

June 13, 2013

Mr. Sadi Rayyan  
Department of Technology, Management and Budget  
Facilities and Business Services Administration  
Design and Construction Division  
530 W. Allegan Street  
Second Floor, Stevens T. Mason Building  
Lansing, Michigan 48933

RE: Part I – Primary List Proposal  
2013 Expanded Environmental Remediation ISID RFP  
Superior Environmental Corp

Dear Mr. Rayyan:

Superior Environmental Corp (Superior) is pleased to submit this Part I – Primary List Proposal in association with the 2013 Expanded Environmental Remediation ISID RFP posted on the Bid4Michigan website. We have enclosed four (4) hard copies and four (4) electronic copies of the proposal package per your instructions. Superior also acknowledges receipt of Addendum No. 1 (dated May 28, 2013) which was posted on the Bid4Michigan website.

We appreciate your consideration of our proposal and we would welcome an opportunity to discuss our submittal with you if you have any questions or comments.

Sincerely,  
Superior Environmental Corp



Jeffrey M. Skendrovic  
V.P. Technical Services/Authorized Expeditor

JMS/ck

enclosures

cc File No. PBC3349.00

**Response to  
DTMB/MDEQ Request for Proposal**

**Part I – Primary List Proposal  
2013 Expanded Environmental  
Remediation ISID RFP**

**Superior Environmental Corp**

**Superior Project No. PBC 3349.00**

***Prepared for:***

Mr. Sadi Rayyan  
Department of Management and Budget  
Facilities Administration  
Design and Construction Division  
530 West Allegan Street  
Lansing, MI 48933

***Prepared by:***

Superior Environmental Corp  
1128 Franklin Street  
Marne, MI 49435  
(616) 667-4000

# 2013 EXPANDED ENVIRONMENTAL REMEDIATION ISID RFP

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- Attachment 1 Example Field Activity Logs and Weekly Report
- Attachment 2 Quality Management Process and Data Quality Assessment Flowchart
- Attachment 3 Organizational Chart
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- Attachment 5 Sub-Consultant Letters of Intent (Stratus Consulting & Soil and Materials Engineers, Inc.)
- Attachment 6 Position, Classification and Employee Billing Rate Information

### FORMS

- Certification Regarding Debarment, Suspension, and Other Responsibility Matters
- Professional/Contractor Demographics, Statistics and Certification
- Certification of Michigan Based Business
- Certificate of Awardability

## **PROFESSIONAL QUESTIONNAIRE**

**Professional Questionnaire for Part I**  
**Department of Technology, Management and Budget**  
**2013 ISID Expanded Environmental Remediation RFP**  
**Professional Environmental Consulting Services**

**INSTRUCTIONS:** Professionals shall complete the following required information in the form provided. A separate sheet may be used if additional space is needed. The Article number(s) relating to the additional information must be included on the separate sheet. Professionals are to ensure all questions are answered completely and concisely to streamline the review process.

**ARTICLE 1: BUSINESS ORGANIZATION**

- 1.1 Business Organization Full Name: Superior Environmental Corp  
Business Organization Address: 1128 Franklin Street, Marne, Michigan 49435  
If Applicable, state the branch office(s), partnering organization or other subordinate element(s) that will perform, or assist in performing, the work:

BRANCH OFFICES:

Western Michigan – Grand Rapids and Cadillac Districts  
1128 Franklin Street  
Marne (Ottawa County), MI 49435

Eastern Michigan – Saginaw Bay and Lansing Districts  
1680 Marquette Avenue  
Bay City (Bay County), MI 48706

Southern Michigan - Kalamazoo and Jackson Districts  
317 S. Grand Street  
Marshall (Calhoun County), MI 49068

Southeast Michigan – Southeast Michigan District  
28287 Beck Road, Suite D-1  
Wixom (Oakland County), MI 48393

Northern Michigan – Gaylord and Upper Penninsula Districts  
P.O. Box 2159  
Gaylord, (Otsego County), MI 49734

- 1.2 Check the appropriate operation status:  
 Individual       Association  Partnership  Corporation, or  Combination –  
Explain:
- 1.3 If operating as a corporation, include the state of incorporation (Michigan) and the date of incorporation (April 1989).
- 1.4 Include a brief description of Professional's business history: Superior has been providing quality environmental services to its clients for over 24 years. Superior currently maintains five full-service offices in Michigan that will be used for the work under this contract and we have additional resources nearby that can be utilized depending on individual Contract

project needs and requirements. Our company's work experience has been on environmental sites located throughout Michigan where improper handling, storage, or disposal of hazardous substances has occurred, including many Part 201 and 213 sites. We believe that our Michigan office locations provide the DTMB/MDEQ with strategically located resources to be able to cost-effectively do work at any sites located throughout the State. Company personnel are well versed in Part 201 and 213 of the Natural Resources and Environmental Protection Act (NREPA), 1994 PA 451, as amended, Comprehensive Environmental Response, Compensation and Liability Act (CERCLA), and other relevant state/federal statutes and requirements. Our personnel are also familiar with all types of discharge permitting; including National Pollutant Discharge Elimination (NPDES), air discharge, and groundwater reinjection.

1.5 Professional(s) federal I.D. number: 38-2858229

## **ARTICLE 2: PRIOR EXPERIENCE**

2.1 Provide client references and brief descriptions for at least three (3) projects in the last five (5) years closely related to the work requested in this RFP. Name the currently employed key personnel assigned to each project. Emphasis shall be placed on recent work at sites of environmental contamination and on sites where the Professional has provided RI/FS services.

### Project 1 Reference Information:

Project Name: Pipeline Company – Crude Oil Release

Key Personnels: Jeff Skendrovic, Todd White, Nate Hehir, Alan Nicholls, Gerard DeBusschere, Tom Sorensen

Project Address: Kalamazoo River

Project City/State/Zip: Marshall, Michigan 49068

Owner/Client Contact Name and Telephone #: Enbridge, Inc., Mr. Robert Steede, P.E. (218) 269-1406

Project 1 Description: On July 26, 2010, a major North American pipeline company (The Company) contacted Superior within 4 hours of the discovery of a crude oil release. The release originated from a break in a 33" buried pipeline that transports crude oil from the Chicago area northeast through Michigan and into Sarnia, Ontario. Superior was one of the first calls placed by The Company for assistance with environmental monitoring and operations support. Superior continues to provide support services to The Company. The release originated in a wetland area and flowed overland until it reached a creek where it then flowed to the confluence of the creek and a major southwest Michigan river, approximately 38 miles from the release point to an inland lake, continuing west toward Lake Michigan. Superior mobilized staff, vehicles, equipment, and a mobile laboratory, to provide environmental monitoring of the surface water, sediments, potable wells, and wildlife between the release area south of Marshall, MI west to Lake Michigan.

Superior set up permanent sample collection locations where surface water and sediment samples were collected daily. Initially, Superior teams collected surface water and sediment samples between the release point and a lake (southeast of Kalamazoo, MI). Additional Superior teams collected samples from the lake to Lake Michigan at 5 mile intervals. Superior also provided teams to collect samples from potable wells when residents in proximity to the creek or river would contact The Company's Response Call Center. Additionally, a continuous strike force was staffed by Superior for rapid response inspection and sample collection

services for residential or commercial properties that were affected by the spill or were suspected of being affected by the spill.

As the spilled crude and water were removed from the river, Superior provided staff on a 24-hour basis to oversee the entrance and exit of the temporary tank farm (over 90 fractionation tanks). At this location, recovered oil and water were deposited until the contents could be classified, recycled, treated, discharged, or transported from the area. Superior staff logged each of the shipments and collected samples of oil or water in the treatment area on an as-needed basis.

Superior staff assisted in designing and building the Wildlife Welfare and Rehabilitation Center. Superior staff also was tasked with deploying deterrent mechanisms to attempt to inhibit wildlife from coming in contact with the crude oil. Air cannons, fences, noise makers etc. were used as deterrents. As local residents reported the location of affected wildlife to The Company Response Call Center, Superior staff responded in an effort to locate the animals or birds, capture them, and transport them to the Wildlife Welfare and Rehabilitation Center for cleaning, observation and rehabilitation and eventual release away from oil impacts. Superior also provided senior staff to aid in writing Health and Safety Plans, Sampling and Analysis Plans, Oil Capture and Containment Plans, Waste Disposal Plans, Backfill Plans, and a variety of standard operating procedures that guided the response activities and were incorporated into larger plans that were submitted to the United States Environmental Protection Agency (USEPA) Region V on-scene coordinator and other regulatory and non-regulatory agencies.

Superior has continued to conduct activities relating to the release following the completion of the emergency response phase of the project. Superior has acted in a management capacity including permitting, QA/QC of deliverables, Work Plan development, contractor procurement, air monitoring management, database management, and budget development. Superior has also conducted sediment sampling, surface water monitoring, turbidity monitoring, shoreline and overbank re-assessment, QA/QC of laboratory data, sediment poling assessments, geoprobe drilling, hollow stem auger drilling, geotechnical drilling, submerged oil assessment, NRDA support sampling, waste characterization sampling, and coordinating laboratories and equipment mobilization.

Project 2 Reference Information:

Project Name: Former Action Auto #30 Site

Key Personnels: Jeff Skendrovic, Alan Nicholls, Gerard DeBusschere, Tom Sorensen

Project Address: 918 E. Grand River Avenue

Project City/State/Zip: East Lansing, Michigan 48823

Owner/Client Contact Name and Telephone #: MDEQ-RRD/Mr. Tom Simpson, 517-335-1142

Project 2 Description: Superior was contracted by the State of Michigan under an ISID contract to conduct site investigation activities at this leaking UST site. The site is a known leaking UST sites with gasoline and diesel fuel releases. The responsible party was no longer a viable business entity and investigation activities and corrective action were incomplete.

Superior developed a Work Plan that included a description of proposed services, estimated costs, and a schedule for completing the project. The Work Plan was provided to the MDEQ SPM and was approved prior to initiating work. Superior requested utility staking using the Miss Dig system prior to conducting the investigation. The scope of services included conducting hollow stem auger (HAS) soil borings, installing monitoring wells (on-site and off-site), collecting soil and groundwater samples, installing and sampling sub-slab soil gas points quarterly, conducting free product recovery, conducting quarterly groundwater monitoring, and developing

a corrective action plan to address site contaminants. The project is ongoing with one quarterly sampling event remaining for groundwater and soil gas.

Superior collected thirty soil samples from the Geoprobe® and HSA soil borings following competitive bidding for both drilling methods. Site restoration was conducted following the investigation. Soil borings were backfilled with bentonite and the surface restored with asphalt or concrete to match existing conditions at each boring location. Certain off-site boring locations were restored using topsoil and seed. Soil cuttings were stored in a roll-off and monitoring well purge water stored in 55-gallon drums. The soil cuttings were transported to a Type II landfill under manifest for disposal and water drums transported under manifest to a licensed disposal facility. Superior's investigation indicated that a significant volume of impacted soil remains at the site. The majority of the contamination was located proximal to the former UST basin and near the existing building structure. Superior installed six sub-slab soil gas monitoring points within the building to evaluate the vapor intrusion exposure pathway. Superior installed shallow and deep monitoring wells at the site to evaluate the extent of the groundwater plume. Superior collected approximately twenty groundwater samples from wells using low-flow methodologies during each quarterly sampling event. The investigation indicated that both shallow and deep (bedrock) groundwater units were impacted by the release. Superior evaluated groundwater flow characteristics to aid in delineating the extent of the groundwater plume for both aquifers.

LNAPL was encountered in one of pre-existing monitoring wells. Superior conducted bail-down testing to evaluate LNAPL recoverability. Monthly hand bailing was selected as the preferred interim recovery method based on the low recharge rates documented during bail-down testing.

Superior prepared reports following the initial investigation and following each of the quarterly groundwater sampling events conducted to date. The reports included a discussion of activities (including field documentation) completed; discussion of results; discussion of data; data summary tables; figures illustrating site features, groundwater flow, sample locations, and analytical results; boring logs; and waste disposal documentation. Superior is currently preparing a feasibility study to evaluate potential remediation options for this site.

Project 3 Reference Information:

Project Name: MDEQ-RRD, Bondale Dinkens Site

Key Personnels: Jeff Skendrovic, Alan Nicholls

Project Address: 5447 Round Lake Road

Project City/State/Zip: Gladwin, Michigan 48624

Owner/Client Contact Name and Telephone #: MDEQ-RD, Ms. Lisa Chadwick (989) 894-6256

Project 3 Description: Superior was retained by the Michigan Department of Natural Resources and Environment (MDNRE) in September 2009 to conduct site investigation and remediation activities at the site. The site was formerly operated as a gasoline filling station. A release of gasoline occurred from the underground storage tanks (USTs) previously located at the site. The USTs were removed from service, but the liable party was not able to financially continue with investigation and remediation activities. Soil and groundwater were impacted with volatile organic compounds.

Superior conducted a Remedial Investigation to evaluate the extent of impact from the gasoline release. Superior advanced twenty-three soil borings using a Geoprobe®. Thirty-three soil and twenty-seven groundwater samples were collected to evaluate the lateral and vertical extent of impact. The results of the investigation indicated a substantial volume of impacted soil remained on the site. The groundwater plume migrated beneath a county roadway where it discharged to a wetland area. At the request of the client, Superior developed a scope of work

to excavate highly impacted soils acting as source material, conduct dewatering, and place ORC® in the excavation area to facilitate enhanced bioremediation. Superior prepared bid specifications in accordance with State of Michigan requirements and a remediation contractor was selected through a competitive bidding process.

In August 2010, Superior conducted remediation activities. A dewatering point was installed to lower the groundwater table and control flow of water into the excavation cavity. The dewatering point was excavated to 12 feet below ground surface and a slotted drain tile inserted into the excavation. Pea stone was placed around the dewatering point to allow for flow of groundwater into the drain tile. Approximately 3,200 cubic yards of impacted soil were excavated and transported to a Type II landfill for disposal. Additionally, 66,000 gallons of impacted groundwater was pumped into frac tanks for temporary storage and then transported to a disposal facility. Following the excavation activities, 2,200 pounds of ORC® was mixed with the sand backfill and placed in the bottom of the excavation, to facilitate natural attenuation of residual contaminants. The excavation was backfilled with sand and compacted to specifications. The surface was restored with 12 inches of compacted 22A gravel.

During excavation activities, two water wells and a dry well were discovered. The water wells were 25 and 35 feet deep. The water wells and dry well were properly abandoned. The remediation activities were completed to specifications, on time, and under budget.

Superior collected eighteen soil samples from the excavation to evaluate residual contaminant levels. Verification samples indicate that the majority of highly impacted soils were excavated. The remaining impacted soils were limited to a small area within the road right-of-way that could not be excavated due to the presence of a fiber optic utility.

Superior installed seven monitoring wells following remediation activities to evaluate contaminant concentrations. Analytical results from groundwater monitoring activities indicated a significant decrease in contaminant concentrations, and attenuation of contaminants to acceptable levels prior to discharge to the drainage wetland area. All phases of the project were completed on time and within budget.

2.2 A sample of field activity logs detailing a 1-week period (from one of the three (3) prior experience sites) and a weekly report provided? Yes No **Refer to ATTACHMENT 1.**

### **ARTICLE 3: ENVIRONMENTAL EXPERIENCE**

Include a brief description of your firm's professional experience in each of the following areas:

3.1 Remedial Investigations: Superior designs our investigative programs to effectively gather accurate information in order to evaluate the type, concentration, and extent of contamination, and to determine how the contaminants relate to the physical characteristics of a designated area. We do this through training, research, site inspection, environmental assessments/audits, field-testing services, quality control, technical analysis, and remedial investigations. An integral aspect of our professional services involves our various testing and field sampling capabilities and related documentation. Superior's range of field services includes: site reconnaissance, site mapping/surveying, drilling, direct imaging (laser induced fluorescence, etc.), soil testing, soil gas surveys, geophysical surveying, groundwater monitoring, media sampling, in-situ monitoring, pilot testing, remedial systems monitoring, and tank closure sampling/compliance certification.

3.2 Sampling and Laboratory Analysis: Superior has extensive experience coordinating with the State Laboratory and approved overflow laboratories on State Funded projects, given our involvement with the State PM, ISID and LOE contract work from 2000 to present. In addition, we have a great deal of experience coordinating with qualified independent laboratories located throughout the Midwest region of the United States on privately funded projects. Superior begins the process with the development of a site specific Work Plan that contains the specific Quality Assurance Project Plan (QAPP). The Work Plan provides (among other things) the number, location, and types of samples that are expected to be taken for a given project or sampling event. The QAPP provides written protocols to provide quality assurance by identifying proper sampling techniques and methods, analytical requirements, appropriate sample containers to use, sample preservation, documentation procedures, sample labeling protocol, and outlines the chain of custody tracking protocol that will be utilized on the project. The QAPP also provides a quality control measure by dictating the type of samples (trip blanks/field duplicates/known standards), frequency and tolerance levels that will be used to measure the amount of uncertainty in the generated analytical data. These measures are then used during data validation.

3.3 Feasibility Studies: Superior has over 24 years experience conducting Feasibility Studies (FS) at sites regulated under Part 201 and Part 213. FS are often coupled with Remedial Investigations (RI); RI information is used to evaluate corrective action needs and alternative response actions. A range of possible remedial alternatives are typically reviewed with respect to their technical feasibility, public health risk and costs. These alternatives may range from no action and risk based alternatives to full scale remediation involving removal actions or on-site contaminant destruction. The FS looks at the range of potential response actions, probability of success and related costs to determine if they warrant additional evaluation. Monitored natural attenuation, soil vapor extraction, air sparge, dual phase extraction, soil excavation, in-situ chemical oxidation, and ozone sparge are just some of the alternatives considered by Superior. The FS are conducted by engineering staff, overseen by a Professional Engineer licensed in Michigan, who are responsible for evaluation and selection of potential remediation options.

3.4 Site Closure: Superior has extensive experience preparing Closure Reports under the Part 213 program and Remedial Action Plans/Site Closure Reports under the Part 201 program. The Corrective Action Plan is followed until contaminants in the affected media are reduced to target cleanup goals established in the Final Assessment Report or Remedial Action Plan. Site closure is recommended when contaminant levels no longer present a demonstrable threat to potential human and sensitive receptors. Site closure is recommended only after the appropriate verification sampling of each media impacted by the release(s).

3.5 Health and Safety: Superior maintains a Corporate Health and Safety Program designed to ensure the safety of our employees, subcontractors, other personnel on or near our project sites, and the general public. Our Program includes safety education, procedures, training and annual refresher training designed to comply with the Michigan Occupational Safety and Health Act (MIOSHA – Act 154 of 1974, as amended) and 29CFR Part 1910, as amended, also known as the Occupational Safety and Health Standards.

Superior utilizes a Behavioral Based Safety program to get the involvement of every employee in the company's health and safety program. Behavioral Based Safety is an employee run program that creates a psychological approach to safety by getting the employees to take charge of safety for themselves and others. Each person participates in creating a Job Safety Analysis at the work site, prior to the start of the day's activities. Additionally, every Superior employee, and subcontractor at a Superior work site, is empowered, expected, and has the

responsibility to stop work of another worker, or operation, if the working conditions or behaviors are considered unsafe.

3.6 UST Removal and Closure: Superior has extensive experience removing and properly closing UST systems on behalf of the MDEQ and private sector clients. Superior's experience includes registration of USTs, providing the required 30-day notification of intent to remove, purging and cleaning of USTs and piping, and conducting site assessments during the UST removal process. In cases where removal of a UST is not possible (typically limited to cases where a building's integrity is threatened), Superior will clean the UST and fill it with flowable fill (concrete). The piping and USTs are inspected during the removal process for holes or defects that may have caused a release. A Site Assessment is completed during the removal/closure process. Soils beneath the piping, beneath the USTs and along the sidewalls of the UST cavity are visually inspected for staining and field screened using a photoionization detector. In cases where contamination is detected (either through visual inspection or laboratory data), a confirmed release is reported. In cases where no contamination is present, a Site Assessment report is prepared.

3.7 Quality Assurance/Quality Control: The goal of Superior's Quality Assurance and Quality Control (QA/QC) program is to identify and implement sampling and analytical methodologies which limit the introduction of error into analytical data, analyses, and reporting. Our program establishes many functions including: quality management policies and guidelines for the development of organization and project-specific quality plans; criteria and guidelines for assessing data quality; assessments to ascertain effectiveness of QA/QC implementation; and training programs related to QA/QC implementation. See Superior's Quality Management Process and Data Quality Assessment Flowchart included as **ATTACHMENT 2**.

#### **ARTICLE 4: REGULATORY KNOWLEDGE**

Include a brief description of your firm's professional experience in each of the following:

4.1 Michigan environmental statutes related to remedial investigation/action: Superior staff understand MDEQ requirements and are well versed in all the major environmental programs including, Part 201 and Part 213 of Michigan's Natural Resources and Environmental Protection Act (NREPA), 1994 PA 451, as amended. Our staff are also familiar with permitting in the major programs, including: National Pollutant Discharge Elimination (NPDES), RCRA permitting and requirements, storm water permitting and Storm Water Pollution Prevention Planning (SWPPP), Spill Prevention Control and Countermeasure (SPCC) Plans, air discharge permitting, groundwater reinjection and Soil Erosion and Sedimentation Control.

Superior meets Qualified Storage Tank Consultant (QC) requirements established under Part 213 of NREPA and employs staff having pertinent certifications, including: Michigan Licensed Professional Engineer, Certified Professional Geologist, and Certified Hazardous Materials Manager.

4.2 Federal regulations and environmental statutes related to remedial investigation/action: Superior staff understand US EPA requirements and are well versed in all the major environmental programs including, CERCLA: Established in 1980, 42U.S.C.s/s 9601 et seq provides a federal "Superfund" to clean up uncontrolled or abandoned hazardous waste sites as well as accidents, spills, and other emergencies caused by release of pollutants and contaminants into the environment. The Superfund Amendments and Reauthorization Act of 1986 (SARA)(42 U.S.C. 9601 et seq) reauthorized CERCLA to continue cleanup activities

around the country. We have staff presently available who have performed or managed the following (but not limited to) CERCLA activities: Listing; Pre-Remedial Investigation and Feasibility Study (RI/FS); Remedial Design; Remedial Construction; Remedial Action Operations; Record of Decision (ROD); Remedial Action (RA) Kick Off; Delisting; Community Involvement Plan; Enforcement Agreements and Consent Decrees; Administrative Record; Community Interviews; Community Advisory Groups; Fact Sheets/Information Bulletins; Public Meetings; and Community Involvement.

RCRA: Hazardous waste regulations overseen by EPA are in the federal Resource Conservation and Recovery Act (RCRA) contained in Title 40, Parts 260 through 279, of the Code of Federal Regulations (40CFR 260-279). Our staff has performed or managed (but not limited to) the following RCRA activities:

RCRA Part A and Part B Permitting; RCRA Facility Investigation; RCRA Feasibility Study preparation; RCRA Corrective Measures Implementation; RCRA Waste Identification and Characterization; RCRA Reporting, Training, Plan preparation, etc.; RCRA Generator, and TSD Audits; and RCRA Corrective Measures Design.

TSCA: PCB, lead based paint, and asbestos containing materials overseen by EPA are in the federal Toxic Substances Control Act (TSCA). Our staff has performed or managed (but not limited to) the following TSCA activities: PCB sampling of various media; lead-based paint sampling; asbestos sampling; disposal of PCB waste under TSCA; disposal of lead-based paint; and disposal of asbestos containing materials.

#### **ARTICLE 5: PERSONNEL STAFFING**

5.1 An organizational chart that includes each person on your project team and their identified roles for a typical assigned project provided? Yes No Refer to **ATTACHMENT 3**.

5.2 Complete the following information regarding the personnel your firm considers key to the successful completion of the study or project scope of work:

##### Key Personnel 1

Name: Jeff M. Skendrovic Job Title: Vice President of Technical Services

Labor Classification: P4 College Degree(s): B.S. Civil/Environmental Engineering

Successfully completed 40 hour HAZWOPER training with an up-to-date 8 hour

HAZWOPER refresher training? Yes No

##### Key Personnel 2

Name: Todd M. White Job Title: Vice President of Operations

Labor Classification: P4 College Degree(s): B.S. Geology

Successfully completed 40 hour HAZWOPER training with an up-to-date 8 hour

HAZWOPER refresher training? Yes No

##### Key Personnel 3

Name: Alan S. Nicholls, CPG Job Title: Team Leader - Assessment Services/Sr.Project Manager

Labor Classification: P4 College Degree(s): B.S. Geology

Successfully completed 40 hour HAZWOPER training with an up-to-date 8 hour

HAZWOPER refresher training? Yes No

Key Personnel 4

Name: Thomas A. Sorensen, P.E. Job Title: Team Leader - Engineering Services  
Sr. Engineer

Labor Classification: P4 College Degree(s): B.S. Civil Engineering

Successfully completed 40 hour HAZWOPER training with an up-to-date 8 hour  
HAZWOPER refresher training? Yes No

Key Personnel 5

Name: Nathanial J. Hehir, CPG Job Title: Team Leader - Pipeline Services/ Sr. Project  
Manager

Labor Classification: P4 College Degree(s): B.S. Geology

Successfully completed 40 hour HAZWOPER training with an up-to-date 8 hour  
HAZWOPER refresher training? Yes No

Key Personnel 6

Name: Richard A. Verstrate, CPG Job Title: Senior Project Manager

Labor Classification: P4 College Degree(s): B.S. Geology

Successfully completed 40 hour HAZWOPER training with an up-to-date 8 hour  
HAZWOPER refresher training? Yes No

Key Personnel 7

Name: Gerard DeBusschere, CPG Job Title: Senior Project Manager

Labor Classification: P4 College Degree(s): B.S. Geology

Successfully completed 40 hour HAZWOPER training with an up-to-date 8 hour  
HAZWOPER refresher training? Yes No

Key Personnel 8

Name: Trevor I. Woollatt Job Title: Team Leader – Real Estate/Due Diligence Services  
Sr. Project Manager

Labor Classification: P4 College Degree(s): B.S. Geology

Successfully completed 40 hour HAZWOPER training with an up-to-date 8 hour  
HAZWOPER refresher training? Yes No

Key Personnel 9

Name: Carla J. Lange Job Title: Senior Project Manager

Labor Classification: P4 College Degree(s): B.S. Biology

Successfully completed 40 hour HAZWOPER training with an up-to-date 8 hour  
HAZWOPER refresher training? Yes No

5.3 Do the Professional Project Managers (PM) have at least three years experience as a PM?

Yes No

5.4 Do the Professional PMs have a minimum of 10 years experience with similar projects?

Yes No

5.5 Resumes for the key personnel provided? Yes No Refer to **ATTACHMENT 4**.

## ARTICLE 6: SUB-CONSULTANTS/SUBCONTRACTORS

6.1 Identify any consultants/subcontractors that will provide services, including engineering, well drilling, and geophysical testing services. (Note: If any support must be provided by a consultant/subcontractor, the consultants/subcontractors must indicate their capability and willingness to conduct the work):

Sub-Consultant/Subcontractor 1

Business Name: Stratus Consulting

Address: 1881 Ninth Street, Suite 201

City/State/Zip: Boulder, Colorado 80302

Contact Name and Telephone #: Jennifer Peers (303) 381-8000

Description of Work to Be Conducted: Natural Resource Damage

Assessment/Environmental Impact Statement , Litigation Support and Database

Management

Letter of intent provided? Yes No Refer to **ATTACHMENT 5**.

6.2 Are consultants/subcontractors trained in health and safety procedures, including participating in a medical monitoring program, and comply with 29 CFR Part 1910, as amended? Yes No

6.3 If a consultant/subcontractor is to be used for drilling, do they have a minimum of 5 years related experience?

Yes No Drilling services will be competitivly bid. Superior does have Geoprobe® and HSA drilling capabilities through our Remedial Services Division if we are low bidder for drilling services.

6.4 Provide the following information and brief descriptions of at least three (3) projects in the last five (5) years closely related to the work requested in this RFP for each consultant/subcontractor:

Project 1 Reference Information:

Project Name: Kalamazoo River PCB site Natural Resource Damage Assessment

Key Personnel: Jennifer Peers, Diana Lane, and David Chapman

Project Address: Kalamazoo River

Project City/State/Zip: Marshall, Michigan 49068

Owner/Client Contact Name and Telephone #: MDEQ, Judith Alfano, 517-373-7402

Project 1 Description: Stratus Consulting has worked with natural resource Trustees at the Kalamazoo site since the mid-1990s. We have provided extensive support to the State of Michigan and the U.S. Fish andWildlife Service on this natural resource damage assessment (NRDA), including preparation of a Preassessment Screen, a Phase I Assessment Plan, and Phase I Assessment and Economic Damages Assessment reports. Our technical work at this site has included: compiling and reviewing existing data; conducting a detailed evaluation of polychlorinated biphenyl (PCB) sources and pathways into the river; coordinating with the Remedial Investigation/Feasibility Study and ecological risk assessment studies; conducting field studies on fish health and on PCB bioaccumulation in fish and birds; designing and conducting extensive recreational angling surveys; conducting benefits transfer economic studies; performing restoration planning, including preparation of environmental assessments (EAs); and environmental impact statements (EISs).

Stratus Consulting recently prepared a restoration plan (RP) and EA for Portage Creek, a portion of the site, and is currently preparing a draft programmatic RP/EIS for the Kalamazoo River PCB site restoration program.

Project 2 Reference Information:

Project Name: Enbridge Oil Spill

Key Personnel: Kaylene Ritter

Project Address: Kalamazoo River

Project City/State/Zip: Marshall, Michigan 49068

Owner/Client Contact Name and Telephone #: U.S. Fish and Wildlife Service, Stephanie Millsap, 734-692-7628

Project 2 Description: Stratus Consulting is providing NRDA management and technical support to state and federal natural resource Trustees for an oil spill of more than one million gallons in the upper Kalamazoo River, Michigan, which occurred in July 2010. Stratus Consulting was on the scene within one day of the spill to plan and coordinate cooperative ephemeral data collections on exposure, injury, and recreational use losses. Since the spill, Stratus Consulting has been the lead consultant for the Trustee Council, which includes the State of Michigan, the U.S. Fish and Wildlife Service, the National Oceanic and Atmospheric Administration, and several tribes, on all aspects of NRDA support.

Preassessment studies that Stratus Consulting has planned, coordinated, or participated in include an extended fish kill investigation; surface water, sediment, and source oil sample collections; and a mussel shell survey, a floodplain oiling survey, and vegetation surveys. We also coordinated Trustee efforts with wildlife response and rehabilitation work on oiled birds and wildlife. Stratus Consulting also provided data management support that included database production, quality assurance/quality control checks, and secure data distribution. Real-time data analysis and interpretation were used to plan additional impact assessment studies. We also have provided the Trustees with case strategy and case management support.

Project 3 Reference Information:

Project Name: Tittabawassee River NRDA

Key Personnel: Kaylene Ritter

Project Address: Tittabawassee River

Project City/State/Zip: Midland, Michigan 48640

Owner/Client Contact Name and Telephone #: Michigan Department of Environmental Quality, Judith Alfano, 517-373-7402

Project 3 Description: The release of hazardous substances from the Dow Chemical Midland facility has resulted in the contamination of the Tittabawassee River and floodplain, as well as downstream Saginaw River and Bay. Since 2006, Stratus Consulting has provided technical support and strategic advice to the the State of Michigan and the other natural resource Trustees on the Tittabawassee River NRDA. To date, this work has included: compilation, analysis, and interpretation of data and information on the site; development of restoration evaluation criteria; development of an Assessment Plan; participation in three cooperative technical work groups (TWGs) with the potentially responsible party, including ecological, restoration, and human services TWGs; development of focus group materials; development of recreational fishing and park use studies; evaluation of cultural uses of the Tittabawassee River system by the Saginaw Chippewa Tribe; habitat equivalency analyses addressing ecological losses within the river system; and restoration planning to identify and rank potential restoration projects.

## **ARTICLE 7: SPECIAL FACTORS**

Include a brief description of your firm’s special qualifications such as awards, recognitions, innovations, etc.

Superior Environmental Corp (Superior) is a Michigan based Women’s Business Enterprise (WBE), and an Employee Owned/10% ESOP Company that has been providing comprehensive, and high-quality environmental management services to both governmental and private clients for over 24 years. Our headquarters has been located in West Michigan since the company was founded. We have strong relationships with many other environmental service providers and related subcontractors within the state.

Financially, Superior maintains a strong balance sheet and financial position that allows us to utilize funding to meet both organizational development and operational needs. Superior’s average annual revenue over the last four years has been approximately \$10 million/year. Superior also has the ability to provide bid, performance and payment bonds when needed through surety companies that are treasury listed, “A”- rated, and admitted within the State of Michigan.

Our project capability and experience ranges from small, short-term projects to larger multi-year, multi-million dollar contracts. Superior has conducted environmental investigations on over a thousand sites throughout the State of Michigan. Therefore, we are very familiar with the geologic and hydrogeologic conditions across the state, including the Upper Peninsula.

Our staff are skilled in the use of computer models for the analysis and design of remediation systems or for risk-based assessments, which may include groundwater flow and contaminant transport modeling. The models used include MODFLOW, FLOWPATH, QUICKFLOW, MT3D, BIOSCREEN, RBCA Toolkit, etc.

Superior’s management team and project managers have on average 20 years of professional work experience, half of which (10 years) has been spent with Superior Environmental. Many of our managers and their support staff also have specific experience and understanding of the State of Michigan expectations, processes and requirements, both technical and administrative. We believe our company provides a strong established professional project management team that already has fundamental knowledge and experience within the State of Michigan needed to implement a successful ISID program and meet the future needs of the State.

Superior makes extensive use of computers and specialized software for project development and program management. Our staff members are well trained in the use of multiple computer technologies, allowing maximum involvement with project development and management. Project managers have the ability to support project needs by rapid access to files, tracking of project tasks and schedules, quality control, and managing budgets with greater ease. The management of data, report development, and presentation requirements are facilitated by current technology in computer hardware and software.

Superior’s project manager and field staff have completed multiple projects where samples are submitted to the MDEQ Environmental Laboratory. Superior’s staff understand the processes for ordering sample containers, scheduling laboratory services, delivering samples to the laboratory, preparing MDEQ Laboratory chain of custody forms, and preserving samples.

## **I-1 GENERAL INFORMATION AND PROJECT TEAM**

## **I-1 GENERAL INFORMATION AND PROJECT TEAM**

### **ORGANIZATION INFORMATION**

Company Name: Superior Environmental Corp  
Address: 1128 Franklin Street, Marne, Michigan 49435  
Contact Person: Jeff Skendrovic  
[j.skendrovic@superiorenvironmental.com](mailto:j.skendrovic@superiorenvironmental.com)

Superior Environmental Corp operates as an “S” corporation and was incorporated in the State of Michigan in 1989. Superior employs Professional Engineers that are licensed to practice in the State of Michigan as required pursuant to the Occupational Code (PA 299 of 1980).

The following branch offices of Superior will assist in providing services:

Marne Office  
1128 Franklin Street  
Marne (Ottawa County), MI 49435

Bay City Office  
1680 Marquette Avenue  
Bay City (Bay County), MI 48706

Marshall Office  
317 S. Grand Street  
Marshall (Calhoun County), MI 49068

Wixom Office  
28287 Beck Road, Suite D-1  
Wixom (Oakland County), MI 48393

Gaylord Office  
P.O. Box 2159  
Gaylord, (Otsego County), MI 49734

Superior owns and operates drill rigs and Geoprobos<sup>®</sup> and will not utilize a subcontractor for drilling services, unless required to be competitively bid. Superior will utilize the following subcontractor and sub-consultant:

Sub-Consultant: Stratus Consulting  
Address: 1881 Ninth Street, Boulder, CO 80302  
Services: Natural Resource Damage Assessments, Environmental Impact Statements, Litigation Support, Database Management

## **I-2 UNDERSTANDING OF PROJECT AND TASKS**

## **I-2 UNDERSTANDING OF PROJECT AND TASKS**

Superior understands the State of Michigan Department of Technology, Management and Budget (DTMB) is interested in identifying qualified professional firms to perform services at state or federally funded cleanup sites through an Indefinite-Scope Indefinite-Delivery contract. Superior has been providing the services described in this Request for Proposal (RFP) on multiple projects for governmental and institutional clients, including designation as a State of Michigan Project Management firm from 2000 to 2013.

Superior has established processes to ensure that investigation and construction project goals are met. The first step in the process is establishing those goals with the State Project Manager (SPM) for investigation and/or construction phases of the project. This is done at the Preliminary Evaluation and Work Plan Development stage described later in Section I-4, Management Summary, Work Plan and Schedule. Superior has also developed a Quality Management Process and Data Quality Assessment process (Refer to ATTACHMENT 2) to further ensure that investigation and construction activities meet project objectives.

Superior understands that detailed and clear construction specifications and drawings are integral to ensuring that the project is completed according to design specification, on time and within budget. Superior's staff is experienced in preparing bid documents, conducting pre-bid meetings, preparing addenda, handling bidder questions and evaluating Trade Contractor proposals. Once a Trade Contractor has been selected, Superior carefully reviews all Trade Contractor submittals (for example equipment cut sheets and shop drawings) to make certain of compliance with the specifications.

Superior also recognizes that diligent construction oversight is a critical component to the successful completion of a construction project. Superior's Construction Managers understand the details of the specifications and are experienced in the on-site management of Trade Contractors. Superior tracks progress on a daily and weekly basis to ensure that the project is constructed correctly, on time and within budget. At the point of Substantial Completion, Superior will review the work and identify any items that require correction and communicate these requirements to the Trade Contractor. Making sure the Trade Contractors meet the requirements of the specifications prevents construction delays, errors and contract disputes.

However, even under the best conditions, issues can arise that will have to be expeditiously resolved. When required, Superior's Project Managers understand when and how to prepare/evaluate Bulletins, Change Authorizations and Change Orders. Superior's understanding of construction management will ensure that projects are conducted in the best interest of the State. As soon as a situation is identified that would impact the successful completion of a project, Superior construction managers will contact the Project Manager and the SPM to begin problem-solving. A determination will be made regarding the severity of the potential impact (to the completion or quality of the project), the cause, (whether it was avoidable or not, if caused by Contractor or Engineer errors and omissions, or unforeseen/uncontrollable forces like severe weather), then develop and implement a plan to correct the issue quickly so any negative impacts are minimized. Every effort will be made to reach resolutions equitably and amicably. Superior will document these issues in addition to the routine documentation described above.

Superior will provide all deliverables in the format(s) specified in the project scope of work. This may include hard copy and CD copies of reports. All project report submittals will begin with an Executive Summary. Superior has the capability to provide deliverables in Microsoft Word,

Excel, AutoCAD and PDF formats. All deliverables will be reviewed in accordance with Superior's Quality Management Process and Data Quality Assessment Process prior to submittal to the State/Client Agency. All draft documents will be clearly denoted as "DRAFT" and "Deliberative Process – FOIA Exempt".

Superior will submit invoices in accordance with the terms of the contract in the required format. In addition, we are very familiar with the administration and financial system needs of the State on their projects through being a State of Michigan Project Management firm from 2000 to 2013.

## **I-3 PERSONNEL**

### **I-3 PERSONNEL**

Superior has assembled a team of highly qualified professionals to successfully accomplish the work set forth in the DTMB ISID Contract. Our team includes Superior's most experienced staff members that are qualified in all phases of investigation, assessment, remedial design, construction management, and O&M of remediation systems. The majority of these professionals have prior experience working on state-led projects similar to what is anticipated under this ISID Contract.

Team members, who Superior considers to be "Key Personnel" to the successful completion of the work, are identified by asterisks (\*\*\*) in the Organizational Chart provided as **ATTACHMENT 3**. These key staff members have an average of over 22 years professional experience directly related to this type of environmental project work and they have an average of over 10 years of experience working with Superior. Resumes for each of these nine (9) Key Personnel are provided in **ATTACHMENT 4**. Resumes include staff name, title, labor classification, college degrees, employment history, specialized training, certifications, and a brief description of key projects they have worked on.

## **I-4 MANAGEMENT SUMMARY, WORK PLAN AND SCHEDULE**

## **I-4 MANAGEMENT SUMMARY, WORK PLAN, AND SCHEDULE**

Superior's primary point of contact with the State Contract Administrator on all contractual and invoicing matters after issuance of the contract will be our Program Director (Jeff Skendrovic). Please refer to Project Organization Chart provided in **ATTACHMENT 3** of this submittal. Superior's Program Director and QA/QC Manager (Todd White) will be available at all times to the State Contract Administrator.

Once a project is assigned to Superior, our Program Director will select a Superior Project Manager to manage the project matching the expertise of our Project Manager with the nature of the project. We have assigned to our Project Team several of our Project Managers from each of our Michigan offices; Grand Rapids, Bay City, Wixom, Marshall, and Gaylord. Therefore, we will generally be able to assign the Project Manager from the office nearest the project site to minimize mobilization costs, facilitate communications with the SPM and take advantage of our knowledge of local hydrogeology and work history on other sites of contamination in the area.

Superior's Program Director and Project Manager will assign additional staff members and equipment to the project based on the technical and scheduling needs of the project. Superior is committed to supplementing individual project teams with additional staffing resources from any Superior office to meet special technical or scheduling requirements.

Upon approval of work plans by the SPM our Project Managers will manage the assigned projects on a day-to-day basis and will be our primary point of contact with the SPM's. The SPM's will be encouraged to contact Superior's Project Director whenever he or she feels it is necessary.

Payment requests will be completed by the assigned Superior Project Manager and will be centrally managed and coordinated by the Program Director to assure consistency in the submitted documents. Having worked as a State Project Management Firm we are very familiar with the State's procedures and requirements in these regards.

Superior's Program Director will assure that only Occupational Safety & Health Administration (OSHA) 40-Hour HAZWOPER Health and Safety trained personnel with current 8-hour refresher training in conformance with 29 CFR 1910.120 are assigned to field duty, and each representative of Superior is dedicated to promoting "safety first" in all phases of operation. Site specific health and safety plans will be prepared for each project site and will be presented to and discussed with field personnel prior to the initiation of any on-site activity. Superior has an excellent safety record that we will be happy to provide to the state upon request. In addition, Superior employed a Behavior Based Safety Program that is designed to promote individual awareness of safety during the completion of any project task. Personnel complete Job Safety Analysis sheets prior to commencing field work. Each task is broken down into components and safety concerns are identified for each component of each task.

### **PROJECT TASKS**

#### ***PRELIMINARY EVALUATION AND WORK PLAN DEVELOPMENT***

Upon receiving instructions from the SPM to begin development of a Work Plan for a specific project site(s), Superior's Project Manager will arrange a meeting with all necessary individuals to discuss the project. Superior will complete the file review to develop an understanding of the existing site conditions, history of the activities conducted at the site and any previous

remediation activities conducted at the site. This may include reviewing remedial investigation reports, leaking underground storage tank reports, Phase I/II environmental assessments, and Baseline Environmental Assessments. Following the file review, Superior will meet with the SPM to further discuss the site. The kick-off meeting is necessary for Superior to understand the SPM's objective for investigating, identifying, and abating any risks to human health, safety, and sensitive environmental receptors associated with the site and to prepare a work plan tailored to meet the project goals.

A site visit will be included as part of the preliminary research to evaluate existing layout and conditions at the site. A site visit is necessary to assess the current site conditions, including land use, and make any notations regarding any changes that may have occurred at the site or other observed constraints that may not be noted in existing reports, such as overhead utilities. Investigation of all potential receptors and the level of risk to potential receptors are integral elements of the scope of work. If risks to receptors are identified, implementation of remedial actions to mitigate the risks is expected.

After the file review and preliminary research have been completed, Superior will develop a site-specific work plan and prepare costs for the SPM to review. The work plan will include at a minimum the following:

- Executive summary
- Evaluation of the existing data, including any additional information obtained during the initial site inspection
- Proposed remedial investigation activities
- Budgets for various tasks and schedules
- Health and Safety Plan

Upon reaching agreement of the Work Plan, schedule, and budget, Superior will prepare the necessary contract document(s) according to the requirements of the ISID contract.

### ***REMEDIAL INVESTIGATIONS (RI)***

Upon finalization of the Work Plan, the next step is a field-oriented effort to collect sufficient data to assess site hazards and evaluate remedial response options. Before embarking on field activities, QA/QC and initial health and safety plans will be developed. The project team will be assigned and consist of professional staff and appropriate subcontractors, if needed. The previously developed Work Plan will be modified as necessary. The remedial investigation, although site specific, will contain at least the following tasks:

Site Investigation Activities – Field activities will be initiated once the plans meet SPM approval. Site activities will vary based on site conditions and may include any or all of the following: establish an on-site office and facilities; survey and prepare a scaled site map that includes the existing well elevations tied to United States Geological Survey (USGS) datum; conduct geophysical studies or other non-intrusive testing (electromagnetic (EM), ground-penetrating radar (GPR), etc.); and gather additional existing data such as sensitive environmental receptors, off-site access requirements, etc.

Detailed Site Characterization Studies – The Work Plan to conduct detailed site characterization studies may be modified upon completion of the site investigation activities. Upon approval

from the SPM, Superior will initiate the additional on-site activities. These may include but are not limited to any or all of the following: hydrogeological investigations; groundwater, surface water and soil/sediment sampling; waste sampling; biota and social/demographic studies; data validation and any additional environmental studies. Monitoring wells installed as part of an investigation will be entered into Wellogic, a designated State database program. A paper copy of the well log(s) may be submitted in lieu of an electronic record. Any well abandonment will be conducted in accordance with the current edition of ASTM Standard D-5299-99.

Natural Resource Damage Assessment (NRDA) Studies – The NRDA studies will be conducted during the RI. NRDA studies are conducted to determine if natural resource injury has occurred due to a hazardous substance release; to identify and quantify the resulting loss of uses or services associated with the injury; and to determine in economic terms how much damage has occurred in the past and how much damage will occur in the future. The NRDA study consists of four major components:

- Pre-Assessment – This is the first step in this process. The pre-assessment portion of a NRDA study will be conducted during the initial site visit to determine if natural resources are being affected by a discharge or release. If a discharge or release is detected, the SPM will be notified and steps will be taken to determine whether or not further assessment actions are needed.
- Assessment Plan – The assessment plan will be presented in the work plan for the RI. The scientific and economic methodologies selected for the assessment of the damage will be presented in the plan. The assessment plan will ensure that only the reasonable costs of assessment will be incurred. Comments received during any public comment period held, as well as responses to these comments, will be maintained as part of the administrative record of the assessment.
- Assessment – The assessment of natural resource damage will be conducted as part of the detailed site characterization study. The assessment will consist of:
  - a) Injury Determination Phase which will focus on determining that an injury to the resource has occurred and that the Injury has resulted from the discharge or release;
  - b) Quantification Phase which will focus of the quantification of the damage before and after the release and the reduction in services resulting from the discharge or release; and
  - c) Damage Determination Phase which will focus on determining the monetary compensation to be sought as damages for the injury to the natural resources as well as determining reasonable alternatives for restoration, rehabilitation, replacement, and/or acquisition of equivalent resources.
- Post-Assessment – The post assessment will be part of the RI report and will consist of a report of the assessment as well as a restoration plan that will comply with 43 CFR Part 11, entitled “Natural Resource Damage Assessments, Final Rule (dated August 1, 1986) and the ‘Notice of Proposed Rulemaking’, (dated April 29, 1991) that proposed modifications to the original rule.

Remedial Investigation Report - Upon receipt of all the analytical data, Superior will prepare a Remedial Investigation Report, which will detail the results of the investigation including the NRDA study conducted for the site, as well as an assessment of the data. The report will include at a minimum the following:

- Details of the investigations. The report will include the identification of all the potential receptors, description of the field activities and associated methodologies conducted at the site, results of all laboratory analyses, and other pertinent information. The report will include the extent of contamination and the potential impact to the identified receptors such as buildings, residential supply wells, utility corridors, surface water and any other potential receptors. The concentrations of the subsurface contaminants will be compared to applicable safe exposure criteria to determine whether they pose any hazards.
- The report will contain all of the appropriate information collected during the investigations, including scaled site maps, figures depicting the extent of contamination, figures showing groundwater elevation contours and flow direction, geologic cross-sections, all pertinent analytical and elevation tables, soil boring and monitor well logs, analytical data, and any other pertinent information relative to the site, such as presence and quantity of free phase liquids.
- Based upon the results of the investigations and evaluation of the contamination compared to applicable criteria, the potential receptors and pathways that need to be addressed will be identified and presented. Recommendations may also be made regarding further work to fully characterize the hazards, if needed, or obtain further information to abate these hazards.

Waste Disposal – Investigation derived waste will be properly characterized, labeled, contained, and disposed of in accordance with applicable state and federal laws, rules, and/or regulations.

#### ***RISK-BASED-CORRECTIVE-ACTION (RBCA)***

As part of this contract, Superior will provide services to conduct the risk-based-corrective-action process for leaking underground storage tank sites as required under Part 213 of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended. These activities may include, but are not limited to: performance of initial response actions, Initial Assessment Reports (IAR), Tier I or Tier II evaluations, Final Assessment Reports (FAR), corrective action plans and closure reports. This task will generally be conducted as part of the RI/FS work.

#### ***FEASIBILITY STUDY (FS)***

Upon review and acceptance of the final Remedial Investigation Report by the SPM, Superior will prepare a Feasibility Study (FS) to evaluate applicable remediation technology(s), including a Risk Assessment as appropriate. A comprehensive list of potential remedial alternatives will be selected that address the hazards identified during the remedial investigation and are determined to be a risk to the identified potential receptors and pathways at the site.

Potential remedial alternatives will be screened using the following factors:

- The source of the contamination is significantly reduced or eliminated;
- The contaminants are reduced to levels where they do not pose an acute hazard to the identified receptors; and
- The contaminants are removed or rendered harmless in a safe, timely, and cost effective manner.

Screening the initial list will result in a short-list of three or four of the most promising technologies which will then be subjected to a more in-depth analysis and comparison.

The follow up comparison will involve preparation of conceptual designs for each alternative from which budgetary cost estimates for capital and operation and maintenance costs can be estimated. In addition to an engineering economic analysis for capital and project lifetime costs, the remedial approaches will be compared based on, among other factors, technical feasibility for application to each of the impacted media, relative advantages and disadvantages, and the ability of each technology to reach the target cleanup criteria. The most technically and economically effective remedial alternative will be selected for abatement of hazards at the site.

### ***DESIGN***

After the RI/FS has been completed the next task will be development of the final designs and specifications for the abatement of the hazards and selection of a contractor to conduct the work. As noted above, a conceptual design will be formulated for the final remedy or interim response during the FS process. From that, the Specialty Sub-List Professional will develop the detailed design and bid specifications. Construction specifications will be in the Construction Specifications Institute (CSI) format unless otherwise requested by the SPM. The detailed design will include, if required, the equipment and materials specifications, detailed drawings for any underground plumbing associated with recovery and discharge lines, remedial building construction, installation and connection of the electrical components, and installation of the treatment equipment. The design will also include the trenching diagrams, well layouts, piping and instrumentation diagrams and electrical drawings that will be used by the contractor for installing the system.

### ***CONSTRUCTION MANAGEMENT SERVICES***

After finalizing the bid documents, the Specialty Sub-List Professional will follow the DTMB's procedures and advertise for the solicitation of bids from qualified contractors. Superior will coordinate the pre-bid meeting, which will include the SPM and the prospective contractors. Superior will respond to technical questions and will prepare and submit any addenda. The Specialty Sub-List Professional will then conduct an evaluation of the bids to facilitate selection of the winning bidder. The bid analysis, including a review of the acceptability of a prospective contractor to conduct the work, will be submitted to the SPM for review and final selection.

The Specialty Sub-List Professional will provide an experienced, qualified staff person for full-time on-site oversight of construction/remediation activities depending upon the complexity of the project. The construction oversight will include at a minimum the following tasks:

- Review of the Work Plan and Health and Safety Plan from the Trade Contractor.
- Assure that the contractor has acquired all necessary work permits and approvals before the start of construction.
- Maintain records of all documents
- Prepare and submit a construction report
- Perform a final inspection.

The Specialty Sub-List Professional's project manager will be responsible for general administration including review of payment requests, change orders, change authorizations, bulletins, addressing questions, answering contractor questions, update schedules, etc.

### ***START-UP ASSISTANCE***

The Specialty Sub-List Professional will provide start-up assistance to the contractor as required. The contractor will be required to demonstrate the start-up and continuous operation of the system within the design parameters for the first 30 days. The start-up phase will be completed when system operation stabilizes, and the system is operating within the design parameters as verified by the design specifications.

### ***OPERATION AND MAINTENANCE OF REMEDIATION SYSTEMS***

As part of the contract, the Specialty Sub-List Professional will provide services for the operation and maintenance of remediation systems unless this item is specifically required as a bid item. These activities may include, but are not limited to, evaluating/developing operations and maintenance manuals, performing routine inspections of systems to ensure they are operating correctly, conducting routine maintenance of remediation equipment, collecting influent and effluent samples of various media and replacing minor system components that are worn or damaged.

## **I-5 REFERENCES**

## **I-5 REFERENCES**

Information requested as part of the RFP is provided in Article 1: Business Organization and Articles 2 and 6.4: Project References of the Professional Questionnaire.

## **I-6 IDENTIFICATION OF PERSONNEL AND ESTIMATED COMPENSATION**

**I-6 IDENTIFICATION OF PERSONNEL AND ESTIMATED COMPENSATION**

**A. Primary Professional and Sub-consultant(s) – Position, Classification, and Employee Billable Rate Information**

Requested information, including information for our proposed Sub-Consultants, is provided in **ATTACHMENT 6**.

**ATTACHMENT 1: ADDITIONAL INFORMATION FOR  
ARTICLE 2.2**

**Example Field Activity Logs and Weekly Report**





ENVIRONMENTAL CORP

### DAILY ACTIVITY LOG

PERSONNEL ON SITE				PROJECT #:BC3209.00
TIME				DATE: August 3, 2010
From:	To:	Name:	Affiliation:	PAGE: <u> 1 </u> OF <u> 1 </u>
6:30 A.M.	5:00 P.M.	Alan Nicholls	Superior Environmental Corp	
7:00 A.M.	5:00 P.M.	Don Winchell	Job Site Services, Inc.	
7:00 A.M.	5:00 P.M.	Dave Winchell	Job Site Services, Inc.	PROJECT NAME: MDEQ-RD, Bondale Dinkens Site 5447 Round Lake Road Gladwin, MI
8:30 A.M.	5:00 P.M.	Lisa Chadwick	MDEQ-RD	
Weather: Sunny and hot, 85 degrees				
COMMENTS: (Daily Activities and Events)				
TIME:				
6:30 A.M.	Conduct tailgate meeting to discuss health and safety and associated with planned activities for the day. Review utility line locations (underground and overhead). Review scope of work. Collect waste manifests from previous day.			
7:15 A.M.	Initiate dewatering. Load first truck (Resteiner Trucking). 40 cubic yards. Sign waste manifest.			
7:30 A.M.	Load 2nd truck (Resteiner Trucking). 40 cubic yards. Sign waste manifest.			
9:45 A.M.	Load 3rd truck (Resteiner Trucking). 40 cubic yards. Sign waste manifest.			
10:00 A.M.	Load 4th truck (Resteiner Trucking). 40 cubic yards. Sign waste manifest.			
12:05 P.M.	Load 5th truck (Resteiner Trucking). 40 cubic yards. Sign waste manifest. Class II sand delivered/staged			
2:10 P.M.	Load 7th truck (Resteiner Trucking). 40 cubic yards. Sign waste manifest. Class II sand delivered/staged			
2:30 P.M.	Field screen soil samples from excavation sidewalls and collect soil samples for laboratory analysis. Floor samples not collected since excavation extended into water table. Record soil types observed during excavation.			
3:30 P.M.	Begin securing site and staging equipment for next day. Meet with owner to discuss planned activities for the following day. Collect waste manifests from landfill disposal of soil. Review quantities with JSS for soil removed and backfill brought to site. Class II sand delivered/staged.			
4:30 P.M.	Inspect job site for cleanliness.			
5:00 P.M.	Leave site.			
Soil removed: 280 yards      Cumulative soil removed: 400 yards      Gallons groundwater removed: 0      Cumulative gallons of groundwater removed: 0				
NOTES BY: Alan S. Nicholls				

**DAILY ACTIVITY LOG**

<b>PERSONNEL ON SITE</b>				PROJECT #:BC3209.00
<b>TIME</b>				DATE: August 4, 2010
<b>From:</b>	<b>To:</b>	<b>Name:</b>	<b>Affiliation:</b>	PAGE: <u>  1  </u> OF <u>  1  </u>
6:00 A.M.	5:00 P.M.	Alan Nicholls	Superior Environmental Corp	
7:00 A.M.	5:00 P.M.	Don Winchell	Job Site Services, Inc.	PROJECT NAME: MDEQ-RD, Bondale Dinkens Site 5447 Round Lake Road Gladwin, MI
7:00 A.M.	5:00 P.M.	Dave Winchell	Job Site Services, Inc.	
8:30 A.M.	5:00 P.M.	Lisa Chadwick	MDEQ-RD	
7:00 A.M.	8:00 A.M.	Ronald Larese	PSC	
Weather: Sunny and hot, 85 degrees				
<b>TIME:</b>		<b>COMMENTS: (Daily Activities and Events)</b>		
6:00 A.M.	Conduct tailgate meeting to discuss health and safety and associated with planned activities for the day. Review utility line locations (underground and overhead). Review scope of work. Collect manifests from previous day. 9,200 gallons of groundwater removed by PSC.			
7:15 A.M.	Initiate dewatering. Load first truck (Resteiner). 40 cubic yards. Sign manifest. Class II sand delivered/staged.			
7:30 A.M.	Load 2nd truck (Resteiner). 40 cubic yards. Sign manifest. Sign manifest. Class II sand delivered/staged.			
8:45 A.M.	Load 3rd truck (Resteiner). 40 cubic yards. Sign manifest. Sign manifest. Class II sand delivered/staged.			
9:00 A.M.	Load 4th truck (Resteiner). 40 cubic yards. Sign manifest. Sign manifest. Class II sand delivered/staged.			
9:15 A.M.	Load 5th truck (Resteiner). 40 cubic yards. Sign manifest. Sign manifest. Class II sand delivered/staged.			
11:25 A.M.	Load 6th truck (Resteiner). 40 cubic yards. Sign manifest. Sign manifest. Class II sand delivered/staged.			
12:05 P.M.	Load 7th truck (Resteiner). 40 cubic yards. Sign manifest. Sign manifest. Class II sand delivered/staged.			
12:30 P.M.	Load 8th truck (Resteiner). 40 cubic yards. Sign manifest. Sign manifest. Class II sand delivered/staged.			
1:30 P.M.	Load 9th truck (JSS). 40 cubic yards. Sign manifest. Sign manifest. Class II sand delivered/staged.			
1:40 P.M.	Load 10 <sup>th</sup> truck (JSS). 40 cubic yards. Sign manifest.			
1:50 P.M.	Load 11 <sup>th</sup> truck (Resteiner). 40 cubic yards. Sign manifest.			
2:05 P.M.	Load 12th truck (Resteiner). 40 cubic yards. Sign manifest.			
2:20 P.M.	Load 13th truck (Resteiner). 40 cubic yards. Sign manifest.			
2:40 P.M.	Load 14th truck (Resteiner). 40 cubic yards. Sign manifest.			
3:00 P.M.	Field screen and collect soil samples from sidewalls for laboratory analysis. Record soil types.			
3:30 P.M.	Begin backfilling northern portion of excavation. Place ORC in excavation and mix with Class II sand. Backfill compacted with vibratory roller in 6" lifts.			
4:30 P.M.	Collect waste manifests. Inspect job site for cleanliness. Leave site at 5:00 P.M.			
Soil removed: 600 yards      Cumulative soil removed: 1,000 yards      Gallons groundwater removed: 9,200      Cumulative gallons of groundwater removed: 9,200				
<b>NOTES BY:</b> Alan S. Nicholls				

**DAILY ACTIVITY LOG**

<b>PERSONNEL ON SITE</b>				PROJECT #:BC3209.00
<b>TIME</b>				DATE: August 5, 2010
<b>From:</b>	<b>To:</b>	<b>Name:</b>	<b>Affiliation:</b>	PAGE: <u> 1 </u> OF <u> 1 </u>
6:00 A.M.	6:30 P.M.	Alan Nicholls	Superior Environmental Corp	
7:00 A.M.	5:00 P.M.	Don Winchell	Job Site Services, Inc.	PROJECT NAME: MDEQ-RD, Bondale Dinkens Site 5447 Round Lake Road Gladwin, MI
7:00 A.M.	5:00 P.M.	Dave Winchell	Job Site Services, Inc.	
8:30 A.M.	5:00 P.M.	Lisa Chadwick	MDEQ-RD	
7:00 A.M.	8:00 A.M.	Ronald Larese	PSC	
Weather: Sunny and hot, 85 degrees				
<b>TIME:</b>		<b>COMMENTS: (Daily Activities and Events)</b>		
6:00 A.M.	Conduct tailgate meeting to discuss health and safety and associated with planned activities for the day. Review utility line locations (underground and overhead). Review scope of work. Collect manifests from previous day. 9,200 gallons of groundwater removed by PSC.			
7:00 A.M.	Initiate dewatering. Load two trucks with soil (JSS trucks). 40 cubic yards/truck. Sign manifests.			
7:25 A.M.	Load third truck with soil (Resteiner). 40 cubic yards. Sign manifest.			
7:40 A.M.	Load 4th truck with soil (Resteiner). 40 cubic yards. Sign manifest.			
8:30 A.M.	Load 5th truck with soil (JSS truck). 40 cubic yards. Sign manifest.			
9:10 A.M.	Load 6th truck with soil (JSS truck). 40 cubic yards. Sign manifest.			
9:45 A.M.	Load 7th truck with soil (Resteiner). 40 cubic yards. Sign manifest.			
9:55 A.M.	Load 8th truck with soil (Resteiner). 40 cubic yards. Sign manifest.			
10:45 A.M.	Load 9th truck with soil (JSS truck). 40 cubic yards. Sign manifest.			
11:35 A.M.	Load 10th truck with soil (JSS truck). 40 cubic yards. Sign manifest.			
12:10 P.M.	Load 11th truck with soil (Resteiner). 40 cubic yards. Sign manifest.			
12:20 P.M.	Load 12th truck with soil (Resteiner). 40 cubic yards. Sign manifest.			
1:10 P.M.	Load 13th truck with soil (JSS truck). 40 cubic yards. Sign manifest.			
1:55 P.M.	Load 14th truck with soil (JSS truck). 40 cubic yards. Sign manifest.			
2:25 P.M.	Load 15th truck with soil (Resteiner). 40 cubic yards. Sign manifest.			
2:40 P.M.	Load 16th truck with soil (Resteiner). 40 cubic yards. Sign manifest.			
3:00 P.M.	Field screen soils from southwest portion of excavation and collect soil samples for laboratory analysis. Record soil types. Properly abandon two water wells and dry well.			
4:30 P.M.	Two load Class II sand delivered/staged. Collect waste manifests. Inspect site for cleanliness. Leave site at 6:30 P.M.			
	General notes: removed former building foundation and foundation walls. Clay layer observed in southwest excavation area. Observed a drain tile with heavy staining and mapped location.			
Soil removed: 320 yards      Cumulative soil removed: 1,960 yards      Gallons groundwater removed: 9,200      Cumulative gallons of groundwater removed: 18,400				
<b>NOTES BY:</b> Alan S. Nicholls				



ENVIRONMENTAL CORP

### DAILY ACTIVITY LOG

PERSONNEL ON SITE				PROJECT #:BC3209.00
TIME				DATE: August 6, 2010
From:	To:	Name:	Affiliation:	PAGE: <u> 1 </u> OF <u> 1 </u>
6:30 A.M.	5:00 P.M.	Alan Nicholls	Superior Environmental Corp	
6:30 A.M.	5:00 P.M.	Don Winchell	Job Site Services, Inc.	
6:30 A.M.	5:00 P.M.	Dave Winchell	Job Site Services, Inc.	
8:30 A.M.	5:00 P.M.	Lisa Chadwick	MDEQ-RD	
7:00 A.M.	8:00 A.M.	Ronald Larese	PSC	
Weather: Sunny and hot, 85 degrees				PROJECT NAME: MDEQ-RD, Bondale Dinkens Site 5447 Round Lake Road Gladwin, MI
TIME: COMMENTS: (Daily Activities and Events)				
6:30 A.M.	Conduct tailgate meeting to discuss health and safety and associated with planned activities for the day. Review utility line locations (underground and overhead). Review scope of work. Collect manifests from previous day. Initiate dewatering. Load first truck (JSS). 40 cubic yards. Sign manifest. 9,200 gallons of groundwater removed by PSC.			
7:15 A.M.	Load 2nd truck (Resteiner). 40 cubic yards. Sign manifest.			
7:30 A.M.	Load 3rd truck (Resteiner). 40 cubic yards. Sign manifest.			
8:30 A.M.	Load 4th truck (JSS). 40 cubic yards. Sign manifest.			
9:35 A.M.	Load 5th truck (Resteiner). 40 cubic yards. Sign manifest.			
10:00 P.M.	Load 6th truck (Resteiner). 40 cubic yards. Sign manifest. Class II sand delivered/staged.			
11:00 A.M.	Load 7th truck (JSS). 40 cubic yards. Sign manifest. Class II sand delivered/staged.			
12:10 P.M.	Load 8th truck (Resteiner). 40 cubic yards. Sign manifest. Class II sand delivered/staged.			
12:35 P.M.	Class II sand delivered/staged (Resteiner). Field screen and collect soil samples from southeast portion of excavation. Record soil types.			
12:50 P.M.	Class II sand delivered/staged (Resteiner).			
1:45 P.M.	Class II sand delivered/staged (JSS).			
2:05 P.M.	Class II sand delivered/staged (Resteiner).			
2:15 P.M.	Class II sand delivered/staged (Resteiner).			
2:50 P.M.	Class II sand delivered/staged (Resteiner).			
3:05 P.M.	Class II sand delivered/staged (JSS).			
3:25 P.M.	Class II sand delivered/staged (Resteiner).			
3:30 P.M.	Begin backfill southwest and southeast portion of excavation. Apply ORC to southeast portion of excavation. Backfill compacted in 6" lifts with vibratory roller.			
5:00 P.M.	Leave site.			
Soil removed: 280 yards      Cumulative soil removed: 2,240 yards      Gallons groundwater removed: 9,200      Cumulative gallons of groundwater removed: 27,600				
NOTES BY: Alan S. Nicholls				



**WEEKLY REPORT**

<b>PERSONNEL ON SITE</b>		PROJECT #:BC3209.00	
<b>Name:</b>	<b>Affiliation:</b>	DATE: August 6, 2010	
Alan Nicholls	Superior Environmental Corp	PAGE: <u> 1 </u> OF <u> 1 </u>	
Don Winchell	Job Site Services, Inc.		
Dave Winchell	Job Site Services, Inc.		
Lisa Chadwick	MDEQ-RD	PROJECT NAME:	
Ronald Larese	PSC	MDEQ-RD, Bondale Dinkens Site	
		5447 Round Lake Road	
		Gladwin, MI	
<b>SUMMARY OF ACTIVITIES</b>			
<b>Period: August 2-6, 2010</b>			
<p>Activities performed include: mobilization, installation of a dewatering point, soil excavation and transportation, landfill disposal, dewatering and liquid disposal, backfill and compaction and application of ORC. Work also included the abandonment of a dry well and two water wells discovered during excavation activities. Soil samples were collected from the sidewalls and floor (where applicable) of the excavation. The sign pole was removed and temporarily relocated prior to excavation activities.</p>			
<b>CONTRACT ITEM</b>	<b>Specified Quantity</b>	<b>Actual Quantities for Week</b>	<b>Percent Complete</b>
1. Mobilization	1	1	100%
2. Excavation, Removal and Transport of Non-Hazardous Soils	2,500	2,240	90%
3. Disposal of Non-Hazardous Soils	2,500	2,240	90%
4. ORC® Material for Backfill	2,200	1,100	50%
5. Backfill and Compaction of Class II Sand Mixed with ORC	2,400	1,200	50%
6. Backfill and Compaction of MDOT 22A Gravel	300	0	0%
7. Dewatering, Transport, Disposal of Non-Hazardous Groundwater	60,000	27,600	46%
8. Solid and Liquid Waste Characterization	1	1	100%
9. Demobilization/Project Close Out	1	0	0%
10. Provisionary Allowance**	1	N/A	N/A
<p>** The provisionary allowance is likely necessary based on the discovery of additional contaminated soil during excavation. This was discussed with Lisa Chadwick of the MDEQ-RD and she has approved the use of the provisionary funds for additional soil removal, dewatering, and backfill material.</p>			
<p>PREPARED BY: Alan S. Nicholls 8-6-2010</p>			

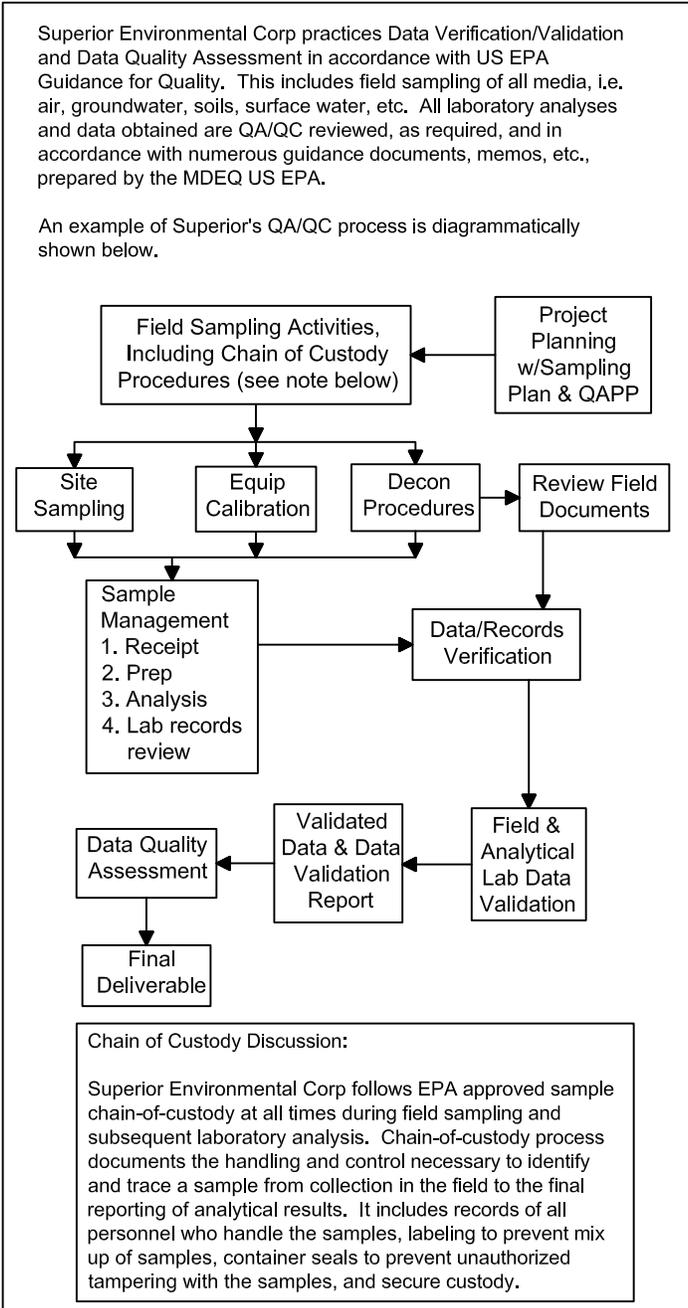
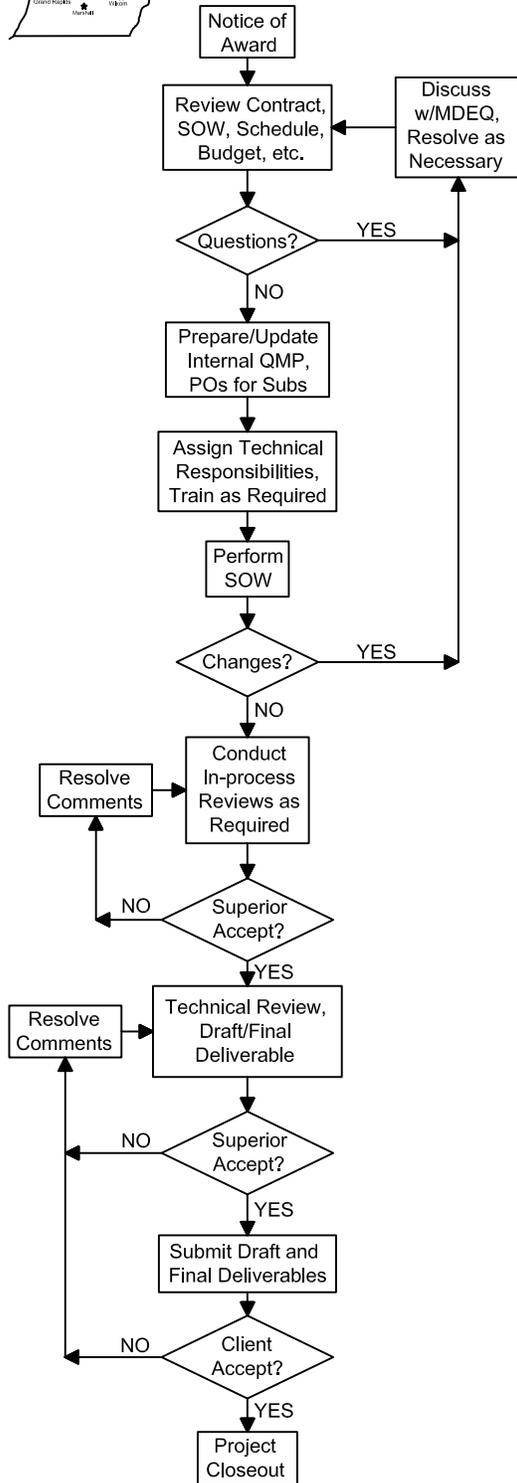
**ATTACHMENT 2: ADDITIONAL INFORMATION FOR  
ARTICLE 3.7**

**Quality Management Process and  
Data Quality Assessment Flowchart**



# Superior Environmental Corp Quality Assurance/Quality Control Quality Management Process and Data Quality Assessment

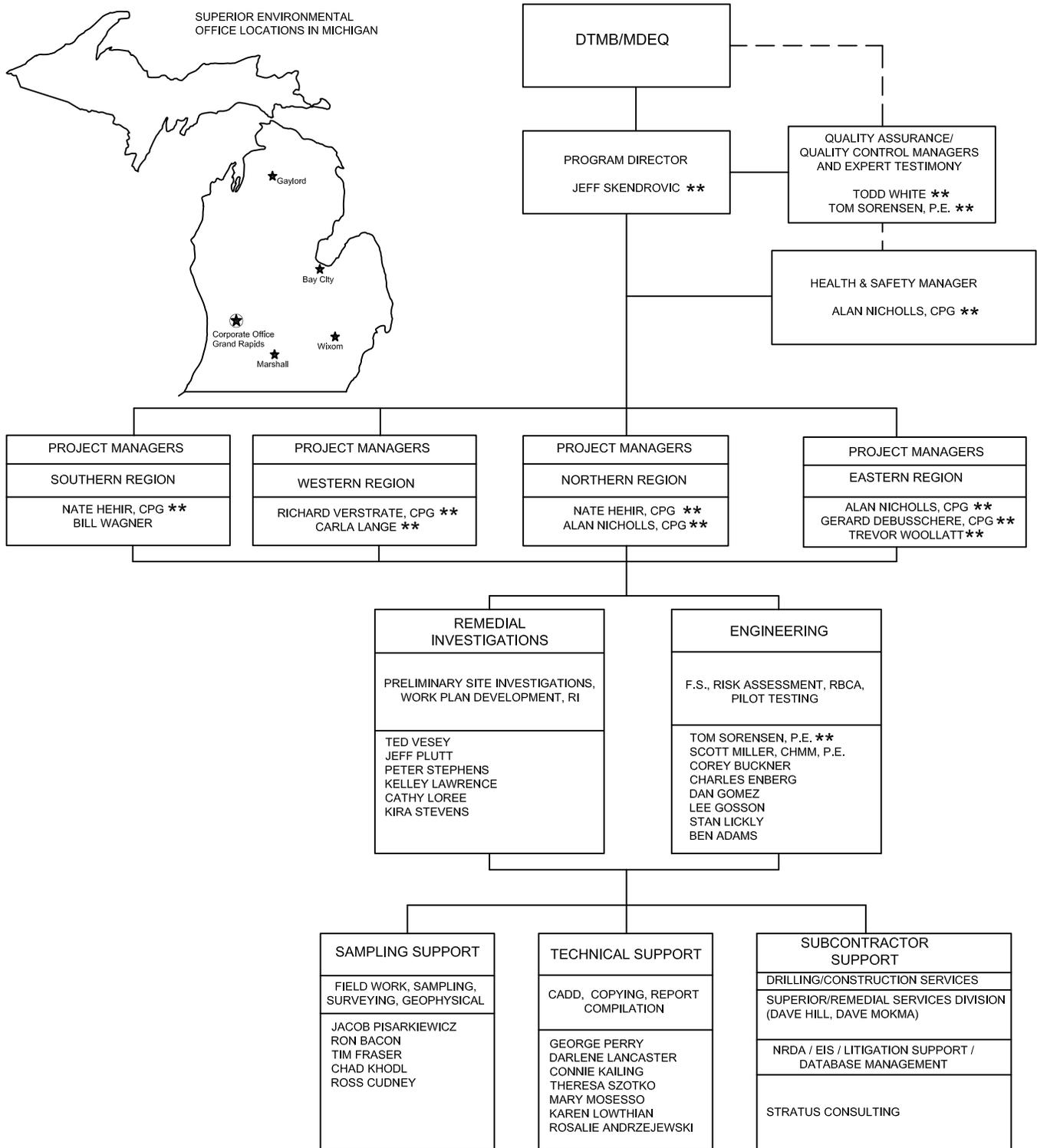
Superior Environmental Corp has a Quality Management Process (QMP) developed for handling all deliverables, whether for internal distribution or external distribution to its clients, such as the MDEQ. This QMP logic diagram can be adapted to meet additional needs of the MDEQ. Superior's QA/QC Manager is responsible for QA/QC on this Contract.



**ATTACHMENT 3: ADDITIONAL INFORMATION FOR  
ARTICLE 5**

**Organizational Chart – Primary List Proposal**

**ORGANIZATION CHART  
DTMB/MDEQ  
INDEFINITE-SERVICE, INDEFINITE-DELIVERY CONTRACTS  
2013 EXPANDED ENVIRONMENTAL REMEDIATION ISID RFP  
PRIMARY LIST PROPOSAL**



**\*\* KEY EMPLOYEES**

CPG - CERTIFIED PROFESSIONAL GEOLOGIST  
CHMM - CERTIFIED HAZARDOUS MATERIALS MANAGER  
PE - PROFESSIONAL ENGINEER

**ATTACHMENT 4: ADDITIONAL INFORMATION FOR  
ARTICLE 5.5**

**RESUMES OF KEY PERSONNEL**

**Superior Environmental Corp – Primary List Proposal and Specialty Sub List  
Proposals**

**Stratus Consulting – Sub-Consultant for Primary List Proposal**

**Soil and Materials Engineers, Inc. – Sub-Consultant for Specialty Sub List  
Proposal**

PROFESSIONAL FIRM NAME/SUB NAME Superior Environmental Corp

EMPLOYEE NAME Jeff M. Skendrovic CLASS LEVEL P4

TO BE COMPLETED BY STATE CONTRACT ADMINISTRATOR		
APPROVED BY	START DATE	TOTAL YEARS EXPERIENCE

FUNCTIONS (as indicated on the Classifications and Labor Rates Form)

**Program Director**

EDUCATION (list each degree separately)

<u>Type of Degree</u>	<u>Degree Granted</u>	<u>Year Granted</u>	<u>Granting Institution</u>
B.S.	Civil/Environmental Engineering	1985	Michigan State University

IS THIS PERSON A CERTIFIED UNDERGROUND STORAGE TANK PROFESSIONAL? **NO**

IS THIS PERSON A KEY INDIVIDUAL ON YOUR CONTRACT? **YES**

REGISTRATIONS

None

SOCIETIES

**American Society of Civil Engineers  
National Ground Water Association**

SUMMARY OF EXPERIENCE

Mr. Skendrovic has over 28 years of experience in the environmental field, including supervision and management of various investigative and corrective action projects at underground storage tank sites and RCRA regulated units, as well as CERCLA/Superfund/NPL sites located in the Western portion of the United States. Mr. Skendrovic has worked on and managed numerous projects requiring knowledge of drilling techniques, soil classification, monitoring and extraction well design, preparation of National Pollutant Discharge Elimination System (NPDES) and air emission permits, data compilation, and technical report preparation. He has managed remedial programs and has experience with numerous soil and groundwater cleanups from a wide variety of contaminant sources.

Mr. Skendrovic served as Superior's key contact with the State of Michigan for the Project Management Contract (2000 – 2005) and has extensive experience working with State procurement procedures, interacting with State personnel and coordinating activities on State projects.

RELEVANT EXPERIENCE (for each firm or institution describe the work performed)

<u>Number of Years</u>	<u>Inclusive Dates</u>	<u>Firm or Institution</u>
23	1990-present	Superior Environmental Corp Sr. Project Manager/Engineer, Office Manager, Vice President of Technical Services
5	1985-1990	Canonie Environmental Services Project Engineer

**Total Years: 28**

## Representative Projects with Similar Experience

1. **Project Director, MDEQ Michigan Project Management, ISID & LOE Contracts** – Responsible for oversight and overall direct management of professional services for State of Michigan contracts held by Superior. Responsibilities also include administration of the contract, liaison with State personnel for individual site contract procurement and project invoicing and reporting activities.
2. **Project Engineer, M-E-W Study Area (California)** – Conducted remedial investigation and assistance for the preparation of the site feasibility study for PRP-Lead CERCLA/Superfund project.
3. **Project Engineer, Fairchild Semiconductor (California)** – Responsible for conducting remedial investigations, design of interim remedial measures, and preparation of the final remedial action plan for a National Priorities List site.
4. **Senior Project Manager, Oilfield Remediation Project** – Multi-site oilfield assessment and bio-remediation project. Project involves preparation of work plan and annual budgets to address a series of abandoned oil wells being assessed and restored by the PRP.
5. **Senior Project Manager, Ionia CERCLA Landfill** – Assessment of site conditions and review of technical work plan/proposals for additional work at the municipal landfill. Prepared assessment report and recommended best approach.
6. **Project Manager, Confidential Major Oil Company (Truck stop, Dimondale, Michigan)** – UST removal, LUST assessment and remediation project. Conducted site investigation, Risk-Based Corrective Actions, remedial design and remedial system installation, system operation, maintenance and reporting, preparation of Site Closure Report.
7. **Project Manager, Sparta Laundry Basket** – Remedial investigations, preparation of the remedial action plan, and installation/operation of a remedial system associated with a dry cleaning facility where a release of tetrachloroethylene solvent (PCE) occurred.
8. **Senior Project Manager, Confidential Major Oil Company (Former Service Station, Melvindale, MI)** – responsible for conducting remedial investigations/feasibility studies, Risk-Based Corrective Actions, preparation of Final Assessment Report and Site Closure Report, management and oversight of remedial system operation and maintenance activities along with associated regulatory, NPDES and Air Discharge reporting.
9. **Senior Project Manager, Zephyr Refinery** – Site Responsible for project management/coordination of remedial system design, remedial system installation, operation and maintenance, and reporting activities at a Part 201 site.
10. **Senior Project Manager, Confidential Oil Company (Service Station, Walker, MI)** – Responsible for conducting remedial investigations/feasibility studies, Risk-Based Corrective Actions, and preparation of Final Assessment Report and Site Closure Report at a LUST site.
11. **Senior Project Manager, Crystal Refinery** – Responsible for project management/coordination of remedial system design, remedial system installation, operation and maintenance, and reporting activities at a Part 201 site.

PROFESSIONAL FIRM NAME/SUB NAME Superior Environmental Corp

EMPLOYEE NAME Todd M. White CLASS LEVEL P4

TO BE COMPLETED BY STATE CONTRACT ADMINISTRATOR		
APPROVED BY	START DATE	TOTAL YEARS EXPERIENCE

FUNCTIONS (as indicated on the Classifications and Labor Rates Form)

**Sr. Project Manager – QA/QC**

EDUCATION (list each degree separately)

<u>Type of Degree</u>	<u>Degree Granted</u>	<u>Year Granted</u>	<u>Granting Institution</u>
B.S.	Geology	1993	Eastern Michigan

IS THIS PERSON A CERTIFIED UNDERGROUND STORAGE TANK PROFESSIONAL? **NO**

IS THIS PERSON A KEY INDIVIDUAL ON YOUR CONTRACT? **YES**

REGISTRATIONS

**Member American Institute of Professional Geologists # MEM-0095**

SOCIETIES

**American Institute of Professional Geologists**

SUMMARY OF EXPERIENCE

Mr. White serves as a Vice President of Operations for Superior Environmental Corp working in Superior’s Bay City, Michigan office. He is responsible for the day to day operations of the company including company health and safety, business planning, personnel management, budgeting, project and proposal QA/QC, contracting, project management, proposal preparation, and the development of work plans to the satisfaction of both client and regulatory agency requirements.

Mr. White's experience also includes project management, development of bid documents, construction management, coordination and negotiation with various state agencies, hydrogeologic work plan and report preparation, on-site supervision of hydrogeologic investigations and UST removals, groundwater modeling, development of site-specific cleanup values, conducting aquifer permeability tests, sampling of soil and groundwater, monitoring well placement and development, and geophysical data acquisition.

Mr. White has both direct field experience and project management experience for assessment and remediation.

RELEVANT EXPERIENCE (for each firm or institution describe the work performed)

<u>Number of Years</u>	<u>Inclusive Dates</u>	<u>Firm or Institution</u>
19	1992-2003 2004-present	Superior Environmental Corp V.P of Operations/Project Manager / Hydrogeologist
1	2003-2004	Job Site Services Office Manager / Project Manager

**Total Years: 20**

## Representative Projects with Similar Experience

1. **Project Administration, Enbridge Energy** – Worked as a member of the Environment Management team maintaining compliance with and providing direction to cleanup and remedial investigation efforts associated with a federal and state order associated with the oil spill.
2. **Project Manager, Industrial Coatings** – Completed Remedial Investigation, Remedial Action Plan, divisibility of harm documentation, and identification of potential responsible parties at an industrial facility that was under a Consent Agreement with the DEQ
3. **Project Manager, Coe's Cleaners** – Provided oversight of operation and maintenance, and NPDES reporting for a groundwater remediation system that pumped and treated 12 to 14 million gallons of contaminated groundwater per month. Contaminated groundwater was treated with an air stripper and discharged to a nearby lake.
4. **Project Manager, U.S. Gypsum** – Provided site definition of an identified petroleum groundwater plume emanating from a leaking underground storage tank. The site definition was completed within one week of discovery, meeting the client's timeline objectives.
5. **Project Manager, Pepsi-Cola Bottling Group** – Completed site definition and risk assessment activities, and implemented remedial corrective action plan.
6. **Project Manager, SBC** – Completed site definition, risk assessment, feasibility analysis activities, and developed remedial corrective action plan.
7. **Hydrogeologist, Ameritech** – Completed a groundwater modeling project, which aided in the delineation of a contaminant plume that had commingled with a second plume. The project demonstrated the concentration and location of the contaminant plume, had it existed under non-commingled conditions.
8. **Hydrogeologist, Ameritech** – Completed a groundwater modeling project, which demonstrated the fate and transport of a petroleum plume. The computer modeling resulted in the selection of natural bioattenuation as the preferred remedial alternative. The computer modeling resulted in a 75% reduction in projected remedial cost for the project.
9. **Hydrogeologist, City of Jackson, Jackson Fire Department** – Completed a groundwater modeling project which determined fate and transport of a petroleum contaminated plume. The project demonstrated that the petroleum contaminated plume would not migrate off-site, eliminating the need for a costly remediation system.
10. **Hydrogeologist, Speedway SuperAmerica** – Developed and coordinated several hydrogeologic investigations from release date through contaminant plume definition.
11. **Project Manager, Speedway SuperAmerica** – Oversight of operation and maintenance for ten groundwater remediation systems located in Michigan and Indiana.
12. **Project Manager, The Star Oil Company** – Completed emergency response activity, initial abatement, hydrogeologic investigation, and free product recovery from a leaking underground tank site.
13. **Project Manager, The Star Oil Company** – Developed and implemented emergency response activities at a marina fueling station consisting of free product recovery.
14. **Project Manager, Bay Metro Transportation** – Provided oversight of UST removal activities, site assessment, hydrogeologic investigation, risk assessment, and Part 213 Closure reporting.
15. **Project Manager, Former Action Auto #10** – Completed a site investigation, developed UST removal and soil abatement specification, and provided contractor management and oversight activities.
16. **Project Manager, Margaret Cearbaugh** – Completed a site investigation and feasibility analysis, developed soil and groundwater abatement specification, and provided contractor management and oversight of remedial activities.
17. **Project Manager, Shady Shores Restaurant** – Completed a site investigation and feasibility analysis, developed soil and groundwater abatement specification, and provided contractor management and oversight of remedial activities.

PROFESSIONAL FIRM NAME/SUB NAME Superior Environmental Corp

EMPLOYEE NAME Alan S. Nicholls CLASS LEVEL P4

TO BE COMPLETED BY STATE CONTRACT ADMINISTRATOR		
APPROVED BY	START DATE	TOTAL YEARS EXPERIENCE

FUNCTIONS (as indicated on the Classifications and Labor Rates Form)

**Sr. Project Manager**

EDUCATION (list each degree separately)

<u>Type of Degree</u>	<u>Degree Granted</u>	<u>Year Granted</u>	<u>Granting Institution</u>
B.S.	Geology	1993	Lake Superior State University

IS THIS PERSON A CERTIFIED UNDERGROUND STORAGE TANK PROFESSIONAL? **YES**

IS THIS PERSON A KEY INDIVIDUAL ON YOUR CONTRACT? **YES**

REGISTRATIONS

**Certified Professional Geologist #10825, American Institute of Professional Geologists  
Certified State of Michigan, Underground Storage Professional #1047**

SOCIETIES

**American Institute of Professional Geologists  
National Groundwater Association  
Michigan Association of Environmental Professionals**

SUMMARY OF EXPERIENCE

Mr. Nicholls currently serves as a Senior Project Manager for Superior Environmental Corp. He performs hydrogeological investigations, site investigation and remediation activities at commercial and industrial sites, Phase II ESAs, Baseline Environmental Assessments (BEAs), Due Care Analyses, Remedial Investigations/Feasibility Studies (RI/FS), and Remedial Action Plans (RAPs).

Specifically, Mr. Nicholls is responsible for the budgeting, scheduling, and preparation of projects that include writing cost proposals, conducting data review, and writing and reviewing reports. He has also managed numerous projects dealing with leaking underground storage tanks, soil and groundwater remediation, and contaminated industrial facilities. Additionally, Mr. Nicholls is responsible for participating in the development of field Standard Operating Procedures (SOPs), Quality Assurance Project Plans (QAPPs), and report templates.

Mr. Nicholls is experienced in many field activities including: water, sediment, soil, and soil gas sampling; soil and rock classification; oil and gas production drilling; evaluating free product recovery; performing slug tests; and installing monitor wells. He has a solid knowledge of Parts 201, 211, and 213 of Michigan's Natural Resources and Environmental Protection Act (NREPA), as well as ASTM International standards for Transaction Screens and ESAs.

RELEVANT EXPERIENCE (for each firm or institution describe the work performed)

<u>Number of Years</u>	<u>Inclusive Dates</u>	<u>Firm or Institution</u>
5+	2008-present	Superior Environmental Corp Senior Project Manager
10	1998-2008	AKT Peerless Environmental Services Senior Project Manager
4	1993-1997	UTEG, MV Technologies Inc. and Selman & Associates Geologist

**Total Years: 19**

Representative Projects with Similar Experience

- Project Manager for Michigan Department of Environmental Quality ISID Projects.** Mr. Nicholls has conducted site investigation and remediation activities at multiple leaking underground storage tank sites on behalf of the MDEQ under Level of Effort and Indefinite Service/Indefinite Delivery contracts. His responsibilities included preparation of work plans, budgets, schedules, bid specifications, and deliverables. He served as the point of contact for MDEQ project managers.
- Project Manager for Brownfield Redevelopment RCRA Facility, Saginaw, Michigan.** Performed Phase I/II ESAs of a former automotive manufacturing facility impacted with petroleum products, metals, and formaldehyde under a RCRA Corrective Action Order. Worked with the developer, construction contractor, three automotive suppliers, a “Big 3” auto manufacturer, and the Michigan Department of Environmental Quality to develop a scope of work to bring the Brownfield property back into use as an industrial facility. Prepared six affirmed Category “S” BEAs and Section 7a Compliance Analyses on behalf of the tenants and lessees that relied on a combination of stipulated conditions, engineering controls, and site characterization data.
- Project Manager for EPA Assessment Grant for Jackson County, Michigan.** Developed inventory of Brownfield sites located in Jackson County, prepared QAPP to EPA standards, conducted Phase I and II ESAs, prepared BEAs, and prepared Due Care Plans. Served as the Project Manager for Phoenix Award winning redevelopment project.
- Project Manager for Site Assessment Grant for Grayling, Michigan.** Prepared an Area-Wide Site Assessment Grant application for client that was funded by the MDEQ. The application focused on redevelopment of Brownfield properties to preserve green spaces. Conducted Phase I/II ESAs, prepared BEAs, and Due Care Plans.
- Project Manager for RI/FS for Confidential Customer in Saginaw, Michigan.** Conducted site investigation in response to soil and groundwater impact from illegal dumping of waste products over a 30-acre site. Contaminants included metals, acids, and ammonia. Conducted short-term storm water characterization study, sediment sampling of a detention basin, and petitioned the MDEQ to classify waste as inert. Developed a strategy that combined landfill disposal of waste materials, storm water runoff controls, and beneficial reuse of materials that did not threaten surface waters.
- Project Manager for Conducting Interim Response Activities on behalf of the Dow Chemical Company in Saginaw and Midland Counties.** Developed and implemented interim response (IR) activities for over 500 residential properties located along the Tittabawassee River floodplain and the City of Midland to address contaminants of concern. IR activities included characterization and removal of potentially impacted dust and placement of physical barriers over potentially impacted and exposed soils. Tracked progress of IR activities, prepared floodplain permits, provided routine reporting to client, and maintained complete records of all correspondence for the property owners and regulatory agencies.

7. **Project Manager for Confidential Petroleum Companies, Michigan.** Managed LUST site investigation and remediation activities for multiple convenience store/gasoline filling stations. Prepared Initial Assessment Reports, Final Assessment Reports, Free Product Reports, Groundwater Monitoring Reports, and Closure Reports on behalf of client. Conducted numerous Tier II evaluations. Designed and implemented remediation strategies including soil excavation and landfill disposal, groundwater treatment systems, in-situ chemical oxidation, free product recovery using passive/multi-array vacuum systems, enhanced bioremediation, air sparge/soil vapor extraction systems, and dual phase extraction.
8. **Project Manager for United States Gypsum Company, Tawas City, Michigan.** Conducted remediation of 3,000 cubic yards of soil and 20,000 gallons of groundwater resulting from a petroleum release at a LUST site located at a mining facility. Obtained a Tier I unrestricted closure upon completion of the remedial activities.

PROFESSIONAL FIRM NAME/SUB NAME Superior Environmental Corp

EMPLOYEE NAME Thomas A Sorensen, PE CLASS LEVEL P4

TO BE COMPLETED BY STATE CONTRACT ADMINISTRATOR		
APPROVED BY	START DATE	TOTAL YEARS EXPERIENCE

FUNCTIONS (as indicated on the Classifications and Labor Rates Form)

**Sr. Engineer**

EDUCATION (list each degree separately)

<u>Type of Degree</u>	<u>Degree Granted</u>	<u>Year Granted</u>	<u>Granting Institution</u>
Civil Engineering	B.S.	1988	University of Colorado

IS THIS PERSON A CERTIFIED UNDERGROUND STORAGE TANK PROFESSIONAL? **NO**

IS THIS PERSON A KEY INDIVIDUAL ON YOUR CONTRACT? **YES**

REGISTRATIONS

- Professional Engineer, Michigan, License No. 40117**
- Professional Engineer, Illinois, License No. 062.065235**
- Professional Engineer, Ohio, License No. 75889**

SOCIETIES

- American Society of Civil Engineers**
- Engineering Society of Detroit**

SUMMARY OF EXPERIENCE

As a Civil Engineer, Mr. Sorensen has designed and conducted numerous subsurface investigations to characterize the hydrogeological conditions throughout Lower Michigan and to delineate soil and groundwater impacts for a multitude of contaminants. He has designed numerous groundwater and soil remediation systems and prepared performance-based specifications for construction, as well as conducting bidding-phase services and construction oversight. He has completed numerous feasibility studies and final assessment reports for various industrial sites, as well as leaking aboveground and underground storage tank sites. Mr. Sorensen has prepared schedules, economic analyses, and cost proposals for a wide variety of projects and budgets. He has also completed several Spill Control, Containment, and Countermeasures (SPCC) plans.

Mr. Sorensen has design, installation, and operational experience with a wide variety of conventional and innovative remediation technologies including: groundwater pump-and-treat technologies, granular activated carbon filter systems, organo-clay adsorption systems, oil/water separators, air stripping, multi-phase extraction, active and passive free product recovery systems, soil vapor extraction, enhanced monitored natural attenuation, and in-situ chemical injection. Mr. Sorensen also designs and implements pilot scale remediation studies utilizing in-house SVE and ozone sparge trailers. In addition, he has coordinated and managed other projects ranging from groundwater pumping tests to industrial site storm sewer assessment surveys.

Mr. Sorensen has participated in numerous remediation system construction activities ranging from large-scale groundwater and soil remediation sites to small turn-key systems. He has performed short- and long-term treatment system operation and maintenance activities at remediation sites throughout the state.

RELEVANT EXPERIENCE (for each firm or institution describe the work performed)

<u>Number of Years</u>	<u>Inclusive Dates</u>	<u>Firm or Institution</u>
3	2010 - present	Superior Environmental Corp
4	2002 - 2006	Blasland, Bouck, and Lee, Inc.
2	2000 - 2002	IT Group
11	1989 - 2000	The Traverse Group, Inc.
<b>Total Years: 20</b>		

Representative Projects with Similar Experience

1. **Field and Design Engineer, Former large automotive component assembly plant site in Flint, Michigan** – Following building demolition, delineated horizontal and vertical extent of free product, supervised additional cleanup of the remaining 2M square foot concrete slab, performed small-scale free product recovery with stand-alone autonomous recovery pumps, supervised construction of the above-ground portion of the full-scale product recovery and treatment system consisting of the treatment building, oil/water separator, organo-clay vessels, granulated activated carbon vessels, PLC and autodialer. Performed startup, Operations & Maintenance, troubleshooting, and system enhancements. In addition, designed and supervised construction of a shot-crete-lined, ½-mile long perimeter runoff control channel.
2. **Field and Design Engineer, Large automotive component assembly complex in Flint, Michigan** – Implemented free product recovery installations at two locations within the facility; one system tied into an existing treatment system and included extensive interaction with skilled trades for installation, the other treatment system was housed in a trailer. Performed startup, troubleshooting, and operation and maintenance of the systems. The trailer system included an oil/water separator, air stripper, vapor-phase GAC and liquid-phase GAC. Performed routine operation of three existing product recovery belt skimmers.
3. **Field and Project Engineer, Large automotive component assembly complex in Flint, Michigan** – Designed and implemented a comprehensive study of the condition of the entire on-site storm sewer system with respect to infiltration of contaminants that could discharge to the Flint River. The investigation included installation of auto-samplers and storm water sampling and extensive use of video equipment. Study culminated in a detailed report with recommendations to mitigate infiltration.
4. **Field and Design Engineer, Large natural gas compressor station site in Marion, Michigan** – Designed and conducted subsurface investigations to delineate subsurface impacts from a release of natural gas condensate, as well as a second investigation for LUSTs. Conducted and evaluated a pump test. Designed, installed, and operated a 100 gpm groundwater recovery system with a packed tower air stripper. Performed startup, troubleshooting, operation, and system enhancements.
5. **Field and Design Engineer, Petroleum distributor with several fuel bulk storage facilities at sites across lower Michigan** – Designed and conducted numerous subsurface investigations to delineate vertical and horizontal extents of petroleum hydrocarbon impacts from AST and UST systems. Prepared feasibility study/corrective action plan. Designed and installed groundwater pump and treat systems where warranted. Designed and performed SVE pilot test, followed by design, installation, and operation of a full-scale SVE system.
6. **Field and Design Engineer, Supported a university research site in southwestern Lower Michigan** – Provided design and field engineering for installation of a nutrient injection system at a research site to study in-situ biodegradation processes for chlorinated solvents. Provided operation, troubleshooting, and PLC programming services.

PROFESSIONAL FIRM NAME/SUB NAME **Superior Environmental Corp**

EMPLOYEE NAME **Nathaniel J. Hehir** CLASS LEVEL **P4**

TO BE COMPLETED BY STATE CONTRACT ADMINISTRATOR		
APPROVED BY	START DATE	TOTAL YEARS EXPERIENCE

FUNCTIONS (as indicated on the Classifications and Labor Rates Form)

**Project Manager**

EDUCATION (list each degree separately)

<u>Type of Degree</u>	<u>Degree Granted</u>	<u>Year Granted</u>	<u>Granting Institution</u>
B.S.	Geology	1998	Lake Superior State University

IS THIS PERSON A CERTIFIED UNDERGROUND STORAGE TANK PROFESSIONAL? **NO**

IS THIS PERSON A KEY INDIVIDUAL ON YOUR CONTRACT? **YES**

REGISTRATIONS

**Certified Professional Geologist # 11378, American Institute of Professional Geologists  
Licensed Geologist (since 2005) – State of Washington**

SOCIETIES

**American Institute of Professional Geologists**

SUMMARY OF EXPERIENCE

Mr. Hehir serves as Project Manager in Superior Environmental Corp's Gaylord, Michigan office. As Project Manager he is responsible for overview of all project activities. Specifically, Mr. Hehir is responsible for the budgeting, scheduling, and preparation of various projects; writing cost proposals; conducting secondary data collection; site reconnaissance; interviews; record reviews; analyzing data; performing field activities; and writing reports.

Mr. Hehir has over nine years of experience in both industry and consulting, acting as a field/project geologist. He specializes in environmental assessment and applied field remedial investigations.

Mr. Hehir's formal training is in environmental science and his initial background is in well drilling and construction which provides him with solid framework for his activities with Superior.

RELEVANT EXPERIENCE (for each firm or institution describe the work performed)

<u>Number of Years</u>	<u>Inclusive Dates</u>	<u>Firm or Institution</u>
7	2006 - present	Superior Environmental Corp Project Manager
2.5	2004 – 2006	Delta Environmental Consultants Inc. Staff Geologist
3.0	2001 – 2004	Sagassar & Associates Staff Geologist
2.5	1998 - 2001	Delta Environmental Consultants Inc. Staff Geologist

**Total Years: 15**

## Representative Projects with Similar Experience

- 1. Project Manager, Enbridge Energy** – Works as a member of the Environment Management team maintaining compliance with and providing direction to cleanup and remedial investigation efforts associated with a federal and state order associated with the oil spill.
- 2. Project Manager/Geologist, Natural Gas Pipeline Release, Michigan** – Responsible for managing site assessment activities and removal/replacement oversight of over ten miles of natural gas gathering pipelines.
- 3. Project Manager/Geologist, Petroleum Pipeline Release, Indiana** – Assisted in the emergency response of a refined petroleum pipeline release. Provided key support to the release assessment activities which included protecting residential drinking water supply wells and providing remedial system construction oversight.
- 4. Staff Geologist, Petroleum Pipeline Release, Ohio** – Assisted in the management of the emergency response of a refined petroleum release in an urban setting. Provided key support to assessment activities which included air monitoring, surface water monitoring, and free product recovery efforts to an impacted stream.
- 5. Staff Geologist, Refined Petroleum Pipeline Release, Illinois** – Responsible for conducting site assessment, remedial investigation and remedial system construction oversight at a large (>100,000 gallons) petroleum pipeline release in a karst geologic setting including advanced geophysical, dye trace, gore-sorber, and phytoremediation monitoring techniques.
- 6. Staff Geologist, Xylene Release, Kentucky** – Participated in the emergency response of a third party puncture of a xylene pipeline. Managed/directed waste removal activities and assisted with surface/groundwater monitoring activities.
- 7. Staff Geologist, Petroleum Pipeline Release, Illinois** – Emergency response of a third party puncture of refined products pipeline in a residential subdivision. Provided field management of remedial activities which included sanitary sewer removal, monitor well installation, and excavation activities.
- 8. Staff Geologist, Former Service Station, Michigan** – Responsible for providing field management and oversight of a \$1.3 million dollar remedial action which included demolition of several buildings, sheet piling, dewatering, removal of a downtown main street, and excavating below the water table to depths of sixteen feet below ground surface.
- 9. Staff Geologist, Dry Cleaning Facility, Michigan** – Directed site investigation and managed site closure activities on behalf of the State of Michigan MDEQ-RRD.
- 10. Staff Geologist, Dredge/Sediment Sampling, Michigan** – Responsible for conducting an investigation of lake bed sediments impacted from historical industrial operations. Site contaminants included various heavy metals, VOC's, PCBs, and PCE.
- 11. Staff Geologist AST/UST Decommissioning, Michigan** – Provided project management for the decommissioning, removal, and proper disposal of ASTs and USTs of various sizes and contents. Implemented approved remedial actions and prepared closure/summary reports.
- 12. Staff Geologist, Residential Leaking Heating Oil Tank, Michigan** – Supervised and conducted site investigation and remedial excavation activities at a residence with a 250 gallon fuel oil spill.
- 13. Staff Geologist, UST Removal/Remedial Excavation in Michigan** – Responsible for managing the removal of multiple USTs, remedial excavation activities in a bedrock geologic setting, and operation and maintenance of a dual-phase extraction remediation system. Prepared CAP/FAR to advance project to closure.

PROFESSIONAL FIRM NAME/SUB NAME **Superior Environmental Corp**

EMPLOYEE NAME Richard A. VerStrate CLASS LEVEL P4

TO BE COMPLETED BY STATE CONTRACT ADMINISTRATOR		
APPROVED BY	START DATE	TOTAL YEARS EXPERIENCE

FUNCTIONS (as indicated on the Classifications and Labor Rates Form)

**Sr. Project Manager**

EDUCATION (list each degree separately)

<u>Type of Degree</u>	<u>Degree Granted</u>	<u>Year Granted</u>	<u>Granting Institution</u>
B.S.	Geology	1984	Hope College

IS THIS PERSON A CERTIFIED UNDERGROUND STORAGE TANK PROFESSIONAL? **YES**

IS THIS PERSON A KEY INDIVIDUAL ON YOUR CONTRACT? **YES**

REGISTRATIONS

**Certified Professional Geologist (since 1994) – American Institute of Professional Geologists**  
**Licensed Professional Geologist (since 1996) – State of Wisconsin**

SOCIETIES

**Michigan Association of Professional Geologists**  
**American Institute of Professional Geologists**

SUMMARY OF EXPERIENCE

At Superior Environmental Corp, Mr. VerStrate has performed multiple project management duties related to the investigation and remediation of numerous petroleum hydrocarbon/chlorinated solvent releases originating from underground storage tanks (USTs) and various other vessels and spill sources. He has performed numerous remedial investigations/feasibility studies (RI/FS) and risk-based corrective action (RBCA) evaluations and closures as a Certified Underground Storage Tank Professional (CP, #384) in the State of Michigan. During this time he has also acted as a geologist working in the field to direct and supervise RI/FS and related site assessment activities.

At MAECORP, Inc., Mr. VerStrate acted primarily as a staff geologist/chemist, to conduct remedial investigations (RI) feasibility studies (FS) activities at UST sites and also to perform various sampling/laboratory duties at numerous USEPA CERCLA/Superfund/NPL sites throughout the Midwest. During this time, he prepared RI/FS reports for the MDNR, supervised the completion of soil borings and the installation of monitor wells, sampled numerous vessels (drums, USTs, ASTs) under Level “B” and Level “C” personnel protection ranging from sites containing thousands of unknown drums to vats at plating facilities, performed compatibility tests on vessel samples, prepared lab packs of highly toxic chemicals for appropriate shipping and disposal, operated multiple groundwater treatment systems (ranging from carbon treatment to remove petroleum hydrocarbons, to carbon/reverse osmosis treatment to remove mercury in underground shafts throughout New York City), worked periodically in an on-site mobile laboratory as a chemist, worked as a Staff Geologist for the Missouri MDNR reviewing UST release reports, and performed emergency response duties for private clients and also for the USEPA throughout Region V.

RELEVANT EXPERIENCE (for each firm or institution describe the work performed)

<u>Number of Years</u>	<u>Inclusive Dates</u>	<u>Firm or Institution</u>
21.5	1991 - present	Superior Environmental Corp Sr. Project Manager
5.5	1986 - 1991	MAECORP, Inc. Sr. Geologist

**Total Years: 27**

**Representative Projects with Similar Experience**

- 1. Project Manager/Field Geologist, Dale's Mini Mart** – Assessment of a commingled release of gasoline and chlorinated solvents from two different sources. Conducted RI for the release heading toward a nearby surface water body present approximately a quarter mile away. Used Polk Directories and old newspaper articles to determine the source of the chlorinated solvent impact.
- 2. Project Manager, Dry Cleaning Facility** – Assessment and delineation of soil and groundwater impact resulting from a release of chlorinated solvents from a former UST at a dry cleaner facility, but also from periodic surface spills.
- 3. Project Manager, Port City Paints** – Directed the investigation and evaluation of a solvent release from former USTs at this paint manufacturing facility before it reached a nearby surface water body. Prepared all required MDEQ reports, a RBCA evaluation, and directed the completion of periodic monitoring to evaluate this plume over time.
- 4. Auto Parts Manufacturer** – Conducted a RI to determine the horizontal and vertical extent of chlorinated solvent impact originating from a compromised concrete vault used to degrease metal auto parts. Determined well placements and screened intervals in a complex geology of intermittent clay layers and sand seams. Construction and operation of a treatment system to actively remediate the dense non-aqueous phase liquids (DNAPLs).
- 5. Project Manager, Bud's Auto Service** – Directed the assessment of a release from former UST systems. Prepared a FAR and an FS/CAP following the complete horizontal and vertical definition of soil and groundwater impact near a surface water body. A RBCA evaluation and limited free product monitoring and recovery was performed.
- 6. Staff Geologist, Household International** – Investigation of a UST system chlorinated solvent release and historical surface spillage at a manufacturing plant in South Carolina. Collected verification samples during the excavation of chlorinated solvents down to bedrock present approximately 40 feet BGL.
- 7. Project Manager, Environmental Control Services** – Assessment of a release of diesel fuel from a former UST, which also commingled with a chlorinated solvent release from a nearby dry well. The RI involved the proper placement and screening of wells across the property for purposes of delineating the horizontal and vertical extent of DNAPL impact. This investigation extended to two nearby streams which required evaluating impact to GSI criteria.
- 8. Field Geologist, Eljer Plumbing Facility** – Involved in determining the horizontal and vertical extent of DNAPL groundwater impact at a former plumbing parts manufacturer that used chlorinated solvents for degreasing purposes. Investigation extended into a heavily wooded area behind the plant and required the use of an off-road type drill rig.

PROFESSIONAL FIRM NAME/SUB NAME Superior Environmental Corp

EMPLOYEE NAME Gerard DeBusschere CLASS LEVEL P4

TO BE COMPLETED BY STATE CONTRACT ADMINISTRATOR		
APPROVED BY	START DATE	TOTAL YEARS EXPERIENCE

FUNCTIONS (as indicated on the Classifications and Labor Rates Form)

**Sr. Project Manager**

EDUCATION (list each degree separately)

<u>Type of Degree</u>	<u>Degree Granted</u>	<u>Year Granted</u>	<u>Granting Institution</u>
B.S.	Geology	1973	Wayne State University

IS THIS PERSON A CERTIFIED UNDERGROUND STORAGE TANK PROFESSIONAL? **YES**

IS THIS PERSON A KEY INDIVIDUAL ON YOUR CONTRACT? **YES**

REGISTRATIONS

**Certified Professional Geologist, AAPG#5369,  
 Licensed Professional Geologist, State of Tennessee #2440  
 Certified Underground Storage Tank Professional State of Michigan #697  
 Certified DEQ Waterworks System Operator, Classification D-5, S-5 #16145**

SOCIETIES

**American Association of Petroleum Geologists**

SUMMARY OF EXPERIENCE

Mr. DeBusschere serves as Senior Project Manager in Superior Environmental Corp's Bay City, Michigan office. He has diverse experience in the environmental and petroleum industries. As Senior Project Manager, Mr. DeBusschere is responsible for client interfacing, compliance review, regulatory reports, budgeting, scheduling, and preparing work plans. As a professional geologist, he demonstrates a balanced scientific approach in conducting site investigations by integrating geology, geophysics, and environmental science. Mr. DeBusschere is responsible for conducting Phase I and Phase II Environmental Site Assessments (ESAs), Baseline Environmental Assessments (BEAs), and Due Care Plans, as well as providing oversight for leaking underground storage tank (LUST) site assessments and closures

RELEVANT EXPERIENCE (for each firm or institution describe the work performed)

<u>Number of Years</u>	<u>Inclusive Dates</u>	<u>Firm or Institution</u>
12	2001-present	Superior Environmental Corp Senior Project Manager
5	1996-2001	Billings Industrial Group Senior Project Manager
3	1993-1996	FEA Management, Inc. Geologist
2	1992-1993	MJ Environmental Consultants Geologist

<u>Number of Years</u>	<u>Inclusive Dates</u>	<u>Firm or Institution</u>
14	1977-1991	ORYX Energy Co., Sun Exploration & Production Co., ANR Storage Co., and Michigan Consolidated Gas Co. Geologist

**Total Years: 36**

Representative Projects with Similar Experience:

- 1. Provided Project Management for an emergency response pipeline spill in SE Michigan for a confidential client.** Wrote, or co-wrote the following plans and/or operating procedures that guided the response activities and which were incorporated into larger plans that were submitted to the United States Environmental Protection Agency (USEPA), Region V on-scene coordinator and other regulatory and non-regulatory agencies: Health and Safety Plan; Sampling and Analysis Plan; Oil Capture, Containment and Recovery Plan; Decontamination of Personnel and Equipment Plan and decontamination tracking forms; Backfill Plan; and a variety of standard operating procedures to be used for the implementation of the various plans.

Provided coordination and oversight of a citizen/landowner interface team, staffed by Superior personnel, to provide for rapid response inspection and sample collection services for residential or commercial properties that were affected by, or suspected of being affected by the spill.
- 2. Project Manager, Brownfield Redevelopment Project, Taylor, Michigan** – Conducted Phase I and II ESAs at a former auto parts manufacturing facility, and based on the results of the Phase II ESA, determined that the site qualified as a “facility”. Prepared a Category N BEA and applied for Brownfield funding for the site. The BEA was subsequently affirmed, and grant monies awarded, which provided for the demolition of the former manufacturing facility and cleanup of the site. Provided environmental oversight during demolition of abandoned manufacturing facility. Prepared Remedial Action Plan (RAP) to obtain site closure for client.
- 3. Project Manager, BEAs, Various Clients, Michigan** – Prepared BEAs on a variety of commercial and industrial sites.
- 4. Project Manager, Phase I and II ESAs, BEA, Former CN Railyard, Detroit, Michigan** – Performed Phase I and II ESAs and determined that the site qualified as a “facility” under Part 201 of the Michigan National Resources and Environmental Protection Act (NREPA). Based on the results of the Phase II ESA, prepared a Category D BEA for the site. The BEA was subsequently affirmed by the Michigan Department of Environmental Quality (MDEQ) Environmental Resources Division (ERD).
- 5. Project Manager, Phase I and II ESAs, BEA, Former CSX Railyard, Saginaw, Michigan** – Performed Phase I and II ESAs and, based on the results of the Phase II ESA, determined that the site qualified as a “facility”. Prepared a Category D BEA for the site. The BEA was subsequently affirmed by the MDEQ ERD.
- 6. Project Manager, Phase I and II ESAs, BEA, Site Remediation, Hexavalent Chromium Assessment, Auto Parts Manufacturer, Detroit, Michigan** – Performed Phase I and II ESAs and, based on the results of the Phase II ESA, determined that the site qualified as a “facility”. Prepared a Category S BEA for the site. The BEA was subsequently affirmed by the MDEQ ERD. Subsequently performed limited remediation to address chromium contamination identified at the property. Performed an analysis of chromium content in soil, and determined that hexavalent chromium was not present at site.
- 7. Project Manager, Phase I and II ESAs, Due Care Plan, Hexavalent Chromium Assessment, Industrial Facility, South Haven, Michigan** – Performed Phase I and II ESAs, and based on the results of the Phase II ESA, determined that the site qualified as a “facility”. Although client did not qualify for BEA protection, prepared a Section 7a Due Care Plan for the site.
- 8. Project Manager/Certified Waterworks Operator, Annual Water Quality Testing and Reporting, Confidential Client, Various Sites, Michigan** – Provide oversight and management for confidential client of annual water quality testing and reporting for seven Type II non-transient public water systems.
- 9. Project Manager, Semi-Annual Discharge Sampling, and Reporting, Confidential Client, Detroit, Michigan** – Assist confidential client to comply with requirements for discharge to the Detroit Water and Sewerage Department (DWSD) combined system. Requirements include semi-annual sampling, the compiling of discharge data, and the submission of a Six-Month Report to the DWSD.

10. **Project Manager, LUST Sites, Various Clients, Michigan** – Provided oversight for underground storage tank (UST) removal activities, obtained appropriate samples, and prepared underground storage tank (UST) assessment reports. Conducted initial and final assessments, performed risk assessments, and prepared initial and final assessment reports. Conducted remediation feasibility analyses to determine the appropriateness of remediation alternatives. Coordinated and provided oversight for the final remediation system design specifications. Coordinated and provided oversight for the construction and installation of soil and groundwater remediation systems. Provided oversight for operation and maintenance of remediation systems. Conducted soil and groundwater verification, and prepared closure reports.
11. **Project Manager, LUST Site, Flint, Michigan** – Provided consulting services for confidential insurance company whose trucking company client had overfilled a UST system, creating a release. Planned and provided oversight for the removal of three USTs, the excavation and disposal of a total of 3,380-tons of contaminated soil, the installation of a 3-compartment, fiberglass storage tank to replace the original system, and the restoration of the site to its original contours. Prepared a closure report which resulted in the successful closure of the release.
12. **Project Manager, Petroleum Spill, Chesterfield Township, Michigan** – Provided consulting services for confidential insurance company whose trucking company client had overturned a tank truck on I-94 in Chesterfield Township, spilling 4,000-gallons of gasoline. Planned and provided oversight for the excavation and disposal of a total of 2,543-tons of contaminated soil; planned and conducted a subsurface investigation to verify that all impacted soil and groundwater had been successfully removed; prepared a closure report which resulted in the successful closure of the release.
13. **Project Manager, Phase I ESA, Former MC (PC) ROW, Saline, Michigan** – Performed site reconnaissance, historical research, and report preparation for former Michigan Central (Penn Central) right-of-way through the Village of Saline, Michigan. Recommended Phase II ESA based on adjoining property usage.
14. **Senior Professional Geologist, ORYX Energy/Sun E&P Company, Gulf of Mexico, and Michigan** – Responsible for subsurface geological characterization (site assessment) integrating geological and geophysical data. Conducted feasibility and risk assessment to determine degree of corporate participation. Co-coordinated and provided oversight for well construction, including lithology descriptions, porosity determinations, and water table elevations for proper screen placement. Prepared project summary reports documenting findings for client and Michigan Department of Natural Resources (MDNR).
15. **Senior Geologist, ANR Storage Company, Michigan, Kansas, and Texas** – Responsible for subsurface geological characterization (site assessment) integrating geological and geophysical data. Designed and coordinated the construction of leak detection monitoring (observation) wells. Provided oversight for monitor (observation) well and injection well construction, including lithology descriptions, porosity determinations, and water table elevations for proper screen placement. Evaluated annual monitoring data to determine migration rate of hydrocarbon plume. Prepared project summary reports documenting findings for client and MDNR.

PROFESSIONAL FIRM NAME/SUB NAME Superior Environmental Corp

EMPLOYEE NAME Trevor I. Woollatt CLASS LEVEL P4

TO BE COMPLETED BY STATE CONTRACT ADMINISTRATOR		
APPROVED BY	START DATE	TOTAL YEARS EXPERIENCE

FUNCTIONS (as indicated on the Classifications and Labor Rates Form)

**Geologist**

EDUCATION (list each degree separately)

<u>Type of Degree</u>	<u>Degree Granted</u>	<u>Year Granted</u>	<u>Granting Institution</u>
B.S.	Geology	1996	West Virginia University

IS THIS PERSON A CERTIFIED UNDERGROUND STORAGE TANK PROFESSIONAL? **NO**

IS THIS PERSON A KEY INDIVIDUAL ON YOUR CONTRACT? **NO**

REGISTRATIONS

None

SOCIETIES

None

SUMMARY OF EXPERIENCE

Mr. Woollatt serves as a Senior Project Manager for Superior Environmental Corp's Wixom, Michigan office. His duties include management of leaking underground storage tank projects, conducting Phase I/II Environmental Site Assessments, preparing Baseline Environmental Assessments (BEAs), preparing Section 7a Compliance Analyses, and conducting remedial investigation/remediation activities. His responsibilities include preparing cost estimates, design, and implementation of sampling programs, evaluating technical data, ensuring quality of deliverables, preparing brownfield plans, developing standard operating procedures, and preparing quality assurance project plans.

RELEVANT EXPERIENCE (for each firm or institution describe the work performed)

<u>Number of Years</u>	<u>Inclusive Dates</u>	<u>Firm or Institution</u>
1	2012-present	Superior Environmental Corp Environmental Scientist
3	2009-2012	Environmental Consulting & Technology, Inc. Senior Associate
1	2008-2009	Civil & Environmental Consultants, Inc. Senior Project Manager
4	2004-2008	AKT Peerless Environmental Services, Inc. Senior Project Manager
6	1998-2004	Applied Science & Technology, Inc. Senior Geologist

Total Years: 15

## Representative Projects with Similar Experience

1. **Project Manager; EZ Mini Storage Facility, City of Ferndale** – \$5 million brownfield redevelopment of a former manufacturing facility in a “Core Community” in Ferndale, Michigan. Activities included Phase I/II ESA, BEA, and Act 381 Brownfield Work Plan. Approved activities included building demolition, removal of six abandoned underground storage tanks (USTs) containing hazardous waste, removal and disposal of hazardous and nonhazardous contaminated soil, and a Single Business Tax brownfield credit application.
2. **Project Manager; Landfill Redevelopment, Confidential Client** – Phase I/II ESA activities associated with the planned \$250 million redevelopment of an 80-acre abandoned landfill in Rochester Hills, Michigan. Project funding was provided by the developer and the City using Community Development Block Grant (CDBG) funds for work in the city right-of-way. Over four borings and methane test wells were installed through 40 feet of waste to characterize the fill material, assess methane migration, and determine the underlying geology. Prepared an Act 381 Brownfield Plan including \$30 million in Tax Increment Financing for eligible activities that were approved by the city council. Prepared a comprehensive Act 381 Work Plan and entered into negotiations with the MDEQ and the attorney general’s office.
3. **Project Manager; Brownfield Redevelopment, Confidential Client** – Brownfield activities including preparation of a Brownfield Plan and Tax Increment Financing (TIF) tables for the redevelopment of a vacant building. The project was located in a core community and included both MDEQ and Michigan Growth Authority (MEGA) eligible activities. Negotiated with the local assessor and Brownfield Redevelopment Authority (BRA) chair in order to maximize eligible activities using local only TIF.
4. **Project Manager; Brownfield Redevelopment, Confidential Client** – Brownfield activities including preparation of an amended Brownfield Plan in order to correct deficiencies identified by Michigan Economic Development Corporation (MEDC) during their review of an Brownfield Michigan Business Tax (MBT) Credit application. Worked with the city assessor, the developer, and MEDC staff to correct previous deficiencies and to update the eligible activities and costs based on the redevelopment activities to be conducted. This project was complicated by the fact that the property was located in a Downtown Development Authority (DDA) and included an Obsolete Property Rehabilitation Act (OPRA). Additional financing sources included a local City Loan Board loan, a DDA Façade Grant; site assessment using a County US EPA Assessment Grant, a Michigan State Housing Development Authority Façade Grant, a MEDC 20% Brownfield MBT credit, State Historic Preservation Office 5% Historic and 7.67% Enhanced Historic Tax Credits, a National Park Service 20% Federal Historic Tax Credit, and a New Market Tax Credit Allocation via the Michigan Magnet Fund.
5. **Project Manager; Water Street Redevelopment Area Demolition, City of Ypsilanti** – Preparation and publication of demolition specifications for fifteen structures including a 75,000 square foot retail building and a 90,000 square foot former manufacturing facility. This project was funded by \$1M in grants including three \$200,000 US EPA Brownfield Cleanup Grants, a \$350,000 Neighborhood Stabilization Program (NSP) Grant through Housing and Urban Development (HUD), and an additional \$150,000 sub grant through the Downriver Community Conference (DCC) US EPA Revolving Loan Fund (RLF). This project required coordinating and tracking activities for each grant, compliance with Davis-Bacon wages, and compliance with HUD Section 3 low income worker provisions.
6. **Project Manager; Sediment Investigation, Village of Dexter** – Implemented an assessment of the sediments remaining after the removal of the Dexter Mill Pond dam. The assessment included dividing the site into exposure units in accordance with the DNRE S3TM guidance and collecting randomly selected samples. Samples were subjected to statistical analysis in accordance with the S3TM in order to determine whether or not there was a risk to the public as part of the development of the site as a city park.
7. **Project Manager; Landfill Redevelopment, Confidential Client** – Brownfield activities including preparation and eventual approval by City Council of a \$15 million landfill redevelopment project in Rochester Hills, Michigan. The project included preparation of two Act 381 Work Plans for additional assessment and for remediation. The project included isolation of PCB-contaminated soil, methane assessment, and passive methane venting systems for proposed buildings.
8. **Project Manager; Former Stanley Door Redevelopment Project (Clean Michigan Initiative Project and Brownfield Project), City of Birmingham** – A major downtown brownfield redevelopment site in Birmingham, Michigan. Project tasks included Phase I/II ESAs; BEAs; due care investigation/plan; asbestos survey and abatement; remedial design; plans/specifications; contractor evaluation and selection; demolition; methane assessment and removal of abandoned landfill material; contaminated soil excavation;

contaminated groundwater removal, transport, and disposal; brownfield facilitation; and community outreach.

9. **Project Manager; Former Ashmore Truck Facility, Kirco Development** – Environmental project activities associated with the planned \$150 million brownfield redevelopment of a former gasoline station and truck repair facility comprising 6 parcels of land in Ferndale, Michigan. Activities included Phase I/II ESA, BEA, and Act 381 Brownfield Work Plan preparation. Approved activities included building demolition, site preparation, removal of two abandoned USTs, removal and disposal of contaminated soil, and a Michigan Business Tax brownfield credit application.
10. **Project Manager; Site Assessments, Washtenaw County** – Two EPA site assessment grants involving Phase I and II ESAs, BEAs, due care plans, brownfield plans, site identification, and community outreach.
11. **Project Manager; Site Assessments, Delta County** – Two EPA site assessment grants involving Phase I and II ESAs, BEAs, due care plans, brownfield plans, site identification, and community outreach.
12. **Project Manager; Abandoned Landfill Site, City of Madison Heights** – A site assessment investigation and methane assessment of an abandoned landfill in Madison Heights, Michigan, using an EPA Hazardous Substance Assessment Grant awarded Macomb County.
13. **Project Manager; Site Assessments, Confidential Clients** – Phase II ESA, BEA, and due care activities for multiple sites and clients in the City of Detroit and Wayne County using EPA Petroleum and Hazardous Substance Assessment Grants on behalf of the Detroit Wayne County Port Authority.
14. **Project Manager; Site Assessments, Confidential Clients** – Phase II ESA, BEA, and due care activities for multiple sites and clients in the Cities of Detroit, Taylor, Melvindale, Ecorse, and Romulus using EPA Petroleum and Hazardous Substance Assessment Grants on behalf of the Downriver Area Brownfield Consortium.
15. **Project Geologist; UST Investigation and Closure, Mobil Oil** – Forty UST sites throughout Michigan. The sites included properties that were actively remediated using soil vapor extraction or soil removal as well as sites that were monitored for natural attenuation. Prepared and submitted all required reports including Initial Assessment, Final Assessment, and Closure Reports. Negotiated with MDEQ staff regarding cleanup strategies and options for closure.

PROFESSIONAL FIRM NAME/SUB NAME Superior Environmental Corp

EMPLOYEE NAME Carla J. Lange CLASS LEVEL P4

TO BE COMPLETED BY STATE CONTRACT ADMINISTRATOR		
APPROVED BY	START DATE	TOTAL YEARS EXPERIENCE

FUNCTIONS (as indicated on the Classifications and Labor Rates Form)

**Sr. Project Manager**

EDUCATION (list each degree separately)

<u>Type of Degree</u>	<u>Degree Granted</u>	<u>Year Granted</u>	<u>Granting Institution</u>
B.S.	Biology	1984	University of Michigan - Dearborn

IS THIS PERSON A CERTIFIED UNDERGROUND STORAGE TANK PROFESSIONAL? **No**

IS THIS PERSON A KEY INDIVIDUAL ON YOUR CONTRACT? **YES**

REGISTRATIONS

**None**

SOCIETIES

**None**

SUMMARY OF EXPERIENCE

Ms. Lange serves as a Senior Project Manager for Superior Environmental Corp, and manages projects within various Superior practice groups, including the Real Estate/Brownfield, and Assessment groups. Ms. Lange manages projects in all phases of investigation and remediation, from initial Phase I Environmental Site Assessment (ESA) and Due Diligence activities, through the Remedial Investigation and Feasibility Study phase, to the various phases of remediation and no further action. The projects she has managed require knowledge of CERCLA, Michigan Act 451 Part 201/213, and ASTM requirements and approaches.

RELEVANT EXPERIENCE (for each firm or institution describe the work performed)

<u>Number of Years</u>	<u>Inclusive Dates</u>	<u>Firm or Institution</u>
.5	2013-present	Superior Environmental Corp Sr. Project Manager
4	2005-2009	Haley Aldrich Project Manager
3	2002-2005	CJL Systems Project Manager
2	2000-2002	MWH Project Manager
2	1997-1999	ToITest Project Manager
8	1988-1996	Eder Associates Project Manager
2	1985-1987	Roy F. Weston Project Scientist

**Total Years: 21+**

## Representative Projects with Similar Experience

1. **Project Manager, Numerous Phase I ESAs, Multiple States** – Conducted numerous Phase I ESAs requiring a cost-effective rapid completion time at properties with diverse operations, including food processing plants, restaurants, universities, rural property, plating facilities, and manufacturers. Managed and conducted several Phase I ESAs on large sites with complex historical operations, such as a former NIKE missile site.
2. **Project Manager, Numerous BEAs and Due Care Plans, Michigan** – Developed numerous BEAs and Due Care Plans submitted to the Michigan Department of Environmental Quality (MDEQ) for determination (prior to October 2012) and disclosure associated with the redevelopment of Brownfield sites such as: the Detroit Arsenal Tank Plant, that was redeveloped for commercial land, and on which is situated the MDEQ's Warren office; a former manufactured gas plant (MGP) site that was redeveloped for use as a college dormitory; and a former plating facility site that was redeveloped for use as a YMCA.
3. **Project Manager, Numerous Leaking UST removals and associated groundwater/soil investigations and remediation, Multiple States** – Developed and managed numerous underground storage tank (UST) removals, ranging in complexity and scope from 500-gallon USTs, to large-capacity USTs, such as: the removal of three adjoining 70,000-gallon leaking heating oil USTs which resulted in the excavation of contaminated soil, the recovery of groundwater from the excavation cavity, associated groundwater investigation, and mitigation measures implemented to avoid the plume comingling with an adjoining MGP site groundwater plume.
4. **Project Manager, Bulk Storage Facilities and Port Terminal, FL** – Developed and managed investigation and remediation at a 640-acre site owned by the client and leased to several lessees, including four bulk oil storage and distribution facilities, one bulk chemical storage and transfer facility, and six transfer stations serviced by rail and ships. Land-based investigation activities focused on the nature and extent of soil and groundwater contamination from uncontrolled oil and chemical releases. Sea-based investigation activities focused on the nature and extent of contaminated sediments in ship slips. Sea-based remediation included upgraded dredging in ship slips. Land-based remediation included the installation and operation of an air stripper groundwater treatment system. Client's objectives were met: 1) compliance status of leased properties was determined; 2) nature and extent of contamination was characterized; 3) sources of contamination were identified; 4) remediation was implemented.
5. **Project Manager, Landfill Closure, OH** – Developed and managed site characterization and remediation for the purpose of property sale at a 130-acre portion of a rail yard historically used for uncontrolled industrial waste disposal. Remedial activities included the removal and off-site disposal of soil and landfilled industrial waste, groundwater recovery and treatment, and mitigation of nineteen on-site wetlands. Potential regulatory enforcement actions on state and federal levels were avoided by negotiations and subsequent inclusion on the site in the Ohio Voluntary Action Program. Client's objectives were met: 1) capital investment of property remediation and wetlands mitigation was recovered by sale price; 2) project was conducted in a timely manner due to constraints imposed by buyer's tax schedule.
6. **Project Manager, Santa Susana Field Laboratory, CA** – On-going investigative, monitoring, and remediation efforts at the 2,850-acre site formerly used for rocket and engine testing since the 1940s. Boeing, NASA, and the DOE are the responsible parties, and the California Department of Toxic Substances Control (DTSC) oversees site activities pursuant to the Resource Conservation and Recovery Act. Primary contaminants at the site include trichloroethylene (TCE) in soil and groundwater, and tritium in groundwater of fractured bedrock. Primary challenges include ongoing risk communication with public and outreach program management, and the impacts of mudslides and a major forest fire on the distribution of contaminants. Client's objectives were met: 1) ongoing data management of millions of individual data, including rapid access to archived data, evaluation of historic and recent data quality, and data interpretation; 2) ongoing effective communications and negotiations with DTSC; 3) ongoing risk communication with the public.

- 7. On-Site Health and Safety Officer, Emergency Response Team Task Manager, Train Derailment, MI –** Provided on-site technical support to the U.S. Environmental Protection Agency Region 5 Emergency Response Team On-Scene Coordinator, and developed and managed the on-site and site perimeter air monitoring programs during remedial activities after a train derailment released 23,000-gallons of 1-decene; 21,000-gallons of chlorosilanes; 11,500-gallons of acrylic acid, and smaller volumes of paraformaldehydes into the environment causing a fire that burned for eight days adjacent to residential and agricultural property. Air samples were collected and analyzed on both a time-weighted-average and real-time basis to assure protection of public health and worker safety. Client's objectives were met: 1) eliminate immediate threat to public health and the environment; 2) remediate the site in the timeliest manner possible to minimize disruption to the cargo train schedule and delivery of industrial goods.

PROFESSIONAL FIRM NAME/SUB NAME Superior Environmental Corp

EMPLOYEE NAME Chris Lee CLASS LEVEL P4

TO BE COMPLETED BY STATE CONTRACT ADMINISTRATOR		
APPROVED BY	START DATE	TOTAL YEARS EXPERIENCE

FUNCTIONS (as indicated on the Classifications and Labor Rates Form)

**Sr. Project Manager**

EDUCATION (list each degree separately)

<u>Type of Degree</u>	<u>Degree Granted</u>	<u>Year Granted</u>	<u>Granting Institution</u>
Geology	B.S.	1995	University of Wisconsin
Geology	M.S.	1997	University of Wisconsin

IS THIS PERSON A CERTIFIED UNDERGROUND STORAGE TANK PROFESSIONAL? **NO**

IS THIS PERSON A KEY INDIVIDUAL ON YOUR CONTRACT? **YES**

REGISTRATIONS

None

SOCIETIES

None

SUMMARY OF EXPERIENCE

As a Senior Project Manager, Mr. Lee has designed and conducted numerous subsurface investigations to characterize the hydrogeological conditions throughout the Midwest to delineate soil and groundwater impacts for a multitude of contaminants. He has designed numerous groundwater and soil remediation systems as well as conducting bidding-phase services and construction oversight. He has completed numerous projects for various commercial and industrial sites, as well as leaking underground storage tank (LUST) sites. Mr. Lee has prepared schedules, economic analyses, and cost proposals for a wide variety of projects and budgets.

Mr. Lee has designed and conducted numerous investigations for soil and groundwater. Mr. Lee has also designed and constructed in-situ and ex-situ chemical oxidation remediation projects. Mr. Lee's chemical oxidation remediation experience includes injection and soil mixing using a variety of techniques for petroleum contamination and chlorinated solvents.

RELEVANT EXPERIENCE (for each firm or institution describe the work performed)

<u>Number of Years</u>	<u>Inclusive Dates</u>	<u>Firm or Institution</u>
7	2006 - present	Superior Environmental Corp
6	2000 - 2006	Northern Environmental Technologies, Inc.

**Total Years: 13**

Representative Projects with Similar Experience:

1. **Senior Project Manager, AT&T Huron Garage, Chicago, IL** – Completed hydrogeological Investigation/RBCA Closure and USTs project from data analysis, report preparation, and remedial action phases. The release occurred from several former USTs, which impacted the soil and groundwater. Prepared the investigation and remedial action reporting to obtain a No Further Remediation Letter for the site in 2006.
2. **Senior Project Manager, Foxy Cleaners in Aurora, Ill** – In-Situ Remediation project during the remedial action phase, designed, coordinated and conducted excavation activities to occur inside the dry-cleaning facility without disrupting normal business operations. Following the excavation, he designed and conducted an in-situ remediation of residual soil contamination unreachable by excavation equipment. Prepared the investigation and remedial action reporting to obtain a No Further Remediation Letter for the site in 2008.
3. **Senior Project Manager, AT&T in Moline, Illinois** – Designed, coordinated and conducted excavation activities during the investigation and remedial action phases to remove the source soils, coordinated with off-site property owners and the Illinois EPA to develop Tier III remediation objectives for off-site exposure routes, and designed an in-situ chemical oxidation injection to remediate contamination off-site while leaving the existing landscaping intact.

## SUB-CONSULTANT RESUMES

## David J. Chapman

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### Areas of Qualification

Environmental and resource economics, non-market valuation, survey research, natural resource damage assessment, benefit cost analysis, policy analysis, program evaluation, tribal resource assessment

### Employment History

- ▶ Vice President, 2010–present, Stratus Consulting Inc., Boulder, CO; Principal, 2006–2010; Managing Economist, 2003–2006
- ▶ Chief, Pacific Coast Branch, Damage Assessment Center, National Oceanic and Atmospheric Administration, 2000–2003; Acting Chief, 1999–2000
- ▶ Economist, Damage Assessment Center, National Oceanic and Atmospheric Administration, 1993–1999
- ▶ Consultant, California Department of Fish and Game, 1992–1993
- ▶ Consultant, Foster Associates, San Francisco, CA, 1992
- ▶ Consultant, California Department of Fish and Game, 1990–1993
- ▶ Research Consultant, NRDA Inc., San Diego, CA, 1989–1992
- ▶ Research Consultant, Minerals Management Service/University of Washington, Department of Forestry, 1989
- ▶ Research Consultant to Dr. W. Michael Hanemann, University of California, Berkeley, 1985–1986
- ▶ Graduate Student Instructor, University of California, Berkeley, 1985–1991

### Education

- ▶ University of California, Berkeley, MS, Natural Resource Economics, 1985
- ▶ University of California, Irvine, BA, Economics, 1983

### Professional Experience

Mr. Chapman has over 25 years of experience in natural resource valuation and policy analysis, specializing in behavioral and welfare effects of environmental and natural resource impacts and federal and state environmental policy. He is experienced in the technical development and implementation of non-market valuation studies to measure the welfare effects of environmental contamination. In addition, Mr. Chapman has coordinated the development and evaluation of federal and state environmental policies and assisted in the development of federal regulations. He has over 10 years of experience working in the federal government conducting natural resource damage assessments (NRDAs), policy evaluation, and regulation development.

At Stratus Consulting, Mr. Chapman leads NRDA projects for state, federal, and tribal clients; is leading projects on non-market valuation studies including the valuation of groundwater, freshwater river systems, coral reefs, right whales, tribal resources, and improved weather information; and has worked on the conceptual and empirical estimates of the value of water for the American Water Works Research Foundation.

As Pacific Branch Chief for the National Oceanic and Atmospheric Administration's (NOAA's) Damage Assessment Center, Mr. Chapman's responsibilities covered the region from Alaska to California, and the Pacific Islands. He was responsible for the overall management of all scientific and economic studies conducted in support of multiple NRDA's for oil spills and toxic waste sites. Activities included spill response coordination, case strategy, technical assessment guidance, quality assurance, and management of eight technical and administrative staff members. Activities also included the role of senior economist on NOAA research projects.

Mr. Chapman served as the lead NOAA economist on over 20 NRDA's, as well as methods development and training of in-house and state and federal agency personnel on economic methods.

Mr. Chapman's experience includes the following:

- ▶ Non-market valuation and other economic analysis
  - Developed a non-market valuation study of value of lost shoreline recreation due to an oil spill in San Francisco Bay
  - Developed a non-market valuation study to determine the value of protecting a river and lake in Oklahoma from increased eutrophication
  - Developed methods for and conducted tribal resource assessments for the Washoe Tribe of Nevada and California's claim at the Leviathan Mine site in California, and for five tribes (including the Confederated Tribes of the Umatilla Indian Reservation) at the Portland Harbor Superfund site
  - Estimated groundwater damages due to contamination
  - Developed non-market valuation studies to determine the value of protecting and improving groundwater resources, freshwater river systems, and Hawaiian coral reef ecosystems; improved protection of north Atlantic right whales; and improved weather forecasts
  - Provided an economic analysis on consultant projects dealing with industrial and commercial sector water conservation practices, and measuring economic impact

of proposed Bay Area Rapid Transit extension through the City of Fremont, California

- Developed a fair market valuation study for a fiber optic cable right-of-way through National Marine Sanctuaries
  - Supported an economic damage assessment for the *Exxon Valdez* oil spill NRDA
  - Developed an economic analysis to estimate the impact of oil and gas development along the Oregon and Washington coasts, including development of a contingent valuation survey
  - Supported the economic impact of proposed agricultural wastewater discharges into the San Joaquin River, a recreational assessment for the albacore sport fishing economic and marine recreational fishing studies.
- ▶ Policy development
- Provided guidance to the European Commission, Spain, and Portugal on NRDA methods and application for implementation of the European Union Environmental Liabilities Directive
  - Provided technical guidance and review on the application of habitat equivalency analysis (HEA) and non-market valuation studies used to develop environmental damage compensation claims resulting from the 1991 Gulf War and evaluated by the United Nations Compensation Commission
  - Developed program evaluation and tracking tools for NOAA.

### **Selected Articles/Chapters/Reports/Books**

Lipton, J., E. Ozdemiroglu, and D.J. Chapman (eds.). *Equivalency Methods for Environmental Liability in the European Union: Assessing Damage and Compensation under the Environmental Liability Directive*. Springer, V, 320 p. ISBN 978-90-481-9811-5 (Forthcoming).

Raucher, R.S., J. Clements, C. Donovan, D. Chapman, R. Bishop, G. Johns, M. Hanemann, S. Rodkin, and J. Garrett. 2013. *The Value of Water Supply Reliability in the Residential Sector*. WateReuse Research Foundation Report 08-09-1, Alexandria, VA.

Chapman, D.J., R.C. Bishop, W.M. Hanemann, B.J. Kanninen, J.A. Krosnick, E.R. Morey, and R. Tourangeau. 2009. Natural Resource Damages Associated with Aesthetic and Ecosystem

Injuries to Oklahoma's Illinois River System and Tenkiller Lake. Expert Report for the State of Oklahoma. Case No. 05-CV-0329-GKF-SAJ. *State of Oklahoma v. Tyson Foods, et al.* In the United States District Court for the Northern District of Oklahoma. Volume I.

Lane, D., K. Carney, and D. Chapman. 2009. Identifying, scaling, and evaluating groundwater restoration projects as compensation for groundwater injuries. *International Journal of Soil, Sediment and Water* 2(1):Article 3. Available: <http://scholarworks.umass.edu/intljssw/vol2/iss1/3>.

Adamowicz, V., D. Chapman, G. Mancini, W. Munns, G. Striling, and T. Tomasi. 2007. Valuation methods. In *Valuation of Ecological Resources: Integration of Ecological Risk Assessment and Socio-economics to Support Environmental Decisions*, R.G. Stahl, L. Kapustka, W. Munns, and R. Bruins (eds.). SETAC Press, Pensacola, FL.

Allen II, P.D., D.J. Chapman, and D. Lane. 2005. Scaling environmental restoration to offset injury using habitat equivalency analysis. Chapter 8 in *Economics and Ecological Risk Assessment, Applications to Watershed Management*, R.J.F. Bruins and M.T. Heberling (eds.). CRC Press, Boca Raton, FL, pp. 165–184.

Chapman, D. and B. Julius. 2005. The use of preventative projects as compensatory Restoration. *Journal of Coastal Research* SI(40):120–131.

Chapman D. and W.M. Hanemann. 2001. Environmental damages in court: The *American Trader* Case, A. Heyes (ed.). *The Law and Economics of the Environment* 319–367.

Chapman, D. and E. English. 2001. Fair Market Value Analysis for a Fiber Optic Cable Permit in National Marine Sanctuaries. Report to National Marine Sanctuary Program, National Oceanic and Atmospheric Administration, Silver Spring, MD.

Chapman, D., N. Iadanza, and T. Penn. 1998. *Calculating Resource Compensation: An Application of the Service-to-Service Approach to the Blackbird Mine Hazardous Waste Site*. National Oceanic and Atmospheric Administration Damage Assessment and Restoration Program Technical Paper 97-1. October.

Chapman, D., W.M. Hanemann, and P. Ruud. 1998. *American Trader* oil spill: A view from the beaches. Featured essay in *AERE Newsletter* 18(2).

Chapman, D. and W.M. Hanemann. 1999. Non-market valuation using contingent behavior: Model specification and consistency tests. In *Proceeding of the 1996 Annual AERE Workshop*, Tahoe City, CA. June.

Kanninen, B., D. Chapman, and W.M. Hanemann. 1992. Survey data collection; detecting and correcting for biases in responses to mail and telephone surveys. In *Proceedings of the U.S. Census Bureau's Annual Research Conference*.

Ellis, G., D. Chapman, and N. Johnson. 1991. Assessing the Economic Impact to Coastal Recreation and Tourism from Oil and Gas Development in the Oregon and Washington Outer Continental Shelf. OCS Study MMS 91-0046. May.

Hanemann, M., E. Lichtenberg, D. Zilberman, D. Chapman, L. Dixon, G. Ellis, and J. Hukkinen. 1987. Economic Implications of Regulating Agricultural Drainage to the San Joaquin River. Regulation of Agricultural Drainage to the San Joaquin River. SWRCB Order No. W.Q. 85-1, Technical Committee Report. Appendix G (two volumes.). State Water Resources Control Board, Sacramento, CA.

### **Presentations/Short Courses/Working Papers**

Training Workshop: Environmental Liabilities Directive Training Handbook – Romanian Ministry of the Environment, Bucharest, RO. October 8–9, 2012.

Training Workshop: Environmental Liabilities Directive Training Handbook – European Commission – Directorate General for Environment – Brussels, BE. October 1, 2012.

Workshop on Resource Equivalency Methods for the E.U. Environmental Liabilities Directive. Instructor. Warsaw, Poland. June 2–3, 2008.

The European Union Environmental Liabilities Directive: Resource Compensation Methods Measure Remediation Scaling under Annex II. Presentation to the European Commission. Brussels Belgium. March 2008.

The European Union Environmental Liabilities Directive: Resource Compensation Methods Measure Remediation Scaling under Annex II. Invited Presentation. Sevilla, Spain. February 2008.

Nonparametric Modeling of Travel Cost Data. Paper presented at the First World Congress of Environmental and Resource Economists (with W.M. Hanemann and M. Ward). Venice, Italy. June 25–27, 1998.

The Role of Value and Economic Efficiency in Habitat Equivalency Analysis. Interactive Platform Session. Fourth SETAC World Congress, Portland, OR. November 2004.

Introduction to Natural Resource Damage Assessment and Restoration-Based Compensation for Environmental Damages. Short course. European Society for Environmental Toxicologists and Chemists (European SETAC). Prague, Czech Republic. April 2004.

Use of Resource Equivalency in Natural Resource Damage Assessments. Presentation to U.S. Environmental Protection Agency, Science Advisory Board, Washington, DC. April 2004.

Use of Economic Valuation to Establish Compensation under the E.C. on Environmental Liability Directive. Envecon 2004 Applied Environmental Economics Conference, London, UK. March 2004.

What Lies Beneath: Valuing Public Lands Leases, Including Sovereign Submerged Lands. 2003 National Public Land Acquisition & Management Partnership Conference, Amelia Island, Florida. December 6–9, 2003.

The Use of Preventative Projects as Compensatory Restoration. Restore America's Estuaries Conference, Baltimore, MD. April 2003.

Developing Defensible NRDA Claims. Short course. International Oil Spill Conference. Vancouver, British Columbia, Canada. April 2003.

Non-Market Valuation Techniques in Natural Resource Damage Assessments. Invited Lecture Series. Department of Economics, College of William and Mary, Williamsburg, VA. Spring 2003.

NOAA's Blue Ribbon Panel: 10 Years After. Invited Panelist. Resources for the Future, Washington, DC. November 2002.

Cooperative NRDA Assessments. Short course. International Oil Spill Conference, Tampa Bay, FL. March 2001.

The Role of Natural Resource Economics in the *American Trader* Oil Spill Trial. Invited speaker at the Yosemite Law Institute, Yosemite, CA. October 1998.

Using Economics in the Courts. Presentation to the Southern Economic Association Meeting, Baltimore, MD. October 1998.

Use of Habitat Equivalency Analysis in Natural Resource Damage Assessments. Presentation to the Joint Assessment Team, Portland, OR. June 1996.

Non-market Valuation Using Contingent Behavior: Model Specification and Consistency Tests. Presented at the 1996 Annual AERE Workshop, Tahoe City, CA. June 1996.

Resource Compensation: An Application of Northwest Salmon. Presented at the W-133 Annual Meetings, Jekyll Island, GA. March 1996.

Natural Resource Economics. Presented to the Natural Resource Damage Assessment and Restoration Workshop, Sponsored by USFWS. April 1994.

Chapman, D. and W.M. Hanemann. Correlated Discrete-Response Contingent Valuation. Department of Agricultural and Resource Economics, Working Paper, University of California, Berkeley. July 1993.

Hanemann, W.M., D. Chapman, and B. Kanninen. Non-market Valuation Using Contingent Behavior: Model Specification and Consistency Tests. Department of Agricultural and Resource Economics, Working Paper, University of California, Berkeley. January 1993.

Survey Data Collection: Detecting and Correcting for Biases in Responses to Mail and Telephone Surveys (co-authored with B. Kanninen). Presented at the United States Census Bureau's Conference on Statistical Methods, Washington, DC. March 1992.

Empirical Uses of Contingent Valuation Studies in Natural Resource Damage Assessments. Presented to the Department of Forestry, University of Washington. July 1989.

Hanemann, W.M. and D. Chapman. Beyond Contingent Valuation: Deriving Environmental Benefits from Hypothetical Data. Department of Agricultural and Resource Economics, Working Paper, University of California, Berkeley. October 1988.

Beyond Contingent Valuation: Deriving Environmental Benefits from Hypothetical Behavior Data (co-authored with W.M. Hanemann). Presented at the American Public Policy Association Meeting, Washington, DC. October 29, 1987.

### **Specific Training**

- ▶ NOAA Facilitation and Mediation Training Workshop, June 1998
- ▶ Advanced Quantitative Marketing Methods, Haas Business School, University of California, Berkeley. July 30–August 1, 1997
- ▶ Stated Preference Short Course, Portland State University. June 24–27, 1996
- ▶ Qualitative Choice Methods Workshop, University of California, Berkeley. May 4–8, 1992.

**Membership**

- ▶ Association of Environmental and Resource Economists
- ▶ European Association of Environmental and Resource Economists.

## **Diana R. Lane**

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### **Areas of Qualification**

Restoration ecology, restoration project planning and management, restoration evaluation, terrestrial ecology, habitat equivalency analysis, natural resource damage assessment

### **Employment History**

- ▶ Principal, Stratus Consulting Inc., Boulder, CO, 2013-present, Managing Scientist, 2005-2012; Senior Scientist, 2003-2005; Senior Associate, 2002-2003
- ▶ Teaching Assistant, Biological Sciences, University of Illinois at Chicago, 1999-2000
- ▶ Associate, Hagler Bailly Services, Inc., Boulder, CO, 1995-1997
- ▶ Research Assistant, Colorado State University, Fort Collins, 1993-1995
- ▶ Fellow, Rockefeller Traveling Fellowship, 1991-1992

### **Education**

- ▶ University of Illinois at Chicago, PhD, Ecology, 2002
- ▶ Colorado State University, MS, Rangeland Ecosystem Science, 1995
- ▶ Harvard University, BA, Biology, 1991

### **Professional Experience**

Dr. Lane is a terrestrial ecologist with specific experience in restoration ecology. Her work focuses on all aspects of restoration planning, management, and evaluation. She has been involved in identifying, screening, scaling, selecting, and designing ecological restoration projects for a variety of natural resource damage assessment (NRDA) sites throughout the United States, including the Deepwater Horizon oil spill. Her research includes a focus on restoration project evaluation, including novel techniques for evaluating the functional consequences of prairie restoration on soil heterogeneity and vegetation dynamics. She also has prepared evaluations of restoration projects and techniques for Gulf of Mexico coastal habitats; Pacific salmon and coastal dune habitats; and Great Lakes wetland, upland, and lake habitats.

Dr. Lane's experience includes providing expert technical assistance to federal, state, and tribal natural resource trustees for a variety of NRDA's. She has expertise in designing and applying habitat equivalency analyses (HEA) and resource equivalency analyses (REA) to quantify natural resource injuries and determine the amount of restoration required to compensate for injuries to state and federal trust resources. Dr. Lane has worked on cooperative NRDA's, assisting trustees with managing and directing all aspects of the restoration planning and evaluation process.

## Selected Projects

### **Early Restoration Planning: Deepwater Horizon Oil Spill**

For: Deepwater Horizon Trustees

Participant in early restoration offsets group. Developing methods and techniques for prioritizing early restoration projects and appropriately quantifying potential restoration benefits for a range of potential early restoration projects in the Gulf of Mexico, including habitat creation, habitat restoration, and resource-focused projects. Participating and presenting at early restoration offsets group meetings to share methodologies.

### **Freeport MacMoran Inc. Copper Mines Natural Resource Damage Assessment**

For: New Mexico Office of Natural Resources Trustee

Project manager for post-settlement restoration planning to compensate for injuries to groundwater resources from three copper mines near Silver City, New Mexico. Developed methodologies for evaluating potential projects in a comparative framework. Developed draft and final versions of a Restoration Plan/Environmental Assessment (RP/EA) to guide proposed restoration projects. Restoration actions included projects to conserve groundwater, reduce groundwater contamination, and clean up an abandoned mine site that has impacted groundwater. Incorporated revisions to the draft report based on public and agency comments.

For the injury assessment phase, assisted with quantification of injuries to riparian and upland habitats using HEA and quantification of injuries to bird resources using REA. Quantified aquatic injuries based on fish toxicity and observed reductions in fish and benthic macroinvertebrate populations. Worked to identify, scale, and cost restoration projects as part of damages quantification. Assisted with case strategy for a cooperative assessment process.

### **Upper Arkansas River Natural Resource Damage Assessment**

For: U.S. Fish and Wildlife Service and State of Colorado

Project manager and technical lead. Developed a Restoration Plan/Environmental Assessment (RP/EA) and a Restoration Monitoring and Public Outreach Plan document to guide proposed restoration actions within the upper Arkansas River basin, including a substantial in-stream habitat restoration project. Developed innovative monitoring frameworks, schedules, and flowcharts to guide monitoring actions and agency oversight. Restoration actions focused on addressing public losses caused by mining impacts to surface water, terrestrial, and groundwater resources. Managed the public participation process and incorporated revisions based on public and agency comments.

For the injury assessment phase, used HEA to quantify injuries to aquatic and terrestrial resources from historic hard-rock mining activities. Quantified aquatic injuries based on fish toxicity and

observed reductions in fish and benthic macroinvertebrate populations. Worked to identify, scale, and cost restoration projects as part of a damages quantification. Assisted with case strategy.

**Nyanza Landfill Site Natural Resource Damage Assessment**

For: Commonwealth of Massachusetts

Project manager. Developed a RP/EA for proposed restoration actions to address contamination from the Nyanza Landfill Site into the Sudbury River. Evaluated proposed actions against Trustee criteria. Worked with engineers and local agencies to develop restoration plans and preliminary costing estimates. Restoration actions include projects to address coldwater fish habitat, fish passage, riparian habitat, and public use.

**Restoration Progress Report: Lower Fox River/Green Bay Natural Resource Damage Assessment**

For: U.S. Fish and Wildlife Service

Project Manager. Developing restoration progress report to synthesize and evaluate the outcomes of more than 50 restoration projects conducted in partial settlement of the Lower Fox River/Green Bay NRDA. Synthesis work includes creating a comprehensive geographic information system (GIS) to map all restoration projects in relation to other natural areas; quantifying the project scope and costs in five different categories (preserve wetland/upland habitat; restore wetland/upland habitat; preserve and restore aquatic, near-shore, riparian habitat; fishery enhancement; and public use enhancement); and evaluating ecological and human-use benefits from projects.

**Natural Resource Damage Assessment: Molycorp Mine, New Mexico**

For: State of New Mexico, Office of the Natural Resources Trustee

Restoration Planning Task Manager. Cooperative NRDA related to releases of hazardous substances from the Molycorp Mine, New Mexico. Used HEA to determine the amount of restoration required to compensate for injuries to natural resources. Worked with Molycorp Mine and its representatives to identify potential restoration projects to benefit different resource categories. Developed appropriate metrics to quantify project-specific benefits and determine appropriate suites of restoration projects to offset injuries to state and federal trust resources. Wrote draft restoration plan/environmental assessment for restoration projects.

**Natural Resource Damage Assessment: Rocky Mountain Arsenal, Colorado**

For: State of Colorado, Department of Law

Restoration Task Manager. Worked with State of Colorado and other parties to identify, scale, and cost potential restoration projects to compensate for natural resource damages to wildlife and

groundwater at the Rocky Mountain Arsenal. Helped draft assessment plan. Participated in multiple meetings with local stakeholder groups to provide training on restoration in the context of damage assessments and listen to potential restoration ideas. Participated in cooperative working group with representatives from the U.S. Army and Shell Oil Company to identify and scale project options acceptable to all parties. Assisted with case strategy and settlement negotiations.

### **Evaluation of Salmon Restoration Techniques**

For: National Oceanic and Atmospheric Administration Damage Assessment Center Rapid Assessment Program

Project Manager. Prepared a manuscript presenting an analysis of the quantitative benefits of different techniques used for salmon restoration. Objective of analysis was to provide information useful for scaling compensatory restoration when salmon have been injured by a release of hazardous substances or by an oil spill. Identified and summarized numerous scientific studies to provide quantitative estimates of the benefits of different restoration techniques for use in HEA calculations.

### **Selected Publications**

Carney, K.M., B. Lazar, C. Rodgers, D.R. Lane, P.A.T. Higgins, R. Jones, S. Morlando, and A.E. Ebbets. 2013. Recent and future climate change and potential implications for species and ecosystem dynamics. Chapter 2 in *Conserving Wildlife Populations in a Changing Climate*, J. Brodie, E. Post, and D. Doak (eds.). University of Chicago Press.

Buddemeier R., D. Lane, and J. Martinich. 2011. Modeling regional coral reef responses to global warming and changes in ocean chemistry: Caribbean case study. *Climatic Change* doi:10.1007/s10584-011-0022-z.

Lane, D., K. Carney, and D. Chapman. 2009. Identifying, scaling, and evaluating groundwater restoration projects as compensation for groundwater injuries. *International Journal of Soil, Sediment and Water* 2(1). Available: <http://scholarworks.umass.edu/intljssw/vol2/iss1/3>.

Allen II, P.D., D.J. Chapman, and D. Lane. 2005. Scaling environmental restoration to offset injury using habitat equivalency analysis. Chapter 8 in *Economics and Ecological Risk Assessment, Applications to Watershed Management*, R.J.F. Bruins and M.T. Heberling (eds.). CRC Press, Boca Raton, FL, pp. 165-184.

Lane, D. and H. BassiriRad. 2005. Diminishing spatial heterogeneity in soil organic matter across a prairie restoration chronosequence. *Restoration Ecology* 13(2):403-412.

Howe, H. and D. Lane. 2004. Vole-driven succession in experimental wet-prairie restoration. *Ecological Applications* 14:1295-1305.

### **Selected Presentations**

Lane, D. 2010. Ecosystem Threshold Responses to Global Warming: Key Dynamics and Management and Policy Implication. Ecological Society of America, Annual Meeting, Pittsburgh, PA. Symposium Organizer and Session Participant.

Lane, D. and J. Lipton. 2008. Using a Logic Model Framework to Develop an Effective Post-Restoration Monitoring Plan (poster presentation). Special Symposium on Approaches for Effective Ecological Restoration Monitoring. Society for Environmental Toxicology and Chemistry 2008 Annual Meeting, Tampa, FL, November 16–20.

Lane, D. and C. Herrick. 2008. Environmental Evaluation in the Age of an Uncertain Climate. Environmental Evaluators Networking Forum, Washington, DC. Invited plenary speaker.

Lane, D., M. Birnbaum, and C. Charbonneau (organizers). 2006. Evaluating the success of ecological restoration programs: The challenge of integrating ecology and social science. Ecological Society of America Annual Meeting, Memphis, TN.

# Joshua Lipton

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## Areas of Qualification

Environmental toxicology and chemistry; applied ecology and natural resource investigations; natural resource damage assessment; ecological risk assessment

## Employment History

- ▶ Chief Executive Officer, 2001-present; Stratus Consulting, Boulder, CO; President, 2005-present; Executive Vice President, 1998-2000
- ▶ Research Professor (full professor rank), Department of Geochemistry, Colorado School of Mines, Golden, 2004-present
- ▶ Vice President, Hagler Bailly, Boulder, CO, 1990-1998
- ▶ Environmental Analyst, Abt Associates Inc., Cambridge, MA
- ▶ Fisheries Biologist, Alaska State Dept. of Fish and Game, Soldotna, AK
- ▶ Research Assistant, Deutsche British Petroleum, A.G., Hamburg, Germany

## Education

- ▶ Cornell University, PhD, Natural Resources
- ▶ Cornell University, MS, Natural Resources
- ▶ Middlebury College, BA, Ecology

## Professional Experience

Dr. Lipton, president and CEO of Stratus Consulting, directly supervises the firm's environmental sciences and natural resources group, as well as its natural resource damage assessment (NRDA) practice. Dr. Lipton's expertise includes environmental toxicology and chemistry, ecology, and natural resources investigations. He has designed and directed laboratory and field toxicity tests, environmental sampling/monitoring studies, ecological field investigations, fisheries and wildlife population monitoring studies, and environmental modeling projects.

Dr. Lipton has published peer-reviewed articles in scientific journals such as the *Canadian Journal of Fisheries and Aquatic Sciences*, *Environmental Toxicology and Chemistry*, *Aquatic Toxicology*, *Ecotoxicology*, *Transactions of the American Fisheries Society*, *Environmental Management*, and *Regulatory Toxicology and Pharmacology*. Dr. Lipton has served as an elected member of the editorial board of *Environmental Toxicology and Chemistry* and *The Science of the Total Environment*.

## Selected Publications

Jones, R.W., C. Travers, C. Rodgers, B. Lazar, E. English, J. Lipton, K. Strzepek, J. Vogel, and J. Martinich. 2012. Climate change impacts on freshwater recreational fishing in the United States. *Mitigation and Adaptation Strategies for Global Change*. DOI: 10.1007/s11027-012-9385-3.

Gala, W., J. Lipton, P. Cerner, T. Ginn, R. Haddad, M. Henning, K. Jahn, W. Landis, E. Mancini, J. Nicoll, V. Peters, and J. Peterson. 2009. Ecological risk assessment and natural resource damage assessment: Synthesis of assessment procedures. *Integrated Environmental Assessment and Management* 5(4):515-522.

Bishop, R.C., J. Lipton, M. Margolis, N. Meade, G.L. Peterson, and A. Randall. 2008. Integrating economics and ecological assessment. In *Valuation of Ecological Resources: Integration of Ecology and Socioeconomics in Environmental Decision Making*, R.G. Stah Jr., L.A. Kapustka, W.R. Munns Jr., and R.J.F. Bruins (eds.). CRC Press, Boca Raton, FL. pp. 45-57.

Welsh, P.G., J. Lipton, C.A. Mebane, and J.C.A. Marr. 2008. Influence of flow-through and renewal exposures on the toxicity of copper to rainbow trout. *Ecotoxicology and Environmental Safety* 69:199-208.

Cacela, D., J. Lipton, D. Beltman, J. Hansen, and R. Wolotira. 2005. Associating ecosystem service losses with indicators of toxicity in habitat equivalency analysis. *Environmental Management* 35(3):343-351.

Hansen, J.A., J. Lipton, P.G. Welsh, D. Cacela, and B. MacConnell. 2004. Reduced growth of rainbow trout fed a live invertebrate diet pre-exposed to metal contaminated sediments. *Environmental Toxicology and Chemistry* 23:1902-1911.

Strange, E.M., P.D. Allen, D. Beltman, J. Lipton, and D. Mills. 2004. The habitat-based replacement cost method for assessing monetary damages for fish resource injuries. *Fisheries* 29:17-23.

Allen, D. and J. Lipton. 2002. Environmental restoration through natural resource damage assessments. *Southwest Hydrology* 1(4):12-13.

Cacela, D., D.J. Beltman, and J. Lipton. 2002. Polychlorinated biphenyl source attribution in Green Bay, Wisconsin, USA, using multivariate similarity among congener profiles in sediment samples. *Environmental Toxicology and Chemistry* 21:1591-1599.

Barron, M.G., J.A. Hansen, and J. Lipton. 2002. Association between contaminant tissue residues and effects in aquatic organisms. *Reviews of Environmental Contamination and Toxicology* 173:1-37.

Hansen, J.A., P.G. Welsh, and J. Lipton. 2002. Relative sensitivity of bull trout (*Salvelinus confluentus*) and rainbow trout (*Oncorhynchus mykiss*) to acute copper toxicity. *Environmental Toxicology and Chemistry* 21:633-639.

Hansen, J.A., P.G. Welsh, J. Lipton, and D. Cacela. 2002. Effects of copper exposure on growth and survival of juvenile bull trout. *Transactions of the American Fisheries Society* 131:690-697.

Hansen, J.A., P.G. Welsh, J. Lipton, and M. Suedkamp. 2002. The effects of long-term cadmium exposure on the growth and survival of juvenile bull trout (*Salvelinus confluentus*). *Aquatic Toxicology* 58:165-174.

Hansen, J.A., J. Lipton, P.G. Welsh, D. Cacela, and A.D. Dailey. 2002. Relative sensitivity of bull trout (*Salvelinus confluentus*) and rainbow trout (*Oncorhynchus mykiss*) to acute exposures of cadmium and zinc. *Environmental Toxicology and Chemistry* 21:67-75.

Hansen, J.A., J. Lipton, P.G. Welsh, J. Morris, D. Cacela, and M.J. Suedkamp. 2002. Relationship between exposure duration, tissue residues, growth, and mortality in rainbow trout (*Oncorhynchus mykiss*) juveniles sub-chronically exposed to copper. *Aquatic Toxicology* 58:175-188.

Strange, E.M., J. Lipton, D. Beltman, and B.D. Snyder. 2002. Scientific and societal considerations in selecting assessment endpoints for environmental decision-making. *TheScientificWorld* 2:12-20.

Strange, E., H. Galbraith, S. Bickel, D. Mills, D. Beltman, and J. Lipton. 2002. Determining ecological equivalence in service-to-service scaling of salt marsh restoration. *Environmental Management* 29:290-300.

Welsh, P.G., G. Chapman, J.A. Hansen, and J. Lipton. 2001. Importance of ionic composition of reconstituted laboratory test water in interpreting metal toxicity test results. *Environmental Toxicology and Risk Assessment: Science Policy, and Standardization — Implications for Environmental Decisions: Tenth Volume, ASTM STP 1403*. B.M. Greenberg, R.N. Hall, M.H. Roberts, Jr., and R.W. Gensemer, eds. American Society for Testing and Materials, West Conshohocken, PA.

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Welsh, P.G., J. Lipton, and G.A. Chapman. 2000. Evaluation of water-effect ratio methodology for establishing site-specific water quality criteria. *Environmental Toxicology and Chemistry* 19:1616-1623.

Welsh, P.G., J. Lipton, G.A. Chapman, and T. Podrabsky. 2000. Relative importance of calcium and magnesium in hardness-based modification of copper toxicity. *Environmental Toxicology and Chemistry* 19:1624-1631.

Beltman, D.J., W. H. Clements, J. Lipton, and D. Cacela. 1999. Benthic invertebrate metals exposure, accumulation, and community-level impacts downstream of a hard-rock mine site. *Environmental Toxicology and Chemistry* 18:299-307.

Hansen, J.A., J.C.A. Marr, J. Lipton, D. Cacela and H.L. Bergman. 1999. Differences in neurobehavioral responses of chinook salmon (*Oncorhynchus tshawytscha*) and rainbow trout (*Oncorhynchus mykiss*) exposed to copper and cobalt: Behavioral avoidance. *Environmental Toxicology and Chemistry* 18:1972-1978.

Marr, J.C.A., J. Lipton, D. Cacela, J.A. Hansen, J.S. Meyer, and H.L. Bergman. 1999. Bioavailability and acute toxicity of copper to rainbow trout (*Oncorhynchus mykiss*) in the presence of organic acids simulating natural dissolved organic carbon. *Canadian Journal of Fisheries and Aquatic Sciences* 56:1471-1483.

Lipton, J., D. Cacela, C. Cowan, P. DeFur, L. Ginzburg, and C. Mebane. 1998. Risk characterization. In *Ecological Risk Assessment Decision-Support System: A Conceptual Design. Proceedings of the Pellston Workshop on Ecological Risk Assessment Modeling 23-28 August 1994*. K.H. Reinert, S.M. Bartell, and G.R. Biddinger (eds.). SETAC Press, Pensacola, FL.

Marr, J.C.A., J.A. Hansen, J.S. Meyer, D. Cacela, T. Podrabsky, J. Lipton, and H.L. Bergman. 1998. Toxicity of cobalt and copper to rainbow trout: Application of a mechanistic model for predicting survival. *Aquatic Toxicology* 43:225-238.

Mastrine, J.A., A.S. Maest, J. Lipton, and B. Sanders. 1998. Framework for a nationwide hard rock mining database. In *Proceedings of the 32nd Meeting of the Geoscience Information Society*, C.J. Manson, (ed.). Geoscience Information Society, Washington, DC.

Anderson, M.J., M.G. Barron, S.A. Diamond, J. Lipton, and J.T. Zelikoff. 1997. Biomarker selection for restoration monitoring of fishery resources. In *Environmental Toxicology and Risk*

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- LeJeune, K., H. Galbraith, J. Lipton, and L.A. Kapustka. 1996. Effects of metals and arsenic on riparian communities in southwest Montana. *Ecotoxicology* 5:297-312.
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- Marr, J., H.L. Bergman, J. Lipton, and C. Hogstrand. 1995. Differences in relative sensitivity of naive and metals-acclimated brown and rainbow trout exposed to metals representative of the Clark Fork River, Montana. *Canadian Journal of Fisheries and Aquatic Sciences* 52:2016-2030.

- Marr, J.C.A., H.L. Bergman, M. Parker, J. Lipton, D. Cacela, W. Erickson, and G.R. Phillips. 1995. Relative sensitivity of brown and rainbow trout to pulsed exposures of an acutely lethal mixture of metals typical of the Clark Fork River, Montana. *Canadian Journal of Fisheries and Aquatic Sciences* 52:2005-2015.
- Phillips, G. and J. Lipton. 1995. Injury to aquatic resources caused by metals in Montana's Clark Fork River basin: Historic perspective and overview. *Canadian Journal of Fisheries and Aquatic Sciences* 52:1990-1993.
- MacRae, R., J. Meyer, A. Maest, and J. Lipton. 1994. Linking geochemistry and fish toxicology at mining sites: Determination of an organic acid analogue for use in copper toxicity studies on salmonids. *EOS* 75(44):243.
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- Lipton, J. and H. Galbraith. 1993. Treatment of uncertainty in ecological risk assessment: Be careful what you wish for. *Water Quality Standards in the 21st Century*. U.S. EPA, Washington, DC.
- Lipton, J., H. Galbraith, J. Burger, and D. Wartenburg. 1993. A paradigm for ecological risk assessment. *Environmental Management* 17(1):1-5.
- Lipton, J. and J.W. Gillett. 1992. Uncertainty in risk assessment: Exceedence frequencies, acceptable risk, and risk-based decision making. *Regulatory Toxicology and Pharmacology* 15:51-61.
- Lipton, J. and J.W. Gillett. 1991. Uncertainty in ocean-dumping health risks: Influences of bioconcentration, commercial fish landings and seafood consumption. *Environmental Toxicology and Chemistry* 10:967-976.
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### **Selected Presentations**

- Vignier, J., L. Donaghy, J. Devine, B. Denkert, P. Soudant, F.L.E. Chu, J.M. Morris, M.W. Carney, J. Lipton, D. Cacela, C. Lay, and A.K. Volety. 2013. Effects of Acute Exposure to Deepwater Horizon Oil Spill and Associated Dispersant on Embryos and Veligers of the Eastern Oyster, *Crossostrea virginica*. Aquaculture 2013: Triennial meeting of the Fish Culture Section

of the American Fisheries Society, the World Aquaculture Society, and the National Shellfisheries Association, Nashville, TN, February 21-25.

Volety, A.K., L. Haynes, J. Vignier, N. Martin, A. Griffith, L. Castret, L. Donaghy, P. Soudant, F.L.E. Chu, J.M. Morris, M.W. Carney, J. Lipton, D. Cacela, and C. Lay. 2013. Biological Responses of the Eastern Oyster, *Crassostrea virginica*, Exposed to Deepwater Horizon and Dispersants Oil via Dietary Pathways: Impacts on F-2 Generation. Aquaculture 2013: Triennial meeting of the Fish Culture Section of the American Fisheries Society, the World Aquaculture Society, and the National Shellfisheries Association, Nashville, TN, February 21-25.

Morris, J.M., A. Maest, A. Craven, and J. Lipton. 2012. Site-specific Issues with Applying the BLM to Evaluate Cu Toxicity: Overestimation of Cu-DOC Complexation and Model Anomalies in Low Hardness Waters. 33rd Annual Meeting of the Society of Environmental Toxicology and Chemistry (SETAC), Long Beach, CA, November 11-15.

Morris, J.M., A. Maest, A. Craven, and J. Lipton. 2012. The Biotic Ligand Model: Unresolved Scientific Issues and Site- and Species-specific Effects on Predicted Cu Toxicity. U.S. Environmental Protection Agency, Hard Rock Mining Conference: Advancing Solutions for a New Legacy, Denver, CO, April 3-5.

Morris, J., J. Peers, J. Lipton, C. Schreck, R. Chitwood, and J. Unrein. 2012. Contaminated Sediment Affects Burrowing Behavior of Pacific Lamprey (*Lampetra tridentata*) Ammocoetes. Presented at the 33rd Annual Meeting of Society of Environmental Toxicology and Chemistry, Long Beach, CA. November 11-15.

Devine, J., J. Vignier, B. Denkert, L. Donaghy, L. Haynes, A.K. Volety, P. Soudant, F.L.E. Chu, J.M. Morris, M.W. Carney, J. Lipton, and D. Cacela. 2012. Effect of Artificially Weathered Oil from Deepwater Horizon Oil Spill and Dispersants on the Early Life Stages of Oysters. 33rd Annual Meeting of the Society of Environmental Toxicology and Chemistry (SETAC), Long Beach, CA, November 11-15.

Haynes, L., L. Castret, L. Donaghy, A. Griffith, N. Martin, A.K. Volety, P. Soudant, F.L.E. Chu, J.M. Morris, M.W. Carney, J. Lipton, and D. Cacela. 2012. Biological Responses of the Eastern Oyster, *Crassostrea virginica*, Exposed to Deepwater Horizon Oil and Dispersants via Dietary Pathways. 33rd Annual Meeting of the Society of Environmental Toxicology and Chemistry (SETAC), Long Beach, CA, November 11-15.

Roberts, A.P., J.T. Oris, M.M. Alloy, A. Tucker, T. Curran, D. Baxter, M. Grosell, R. Griffith, A. Volety, D. Cacela, J. Lipton, and J. Morris. 2012. Photoenhanced Toxicity of WAF Oil to Early Lifestages of Gulf of Mexico Aquatic Species. 33rd Annual Meeting of the Society of Environmental Toxicology and Chemistry (SETAC), Long Beach, CA, November 11-15.

Vignier, L., B. Denkert, J. Devine, L. Haynes, L. Donaghy, A.K. Volety, P. Soudant, F.L.E. Chu, J.M. Morris, M.W. Carney, J. Lipton, and D. Cacela. 2012. Evaluation of Toxicity of Deepwater Horizon Oil and Dispersant on Gametes of the Oyster *Crassostrea virginica*: Embryogenesis and Larval Development. 33rd Annual Meeting of the Society of Environmental Toxicology and Chemistry (SETAC), Long Beach, CA, November 11-15.

Morris, J., J. Peers, J. Lipton, C. Schreck, R. Chitwood, and J. Unrein. 2011. Toxicity of Portland Harbor Sediments to Pacific Lamprey Ammocoetes (*Lampetra tridentata*). Presented at the 32nd Annual Meeting of Society of Environmental Toxicology and Chemistry, Boston, MA. November 13-17.

Peers J., J. Morris, J. Lipton, C. Schreck, R Chitwood, and J. Unrein. 2010. Toxicity of Portland Harbor Sediments to Pacific Lamprey Ammocoetes (*Lampetra tridentata*): Experimental Design. Presented at the 31st Annual Meeting of Society of Environmental Toxicology and Chemistry, Portland, OR. November 7-11.

Lane, D. and J. Lipton. 2008. Using a Logic Model Framework to Develop an Effective Post-Restoration Monitoring Plan (poster presentation). Special Symposium on Approaches for Effective Ecological Restoration Monitoring. Society for Environmental Toxicology and Chemistry 2008 Annual Meeting, Tampa, FL, November 16–20.

Lipton, J., K. Ritter, A. Maest, and C. Mebane. 2006. Evaluating Acute Cu Toxicity to Rainbow Trout: Cu-DOC Complexation and the BLM. Presented at SETAC Europe 16th Annual Meeting, The Hague, The Netherlands. May 7-11.

LeJeune, K., D. Atkins, and J. Lipton. 2005. Communicating Water Quality Risks Associated with Mining to a Skeptical Public. Platform presented at the Annual Meeting of the Society of Environmental Toxicology and Chemistry-Europe, Lille, France. May 23-26.

Lipton, J., K. LeJeune, and A. Maest. 2005. Evaluating Baseline Water Quality at the Yanacocha Mine, Cajamarca, Peru. Poster presented at the Annual Meeting of the Society of Environmental Toxicology and Chemistry-Europe, Lille, France. May 23-26.

Lipton, J. and J.A. Hansen. 2003. Exposure of Rainbow Trout to Live Diets Contaminated with Metals: II. Metal Residues and Histology. Poster presented at the Annual Meeting of the Society of Environmental Toxicology and Chemistry, Austin, TX. November.

Hansen, J.A., J. Lipton, and D. Cacela. 2003. Exposure of Rainbow Trout to Live Diets Contaminated with Metals: I. Growth Effects. Platform presented at the Annual Meeting of the Society of Environmental Toxicology and Chemistry, Austin, TX. November.

Hansen, J.A., J. Lipton, P.G. Welsh, and D. Cacela. 2002. Exposure of Rainbow Trout to Live Invertebrate Diets Pre-Exposed to Metal-Contaminated Sediments. Poster presented at the 23rd Annual Meeting of the Society of Environmental Toxicology and Chemistry, Salt Lake City, UT. November 16-20.

Lipton, J., J.A. Hansen, and D. Cacela. 2002. Assessing Risks of Metal Contaminated Sediments to Trout: Diet Toxicity Studies. Platform presented at the 12th Annual Meeting of SETAC-Europe, Vienna, Austria. May 12-16.

Lipton, J., J.A. Hansen, T. Podrabsky, and K. LeJeune. 2001. Evaluation of Toxic Effects of Metals to Fish in the Coeur d'Alene River Basin, ID. Poster presented at the 22nd Annual Meeting of the Society of Environmental Toxicology and Chemistry, Baltimore, MD. November 11-15.

Lipton, J., J.A. Hansen, P.G. Welsh, and D. Cacela. 2001. Relationship between Whole-Body Copper Residues and Growth Effects in Two Salmonids. Platform presented at the 22nd Annual Meeting of the Society of Environmental Toxicology and Chemistry, Baltimore, MD. November 11-15.

Beltman, D.J., J. Lipton, and S. Bickel. 2001. A Review of Field Studies on PCB Impacts to Birds in Green Bay, Lake Michigan, USA. Poster presented at 11th Annual Meeting of SETAC-Europe, Madrid, Spain. May 6-10.

Hansen, J.A., P.G. Welsh, K. Neptun, and J. Lipton. 2001. Approaches to Evaluating Effects of Metal-Contaminated Sediments on Rainbow Trout. Platform presented at 11th Annual Meeting of SETAC-Europe, Madrid, Spain. May 6-10.

Lipton, J., M. Anderson, A. Grêt, D. Cacela, and D.J. Beltman. 2001. Evaluation of Biomarker Responses of Smallmouth Bass Collected from a PCB-Contaminated River. Poster presented at 11th Annual Meeting of SETAC-Europe, Madrid, Spain. May 6-10.

Lipton, J., J.A. Hansen, and P.G. Welsh. 2000. Are Water Quality Criteria for Metals Protective of Pacific Northwest Salmonids? Platform presentation at the 21st Annual Meeting of the Society of Environmental Toxicology and Chemistry, Nashville, TN. November 12-16.

Welsh, P.G., J. Lipton, and J.A. Hansen. 2000. Determining Site-Specific Bioavailability and Toxicity of Metals to Aquatic Biota. Platform presentation at the 21st Annual Meeting of the Society of Environmental Toxicology and Chemistry, Nashville, TN. November 12-16.

Hansen, J.A., J. Lipton, and P.G. Welsh. 2000. Subchronic Toxicity of Cadmium to Bull Trout. Platform presentation at the 21st Annual Meeting of the Society of Environmental Toxicology and Chemistry, Nashville, TN. November 12-16.

Hansen, J.A., P.G. Welsh, and J. Lipton. 2000. Relationship between Copper Exposure, Growth, and Tissue Accumulation in Rainbow Trout and Bull Trout during Subchronic Exposures. Platform presentation at the 21st Annual Meeting of the Society of Environmental Toxicology and Chemistry, Nashville, TN. November 12-16.

Lipton, J., J.A. Hansen, P.G. Welsh, and D. Cacela. 2000. Critical Body Residues for Metals: Evaluation of Relationship between Copper Accumulation and Effects in Rainbow and Bull Trout. Poster presented at the 21st Annual Meeting of the Society of Environmental Toxicology and Chemistry, Nashville, TN. November 12-16.

Welsh, P.G., J.A. Hansen, and J. Lipton. 2000. Acute Toxicity and Relative Sensitivity of Bull Trout and Rainbow Trout to Cadmium and Zinc. Poster presented at the 21st Annual Meeting of the Society of Environmental Toxicology and Chemistry, Nashville, TN. November 12-16.

Hansen, J.A., M. Barron, and J. Lipton. 2000. A Review of Critical Body Residues Found in the Literature. Poster presented at the 21st Annual Meeting of the Society of Environmental Toxicology and Chemistry, Nashville, TN. November 12-16.

Beltman, D.J., J. Lipton, and S. Bickel. 2000. A Comprehensive Review of Field Studies on PCB Impacts to Birds in Green Bay, Lake Michigan. Poster presented at the 21st Annual Meeting of the Society of Environmental Toxicology and Chemistry, Nashville, TN. November 12-16.

Beltman, D., J. Lipton, and S. Bickel. 2000. Evaluation of Adverse Effects of PCB Exposure on Fish Health and Reproduction in Green Bay, Lake Michigan. Presented at the 21st Annual Meeting of Society of Environmental Toxicology and Chemistry, Nashville, TN. November 12-16.

Hansen, J.A., J. Lipton, and P.G. Welsh. 2000. Acute Responses of Bull Trout (*Salvelinus confluentus*) to Cadmium, Copper, and Zinc. Poster presented at the Third SETAC World Congress 10th Annual Meeting of SETAC-Europe, Brighton, UK. May 21-25.

Hansen, J.A., J. Lipton, and P.G. Welsh. 2000. Effects of Cadmium and Copper on Bull Trout (*Salvelinus confluentus*) in Subchronic Exposures. Poster presented at the Third SETAC World Congress 10th Annual Meeting of SETAC-Europe, Brighton, UK. May 21-25.

Lipton, J., D. Beltman, and S. Bickel. 2000. Evaluation of Adverse Effects of PCB Exposure on Health and Reproduction on Fish in Green Bay, Lake Michigan (USA). Presented at the Third SETAC World Congress 10th Annual Meeting of SETAC-Europe, Brighton, UK. May 21-25.

Lipton, J., J.A. Hansen, P.G. Welsh, and D. Cacela. 2000. Relationship between Water Exposure, Tissue Residues, Growth, and Mortality of Rainbow Trout (*O. mykiss*) Exposed to Copper.

Poster presented at the Third SETAC World Congress 10th Annual Meeting of SETAC-Europe, Brighton, UK. May 21-25.

Welsh, P.G., G. Chapman, J.A. Hansen, and J. Lipton. 2000. Ionic Composition of Reconstituted Laboratory Water and Natural Surface Waters in the United States — Implications for Conducting and Interpreting Metal Toxicity Tests. Presented at ASTM Tenth Symposium on Environmental Toxicology and Risk Assessment, Toronto, Ontario. April 9-13.

Anderson, M., M.G. Barron, D. Beltman, D. Cacela, J. Lipton, S.J. Teh, D.E. Hinton, J.T. Zelikoff, A.L. Dikkeboom, D.E. Tillitt, M. Holey, and N.D. Denslow. 1999. Association between PCBs, Liver Lesions, and Biomarker Response in Adult Walleye (*Stizostedium vitreum vitreum*) Collected from Green Bay. Presented at the 20th Annual Meeting of Society of Environmental Toxicology and Chemistry, Philadelphia, PA. November 14-18.

Beltman, D., J. Lipton, D. Cacela, and S. Bickel. 1999. Spatial and Temporal PCB Patterns in Green Bay, Wisconsin. Presented at the 20th Annual Meeting of Society of Environmental Toxicology and Chemistry, Philadelphia, PA. November 14-18.

Hansen, J.A., P.G. Welsh, J. Lipton, and T. Podrabsky. 1999. Acute Toxicity and Relative Sensitivity of Bull Trout (*Salvelinus confluentus*) to Copper. Presented at the Annual Meeting of the Society of Environmental Toxicology and Chemistry, Philadelphia, PA. November 14-18.

Lipton, J. 1999. Natural Resource Damage Assessment in the United States. Presentation at the 9th Annual Meeting of Society of Environmental Toxicology and Chemistry-Europe, Leipzig, Germany, May 25-29. Prepared by Stratus Consulting Inc., Boulder, CO.

Lipton, J., P.G. Welsh, and J.A. Hansen, 1999. Influence of Mediating Biological Factors in Assessing Copper Risks to Aquatic Biota. Presented at the 20th Annual Meeting of Society of Environmental Toxicology and Chemistry, Philadelphia, PA. November 14-18.

Lipton, J., P. Welsh, J. Hansen, and S. Teh. 1999. Synergistic Toxicity of Copper and the Protozoan *Ichthyobodo sp.* to Rainbow Trout, *Oncorhynchus mykiss*. Presentation at the 9th Annual Meeting of Society of Environmental Toxicology and Chemistry-Europe, Leipzig, Germany, May 25-29. Prepared by Stratus Consulting Inc., Boulder, CO and the University of California, Davis.

Lipton, J., P. Welsh, T. Podrabsky, and J. Hansen. 1999. Approaches to Evaluating Copper Risks to Aquatic Biota. Presentation at the 9th Annual Meeting of Society of Environmental Toxicology and Chemistry-Europe, Leipzig, Germany, May 25-29. Prepared by Stratus Consulting Inc., Boulder, CO.

Lipton, J., P. Welsh, J. Hansen, T. Podrabsky, and R. Playle. 1999. Laboratory Studies Evaluating Biotic Ligand Models of Copper Toxicity to Rainbow Trout, *O. mykiss*: Gill Uptake Experiments. Presentation at the 9th Annual Meeting of Society of Environmental Toxicology and Chemistry-Europe, Leipzig, Germany, May 25-29. Prepared by Stratus Consulting Inc., Boulder, CO and Wilfrid Laurier University, Waterloo, Canada.

Strange, E., H. Galbraith, D. Beltman, R. Jones, and J. Lipton. 1999. Ecological Maturation in Restored Salt Marshes. Presented at the 20th Annual Meeting of Society of Environmental Toxicology and Chemistry, Philadelphia, PA. November 14-18.

Strange, E., H. Galbraith, D. Beltman, R. Jones, and J. Lipton. 1999. Restoration of Coastal Salt Marshes; "What is Success?" Presented at the 20th Annual Meeting of Society of Environmental Toxicology and Chemistry, Philadelphia, PA. November 14-18.

Welsh, P.G., J. Lipton, J.A. Hansen, and T. Podrabsky. 1999. Derivation of Gill Residue Threshold Values for the Biotic Ligand Model. Presented at the 20th Annual Meeting of Society of Environmental Toxicology and Chemistry, Philadelphia, PA. November 14-18.

Barron, M.G., R. Playle, P. Welsh, and J. Lipton. 1998. Calcium-Dependent Accumulation of Zinc on Rainbow Trout Gills. Presented at the Society of Toxicology, New Orleans, LA. March.

Cacela, D., D. Beltman, and J. Lipton. 1998. Determining Similarity among PCB Congener Profiles from Sediment Samples Using a Simple Multivariate Distance Sample. Presented at Society of Environmental Toxicology and Chemistry 19th Annual Meeting, Charlotte, NC. November 15-19.

Cacela, D., D. Beltman, and J. Lipton. 1998. Using PCB Congener Patterns to Identify PCB Sources. Presented at the Society of Environmental Toxicology and Chemistry 19th Annual Meeting, Charlotte, NC. November 15-19.

Lipton, J. 1998. Injury Endpoint Selection in Natural Resource Damage Assessment. Society of Environmental Toxicology and Chemistry 19th Annual Meeting, Charlotte, NC. November 15-19.

Lipton, J. and P.G. Welsh. 1998. Conducting Laboratory Studies to Evaluate the Site-Specific Toxicity of Cu. Society of Environmental Toxicology and Chemistry 19th Annual Meeting, Charlotte, NC. November 15-19.

Lipton, J., P.G. Welsh, and R. Playle. 1998. Cu Uptake Kinetics and Critical Gill Cu Concentrations in Chinook Salmon Fry. Society of Environmental Toxicology and Chemistry 19th Annual Meeting, Charlotte, NC. November 15-19.

Welsh, P.G., J. Lipton, and G. Chapman. 1998. Untested Assumptions in Water Effect Ratio Testing. Society of Environmental Toxicology and Chemistry 19th Annual Meeting, Charlotte, NC. November 15-19.

Barron, M.G., J. Lipton, and R. Ricker. 1997. Comparison of Injury Thresholds to Field Exposure Concentrations for a Weathered Petroleum. Society of Environmental Toxicology and Chemistry, San Francisco, CA.

Barron, M.G., E.E. Little, J. Lipton, and R.W. Ricker. 1997. Assessment of the Photoenhanced Toxicity of Petroleum. Arctic and Marine Oil Program, Vancouver, British Columbia, Canada.

Hudson, R., P. Welsh, T.L. Podrabsky, J. Lipton, D. Cacela, J. Marr, and C. Huang. 1997. Changes in DOC Concentration and Metal Bioavailability in Static Renewal Metal Toxicity Tests with Rainbow Trout — Implications for Interpreting Test Results. Society of Environmental Toxicology and Chemistry, San Francisco, CA.

Lipton, J. 1997. Injury Determination Approaches in Natural Resource Damage Assessment. American Society for Testing and Materials (ASTM), Symposium on Environmental Toxicology and Risk Assessment, ASTM Session, St. Louis, MO.

Lipton, J., D. Cacela, J.C.A. Marr, J.S. Meyer, and J. Hansen. 1997. Acute Toxicity of Organically Complexed Cu to Rainbow Trout. 24th Annual Aquatic Toxicity Workshop, Niagara Falls, Ontario.

Welsh, P.G., J. Lipton, T. Podrabsky, and R. Playle. 1997. Uptake Kinetics and Critical Gill-Cu Concentrations in Chinook Salmon Fry. 24th Annual Aquatic Toxicity Workshop, Niagara Falls, Ontario.

Welsh, P.G., J. Lipton, D. Cacela, T.L. Podrabsky, R. Hudson, J. Mastrine, C. Huang, and G. Chapman. 1997. Calcium Concentration v. Water Hardness: Modifiers of Metal Toxicity to Aquatic Organisms. Society of Environmental Toxicology and Chemistry, San Francisco, CA.

Anderson, M.J., M.G. Barron, S.A. Diamond, J. Lipton, and J.T. Zelikoff. 1996. Biomarker Selection for Restoration Monitoring of Fishery Resources. Environmental Toxicology and Risk Assessment: Modeling and Risk Assessment, Orlando, FL.

Cacela, D., K. LeJeune, and J. Lipton. 1996. Use of Multivariate Statistical Analysis to Delineate the Extent of Metals Contamination in a Floodplain. Annual Meeting of the Society of Environmental Toxicology and Chemistry, Washington, DC. November.

Galbraith, H., K. LeJeune, T. Podrabsky, and J. Lipton. 1996. Mass Mortality of Snow Geese in Southwest Montana due to Mining-Related Contaminants. Poster presentation at Society of Environmental Toxicology and Chemistry, Annual Meeting, Washington, DC. November.

LeJeune, K., D. Cacela, D. Lane, and J. Lipton. 1996. Ecological Impacts of Mine Waste Contaminated Alluvial Soils on Indigenous Riparian Communities. Annual Meeting of the Society of Environmental Toxicology and Chemistry, Washington, DC. November.

Lipton, J. 1996. What, No Cookbook?: Development of Ecological Risk Assessment Guidance. American Society for Testing and Materials (ASTM), Symposium on Environmental Toxicology and Risk Assessment. Orlando, FL. April.

Beltman, D., J. Lipton, D. Cacela, and W. Clements. 1995. Effects of Metals on a Montane Aquatic System Evaluated Using an Integrated Assessment Approach. Annual Meeting of the Society of Environmental Toxicology and Chemistry, Vancouver, British Columbia, Canada. November.

Hansen, J., H.L. Bergman, J.S. Meyer, R. MacRae, J. Marr, J. Lipton, and D. Cacela. 1995. The Avoidance of Copper by Salmonids as Affected by Metals Concentration, Organic Content, and Acclimation. Annual Meeting of the Society of Environmental Toxicology and Chemistry World Congress, Vancouver, British Columbia, Canada. November.

Lipton, J. 1995. Assessing Bioavailability, Lethality, and Sub-Lethal Growth Effects of Copper and Cobalt on Salmonids in a Rocky Mountain Stream. Invited Seminar: National Fisheries Contaminant Research Center, National Biological Service, Columbia, MO.

Lipton, J., J. Marr, and E.E. Little. 1995. Sub-Lethal Effects of Metals on Fish: Use as Endpoints in Natural Resource Damage Assessment. American Standards for Testing and Materials, 5th Symposium on Environmental Toxicology and Risk Assessment, Denver, CO.

Lipton, J., K. LeJeune, D. Cacela, H. Galbraith, and T. Podrabsky. 1995. Impacts of Smelter Emissions on Vegetation Communities: The Identification of Causal Mechanisms. Annual Meeting of the Society of Environmental Toxicology and Chemistry, Vancouver, British Columbia, Canada. November.

Lipton, J., J. Marr, D. Cacela, J. Hansen, and H.L. Bergman. 1995. Modeling Growth Responses of Rainbow Trout Fry as a Function of Tissue Copper Concentration and Copper Exposure Duration. Annual Meeting of the Society of Environmental Toxicology and Chemistry World Congress, Vancouver, British Columbia, Canada. November.

Lipton, J., J. Marr, J.S. Meyer, J. Hansen, R. MacRae, A. Maest, and H.L. Bergman. 1995. Acute Lethality and Bioavailability of Copper in the Presence of Dissolved Organic Carbon. Society of Environmental Toxicology and Chemistry World Congress, Copenhagen, Denmark. June.

MacRae, R., J.S. Meyer, J. Hansen, H.L. Bergman, A. Maest, J. Marr, D. Beltman, and J. Lipton. 1995. Determination of an Organic-Acid Analog of DOC for Use in Copper Toxicity Studies on Salmonids. Annual Meeting of the Society of Environmental Toxicology and Chemistry World Congress, Vancouver, British Columbia, Canada. November.

Maest, A., D. Beltman, and J. Lipton. 1995. Temporal Variability in Metal Concentrations in a Mine-Impacted Stream: Implications for Metal Bioavailability. Annual Meeting of the Society of Environmental Toxicology and Chemistry World Congress, Vancouver, British Columbia, Canada. November.

Marr, J., J. Lipton, D. Cacela, T. Podrabsky, J. Hansen, and H.L. Bergman. 1995. Acute Lethality of Cobalt, Copper, and Cobalt/Copper Mixtures to Rainbow Trout Fry. Annual Meeting of the Society of Environmental Toxicology and Chemistry World Congress, Vancouver, British Columbia, Canada. November.

Marr, J., J. Lipton, A. Maest, D. Cacela, J.S. Meyer, J. Hansen, R. MacRae, and H.L. Bergman. 1995. Acute Lethality and Bioavailability of Copper in the Presence of Dissolved Organic Carbon. Annual Meeting of the Society of Environmental Toxicology and Chemistry World Congress, Vancouver, British Columbia, Canada. November.

Meyer, J.S., D. Beltman, A. Maest, J. Marr, J. Lipton, C. Cors, D. Cacela, and R. MacRae. 1995. Use of Geochemical and Toxicity Modeling to Predict Lethality of Copper in a Metals-Impacted Stream. Annual Meeting of the Society of Environmental Toxicology and Chemistry World Congress, Vancouver, British Columbia, Canada. November.

Cacela, D. and J. Lipton. 1994. Phytotoxicity of Metal/Metalloid Contaminated Soils: Correlation Analysis to Determine Causality. Annual Meeting of the Society of Environmental Toxicology and Chemistry, Denver, CO. November.

Galbraith, H., K. LeJeune, and J. Lipton. 1994. Contaminant Effects on Terrestrial Resources: Vegetation Community and Wildlife Habitat Evaluation. Annual Meeting of the Society of Environmental Toxicology and Chemistry, Denver, CO. November.

Galbraith, H., J. Lipton, and K. LeJeune. 1994. Effects of Mine Wastes on Riparian Soils, Vegetation, Wildlife Habitat. Annual Meeting of the Society of Environmental Toxicology and Chemistry, Denver, CO. November.

- Kapustka, L., J. Lipton, and K. LeJeune. 1994. Phytotoxicity of Metals and Arsenic-Contaminated Soils. Annual Meeting of the Society of Environmental Toxicology and Chemistry, Denver, CO. November.
- LeJeune, K., J. Lipton, and H. Galbraith. 1994. Contaminant Effects on Terrestrial Resources: Sampling Design and Patterns of Soil Contamination. Annual Meeting of the Society of Environmental Toxicology and Chemistry, Denver, CO. November.
- Lipton, J., J. Marr, and E.E. Little. 1994. Use of Behavioral Endpoints in Natural Resource Damage Assessment. Annual Meeting of the Society of Environmental Toxicology and Chemistry, Denver, CO. November.
- Little, E.E., A.J. DeLonay, J. Lipton, and E. Smith. 1994. Behavioral Factors Influencing Spatial Distributions of Fish in Contaminated Environments. Annual Meeting of the Society of Environmental Toxicology and Chemistry, Denver, CO. November.
- Marr, J.C.A., A.M. Farag, H.L. Bergman, and J. Lipton. 1994. The Effects of Metals Found in the Clark Fork River, Montana, on Rainbow (*Oncorhynchus mykiss*) and Brown Trout (*Salmo trutta*). American Society for Testing and Materials (ASTM), 4th Symposium on Environmental Toxicology and Risk Assessment, Montreal, Quebec, Canada.
- Galbraith, H. and J. Lipton. 1992. Terrestrial Ecological Risk Assessment: Links between Phytotoxicity and Wildlife Habitat. Annual Meeting of the Society of Environmental Toxicology and Chemistry, Cincinnati, OH. November.
- Lipton, J. 1992. Assessment and Valuation of Ecosystem Perturbation: A Comparison of Methods. Society for Risk Analysis, San Diego, CA. December.
- Lipton, J. 1992. Natural Resource Damage Assessment and Ecological Risk Assessment: What Falls through the Cracks? Annual Meeting of the Society for Risk Analysis, San Diego, CA. December.
- Lipton, J. and H. Galbraith. 1992. Natural Resource Damage Assessment and Ecological Risk Assessment: A Comparison. Annual Meeting of the Society of Environmental Toxicology and Chemistry, Cincinnati, OH. November.
- Lipton, J. and H. Galbraith. 1992. Treatment of Uncertainty in Ecological Risk Assessment: Be Careful What You Wish For. Invited presentation at "Water Quality Standards for the 21st Century." U.S. Environmental Protection Agency sponsored conference, Las Vegas, NV. September.

Lipton, J., H. Galbraith, D. Wartenburg, and J. Burger. 1991. A Paradigm for Ecological Risk Assessment. Annual Meeting of the Society of Environmental Toxicology and Chemistry, Seattle, WA.

Lipton, J. 1990. Modeling Uncertainties in Health Risks from Ocean Dumping. Annual Meeting of the Society of Environmental Toxicology and Chemistry.

Lipton, J. 1990. Movement of Pollutants through a Marine Food-Web. Annual Meeting of the Natural Resources Modeling Association.

Lipton, J. 1989. Uncertainty in the Calculation of Human Health Risks Associated with the Consumption of Contaminated Seafood. Student Poster Award: Annual Meeting of the American Fisheries Society.

Lipton, J. 1986. Trading Plaices: Bilateral Trade and Management Implications of the Georges Bank Boundary Delimitation, Resource Economies in Emerging Free Trade, University of Maine. January.

### **Professional Affiliations**

- ▶ Editorial Board, Science of the Total Environment (1999-present)
- ▶ Editorial Board, *Environmental Toxicology and Chemistry* (1994-1996)
- ▶ Member, Society of Environmental Toxicology and Chemistry
- ▶ Member, American Fisheries Society
- ▶ Member, Expert Peer Review Panel on Ecological Risk Assessment, Department of Energy (DOE), Center for Risk Excellence.

## Jennifer M.H. Peers

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### Areas of Qualification

Natural resource damage assessment, water quality, mining impacts, hydrology, toxicology, ecological risk, database design and management

### Employment History

- ▶ Managing Scientist, Stratus Consulting Inc., Boulder, CO, 2009–present; Senior Scientist, 2006–2009; Senior Associate, 2003–2005; Associate, 2000–2003
- ▶ Research Assistant, Institute of Arctic and Alpine Research, Boulder, CO, 1998–2000
- ▶ Teaching Assistant, Department of Geography, University of Colorado, Boulder, 1998–2000
- ▶ Environmental Coordinator, Middlebury College, Middlebury, VT, 1996–1998
- ▶ Research Assistant, Rocky Mountain Biological Laboratory, Gothic, CO, 1994–1995

### Education

- ▶ University of Colorado, Boulder, MA, Geography, 2000
- ▶ Middlebury College, BA, Environmental Studies, 1995
- ▶ School for International Training, Semester in St. Petersburg, Russia, 1994

### Professional Experience

Ms. Peers is a physical geographer with over 12 years of experience in ecological impacts of contaminant toxicity in the environment. Her work focuses on industrial contamination, impacts of mining and oil and gas production, aquatic and terrestrial toxicity, ecological services, restoration planning, ecological impacts of climate change, and tribal natural resources. At Stratus Consulting, Ms. Peers has provided state, federal, and tribal clients with technical and strategic support on Natural Resource Damage Assessments and Superfund cleanups. She has developed exposure and toxicological effects models; designed litigation-quality relational databases; performed ecological research and analysis; provided scientific litigation support; designed and coordinated field research; and written, reviewed, and presented scientific reports.

As a research assistant with the Institute of Arctic and Alpine Research, Ms. Peers collaborated on an acid mine drainage study with the State of Colorado and the U.S. Environmental Protection Agency (EPA). Ms. Peers was also invited to participate in a scientific partnership exchange funded by a NATO Linkage Grant. In the summer of 1999, she traveled to Kazakhstan and Kyrgyzstan to meet with water and snow scientists to build partnerships and promote collaborative research.

**Selected Projects****Project: Natural Resource Damage Assessment, Kalamazoo River, Michigan**

*Clients: U.S. Fish and Wildlife Service, Michigan Department of Environmental Quality, National Oceanic and Atmospheric Administration*

Ms. Peers is the project manager for this large polychlorinated biphenyl (PCB)-contaminated site. Stratus Consulting has provided strategic assistance to the natural resource trustees with injury assessment and restoration planning. Ms. Peers is currently directing the development of National Environmental Policy Act documents for restoration planning efforts. She also collaborated with other Stratus Consulting staff on data analysis and the preparation of several reports for the site (Assessment Plan and the Stage I Injury Assessment Report).

**Project: Natural Resource Damage Assessment, Passaic River, New Jersey**

*Client: Jackson Gilmour and Dobbs, on behalf of New Jersey Office of Attorney General*

Ms. Peers is the project manager for the State of New Jersey's NRDA for the Passaic River/Newark Bay complex. Her work has involved document review, the development of a document review database, and coordination of junior staff.

**Project: CERCLA Support and Natural Resource Damage Assessment, Portland Harbor, Oregon**

*Clients: Confederated Tribes of the Grand Ronde Community, Nez Perce Tribe, Confederated Tribes of Siletz Indians of Oregon, Confederated Tribes of the Umatilla Indian Reservation, and the Confederated Tribes of the Warm Springs Reservation of Oregon, National Oceanic and Atmospheric Administration*

Ms. Peers served as the project manager for this large urban Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) site. We represented the interests of the five Tribes in the CERCLA site investigation process, including evaluating ecological risk assessments, sampling methodology, and potential cleanup actions. Additionally, we provided strategic and technical advice to the five Tribes and other natural resource trustees in the cooperative NRDA process. As part of this project, Ms. Peers managed a sediment toxicity bioassay on larval lamprey, an important tribal resource.

**Project: Great Lakes Environmental Contamination Database**

*Client: National Oceanic and Atmospheric Administration*

Ms. Peers was the project manager for this effort to develop a Great Lakes basin-wide environmental contamination database. She has worked with the National Oceanic and Atmospheric Administration to develop outreach materials for potential data contributors and potential data users and promoted the database at the 2011 Great Lakes Week conferences. She

has also worked with state partners to identify, acquire, and screen datasets for inclusion in the database.

**Project: Natural Resource Damage Assessment, Twin Cities Army Ammunition Plant, Minnesota**

*Client: Minnesota Pollution Control Agency*

As project manager, Ms. Peers is supporting the Minnesota Pollution Control Agency on the cooperative NRDA at this large military site in St. Paul. Ms. Peers developed methods for identifying and scaling restoration projects to compensate the public for injuries to groundwater from a large organochlorine plume in the St. Paul area. She developed several reports and plans for the site, and is currently supporting the client with restoration planning and its cooperation with other agencies and parties.

**Project: Natural Resource Damage Assessment, Industrial Facility, New Jersey**

*Client: On behalf of New Jersey Department of Environmental Protection*

Ms. Peers provided technical expertise in a rapid review of documents and site information about this industrial facility. Her work focused on the site history and the nature and extent of contamination in soils, sediments, and surface water. She also assisted with the rapid design and implementation of a sediment sampling effort.

**Project: Lowry Landfill, Colorado**

*Client: Colorado Office of Attorney General*

As project manager, Ms. Peers provided technical support to the Office of Attorney General on this groundwater contamination site. Additionally, Ms. Peers and other Stratus Consulting staff prepared a one-day introductory course on NRDA for Colorado employees.

**Project: Natural Resource Damage Assessment for Five Asarco Sites, New Mexico**

*Client: New Mexico Office of Natural Resource Trustee*

Ms. Peers evaluated injuries and damages to groundwater and habitat at the Black Hawk Mine, Deming Mill, Doña Ana/El Paso Smelter, Magdalena/Hop Canyon/Waldo Mill, and Stephenson-Bennett Mine sites in New Mexico. Ms. Peers met with representatives of New Mexico agencies to review site histories and acquire site data and documentation. She prepared a report for each of these sites in collaboration with other Stratus Consulting scientists and economists.

**Project: Confidential Petroleum Terminal Sites, Minnesota***Client: Minnesota Pollution Control Agency*

As project manager, Ms. Peers estimated the volume and flux of contaminated groundwater at these two sites, and then estimated monetary damages with a simplified groundwater value formula developed by the State of Minnesota. The results of her work will be used by the client to determine if and how to pursue natural resource damage claims at these sites.

**Project: Confidential Site, East Coast***Clients: U.S. Department of Defense and U.S. Department of Justice*

Ms. Peers is providing technical support for pending litigation pertaining to the transport and fate of petroleum products in groundwater at this site. This project involves extensive compilation and analysis of geologic, hydrologic, physical, and chemical data from diverse sources and time periods and the development of a complex relational database model to relate all site data spatially and temporally.

**Project: Natural Resource Damage Assessment, Ashtabula River, Ohio***Client: U.S. Fish and Wildlife Service*

As project manager, Ms. Peers worked with the U.S. Fish and Wildlife Service to initiate an NRDA for the Fields Brook/Ashtabula River site. She supported the client in cooperating with other agencies and parties, conducted an extensive document review, and directed data compilation and quality control.

**Project: Natural Resource Damage Assessment, Former Indian Refinery, Lawrenceville, Illinois***Clients: State of Illinois, U.S. Department of Interior*

Ms. Peers supported the cooperative NRDA at this former oil refinery. She reviewed the ecological risk assessment at the site. In particular, Ms. Peers designed an innovative method of describing the degree of contamination and harm from polycyclic aromatic hydrocarbons (PAHs) in soils using information on toxicity to soil invertebrates. She integrated information on toxicity and loss of life-supporting services provided by soil into a computational model to estimate service loss from multiple contaminants across the site.

**Project: Natural Resource Damage Assessment, Yerington Mine, Nevada***Client: Yerington Paiute Tribe*

As project manager, Ms. Peers worked with the Yerington Paiute Tribe to perform the initial steps in an NRDA for the Yerington Mine.

**Project: Natural Resource Damage Assessment, Cyprus Tohono Mine, Arizona**

*Clients: U.S. Bureau of Indian Affairs, Tohono O’Odham Nation*

As project manager, Ms. Peers worked with the Bureau of Indian Affairs and the Tohono O’Odham Nation to initiate an NRDA for the Cyprus Tohono Mine. Ms. Peers met with villagers near the mine to discuss the NRDA process and present plans for evaluating whether hazardous substances in soils and groundwater on and near the mine require further investigation.

**Project: Natural Resource Damage Assessment, Rio Tinto Mine, Nevada**

*Client: Shoshone-Paiute Tribes of Duck Valley*

As project manager, Ms. Peers supported the Tribes in developing an Assessment Plan for the Rio Tinto Mine site. She was responsible for reviewing and analyzing data, developing and authoring proposed methods for injury assessment, and directing technical staff on other sections of the plan. She also worked with the Tribes to direct field sampling of surface water, sediments, and riparian soils for the assessment.

**Project: Natural Resource Damage Assessment Pathway Determination, Hudson River, New York**

*Clients: U.S. Fish and Wildlife Service, National Oceanic and Atmospheric Administration, State of New York*

Ms. Peers provided technical expertise to determine how PCBs are transported and transformed within the Hudson River system. She also developed a sampling and analysis plan for a fish health study, coordinated the implementation of the study in the field, and developed a database of the results. Ms. Peers also developed a broader site database and managed a subcontractor who provided a quality assurance/quality control review of the data sources.

**Project: Natural Resource Damage Assessment, Leviathan Mine, California**

*Client: Washoe Tribe of Nevada and California*

Ms. Peers has supported the Tribe on many aspects of the NRDA for the Leviathan Mine. In collaboration with other staff, she developed an Assessment Plan for the site. Ms. Peers served as project manager for responses to comments on the Draft Assessment Plan. More recently, she visited potential restoration sites to evaluate habitat characteristics.

**Project: Expert Report, Summitville Mine, Colorado**

*Client: State of Colorado*

Ms. Peers assisted Dr. Ann Maest with developing an expert report on the releases of hazardous substances from the Summitville Mine. Her responsibilities included reviewing historical documents, analyzing data, and authoring sections of the expert report.

**Project: Ecological Impacts of Sea Level Rise**

*Client: U.S. Environmental Protection Agency*

Ms. Peers conducted an extensive literature review on the potential ecological consequences of sea level rise on the U.S. East Coast. She has also developed computer code to prepare summary data tables for EPA reports describing the ecological consequences of human responses to sea level rise.

**Other Experience**

- ▶ Conversational in Spanish and Russian
- ▶ Proficient in Splunk data analysis program
- ▶ Level I Microsoft Access Training, 2006
- ▶ Volunteer Web Administrator, Rocky Mountain Lab Rescue, 2010

**Selected Presentations and Publications**

Peers, J., T. Goeks, C. Chan, D. Smorong, and P. Myre. 2012. The Great Lakes Environmental Contamination Database Project: A comprehensive tool to support removing beneficial use impairments. Presented at the 33rd Annual Meeting of Society of Environmental Toxicology and Chemistry, Long Beach, CA. November 11–15.

Morris, J., J. Peers, J. Lipton, C. Schreck, R. Chitwood, and J. Unrein. 2012. Contaminated sediment affects burrowing behavior of Pacific lamprey (*Lampetra tridentata*) ammocoetes. Presented at the 33rd Annual Meeting of Society of Environmental Toxicology and Chemistry, Long Beach, CA. November 11–15.

Hughes, J., J. Peers, L. Senkyr, and J. Thompson. 2012. Restoration Planning for the Portland Harbor Superfund Site. Presented at the Tenth Annual Urban Ecology and Conservation Symposium. Portland, OR. February 24.

Morris, J., J. Peers, J. Lipton, C. Schreck, R. Chitwood, and J. Unrein. 2011. Toxicity of Portland Harbor Sediments to Pacific Lamprey Ammocoetes (*Lampetra tridentata*). Presented at the 32nd Annual Meeting of Society of Environmental Toxicology and Chemistry, Boston, MA. November 13–17.

Peers, J. and K. Ritter. 2011. Natural Gas Development: Potential Contamination Sources, Pathways and Monitoring. Presented at the Colorado Water & Energy Research Center Scientific Workshop: Potential Effects of Natural Gas Development on Water and Air in the West. Boulder, CO. October 18.

Maest, A. and J. Peers. 2011. Potential Environmental Impacts of Hydraulic Fracturing and Produced Waters: Surface Effects. Presented at Hydraulic Fracturing: A Wyoming Energy Forum, Laramie, WY. September 26.

Peers J., J. Morris, J. Lipton, C. Schreck, R Chitwood, and J. Unrein. 2010. Toxicity of Portland Harbor Sediments to Pacific Lamprey Ammocoetes (*Lampetra tridentata*): Experimental Design. Presented at the 31st Annual Meeting of Society of Environmental Toxicology and Chemistry, Portland, OR. November 7–11.

Chapman, D., J. Peers, and E. Horsch. 2010. Working to Protect our Resources for Future Generations: Natural Resource Restoration. Presented at the 2010 EPA Region 10 Tribal Leaders Summit. Juneau, AK. September 2.

Beltman, D., J. Peers, A. Maest, M. Carney, and T. Hodgson. 2009. The Toxicity of Produced Water Discharges in the Amazon Basin, Ecuador. Presented at the 30th Annual Meeting of Society of Environmental Toxicology and Chemistry, New Orleans, LA. November 20–23.

Peers, J., J. Holmes, D. Beltman, B. Whetsell, T. Heavisides, and T. Rettig. 2008. Framework for Service Loss Quantification: A GIS-Based Approach Integrating Service Loss across Multiple Contaminants and Multiple Resources. Presented at the 29th Annual Meeting of Society of Environmental Toxicology and Chemistry, Tampa, FL. November 16–20.

Holmes, J., A. Maest, and J. Peers. 2008. Quantifying groundwater injury and service loss in natural resource damage assessments. Abstract. Annual International Conference on Soils, Sediments and Water, October 20–23.

Strange, L., J. Lipton, M. Lefer, J. Henderson, and J. Hazen. 2003. A Framework for Evaluating Effects of Drought and Other Global Stressors on Ecosystem Services of the South Platte Basin. Presentation at workshop on Assessing the Impacts of Prolonged Severe Drought on Aquatic Ecosystems and Water Quality in the South Platte River Basin, Colorado State University, Fort Collins, CO, April 3.

Hazen, J.M., M.W. Williams, B. Stover, and M. Wireman. 2002. Characterisation of acid mine drainage using a combination of hydrometric, chemical and isotopic analyses, Mary Murphy Mine, Colorado. *Environmental Geochemistry and Health* 24(1):1–22.

Strange, E.M., K. LeJeune, R. Jones, J. Hazen, and M. Lefer. 2001. A Framework for Evaluating Effects of Global Stressors on Aquatic Ecosystem Services. Presentation to the Global Change Research Program, U.S. Environmental Protection Agency, Washington, DC, March 1.

Davies, G.J., M. Wireman, B.K. Stover, and J. Hazen. 2000. Mary Murphy's chest pains: Resorting to geological angioplasty to study specific metals loading at a high-altitude mine site. *Geological Society of America Abstracts with Programs* 32(7):362.

Hazen, J. 1999. Use of Isotopic and Dissolved Solute Tracers to Identify Hydrologic Sources and Flowpaths in a Mine. Supplement to *Eos, Transactions*, (80)46. Presented at the American Geophysical Union Annual Meeting, San Francisco, CA. November.

Hazen, J. 1998. Invited speaker, National Recycling Coalition – College and University Recycling Council, Campus Recycling Series Conference, John Hopkins University, Baltimore, MD.

# Kaylene Ritter

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## Areas of Qualification

Environmental chemistry; climate change, including geologic sequestration (GS) of carbon dioxide (CO<sub>2</sub>); oil spills; natural resource damage assessments; hydrogeology; fate, transport, and speciation of metals, radionuclides, organic contaminants, and oil in groundwaters, surface waters, and biota

## Employment History

- ▶ Managing Scientist, Stratus Consulting Inc., Boulder, CO, 2009-present; Senior Scientist, 2007-2008; Senior Associate, 2006
- ▶ Environmental Aquatic Chemistry Researcher, Colorado School of Mines, Golden, CO, 2001-2006
- ▶ Hydrogeology Researcher, University of Waterloo, Canada, 1997-2000
- ▶ Hydrology Modeller, Laurentian University, Sudbury, Canada; Field Geologist, 1992-1997

## Education

- ▶ Colorado School of Mines, PhD, Applied Chemistry and Geochemistry, 2005
- ▶ University of Waterloo, MS, Earth Sciences (Hydrogeology), 2000
- ▶ Laurentian University, BS, Earth Sciences, 1997

## Professional Experience

Dr. Ritter is an environmental geochemist. Her work is focused on providing policy and regulatory support to the U.S. Environmental Protection Agency (EPA) on GS, assisting tribes and state and federal agencies with natural resource damage assessments (NRDAs), and providing litigation support work. She has expertise in assessing the vulnerabilities and potential impacts of GS, as well as GS monitoring needs and technologies. She also has expertise in assessing oil spill sites, urban/industrial sites contaminated with organic and metal pollutants, and mine-impacted sites.

## Selected Projects

### **Project: Comparative Analysis of Monitoring Technologies for Geologic Sequestration of CO<sub>2</sub>**

**Client: U.S. Environmental Protection Agency Office of Air and Radiation**

Developing technical briefing papers summarizing key attributes of GS monitoring technologies, including cost, spatial and temporal properties, detection limits, and operating and maintenance requirements. Developing a comparative analysis of the technologies, based on key attributes.

### **Project: Regulatory and Policy Support work on Geologic Sequestration of CO<sub>2</sub>**

**Client: U.S. Environmental Protection Agency Office of Air and Radiation**

Provided technical, policy, and regulatory support on various aspects of GS of CO<sub>2</sub>. Assisted EPA in developing a vulnerability evaluation framework (VEF). The VEF project involved identifying potential adverse impacts of GS, potential receptors, the geologic attributes that could lead to increased vulnerability of adverse impacts, and developing decision-support approaches for evaluating key aspects of GS systems. Prepared a draft and final VEF Technical Support Document (TSD). Facilitated an international expert review panel, and compiled and addressed comments. Prepared and led numerous technical workshops and webinars on the VEF for EPA and state regulators. The VEF TSD is included in the docket supporting EPA Office of Water's proposed rulemaking for GS of CO<sub>2</sub>.

### **Project: GS Monitoring Plan TSD**

**Client: U.S. Environmental Protection Agency Office of Air and Radiation**

Technical lead on the development of a TSD for the proposed Greenhouse Gas (GHG) Mandatory Reporting Rule (MRR). Conducted a review of the literature, and identified key elements for the development of a robust, flexible, and dynamic GS monitoring plan. Prepared the draft and final report. The report is on the docket for the proposed GHG MRR.

### **Project: Oil Spill, Kalamazoo River, Michigan**

**Client: US FWS**

Project manager. Some of the key tasks include the provision of technical support and strategic advice to the trustees; development of workplans, field sampling, compilation, analysis, and interpretation of data and information on the site; and participation in technical workgroups.

**Project: Oil Spill, Yellowstone River, Montana****Client: Montana NRDP**

Project manager. Some of the key tasks include the provision of technical support and strategic advice to the trustees; development of workplans, field sampling, compilation, analysis, and interpretation of data and information on the site; and participation in technical workgroups.

**Project: Sand Creek Suncor Spill****Client: Colorado AG**

Project manager. Initial evaluation of site data, development of sediment sampling plan, and providing trustees with technical and strategic advice and recommendations.

**Project: Midnite Uranium Mine Site****Client: U.S. FWS**

Project manager. Initial evaluation of available data and information, development of recommendations to trustees on potential additional studies, recommendations for a groundwater study, and development of report of injury determination.

**Project: Review of Underground Coal Gasification (UCG) Project, Alaska****Client: Center for Science and Public Participation**

Assessed underground coal seams targeted for UCG, the local geology, and tectonics. Conducted a literature review on previous UCG projects and potential environmental impacts, and evaluated and summarized the environmental risks of UCG. The project proposal also calls for carbon sequestration of produced CO<sub>2</sub>, and the environmental risks associated with GS were also evaluated. Summarized findings in a technical report that is currently being circulated to members of the Alaska Legislature reviewing the project and underlying regulatory framework.

**Project: Dioxin Contamination Site, Tittabawassee River, Michigan****Client: Michigan Department of Environmental Quality**

Project manager. Contaminants of concern include dioxins and furans, and other organic and metal contaminants. Some of the key tasks include the provision of technical support and strategic advice to the trustees; compilation, analysis, and interpretation of data and information on the site; development of restoration evaluation criteria; development of an Assessment Plan; participation in cooperative technical workgroups; review and planning of ecological and human services studies, including the development of focus group materials for phase one of a human services study; and the development of a habitat equivalency analysis (HEA) for areas affected by response actions taken along the river.

**Project: PCB Contamination Site, Ottawa River, Ohio****Client: US Fish and Wildlife Service**

Project manager. Main contaminants of concern include polychlorinated biphenyls (PCBs), polyaromatic hydrocarbons (PAHs), and lead. Provision of technical support and strategic advice to the trustees. Tasks include the compilation of available information on the site in an extended bibliography and accompanying technical memorandum; analysis and interpretation of site data; compilation and analysis of relevant injury thresholds; evaluation of pathways and potential sources; and development of a HEA for the site.

**Project: Arsenic and Selenium Contamination Site, East Helena Smelter Site****Client: State of Montana**

Evaluation of approaches for restoration of the alluvial aquifer under- and downgradient of the East Helena smelter site in Montana. Main contaminants are arsenic, metals, and sulfate. Includes examination of existing groundwater impacts and remediation measures used to date and proposal of methods to improve groundwater quality, especially for arsenic, beyond remedial goals. The project involved summarizing the extent and nature of groundwater contamination at the site, and developing recommendations for groundwater restoration. Other tasks included calculating the total static volume of impacted groundwater and impacted groundwater flux over time for damage determinations, and assisting in the preparation of the final expert report.

**Project: Chino Mine Site, New Mexico****Client: New Mexico Office of Natural Resource Trustee**

Assessment and quantification of groundwater impacted by mining activities, including open-pit mining and tailings operations. The work involved interpretation of geologic logs, development of a conceptual hydrogeologic model of the site for fate and transport of metal and contaminants, and calculation of contaminated static groundwater volume and groundwater flux.

**Project: Eagle Proposed Mine Site, Michigan****Client: National Wildlife Federation**

Reviewing long-term kinetic, static, and short-term leach test data and other geochemical information for a high-sulfide copper-nickel deposit in Michigan. Evaluating the representation of the different geochemical units in the testing program, the appropriateness of the selected tests, and the implications of the results for groundwater quality during and after proposed underground mining.

**Project: Litigation Support, Fate and Transport Analysis, Confidential Site, East Coast**  
**Client: Department of Defense and Department of Justice**

Scientific litigation support for chemistry and refinery engineer experts. Collection and review of publications on the chemical properties of numerous oil refinery products. Quality control of laboratory analyses of light non-aqueous phase liquids (LNAPLs).

**Project: Project: Onondaga Lake, New York**  
**Client: Onondaga Nation**

General technical and litigation support work for the Onondaga Nation. Evaluation of nitrogen and phosphorus contamination of the lake and tributaries, and assessment of the justification for the Clean Water Act 303(d) de-listing of some of the tributaries for nitrogen and phosphorus. Evaluation of a proposed Explanation of Significant Differences for the Record of Decision for part of the Onondaga Lake bottom, contaminated with dense, non aqueous phase liquids (DNAPL).

### **Short Courses**

Ritter, K.R., C. Travers, and A. Maest. Modeling Impacts at Hardrock Mines. Rocky Mountain SETAC Meeting, March 2007.

### **Selected Refereed Publications**

Ritter, K., G.R. Aiken, J.F. Ranville, B.P. Jackson, and D.L. Macalady. 2006. Evidence for the aquatic binding of arsenate by natural organic matter-suspended Fe(III). *Environmental Science and Technology* 40(17):5380-5387.

Macalady, D.L., K. Ritter, A. Redman, and M. Skold. 2004. Comparative characteristics of natural organic matter in the Fortymile River, Alaska. In *Selected Geochemical and Biogeochemical Studies of the Fortymile River Watershed, Alaska: U.S. Geological Survey Professional Paper*, L.P. Gough (ed.). 1685.

Ritter, K., M.S. Odziemkowski, R. Simpgraga, R.W. Gillham, and D.E. Irish. 2003. An in situ study of the effect of nitrate on the reduction of trichloroethylene by granular iron. *Journal of Contaminant Hydrology* 65:121-136.

Ritter, K., M.S. Odziemkowski, and R.W. Gillham. 2002. An in situ study of the role of surface films on granular iron in the permeable iron wall technology. *Journal of Contaminant Hydrology* 55:87-111.

Gillham, R.W., K. Ritter, Y. Zhang, and M.S. Odziemkowski. 2002. Factors in the long-term performance of granular iron permeable reactive barriers (PRBs). *Journal of Hazardous Materials* IAHS 275:421-426.

Rukholm (Ritter), K. and E.A. Gallie. 1998. Runof97: A GIS-based, Distributed, Surface-Runoff Model. In *New Applications in Modeling Urban Water Systems*, W. James (ed.). Monograph 7, Proceedings of the 1998 Conference on Stormwater and Water Quality Management Modeling, CHI publications, Guelph Ont., pp. 102-122.

### **Selected Abstracts and Non-Refereed Publications**

Welsh, P, J. Liton, C. Mebane, and K. Ritter. 2007. Influence of Flow-Through and Renewal Exposures on the Toxicity of Copper to Rainbow Trout. Poster presented at the Annual National SETAC Conference. Milwaukee, November.

Karimjee, A., N. Damodaran, and K. Ritter. 2007. A Vulnerability Evaluation Framework for Geologic Sequestration of Carbon Dioxide. Poster presented at the Society for Risk Assessment Annual Conference. Texas.

Scheele, E., K. Ritter, D. Mills, and N. Damodaran. 2007. Overview of a Vulnerability Evaluation Framework (VEF). Poster presented at the 6th Annual NETL Carbon Capture and Sequestration Conference, Pittsburgh, PA. May.

Ritter, K., D.L. Macalady, G. Aiken, and J. Gasper. 2005. Aquatic Interactions of Arsenic and Natural Organic Matter. Oral paper presented at the American Chemical Society Meeting, San Diego, CA. March.

Ritter, K., D.L. Macalady, and D. Ahmann. 2004. Vadose Zone Arsenic Transport Facilitated by Interactions with Natural Organic Matter: The Importance of Organic Nitrogen. Oral paper presented at the symposium, Chemistry of Metals in Terrestrial and Aquatic Systems. American Chemical Society Meeting, Anaheim, CA. March.

Macalady, D.L., K. Ritter, D. Ahmann, S. Fevig, and A. Redman. 2003. Interactions of Diverse Natural Organic Matter Sources with Arsenic. Oral paper presented at the Soil Science Society of America Annual Meeting, Denver CO. November.

Ritter, K., R.W. Gillham, and M.S. Odziemkowski. 2003. The Role of Surface Films on the Reduction of Trichloroethylene (TCE) by Granular Iron in the Presence of Nitrate. Oral paper presented at the American Chemical Society Meeting, Boston, MA. August.

**Languages**

French



**CHRISTOPHER G. NAIDA, PE**  
Senior Engineer, **SOIL AND MATERIALS ENGINEERS, INC.**

Provides geotechnical engineering services including preparation of geotechnical evaluation reports to address shallow and deep foundations, earth retention systems and other related geotechnical concerns. Also provides field engineering services related to both shallow and deep foundations, subgrade evaluations, and specialized project assignments.

**Related Project Experience:**

- Provided PDA testing, load tests, and observations of driven H-Piles for the proposed Samaritan Wellness Center in Detroit, Michigan and Great Lakes Research Center in Houghton, Michigan.
- Prepared a geotechnical evaluation report for the proposed Wayne State University Campus Apartments in Detroit, Michigan. Provided recommendations for general site preparation, subgrade preparation for grade slab, reuse of on-site soils as engineered fill, foundation design, preliminary pavement design, and general construction considerations.
- Provided observation of auger cast piles for an MRI addition at Harper Hospital in Detroit, Michigan.
- Provided geotechnical design and/or construction materials services (CMS) with geotechnical related field testing for University of Michigan (U-M) Alice Lloyd and East Quadrangle Dormitory. Services included the design of temporary earth retention systems (TERS) such as shotcrete walls, push pier and concrete minipiles, concrete underpinning, tiebacks, soil nails, and soil grouting.
- Project Engineer for several geotechnical evaluations for new construction and building additions including U-M Laundry Building, U-M Driving Range and Putting Facility, U-M Institute for Social Research, Glacier Hills Senior Living Facility, and the Michigan Islamic Academy in Ann Arbor; Assisted Living Community Center (various sites); and Wal-Mart (various sites).
- Project Engineer for several preliminary geotechnical evaluations for projects throughout southeast Michigan and northwest Ohio.
- Provided geotechnical related services for slope stability analysis for the Blue Water Bridge in Port Huron, 10 Mile Road failure in Lyon, and I-94 and I-69 interchange.
- Provided construction materials services (CMS) and geotechnical related field testing for Market Square in West Bloomfield including observation of geopier installation and a vibration measurement program. Duties also included the observation and testing of foundation installation operations, density testing of engineered fill, concrete testing, preparation of active clay subgrade soils, client meetings, and structural steel review.
- Field Engineer providing geotechnical related field observation and testing relating to drilling operations including observation of drilling activities, visual classification of soil samples, soil specimen sampling/collection using split barrel and thin-walled tubing, and boring backfilling. Duties also include the observation of Pitcher Sampling and performing Vane Shear Testing.
- Prepared geotechnical evaluation reports for proposed elevated water storage tanks in Farmington Hills, Michigan.
- Prepared geotechnical evaluation reports for proposed Walmart Stores in Michigan and Ohio.
- Performed Vibration Monitoring during sheet pile installation near sensitive structures.

**Years Experience:**

SME since 2008; other firms from 2004

**Registration:**

Professional Engineer (PE) – Michigan

**Certifications:**

Certified Nuclear Density Meter Operator - Troxler  
MUST Safety Program  
Achieved rank of Intermediate on the Dynamic Measurement, Analysis Proficiency Test and CAPWAP

**Education:**

B.A., Civil Engineering, Lawrence Technological University (LTU)  
M.A., Geotechnical Engineering, University of Michigan

**Affiliations:**

American Society of Civil Engineers  
Chi Epsilon - National Civil Engineering Honor Society

**Expertise:**

Experienced in field testing, monitoring of shallow and deep foundations, earthwork operations and earth retention systems.

Skilled in performing geotechnical field evaluations for new construction and preparing geotechnical evaluation reports.

Skilled in performing vibration measurement evaluations for new construction as well as evaluations of distressed structures.

Experienced in monitoring piles, pile dynamic analysis testing, and setting-up and evaluating pile load tests.



- Performed pile dynamic analysis at Delaware State Park Marina in Delaware, Ohio. The project involved installation of numerous pipe piles for construction of new boat docks.
- Provided geotechnical engineering services for the Hogsback Lane slope repair project in Lakewood, Ohio.



**JOEL W. RINKEL, PE**  
Senior Project Engineer, **SOIL AND MATERIALS ENGINEERS, INC.**

Geotechnical engineering and project management including preparation of evaluations and subsurface-related engineering design plans and specifications for temporary and permanent earth retention systems and reinforced slopes.

**Related Project Experience:**

- Project Engineer for preparing design plans and/or recommendations for reinforced slopes at various sites including the US-127 Renovation Project in Jackson; Bear Creek Rehabilitation Project in Warren; Seymour Road Slope Failure in Taymouth Township; the Schram Drain Slope Stability Project in Port Austin; the Keystone-Hammond Connector Project in Traverse City; and the Mastronardi Produce Project in Coldwater.
- Developed and engineered design plans and/or specifications for segmental block, auger-cast pile, steel sheet pile, soldier pile and lagging, masonry block, and/or boulder retaining walls up to 70 feet tall at various industrial, commercial, and educational sites. Projects include the Manchester Knolls; Ford Rouge Plant in Dearborn; Johnson Residence in Portage; Deerfield Elementary School in Novi; Victor Office Park in Livonia; Residence Inn in East Lansing; residential development in Auburn Hills; the McGraw Glass Plant in Detroit; Fifth Avenue Underground Parking Structure and 601 Forest Avenue in Ann Arbor; and at several University of Michigan (UM) projects in Ann Arbor including Weill Hall, Mosher Jordan Hall, North Quad Residential and Academic Complex, Ross School of Business, and the football stadium expansion.
- Responsible for peer review of various earth retention systems as well as management of SME field personnel performing materials testing services for construction of earth retention systems, including repair of existing walls at the Village Green Apartments in Rochester Hills; the construction of new walls at the Faurecia Building and Home Depot in Auburn Hills; Oxford High School in Oxford; and multiple UM projects.
- Responsible for evaluating the condition of existing retaining walls and/or conducting failure analysis of failed retaining walls at the Village Green Apartments in Rochester Hills; Links of Northville Residential Development in Northville; Tarter Residence in South Lyon; Plymouth Technology Park in Plymouth; and multiple residential projects in Southeastern Michigan.

**Years Experience:**

SME since 1992

**Registrations/Certifications:**

Professional Engineer - Michigan

**Education:**

B.S., Civil Engineering, Michigan  
Technological University

M.S., Civil Engineering, Wayne State  
University

**Expertise:**

Lead-designer for a variety of earth retention systems consisting of natural stone, segmental blocks, masonry block, auger-cast piles, cast-in-place concrete, soldier pile and lagging, and/or steel sheet piles.

Experienced with underpinning design for existing structures and shoring/bracing design for distressed structures.

Specialist in preparing forensic evaluations and failure analysis, and experienced in providing expert witness testimony, for earth retention systems and steep reinforced slopes.



**ATTACHMENT 5: ADDITIONAL INFORMATION FOR  
ARTICLE 6.1**

**SUB-CONSULTANT LETTERS OF INTENT**

**Stratus Consulting – Primary List Proposal**

**Soil and Materials Engineers, Inc. – Specialty Sub-List Proposal**

**STRATUS CONSULTING**  
**ENVIRONMENTAL RESEARCH AND CONSULTING**

1881 Ninth Street, Suite 201, Boulder, CO 80302  
P.O. Box 4059, Boulder, CO 80306  
p 303.381.8000 | f 303.381.8200  
stratusconsulting.com

June 10, 2013

Mr. Alan Nicholls  
Superior Environmental Corp.  
1680 Marquette Avenue  
Bay City, MI 48706

Dear Mr. Nicholls:

Stratus Consulting is pleased to submit this letter of commitment to serve as a subcontractor to Superior Environmental Corp. for its proposal to the State of Michigan for environmental services. Stratus Consulting is capable and willing to perform work in the following professional areas:

- ▶ Natural resource damage assessment (NRDA)
- ▶ Environmental impact statements (EIS).

Stratus Consulting is a national leader in providing NRDA support to Trustees. We provide natural resource damage support services to Trustees that span the entire natural resource damage technical and legal process. We have worked for federal, state, and tribal governments on dozens of sites around the United States, including for the State of Michigan at the Tittabawassee River and Kalamazoo River Superfund sites and on the 2010 Enbridge oil spill in the Kalamazoo River. Stratus Consulting also has experience in preparing and reviewing National Environmental Policy Act documents, including both EIS and Environmental Assessment (EA) documents. We recently completed a comprehensive restoration plan/environmental assessment (RP/EA) for the Arkansas River/California Gulch site in Colorado and are currently developing a programmatic restoration plan and EIS for the State of Michigan. With over 20 years of experience in assisting Trustees, Stratus Consulting is uniquely qualified to provide the State of Michigan with the NRDA and EIS support it requires.

We are also well versed in providing litigation support to our clients. We have provided expert reports and testimony for several NRDA trials and pretrial actions and have worked closely with case attorneys in preparing and presenting cases for trial (e.g. Coeur d'Alene Basin, Idaho; Clark Fork River, Montana; Blackbird Mine, Idaho). We have also provided litigation support for environmental enforcement and cost recovery cases (e.g., Graniteville Clean Water Act violation, Presidio/Caltrans 1938 Permit violation, Portland Meadows Clean Water Act violation, Turkey Creek Clean Water Act violation).

Mr. Mr. Alan Nicholls  
June 10, 2013  
Page 2

Stratus Consulting also brings extensive expertise in database development and management. For example, we recently participated in the development of the Great Lakes Environmental Database for the National Oceanic and Atmospheric Administration, and we are currently managing large quantities of litigation-related data related to the Deepwater Horizon oil spill.

Please feel free to contact me if you have any questions. I can be reached at 303-381-8000, by electronic mail at [jlipon@stratusconsulting.com](mailto:jlipon@stratusconsulting.com), or at the address in the masthead.

Sincerely,

  
Joshua Lipton  
President and CEO

Enc.



June 11, 2013

**Soil and Materials Engineers, Inc.**  
The Kramer Building  
43980 Plymouth Oaks Blvd.  
Plymouth, MI 48170-2584  
tel (734) 454-9900  
fax (734) 454-0629  
www.sme-usa.com

Mr. Alan Nicholls, CPG, CP  
Superior Environmental Corporation  
1680 Marquette Avenue  
Bay City, Michigan 48706

*Via E-mail: [A.Nicholls@superioreenvironmental.com](mailto:A.Nicholls@superioreenvironmental.com)*

Kenneth W. Kramer, PE  
Founder

Mark K. Kramer, PE  
Timothy H. Bedenis, PE  
Gerald M. Belian, PE  
Andrew J. Emmert, CPA  
Chuck A. Gemayel, PE  
James M. Harless, PhD, CHMM  
Larry P. Jedele, PE  
Cheryl A. Kehres-Dietrich, CGWP  
Gerard P. Madej, PE  
Timothy J. Mitchell, PE  
Robert C. Rabeler, PE  
Daniel O. Roeser, PG

Christopher R. Byrum, PhD, PE  
Daniel R. Cassidy, CPG  
John E. Dingeldein, PE  
Sheryl K. Fountain, SPHR  
Davie J. Hurlburt, PE  
Anthony L. Jarem, PE  
Laurel M. Johnson, PE  
Jeffery M. Krusinga, PE, GE  
Jeffrey R. Lanier, PE  
Michael S. Meddock, PE  
Louis J. Northouse, PE  
Rohan W. Perera, PhD, PE  
Joel W. Rinkel, PE  
Jason A. Schwarzenberger, PE  
Larry W. Shook, PE  
Thomas H. Skotzke  
Michael J. Thelen, PE  
Anthony B. Thomas, PE  
Keith D. Toro, PE  
John C. Zarzecki, CET, CDT, NDE

RE: Proposal for Geotechnical Design Services  
Temporary Earth Retention System Design  
2013 Expanded Environmental Remediation ISID  
Department of Technology, Management & Budget  
Various Locations, Michigan  
SME Proposal No. P01517.13

Dear Alan,

Soil and Materials Engineers, Inc. (SME) would be pleased to perform geotechnical design services for the subject project. This proposal is in response to your Request For Proposal (RFP) to Mr. Christopher Naida via e-mail dated June 5, 2013.

We understand that you are proposing on an environmental remediation contract with the Michigan Department of Technology, Management & Budget (DTMB). As part of your services, we understand that you are requesting SME to provide geotechnical design services for temporary earth retention systems (TERS) as required for the contract projects. The TERS may be required to maintain support of an existing building, utility, right-of-way, etc. to allow for the excavation and remediation of impacted soil. We also understand the design package will be submitted to earth retention contractors to obtain bids for the installation of the TERS.

SME is one of the largest geotechnical, environmental consulting and construction materials testing firms in Michigan, Indiana, and Ohio with approximately 220 employees in 11 offices. During our 48-year history, we have provided service on over 70,000 projects throughout the United States.

When considering ground improvement and support, SME offers design and consulting services in the areas of geo-civil design (e.g. earth retention, reinforced slopes, underpinning, soil stabilization, etc.), geotechnical, geodynamics, and pavements. Specific to earth retention systems, we have prepared earth retention designs for various types of walls up to 70 feet tall. Our experience in earth retention design is substantial.

OFFICES  
Indiana  
Michigan  
Ohio

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**consultants in the geosciences, materials, and the environment**

For this project, we anticipate the earth retention systems will generally range from about 5 to 20 feet tall. On that basis, we have included three examples of previous TERS designs that we consider relevant to this project (refer to the attachments at the end of this proposal). We would be pleased to provide additional information regarding our expertise in earth retention design, if requested.

## SCOPE OF SERVICES

Based on our understanding of your request, we envision the scope of services for these projects will include the following:

- Prepare design drawings for the temporary earth retention system (TERS) required to perform the required work. The drawings will also include an appropriate number of sections (and associated details) outlining the proposed sequencing of construction to be followed during construction of the TERS. The drawings will be detailed sufficiently for construction by experienced earth retention contractors.
- Prepare specifications for the TERS design. The drawings and associated specifications will be prepared by a registered Professional Engineer in the State of Michigan.
- Prepare supporting calculations (including a pressure diagram that accounts for building surcharge loads), and estimated lateral deflection, for the TERS design.
- Respond to questions/comments from the project team, and from contractors during the bidding phase of the project.

**NOTES:** 1) The design drawings will be prepared in AUTOCAD format and will be presented on 24-inch by 36-inch sheet(s). The drawings will also be submitted to the Consultant as “draft” for review and comment. After any changes (if any) are made to the draft submittal, the final submittal will be signed and sealed by a professional engineer registered in the State of Michigan.

2) In preparing the design calculations, we will use the project information previously supplied to SME via electronic mail. We request that Superior Environmental forward the existing base drawing(s) (in AUTOCAD format) to SME for our sole use in developing our design drawings.

Our proposed scope of services for this project do not include surveying services, revisions to the design plans after submittal, field visit(s) during construction, progress meetings, additional design services required to address unforeseen conditions (e.g. encountering obstructions, boulders, unknown utilities, etc.), subsurface evaluation(s), testing of the materials (e.g. concrete, steel, etc.) to be used for TERS construction, or significant consultation after the final submittal of our design drawings. SME offers the above and other related services to our clients, and we would be pleased to provide further information and estimates for additional services, if and when required.



## PROFESSIONAL SERVICES FEE

Our services will be performed on a time and materials basis using the fee schedule FS:0 (01/12) appended to this proposal. We will team with you to determine the specific scope of TERS design services for each project prior to beginning our services.

Also, we understand the TERS design services would be required for a five-year period. Refer to the attached 'Position, Classification and Employee Billing Rate Information' form additional information regarding billing rates throughout the five-year period.

## AUTHORIZATION

Please sign and provide the appropriate information on the attached SME General Conditions (1/09) sheet where space is provided and return to SME.

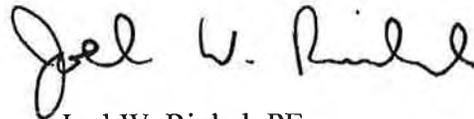
We look forward to be of service for this project. If you have any questions concerning this proposal, please contact us.

Very truly yours,

**SOIL AND MATERIALS ENGINEERS, INC.**



Christopher G. Naida, PE  
Senior Engineer



Joel W. Rinkel, PE  
Senior Project Consultant

Attachments: Examples of Previous TERS Design Projects (three examples)  
Resumes  
Position, Classification and Employee Billing Rate Information  
FS:0 (01/12)  
SME General Conditions (1/09)

P01517.13.DOC



## **ATTACHMENT 6: POSITION, CLASSIFICATION AND EMPLOYEE BILLING RATE INFORMATION**

**Superior Environmental – Primary List Proposal and Specialty Sub List Proposals**

**Stratus Consulting – Sub-Consultant for Primary List Proposal**

**Soil and Materials Engineers, Inc. – Sub-Consultant for Specialty Sub-List  
Proposal**

**POSITION, CLASSIFICATION AND EMPLOYEE BILLING RATE INFORMATION**

**SUPERIOR ENVIRONMENTAL CORP**

**PROFESSIONAL SERVICES - 2013 EXPANDED ENVIRONMENTAL REMEDIATION ISID RFP**

**Firm Name** Superior Environmental Corp - Primary List & Specialty Sub-List Proposals  
**Yearly Hourly Billing Rate Increase** 0.0%

Level	Employee(s) Name	Position/Classification	Year 2013	Year 2014	Year 2015	Year 2016	Year 2017	Year 2018
P4	Jeff Skendrovic**	Program Director	\$115.39	\$115.39	\$115.39	\$115.39	\$115.39	\$115.39
P4	Todd White**	Quality Assurance/Quality Control	\$121.15	\$121.15	\$121.15	\$121.15	\$121.15	\$121.15
P4	Tom Sorensen**	Sr. Engineer/P.E.	\$92.32	\$92.32	\$92.32	\$92.32	\$92.32	\$92.32
P4	Alan Nicholls**	Sr. Project Manager/H&S Manager	\$97.36	\$97.36	\$97.36	\$97.36	\$97.36	\$97.36
P4	Nate Hehir**	Sr. Project Manager	\$97.36	\$97.36	\$97.36	\$97.36	\$97.36	\$97.36
P4	Richard VerStrate**	Sr. Project Manager	\$96.01	\$96.01	\$96.01	\$96.01	\$96.01	\$96.01
P4	Carla Lange**	Sr. Project Manager	\$94.77	\$94.77	\$94.77	\$94.77	\$94.77	\$94.77
P4	Gerard DeBusschere**	Sr. Project Manager	\$88.40	\$88.40	\$88.40	\$88.40	\$88.40	\$88.40
P4	Trevor Woollatt**	Sr. Project Manager	\$94.00	\$94.00	\$94.00	\$94.00	\$94.00	\$94.00
P4	Scott Miller	Sr. Project Manager/P.E.	\$100.00	\$100.00	\$100.00	\$100.00	\$100.00	\$100.00
P3	Bill Wagner	Jr. Project Manager	\$76.93	\$76.93	\$76.93	\$76.93	\$76.93	\$76.93
P3	Ron Bacon	Sr. Project Scientist/Geophysical	\$100.00	\$100.00	\$100.00	\$100.00	\$100.00	\$100.00
P3	Corey Buckner	Project Engineer	\$77.50	\$77.50	\$77.50	\$77.50	\$77.50	\$77.50
P3	Charles Enberg	Project Engineer	\$79.50	\$79.50	\$79.50	\$79.50	\$79.50	\$79.50
P3	Kelley Lawrence	Project Scientist	\$86.04	\$86.04	\$86.04	\$86.04	\$86.04	\$86.04
P3	Dave Hill	Project Scientist/Drilling Manager	\$87.49	\$87.49	\$87.49	\$87.49	\$87.49	\$87.49
P3	Kira Stevens	Project Scientist	\$86.86	\$86.86	\$86.86	\$86.86	\$86.86	\$86.86
P2	Jeff Plutt	Field Scientist	\$68.94	\$68.94	\$68.94	\$68.94	\$68.94	\$68.94
P2	Peter Stephens	Field Scientist	\$66.17	\$66.17	\$66.17	\$66.17	\$66.17	\$66.17
P1	Cathy Loree	Field Scientist	\$57.12	\$57.12	\$57.12	\$57.12	\$57.12	\$57.12
P1	Ben Adams	Field Engineer	\$55.54	\$55.54	\$55.54	\$55.54	\$55.54	\$55.54
T3	Ted Vesey	Field Scientist	\$61.13	\$61.13	\$61.13	\$61.13	\$61.13	\$61.13
T3	Dan Gomez	Sr. Field Technician	\$57.57	\$57.57	\$57.57	\$57.57	\$57.57	\$57.57
T3	Lee Gosson	Sr. Field Technician	\$63.00	\$63.00	\$63.00	\$63.00	\$63.00	\$63.00

\*Billing Rate will be in accordance with the attached guideline page for instructions regarding the "Overhead Items used for Professional Billing Rate Calculation," and the attached "Sample Standard Contract for Professional Services, "Article II, Compensation Text".

\*\*Key Project Personnel

**POSITION, CLASSIFICATION AND EMPLOYEE BILLING RATE INFORMATION**

**SUPERIOR ENVIRONMENTAL CORP**

**PROFESSIONAL SERVICES - 2013 ISID EXPANDED ENVIRONMENTAL REMEDIATION SERVICES**

**Firm Name** Superior Environmental Corp - Primary List & Specialty Sub-List Proposals  
**Yearly Hourly Billing Rate Increase** 0.0%

Level	Employee(s) Name	Position/Classification	Year 2013	Year 2014	Year 2015	Year 2016	Year 2017	Year 2018
			T3	Stan Lickly	Sr. Field Technician	\$63.02	\$63.02	\$63.02
T3	Dave Mokma	Sr. Field Technician/Driller	\$59.80	\$59.80	\$59.80	\$59.80	\$59.80	\$59.80
T3	Darlene Lancaster	CADD	\$57.59	\$57.59	\$57.59	\$57.59	\$57.59	\$57.59
T3	George Perry	CADD	\$54.64	\$54.64	\$54.64	\$54.64	\$54.64	\$54.64
T1	Tim Fraser	Field Technician	\$50.65	\$50.65	\$50.65	\$50.65	\$50.65	\$50.65
T1	Chad Khodl	Field Technician	\$57.35	\$57.35	\$57.35	\$57.35	\$57.35	\$57.35
T1	Ross Cudney	Field Technician	\$55.03	\$55.03	\$55.03	\$55.03	\$55.03	\$55.03
T1	Jacob Pisarkiewicz	Field Technician	\$44.73	\$44.73	\$44.73	\$44.73	\$44.73	\$44.73
TS	Connie Kailing	Technical Support	\$43.50	\$43.50	\$43.50	\$43.50	\$43.50	\$43.50
TS	Karen Lowthian	Technical Support	\$50.49	\$50.49	\$50.49	\$50.49	\$50.49	\$50.49
TS	Mary Mosesso	Technical Support	\$49.08	\$49.08	\$49.08	\$49.08	\$49.08	\$49.08
TS	Theresa Szotko	Technical Support	\$35.25	\$35.25	\$35.25	\$35.25	\$35.25	\$35.25
TS	Rosalie Andrzejewski	Technical Support	\$44.43	\$44.43	\$44.43	\$44.43	\$44.43	\$44.43

\*Billing Rate will be in accordance with the attached guideline page for instructions regarding the "Overhead Items used for Professional Billing Rate Calculation," and the attached "Sample Standard Contract for Professional Services, "Article II, Compensation Text".

\*\*Key Project Personnel

**POSITION, CLASSIFICATION AND EMPLOYEE BILLING  
RATE INFORMATION**

**SUB-CONSULTANT SERVICES - 2013 ISID EXPANDED  
ENVIRONMENTAL REMEDIATION SERVICES**

**POSITION, CLASSIFICATION AND EMPLOYEE BILLING RATE INFORMATION**

**SUPERIOR ENVIRONMENTAL CORP**

**PROFESSIONAL SERVICES - 2013 EXPANDED ENVIRONMENTAL REMEDIATION ISID RFP**

**Firm Name** Stratus Consulting - Sub-Consultant: Part I Primary Proposal  
**Yearly Hourly Billing Rate Increase** 3.1%

Level	Employee(s) Name	Position/Classification	Year 2013	Year 2014	Year 2015	Year 2016	Year 2017	Year 2018
			P4	Josh Lipton**	Officer/Expert	\$255.25	\$263.16	\$271.32
P4	David Chapman**	Sr. Manager/Principal	\$215.35	\$222.03	\$228.91	\$236.00	\$243.32	\$250.86
P4	Diana Lane**	Sr. Associate (Level 2)	\$159.00	\$163.93	\$169.01	\$174.25	\$179.65	\$185.22
P4	Kaylene Ritter**	Sr. Associate (Level 2)	\$159.00	\$163.93	\$169.01	\$174.25	\$179.65	\$185.22
P3	Jennifer Peers**	Sr. Associate (Level 2)	\$159.00	\$163.93	\$169.01	\$174.25	\$179.65	\$185.22

\*Billing Rate will be in accordance with the attached guideline page for instructions regarding the "Overhead Items used for Professional Billing Rate Calculation," and the attached "Sample Standard Contract for Professional Services, "Article II, Compensation Text".

\*\*Key Project Personnel

**POSITION, CLASSIFICATION AND EMPLOYEE BILLING RATE INFORMATION**

**SUPERIOR ENVIRONMENTAL CORP**

**PROFESSIONAL SERVICES - 2013 EXPANDED ENVIRONMENTAL REMEDIATION ISID RFP**

**Firm Name** Soil and Materials Engineers Inc. - Part II: Special Sub-List Proposals, Excavation Dewatering and Off-Site Disposal (Earth Retention Systems Only)

**Yearly Hourly Billing Rate Increase** 2%

Level	Employee(s) Name	Position/Classification	Year 2013	Year 2014	Year 2015	Year 2016	Year 2017	Year 2018
			P4	Joel W. Rinkel, PE**	Senior Project Engineer	\$145.00	\$147.90	\$150.86
P3	Matthew C. Desjardins, PE	Project Engineer	\$120.00	\$122.40	\$124.85	\$127.34	\$129.89	\$132.49
P3	Andrew T. Bolton, PE	Project Engineer	\$120.00	\$122.40	\$124.85	\$127.34	\$129.89	\$132.49
P2	Christopher G. Naida, PE**	Senior Engineer	\$100.00	\$102.00	\$104.04	\$106.12	\$108.24	\$110.41
P2	Steven R. Good	CAD Manager	\$80.00	\$81.60	\$83.23	\$84.90	\$86.59	\$88.33
P1	Gus B. Kurdi	CAD Drafter	\$65.00	\$66.30	\$67.63	\$68.98	\$70.36	\$71.77

\*Billing Rate will be in accordance with the attached guideline page for instructions regarding the "Overhead Items used for Professional Billing Rate Calculation," and the attached "Sample Standard Contract for Professional Services, "Article II, Compensation Text".

\*\*Key Project Personnel

# **FORMS**

**Certification Regarding Debarment, Suspension, and Other Responsibility  
Matters**

**Professional/Contractor Demographics, Statistics and Certification**

**Certification of Michigan Based Business**

**Certificate of Awardability**



DEPARTMENT OF TECHNOLOGY, MANAGEMENT AND BUDGET  
Facilities and Business Services Administration

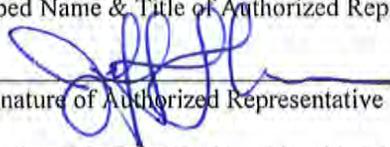
**Certification Regarding  
Debarment, Suspension, and Other Responsibility Matters**

The prospective participant certifies to the best of its knowledge and belief that, within the past three (3) years, the vendor, an officer of the vendor, or an owner of a 25% or greater interest in the vendor:

- (a) Has not been convicted of a criminal offense incident to the application for or performance of a contract or subcontract with the State of Michigan or any of its agencies, authorities, boards, commissions, or departments.
- (b) Has not been convicted of a criminal offense which negatively reflects on the vendor's business integrity, including but not limited to, embezzlement, theft, forgery, bribery, falsification or destruction of records, receiving stolen property, negligent misrepresentation, price-fixing, bid-rigging, or a violation of state or federal anti-trust statutes.
- (c) Has not had a loss or suspension of a license or the right to do business or practice a profession, the loss or suspension of which indicates dishonesty, a lack of integrity, or a failure or refusal to perform in accordance with the ethical standards of the business or profession in question.
- (d) Has not been convicted of a criminal offense or other violation of other state or federal law, as determined by a court of competent jurisdiction or an administrative proceeding, which in the opinion of DTMB indicates that the vendor is unable to perform responsibly or which reflects a lack of integrity that could negatively impact or reflect upon the State of Michigan, including but not limited to, any of the following offenses under or violations of:
  - i. The Natural Resources and Environmental Protection Act, 1994 PA 451, MCL 324.101 to 324.90106.
  - ii. A persistent and knowing violation of the Michigan Consumer Protection Act, 1976 PA 331, MCL 445.901 to 445.922.
  - iii. 1965 PA 166, MCL 408.551 to 408.558 (law relating to prevailing wages on state projects) and a finding that the vendor failed to pay the wages and/or fringe benefits due within the time period required.
  - iv. Repeated or flagrant violations of 1978 PA 390 MCL 408.471 to 408.490 (law relating to payment of wages and fringe benefits).
  - v. A willful or persistent violation of the Michigan Occupational Health and Safety Act, 1974, PA 154, MCL 408.10001 to 408.1094, including: a criminal conviction, repeated willful violations that are final orders, repeated violations that are final orders, and failure to abate notices that are final orders.
  - vi. A violation of federal or state civil rights, equal rights, or non-discrimination laws, rules, or regulations.

I understand that a false statement on this certification may be grounds for rejection of this proposal or termination of the award and may be grounds for debarment.

Jeffrey M. Skendrovic, Vice President Technical Services  
Typed Name & Title of Authorized Representative

  
Signature of Authorized Representative

6/13/13  
Date

I am unable to certify to the above statements. My explanation is attached.



DEPARTMENT OF TECHNOLOGY, MANAGEMENT AND BUDGET  
Facilities and Business Services Administration

PROFESSIONAL/CONTRACTOR DEMOGRAPHICS,  
STATISTICS AND CERTIFICATION

1. Company Name: Superior Environmental Corp
2. Company Address: 1128 Franklin Street  
Marne, MI
3. Principle Place of Business (zip code): 49435
4. Year of Establishment 1989

**Woman, Minority, or Veteran Owned Small  
Business Representation**  
(For Statistical Use Only)

**DEFINITIONS:**

'Woman-owned business,' means a small business that is at least 51% owned by a woman or women who are US citizens and who control and operate the business.

The vendor represents that it  IS,  IS NOT a woman-owned small business.

'Minority-owned business,' means a small business that is at least 51% owned by a minority or minorities who are US citizens and who control and operate the business.

The vendor represents that it  IS,  IS NOT a minority-owned small business.

African American     Arab American     Asian American     Hispanic  
 American Indian     Eskimo

'Qualified Disabled Veteran,' means a business entity that is 51% or more owned by one or more veterans with a service-connected disability.

'Qualified Disabled,' means a business entity that is 51% or more owned by one or more with a service-connected disability.

The vendor represents that it  IS,  IS NOT qualified disabled.

'Veteran-owned business,' means a small business that is at least 51% owned by a veteran or veterans who are U.S. citizens and who control and operate the business.

The vendor represents that it  IS,  IS NOT a veteran-owned small business.

The contractor represents and warrants that the company meets the above (when checked) and can provide supportive documentation upon request.

Jeffrey M. Skendrovic

Authorized Agent Name (print or type)

  
Authorized Agent Signature

Fraudulent Certification as a Qualified Disabled Veteran is subject to debarment under MCL 18.264.

## Certification of a Michigan Based Business

(Information Required Prior to Contract Award for Application  
of State Preference/Reciprocity Provisions)

**DEFINITION:** To qualify as a Michigan business, vendor must have during the 12 months immediately preceding this bid deadline, or if the business is newly established, for the period the business has been in existence, it has (check all that apply):

Bidder shall also indicate one of the following:

- Bidder qualifies as a Michigan business (provide zip code: 49435)
- Filed a Michigan single business tax return showing a portion or all of the income tax base allocated or apportioned to the State of Michigan pursuant to the Michigan Single Business Tax Act, 1975 PA 228, MCL 208.1 – 208.145; or
- Filed a Michigan income tax return showing income generated in or attributed to the State of Michigan; or
- Withheld Michigan income tax from compensation paid to the bidder's owners and remitted the tax to the Department of Treasury; or

I certify that **I have personal knowledge** of such filing or withholding, that it was more than a nominal filing for the purpose of gaining the status of a Michigan business, and that it indicates a significant business presence in the state, considering the size of the business and the nature of its activities.

I authorize the Michigan Department of Treasury to verify that the business has or has not met the criteria for a Michigan business indicated above and to disclose the verifying information to the procuring agency.

- Bidder does not qualify as a Michigan business (provide name of State: \_\_\_\_\_).
- Principal place of business is outside the State of Michigan, however service/commodity provided by a location within the State of Michigan (provide zip code: \_\_\_\_\_).

Jeffrey M. Skendrovic

Authorized Agent Name (print or type)



Authorized Agent Signature

Fraudulent Certification as a Michigan business is prohibited by MCL 18.1268 § 268. A BUSINESS THAT PURPOSELY OR WILLFULLY SUBMITS A FALSE CERTIFICATION THAT IT IS A MICHIGAN BUSINESS OR FALSELY INDICATES THE STATE IN WHICH IT HAS ITS PRINCIPLE PLACE OF BUSINESS IS GUILTY OF A FELONY, PUNISHABLE BY A FINE OF NOT LESS THAN \$25,000 and subject to debarment under MCL 18.264.

## MICHIGAN DEPARTMENT OF CIVIL RIGHTS

**CERTIFICATE OF AWARABILITY**

The Department of Civil Rights, having conducted a review of

**Superior Environmental Corp.**

1128 Franklin Street  
Marne, MI 49435

certifies that this contractor meets the requirements of Section 209 of Public Act 453 and / or Public Act 220 of Public Acts of 1976. Unless this Certificate is revoked by the provisions outlined below, the contractor is awardable and eligible to do business with the state on transactions administered by the Department of Management and Budget, Offices of Facilities Administration and Purchasing Operations; and / or various other state and local governmental units.

**THIS CERTIFICATE SHALL REMAIN VALID FOR ALL BIDS SUBMITTED BY THE COMPANY TO THE MICHIGAN DEPARTMENT OF MANAGEMENT AND BUDGET, OFFICES OF FACILITIES ADMINISTRATION AND PURCHASING OPERATIONS; AND / OR VARIOUS OTHER STATE AND LOCAL GOVERNMENTAL UNITS, UNTIL**

04/26/2016

This Certificate may be revoked by the Department of Civil Rights and / or the Department of Management and Budget upon finding of Violation of Public Act 453 and / or Public Act 220 of Public Acts of 1976.

Issued at Detroit, Michigan, on

04/26/2013

By:

*R. James Budden*  
Contract Compliance Unit

Mr. Jeff Skendrovic  
Superior Environmental Corporation  
Page 2  
January 31, 2014

If your company is interested in participating in the MiDEAL program, please sign below and return to this letter to the letterhead address, Attention: Melissa Sambaglio

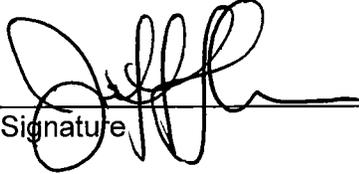
**FOR THE STATE OF MICHIGAN**



Robert C. Hall, RA, NCARB, Director  
Design and Construction Division  
Facilities Administration

**FOR THE PROFESSIONAL**

Superior Environmental Corporation agrees to extend the terms, conditions, and pricing of our 2013 Environmental Expanded Remediation Services contract, No. 00474, to MiDEAL members and will remit the one percent (.01) administrative payment fee along with the quarterly report as outlined.

  
\_\_\_\_\_  
Signature

2/21/14  
\_\_\_\_\_  
Date

JEFF SKENDROVIC, VICE PRESIDENT  
\_\_\_\_\_  
Print Name/Title