

## **EDUCATION**

B.S., Fisheries & Wildlife Sciences, Michigan State University, 1992  
Juneau Icefield Research Program, University of Idaho, 1987

## **CERTIFICATIONS**

Heartsaver First Aid & CPR AED Certified

## **PROFESSIONAL EDUCATION COURSES**

OSHA 40 hour (29 CFR 1910.120) – Hazardous Waste Operations (HazWoper)  
Annual 8-Hour HazWoper Refresher Course  
8-Hour Supervisor, Hazardous Waste Operations and Emergency Response Course  
ATC Associates Inc., Electrical Systems and Safety Training Certifications Level 1 through 3  
ASTM E1739-95: Risk Based Corrective Actions at Petroleum Release Sites, October 2007  
Assessment and Remediation of Petroleum Hydrocarbons, Alpine Environmental, Inc.  
Wetlands Workshop for Local Government Officials, ERMNET, Inc.  
Advanced Technologies for Accelerated Natural Attenuation, Regenesis, Inc.  
eRAILSAFE System Line Worker Certification  
CSX & CN Rail Roadway Worker Protection Contractor Safety  
Pipeline Awareness for Excavator Operations

## **PROFESSIONAL EXPERIENCE**

### **Leaking Underground Storage Tank (LUST)/ Underground Storage Tank (UST)/Aboveground Storage Tank (AST)**

**State of Michigan Statewide Expanded TRIAGE (SWET) Program** — Project Manager for State of Michigan LUST TRIAGE projects. Environmental Resources Group, LLC (ERG) was retained by the Michigan Department of Technology, Management and Budget (DTMB) to provide limited site investigation and sampling services on behalf of the Michigan Department of Environmental Quality (MDEQ) under their Expanded Triage Program (ETP). The SWET projects involve targeted investigations of several orphan LUST sites to determine current environmental conditions and remaining risks posed by any contamination. The limited site investigation activities performed by ERG included geophysical and subsurface drilling as well as soil and groundwater sampling activities performed in accordance with a workplan prepared for and approved by the MDEQ for 17 orphan LUST sites in the Kalamazoo, Michigan District area. Upon completion of the field work, ERG provided the

SWET program coordinator and district project managers with a summary report of each site's investigation activities.

**LUST Response Investigation and Remediation / Retail Petroleum Clients throughout Michigan and other states, including Kentucky, Virginia and New Hampshire** — Project Manager for LUST projects, including removal and in-place closures, contaminant delineation, and remediation in accordance with Risk-Based Corrective Action (RBCA) procedures. Implemented the investigation, delineation and remediation of phase separated, adsorbed, and dissolved phase hydrocarbon plumes from the release of gasoline and diesel fuel at retail petroleum facilities. Remedial strategies designed and implemented in response to these LUST projects have included traditional groundwater pump and treat systems, soil vapor extraction, air sparging, and in-situ bioremediation utilizing oxygen releasing compounds.

**LUST Response Investigation and Remediation, Multi-Phase Free Product Recovery System Design and Installation / Retail Petroleum Client / Battle Creek, Michigan** - Following the catastrophic release of approximately 9,000 gallons of unleaded gasoline from a leaking UST adjacent to a residential neighborhood with potable drinking water wells, I was the Project Manager who interfaced with the client's insurance carrier, their consultant and the Michigan Department of Environmental Quality to take over the project in a timely manner to alleviate the immediate danger to the residential population down gradient of the release location.

Beginning in July 2007, designed and oversaw the installation of various free product recovery and treatment systems for mass free phased product recovery. The systems included the use of product skimming pumps, vacuum enhanced fluid recovery utilizing vacuum truck technologies, and 2 mobile multi-phase recovery systems that utilized catalytic thermal oxidation in addition to free phase recovery. Between July 2007 and September 2008, a total of 5,423 gallons of free phase product was recovered. Additionally, based on calculations, 1,301 gallons of vapor phase free product were processed and treated using catalytic oxidation methods. The free phased product was significantly recovered and no confirmed impact to the surrounding potable drinking water wells was detected.

**LUST Response Investigation and Remediation / Retail Petroleum Client New Hampshire** - Interfaced with the New Hampshire Department of Environmental Services to secure the approval of the first in-situ bioremediation programs utilizing oxygen releasing compounds in the state of New Hampshire. The remedial design strategies involved the injection of oxygen releasing compounds into the petroleum impacted subsurface using direct push and injection technologies, which resulted in the closure of two sites within less than one year of remedial implementation and subsequent performance monitoring.

**Underground / Aboveground Storage Tank System Design & Installation** – Oversaw the design, permitting and construction management of underground and above ground storage tank system installations at institutional settings for school transportation center and county emergency sewer lift station facilities.

## REMEDIATION/BROWNFIELDS

**Remedial Corrective Actions, including Source Removal, Stormwater Management and Phyto-Remediation System Installation / Fertilizer Blending and Distribution Facility / Woodbury, Michigan; 2009 – 2011** - Project activities included the following interim corrective actions: source soil removal and off-site disposal, design and implementation of a stormwater management/infiltration barrier, and phytoremediation system installation. The corrective actions were implemented in response to a Consent Decree entered into between the former property owners and the State of Michigan as a result of historic practices and numerous documented releases across the site. My responsibilities involved assisting in the design and implementation of a phyto-remediation system to extract nutrients from the soil and vadose zone water, reduce the infiltration of surface waters through nutrient impacted soils, and reduce the quantity and improve the quality of stormwater runoff from the facility. Additionally, I interfaced with the client and regulatory agencies including multiple Michigan Department of Environmental Quality (MDEQ) divisions and county stormwater and soil erosion and sedimentation control departments to develop the work scope and ensure timely implementation of the activities. The following interim corrective action activities were completed to attenuate the nutrient impacted soils located at various locations on the site: removal and off-site disposal of approximately 6,525 tons of nutrient impacted source soils; the implementation of a stormwater management/infiltration barrier and treatment system consisting of site grade improvements to direct surface stormwater run-off into shallow vegetated attenuation pans to modulate stormwater flows and mitigate stormwater impacts; and the installation of a phytoremediation system consisting of the planting of 1,675 cuttings of various varieties of hybrid poplar and willow species over an approximate 2.5 acre area and planting of low spreading grass/forb vegetated swales and drainage ways over an additional 1.5 acre area. Over the course of 20 years, the completed phytoremediation system will have the potential to phytosequester or phytostabilize 9 tons of nitrogen and 1.05 tons of phosphorus.

**Wastewater Lagoon Closure, Discharge Permitting and Remedial Investigation/ Poultry Processing Plant / Athens, Michigan; 1997 – 2006** - Project included the design and implementation of a Closure Plan for a wastewater treatment system's anaerobic seepage lagoon for a poultry processing plant. Prior to implementing the lagoon closure activities, designed and prepared groundwater discharge permits necessary for discharge of nutrient laden treated wastewater through spray irrigation onto agricultural lands. Prior to discharge, the wastewater was treated utilizing anaerobic digestion and a sequencing batch reactor prior to storage in a retention lagoon for photo-decomposition. In order to obtain the required discharge permit, all agricultural fields proposed for use were first "qualified" for baseline nutrient loading and available nutrient treatment capacity using spray irrigation at agronomic rates. An approved Irrigation Management Plan was then developed for the permitted discharge. As a result of the closure of the original seepage style lagoon and permitted land application of the treated wastewater, the Consent Order Decree from the Michigan Department of Environmental Quality (MDEQ) – Air Quality Division was terminated allowing the client to lessen their regulatory burden. Subsequent to lagoon closure activities, I developed and implemented a verification of soil remediation (VSR) sampling plan to ensure adequate removal of source contaminants and also directed a groundwater delineation investigation to define the extent of impact from the wastewater seepage into the shallow aquifer down gradient of the former lagoon. The results of the investigation assisted in determining the natural phyto-remediation of nitrogen compounds near a shallow surface water receptor. The level of effort required for this project involved the coordination and negotiations with the client, off-site property owners, and multiple divisions of the MDEQ, including Air Quality Division, Remediation and Redevelopment Division, Surface Water Division, and Water Bureau in order to obtain

consent order decree termination, groundwater discharge permitting, and finalization of the Remedial Investigation/Feasibility Analysis, which included a corrective action plan.

**Wastewater Lagoon Closure, Wetland and Discharge Permitting / Beef Processing Plant / Allendale, Michigan; 2001** - Project included the design and implementation of a Closure Plan for a closed beef processing plant's wastewater treatment system lagoons. Prior to implementing the lagoon closure activities, I interfaced with the client and MDEQ regulatory divisions to design an effective closure strategy. Prior to plant closure, the wastewater treatment lagoon system treated the plant's wastewater prior to discharging into an adjacent trout stream under terms of a National Pollutant Discharge Elimination System (NPDES) permit. Compounding the lagoon closure strategy, the processing plant had received numerous correspondences from the MDEQ regulatory divisions, pertaining to exceedances in their wastewater discharge effluent to the receiving water. I assisted in the development and submittal of wetlands permits and amended the NPDES permit to allow discharge of treated wastewater during the lagoon closure activities. Following sludge removal and off-site disposal, a VSR sampling plan was developed and implemented to verify the effectiveness of the lagoon closure strategy. As a result of the lagoon closure activities, the former processing plant property was able to be transformed into a residential development. The former lagoon basins were enlarged, and converted into a small lake within the development. The level of effort required for this project involved the coordination and negotiations with the client and multiple divisions of the MDEQ, including the Remediation and Redevelopment Division and Surface Water Division in order to obtain closure approval and wastewater discharge permitting to ensure compliance with state and federal laws. As a result of the lagoon closure activities, the former processing plant property was able to be transformed into a residential development. The former lagoon basins were enlarged, and converted into small lakes within the development.

**Remedial Investigation and Soil Removal/ Fertilizer Blending Plant / Marne, Michigan; 2005 – 2006** - Project included the design and implementation of a remedial investigation work plan and coordination/negotiations with Michigan Department of Environmental Quality (MDEQ) divisions following a fire, which destroyed the blending plant and product storage warehouse. During fire suppression actions for the fully involved fire, the fire department applied approximately 3 million gallons of water to the fire resulting in the potential spread of fertilizer compounds, particularly ammonia and phosphorus, into the subsurface. Prior to implementing a remedial strategy, I designed and directed the remedial investigation to determine the extent of impacts resulting from the fire. Based on the results of the investigation, a remedial strategy was designed which resulted in the excavation and proper disposal of approximately 8,500 cubic yards of ammonia impacted soils. Subsequent to soil removal activities, I directed and conducted VSR sampling to verify the removal of impacted subsurface soils to ensure compliance with MDEQ cleanup criteria. The level of effort required for this project involved the coordination and negotiations with multiple divisions of the MDEQ, including Remediation and Redevelopment Division and Surface Water Division.

**Wastewater Lagoon Closure, Wetland Permitting and Reconstruction/ Beef Processing Plant / Ada, Michigan; 2002 – 2006** - Project included the design and implementation of a Closure Plan for a closed beef processing plant's wastewater treatment system lagoons. Prior to implementing the lagoon closure activities, I interfaced with the client and MDEQ regulatory divisions to design an effective closure strategy. The site's wastewater lagoons were located within a regulated floodplain, which compounded the lagoon closure strategy. I assisted in negotiations with the MDEQ's Water Bureau and Land & Water Management Divisions to allow in-place closure of the lagoon system with no off-site

disposal of nutrient impacted lagoon sludge. Following lagoon closure activities, a VSR sampling plan was developed and implemented to verify the effectiveness of the lagoon closure strategy and to demonstrate the effectiveness of allowing the dewatered lagoons to revert back to a natural wetland condition within the floodplain area. Additionally, a portion of the beef processing property had been historically filled within the site's native wetland boundaries. A work plan was developed and implemented with the MDEQ Remediation and Redevelopment Division and Land & Water Management Division to remove arsenic impacted fill soils from the area for off-site disposal. I developed and implemented a work plan under a Wetlands Permit to re-construct the wetland area following soil removal. The wetland area was re-established by planting the excavated area with native wetland seeds. As a result of the lagoon closure activities, the former processing plant property was able to be transformed into a township park. The former lagoon basins were allowed to revert into a wetland complex matching the surrounding property areas. The level of effort required for this project involved the coordination and negotiations with the client and multiple divisions of the MDEQ, including the Water Bureau, Remediation and Redevelopment Division and Surface Water Division in order to obtain lagoon closure and conduct permitted activities within a regulated wetland and the re-establishment of historic wetland boundaries.

**Emergency Spill Response Investigations and Remediation / Transportation Clients throughout Michigan; 1997 – 2013** - Served as Project Manager and provided oversight, sampling and reporting for over 200 Emergency Response Spill Cleanup projects. The spill cleanups have typically been in response to the release of hazardous substances related to highway accidents involving trucking companies. The cleanups range from the excavation and disposal of diesel fuel impacted soils and other hazardous materials being transported by the trucking companies. The cleanups involve interfacing and coordination with the client, remediation contractors, and regulatory agencies to obtain necessary permits, including permitted highway lane closures and wetlands permits for conducting emergency response activities within regulated wetlands.

## DUE DILIGENCE

**Environmental Site Assessments / Property Transactions throughout Michigan** - Served as project manager and provided oversight of over 200 Phase II Environmental Site Assessments (Phase II ESAs), including development of an appropriate scope of work through the completion of each project.

**Baseline Environmental Assessments** — Completed BEAs and Due Care Plans for numerous contaminated sites in accordance with State of Michigan requirements. The BEAs were “determined” by the Michigan Department of Environmental Quality (MDEQ) to be “adequate” in limiting the new site owners liability.

## ENVIRONMENTAL, INDUSTRIAL CLEANING & EMERGENCY RESPONSE SERVICES

**Industrial and Transportation Clients throughout Michigan** - General Manager / Account Manager of Western Michigan Operations for emergency response / industrial services provider. Generated approximately \$1 million in annual sales / gross revenue for branch while overseeing staff of 4 full time field services personnel. Successfully closed highest percentage of sales opportunities in the company, while also maintaining duties as general manager and branch operations manager.

## **EMPLOYMENT**

Environmental Resources Group, LLC (Project Manager) January 2014 - Present  
Young's Environmental Cleanup, Inc. (General Manager / Account Manager – West Michigan)  
2011 - 2013  
ATC Associates Inc. (Project Manager) 2006 - 2011  
Dixon Environmental Consulting (Project Manager / Field Services Manager) 1997 - 2006  
Aqua-Terra, Inc. (Field Services Manager / Project Manager) 1993 - 1997  
Mackinac Environmental Technologies (Environmental Specialist) 1992 - 1993

## **PROFESSIONAL AFFILIATIONS**

Michigan Association of Environmental Professionals