November 27, 2001

CON 12-15
Doc #14096

Don Hamera
Project Coordinator/On Scene Coordinator
United States Environmental Protection Agency
Region VII
901 N. 5th Street
Kansas City, KS 66101

2001 NOV 30 P 3:26
DEPT. OF NATURAL RESOURCES

RE: Former Diller Battery Site
Activity ID 01-2001-052

Dear Mr. Hamera:

The respondents have retained a consultant to prepare the work plan for the above-referenced site. The consultant is Terracon, 600 S.W. 7th Street, Suite M, Des Moines, Iowa, 50309.

I am enclosing a copy of Terracon's proposal describing their qualifications to prepare the required work plan for this project.

If you have any questions or concerns, please do not hesitate to call me at 515-283-4028.

Yours very truly,

David N. McGuffin, P.E.
Civil Engineer I

Enclosure

DNM:lav

cc: Dan Cook, Iowa Department of Natural Resources, Wallace State Office Building, 502 E. 9th Street, Des Moines, IA, 50319
J.D. McDermott, P.E., Manager, Environmental Site Remediation, Union Pacific Railroad, Room 930, 1416 Dodge Street, Omaha, NE, 68179-0930
David Young, Union Pacific Railroad, 1416 Dodge Street, Room 830, Omaha, NE, 68179
Michael O'Meara, Office of the County Attorney, 111 Court Avenue, Room 340, Des Moines, IA, 50309
Richard A. Bartolomei, Bartolomei & Lange, 666 Grand Avenue, Suite 1800, Des Moines, IA, 50309
Dennis L. Eppard, 1920 Arlington Avenue, Des Moines, IA, 50314

CITY OF DES MOINES

ENGINEERING DEPARTMENT
CITY HALL
400 EAST FIRST STREET
DES MOINES, IOWA 50309-1891
(515) 283-4920
FAX (515) 283-4112

ALL-AMERICA CITY 1949, 1976, 1981

Terracon
600 SW 7th St, Ste M
Des Moines, IA 50309
(515) 244-3184 Fax: (515) 244-5249

July 5, 2001

Floyd Bentz, PE
City Engineer
City of Des Moines
400 East 1st Street
Des Moines, Iowa 50309-1891

2001 NOV 30 P 3:26

DEPT. OF
NATURAL RESOURCES

Re: Proposal to Provide Engineering Design and Inspection Services for Excavation & Disposal Activities at the Former Diller Battery Site
Proposal No. 0801316

Dear Mr. Bentz:

Terracon is pleased to present this proposal to provide engineering design and inspection services for remedial activities at the former Diller Battery site in Des Moines, Iowa.

SITE BACKGROUND

The Diller Battery Company operated a lead-battery factory from 1946 to 1952 on the southernmost part of the site. In 1953, the facility was operated jointly by Diller Battery and various other entities. Another part of the site, located northeast of the former Diller Battery Company property at the southwest corner of 6th avenue and Boston Avenue, was previously the location of a school. The school was demolished in 1994. Contaminated fill dirt may have been moved from the Diller Battery property onto the cleared lot.

Sampling activities conducted by the Iowa Department of Natural Resources in 1995, the City of Des Moines (CDM) and Union Pacific Railroad (UPRR) in 1999, and EPA contractors in 1996 and 1999, indicated elevated concentrations of lead and polynucleur aromatic hydrocarbons (PAH's) at the site requiring remedial action. An Engineering Evaluation/Cost Analysis (EE/CA) was performed by EPA contractors that recommended excavation and disposal as a means to mitigate the effects of elevated lead and PAH's in soil at the site. The CDM, UPRR and Polk County entered into a voluntary administrative order on consent and agreement for a removal action with the EPA. ***This proposal was developed to offer Terracon's unique qualifications and experience to perfom the work elements requested and itemized herein.***

UNIQUE TERRACON QUALIFICATIONS AND INTEREST

Terracon is very interested in partnering with the CDM to produce a successful project. The Des Moines, Iowa office is a major Terracon center for engineering services, having a depth of over 50 local professionals that represent a broad range of major engineering and scientific disciplines including engineers, scientists, and trained technicians in the fields of

environmental and regulatory compliance; hazardous and solid waste management; environmental, civil, and geotechnical engineering; construction materials testing; geology and hydrogeology; risk assessment; air quality management; industrial hygiene; construction management; and operation and maintenance.

Terracon is a firm of diverse specialized strengths. Our mission is not to be "everything to all clients", but to be the best in our areas of specialty. ***Design of removal of contaminated soils and on-site inspection is one an area of strength in Terracon. In addition, Terracon offers the following advantages:***

- **Proven Track Record with EPA Region VII** - Terracon has real experience developing EPA approved Data Quality Objectives (DQO) and Quality Assurance Project (QAP) plans with successful concurrance by Region VII.

- **Experience** - Terracon brings 35-plus years of environmental engineering and foundation design and construction experience in exploring, evaluating, constructing and managing buildings, pavements and utilities. Cutting-edge expertise allows cost-effective solutions to the issues of restoring sites like Diller Battery.

- **Communication and Problem Solving** - Clear and frequent communications are the primary tools for prevention of problems. When differences arise, we have a history of resolving issues quickly and in the best interest of the client and the project. Authority for problem resolution begins at the project manager level and progresses through the program manager to the principal engineer in charge of operations, all residing in our local Des Moines office.

- We bring a team to the FDBS Project with capacity and skill to be:

  - ✓ innovative in developing cost effective remedial design
  - ✓ technically progressive
  - ✓ responsive with action
  - ✓ proactive with previous redevelopment experience
  - ✓ proactive communicators with all of the major stakeholders

- **Project Leadership and Monitoring** - Efficiency and high technical standards are the cornerstone of the Terracon approach to project management. Terracon's innovative project management system is founded on direct communication between the project manager and the client and is designed to facilitate project tracking. This system is propelled by a networked communication system, computerized financial information, and project specific

data which are immediately available to all staff. Each proposal/work plan includes a work scope of specific tasks, a project schedule, and detailed cost breakdown for each task. It is the responsibility of the project manager to see that the project objectives are met and that the client understands what, how, when and why tasks are to be completed.

- ***Terracon is a "home grown" national firm*** relative to experience and services in the region, having begun in Cedar Rapids, Iowa in 1965. Our Des Moines office has been around since 1975. Terracon has achieved record but controlled growth through successful client service, rising from 391st in 1986 to its present overall ranking of **59*th*** on the 2001 Engineering News-Record (ENR) Top 500 Design Firms annual ranking. Terracon is also ranked ***5th*** in 1999 ENR "Top 100 Asbestos and Lead Abatement" and ***17th*** in "Top 100 Environmental Site Assessment and Compliance" categories.

- The proposed inspector for this project, Mark Anderson, has extensive environmental and construction testing background, including environmental sampling and nuclear gauge certification for in-place density testing. ***This advantage offers the unique capacity for Terracon to collect nuclear density and moisture tests during compaction of backfill in addition to environmental inspection and testing.***

PROJECT TEAM

The proposed project team is listed in the table below. For a complete description of their unique experience and qualifications, please refer to their resumes which are attached.

Terracon Staff	Job Classification
Marty Jacobs, P.E.	Senior Project Engineer
Eva Schmitz, P.E.	Environmental Engineer
Jerry Hentges, PG	Project Manager
Sean Brown, P.E.	QA/QC /Review
Mark Anderson	Environmental Scientist
Troy Kidd	Autocad Technician
Project Support Staff	Secretary

REPRESENTATIVE PROJECT EXPERIENCE

The following project capsules are offered as representative of the type of experience the proposed Des Moines project team has for this project. ***These projects were successfully performed by the proposed project team here in Des Moines.*** Significant additional experience is also available from experts across Terracon's network of over 50 offices nationwide.

Allied Insurance Headquarters, Des Moines, Iowa - Terracon has offered expertise to the City and Allied/Nationwide with over-excavation and removal of soils impacted by various activities conducted on the six square block area in downtown Des Moines. Terracon was selected for the project based on its positive relationship with Nationwide and the City of Des Moines. Terracon has completed several stages of Phase III environmental site remediation through over excavation of impacted soils at the project site to ensure a stable environment for the complex.

The geotechnical work included soil sampling, groundwater sampling and chemical analysis to determine what type of subgrade materials were present in the area. Terracon was able to provide the City of Des Moines and Nationwide with extensive knowledge of the geology and geotechnical characteristics of the site as a result of our work on numerous projects in the area.

J.I Case, Burlington, Iowa - Terracon designed and implemented a soil removal plan approved by the IDNR and the USEPA for the J.I. Case Plant in Burlington, Iowa. The soils were impacted by lead paint wastes dumped into a former building foundation. Terracon specified, supervised and documented all aspects of the work performed by the excavation contractor and transport company relative to the removal, loading, manifesting and closure of the impacted area. Terracon devised a plan that allowed for a portion of the excavated soil that did not meet sanitary landfill requirements for disposal be temporarily stored on site and treated to levels below local landfill limits.

Former Gould Battery Site, Omaha, Nebraska – The current Terracon Principal Engineer working at his former employer, the Nebraska Department of Environmental Quality, provided regulatory oversight/project management for excavation and removal activities at the former Gould Battery Site in downtown Omaha, Nebraska. The Gould battery site was redeveloped as a major part of the Omaha Riverfront Redevelopment project. Following a very successful excavation and removal, a new park and lake were constructed over the area previously contaminated with lead and arsenic as a result of battery recycling activities.

Bullet Manufacturer, Alda, Nebraska – Terracon personnel were contracted to perform site characterization, monitoring and design of removal and treatment of contaminated soils at the

former bullet manufacturer site in Alda, Nebraska. The site was used to recycle batteries and recover the lead to make ammunition. Inefficient air pollution control equipment resulted in significant concentrations of elevated lead, arsenic, and cadmium in soil and groundwater at the site. The successful design of the removal and on-site treatment were conducted under RCRA regulations.

Wal-Mart, Marshalltown, Iowa - Terracon was retained by Wal-Mart to evaluate and remediate soil contaminated by a former agricultural implement manufacturer. The impacted soil was associated with the former septic tank drain field that had been used for the disposal of lead waste and solvents. Terracon designed an over-excavation remedial action that included on-site field screening and laboratory testing for removal confirmation. We provided over-excavation supervision and disposal permitting and contracting to a local landfill. Terracon's geotechnical personnel on site monitored the backfill of the area to ensure the integrity of the future building and parking areas.

WORK CAPACITY

Terracon understands the City wishes to expedite the remedial action project at the FDBS. Terracon has the technical and management capacity to conduct the scope of work in a streamlined fashion. ***With over 50 staff members in Des Moines, no other local firm has the level of capacity we offer to expedite your project.***

This project is necessarily awarded a high priority upon award due to the nature of the desired schedule. The allocation of resources and personnel is within the daily authority of Mr. Sean Brown, PE as the Principal in Charge of the Des Moines office.

PROJECT OVERVIEW AND WORKPLAN

Parcel 1

Work includes the excavation of soil above the established action levels to the approximate depth of one foot below the existing ground surface, removal and disposal of the excavated material, confirmation sampling and replacement and compaction of the soil. In addition, the concrete slab in the southern portion of the parcel will be demolished, removed and disposed at an appropriate disposal facility. This work requires the excavation of approximately 1860 cubic yards. Soils will be hauled off-site to an appropriate disposal facility.

Parcel 2

Work includes the excavation of soil to the approximate depth of two feet below the existing ground surface, removal and disposal of the excavated material, and replacement and compaction of the soil. This work requires the excavation of approximately 1935 cubic yards of

soil and approximately 2220 cubic yards of contaminated concrete. Soils and concrete will be hauled off-site to an appropriate disposal facility.

Task 1 – Removal Action Work Plan. Terracon will prepare and provide a Removal Action Work Plan (Work Plan) to the CDM. The Work Plan will include the following items:

1. **Information Analysis and Site Visit.** Terracon will meet with City/County/UPRR staff on-site to evaluate the current conditions and review existing information. Terracon assumes that the City will make available existing information including topographical maps, prior environmental reports and other pertinent information on file with the City.

2. **Detailed construction specifications, and plan sheets.** Technical specifications will be provided for the following:

   Excavation of appointed soils in parcel 1 and parcel 2;
   Screening and disposal of debris encountered during excavation;
   Backfilling and compaction of clean soil to initial grade;

   Excavation and removal drawings will consist of 2-3 plan sheets and 2-3 sheets for details. Specifications will include a Summary of Work, Project Coordination, Field Inspection, On-site Health and Safety, Project Meetings, Submittals, Quality Control, Environmental Protection *including dust control*, Site Preparation, Erosion and Runoff Control, Soil Placement and Compaction, and Site Restoration. Terracon will prepare the plans and specifications in draft form allowing for CDM/UPRR/Polk County staff review/comment at the 90 percent level of completion.

3. **Sampling Activities** - A Detailed description of sampling activities in accordance with the Quality Assurance Project Plan (QAPP) will be developed. For a more complete description of this scope item – please refer to Task 2, below.

4. **ARAR's** - Identification of and plans for compliance with applicable permitting requirements and environmental statutes. ARAR's will be identified and discussed in the Work Plan.

5. **Roles & Responsibilities** - Identification of roles and responsibilities for this removal action will also be included in the Work Plan.

Task 2 – Quality Assurance Project Plan (QAPP). Terracon will develop a QAPP that will provide for quality assurance, quality control, and chain-of-custody procedures for sampling activities in accordance with applicable EPA guidance.

A. The QAPP will describe the processes for obtaining analytical data of sufficient quality and quantity to characterize the Site and to allow EPA to evaluate if removal objectives have been met. The QAPP will generally follow the EPA Guidance: "EPA Requirements for Quality Assurance Project Plans," EPA QA/R-5, EPA/240/B-01/003, March 2001. The QAPP will also include the following information:

1. Description of the approximate number, type, and location of samples and the types of analyses to be performed, and supporting rationales.
2. Provisions for providing split samples to CDM and or EPA, if and as requested by CDM/ EPA.
3. Provisions for the analyses of performance evaluation ("PE") samples provided by EPA.
4. Identification of the laboratories that will be used for the analysis of the samples collected, the methods of sample collection and compositing, the analytical methods to be used, and detection limits for all analyses in all media sampled.
5. Provisions for the collection and analysis of trip and/or field blank and duplicate samples and other aspects of quality assurance/quality control ("QA/QC").

B. The QAPP will provide that all sample collection and analyses be performed in accordance with approved EPA methods where available, including the timing of sample extraction and analysis, and documentation of sample collection, handling, and analysis. The proposed sampling scheme will be capable of producing statistically valid data and, where applicable, will generally conform to the following EPA guidance documents:

1. Compendium of ERT Field Analytical Procedures, Office of Emergency and Remedial Response, Publication 9360.4-04, May 1992.
2. Compendium of ERT Waste Sampling Procedures, Office of Solid Waste and Emergency Response, EPA/540/P-91/0008, January 1991.
3. QA/QC Guidance for Removal Activities: Sampling QA/QC Plan and Data Validation Procedures, Office of Emergency and Remedial Response, EPA/540/G-90/004, April 1990.
4. Removal Program Representative Sampling Guidance, Volume 1: Soil – Office of Emergency and Remedial Response, Publication 9360.4-10, November 1991.
5. Compendium of ERT Soil Sampling and Surface Geophysics Procedures, Office of Solid Waste and Emergency Response, EPA/540/PO91/006, January 1991.

C. The QAPP will identify the EPA approved laboratory to be used for this project. Terracon will include required EPA information regarding the laboratory operations and QA/QC protocols in accordance with the EPA Work Plan.

Task 3 – Health and Safety Plan. Terracon will submit prior to site activities a health and safety plan based on available information. The health and safety plan will cover on-site inspection and investigation activities required for performance of the Scope of Work and will be consistent with OSHA requirements.

Construction Oversight and Documentation Report

Task 4 – Preconstruction Meetings (Optional). Terracon will participate in the Preconstruction meeting at the site with the involved parties. At this meeting Terracon will be available to assist the City with issues related to anticipated construction problems, communication chain and timelines for construction, discuss the QA/QC requirements, and answer any questions.

Task 5 – Construction Inspection. Terracon personnel will be on-site during construction activities to provide construction observation to document the project activities and to observe conformance to the approved plans, specifications, addenda, and QA/QC Plans.

Terracon has estimated services for this subtask in accordance with the schedule provided in the EE/CA (1999) as being 40 days of construction. Forty (40 days) of construction inspection services are included in this proposal.

Terracon will keep daily records of observed construction activities and report these to the CDM.

Task 6 – Post Construction Sampling. During the project Terracon will conduct field sampling and testing of the soil during excavation to provide post excavation soil characterization. The soils will be tested and analyzed using field and/or analytical methods to be determined upon development of the QAPP. No analytical fees are include in this proposal. These will be identified upon development of the QAPP.

Task 7 – Removal Action Report. Terracon will provide a Removal Action Report to the CDM following the completion of the project. Documentation will be kept for each excavated cell as to its excavation depth, analytical results after confirmation sampling, and depth of clean fill placed back in the cell. The report will be based on observation records kept by Terracon and will include the following information:

1. Introduction and Background
2. Parcel 1 Work

3. Parcel 2 Work
4. Soils Disposal/Location
5. Timelines
6. "As Built" Drawings
7. Laboratory Analyses

TIME OF COMPLETION OF THE PROJECT

Terracon understands the City UPRR/Polk County wishes to expedite the remedial action project at the FDBS. Terracon has the technical and management capacity to conduct the scope of work in a streamlined fashion. No other Des Moines firm offers the level of capacity we offer to expedite your project. The following is a projected schedule to facilitate completion of the project:

	Schedule Following Contract Approval
Completion of 90% Design Development (Draft)	30 Days
QAPP submitted to EPA	30 Days
Completion of Final Design	7 Days following comments
Start of Construction and Inspection Oversight	Contractor Dependant
Post Construction Sampling	Immediately After Removal
Construction Report	14 Days after analytical Results

Terracon appreciates the opportunity to be considered for this project and is excited about partnering with the City of Des Moines. Should you have any questions regarding the content of this proposal, please contact one us at 244-3184. We look froward to hearing from you.

Sincerely,
TERRACON

Sean D. Brown, PE
Principal Engineer/ Office Manager

Gerald T Hentges, PG
Hydrogeologist

RESUMES

SEAN D. BROWN, P.E.

ASSOCIATE PRINCIPAL / OFFICE MANAGER

PROFESSIONAL EXPERIENCE

Mr. Brown is the Principal in charge of the Des Moines office. He has over 14 years of environmental engineering experience including multi-media regulatory compliance and permitting (CAA, RCRA, OSHA, NPDES, CWA, Solid Waste), site assessment and subsurface investigations, risk assessment, risk-based corrective action, remediation system design, and expert witness testimony.

In addition, Mr. Brown has provided process safety management/risk management planning including assistance with management systems, management of change, offsite consequence analysis and HAZOPS systems.

Mr. Brown also worked for the Nebraska Department of Environmental Quality where he provided regulatory oversight for investigation and clean-up of a variety of contaminated industrial sites, reviewed engineering plans and specifications and financial assurance submittals for hazardous waste facilities, and performed compliance inspections. Mr. Brown also conducted public hearings, provided risk education, and gave technical presentation at public meetings.

PROJECT EXPERIENCE

Industrial Site Investigation/RCRA/CERCLA Projects

- Project manager/regulatory oversight for Brownfields redevelopment at the Central Park East/Riverfront lead battery site remediation in Omaha, Nebraska; and review of CERCLA Engineering Evaluation/Cost Analysis (EE/CA) for remedial alternatives for Murdock, Nebraska, remediation.
- Expert Witness for potential CERCLA cost recovery project involving DNAPL contamination.
- Project Manager for RCRA subsurface investigation, remediation, and O & M for a telecommunications products plant in Lincoln, Nebraska; a large printing plant in Omaha, Nebraska; an agricultural products manufacturer in Columbus, Nebraska; and an agricultural products manufacturer in Gering, Nebraska.
- Project Manager for development of Plans & Specifications and RCRA Closure and Post Closure plans for a large printing plant in Omaha, Nebraska; a chemical fertilizer plant in Fairbury, Nebraska; a motor parts plant in Omaha, Nebraska; a bullet manufacturer in Alda, Nebraska; and the City of Lincoln.
- Project Manager for development of RCRA Facility Investigation (RFI) Work Plan for an agricultural products manufacturer in in Gering, Nebraska; and a telecommunications products plant in Lincoln, Nebraska.
- Administrative and technical review of a RCRA Part B hazardous waste incinerator/storage facility Permit Applications; authored RCRA permits for both. Performed hundreds of RCRA compliance inspections.

Remediation System Design

- Project Engineer for design groundwater pump-and-treat systems for metals, gasoline, diesel, jet fuel and chlorinated hydrocarbon contaminated sites.

EDUCATION

Master of Business Administration, 1994, Creighton University

Bachelor of Science, Chemical Engineering, 1987, University of Nebraska

REGISTRATIONS

Professional Engineer: Nebraska, E-8448, Iowa 14781

Missouri Environmental Well Drilling Superviser

AFFILIATIONS

American Institute of Chemical Engineers (AIChE), Eastern Nebraska Chapter, Former Chair, Iowa Engineering Socitey, American Institue of Business and Industry

CERTIFICATIONS

OSHA Hazardous Waste Site Activities Training-40-Hour and Supervisor Training (8-Hour)

WORK HISTORY

Terracon, Office Manager, 1999-present

HWS Consulting Group, Senior Project Engineer/Project Manager, 1989-1999

Nebraska Department of Environmental Quality, Environmental Engineer, 1986-1989

Risk Assessment

- Project Manager for development of Risk Assessment to shorten post closure care period for an agricultural products plant in Columbus, Nebraska.
- Quality Assurance for Risk Assessment for a chemical fertilizer plant in Fairbury, Nebraska.

Environmental Assessments

- Project Manager for Comprehensive Environmental Site Evaluation for communications products plant in Omaha, Nebraska.
- Project Manager for several Multi-Media Environmental Compliance Audits.
- Project Engineer for Phase I Environmental Site Assessments (ESA's) for industrial and commercial properties.

Environmental Compliance (General)

- Project Manager for development/certification of multistate SPCC Plans for a large telecommunications company.
- Technical/regulatory liaison for client legal counsel.
  Review of Livestock Waste Management Permit Applications

NPDES Projects

- Project Manager for Stormwater Management Pollution Prevention Plan (SWMP/PPP, Industrial and Construction) and a Spill Response Plan for Nebraska Air National Guard in Lincoln, Nebraska; an Agricultural Chemical plant in Beatrice, Nebraska; an RV plant in Omaha, Nebraska.
- General NPDES compliance consultation to a variety of industrial clients.

Clean Air Act (CAA) Projects.

- Project Manager for development of (1) Risk Management Plan and Risk Management Program and PSM Compliance Audit for an Ag Chemical Plant in Beatrice, Nebraska, and a large utility in Lincoln, Nebraska.
- Prevention of Significant Deterioration (PSD) Permit Application for a petroleum well-field in Thermopolis, Wyoming.
- Title V permit application for a petroleum well-field in Thermopolis, Wyoming; a paint manufacturer in Lincoln, Nebraska, a motor parts manufacturer in Hastings, Nebraska and a furniture manufacturer in Beatrice, Nebraska.
- Construction Permit Application for an Ethanol Plant in York, Nebraska.

CONTINUING EDUCATION

National Brownfields Conference, 1998
Remediation of Soils and Groundwater, 1995
Air Pollution Control, 1994
RCRA Corrective Action, 1991, 1992
RCRA Permit Writers Seminars, 1988, 1989
Hazardous Waste Incineration, 1988

GERALD T. HENTGES, P.G.

SENIOR PROJECT MANAGER
TERRACON ENVIRONMENTAL, INC.

PROFESSIONAL EXPERIENCE

Mr. Hentges is a senior project manager in the Des Moines, Iowa, office. He directs project managers and field teams in hydrogeological assessments, solid waste facility design and permitting and hazardous waste site assessment and remediation. Mr. Hentges has accumulated extensive experience as a manager of hydrogeological projects for agricultural bulk storage and handling sites, solid waste disposal facilities, underground storage tank sites, and hazardous waste sites His expertise includes hydrogeological groundwater modeling in support of remediation systems design. Mr. Hentges has managed all aspects of solid and hazardous waste operations from permit application through hydrogeological assessment to site closure. He is responsible for planning and conducting hydrogeological assessments, leachate control plans, groundwater monitoring plans, closure and post-closure plans and engineering design and permit renewals at facilities throughout the Midwest.

PROJECT EXPERIENCE

Groundwater Assessments :
Project manager for assessment and remediation plan for pesticide impact on public water supplies for the Farmers Coop elevator in Hospers, Iowa, and Oxford Junction, Iowa. He has investigated grain fumigant, fertilizer and pesticide spills and the impact local water supplies. He conducted groundwater modeling of gradient control wells with a spray irrigation evaporation system.

He will conduct groundwater modeling as required using MODFLOW, MOC, Random Walk, Plasm, GWFL3D and GWTR3D simulation programs to model groundwater flow and contaminant transport during remedial well operations. He has designed and managed several field investigation projects including aquifer pumping test analyses to evaluate zone of influence, gradient control, and contaminant transport. His efforts in surface and groundwater modeling have led to effective programs for long term monitoring, and management of remedial design implementation.

Manufactured Gas Plants :
He was the project manager for an assessment of impacted groundwater buried gasometer/residues and light non-aqueous phase liquid impacts from two coal tar sites. Mr. Hentges subsequently provided remedial investigation and mitigation services to the Cities of Newton, Iowa and Davenport, Iowa during remedial activities at former manufactured gas plant sites. He represented the client in on-site observation/documentation of gasometer remedial activities, groundwater treatment design, evaluation and consultation relative to a removal action (RA) of the gasometer and cost estimation relative to negotiating joint technical and financial responsibility for the project.

Industrial Sites :
Mr. Hentges has been the project manager for several industrial sites where he planned and implemented investigations, assessments and remedial designs including the Naval Ordinance Facility and Whitaker Solvent cleanups in Fridley, Minnesota, the John Deere Moline Plow Works in Rock Island, Illinois, the J.I. Case Plant in Burlington, Iowa, Firestone Tire and Rubber Company in Des Moines, Iowa . Over excavations for lead impacted soils were designed and completed by Mr. Hentges for the John Deere, Engine Works in Waterloo, Iowa, and the JI Case Plant in Burlington, Iowa.

EDUCATION

Bachelor of Science, Hydrology, 1983, University of Arizona

Post Graduate Work, Hydrology, 1984, University of Arizona

REGISTRATION

Professional Geologist, Arkansas ,AIPG

AFFILIATIONS

American Institute of Professional Geologists

National Water Well Association

Association of Groundwater Scientists and Engineers

American Water Works Association

Iowa Groundwater Association

WORK HISTORY

Terracon Environmental, Inc., Project Manager, 1989-present

James M. Montgomery, Consulting Engineers, Inc., Project Hydrogeologist, 1983-1989

University of Arizona, Research Assistant, 1980-1983

Some other projects he managed where large volumes of soil were removed include the Allied Headquarters in Des Moines, Iowa, Wal-Mart in Marshalltown, Iowa and the City Coal Tar Site in Davenport, Iowa.

Wetland Mitigation
Mr. Hentges was the senior hydrologist on the Hughes/Phillips Reclamation project where groundwater flow from underground mines contributed significant amounts of acid mine drainage to the surface water stream. He was the lead hydrogeologist on the Rempe Reclamation project, in Oskaloosa, Iowa. His work included a geophysical study to determine the sources of groundwater flows from underground mine works. He developed a reclamation plan to create a 50 acre wetland to reduce impacts on local streams from spoils and underground mines in the area.

Mr. Hentges recently developed a wetland creation plan for mitigation of a landfill expansion and drainage improvement project for the Metro Waste Authority in Polk County, Iowa. His expertise in groundwater hydraulics and surface and groundwater modeling have led to effective programs for wetland management and design at many sites.

Mr. Hentges experience includes mitigation of wetland areas impacted by developments and agricultural practices in Minnesota, Nebraska and Iowa. He has written several wetland enhancement, creation and mitigation plans

Mr. Hentges conducted a flood plain delineation study by modeling peak flows on a major stream adjacent to the Metro Park East Sanitary Landfill. The assessment successfully documented to county and state regulators that the proposed structures were outside the actual 100-year flood plain.

Public Hearings :
Mr. Hentges assisted several sanitary landfills with local zoning approval and the technical submittals required by the regulatory agencies. He has successfully represented clients at several public meetings and informational hearings regarding permit issues for remedial design implementations, livestock facility siting and asphalt batch plant operations.

PUBLICATIONS

"Leachate Extraction Well Assessment, Des Moines Metropolitan Solid Waste Agency, Des Moines Metro Park East Sanitary Landfill, Des Moines, Iowa," Proceedings, The 12th Annual Conference of The Solid Waste Association of North America/Iowa Society of Solid Waste Operations Chapter, G.T. Hentges, F. Thies, T.S. Lemar, September 16-18, 1992.

"Leachate Extraction Well Assessments, Des Moines Metropolitan Park East and Hamilton County Sanitary Landfill," Proceedings, Sixteenth International Madison Waste Conference, Municipal and Industrial Waste, University of Wisconsin, Madison, G.T. Hengtes, F. Thies, T.S. Lemar, September 22-23, 1993.

"A Case History: The Use of an Uncovered Windrow Compost Facility as a Bioreactor for Municipal Solid Waste Landfill Leachate," Proceedings, Seventeenth International Madison Waste Conference, Municipal and Industrial Waste, University of Wisconsin, Madison, G.T. Hentges, F. Thies, T.S. Lemar, September 21-22, 1994.

MARTIN L. JACOBS, P.E.
SENIOR PROJECT MANAGER

PROFESSIONAL EXPERIENCE

Mr. Jacobs is an environmental engineer and project manager in the Des Moines, Iowa office. He performs remediation design, monitoring and field investigations for asbestos, underground storage tanks and other environmental projects. This work includes preparations of plans and specifications, bid assessment and recommendation.

He also performs environmental site assessments and prepares spill prevention control and countermeasures plans.

As a project manager, he directs the activities of field technicians in performing asbestos surveys, underground storage tank field testing, indoor air quality investigations, remedial site inspection and Phase I and Phase II environmental site assessments.

PROJECT EXPERIENCE

- **10th Street Superfund Site – Oklahoma City, Oklahoma**
  Remediation Design including site safety and health services, air monitoring, soil and groundwater and compliance testing for a superfund site with PCB and hydrocarbon contamination in soil and groundwater.

- **Remediation Projects – Sioux City, Cedar Rapids, Dennison & Atlantic**
  Writing site cleanup reports, pre-drilling and post-drilling site work and mapping

- **South Barber Middle School – Hardtner, Kansas**
  Field investigation and remediation design for a Kansas trust fund LUST project involving soil and groundwater remediation, free product recovery, and protection of a public water supply well

- **Alexander Coop – Alexander, Kansas**
  Field investigation and preliminary remediation design for a Kansas trust fund site involving soil and groundwater remediation

- **Alexander Coop – Alexander, Kansas**
  Field investigation and preliminary remediation design for a Kansas trust fund site involving soil and groundwater remediation

- **Leroy's Diamond Shamrock – Hayes, Kansas**
  Field investigation and remediation design for a Kansas trust fund LUST project involving soil and groundwater remediation, large scale free product recovery, and remediation of a public water supply well

- **Confidential Client – Hayes, Kansas**
  Field investigation, remediation design and installation oversite for a private client at a former gas station site involving soil and groundwater remediation.

EDUCATION

Bachelor of Science in Civil Engineering, Iowa State University, 1985

REGISTRATIONS

Professional Engineer, Iowa, 1999 # 14753

Professional Engineer, Kansas, 1993 #12923

Professional Engineer, Missouri, 1995, E-27350

Professional Engineer, Nebraska, 1997, E-8947

CERTIFICATIONS

EPA/AHERA Contractor/Supervisor – 1987

EPA/AHERA Project Designer - 1989

EPA/AHERA Inspector - 1992

EPA/AHERA Management Planner – 1992

Iowa Asbestos Project Designer – 1998

Iowa Asbestos Inspector – 1998

Iowa Asbestos Management Planner – 1998

Missouri Asbestos Air Sampling Professional – 1995

Missouri Asbestos Supervisor – 1995

Missouri Asbestos Inspector – 1995

Missouri Asbestos Project Designer – 1995

Missouri Asbestos management Planner - 1995

AFFILIATIONS

American Society of Civil Engineers

WORK HISTORY

Terracon, Inc., Project Manager, March 2001 –Present

Shive-Hattery, Inc., Project Manager, May 1998 – March, 2001

Professional Service Industries/ Hall-Kimbrell, Staff Engineer/Project Manager December, 1987 – May, 1998

- **Confidential Client – Cedar Rapids, Iowa**
  Preparation of environmental demolition report covering asbestos, lead-based paint, mercury, PCB's, hazardous waste, and potential hydrocarbon contamination

- **Woolf Avenue Apartments – Iowa City, Iowa**
  Monitoring and project management for exterior lead-based paint removal project

- **University of Iowa – Iowa City, Iowa**
  Asbestos surveys, asbestos demolition surveys, asbestos abatement project design and abatement monitoring for ongoing asbestos work at the University of Iowa

- **Confidential Agricultural Client – Kansas & Iowa**
  Project planning for multi-state asbestos survey for grain storage, feed processing, petroleum transporting and fuel processing facilities

- **San Leandro Unified School District – San Leandro, California**
  Remediation design for asbestos abatement in an occupied school

- **Geosource Plaza – Post Oak Tower – Houston, Texas**
  Remediation design for phased asbestos abatement in an occupied high-rise office building

- **Department of Neighborhood Preservation – Kansas City, Missouri**
- **Asbestos demolition surveys, hazardous waste investigations and abatement specifications for condemned residential and commercial buildings Confidential Client – Kansas City, Kansas**
  Preparation of site safety plan, general site safety and health services, industrial hygiene testing and compliance testing for large scale contaminate soil landfarm remediation project

- **Confidential Client – Des Moines, Iowa**
  Preparation of environmental report including phase I environmental site assessment, radon testing, and asbestos survey in a high rise office building

- **Confidential Client – Fairfield, Iowa**
  Indoor air quality investigation in an occupied office building

ADDITIONAL COURSES

OSHA Approved Confined Space Training, Professional Services Industries, 1995

X-ray Fluorescence Safety Training, RMD, Inc.,

EVA S. SCHMITZ, P.E.

ENVIRONMENTAL ENGINEER
TERRACON, DES MOINES OFFICE

PROFESSIONAL EXPERIENCE

Ms. Schmitz conducts field activities and project management for groundwater, surface water, wastewater treatment, and geotechnical engineering projects. For landfill and agricultural sites, she conducts research, performs data analysis, and completes reports. She prepares reports for site assessments, risk based corrective action at LUST sites, agricultural chemical sites, and waste confinement lagoons. Ms. Schmitz has expertise in conducting human health risk assessments in accordance with the EPA's Risk Assessment Guidance for Superfund (RAGS). She performs field tests for the characterization of aquifer conditions and makes recommendations for corrective action based on site conditions.

PROJECT EXPERIENCE

- **Project Manager**
  Performs technical analysis related to various field activities including; determining hydraulic conductivities based on field measurements, determining groundwater flow direction and gradient, and analyzing the presence and movement of soil and groundwater contamination. Responsible for coordinating and overseeing the sampling and removal of contaminated soil for a multi-block demolition/construction project.

- **Iowa LUST Project Experience**
  Responsible for writing and compiling information for various reports including Site Cleanup Reports, Site Monitoring Reports, Corrective Action Design Reports, Free Product Reports, Iowa RBCA Tier 1 and Tier 2 Reports, Phase I and II Site Assessments. These reports include information concerning site geology, the presence of soil and groundwater contamination, potential impact of contamination to receptors, and groundwater flow data. Analyzes LUST sites and develops scopes of work for risk based corrective actions. Has been trained in the Iowa RBCA procedures and is a Certified Groundwater Professional.

- **Agricultural Project Experience**
  Performs soil and groundwater assessments as related to waste storage lagoons and agricultural chemical/fertilizer sites. These reports include information concerning site geology, the presence of soil and groundwater contamination, and groundwater flow data. Prepares construction permits and manure management plans for hog confinement operations. Projects include developing an assessment work plan and completing the required groundwater monitoring for an alachlor release at a cooperative. Developed one of Iowa's first groundwater assessments and lagoon abandonment plans for a hog waste lagoon.

- **Air Sampling**
  Monitored various air quality project including Visual Emissions (opacity) and Stack Testing via EPA Method 5, 201A, 202, and 306.

EDUCATION

Bachelor of Science, Agricultural Engineering, 1994, Iowa State University

REGISTRATION

Professional Engineer: Iowa

Certified Groundwater Professional, 1997

AFFILIATIONS

American Society of Agricultural Engineers

WORK HISTORY

Terracon, Environmental Engineer, 1997-present

EnvironManagement, Staff Engineer, 1995-1997

MARK J. ANDERSON

ENVIRONMENTAL FIELD TECHNICIAN III
TERRACON

PROFESSIONAL EXPERIENCE

Mr. Anderson is responsible for the operation and maintenance of remediation systems, conduction of field services and collection of field data for environmental site assessments, risk based corrective action assessments, wetland delineations, and landfill sites. His relevant experience includes conducting field activities in conjunction with intrusive and non-intrusive investigations for assessing nature and extent of potentially hazardous subsurface contamination, preparing written reports, and providing technical guidance for environmental projects. Field activities include drilling operations, soil and groundwater sampling, remedial system maintenance, aquifer testing, and geophysical surveys. Mr. Anderson is also a senior technician with Terracon's Des Moines, Iowa, office. He is responsible for material's testing and construction inspection. Other responsibilities include laboratory testing of soils, concrete and masonry samples, roofing and rebar inspections, and assisting lead driller.

PROJECT EXPERIENCE

- **Wetland Delineations**
  Mr. Anderson has conducted wetland surveys for potential impact as a result of land development. Survey activities included plant and soil collection and classification.

- **Field Experience**
  Mr. Anderson is experienced in soil and groundwater sampling and reporting as related to Phase I/II site assessments, LUST sites, landfill sites, and release sites. He has experience with tank closures and over-excavations. He has performed various phases of subsurface investigations including hollow stem auger drilling, soil and groundwater sampling, hydraulic conductivity measurement, receptor and vertical surveying.

- **Soil Screening**
  He conducts the field screening of soil samples for the vertical and horizontal delineation of soil contamination involved at an impacted site.

- **Sample Collection**
  He conducts the routine sample collection for monitoring wells as a part of the IDNR LUST program, as well as Phase I/II assessments. He is responsible for collection of groundwater samples in conjunction with landfills.

- **Remedial System Operation**
  Mr. Anderson is responsible for the operation and maintenance of several remediation systems in the Des Moines area. Sites include pump and treat, soil vapor extraction and sparging wells.

- **Geoprobe Sampling**
  He has experience assisting and operating the direct-push sampler.

EDUCATION

Winona State University, Bachelor of Science, Geology, 1995

McHenry County College, Crystal Lake, Illinois, AutoCAD v. 13, 1997

Winona Technical College, Associate of Applied Science, Composites Technology, 1990

Carpentry Program, 1987-88

Mechanical Design Technology, 1983-85

TRAINING AND CERTIFICATIONS

OSHA 40-Hour Hazardous Waste Training

Certified Nuclear Density Gauge User

38 Hour Army Corps of Engineers Wetland Delineation & Management Training Program

WORK HISTORY

Terracon, Environmental Field Technician, 1995- Present