

APPENDIX J
Qualifications of Environmental Professional

Senior Geologist with work experience as senior project manager, project geologist, and senior scientist. As a Senior Geologist, Ms. McCall has managed site characterization, remediation, hydrogeological, wetland and landfill projects, and ecological risk assessments, regulatory compliance investigations, Michigan Department of Environmental Quality (MDEQ) Part 201 and 213 investigations, Phase I and Phase II environmental site assessments (ESAs), and proposal preparation.

Additional responsibilities include, but are not limited to; underground storage tank compliance activities; implementing landfill monitoring projects, groundwater sampling and methane monitoring, wetland delineations and mitigation monitoring, project budgeting and tracking. Ms. McCall has completed and certified USEPA Greenhouse gas reporting for municipal landfills and prepared remedial investigations, hydrogeological investigations, initial and final assessment reports, work plans, closure reports, remedial action plans, statistical analysis, wetland delineation reports, wetland mitigation monitoring reports and Joint Permit Application preparation. She has supervised ongoing remediation projects, Phase I and II ESA's, ground water monitoring, and report presentation.

EXPERIENCE

Key Landfill Experience

Municipal Waste Landfill, Ann Arbor, Michigan – Senior Geologist and Project Manager responsible for overseeing the completion of groundwater, wastewater and gas sampling events on a quarterly basis, methane collection system operations, database management and evaluation, wastewater discharge mass balance calculations, maintenance repairs and subcontractor coordination budget tracking and task management. Ms. McCall is also responsible for coordinating with and attending meetings when necessary with the MDEQ and attending monthly project meetings with City of Ann Arbor personnel.

Other activities completed during the contract period include a leachate outbreak investigation and landfill cap repair work plan preparation, installation and final report; an historical review and completion of a report to document proper closure of Phase I, assistance with and final preparation of the offsite remedial action plan, completion of the United States Environmental Protection Agency (USEPA) greenhouse gas mandatory reporting requirements, completion of the Industrial User Permit (IUP) renewal application, optimization of the north side methane collection system including the addition of a telemetry system, a bioremediation pilot test and a successful revision to the gas monitoring plan, significantly reducing the sampling plan requirements.

Education:

B.S., Geology, Indiana University Northwest, Gary, Indiana, 1999

B.S., Public Policy, Indiana University, Bloomington, Indiana, 1993

Professional Affiliations:

American Institute of Professional Geologists

Geological Society of America

Huron River Watershed Council

Michigan Association of Environmental Professionals

University of Michigan Matthaei Botanical Gardens and Nichols Arboretum

Sigma Xi

Registrations/ Certifications:

40-hour HAZWOPER, Compliance Solutions 2002 Southfield, Michigan with annual 8-hour refreshers from 2003 to present.

Adult First Aid, CPR and AED certified 2007 by American Red Cross with annual refreshers from 2008 to present.

FRA 214 Railroad Workplace Safety On-Track Safety Canadian National Railway 2011 to present

TransCanada Health, Safety and Environment Training 2012

Office:

Ann Arbor, Michigan

Years of Experience:

Eleven

Years with Tetra Tech

Six

As a senior scientist at a previous firm, Ms. McCall was responsible for completing field sampling activities, environmental reporting, completing a groundwater discharge investigation and coordinating the 1,4-dioxane onsite treatment pilot test.

Capture Zone Analysis at Municipal Landfill, Ann Arbor, Michigan – Project manager and geologist on a team of scientists and engineers, who successfully updated the site conceptual model and completed a capture zone analysis of the existing extraction well configuration. Activities included updating the geological interpretation, installing observation wells and completing an aquifer analysis and numerical groundwater model. The results provided a significant cost savings to the city of Ann Arbor by allowing one extraction well to be turned off. A modification to the IUP was completed and approved by the City of Ann Arbor to reduce the sampling requirements of the extraction well.

Previous firm

Private Type II Landfill, Birch Run, Michigan – Senior scientist responsible for overseeing the completion of groundwater, gas and primary and secondary leachate sampling events on a quarterly basis, database management and evaluation, secondary leachate discharge volume calculations, maintenance repairs and subcontractor coordination, annual MDEQ inspections, budgeting and task management and coordination with the MDEQ project manager, site supervisor and client.

Numerous Type II Landfills, Lower Michigan – Senior scientist responsible for statistical evaluations and tolerance limit calculations both site wide and intra well; assistance with completion of groundwater, gas and leachate sampling on a quarterly basis, database management and evaluation, budgeting and task management on numerous type II landfills.

Key Environmental Site Characterization, Remediation and Property Transfer Project Experience

Canadian National Railway, Detroit, Michigan – Senior Geologist responsible for reviewing FOIA documents and data from previous consultants, creating Areas of Concern, developing a sampling strategy and implementing a phased approach to delineating soil and groundwater impacts. Additional tasks include identifying current underground infrastructure as possible sources of free product conveyance using ground penetrating radar (GPR) and electromagnetic locating equipment, completing a statistical background metals analysis, completing test pits, removing oil from site catch basins and attending regular meetings with the client for progress updates. A focused feasibility study is being prepared to provide remediation and closure plans for a variety of land use options.

721 N. Main Street, Ann Arbor, Michigan – Senior Geologist responsible for completing a Phase I ESA for the City of Ann Arbor's former Fleet Facility and Maintenance Garage. The completion of the Phase I required input from numerous City of Ann Arbor employees and coordination between SmithGroupJJR, Tetra Tech and City of Ann Arbor personnel. A Phase II investigation is in the planning stages.

Millers Creek Sediment Assessment, Ann Arbor, Michigan – Senior Geologist responsible for developing a sampling plan for characterizing the removal of approximately 1,000 cubic yards of sediment from a creek. A significant cost savings was realized by sampling the creek for all potentially necessary parameters to be placed on hold with the laboratory, while sieve analyses were completed. Results of the sieve analysis indicated a sufficient percentage of sand grains to preclude quality analysis of the sediment for contaminants. However one sample was

analyzed for select parameters to complete waste profiling, should City personnel chose to dispose of the sediment at a landfill.

Municipal Waste Landfill, Ann Arbor, Michigan – Senior Geologist responsible for overseeing the completion of a bioremediation pilot test on a vinyl chloride plume. Responsibilities included coordination with state, county and city officials for permits and concurrence on injection of an emulsified vegetable oil remediation product. The pilot test required the installation of seven injections wells and an observation well to approximately 20 feet. A manifold system was used to inject EOS from 55 gallon drums followed by a water flush using the city’s hydrant. Additional sampling required by MDEQ included secondary metal releases and methane generation. Follow-up sampling to determine the success of the pilot test has demonstrated complete dechlorination of vinyl chloride to ethene and significant mass removal.

Automotive Manufacturing Facility, Confidential Client, Michigan – Senior Geologist responsible for planning and completing an investigation into leaking oil lines from presses at an active manufacturing facility. The investigation included vacuuming out a previously abandoned underground oil line and connecting sump locations, installing a mobile camera to determine the integrity of the pipe/sumps and presence of oil, pushing water through the line to determine which presses were connected to the previously abandoned pipeline system, finding connections and capping known locations, investigating the trench system of all presses and finally filling the abandoned line with flowable fill.

Automotive Manufacturing Facility, Confidential Client, Michigan – Senior Geologist responsible for planning and completing chemical oxidation injections as corrective action on a Resource Conservation and Recovery Act (RCRA) site to remediate heavy metals (chiefly hexavalent chromium and nickel) from the groundwater. The site is successfully being remediated through interim actions, removing the need to implement large-scale infrastructure that would be necessary for a pump and treat system, originally planned for the corrective measure. Completing chemical oxidation has created a cost savings for the client while attaining cleanup objectives in a shorter timeframe. Due to site and time constraints and the active nature of the facility, the work has required a great deal of coordination between parties and production schedules.

Automotive Manufacturing Facility, Confidential Client, Michigan – Senior Project Geologist responsible for completing closure activities for six RCRA Solid Waste Management Units (SWMUs) including the excavation of three former sludge settling lagoons and a process underground storage tank. Verification of soil remediation and groundwater samples were collected in accordance with *MDEQ Sampling Strategies and Statistics Training Materials for Part 201 Cleanup Criteria* and a closure report has been submitted for four of the six SWMU’s.

The remaining two SWMUs include a wastewater treatment plant (WWTP) that formerly conveyed electroplating waste and an oil/water decanting farm located adjacent to the WWTP. Selective demolition was completed on the WWTP to remove all piping, chemical tanks and sumps, including electrical conduit related to the former process. Restoration activities included the addition of a concrete drive for tanker trucks and a garage door and driveway for facility access. A natural gas line was installed to bring heat to the WWTP from the powerhouse.

During the demolition, a drilling investigation was completed under the former oil/water decanting farm that identified hydraulic oil impacts in the soil. An excavation was completed to remove the soils above the thin native clay unit protecting the perched aquifer. A bioremediation product, Micro-Blaze^R was applied to the native clay to enhance biological degradation of the oil. Site characterization was completed to delineate the extent of the impact

under the existing containment area and WWTP. Passive recovery and monthly free product checks are being completed while remedial options are being investigated.

Automotive Manufacturing Facility, Confidential Client, Michigan – Senior Geologist responsible for completing closure activities for a RCRA SWMU that was a former construction debris landfill. Activities included excavation, wetland delineating and permitting, concrete roadway replacement, backfill and seeding and planting restoration activities. The landfill contained concentrations of trichloroethene and daughter products above applicable criteria that migrated from the capped landfill, down a slope and into a wetland that serves as the groundwater surface water interface compliance point. Excavation has occurred in three phases. The first phase required steel shoring to maintain structural integrity of a retaining wall and concrete roadway replacement in winter. The second phase required excavation along a slope to depths greater than 25 feet into clay. The third phase of excavation was within a wetland and required coordination with MDEQ state wetland regulators and submittal and approval of a JPA. Verification of soil remediation and groundwater samples were collected in accordance with *MDEQ Sampling Strategies and Statistics Training Materials for Part 201 Cleanup Criteria*. Wetland restoration included backfilling with primarily clay to maintain the perched nature of the wetland and grading to pre-excavation elevations. The area was planted with an emergent wetland seed mix and a dozen wetland shrubs were planted in the spring of 2012. An Interim Measures Implementation Report has been submitted to MDEQ.

Automotive Manufacturing Facility, Confidential Client, Michigan – Senior Project Geologist responsible for completing the excavation of PCB-containing sediment from an outfall discharge to a wetland. The project included delineating the wetland, completing and obtaining a permit from the MDEQ for excavation and dewatering activities within the wetland, engineering two new outfall structures with oil water separators, and restoring the wetland. Verification of soil remediation and groundwater samples were collected in accordance with *MDEQ Sampling Strategies and Statistics Training Materials for Part 201 Cleanup Criteria* and a closure report was submitted.

East Stadium Boulevard Bridge Project, Ann Arbor, Michigan – Senior Geologist responsible for designing and implementing a soil characterization sampling plan prior to replacement of the East Stadium Boulevard Bridge and associated and nearby utility infrastructure. Responsibilities included reviewing nearby facility data, developing a sampling plan for infrastructure routes along the boulevard and the six earthen walls surrounding the bridge, conducting a site meeting for private, city and University of Michigan utilities prior to subsurface work, implementing a hand auger and direct push drilling plan, completing a statistical analysis of soil concentrations above applicable criteria, and preparing a letter report of findings and recommendations. The age of the fill material used to build the earthen walls surrounding the bridge and the past industrial uses in the area required an extensive sampling plan. Additional area information and statistical analysis were used to reduce the sampling parameters and coordination with local landfill operations prior to sampling implementation helped to reduce the overall number of samples required. Other responsibilities included preparing a Due Care Plan, estimating dewatering volumes, completing groundwater sampling and assisting with groundwater to surface water discharge needs.

Various Projects, Ann Arbor, Michigan – Senior Geologist responsible for additional ‘on-call’ environmental projects as needed. During the contract period 2007 to 2012, the City of Ann Arbor personnel have required environmental assistance with a variety of projects including: sampling and removal of a found underground storage tank during utility installation; sampling and site characterization assistance during utility installation for petroleum impacted groundwater; sampling and site characterization assistance during utility installation for suspected petroleum impacted soils; sampling and determining safety protocols for handling slag; sampling and

completing a waste profile for railroad embankment soils; developing and implementing a soils sampling plan and coordinating with University of Michigan for impacts within the City-owned road right of way; sampling and site characterization assistance during water main replacement and road improvements for suspected petroleum impacted soils; soil sampling and site characterization for soil/debris pile removal during a water main installation project in an area park; and groundwater sampling and site characterization for an embankment improvement area near a railroad for suspected water contaminants.

Pall Life Sciences 1,4-dioxane plume, Ann Arbor, Michigan – Senior Project Geologist responsible for oversight, budget tracking and client coordination for a third party review completed by Doug Sutton, Principal Engineer of GeoTrans, Inc. (former name of Tetra Tech GEO). The site conceptual model completed for the Evergreen Area of the Pall Life Sciences (PLS) 1,4-dioxane contaminant plume by PLS’s consultant Fishbeck, Thompson, Carr & Huber, Inc (ftc&h) and MACTEC Engineering and Consulting was reviewed by Mr. Sutton Ms. McCall and Mr. Sutton attended a meeting with PLS, ftc&h, MACTEC, City of Ann Arbor and Washtenaw County personnel to review ftc&h/MACTEC findings, Mr. Sutton’s findings and provide recommendations for additional data needs moving forward. A summary letter of the meetings key findings was produced by Ms. McCall and Mr. Sutton for the City of Ann Arbor.

Previous firm

Sunoco Gas Station, Luna Pier, Michigan – Senior Scientist responsible for emergency response to a diesel fuel spill from a gas station to Lake Erie. The project required coordination with United States Coast Guard, USEPA Region V, numerous MDEQ divisions, City of Luna Pier officials and the gas station owner (client). Ms. McCall provided direction and completed oversight of field activities including investigation of the diesel fuel leak from pumps, through utilities to the wastewater treatment pump station and finally to Lake Erie. This included completing excavation, numerous infrastructure repairs and replacements; drilling activities to delineate free product; continuous vacuum pumping to maintain further releases offsite, jet-cleaning utilities to the Lake; installing a recovery trench and recovery wells and installing a mobile SVE system. Twice daily meetings were coordinated and lead by Ms. McCall to facilitate the cleanup with field personnel, subcontractors, USEPA’s Superfund Technical Assessment & Response Team (START) contractor, regulatory personnel (state and federal) and City officials and wastewater treatment operators. When the client was unable to meet financial obligations, the USEPA exerted jurisdiction over the site and requested Ms. McCall’s return to complete additional subsurface investigational work and data analysis.

Former Manufacturing Facility, Confidential Client, Michigan – Senior Scientist responsible for developing a sampling plan and implementing a Phase II site investigation for a former foam and plastic manufacturing facility that previously supported the automotive industry. The initial Phase II investigation included gathering soil and groundwater data through temporary monitoring wells. Following the initial Phase II investigation and data evaluation, a second mobilization to delineate impacts was completed. The data was evaluated and recommendations were made for impacted areas. A BEA was completed to assist with the sale of the property and submitted to the MDEQ.

Retail Petroleum Market, Multiple Site Divestiture, Confidential Client, Southeast Michigan – Senior Scientist on a team responsible for completing a fast-track, real estate divestiture assessment of 26 locations in the metropolitan Detroit area. Each site assessment was completed within four weeks and all 26 sites were completed in a three month timeframe, requiring management of multiple sites per team member. Each site assessment included

placement and installation of an average of six soil borings and groundwater monitoring wells, soil sample and groundwater collection, data evaluation and site divestment assessment reporting. Site work was completed in accordance with the client specific health and safety requirements, which required project personnel to attend two 8-hour training sessions. The client's compressed schedule and project goals were achieved and all work was completed without a health and safety incident.

Commercial Petroleum Multiple Phase I Environmental Site Assessments (ESAs), Confidential Client, Southeast Michigan – Senior Scientist on a team responsible for completing Phase I ESAs at 13 locations in the metropolitan Detroit area within a 30-day timeframe in accordance with the ASTM standard. In addition to specific site reporting tasks, Ms. McCall was responsible for completing a technical review of the 13 client-specific formatted Phase I ESA reports. Two levels of client review were completed prior to the report finalization. The client's compressed schedule and project goals were achieved.

Former Manufacturing Facility, Oceana County, Michigan – Senior Scientist responsible for completing a Phase II site investigation, BEA and Due Care Plan at a former manufacturing facility. The property was classified as a leaking underground storage tank (LUST) site, which was known by the client prior to purchase. A Category N BEA was completed on behalf of the purchaser to obtain liability protection for the existing contamination resulting from the LUST. A Due Care Plan was also developed and included with the BEA submittal.

Clawson Concrete (Edw. C. Levy Property), Detroit, Michigan – Senior Scientist responsible for planning and implementing scopes of work, coordinating with the client, and completing field activities including site and off-site characterization, notice of migration drafting, well installations, free product recovery, monthly free product checks; Part 213 semi-annual progress reports; excavation planning and implementation, Final Assessment Report update and site closure activities. The site was granted closure with no further action required by MDEQ.

Former Retail Gas Station, Romulus, Michigan – Senior Scientist responsible for completion of site characterization, soil and groundwater sampling, completion of a feasibility analysis of remedial options, and development and implementation of corrective actions including excavation oversight, dewatering activities and installation of an oxygen releasing compound (ORC) to complete bioremediation in the utility corridor where excavation was not feasible. A final report documenting site activities was submitted to the MDEQ. The project was completed for the State of Michigan through a Level-of-Effort (LOE) state contractor (MACTEC) project management program. A bid package was drafted and selection of trade contractors for the remedial activities was completed in accordance with MDEQ requirements for the LOE contract.

Automotive Supplier Manufacturing Facility, Confidential Client, Rochester, Michigan – Senior Scientist responsible for planning and implementing the closure-in-place of three unregulated underground storage tanks (USTs) located beneath the active facility's interior floor. Soil sampling was completed around the USTs in accordance with *MDEQ Sampling Strategies and Statistics Training Materials for Part 201 Cleanup Criteria* guidance. The facility maintained full production while the USTs were located, the concrete floor and steel tanks were accessed, the airspace inside the USTs were rendered inert and the USTs were cleaned before filling with concrete. To complete the project safely within the schedule and budget, continual coordination and communication was required with plant personnel as well as innovative and evolving planning and implementation to ensure the facility's production schedule was not impacted.

Part 213 Investigations, Numerous Clients Michigan - Completion of MDEQ Part 213 Leaking Underground Storage Tank Closure reports for sites with reported petroleum releases. Tasks completed included preparation of Interim Action Reports (IARs); supervision of UST removal activities; collection of verification of soil remediation samples; quarterly groundwater monitoring events and data evaluation, monthly free product events, system operation and maintenance, development of corrective action plans, preparation of MDEQ Part 213 Site Assessment, and preparation of Final Assessment Reports (FAR) for Tier I and II sites.

Phase I and II Environmental Site Assessments (ESA) - Numerous Clients, Michigan – Completion of Phase I and Phase II ESAs for residential, commercial and industrial clients within Southeast Michigan using ASTM standards and All Appropriate Inquiry (AAI) for site assessments. Additional scope of work for Phase I ESAs included wetland delineations where appropriate.

Key Wetland Experience

Canadian National Railway, Michigan – Senior Geologist on a team of scientists responsible for providing a GIS platform of CN's railways through Michigan's natural resources. The database will provide end users the ability to determine potential locations that require permitting or where mitigation banks are available in various watersheds. Layers include National Wetland Inventory (NWI) Cowardin types, National Wild and Scenic Rivers, Soil Survey Geographic Database (SSURGO) maps; State of Michigan mapped wetlands, Watershed boundaries, topography, Wetland mitigation banks and the CN Railway throughout Michigan. The current work is expected to migrate to surrounding states where CN has rail lines.

TransCanada, Ottawa and Kent Counties, Michigan – Senior Geologist on a team of scientists and engineers assisting with a 16.5-mile corridor wetland delineation and construction activities for removal and abandonment of a natural gas pipeline in Kent and Ottawa Counties. The project included evaluating workspaces to minimize wetland impacts, coordinating with USACE and MDEQ for qualifying permit exemptions and facilitating both cultural and threatened and endangered species surveys to satisfy Federal Energy Regulatory Commission (FERC) requirements. A wetland delineation report was submitted to the MDEQ Wetland Identification Program and an onsite meeting was held with the MDEQ wetland regulator. A pre-application meeting was held onsite to review changes in the project scope and determine the necessity of a JPA for stream impacts. The activities were exempt from the wetland permitting process.

Energy Sector, Confidential Client, Michigan – Senior geologist working with a team of scientists and engineers, responsible for assisting in alternative analysis and new construction building envelope options resulting in the least amount of wetland disturbance in conjunction with logistical, economic, environmental and project goals. Additional responsibilities included assistance with watershed analysis, planning and drafting a conceptual mitigation document, meetings with regulatory agencies, producing a Request for Additional Information document to the Combined Operating Licensing Application for submittal to the United States Army Corps of Engineers (USACE) and completing a Joint Permit Application for MDEQ and USACE submittal. The JPA was approved by MDEQ in January 2012.

In accordance with the JPA process and to receive approval for a draft permit, mitigation was required for wetland impacts. An offsite parcel was necessary to achieve the mitigation acreage. After locating a suitable parcel, Ms. McCall was responsible for overseeing completion of a wetland delineation on a 210-acre agricultural field and regulatory concurrence using the state's Wetland Identification Program that included an onsite review by representatives from the MDEQ and USACE. Additional responsibilities included completion of geotechnical borings, direct push drilling and installation of piezometers, transducer installation, 12 weeks of water level gauging, stream gauging and transducer data download. Data was evaluated and a report of findings was completed for use in determining the site's water budget for mitigation planning.

Automotive Manufacturing Facility, Confidential Client, Michigan – Senior project geologist responsible for coordination and completion of a formal wetland delineation and oversight and assistance of an approved screening level ecological risk assessment (SLERA) on the undeveloped portion of a 180-acre industrial property. Activities for the SLERA included sediment sampling with a mini-ponar, soil and surface water collection, database management, statistical analysis, reporting and coordination with both the state of Michigan and the USEPA Region V. A modified Baseline ERA Sampling Plan was submitted and approved by the state of Michigan. Soil and specimens were collected and tissue sampling and analysis were completed. A bioaccumulation study, statistical analysis and final modified BERA were submitted and approved by USEPA and the MDEQ.

Municipal Project, Genesee County, Michigan – Senior project geologist responsible for coordination and completion of formal wetland delineation and stream identification activities along 5.5+/- miles of a proposed sanitary sewer alignment and completion of a Phase I ESA along the proposed corridor. Responsibilities also include alignment location and construction method recommendations for the project engineer in order to eliminate or minimize potential wetland or stream impacts; coordination with the state regulatory authority, attendance at a pre-application meeting with the state wetland regulator and completion of a JPA for the regulated wetland impacts. A permit was granted by MDEQ in April 2012.

Golf Course Redevelopment, Ottawa Lake, Michigan – Senior project geologist responsible for completion of a wetland delineation and regulatory assessment within the state of Michigan's Wetland Protection Law. Four ponds on the property were proposed for either expansion or fill and a wetland connected to a county drain were identified. Attendance at an onsite pre-application meeting with MDEQ personnel and changes in development planning resulted in a letter report to the state in lieu of a Joint Permit Application providing the client significant cost and time savings.

Various Municipal and Commercial Projects, Southeast Michigan and Northwest Ohio – Senior project geologist responsible for coordination and completion of formal wetland delineations and assessment activities prior to construction activities. These delineations and assessments were necessary for determining building envelopes, construction and planning activities and regulatory requirements for both municipal and commercial developments ranging from bridge improvement and utility infrastructure improvements to golf course improvements.

Previous firm

Various Residential and Commercial Developments, Southeast Michigan – Senior scientist responsible for coordination and completion of formal wetland delineations throughout Livingston, Wayne, Ingham, Genesee, Oakland and St. Clair Counties in southeast Michigan. These delineations were required for both residential and

commercial developments with properties ranging in size from less than an acre to greater than 100-acres. The majority of these delineations were reviewed and approved by the MDEQ as accurate.

Municipal Project, Sanilac County, Michigan – Senior scientist responsible for coordination and completion of formal wetland delineation and stream identification activities along 26+/- miles of a proposed water main alignment. Responsibilities also included alignment location and construction method recommendations for the project engineer in order to eliminate or minimize all potential wetland or stream impacts. The project was completed in two months; impacts were minimized to meet the MDEQ’s general permit requirements and resulted in receipt of a permit within 30 days of submittal. The project fast-track was required to meet significant funding timelines.

Residential/Commercial Traditional Neighborhood Development, Howell and Fowlerville, Michigan – Senior scientist responsible for coordinating and completing annual wetland mitigation monitoring activities. Wetland mitigation included the creation of 1.41-acres of emergent wetland in addition to riffle and pool and meander stream construction along 800-feet of county drain. Monitoring activities included sampling along seven transects; data collection within 38 sample plots along the established transect lines; data analysis using the Floristic Quality Assessment; and statistical analysis to determine plant dominance, degree of wetness and diversity.

Lake Dredge, Brooklyn, Michigan – Senior scientist responsible for coordination with and attendance at an MDEQ pre-application meeting to determine application needs and the MDEQ’s concerns related to proposed lake dredging required for adequate boat access. Prior to the application process, access to open water of the lakefront property was dominated by aquatic bed wetland at shallow depths. Dredging of the aquatic bed was proposed. Responsibilities in addition to the MDEQ coordination, included preparation of an MDEQ permit application detailing the project needs, alternatives analysis and design parameters.

Residential Development, Fenton Township, Michigan – Senior scientist responsible for coordinating and completing annual wetland mitigation monitoring activities. Wetland mitigation included the creation of 1.33-acres of emergent wetland at four separate locations within the development. Monitoring activities include qualitative sampling and data analysis using the Floristic Quality Assessment; and statistical analysis to determine plant dominance, degree of wetness and diversity within the four mitigation areas.

Residential Development, Burtchville Township, Michigan – Senior scientist responsible for completion of a formal wetland delineation required for resolution with the MDEQ and future sale of lots for residential development. Project specifics included delineation of a unique forested wetland system located on former lake beach and ridge land formations. The area was determined to represent a unique natural resource requiring additional protection from future development. The wetland delineation was approved by the MDEQ as accurate and the owner received a wetland permit based on the delineation.

Key Volunteering Ecological Experience with the Huron River Watershed Council

Volunteer participant for many on-going projects including the following:

- Participant in the Annual Stream Measuring and Mapping of creeks and rivers in the watershed – Field collection of bank structure, channel and streambed data, patterns of flow, stream velocity and discharge calculations to provide overall ecological habitat quality (2007 to present).

- Stream gauging and water quality data collection – Captain of the biweekly assessments of Honey Creek, including stream flow gauging, and water chemistry and quality data collection. Data is used to determine e. coli concentrations and phosphate load carried by Honey Creek and the total maximum daily loading to the Huron River (2007 to present).
- Team Leader in the Annual Stonefly Collection – Collection of stoneflies from watershed streams in creeks annually in January used in assessing the health or degradation of the waterbody (2006 to present).
- Team Leader in the Semi-annual River Roundup – Collection of benthic macroinvertebrates in watershed streams and creeks used in assessing the ecological diversity and function of the macroinvertebrates in the stream or creek (2006 to present).
- Surveyor - Bioreserve Project: Rapid Ecological Assessment of Natural Areas in the Huron River Watershed – Field identification and assessment of the remaining natural, undeveloped lands in the watershed. Data collection included categorizing undeveloped land and surrounding areas by ecosystem, habitat and function, and prioritizing undeveloped property for field assessment and protection (2007 and 2008).
- Plant Expert in the Bioreserve Field Assessment of Natural Areas in the Huron River Watershed – Field assessment of wetlands, forests, grasslands and creeks for plant identification; vegetation structures, including tree size distributions, native vs. invasive species distribution; soil identification; signs of human disturbance; stream bank and water quality data. Data collected is scored to aid in determining the preservation ranking (2008).
- Participant in fundraising events and education awareness projects including Suds on the River and the Miller’s Creek Film Festival (2007).

PREVIOUS WORK EXPERIENCE

Tetra Tech GEO (formerly GeoTrans), Ann Arbor, MI (2007-present), *Senior Project Geologist, Senior Geologist*
Insight BCI, Howell, MI (2007), *Senior Scientist*
Insight Environmental Services, Inc, Howell, MI (2002 - 2006), *Staff Scientist, Senior Scientist*

SPECIALIZED TRAINING

“Light Non Aqueous Phase Liquid LNAPL Workshop” Michigan Department of Environmental Quality and American Institute of Professional Geologists, June 20 and 21, 2012

“Army Corps of Engineers Wetland Delineation and Regional Supplement Training,” Richard Chinn Environmental Training, Inc., 2011

Canadian National Railroad, On-Track-Safety, 2011

“Planning Hydrology, Vegetation, and Soils for Constructed Wetlands,” Wetland Training Institute, Hickory Corners, Michigan, 2010

“Access Beginning” Washtenaw Community College, 2009

“Access Intermediate” Washtenaw Community College, 2009

“Plant ID Course”, Matthaei Botanical Gardens, University of Michigan, 2008

“Wetland Flora,” Institute of Botanical Training, LLC, Hastings, Michigan, 2005

“Asters and Goldenrods,” Matthaei Botanical Gardens, University of Michigan, 2005

“Spring Flora,” Matthaei Botanical Gardens, University of Michigan, 2003

“Small Trees and Shrubs,” Matthaei Botanical Gardens, University of Michigan, 2003

“Sedges,” Matthaei Botanical Gardens, University of Michigan, 2003

“Winter Botany,” Matthaei Botanical Gardens, University of Michigan, 2004
“Spectacular Wildflowers,” Matthaei Botanical Gardens, University of Michigan, 2004
“Fall Grasses,” Matthaei Botanical Gardens, University of Michigan, 2004
“Orchids of Michigan,” Matthaei Botanical Gardens, University of Michigan, 2003
“Botany,” Matthaei Botanical Gardens, University of Michigan, 2009
“Exploring Michigan’s Rare Wetlands,” Michigan Department of Environmental Quality, 2009
“Contractor - Local Government Workshop,” MDEQ, Land and Water Management Division, 2005
“2005 Consultant Workshop,” MDEQ, Land and Water Management Division, 2005
“Understanding and Accelerating Remediation of Contaminated Groundwater,” Regenesys, 2004
“Michigan’s Land and Water Permits Workshop,” Michigan Department of Environmental Quality, 2003
A Systemic Approach to Groundwater Capture Zone Analysis, U.S. Environmental Protection Agency, 2007
Project Management Training – Level 1 and 2, Tetra Tech, 2009
Tetra Tech Technical Writing Training Course, Tetra Tech, 2009
Risk-Based Corrective Action Applied at Petroleum Release Sites, ASTM, 2007
“Wetland Delineation in Michigan,” Matthaei Botanical Gardens, University of Michigan in cooperation with Michigan Department of Environmental Quality, US Department of Agriculture, Natural Resource Conservation Service, and the US Army Corps of Engineers, Detroit District, 2003

PUBLICATIONS AND PRESENTATIONS

McCall, P.J., Bagby, L.A., Blocker, J.E., *In-Situ Groundwater Remediation of Heavy Metals at an Active Manufacturing Facility*; Remediation of Chlorinated and Recalcitrant Compounds; The Seventh International Conference.

McCall, P.J., Moreira, N.F., Walter, L.M., Vasconcelos, C., McKenzie, J.A., *Role of Sulfide Oxidation in Dolomitization; Sediment and Pore-water Geochemistry of a Modern Hypersaline Lagoon System*. Geological Society of America

McCall, P.J., Szramek, K., Walter, L.M., *Arsenic Mobility in Groundwater/Surface Water Systems in Carbonate-rich Pleistocene Glacial Drift Aquifers (Michigan)*. Applied Geochemistry

McCall, P.J., Szramek, K., Walter, L.M., *Arsenic Sources and Sinks in a Surface Water/Groundwater System: Tracking Recharge to Discharge in Glacial Drift Deposits (Hell, Michigan)*. Geological Society of America Annual Conference

Moreira, N.F., McCall, P.J., Walter, L.M., *Hydrogeochemistry of a Modern Dolomite-forming Lagoon System (Cabo Frio-Rio de Janeiro, Brazil): Role of Sulfide Oxidation*. J.A. Goldschmidt Annual Conference

McCall, P.J., *Geochemistry of the Inland Steel Landfill Groundwater: A Preliminary Investigation*. Presented to Law Environmental Consulting Firm, Atlanta, Georgia

Ms. Gryzenia is a Project Geologist with over 2 years of experience performing soil and groundwater sampling using multiple sampling techniques, and has completed vertical profiling of shallow and deep aquifers for groundwater monitoring purposes. Ms. Gryzenia has experience with contractor oversight, drilling and well installation using hollow stem auger, roto-sonic, and direct push drilling methods. She has worked on soil boring, recovery, and well installation including observation, monitoring, injection and extraction wells. She has also assisted in in-situ application of integrated carbon and zero valent iron for treatment of nickel and chromium impacts using direct push drilling methods. Ms. Gryzenia has experience with excavation oversight and is trained in using a Leica 1200 global positioning system (GPS) for surveying. She routinely assists project managers with gINT, Mining Visualization Software (MVS), Microsoft excel, access and word, writing closure reports, proposal preparation, and performing Phase I site assessments.

Proficient in the following computer programs: Mining Visualization Software (MVS), Microsoft Office suite of programs: Word, Excel, Power Point and Access.

EXPERIENCE

Environmental Site Characterization and Property Transfer

East Stadium Boulevard Bridge Project, Ann Arbor, Michigan – Staff geologist responsible for sampling a soil characterization plan prior to replacement of the East Stadium Boulevard Bridge and associated and nearby utility infrastructure. Responsibilities included reviewing nearby facility data, aiding the senior geologist in developing a sampling plan for infrastructure routes along the boulevard and the six earthen walls surrounding the bridge, implementing a hand auger and direct push drilling plan, completing a statistical analysis of soil concentrations above applicable criteria and preparing a letter report of findings and recommendations. The age of the fill used to build the earthen walls surrounding the bridge and the past industrial uses in the area required an extensive sampling plan. Additional area information and statistical analysis were used to reduce the sampling parameters and coordination with local landfill operations prior to sampling implementation helped to reduce the overall number of samples required.

Phase III Soil and Groundwater Investigation, Confidential Client, Michigan – As Staff Geologist, was the field lead for a Phase III soil and groundwater investigation to identify previously recognized concerns at an inactive particle board manufacturing plant. Lithology was logged and shallow soil samples were collected using GeoProbe direct push drilling methods. A shallow groundwater investigation was completed by vertically profiling the groundwater for nitrate, total dissolved solids and specific conductivity. Temporary monitoring wells were installed at the depth with the highest parameter of concern and the wells were sampled using low-flow techniques. A deep groundwater investigation was also conducted in 4 locations, using roto-sonic drilling techniques. Again, vertical

Education:

M.S., Geosciences, Western Michigan University, Allendale, Kalamazoo, Michigan, 2010

B.S., Geology, Grand Valley State University, Allendale, Michigan, 2008

Hydrogeology Field Camp, Western Michigan University, Kalamazoo, Michigan, 2009

Indiana University Geologic Field Station, Indiana University, Cardwell, Montana, 2008

Registrations/Certifications:

8-Hour HAZWOPER Refresher, 29 CFR 1910.120 (e)(8) OSHA, 2010 to present

40-Hour HAZWOPER Training + 24-Hours of Field Training, 29 CFR 1910.120 OSHA, 2009

Adult First Aid, CPR, and AED certified, 2012

e-RAILSAFE Contractor certified (2011)

CN – Rail Safety certified (2012)

Office:

Ann Arbor, Michigan

Years of Experience:

Two

Years with Tetra Tech:

Two

profiling was conducted for nitrate, total dissolved solids and ammonia and monitoring wells were installed and sampled.

Soil Impact Delineation and Characterization, Canadian National Railroad, Detroit, Michigan – Staff geologist responsible for assisting the senior geologist in developing a sampling plan at a former railroad junction and carrying out the soil delineation and characterization sampling plan. As field lead, completed test pits and soil borings to delineate an abandoned diesel fuel line and its associated impacts. Using survey equipment, coordinates of the sample locations were collected. Sample results were analyzed and a remediation plan and focused feasibility are being developed.

Soil and Waste Sampling, Confidential Client, Jackson, Michigan - Completed soil borings using the hand auger drilling method to collect soil samples for PCB analysis. Additional sampling was completed to determine whether the source of PCBs was originated from the waste on site. Test pits were completed with a backhoe, soil was screened with a PID, and the soil was described and documented. Assisted the project manager in data analysis and report organization.

Municipal Waste Landfill, Ann Arbor, Michigan – Staff geologist responsible for oversight of a leachate outbreak repair. A leachate outbreak was discovered in the summer of 2006, and after investigating the cause of the outbreak, a clay cap repair was implemented. Vegetation and upper topsoil was removed and stockpiled for later use. Clay meeting the requirements for hydraulic conductivity was added in lifts, totaling 2 feet. Compaction testing was completed before 6 inches of topsoil was added and compacted. Grass seed, fertilizer, and straw was added as final cover.

Submerged Oil Task Force, Enbridge Oil Release, Marshall, Michigan – Used a Leica GPS unit to stakeout to possible submerged oil locations along a 38-mile long portion of the Kalamazoo River. Also took survey locations of highly oil contaminated areas, and delineated the extent of oil in these areas. Sampling of the sediment core samples collected along the Kalamazoo River was also completed.

Phase I Site Assessment, Baker College, Port Huron, Michigan – Completed a Phase I site assessment for Baker College in Port Huron, Michigan. The assessment included a site walk, contacting former property owners and conducting interviews, reviewing aerial photographs, topographic maps, and soil classification maps, and reviewing a radius map report.

Phase I Site Assessment, ADESA, Bay City, Michigan – Assisted a project manager with a Phase I site assessment for ADESA, Inc., in Bay City, Michigan. The assessment included reviewing aerial photographs, topographic maps, soil classification maps and reviewing a radius map report to identify recognized environmental concerns in the area.

Phase I Site Assessment, City of Port Huron, Port Huron, Michigan – Assisted a project scientist with a Phase I site assessment for the City of Port Huron in Port Huron, Michigan. Ms. Gryzenia's role included a site walk, reviewing aerial photographs, topographic maps, soil classification maps and reviewing a radius map report to identify recognized environmental concerns in the area.

Phase I & Phase II Site Assessment, SmithGroupJJR, City of Ann Arbor, Michigan – Completed a Phase I site assessment for SmithGroupJJR for a former fleet services center and city garage in Ann Arbor, Michigan. The assessment included reviewing aerial photographs, topographic maps, soil classification maps, Sanborn maps, city directories, and a radius map. Ms. Gryzenia helped to identify recognized environmental concerns in the area and completed a site walk and interview. A Phase II sampling plan was developed after completing the Phase I site assessment. Ms. Gryzenia aided in developing the sampling plan and cost estimates.

Remediation Project Experience

Municipal Waste Landfill, Ann Arbor, Michigan – Staff geologist responsible for completing well installations and injection of an emulsified vegetable oil (EVO) created by EOS™ as part of a bioremediation pilot test. The pilot test was initiated to treat a vinyl chloride plume downgradient of the City's municipal solid waste landfill. Responsibilities included drilling oversight for installation of seven injection wells and one observation well, recording lithology, sampling soil, creating digital well logs and developing observation and injection wells with a peristaltic pump. Injections were delivered through an eight-channel manifold system connected to each injection well from 55 gallon drums of EVO. The EVO injections were followed by a water flush using the City's water hydrant.

Automotive Manufacturing Facility, Confidential Client, Michigan - Staff Geologist responsible for *in-situ* Application of EHC-M™ a reductive zero-valent iron substrate utilized in metal fixation, as a chemical and bioremediation technique for chromium and nickel contamination. Using direct push drilling methods, soil borings were pushed to depth, and injections of integrated carbon and zero valent iron were completed. Ms. Gryzenia assisted the project manager in planning, data analysis and performance monitoring sampling.

Automotive Manufacturing Facility, Confidential Client, Michigan – Staff Geologist responsible for excavation oversight and oil water separator installation of a 33,000 square foot area with PCB impacts. Ms. Gryzenia oversaw the installation of two oil water separators in a wetland area. Took soil samples to verify the contaminant was removed to below detection limits. Wetland restoration was completed after the impacted soil was removed. Assisted the project manager with data analysis, and writing a report for clean closure.

Bioaugmentation and Groundwater Sampling, Visteon Systems, LLC, Connersville, Indiana - As Staff geologist, performed groundwater sampling to monitor performance of *in-situ* groundwater bioremediation systems. Performed low flow sampling to demonstrate compliance for a regulatory agency. Completed injections of bacteria for purposes of creating an anaerobic biological groundwater treatment zone.

Automotive Manufacturing Facility, Confidential Client, Michigan – Staff Geologist responsible for a soil investigation and hazardous waste excavation oversight. Ms. Gryzenia planned and oversaw a delineation investigation of VOC contaminated soil. The area is a former landfill that was previously excavated, but still had high levels of trichloroethene and its daughter products. The area of concern was separated into a grid pattern and was sampled using the direct push drilling method. Samples were collected in accordance to ST3M regulations and were submitted for laboratory analysis. The delineation sampling lead to planning a phased-approach excavation. A phased approach was planned because the area of concern was partially located in a wetland, requiring a wetland permit before excavation activities could begin. Ms. Gryzenia was the field lead for the excavation that removed over 700 tons of hazardous soil and 9000 tons of non-hazardous soil. Level C personal protective equipment was

maintained during the hazardous waste excavation, requiring the use of personal air monitoring badges on all personnel involved in the excavation activities. Continuous air monitoring was completed using an LEL and PID to ensure worker's safety. Ms. Gryzenia assisted in data analysis, and planning of the excavation. Assisted the project manager in writing a work plan addendum and work plan addendum 2 to be submitted to the state. Mining Visualization Software (MVS) was used by Ms. Gryzenia to create maps and cross sections of the impacted subsurface. Once the excavation phases were complete, Ms. Gryzenia assisted in the writing the interim measures implementation report, completed data analysis tables, compiled appendices and waste documents.

Automotive Manufacturing Facility, Confidential Client, Michigan – Staff Geologist responsible for overseeing a horizontal well installation for a soil vapor extraction system. Oversaw the installation of two horizontal wells, each over 400 foot long, that reached under the floor of the manufacturing plant, to aid in the extraction of hazardous soil vapors. Duties included tracking the progress of the drilling, documenting field events, and contractor coordination.

Automotive Manufacturing Facility, Confidential Client, Michigan – Staff Geologist responsible for aiding in the planning and developing of a soil investigation and overseeing an impacted soil excavation. Assisted in the development of a sampling plan at a former chromium waste treatment facility. The treatment facility was scheduled to be demolished, but before a soil sampling event was completed to determine whether the underlying soils were impacted. After the investigation, sample results were analyzed and it was determined that the soil was impacted. A delineation sampling event was completed and impacted soils were excavated. As a staff geologist, Ms. Gryzenia was responsible for excavation oversight and disposal paperwork. Ms. Gryzenia assisted the project manager in writing a work plan addendum to be submitted to the state. Mining Visualization Software was used to create maps and cross sections of the impacted subsurface.

Groundwater Sampling

Automotive Manufacturing Facility, Confidential Client, Michigan - As a Staff Geologist, performed monthly, quarterly, and yearly groundwater sampling using low-flow techniques to collect water samples for laboratory analysis of various parameters.

Groundwater Sampling, City of Hartland, Michigan - Performed annual groundwater sampling using bailer, low-flow and high-flow techniques to collect water samples for laboratory analysis of various parameters.

Groundwater Sampling, Confidential Client, Michigan – Performed quarterly groundwater sampling using modified high-flow techniques to collect water samples for laboratory analysis of various parameters. A submersible pump was used to purge the well, and an MP20 water quality meter was used to collect and record water quality parameter readings.

Publications and Presentations

Gryzenia, Joy T., *Production, accumulation, and characterization of surfactants produced during the chemical oxidation of PAH contaminated soil*. Western Michigan University (2010) 108 pages.

Gryzenia, J., Cassidy, D., Hampton, D. *Production and accumulation of surfactants during the chemical oxidation of PAH in soil*. Chemosphere 77, (2009) 540-545.

Gryzenia, J., Cassidy, D., Hampton, D. *Production and accumulation of surfactants during the chemical oxidation of PAH in soil*. Geological Society of America Annual Conference, Portland, Oregon.