – **MtBE Numerical Modeling Case Study – Wyoming, DE**. Poster Session at the 12th Annual UST/LUST National Conference, Portland, Oregon. March 20-22, 2000.

Presentations (continued)

3/30/99- *Risk Based Corrective Action Program (DERBCAP) One-Day Risk-Assessment Workshop: Tier 2 Modeling.*
Presented at the DERBCAP Training Course in Newark, DE. March 30, 1999.

Special Honors and Responsibilities

- Award of Recognition for serving a three-year term on ASTM International's Award of Merit Selection Committee (2014-2016)
- Appointed to the 2014 ASTM Board of Directors Nominating Committee
- Member of the Environmental Engineering Curriculum Advisory Committee for the Delaware Technical and Community College (2012-2015)

Awards

- 2007 Recipient of a *National Achievement Award* from the USEPA Region III for exceeding cleanup goals and working on new Initiatives
- 2006 Recipient of the Delaware Department of Natural Resources and Environmental Control's DAWM *Outstanding Achiever Award*
- 1996 W.A. Tarr Award - Annual award presented by Sigma Gamma Epsilon for meritorious work in the Earth Sciences