

Education

Bachelors of Science: Geology,
Minor: Mathematics;
Indiana University, Bloomington
(2003)

Years of Experience

Total - 16

Hydrogeology, Inc – 3 months
(Contract employee since 2007)
ARCADIS – 10
AECOM (formally, Earth Tech) – 3
Earth Exploration – 3

Professional Registrations

Licensed Professional Geologist
Since 2008 – Indiana #2253

OSHA 8-Hour Site Supervisor

OSHA 40-Hour HAZWOPER
(Refresher completed in 2015)

DOT/ IATA Hazardous Materials
Transportation, 49 CFR 172.704
2014

FEMA- Project Officer (Ops. 1 and 2)
and Public Assistance Coordinator
Training

Professional Publications and
Abstracts

Society for Risk Analysis, 2013
Annual Meeting –
*Evaluation of a Simple Steady-State
Model: Estimating Resuspended
Particles in Indoor Air.*

Tai T. Hubbard, LPG

Senior Geologist

Mr. Hubbard has 16 years of experience on a variety of environmental and geotechnical projects, resulting in the management and oversight of over 5,000 feet of sonic drilling. Beginning his career as a drilling assistant for a geotechnical engineering firm, then becoming a licensed professional geologist, provides Mr. Hubbard with a diverse knowledge of drilling technique for both geotechnical and environmental drilling programs. Mr. Hubbard is well versed in the design, management, preparation, and execution of subsurface investigations in complex geologic settings, including the evaluation and characterization of karst geology. Over the past several years he has completed or been involved with numerous karst related projects involving karst delineation; including subsurface core analysis, downhole camera surveys, watershed evaluations, and surficial karst feature mapping. In addition, Mr. Hubbard regularly performs geologic and hydrogeologic modeling and studies on numerous remediation sites.

Project Experience

Indiana Department of Transportation – Karst Delineation

Interstate 69 Corridor Karst Delineation, Multiple Sites, Indiana.

Responsible for delineation and characterization of karst features prior to and during highway construction. Assisted with the design and implementation of dye trace events throughout the highway corridor, including the sampling and laboratory analysis of dye trace sample media. Primary scopes of services included karst feature identification, watershed delineation, and downhole camera surveys.

Confidential Utility and Energy Company – Geotechnical and Environmental Investigation

Confidential Utility Company, Conesville, Ohio

Lead field geologist, managing the installation of bedrock wells and unconsolidated wells regarding both environmental and geotechnical evaluations. Executed field work using hollow stem augers and air rotary drilling techniques. Responsible for bedrock core collection, field logging, identification of karst marker beds in complex geologic setting, utility screening, and health and safety management.

Former Rail Road Creosote Treatment Facility Investigation

Confidential Rail Road, Bloomington, Indiana

Project and task management assistance, including the oversight of rotasonic drilling programs over a 1 year investigation period. Designed and provided oversight for the installation of numerous extraction wells targeting subsurface karst features within a specific limestone

formation – both deep and shallow bedrock wells. Hazardous waste inspection, and disposal management regarding recovered creosote materials.

Confidential Utility and Energy Company – Investigation, Risk Assessment, and Compliance

Confidential Utility Company, Multiple Sites, Indiana

Project, task, and field management for environmental activities associated with historical and current coal ash management areas. Executed field inspection activities from land and water, regarding the evaluation and assessment of environmental risk to both groundwater and surface water receptors. Responsible for karst feature delineation, evaluation of risk mitigation alternatives, reporting, cost estimation, and coordination/oversight of additional field investigations.

RCRA Investigation, Former Automotive Manufacturing Facility

General Motors, Kokomo, Indiana

Provided task management assistance, technical oversight and hydrogeologic support for the investigative activities related to shallow and deep chlorinated solvent impacts within the surrounding aquifer. Conducted numerous rotasonic drilling events over a two year period to support the horizontal and vertical delineation of chlorinated impacts at the unconsolidated and bedrock interface. Responsible for oversight of rotasonic drilling program, core logging, design and installation of monitoring wells. Conducted packer testing and developed and evaluated geologic cross sections for the development of site conceptual model. Developed the written Standard Operating Procedure for soil vapor sampling and installed many of the soil vapor monitoring points currently utilized in the ongoing investigation.

Allison Transmission – Remedial Facility Investigation

Indianapolis, Indiana

Over two years of roto-sonic drilling, completed on numerous site investigations at the site. Responsible for oversight of rotasonic drilling programs using both sonic and mini-sonic drill rigs, core logging, design and installation of monitoring wells. Multiple events and multiple drilling company's used throughout the years of investigation at the site. Developed and evaluated geologic cross sections continually updating the site conceptual model.

Rubber Manufacturing Company – Investigation and Remedial Evaluation

Confidential Rubber Manufacturing Company, Princeton, Indiana

Project, task, and field management for environmental and geotechnical activities associated with the initial site characterization, conceptual model, and remedial technology evaluation. Activities include in-situ geotechnical testing and the collection of unconsolidated soils. Responsible for the design and coordination of subsurface investigations to ultimately define the remedial area of primarily chlorinated solvents (PCE, TCE, DCE, and vinyl chloride) found in both soil and groundwater. Regular coordination and implementation of low-flow sampling techniques for

groundwater collection on a quarterly basis and provides oversight of drill rigs and stratigraphic logging. In-situ soil stabilization is based on the geotechnical and environmental evaluation completed to date.

Paint and Coatings Company – Investigation, Remediation, Compliance

Confidential Paint and Varnish Company, Evansville, Indiana

Project, task, and field management for environmental activities associated with historical and current impacts related to the manufacturing of paint and varnishes. Typical activities included trouble shooting of existing remediation systems, compliance with existing agreed order, subsurface and groundwater investigations and monitoring, oversight of drill rigs, soil sampling and stratigraphic logging. Authored work plans and developed budgets for multiple investigations for a variety of contaminants. Investigative activities included the total site characterization of a comingled plume of both LNAPL (1,2,4-trimethylbenzene) and DNAPL (perchloroethene - PCE), and development of the conceptual site model. Personally designed and installed the extraction well network associated with the final remedial implementation consisting of a 52 extraction well, multi-phase extraction system.

Pipeline Release – Investigation, Remediation, Mitigation of Risk

Confidential Pipeline Transmission Company, Cedar Grove, Indiana

Project, task, and field management for environmental activities associated with a 30-inch diesel pipeline release. Activities included the design and installation of residential water filtration systems to mitigate risk to human health, advanced subsurface delineation of hydrocarbons using a Cone Penetration Testing (CPT) rig equipped with a Rapid Optical Screening Tool (ROST) – a form of Laser Induced Fluorescence, Light Non-Aqueous Phase Liquid (LNAPL) baildown testing, hydrogeologic testing (slug tests, pump tests, etc.), monitoring well installation, quarterly groundwater sampling, monthly groundwater gauging data management, evaluation, and reporting. Data collected from the above activities supported an in depth LNAPL mobility study resulting in quantitative analysis and mathematical modeling illustrating that the LNAPL was effectively immobile. Facilitated property access agreements and supported client legal council with environmental interpretation, state regulations, and residential communications.

Redevelopment of Former Hydrocarbon Bulk Storage Facility

Confidential Petroleum Company, Indianapolis, Indiana

Performed task and field management for investigation activities associated with the redevelopment of a former bulk storage plant back to a public baseball park. Activities included coordination of field events, sampling, clearing, reporting, and rigorous health and safety review and implementation related to the both hydrocarbon and lead impacted soil and groundwater. Remedial activities to included removal of lead impacted soils, groundwater investigation, and free product abatement. Received a risk based non-default closure with the final approval by Indiana Department of Environmental Management (IDEM) and the U.S. EPA (who provided a limited oversight role due to the historical sensitivity of the project).

Environmental Site Assessments (ESAs)

Multiple Clients, Indiana

Completed numerous Phase I and II ESAs for the purpose of facility and/or property transactions in an effort to reduce the environmental liabilities for the client. In general the purpose of such an assessment is to perform the necessary due diligence to identify possible environmental concerns that may affect the overall environmental condition of that property.

Krempf Lumber Company (United States Navy Small Business MACC Holder)

Munitions Constituents, Construction Worker Safety – Sampling, Evaluation, Limited Risk Assessment

Naval Surface Warfare Center, Crane Detachment, Crane, Indiana

Developed new client and was awarded a project for the determination of residual contamination from explosives constituents as related to construction work safety. Developed contract, scope of work, and technical team to facilitate an expedited new client request. Authored field sampling work plan, coordinated staff, determined all safety protocols necessary to perform work within a explosives manufacturing facility. Managed field work execution, data review and evaluation, subcontractor budgets, and overall project financials. Co-authored abstract and presentation for the 2013 Society of Risk Analysis Annual Meeting.

Lee & Ryan (U.S. EPA) – Phase 1 Lincoln Park/ Milwaukee River Dredging Project

Milwaukee Estuary Area of Concern, Milwaukee, Wisconsin

Developed new client and was awarded a third party oversight and site management role during the dredging of river sediments contaminated with primarily PCBs (portions TSCA waste) and asbestos. Developed teaming agreement, executed contract, and detailed scope of work regarding the third party health and safety oversight; technical assistance, and as built drawings for the project. Coordinated staff, managed financial budgets, and maintained employee compliance throughout project duration.

Landfill Sighting Investigation

Confidential Client, Veedersburg, Indiana

Task and field management for geotechnical investigation activities associated with completing the Indiana State landfill application. Activities included interpretation of state landfill regulations, monitoring well installation, groundwater sampling, soil sampling, and data evaluation.

Emergency Derailment Response

Confidential Rail Road, Multiple Locations

Indianapolis, Indiana; Painesville, Ohio; Brooks, Kentucky

Supported environmental activities conducted during the emergency response portion and ongoing environmental cleanup during each derailment. Responsibilities included oversight of contractor excavation/construction activities, assisting clean-up strategy development and implementation and onsite management of field staff, provide support to client and onsite hazardous materials responders, communications and reporting with client and regulatory agencies, collection of soil and/or water samples, facilitated transition from the emergency response phase to a long-term site investigation/remediation phase.

Remedial Facility Investigation

General Motors Corporation, Indianapolis, Indiana

Task Manager for environmental activities associated with automotive parts manufacturing facilities. Activities have included Phase I and II environmental assessments, coordination of and oversight of field investigations, quality control, reporting, and technical support. Contaminants of concern have included chlorinated solvents, petroleum hydrocarbons, polychlorinated biphenyls (PCBs), and metals. Remedial technologies implemented at the facilities have included groundwater pump & treat, air sparging, soil vapor extraction, in-situ reductive zones, and monitored natural attenuation.

Manufactured Gas Plant Remediation

Vectren Corporation, Indiana Gas Company, Inc., New Albany, Indiana

Site Safety and remediation foreman, responsible for sample collection, data management, and client and regulator correspondence. Coordinated and implemented a comprehensive real-time and time-weighted average (TWA) ambient air monitoring program. Used portable GC, PID and personal data ram/aerosol meter for real-time monitoring. Collected TWA constituent-specific samples on a 24-hour basis using EPA methodologies for semi-volatile organics (TO-13) and volatile organics using Summa canisters (TO-14). Corresponded with laboratory and managed all environmental data. Wrote confirmation sampling report and remediation completion report. Client was impressed with performance, leading to 5 additional RFP's for different MGP sites throughout Indiana.

Natural Gas Pipe Line Pressure Testing/Water Quality Testing

Vectren Corporation, Indiana Gas Company, Inc., Crestwood, Kentucky

Project scientist responsible for setting up and operating mobile on-site water treatment system to control discharge concentrations of suspended solids and total iron released from a natural gas pipe line after pressure testing. Water quality was monitored on a real-time basis with a Hach DR 890 colorimeter and with analytical samples. Maintained and adjusted the system as needed for three consecutive days. Successfully filtered over 375,000 gallons of water, controlling the concentrations of total suspended solids and total iron in accordance with local DNR/EPA criteria.

Chemical Plant and Tar Pit Environmental Dredge Site

Michigan Department of Environmental Quality, Jennings, Michigan.

Professional Services Consultant (PSC) providing fulltime oversight for the duration of remediation activities for the dredging of lake bottom sediments. Developed waste manifests for all transported hazardous waste. Conducted weekly progress meetings and created daily progress reports. Performed turbidity monitoring and located, collected, and managed verification samples from specific coordinates within the dredge area using a "Ponar" dredge sampling device and GPS. Corresponded with laboratory and managed all environmental samples. Wrote construction summary report including sampling procedure/results, on-site ambient air monitoring summary, and turbidity monitoring summary. Successfully handled public relations, site security issues, and project documentation. The project was completed on time and under budget.

Public Assistance, Hurricane Katrina

Federal Emergency Management Agency (FEMA), Louisiana

Lead project officer for 8 individuals dedicated to rebuilding the Louisiana School System in Tangipahoa and St. Tammany Parishes. Met with school systems and determined the extent and nature of damage parish wide. Developed strategies and set up temporary campuses to continue education (and in some cases housing) for more than 2500 students, grades K through 12. Received government training about residential and commercial issues pertaining to floodplain management and the National Flood Insurance Program (NFIP). Developed over \$17 million in project worksheets and damage estimates. Trained 15 members of the FEMA Educational Facilities Team on the specifics of wise floodplain management and NFIP. Rebuilding continues.

Railyard Superfund Site

Confidential Railway Client, Elkhart, Indiana

Construction manager for the design-build of a groundwater containment pumping and treatment system and groundwater circulation well pilot system. Provided full time field oversight and management for the construction of a groundwater treatment plant capable of treating 600 gallons per minute of volatile organic compound impacted groundwater. Oversaw the installation and hydrostatic pressure testing of approximately 5000 feet of HDPE piping. Coordinated construction activities during rail yard operations at one of the largest hump yards in the Midwest, including a 300-foot jack and bore beneath three sets of active rails, installation of three 150-foot extraction wells, and more than 2000 feet of trenching and backfilling. Managed the submittal plans, product data, and testing results for the duration of the project. Oversaw contractor health and safety including a weekly health and safety meeting. Prepared daily work activity logs and weekly progress reports. Approved small change orders and maintained a photographic log documenting project features. Wrote final report summarizing construction activities and containing the record documents for the project. Project was completed on time and under budget.

Miller Springs Remediation Management, White Lake Dredging Superfund Site

Client Confidential, Montague, Michigan

Project geologist responsible for all environmental monitoring, sampling, and quality control. Coordinated resources for and implemented ambient air monitoring program consisting of time

weighted average (TWA) constituent-specific sampling on a 24-hour basis using EPA methodologies for PCBs (TO-4a) and PM10 particulates, and NIOSH PCM and TEM methodologies for asbestos. Deployed, operated, and maintained real-time turbidity monitoring system consisting of five buoys with sensors placed above and below thermocline. Utilized data logging and telemetry to operate system remotely. Turbidity data was collected at 10-minute intervals, managed and evaluated with data management software. Utilized Trimble backpack GPS unit for precise placement of buoys and to direct confirmation sampling using a "Ponar" dredge sampling device to verify that contaminant cleanup objectives were met. Coordinated collection of all confirmation, waste disposal, and quality control samples. Wrote final report summarizing remediation activities. Project was completed on time and under budget.

Wood Treatment VRP Site

Osmose-Casswood, Beardstown, Illinois

Project Geologist responsible for coordinating, implementing, and collecting data for step draw down testing on three extraction wells belonging to an existing remediation system. Using 4-inch submersible pumps, 25-gpm Mini-Troll pressure transducers, flow meters, and the necessary piping and attachments, initiated step draw down tests on each extraction well at three exact pumping rates. Using Win-Situ 4.0 and Grapher 5 software, collected the data and determined specific capacity for each extraction well. Conducted troubleshooting of existing pump and treat system working with the plant operator to identify and correct system inadequacies.

Public Assistance, Hurricane Relief

Federal Emergency Management Agency (FEMA), Florida

Lead project officer for Hernando County, Florida. Met with local municipalities and reviewed damages for all categories of both emergency and permanent work related to Hurricanes Charlie (FEMA-1539-DR-FL), Frances (FEMA-1545-DR-FL), and Jeanne (FEMA-1561-DR-FL). Verified all reported damages and assessed eligibility in accordance with FEMA eligibility criteria between September 2004 and February 2005. Damages ranged from infrastructure to debris removal. Developed project worksheets for state reimbursement totaling approximately \$3.8 million.

Soil Assessment and Arsenic Plume Evaluation

Monroe County Solid Waste Management District, Bloomington, Indiana

Project geologist responsible for the comprehensive geotechnical evaluation of on-site soils within the landfills borrow area. During these activities the municipality expanded our scope of work to include the installation of monitoring wells due to arsenic contamination found in existing monitoring wells. Logged soils, collected Shelby tube cores, determined the location (installed, developed, and sampled) six monitoring wells, and correlated the stratigraphy of the soil borings to determine soil quantities. Wrote the Soil Assessment Report and contributed to the Arsenic Plume Investigation Report.