PROPOSAL

prepared for

MINNESOTA POLLUTION CONTROL AGENCY

Minnesota Pollution Control Agency &
Minnesota Department of Agriculture

REMEDIATION MASTER CONTRACT

Category B

PETROLEUM ONLY ENVIRONMENTAL SERVICES

Prepared by

Carlson McCain
ENVIRONMENTAL • ENGINEERING • SURVEYING

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COVER LETTER

Carlson McCain

ENVIRONMENTAL • ENGINEERING • LAND SURVEYING

April 11, 2018

Minnesota Pollution Control Agency
520 Lafayette Road
St. Paul, Minnesota 55155

Re: Request for Proposal
MPCA and MDA Remediation Master Contract
Category B – Petroleum Only Remediation Environmental Services

Dear Selection Committee:

Carlson McCain, Inc. (Carlson McCain) is pleased to submit our Proposal to the Minnesota Pollution Control Agency (MPCA) and Minnesota Department of Agriculture (MDA) for the Remediation Master Contract for Petroleum Only Remediation Environmental Services (Category B). We are a full-service environmental, engineering and land surveying consulting firm with offices in Blaine and Plymouth, Minnesota, as well as Bismarck, North Dakota. Our staff of 55 professionals provide comprehensive services to successfully complete a wide variety of environmentally challenging projects for our clients in the public and private sector.

First and foremost, Carlson McCain accepts the Classification Levels and Rates listed on Schedules 1 and 2 of the RFP. In addition, Carlson McCain accepts the Equipment and Supplies pricing list, which lists equipment to perform services with prices associated with the RFP. We are aware that the prices listed in the RFP include all costs associated, but not limited to, applicable taxes, fees, insurance costs, direct costs, overhead and profit.

There are many qualified environmental consulting companies, large and small, but our clients choose to work with us because they trust our level of technical and management expertise, our integrity and the manner in which we respond to meeting their needs and project objectives. Our corporate philosophy is to provide quality, specialized services while preserving the cost-effectiveness and genuine concern for client needs. Our success has best been measured by our reputation for being knowledgeable, thorough and resourceful, resulting in a company that's been built on repeat and referral business. We also pride ourselves that many of the staff that were with us going back to inception of the company in 1997, are still with us today. It's that dedication, continuity and loyalty that also provides a solid foundation for building long-term partnerships with our clients.

We are committed to providing the technical staff, resources and specialized expertise required to successfully investigate and remediate petroleum contaminated sites as part of this Contract. Carlson McCain staff have repeatedly demonstrated their ability to comply with comprehensive assignments and schedules, working on projects of varying sizes and duration. Our overall project delivery approach is designed to provide functional responsibility and authority, and judicious regulatory agency interaction, all supported by a strong management control structure.

Simply stated, we are experts in petroleum assessment and remediation. These types of projects are part of our core business. In 2004, our strong background and reputation as a leader in petroleum related assessments and investigations were acknowledged when Carlson McCain was selected as one of two consultants awarded the Minnesota Department of Commerce (MDC) Petrofund Abandoned Tank Removal Program contracts. Our technical expertise, quality of service and efficiency in which we completed projects was acknowledged by the MDC when our contract was renewed in 2008, 2013 and most recently in 2018 for the next five years.

Our petroleum investigation and remedial investigation experience was recognized in 2013 when Carlson McCain was selected as an MPCA contractor for the Level 1 Petroleum Only Environmental Services Contact. For the past 4.5 years, Carlson McCain successfully managed and provided investigation services at 44 sites throughout Minnesota with the MPCA Fund Financed Program. Continued growth, working relationships and project accomplishments have been conducted between Carlson McCain and the MPCA through the current Professional Master Service Contract.

Our staff includes environmental scientists, engineers, hydrogeologists, geologists, land surveyors and geographic information systems (GIS) specialists are uniquely qualified and experienced and will be an asset to assist the MPCA and MDA as they move forward with implementing both short and long-term goals and objectives in regards to conducting investigation and remediation at petroleum sites in Minnesota Currently, 11 of these professionals will be designated to this contract work, four of which are currently based in our Blaine office and seven based in the Plymouth office. Our staff work with MPCA personnel on a day to day basis and have extensive experience working with the available MPCA Petroleum Remediation Program (PRP) Guidance Documents and regulatory framework to facilitate well executed investigations, which consistently lead to effective, approved assessments, cleanup and eventually site closure.

Your primary contact for the duration of the Contract would be Chris Loch, who has been managing PRP and Brownfield projects for Carlson McCain since 2003 and has over 17 years of consulting experience. Mr. Loch has also succuessfully managed Carlson McCain's current MPCA/MDA's Professional Master Services Contract for Fund Financed petroleum investigation sites throughout Minnesota since 2013. He maintains a reputation and leadership role in PRP investigation and remediation projects and has worked on and managed some very complex projects throughout Minnesota. Based on his experience, he has a thorough understanding of the many aspects required to complete projects, including working with and implementing MPCA Guidance Documents and Better Management Practices (BMPs). Chris has also demonstrated his project management capability by successfully managing the Minnesota Department of Commerce – Petrofund Abandoned Storage Tank Removal Contract since 2004. In this time, he has managed and completed over 200 abandoned tank removal projects associated with the contract.

Proposal Contact
Chris Loch
Carlson McCain, Inc.
15650 – 36th Ave N; Suite 110
Plymouth, MN 55446
952-346-3913 office
651-285-5954 cell
cloch@carlsonmccain.com

Carlson McCain has two offices in Minnesota which would provide services, personnel and equipment for the MPCA and MDA Remediation Master Contract. Our office locations are as follows:

Corporate Office:
3890 Pheasant Ridge Dr.; Suite 100
Blaine, MN 55449
763-489-7900 office
763-489-7959 fax
www.carlsonmccain.com

West Metro Office:
15650 – 36th Ave N; Suite 110
Plymouth, MN 55446
952-346-3900 office
952-346-3901 fax
www.carlsonmccain.com

We appreciate the opportunity to submit this Proposal and look forward to working with the MPCA and MDA. Carlson McCain accepts the proposed Model Contract Terms and Conditions, as specified in the RFP. Please feel free to call me at (763) 489-7924 or send me an e-mail at wcarlson@carlsonmccain.com if you have any questions or comments. Thank you for your time and consideration.

Sincerely,

Carlson McCain, Inc.

Wade A. Carlson, P.G.
President

2. QUALIFICATIONS AND CAPABILITIES

Summary of Overall Company Capabilities

Carlson McCain, Inc. (Carlson McCain) is an established environmental, engineering and land surveying consulting firm with the staffing, technical and financial resources necessary to fulfill the requirements of the Minnesota Pollution Control Agency (MPCA) & Minnesota Department of Agriculture (MDA) Petroleum Only Environmental Services Category B Master Contract. Through our offices in Plymouth and Blaine, Minnesota; and Bismark, North Dakota, our staff of 55 professionals provides comprehensive services to successfully complete a wide variety of technically challenging environmental projects.

Carlson McCain's environmental staff has reputable experience completing all aspects of environmental services including petroleum and hazardous materials investigation and remediation. Our technical skills, good judgment, and experience with regulatory compliance have resulted in the successful investigation, cleanup, and redevelopment of properties such as abandoned petroleum storage tank sites, service stations, residential properties, vacant industrial facilities, power plants, abandoned dump sites, old salvage yards, rail yards, and vacant dry cleaners.

Over the years, we have provided tank removal, release notification, remedial investigation and monitoring services at numerous petroleum release sites in Minnesota. Statewide, Carlson McCain staff has managed over 600 petroleum related release sites over the past 20 years. Carlson McCain staff work with MPCA personnel on a daily basis for these projects. Specifically, we work with the MPCA Petroleum Remediation Program (PRP), MPCA Tank Inspection Compliance staff, Minnesota Department of Commerce (MDC) – Petrofund Abandoned Storage Tank Removal Program, the MPCA Petroleum Brownfields (PB) Program, the MPCA Superfund Program and the Voluntary Investigation and Cleanup (VIC) Program. Carlson McCain's capabilities in completing specific project related investigation tasks are further strengthened by conducting similar work in neighboring states. Our services have included project management, tank removal sampling, assessment, site and off-site access, drilling oversight, sampling, coordinating analytical services with subcontracted laboratories, and regulatory reporting of results to the MPCA. Associated with petroleum related limited site and remedial investigation activities, is Carlson McCain's track record assisting clients for reimbursement of eligible costs through the MDC – Petrofund program.

Our strong background and reputation as a leader in petroleum related assessments and investigations were evidenced by the MPCA selecting Carlson McCain for the Fund Financed Multi-Site Program for Level 1 Petroleum Only Environmental Services in 2013. During the past five years, Carlson McCain has received positive evaluations from MPCA Project Leaders for work associated with our current MPCA contract. In addition, Carlson McCain has been a contractor with the MDC - Petrofund Abandoned Storage Tank Removal Program for conducting abandoned tank removals and subsequent reporting since 2004.

Organizational Structure

Carlson McCain's organization structure and project management plan are designed to provide a line of functional responsibility and authority, supported by a management control structure and independent quality assurance review. This control structure provides for:

- Clearly identified lines of communication and coordination;
- Monitoring of project budget and schedules;
- Managing key technical resources;
- Providing progress reports; and
- Quality control.

Project Approach

At the onset of each project, it is a paramount that we understand the MPCA or MDA goals and objectives. By doing so, we can then clearly define a scope of work and assign the appropriate staff to complete each task. We firmly believe that thorough project planning ensures quality assurance/control, keeps projects on time & on budget, encourages creative problem solving and keeps our clients informed about their project from start to finish.

Communication

Virtually all aspects of any project start with excellent communication, be it with the MPCA or MDA, other regulatory agencies, site and off-site property owners, between the Project Manager and field staff, subcontractors and/or public relations. We pride ourselves on being widely available and very responsive to all parties working on a project and can effectively do so through the use of land lines, cell phones and e-mail. Furthermore, we are effectively able to transmit information between our Blaine and Plymouth offices, as we have access to shared servers.

Staff Roles

Once the Scope of Work has been defined and project goals and objectives have been determined, we then pair staff with the best skill sets required to complete each task. The following sections identify the primary responsibilities of each project team member relative to the overall objectives of the projects within this Contract.

Chris Loch, based in our Plymouth, MN office, will be Carlson McCain's contract administrator and primary contact.

Chris Loch will be the Contract Administrator and primary contact for the MPCA.

Chris Loch and Barb Ryan will be Carlson McCain's **project management team** for the contract and will manage the projects based on geographic location and work load. They will be responsible for preparing comprehensive and site-specific work plan and cost proposal packages for each project. They will manage all project activities, including (but not limited to) acting as the liaison between the MPCA or MDA and Carlson McCain, scheduling and coordination, site and off-site access agreements, providing direction for staff assigned to projects, data evaluation, report preparation and technical review, establishing/maintaining project budgets, invoicing, soliciting subcontractor bids, managing subcontractors and interaction with the public.

Caitlin Castner, Megan Lindstrom, Dave Katzner, Marina Cord and Nick Bonow will serve as **scientists, field technicians and engineers** to implement work plans for projects assigned as part of this contract. Their responsibilities will include performing on-site work including (but not limited to) tank removal, site assessments, drilling oversight, soil excavation oversight, collection of soil, groundwater and soil-gas samples, conducting receptor surveys, monitoring well development, measurement and sampling, and site mapping/surveying. They will be responsible for calibration and maintenance of all site-related field instrumentation. They will also assist with data evaluation, design and technical reporting, as necessary.

Ashton Kogel and Dan Wilke will provide CADD services for technical report preparation. Providing detailed and legible site figures is important to portray LSI and RI activities.

Wade Carlson and **Jim Crowl** will serve as technical advisors for the projects within this Contract. Their roles will be to ensure that all projects are completed per contract requirements and MPCA PRP Guidelines. In addition, they will ensure that appropriate

quality assurance/quality control (QA/QC) measures implemented and that and corporate health and safety policies are adhered to. They will review analytical reports generated by the subcontracted laboratory and have authority to direct the laboratory to re-analyze samples or stop work until any QC problems are isolated and corrected. They will also have the authority to correct any deficiencies which are not in compliance with QA/QC measures and corporate health and safety policy.

Public Relations

Carlson McCain will provide assistance to the MPCA and MDA in support of community outreach, public relations and programming efforts. Furthermore, we are accustomed to working directly with government agencies and will work closely with the MPCA and MDA to maintain positive public relations and potential access agreements. As necessary, we will provide support, including preparation of informational materials and technical presentations. All project documentation and/or materials will be prepared to a standard to uphold public scrutiny during public hearings/meetings, outreach programs and/or educational meetings. We know that in environmental industry perception oten become s reality. To that end we are sensitive to this fact when dealing with the public.

Time and Budget Tracking

Carlson McCain has several project management tools which help in establishing, tracking and ensuring that projects are completed on-time and on budget. Carlson McCain's time and expenses are recorded electronically through the use of Vision 7.3 by Deltek®, which automatically updates both the project cost and accounting systems. Vision software provides an excellent audit trail and provides detailed project reports as needed. This program has greatly increased our project management efficiencies and our clients have seen more efficient service as a result. Carlson McCain can and will provide the MPCA or MDA with a monthly detailed invoice cost break-out of all charges.

Quality Assurance/Quality Control

At Carlson McCain, we pride ourselves having each team member taking ownership and accountability for each project they work on. By doing so, quality assurance is instilled in everything we do from field work through reporting. As a quality assurance/quality control (QA/QC) measure, both field and laboratory samples will be taken in order to evaluate procedures being used. After the data have been received from the laboratory, the individual reports will be reviewed for accuracy and completeness to make sure that data quality objectives have been met. Prior to submitting deliverables, all documents are reviewed by one of our senior staff.

Health and Safety Policy

It is the policy of Carlson McCain that every operation shall be performed in the safest possible manner, so as to prevent injuries to persons and damage to property. Carlson McCain has a written stop work policy and all employees are encouraged and required to use it in the event that un-safe conditions are observed on a job site. To alleviate potential health hazards, Carlson McCain corporate policy requires that all employees are properly trained to recognize potential hazards and deal with them safely. In response to this, and in keeping with OSHA 29 CFR 1910.120, Carlson McCain has developed and implemented a Health and Safety Program for all employees involved with field activities.

Carlson McCain personnel involved with field projects have completed the OSHA 40-hour equivalent health and safety training which includes basic, intermediate, and advanced levels of training in site evaluation, emergency help and self-rescue, theory and use of atmospheric monitoring equipment, and the use of personal protective clothing and equipment. An eight-hour refresher health and safety training course and ten-hour

supervisory training course (if required) are also provided annually. Additionally, employees are trained and certified in CPR every year and multi-media first aid every two years.

A strict employee medical surveillance program has been established to screen employees for evidence of adverse effects from occupational exposure to toxic and hazardous substances. Each employee involved with field investigations receives a complete medical examination that provides baseline information for evaluation during subsequent periodic examinations. Employees are examined annually, and on a periodic basis, dependent on the employee's involvement in project-specific site work. A personal protection program has been implemented in accordance with OSHA Standards as set forth in 29 CFR, Part 1910, Subpart I which includes skin and body, face and eye, foot and head, and respiratory protection.

Safety Managers

The Carlson McCain Health and Safety Managers are responsible for preparing and/or approving a safety plan for each project site. Before on-site work is begun, the plan is reviewed with all personnel involved with on-site investigations. The Health and Safety Manager or a designated Site Safety Officer is responsible for implementing and enforcing the safety plan to ensure that personnel involved with field activities comply with all safety protocols. Carlson McCain's Corporate Health and Safety Managers:

Barb Ryan, PG, CHMM 3890 Pheasant Ridge Drive NE; Suite 100 Blaine, MN 55449 763-489-7900 bryan@carlsonmccain.com	Caitlin Castner, Staff Geologist 15650 – 36th Avenue N; Suite 110 Plymouth, MN 55446 952-346-3900 ccastner@carlsonmccain.com

Resumes of Key Staff Assigned to Contract

Carlson McCain will provide highly qualified staff to meet the anticipated needs and demands to successfully complete the types of projects that will be conducted as part of this Contract. The key project team members identified to complete work as part of this Contract were selected based on their familiarity and current experience with the tasks required in your Scope of Services. Resumes for these key personnel that would be assigned to the Contract are presented below:

Wade A. Carlson, P.G. - President/Senior Geologist

Position Relative to MPCA/MDA Proposal

- Project Manager

Mr. Carlson has over 33 years of environmental consulting experience gained from managing and providing technical expertise on a wide range of environmental projects requiring soil and groundwater evaluations. Mr. Carlson provides assistance and daily company duties from offices in Blaine and Plymouth, Minnesota. His primary areas of expertise include Phase I and II ESAs, hazardous waste, remedial investigations/feasibility studies, soil and ground water remediation, solid and industrial waste permitting, project management, RCRA and CERCLA regulatory compliance, soil-gas BMPS and client/agency liaison.

Specialization

- VIC, Petroleum Brownfields and Superfund site management
- Phase II Environmental Assessments
- Laboratory analytical and sampling methods quality assurance/quality control
- Regulatory compliance
- Petroleum investigation/remediation technical review

Brownfield Redevelopment

- Lee's Wrecking, Blaine, Minnesota;
- Columbia Heights Industrial Park, Columbia Heights, Minnesota;
- Port Riverwalk, Coon Rapids, Minnesota;
- Louie's Auto Salvage, Champlin, Minnesota;
- Mississippi Crossings, Champlin, Minnesota;
- St. Paul Terminals, Ramsey, Minnesota; and
- Former Shorty's Towing

Site Characterization/Remediation

- Monticello Nuclear Generating Plant, Monticello, Minnesota;
- Nico Products – Minneapolis, MN;
- Twin City Metalseal & Powdercoating – Minneapolis, MN;
- Kress Creek/West Branch DuPage River, West Chicago, Illinois;
- Former Dealers Manufacturing (Reviva) – Fridley, MN;
- Xcel Energy, Manufactured Gas Plant, Grand Forks, North Dakota;
- Xcel Energy, Manufactured Gas Plant, Brainerd, Minnesota;
- Xcel Energy, Manufactured Gas Plant, Chippewa Falls, Wisconsin;
- Casco Point Road UST removal and impacted soil excavation in Orono, MN;
- County Road 101 assessment and soil excavation in Maple Grove, MN; and
- High Bridge Generating Plant Decommissioning and Demolition, St. Paul, Minnesota

Solid and Industrial Waste Permitting and Site Characterization

- Vonco II Waste Management Campus – Becker, MN;
- Vonco V Waste Management Campus – Duluth, MN;
- Great River Energy RDF Ash Landfill – Becker, MN;
- Xcel Energy Sherco Generating Plant – Becker, MN;
- IHD Environmental – Williston, ND

Education/Licenses/Registrations

- B.S. Geology, University of Minnesota, Duluth, 1984
- Professional Geologist, MN & IL
- OSHA, 40-hour Health & Safety Training
- OSHA, 8-hour Supervisors Health & Safety Training
- 8-hour Basic Radiation Worker Training
- Basic Geophysical Logging and Techniques Training
- Advanced Geophysical Logging Techniques Workshop

Chris J. Loch – Petroleum Investigation/Remediation Senior Project Manager

Position Relative to MPCA/MDA Proposal

- Contract Administrator
- Project Manager
- Scientist II
- Field Technician

Mr. Loch has over 17 years of experience performing Phase I and II site assessments, UST and AST removals, MPCA PRP limited site and remedial investigations, MPCA VIC/PB Program projects, Superfund projects and regulatory compliance. As a senior project manager in the Plymouth, MN office, he has experience working with utilities, petroleum dispensing companies, bulk petroleum suppliers, pipeline companies, the MPCA, the MDC – Petrofund program, MN DOT, Federal General Services Administration (GSA) and other public and private sector clients. Mr. Loch's responsibilities include project budget tracking, client communications and development, site and off-site access, directing and conducting site investigations, technical report preparation and review, regulatory agency communication, remedial investigation planning and implementation. Chris has successfully managed the MDC – Petrofund Abandoned Storage Tank Removal Program contracts from 2004 through the present. In addition, Mr. Loch currently manages Carlson McCain's MPCA Fund Financed Multi-site contract since 2013. Furthermore, he has developed an excellent working relationship with a great number of MPCA and MDC staff.

Specialization

- MDC – Petrofund Abandoned Storage Tank & MPCA Fund Financed Multi-Site Contracts management
- Project management of MPCA PRP limited site and remedial investigation sites
- UST and AST removal supervision, sampling and management
- VIC, Petroleum Brownfields and Superfund sites
- Impacted soil excavation and clean-up management
- Technical reporting
- Regulatory/client liaison
- Access agreements
- Phase I and II site assessments
- Abandoned tank pre-removal assessment
- Contractor solicitation, coordination and oversight
- Soil boring oversight, screening and sampling
- Monitoring well installations, development and sampling
- Ambient, soil-gas and sub-slab vapor sampling/monitoring/BMPs
- Petrofund reimbursement applications
- Hydrogen release compound remediation

Tank Removal/Petroleum Site Investigation and Remediation

- Primary contract manager for the MDC – Petrofund Abandoned Storage Tank Removal Program from 2004 to present, successfully managed over 200 projects throughout MN;
- Primary project manager for 44 MPCA Fund Financed Multi-Site Contract projects from 2013 to the present;
- Best Oil/Little Store Inc. multiple site assessments, tank system compliance evaluations, UST removal and subsequent investigations throughout northern MN;
- Travel Centers of America Minit Mart gas stations - tank removals, system upgrades and subsequent investigations at sites throughout northern MN;
- White Bear Lake Holiday station store tank installation, impacted soil excavation and management, and investigation;
- Farmington School District buildings UST removals;

- GSA building UST removal and LSI in Minneapolis, MN;
- Xcel Energy Sherco Generating Plant UST removals in Becker, MN;
- Hermantown BP UST system removal and remedial investigation;
- S&R Market remedial investigation in Ogilvie, MN;
- Former Dalbo Foods emergency water well sampling, carbon system installation and investigation activities;
- Denny Residence LSI and sub-slab soil gas sampling management in Wayzata, MN;
- Katter and Siska properties impacted soil excavation and disposal management with subsequent investigations at each site located in Edina and Minneapolis, MN;
- General UST removal oversight and management activities for several tank removal contractors with subsequent investigation at sites throughout MN; and
- Contractor supervision, permitting and tank status notifications for tank removals at sites statewide

Brownfield Redevelopment/Superfund

- Avestopolis Cleaners Hennepin County Environmental Services assessment and MPCA Superfund investigation & vapor mitigation in Minneapolis, MN;
- Former Northern Auto Parts PB Enrollment, investigation and work plan;
- Gardenwood Redevelopment in Blaine, MN;
- Shoreview Sinclair PB program redevelopment, MN;
- Former Kath Fuel Oil Service Superfund investigation in North Branch, MN

Phase I and II Environmental Site Assessments

- Best Oil Company/Little Stores, Inc., sites throughout Minnesota;
- St. Louis Park BP Phase II Assessment;
- Bluewater Yachts Phase I and II Assessments in Mora, MN;
- Former Bremer Bank Phase I and II Assessments in Milaca, MN;
- Enbridge Energy, various site assessments in North Dakota

Education/Licenses/Registrations

- B.S., Hydrogeology and Environmental Studies, University of MN - Duluth, 2000
- Certified Minnesota Underground Storage Tank Supervisor (#1109)
- Wetland Delineation and Management, U.S. Army Corps of Engineers
- OSHA, 40-hour Health & Safety Training
- OSHA, 8-hour Supervisors Health & Safety Training

Barb A. Ryan, P.G., CHMM - Project Manager/Senior Geologist

Position Relative to MPCA/MDA Proposal

- Project Manager
- Scientist II
- Health & Safety Officer

Ms. Ryan is a professional geologist located in our Blaine, Minnesota office with over 28 years of experience performing Phase I and II site assessments, MPCA PRP investigations, VIC/PB Program projects and regulatory compliance. She has experience working with utilities, railroads, transportation departments, the U.S. Army Corps of Engineers, and other public and private sector clients. Ms. Ryan has provided management and technical review of multiple Phase I and II site assessments, site investigations, UST removals, impacted soil excavation and petroleum remediation investigations. She is Carlson McCain's current health & safety officer, coordinating 40-hour hazardous materials training and 8-hour refresher courses along with reviewing and providing technical guidance for site specific health and safety plans.

Specialization

- Project management of VIC, RCRA and Petroleum Brownfield Sites
- Phase I and II site assessments/limited subsurface investigations
- Hazardous materials management
- Technical reporting/report review
- Regulatory/client liaison
- Contractor coordination
- Regulatory compliance

Brownfield Redevelopment

- Xcel Energy High Bridge Power Plant, MN;
- Eldercare Lots – Senior Living Community, Minneapolis, MN;
- Golf Courses (Minnetonka Country Club and 3M's Tartan Park);
- Bromley Property, Blaine, MN;
- Centerpoint Energy Corridor;
- Xcel Riverside Outlots, Minneapolis, MN;
- Bossen Field, Minneapolis, MN;
- AW Beadblasting, Minneapolis, MN;
- Former Lee's Wrecking, Blaine, MN;
- Laidlaw - Solidification, Inc, Brooklyn Park, MN;
- Lake States Lumber/Woodland Container, Aitkin, MN;
- Knoll Property, Blaine, MN;

Phase I and II Environmental Site Assessments

- Minnesota Department of Transportation (Mn/DOT), Management of over 50 maintenance sites or traffic corridors located throughout Minnesota;
- CenterPoint Energy, MERP pipeline project, MN;
- Xcel Energy, various sites throughout Minnesota and South Dakota;
- Enbridge Energy, various sites in northern Minnesota;
- Red Lake Band of Chippewa DNR, Red Lake, Minnesota;
- U.S. Army Corps of Engineers, MN and ND;
- Chrysler Corporation, Minnesota, Iowa, Kansas, Ohio, California;
- Former Grain Belt Brewery Gasthaus and Maintenance Building, MN;
- Canadian Pacific Railway, Belknap Railroad Yard, WI;
- Canadian Pacific Railway, ND;
- Mn/DOT, Multiple Locations, MN;
- UST Petroleum Release Sites, Minnesota, Wisconsin, and Iowa;
- U.S. Army Corps of Engineers, Former Gasoline Station, Automobile Salvage Yard, and Dump Site, WI;
- Amoco Oil Company, MN and WI;
- McLeod County Highway Department, MN;
- Best Oil Company Phase I assessments for properties in Cloquet, MN;
- Frattalone Excavating, MN;
- Bluewater Yachts Phase I & II assessments in Mora, MN

Education/Licenses/Registrations

- B.S. Geology, Winona State University, Minnesota, 1990
- Certified Hazardous Materials Manager, 2005;
- Professional Geologist, Minnesota, 1998;
- Professional Geologist, Wisconsin, 1996; and,
- Asbestos Inspector A112651

James B. Crowl, III, P.G. - Project Manager/Senior Hydrogeologist

Position Relative to MPCA/MDA Proposal

- Project Manager/Technical Advisor/QA &QC
- Scientist II

Mr. Crowl is a hydrogeologist with nearly 26 years of environmental consulting experience. He has managed and provided technical expertise for wide variety environmental and remedial investigations. His primary areas of expertise include Brownfield redevelopment and geologic and hydrogeologic investigations for landfills. He also has expertise with environmental and exploratory drilling techniques, well construction and installation, technical reporting and client/agency liaison, geologic/hydrogeologic interpretation, hydraulic characterization, borehole geophysics and environmental sampling.

Specialization

- Brownfield Redevelopment
- Project management, investigation and remediation for VIC, PB & Superfund sites
- Technical support & senior review for petroleum investigation and remediation
- Geologic & hydrogeologic characterization for landfills
- Regulatory compliance
- Client/Agency liaison

Brownfield Redevelopment

- Former Northern Auto Parts PB Enrollment, investigation and work plan;
- Columbia Heights Industrial Park, Columbia Heights, MN;
- Louie's Auto Salvage, Champlin, MN;
- Port River Walk, Coon Rapids, MN;
- St. Paul Terminals, Ramsey, MN;
- Former Shorty's Towing, Spring Lake Park, MN;
- Gardenwood Redevelopment, Blaine, MN;
- Knauff Salvage Yard, Newport, MN;
- 39th and Central Redevelopment Project, Columbia Heights, MN;
- IMI Cornelius, Anoka, MN;
- Lewis Nut & Bolt/Metal Coatings, St. Paul, MN;
- Former Watkins Trucking, St. Paul, MN

Environmental Site Assessments and Remediation

- Avestopolis Cleaners MPCA Superfund investigation & vapor mitigation in Minneapolis, MN;
- Kath Fuel Service bulk facility chlorinated assessment in North Branch, MN;
- USACE Minuteman III Dismantlement, Grand Forks Air Force Base, ND;
- USACE, Ellsworth Air Force Base, SD;
- USACE, Badlands Bombing Range, SD;
- Dickinson Air Force Facility, Dickinson, ND;
- Xcel Energy, Former MGP Site, Chippewa Falls, WI; Grand Forks, ND;
- Xcel Energy, Former MGP, Grand Forks, ND

Hydrogeologic Investigations

- Vonco II Industrial Landfill - Becker Township MN;
- Vonco IV Demolition Landfill - Austin MN;
- Vonco V Demolition Landfill - Duluth, MN;
- Bueckers City Sanitation Facility - Sauk Centre, MN;
- Hansen Demolition Landfill - Hutchinson, MN;

- Thunder Butte Special Waste Landfill - Campbell Co., WY;
- Lightning Butte Special Waste Landfill - Converse Co., WY;
- Bison Butte Special Waste Landfill - Mountrail Co., ND;
- Smoky Butte Special Waste Landfill - Divide Co., ND;
- Chimney Butte Special Waste Landfill - Billings Co., ND;
- Steele County Landfill - Blooming Prairie, MN;
- Renville County Landfill - Renville, MN;
- MCES Wastewater Treatment Plant - St. Paul, MN;
- Cedar Hollow RDF - Owensville, MO;
- Black Oak RDF - Hartville, MO;
- Ozark Summit RDF - Rolla, MO;
- Marissa RDF - Marissa, IL

Education/Licenses/Registrations

- B.S., Hydrogeology/Environmental Geology, U of M, Duluth, 1991
- Professional Geologist, Minnesota
- Co-chair for the Professional Development Committee of EDAM
- Membership Committee of MN Brownfield
- OSHA, 40-hour Health & Safety Training
- OSHA, 8-hour Supervisors Health & Safety Training

Nick Bonow, P.E., P.G. – Environmental Engineer/Hydrogeologist

Position Relative to MPCA/MDA Proposal

- Engineer III
- Scientist II

Mr. Bonow has over 14 years of experience in civil and environmental consulting performing a wide variety of duties including waste management facility permitting, design, and monitoring; subsurface investigation; groundwater monitoring and reporting, Phase I and II site assessments, UST removals, PRP limited site and remedial investigations, VIC Program projects, and regulatory compliance. As a senior engineer/scientist in the Plymouth, MN office, Mr. Bonow has a diverse skill set and his experience ranges from preparing engineering designs and permit documents to developing groundwater monitoring plans and performing and interpreting aquifer tests. He has performed permitting and environmental review for land disposal sites and resource development projects; conducted environmental site investigations; and performed groundwater modeling. Mr. Bonow has extensive field experience and has provided on-site construction management and/or driller oversight for numerous projects. Additionally, he has expertise in general field tasks such as sampling, logging, waste profiling, and surveying. Mr. Bonow has worked extensively with MCPA staff on a number of solid waste and site investigation/remediation projects, and also has worked successfully with numerous local authorities on the county and city level.

Specialization

- Solid waste management facility permitting, design, and monitoring
- General hydrogeologic site investigation and characterization
- Groundwater flow regime analysis and monitoring network design
- Technical planning and reporting
- Regulatory/client liaison
- Phase I and II site assessments
- UST and AST removal supervision, sampling and management
- VIC and risk assessment reporting
- Contractor coordination and oversight
- Soil boring oversight, screening and sampling

- Monitoring well installations, development and sampling

Tank Removal/Petroleum Site Investigation and Remediation

- GRE Cambridge Peaking Plant UST removal; LSI & RI;
- G&T Trucking UST removal, excavation reporting;
- Preparation and technical review and edit of numerous LSI and RI reports;
- Conducted and reviewed hydrogeologic evaluations & calculations for petroleum investigation sites throughout MN

Phase I and II Environmental Site Assessments / Site Redevelopment

- Moon Valley former gun range, Chanhassen, MN;
- Marsh Lake Hunting preserve gun range, Chaska, MN;
- Former unregulated public dump site, Slayton MN;
- Former auto recycling facility and unregulated dump site, Jordan MN;
- Former auto sales and recycling facility, Tonka Bay, MN;
- Village on Quebec soil vapor collection system operation and monitoring, New Hope, MN

Petroleum Storage Management and Compliance

- SPCC plan preparation for multiple facilities in Minnesota and Wyoming

Environmental Compliance / Reporting

- SPCC plan preparation for facilities in Newport, Elk River and Becker, MN;
- Groundwater monitoring reporting including statistical analysis for numerous landfills in Minnesota and North Dakota;
- Leachate evaluation and discharge reporting for combustor ash landfill in Becker, MN;
- EAW preparation for waste management and aggregate mining facilities in MN

Hydrogeologic Site Characterizations

- Xcel Energy A.S. King Generating Station proposed ash landfill – West Lakeland Twp., MN;
- Multiple landfill development sites in North Dakota, Montana, and Wyoming
- Great River Energy combustor ash landfill expansion – Becker, MN;
- IHD Solids Management special waste landfill expansion – Williston, ND;
- SKB Lansing Industrial and C&D Landfill monitoring network evaluation – Austin, MN

Education/Licenses/Registrations

- B.S., Geology, University of MN – Twin Cities, 2004
- B.GeoE., Geological Engineering, University of MN – Twin Cities, 2004
- Licenses Professional Engineer – MN, ND
- Licensed Professional Geologist – MN
- OSHA, 40-hour Health & Safety Training
- OSHA, 8-hour Supervisors Health & Safety Training

David M. Katzner, G.I.T. – Staff Geologist

Position Relative to MPCA/MDA Proposal

- Scientist I
- Field Technician
- GIS/CADD Specialist

Prior to working at Carlson McCain, Inc., Mr. Katzner worked approximately 10 years as an environmental specialist at Sherburne County in Elk River, Minnesota and 2 years at

an environmental consulting firm in St. Cloud, Minnesota. Mr. Katzner's expertise includes landfill and other solid waste facility permitting and operations; hydrogeologic investigation and groundwater monitoring and reporting at landfills; brownfields projects including site geological characterization, remedial activities, groundwater and soil sampling, and drilling oversight; and County water and municipal wellhead protection planning projects including assistance with drafting plans and in advisory roles on such committees. Mr. Katzner has now been with Carlson McCain as a staff geologist in the Plymouth, Minnesota office for over a year and has provided tank removal oversight, familiarized himself with MPCA PRP Guidance, sampling and conducted MPCA PRP soil and groundwater investigations. In addition, Mr. Katzner assisted Xcel Energy staff with management of environmental monitoring systems, database management and regulatory groundwater monitoring and reporting for nine facilities (six landfills) in Minnesota and South Dakota; and water supply exploration and wellhead protection planning.

Specialization

- Geographic Information Systems (GIS) Mapping
- Technical reporting
- Client/Agency liaison
- UST removal oversight, sampling and reporting
- Contractor scheduling, coordination and oversight
- Soil boring/test hole oversight, screening, and sampling
- Monitoring well installations, development, and sampling
- Impacted soil excavation oversight and sampling
- Phase II Environmental assessments
- Petrofund reimbursement application preparation

Tank Removal/Assessments/Petroleum Site Investigation and Remediation

- Former Stacy BP UST system removal in Stacy, MN;
- Former Johnson Tire site and off-site LSI activities in Red Wing, MN;
- S&R Market remedial investigation groundwater sampling in Ogilvie, MN;
- Xcel Energy Black Dog Plant LSI in Burnsville, MN;
- Norton residence LSI in Dundee, MN;
- Former residence soil excavation, report prep, and Petrofund reimbursement in Santiago, MN;
- Convent RI monitoring and report prep in St. Cloud, MN;
- Pan O Gold Baking Co excavation, LSI, and RI monitoring and report prep in St. Cloud, MN;
- Former Gas Station RI well installation, GW monitoring, and report prep in Keewatin, MN;
- Murphy Oil RAP Implementation field work and report prep in Hibbing, MN;
- Auto Parts Headquarters LSI field work and report prep in Grand Rapids, MN

Education/Licenses/Registrations

- B.S. Geology and Hydrology, St. Cloud State University – St. Cloud, MN, 2003 and 2004
- OSHA, 40-hour Health & Safety Training
- OSHA, 8-hour Supervisors Health & Safety Training
- Geologist-In-Training (Minnesota)
- MPCA, Solid Waste Landfill Operator Certification (Type II)

Megan A. Lindstrom, E.I.T., G.I.T. – Staff Engineer/Geologist

Position Relative to MPCA/MDA Proposal

- Scientist I
- Engineer I
- Field Technician

Ms. Lindstrom is a geological engineer and geologist with four years of environmental permitting, compliance, and consulting experience. Prior to Carlson McCain, Megan was employed for 1.5 years at the Minnesota Pollution Control Agency as a hydrologist where she assisted in the permitting and compliance of solid waste facilities. Since joining Carlson McCain, Ms. Lindstrom has conducted tank removal oversight and sampling; sub-surface investigations with knowledge in environmental drilling techniques, environmental sampling of impacted soil, groundwater, and vapor, monitoring well construction and installation, and geologic/hydrogeologic interpretation; provided construction oversight including landfill construction quality assurance/quality control and field screening of contaminated soil for disposal; and experience in technical reporting including generation of quality assurance project plans, field sampling and analysis plans, solid waste facility permit applications, annual environmental monitoring reporting for solid waste facilities and hydrogeologic investigation reporting. Ms. Lindstrom has become well versed with MPCA Vapor Intrusion BMPs, mitigation and system diagnostics. She is also knowledgeable in field-generated data manipulation and analysis using software such as Surfer®, AutoCAD®, Geo Studio®, gINT®, Microsoft Excel®, AQETSOLV ®, HOBOware®, and Win-Situ®.

Specialization

- Technical reporting
- Preparation of boring logs and figures associated with sub-surface investigations
- UST removal oversight and sampling
- Contractor scheduling, coordination. and oversight
- Soil boring oversight, screening, and sampling
- Monitoring well installations, development, and sampling
- Ambient, soil gas and sub slab vapor sampling/monitoring/BMPs
- Impacted soil excavation oversight and sampling
- Phase II Environmental assessments

Tank Removal/Assessments/Petroleum Site Investigation and Remediation

- Farmington ISD UST removals at schools in Farmington, MN;
- Former 1120 West Broadway gas station Phase I & II Assessments, Minneapolis, MN;
- Former P&K's Pizza petroleum investigation in Redwood Falls, MN;
- Former J&J Castings Phase II investigation in Two Harbors, MN;
- Former Northern Auto Parts PB program assessment in Minneapolis, MN;
- Former Minnetonka Country Club contaminated soil exc., Minnetonka, MN;
- Hermantown BP UST system removal oversight in Hermantown, MN;
- Primeau Residence Abandoned UST removal in Tonka Bay, MN

Site Characterization/Remediation

- Monticello Nuclear Generating Plant, Monticello, Minnesota;
- Nico Products – Minneapolis, MN;
- Twin City Metalseal & Powdercoating – Minneapolis, MN;
- Former Dealers Manufacturing (Reviva) – Fridley, MN

Education/Licenses/Registrations

- B.S. Geology, University of Minnesota – Twin Cities, 2013
- B.S. Geological Engineering, University of Minnesota – Twin Cities, 2013

- Geologist-In-Training
- Engineer-In-Training
- OSHA, 40-hour Health & Safety Training
- OSHA, 8-hour Supervisors Health & Safety Training

Caitlin J. Castner – Staff Geologist/Environmental Scientist

Position Relative to MPCA/MDA Proposal

- Scientist I
- Field Technician
- GIS/CADD Specialist

Prior to working at Carlson McCain, Inc., Ms. Castner worked approximately 2 years as an environmental specialist at a printing company (Meyers Printing, Inc.) in Minneapolis and at a paper mill (WestRock, Inc.) in St. Paul, Minnesota. Ms. Castner has now been with Carlson McCain as a staff geologist in the Plymouth, Minnesota office for 1.5 years. Since her time with Carlson McCain, she has provided numerous tank removal and in-place abandonment oversight and sampling activities at sites throughout Minnesota. In addition, conducted many MPCA PRP and Fund Financed program soil and groundwater investigations, completed impacted soil excavations, assisted with MN DOT Phase II Assessments, and prepared MPCA Guidance documents and technical reports. She also has experience with analytical data input, management and analysis, technical report preparation, and processing GIS data utilizing ArcGIS. She is also knowledgeable of storm water pollution prevention plans (SWPPPs) & permits, hazardous and non-hazardous waste rules in accordance with Minnesota and Environmental Protection Agency (EPA) regulations.

Specialization

- Technical reporting
- Receptor Surveys and Access
- Preparation of boring logs and figures associated with PRP investigations
- UST removal/in-place abandonment oversight, sampling and reporting
- Contractor scheduling, coordination and oversight
- Soil boring oversight, screening, and sampling
- Monitoring well installations, development, and sampling
- Ambient, soil gas and sub slab vapor sampling/monitoring
- Impacted soil excavation oversight and sampling
- Phase II Environmental assessments
- Petrofund reimbursement application preparation

Tank Removal/Assessments/Petroleum Site Investigation and Remediation

- Mn/DOT St. Cloud Truck Station UST system removal and upgrade;
- Xcel Energy Chestnut Facility UST system removal in Minneapolis, MN;
- Cemstone Facility UST removal in Hastings, MN;
- Former Milkhouse Station UST system removal in Pine City, MN;
- Dahl Property UST in-place abandonment in St. Paul, MN;
- Norton Property LSI in Dundee, MN;
- Former Johnson Tire LSI with additional sub-slab vapor sampling in Red Wing, MN;
- S&R Market RI monitoring, reporting and reimbursements in Ogilvie, MN;
- Crow Residence Abandoned Tank Removal and subsequent LSI in St. Paul, MN;
- Former Sarge's Service off-site access and LSI in Truman, MN;
- Minnoco Center Mart LSI and reimbursement in Centerville, MN;
- Best Oil Storage Facility LSI report preparation (MPCA GD 4-06) in Cloquet, MN;
- Katter Property impacted soil excavation, sampling & reporting in Edina, MN;

- Thompson Residence LSI soil and vapor boring advancement in St. Paul, MN;
- Former Sportstown USA additional LSI and reimbursement in Blaine, MN; and
- Denny Residence LSI with sub-slab soil gas sampling in Wayzata, MN

Education/Licenses/Registrations

- B.S. Earth Sciences with a Geology emphasis, University of Minnesota – Twin Cities, 2014
- OSHA, 40-hour Health & Safety Training
- OSHA, 8-hour Supervisors Health & Safety Training

Marina A. Cord – Staff Hydrogeologist

Position Relative to MPCA/MDA Proposal

- Field Technician
- GIS/CADD Specialist

Ms. Cord is hydrogeologist with 5 years of environmental consulting experience based in our Blaine, Minnesota office. Her primary areas of expertise include geologic/hydrogeologic investigations for agricultural chemical distribution and storage facilities. She also has experience with hazardous materials handling, construction and excavation oversight including disposal of contaminated soil, environmental sampling, well construction and installation, technical report writing, geologic/hydrogeologic interpretation, GPS field data collection using Trimble devices, and in proficient in the manipulation and analysis of data using ArcGIS and AutoCAD. Furthermore, has overseen and assisted with UST removals and investigations. Since her time with Carlson McCain, Ms. Cord has been familiarizing herself with MPCA PRP Guidance and Vapor Intrusion BMPs.

Specialization

- Technical reporting
- Preparation of figures with AutoCAD and ArcGIS
- UST removal oversight and sampling
- Phase I and II site assessments
- Contractor coordination and oversight
- Soil boring oversight, screening and sampling
- Geologic & hydrogeologic investigations
- Impacted soil oversight and sampling

Tank Removal/Assessments/Petroleum Site Investigation and Remediation

- Abandoned Tank Removal Program – Forest Lake ROW UST removal oversight;
- Coughlin Residence LSI in Minnetonka Beach, MN;
- Bridge Street UST removal in Redwood Falls, MN;
- Swift Ave and West Ripley Street UST removal in Litchfield, MN;
- Twin City Metals Phase II Assessment in Minneapolis, MN
- Glacial Plain Co-op Phase II Assessment in Murdock, MN
- Eastern Farmers Co-op site assessments and remediation in Luverne & Adrian, MN
- Woodland Containers assessment and remediation in Aitkin, MN
- Magellan Pipeline assessment and subsequent remediation in Harwood, ND
- Surveyed sample locations using Trimble VRS and import data into AutoCAD for various sites visited throughout Minnesota;
- Utilized GIS to establish well locations for site maps and aerial photos

Education/Licenses/Registrations

- B.A., Geology, University of Minnesota-Morris, 2014

- B.A., Environmental Science, University of Minnesota-Morris, 2014
- OSHA, 40-hour Health & Safety Training
- OSHA, 8-hour Supervisors Health & Safety Training
- Certified First Aid/CPR

Dan Wilke, P.E. – Project Engineer

Position Relative to MPCA/MDA Proposal

- GIS/CADD Specialist
- Engineer II

Mr. Wilke has over 6 years of experience in design, construction and project management. His primary areas of expertise include CADD, environmental site investigation, solid and hazardous waste, municipal, industrial and construction/demolition debris landfill permitting, design, construction and operations. Dan has partaken in landfill and hazardous waste site investigations, feasibility studies, remedial design and storm water modeling. Based in the Plymouth, MN office, he has conducted CADD work for multiple environmental site investigations, assessments, tank removals and remedial investigations.

Specialization

- CADD for technical reports associated with petroleum investigation, remediation, PB, Superfund and VIC sites
- Phase I and II site assessment CADD work
- Technical reporting
- Landfill project engineering, permitting and design
- Contractor coordination and oversight

Tank Removal/Assessments/Petroleum Site Investigation and Remediation

- Best Oil Company site assessments and investigations CADD;
- Travel Center of America (Minit Marts) UST & investigation CADD;
- Kwik Trip station design, stormwater management, grading and utility at sites throughout Minnesota;
- CADD for multiple residential and commercial property PRP site investigations and Phase II assessment throughout MN;
- Provided CADD for multiple tank removal and investigation projects associated with the MDC Abandoned Tank and MPCA Master Service contracts

Landfills

- Blue Buttes Disposal Facility; Keene, ND; CADD, permitting, construction, and technical reporting;
- Indian Hills Disposal Facility; Alexander, ND; CADD, permitting, construction, and technical reporting;
- Chimney Butte Disposal Facility; Fairfield, ND; CADD, permitting, construction, and technical reporting;
- Smoky Butte Disposal Facility; Fortuna, ND; CADD, permitting, construction, and technical reporting;
- Prairie Disposal Special Waste Landfill; Tioga, ND; CADD, permitting, construction, and technical reporting;
- Little Missouri Special Waste Landfill; Marmarth, ND; CADD, permitting, and technical reporting;
- Spruce Ridge Landfill; Glencoe, MN; CADD and construction;
- Ottertail Power Hoot Lake Landfill; Fergus Falls, MN; CADD, permitting, construction, and technical reporting;

- Lightning Butte Disposal Facility; Converse County, WY; CADD, permitting, and technical reporting; and
- Thunder Butte Disposal Facility; Campbell County, WY; CADD, permitting, and technical reporting

Education

B.S. Civil/Environmental Engineering, U of M, Twin Cities, MN – 2009
Certified Professional Engineer, Minnesota, North Dakota, Montana & Wyoming

Ashton A. Kogel, E.I.T. – Staff Engineer

Position Relative to MPCA/MDA Proposal

- GIS/CADD Specialist
- Engineer I
- Field Technician

Ms. Kogel has 3 years of experience working at Carlson McCain as a staff engineer in the Plymouth, Minnesota office. She has experience collecting and recording geophysical data from boreholes, extensive AutoCAD experience and using Geographic Information Systems (GIS) to establish well and boring locations. Since her time with Carlson McCain, she has reviewed and familiarized herself with MPCA PRP Guidance Documents, soil and groundwater sampling protocol, and conducted receptor surveys associated with investigations. In addition, has overseen and assisted field scientist and technical personnel during tank removals and Limited Site Investigations (LSIs).

Specialization

- Technical reporting
- Preparation of figures with AutoCAD for tank removal and PRP remedial investigations
- UST removal oversight, sampling and reporting
- Phase I and II site assessments
- Contractor coordination and oversight
- Soil boring oversight, screening and sampling
- Ambient and soil vapor sampling/monitoring
- Assisted with Petrofund reimbursements

Tank Removal/Assessments/Petroleum Site Investigation and Remediation

- Former Oasis Market tank system removal oversight, LSI drilling, UST Excavation (MPCA GD 3-02), and subsequent LSI report (MPCA GD 4-06) preparation;
- Kohler Residence LSI, including field sampling, utility locate information and AutoCAD figure preparation;
- Minnetonka Moccasin UST in-place abandonment in Minneapolis, MN;
- Former Tartan Park Golf Course Phase II investigation, sample collection and surveying;
- Abandoned Tank Removal Program – Christopherson Residence UST removal oversight, sampling and subsequent AutoCAD figure preparation;
- Surveyed sample locations using Trimble VRS and import data into AutoCAD for various sites visited throughout Minnesota;
- Utilized GIS to establish well locations for site maps and aerial photos

Education/Licenses/Registrations

- B.S. Civil Engineering, University of Minnesota-Duluth, 2014
- OSHA, 40-hour Health & Safety Training
- OSHA, 8-hour Supervisors Health & Safety Training

Matrix Table of Staff Qualifications

Carlson McCain will provide highly qualified staff to meet the anticipated needs and demands for the projects. The following matrix depicts our project staff classifications as described in the request for proposal (RFP). Please refer to resumes listed above for the educational and work experience of our key staff.

	Staff Classifications								OSHA Cert.		Licenses			
Staff Name and Office Location	Project Manager	Engineer III	Engineer II	Engineer I	Scientist II	Scientist I	Field Technician	GIS/CADD Specialist	40 Hour HAZWOPER	8 Hour Refresher (2018)	Professional Engineer	Professional Geologist	Other	Years with Carlson McCain
Chris Loch Office Plymouth	♦				♦		♦		♦	♦			♦[1]	13
Barb Ryan, PG, CHMM Office Blaine	♦				♦				♦	♦		♦	♦[2]	13
Caitlin Castner Office Plymouth						♦	♦	♦	♦	♦		♦		1.5
Megan Lindstrom, GIT, EIT Office Plymouth				♦		♦	♦		♦	♦		♦		2.5
Marina Cord Office Blaine							♦	♦	♦	♦				1
Dave Katzner, GIT Office Plymouth						♦	♦	♦	♦	♦				1.5
Nick Bonow, PG, PE Office Plymouth		♦			♦				♦	♦	♦	♦		14
Dan Wilke, PE Office Plymouth			♦					♦	♦	♦	♦			6
Ashton Kogel, EIT Office Plymouth				♦			♦	♦	♦	♦				3
Jim Crowl, PG Office Blaine	♦				♦				♦	♦		♦		19
Wade Carlson, PG Office Plymouth & Blaine	♦				♦				♦			♦		20

[1] Certified MN UST Removal Supervisor
[2] Certified Hazardous Materials Manager

Company Information

Carlson McCain, Inc. (Carlson McCain) consists of two offices in the state of Minnesota which would provide services, personnel and equipment for the participation of the MPCA & MDA Remediation Master Contract. Office locations, staffing and available equipment assures that Carlson McCain personnel can be at any Minnesota project site within an efficient timeframe. Carlson McCain office locations are as follows:

Corporate Office:
3890 Pheasant Ridge Drive; Suite 100
Blaine, MN 55449
763-489-7900 office
651-285-5954 fax
www.carlsonmccain.com

West Metro Office:
15650 – 36th Ave North; Suite 110
Plymouth, MN 55446
952-346-3900 office
952-346-3901 fax
www.carlsonmccain.com

Carlson McCain has designated Mr. Chris Loch to answer any questions pertaining to this proposal. Mr. Loch's contact information is provided below:

Proposal Contact
Chris Loch
15650 – 36th Ave North;
Suite 110
Plymouth, MN 55446
952-346-3913 office
651-285-5954 cell

Please visit our Carlson McCain website (www.carlsonmccain.com) for updated information about our company.

Knowledge of MPCA Petroleum Remediation Program Guidance & Minnesota Statutes 115C.01 – 115C.13

Carlson McCain is a Registered Petrofund Consultant (#2632).

Carlson McCain is a Certified Minnesota UST Closure Contractor (MPCA

Our track record with regards to obtaining MPCA Closure for numerous sites demonstrates our ability to comply with PRP Guidance Documents and current Minnesota Statutes 115C.01 through 115C.13. We are versed in all aspects of the PRP with respect to evolving General Guidance, specifically UST and AST Oversight and Sampling, Release Reporting, Soil Excavation and Treatment, Receptor Surveys, Vapor Intrusion assessment, Remedial Investigation/Corrective Action and Development. As of late, Carlson McCain has been immersed with projects following MPCA's Vapor Intrusion BMPs. Based on our broad cliental and from previous and current experience through our Contracts with the MDC - Petrofund Abandoned Tank Removal and MPCA Fund Financed Multi-Site Programs, we have conducted work across the entire State of Minnesota. To that end, we are accustomed meeting the requirements set forth by the PRP and have worked with multiple MPCA staff from different regions across the State to provide timely, cost effective solutions for sites ranging from small residential tank spills to larger scale tank failures and more significant petroleum releases. Carlson McCain takes pride in working with the MPCA to meet Guidance standards and goals associated with petroleum investigations, ultimately providing our clients the best technical service available and assuring eligible MDC - Petrofund reimbursement.

Carlson McCain is in constant contact with MPCA Project Mangers and Hydrogeologists for site specific petroleum investigations, always keeping up with any changes or additions to PRP Guidance. In addition, Carlson McCain staff attends all MPCA "Consultant Day" and recent Minnesota tank compliance workshops, which have primarily focused on any current or future changes to Guidance Documents and gives insight to potential changes or rules in the future.

In addition, Carlson McCain staff have completed various projects including right of way corridors and Brownfield Redevelopment projects which have involved multiple sites and coordination within multiple programs including the MPCA PB Program and the Voluntary Investigation and Cleanup (VIC) Program. This work experience almost always requires specific activities focusing on petroleum related issues and adherence to Guidance set forth for within the PRP.

Experience Working with the MPCA Petroleum Remediation Program

For the past 20 years, Carlson McCain has worked on over 600 tank removal and site assessments that lead to Standard Limited Site Investigations (LSIs) and Remedial Investigations (RIs) throughout Minnesota. Sites investigated have either lead to MPCA leak-site closure or require Corrective Action Design (CAD) for no further action determinations. Up to 10 current leak-sites are expected to reach closure within the next several months. Our active project workload between our Minnesota offices routinely

manages between 30 to 35 PRP sites, which include tank removals and Phase II investigation work which lead to petroleum investigation work.

Since 2013, Carlson McCain is currently and has conducted over 40 investigations under the MPCA Fund Financed Multi-Site contract as a Level 1 Petroleum Services Only contractor. Working directly with the MPCA PRP Project Leaders, Carlson McCain has successfully completed each leak-site work order. Understanding the PRP program has assisted Carlson McCain to meet work order deadlines, "close" the leak-site, and potentially correspond additional work to the MPCA that is necessary to meet PRP outcomes. Carlson McCain is currently managing six projects under the MPCA Fund Financed contract, four of which are targeted to "close" with investigation work. Two additional work orders are underway for work beyond initial scopes that did not provide information to "close". Carlson McCain and the MPCA hope that additional investigative work may lead to leak-site closure before fiscal year end.

Carlson McCain has also worked on well over 250 unrelated underground storage tank (UST) removal projects within the State over the years, which were not required to report to the MPCA or were closed with no further action necessary. A large number of these sites comprise of tank removals associated with the MDC – Petrofund Abandoned Storage Tank Removal Program since 2004. Following MPCA PRP sampling guidance never identified petroleum impacted soil or a release from a giving tank(s).

Experience Working Under Contracts for Federal & State Agencies or Departments

Carlson McCain has extensive experience and knowledge of the various Federal, State, and Local regulatory requirements. We are currently working or have worked with the following agencies:

- Minnesota Department of Commerce: Petroleum Abandoned Storage Tank and Contaminated Soil Removal/Disposal contracts from 2004-2008; 2008-2012 and 2013-2018.
- Minnesota Pollution Control Agency: Multi-Site Fund Financed Contract (2013-2018). Currently conducting investigation/remedial investigations at properties throughout Minnesota in regards to petroleum contamination from tank releases.
- Minnesota Department of Transportation Contaminated Property Assessments Prequalification (2005-2018). Property transaction assessments, UST removal and petroleum investigations, media sampling at spill sites and general assistance related to contaminated media, Phase I and Phase II Investigations, Limited Site Investigations, and contaminated soil removal oversight.
- Minnesota Department of Transportation: Asbestos and Regulated Waste Prequalification (2005-2018). Asbestos and regulate waste assessments and removal oversight (multiple locations statewide).
- Minnesota Department of Agriculture.
- Minnesota Department of Administration (2009-2017): Approved consultant for environmental services statewide.
- Metropolitan Airports Commission: Light Rail Transit Tunnel portal investigations and impacted soil removal management.
- Minnesota Air National Guard: Runway and aircraft storage area soil investigation and excavation management.

Carlson McCain is pre-qualified with Mn DOT for Contaminated Property Investigations, and we are also a MnDOT pre-approved contractor for asbestos and regulated waste assessment services.

We also have experience working with the following governmental entities:

- Metropolitan Council: Master Services Contract for right of way services.
- Hennepin County: Professional Environmental Consulting Services Contract #107917 and A178384 (2007-2018).
- Multiple city and county contracts.
- Minneapolis Park & Recreation Board (2014-2018)
- Federal General Services Administration (Site-specific UST removal and investigation

3. LIMITED SITE OR REMEDIAL INVESTIGATION PROJECT DESCRIPTIONS

Carlson McCain is currently providing limited site and/or remedial investigations at numerous petroleum release sites in Minnesota. Our services include project management, Site and off-site access, drilling oversight, sampling, coordinating analytical services with subcontracted laboratories, and regular reporting of results and recommendations to the MPCA. The following project examples detail our experience with the services required under this contract.

Limited Site or Remedial Investigation Example #1

Name of Project	**HERMANTOWN BP – HERMANTOWN, MN**
Client	**Teberg Corporation** Mr. Curt Teberg – (218) 722-8428
Site Description	**MPCA Leak #LS0018507–** Former gas station and repair facility located at 4803 Miller Trunk Highway in Hermantown, MN. A total of three 12,000-gallon gasoline USTs, four fuel dispensers, associated piping and canopy were removed from the site during RI activities.
Tasks Performed by Staff	**Project Manager:** Chris Loch **Senior/Technical Review:** Barb Ryan and Chris Loch **Field Staff:** Megan Lindstrom and Chris Loch **Technical Reporting:** Ashton Kogel, Chris Loch & Caitlin Castner **Computer Aided Drafting:** Ashton Kogel **Petrofund Reimbursement Applications:** Chris Loch and Caitlin Castner
Selected Subcontractors	**Remedial Investigation (RI) direct push borings and monitoring well installation:** Range Environmental Drilling (Range) **UST system removal:** Twin Ports Environmental & Construction (TPEC) **Laboratory analysis:** Pace Analytical Services, Inc. (Pace)
Description of Tasks Performed 	Carlson McCain was selected by the responsible party (RP) to conduct the MPCA requested Remedial Investigation (RI) at the site. The RI was completed at the request of the MPCA to assess the extent and magnitude of petroleum impacted soil and groundwater from a broken fuel dispenser seal releasing gasoline. The scope of work included advancement of direct-push soil borings around the fuel dispenser island area and underground storage tank (UST) basin in an attempt to define the horizontal and vertical extent of petroleum impacted soil and groundwater. Due to the discrepancy of the total amount of gasoline released, the MPCA also requested the installation of up to three site monitoring wells for quarterly sampling. In addition, soil vapor borings were advanced toward the site building, neighboring property structures and buried utility lines for the collection of soil gas samples to assess the potential of soil vapor intrusion impacts. Associated with the RI are vapor risk assessment, surface water risk assessment and a water well receptor survey in accordance with MPCA guidance documents.

Soil, groundwater and soil gas samples collected from soil and vapor borings advanced throughout the Site provided impacted soil and groundwater plume definition. In addition, two quarterly sampling events conducted from the three installed monitoring wells evaluated site hydrogeology and suggested low magnitude, stabile impacted plume characteristics. Monitoring wells were drilled in accordance with Minnesota Department of Health Well Construction Code (Minnesota Rules 4725). All well installation and soil boring advancement activities were supervised by Carlson McCain staff, Mr. Chris Loch.

While the RI was underway, the RP/property owner decided to have the USTs, fuel dispensers, associated piping and canopy (tank system) removed. Carlson McCain contacted the MPCA Project Manager about the tank system removal and information would assist recommendations associated with the completed RI report (MPCA Guidance Document 4-06). Megan Lindstrom, of Carlson McCain, was on-site to conduct UST system sampling activities. Impacts were not discovered below the removed USTs. However, impacted soil was identified below each removed fuel dispenser. Because the current RI encompassed the former fuel dispensers, the MPCA did not assign a new Leak-site and requested that info be provided under the current leak ID. Carlson McCain completed the UST Excavation Report (MPCA Guidance Document 3-02), which would be submitted with the completed RI Report.

Subsequent to tank system removal and RI activities, Ashton Kogel, Caitlin Castner and Chris Loch of Carlson McCain completed the RI Report (MPCA Guidance Document 4-06) recommending Leak-site closure.

Outcome Achieved

The RI suggested that the two completed quarterly sampling events appear to have defined the extent of impacted groundwater and indicated stabilization of the discontinuous contaminant plume. Therefore, additional investigation activities, vapor intrusion assessments and receptor surveys are not necessary for the Site release. Subsequent to UST system removal and remedial investigative work completed by Carlson McCain, the MPCA assigned Leak-site closure on June 29, 2017. The MDC – Petrofund approved reimbursement for the eligible costs to complete UST system removal sampling and MPCA requested RI activities.

Limited Site or Remedial Investigation Example #2

Name of Project	**S&R MARKET – OGILVIE, MN**
Client	**Ms. Seema Mahindru** (763) 533-9266
Site Description	**MPCA Leak #LS0019434** – Current gas station and retail store located at 101 West Highway 23 in Ogilvie, MN. A petroleum release (diesel fuel) was discovered during a routine MPCA Tank Inspection. The MPCA regional tank inspector noted a product drip from below the diesel fuel dispenser. Because the dispenser does not have under dispenser containment (UDC) and product was directly impacting soil, the release was notified to the MN State Duty Officer.
Tasks Performed by Staff	**Project Manager:** Chris Loch **Senior/Technical Review:** Barb Ryan and Chris Loch **LSI, RI and Add. Investigation drilling and field sampling activities:** Caitlin Caster and Chris Loch **Quarterly Groundwater Monitoring:** Caitlin Castner, Dave Katzner and Chris Loch **Report Preparation:** Chris Loch, Caitlin Castner and Ashton Kogel **Computer Aided Drafting:** Dan Wilke and Ashton Kogel
Selected Subcontractors	**LSI direct push borings:** Range Environmental Drilling (Range) **RI Monitoring well installation:** Range **Additional LSI & Off-site borings:** Range **Initial LSI, RI and Quarterly GW Sampling Laboratory analysis:** Test America, Inc. (TA) **Additional Soil gas analysis:** Pace Analytical Services (Pace)
Description of Tasks Performed	Carlson McCain was contracted by the responsible party (RP) to work with the MPCA and address a petroleum release (diesel fuel dispenser drip) discovered during tank inspection activities conducted by an MPCA regional tank inspector. A total of five soil borings (GP-1 through GP-5) and four vapor borings (VP-1 through VP-4) were initially advanced across the Site as part of a Limited Site Investigation (LSI) conducted on July 22, 2014, to assess the vertical and horizontal extents of soil, groundwater and soil-gas contamination associated with the diesel fuel release. In addition, Carlson McCain conducted vapor and water well receptor survey walkthroughs to obtain nearby property addresses, observe or identify private water supply wells and to confirm any potential vapor accumulation (i.e. noticeable odors, confirm basement and/or sump, private water wells present, etc.). Receptor surveys indicated that the Site and surrounding properties are connected to municipal (City of Ogilvie) water and sanitary sewer services. The vapor receptor survey did not identify petroleum impacts to nearby property basements or underground structures. In addition, receptor survey walkthrough, MDH online MWI database review, property owner contacts and returned survey letters did not identify

Carlson McCain worked with the MPCA, the RP, off-site property owners, and the City of Ogilvie to complete the Remedial Investigation recommending Leak Site Closure

private wells neighboring the Site.

The results of the LSI appeared to identify contamination associated with closed MPCA Leak-Site #LS0002607. However, elevated diesel range organic (DRO) concentrations were identified in soil and groundwater samples collected throughout the Site and was not previously investigated during the historical gasoline release. Subsequently, the MPCA requested that a Remedial Investigation (RI) be completed in a letter dated May 26, 2015. In summary, the MPCA requested the following for RI completion:

- Advancement of additional soil and vapor borings to define the magnitude and extent of diesel fuel and gasoline petroleum contamination;
- Vapor survey of manholes noted in previous LSI;
- Installation of three Site monitoring wells; and
- Two quarterly sampling events from monitoring wells.

After correspondence with the MPCA, Carlson McCain completed the requested RI scope of work. Prior to RI activities, Carlson McCain retained off-site access from two adjoining, side-gradient properties for additional soil and vapor boring advancements.

Once buried utilities were cleared, Carlson McCain oversaw the installation of three Site monitoring wells. The monitoring wells were installed using hollow stem augers (HSA). The monitoring wells were completed in areas accepted by the property owner and encompassing the release source area, side and down-gradient groundwater plume extents. The monitoring wells were drilled in accordance with Minnesota Department of Health Well Construction Code (Minnesota Rules 4725). In addition to monitoring well installation, a total of six soil and four soil vapor borings were advanced by direct-push technology for the collection of Site and off-site soil, groundwater and soil-gas samples conducted on October 29, 2015. Monitoring well installation supervision, soil and vapor boring advancement and sampling activities and limited vapor survey of nearby manholes were conducted by Carlson McCain field geologists. In addition, off-site access agreements were conducted by Chris Loch.

Supplemental Site and off-site soil borings (GP-6 through GP-11) were advanced in locations to further assess and potentially define DRO impacts and the residual gasoline plume. Results from soil and groundwater samples indicated a significant decrease in petroleum constituent concentrations when compared to previous LSI soil boring results (GP-1 through GP-5).

A total of four vapor borings (VP-6 through VP-9) were advanced next to respective Site and off-site soil borings. Soil-gas sampling did not identify petroleum constituent concentrations exceeding MPCA residential Intrusion Screening Values (ISVs) referenced at that time with the exception of soil-gas samples VP-7 and VP-8, advanced towards off-site property structures to the northwest and north of the

Site, respectively. However, the concentrations are below the MPCA's current 33X Commercial ISVs.

A limited vapor survey was conducted within a nearby covered manhole and two nearby open storm sewer grates/catch basins, and measured with a photoionization detector (PID) and 4-gas meter. The vapor survey resulted in no detectable or unusual readings.

Subsequent to well development and surveying of three Site flush-graded monitoring wells, two quarterly groundwater sampling events were conducted by Carlson McCain staff on November 6, 2015 and February 4, 2016. The two quarterly groundwater sampling events indicated that petroleum constituents are present at concentrations significantly lower than concentrations identified during initial LSI activities. In addition, a very low hydraulic gradient exists in regards to a fluctuating water table and general flow directions to the north, northwest and northeast. After the second sampling event, Carlson McCain completed the Monitoring Report Form (MPCA Guidance Document 4-08), recommending additional soil gas/vapor intrusion investigation for the Site building. Additional soil gas/vapor intrusion investigation was recommended due to the shallow, petroleum impacted soil and groundwater identified throughout the Site. The Monitoring Report was completed by Chris Loch and reviewed by Barb Ryan.

The results of the RI appeared to define both diesel and historical gasoline impacted groundwater plumes. Subsequent to review of the Monitoring Report, the MPCA requested additional work in a letter dated October 24, 2016. In summary, the MPCA requested the following for additional RI completion:

- Four quarters of additional groundwater sampling from each monitoring well to establish plume stability over time;
- Additional soil borings to the south of the tank basin/dispenser area to complete plume delineation; and
- Additional soil-gas samples adjacent to sanitary line utility corridor and northwest of VP-7, towards a neighboring single-family home.

After correspondence with the MPCA, Carlson McCain completed the requested additional RI activities. Prior to additional RI activities, Carlson McCain gained off-site access from the southern adjoining property (commercial building) for additional soil and vapor boring advancement.

Because impacted groundwater plume stability was not apparent during the two previous quarters of sampling, four quarters of monitoring well sampling were conducted by Carlson McCain staff on January 9, 2017; April 11, 2017; July 11, 2017; and October 4, 2017. Laboratory analysis of groundwater samples collected from Site monitoring wells during each additional quarterly sampling event indicated a

	general decline of petroleum constituent concentrations when compared to previous LSI and RI activities. Quarterly sampling with conducted by field technicians/field geologist (Caitlin Castner and David Katzner). In addition to quarterly monitoring well sampling, two soil and three soil vapor borings were advanced at the Site and off-site property on December 11, 2017. Soil vapor borings VP-10 and VP-11, advanced to the northwest of VP-7 towards a neighboring single-family home; and adjacent to the Site sanitary sewer line, respectively, did not identify petroleum constituent concentrations above 33X residential ISVs. In addition, soil vapor boring VP-12, advanced to the south of the Site, did not identify petroleum constituent concentrations above 33X residential ISVs. The 33X residential ISVs became effective on February 13, 2017. Carlson McCain concluded that a very low risk for soil vapor migration and intrusion towards neighboring property structures and buried utility trenches/corridors exists. Additional soil and vapor boring advancement was conducted by Caitlin Castner, one of our field scientist/staff geologist. Off-site soil borings (GP-12 and GP-13) were also advanced to the southeast and southwest of the Site, respectively, at the southern adjoining property. Soil samples collected from each off-site soil boring did not identify petroleum constituents above laboratory detection limits. The groundwater sample collected from soil boring GP-12 identified slightly elevated petroleum constituents above laboratory detection limits. Subsequent to correspondence with the MPCA Hydrogeologist, the results may be from the historical use of the southern property as a fueling station. The collected groundwater sample from soil boring GP-13 did not identify any petroleum impacts. The results of additional RI activities appeared to define both diesel and historical gasoline plumes to the south. In addition, the soil-gas samples advanced on and off-site confirmed there is an insignificant risk for soil vapor migration and intrusion towards neighboring property structures and buried utility corridors. Furthermore, the four quarters of additional monitoring well sampling indicated plume definition, stabilization and degradation.
Outcome Achieved	LSI and RI activities, coupled with six rounds of quarterly groundwater sampling events and additional investigation soil and vapor borings, determined that petroleum impacts were defined in each direction and concentrations appeared stabilized within the low-gradient contaminant plume. Site and off-site soil vapor intrusion assessment and receptor surveys also indicated a very low threat for vapor migration and accumulation to utility trenches and neighboring property structures. Chris Loch, Caitlin Castner and Ashton Kogel of Carlson McCain recently prepared the Monitoring Report (MPCA Guidance Document 4-08) recommending MPCA Leak Site closure. The report is currently pending MPCA review. Monitoring well abandonment would follow a MPCA Leak-site closure determination.

4. SCOPE OF SERVICES EXPERIENCE

Statewide, Carlson McCain staff has managed well over 600 petroleum related release sites over the past 20 years. These projects have been managed primarily through either the MPCA Petroleum Remediation Program or the MPCA Petroleum Brownfields (PB) Program. Our experienced staff and resources allow us to complete investigations in an efficient, cost effective manner. In turn, this leads to timely site closures for low risk sites or (when necessary) approval of remedial actions necessary to protect human health and/or the environment. Carlson McCain staff completing environmental services for petroleum release sites consists of professional geologist, hydrogeologists, environmental engineers and environmental scientists.

The following highlights our experience in regards to the bulleted tasks listed on pages 5 & 6 (Section 3 Scope of Services – Category B Petroleum Only Environmental Services) of the RFP:

Oversee Site Investigation Services for Soil Boring Advancement & Monitoring Well Installation Using Both Standard Drilling and Direct-Push Probe Methods

Carlson McCain has been managing and directing site investigation services associated with petroleum release sites for over 20 years. During this timeframe, our staff has conducted over 600 assessments, tank removals, limited site and remedial investigations which required soil boring advancement and monitoring well installation. Carlson McCain strives to provide efficient and cost-effective scientific and engineering services necessary to investigate and remediate contaminated soil, groundwater and soil-gas. As we do not own or operate drilling equipment, we have formed strong relationships with some of the most reputable and certified drilling contractors in Minnesota. Furthermore, we obtain competitive bids for each drilling project.

Prior to conducting subsurface investigation or assessments, Carlson McCain reviews any available historical limited site/remedial investigation reports, tank excavation reports, Phase I or Phase II Environmental Site Assessments (ESAs), geologic maps, and local water well boring logs (MDH online MWI) to evaluate geologic and hydrogeologic conditions and determine the drilling technique best suited for the site. In addition, we review site information to identify all potential petroleum release sources. The primary goal of the subsurface investigation is to define the extent and magnitude of petroleum contaminated soil, potentially impacted groundwater and assess vapor intrusion impacts. Gathering site information of all potential petroleum release source areas assists in determining appropriate drilling locations. Our petroleum site investigation approach follows the MPCA Petroleum Remediation Program (PRP) Guidance Documents. Once drilling locations are proposed, Carlson McCain coordinates utility clearance, scheduling, permitting and off-site access (if necessary) with selected drilling contractor.

Carlson McCain has conducted subsurface investigation using just about every type of drilling equipment and technology available. Typically, we recommend initial soil, soil-gas and groundwater investigations or assessments to be conducted using push-probe technology and monitoring wells be installed using hollow stem auger. However, additional technologies may include dual tube, mud rotary, air-rotary or rotosonic. In some cases, hand augering may also be the most appropriate.

Conduct Groundwater, Soil, Surface Water, Sediment & Air Sampling/Monitoring

Regardless of the medium being collected or the method used to obtain samples, sound sampling procedures are critical to ensuring quality data are obtained, be it for initial site investigation, remedial investigation or confirmatory sampling required to obtain site closure or no further action. Depending on the nature of the project, the sampling

medium being collected, our staff are accustomed to following applicable MPCA Guidance Documents.

Carlson McCain has great deal of experience with a wide variety of sampling techniques for each of the media and maintains a wide range of sampling equipment, but quality sampling starts with a quality sampling program. This includes sampling locations, methods and procedures to be used, decontamination, quality assurance and quality control (QA/QC) measures, as well as thorough and accurate documentation. Something that is often overlooked, but we feel is an integral part of the sample handling procedures, is good communication between field, office and laboratory personnel. Good communication gives both field and laboratory personnel the opportunity to discuss project status, request for additional bottles, special handling or instructions, etc.

To best illustrate our experience with sampling, we offer the following examples:

- In order to satisfy MPCA requirements through the MPCA PRP, VIC and PB Programs, Carlson McCain designed a unique soil sampling program to characterize several hundred thousand cubic yards of heterogeneous fill that had been imported into a "green" site (Gardenwood Redevelopment Project, a non-conventional Brownfield site in Blaine, Minnesota). To compliment characterization of the material, a field screening and confirmatory soil sampling plan were also implemented to ensure the residential lots on all 27 acres were suitable for development. In excess of 800 grab and composite soil samples were collected as part of remediation efforts alone.

- Carlson McCain currently conducts annual to quarterly groundwater monitoring on over 200 monitoring wells in Minnesota, North Dakota, Wyoming and Montana. Carlson McCain has been doing so for a number of these sites in excess of 15 years. All work is conducted in accordance with MPCA approved Field Sampling and Analysis Plans (FSPs) for each Minnesota site.

- Carlson McCain also had a very unique opportunity and served as the consultant to manage all environmental affairs associated with the dismantlement of the Minuteman III missile silos out of Grand Forks Air Force Base in North Dakota. Several thousand soil, groundwater, surface water and sediment samples were collected from 15 Launch Control Facilities and 150 Launch Facilities as part decommissioning activities. As part of this effort, 265 USTs were either removed or abandoned in place and required oversight and sampling efforts. All work was completed to meet United States Army Corps of Engineers (USACE) requirements.

Conduct Vapor/Air Monitoring for Health & Safety and Air Quality Data

To ensure the health and safety of on-site personnel, Carlson McCain routinely conducts air monitoring during tank removal and excavation of contaminated soils. Air monitoring is typically conducted using a PID to monitor for the presence of organic vapors. Prior to the start of work each day and as conditions change, the PID is calibrated using the benzene equivalent of an isobutylene standard. As necessary, many tasks also dictate that we use multi-gas meter to monitor oxygen, hydrogen sulfide, carbon monoxide and the lower explosive limit (LEL).

During LSI receptor surveys, Carlson McCain also collects air data from identified vapor points. Vapor points generally sampled during investigation activities are storm sewer catch basins, sanitary manholes, utility corridors and property structure basements. These points are measured with a PID and 4-gas meter for the presence of elevated vapors.

In addition to conducting routine air monitoring during "conventional" soil and groundwater investigation and remediation activities, Carlson McCain staff are well versed in conducting landfill gas monitoring. While routine monitoring of gas vents and gas wells always requires precautions be taken, we are particularly proud of our experience and track record for ensuring worker safety during installation of gas wells & vents and when waste materials require mass excavation.

As a certified tank removal Supervisor, Carlson McCain staff have conducted UST vapor monitoring at numerous sites to confirm the need of either purging or dry-ice inertion to eliminate hazardous vapors prior to tank removal. Again, a calibrated 4-gas meter is used to insure the safety of workers around and within a volatile UST(s) prior to and during removal activities.

Often times, we are required to conduct soil vapor sampling to confirm the presence or absence of vapor intrusion, which is typically conducted through use of Summa canisters. We also have staff experienced with indoor air quality testing and are equipped with air sampling pumps to supplement sub-slab vapor sampling, when necessary.

Conduct and/or Oversee Site Assessment Activities (Phase I and II), Limited Site Investigations (LSIs) & Remedial Investigations (RIs)

Phase I ESAs

Carlson McCain staff have conducted hundreds of Phase I Environmental Site Assessments (ESAs) for commercial, industrial and residential properties, following guidelines established by the American Society for Testing and Materials (ASTM), "Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process, Standard E1527 and MPCA VIC Program Fact Sheet #8. Not only are we well versed in conducting Phase I ESAs for individual properties, but often times for multiple parcels such as Minnesota Department of Transportation (MnDOT) and Hennepin County corridor projects.

Our approach to conducting a Phase I ESA is to obtain information about the general environmental character of a Property; and satisfy one of the requirements to qualify for the *innocent landowner, contiguous property owner, or bona fide prospective purchaser* limitations on Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) liability in accordance with 42 USC §9601(35)(B), should the need arise. That requirement includes conducting "all appropriate inquiry into the previous ownership and uses of a Property consistent with good commercial and customary practice."

Phase I ESAs will be completed with consideration of property transfer guidelines as set forth by the MPCA, to determine if a release or threatened release of a hazardous substance, pollutant, or contaminant exists or has occurred under the meaning of the Minnesota Environmental Response and Liability Act (MERLA). Phase I ESAs will also assess the potential for environmental impact to Properties from other nearby facilities also covered under MERLA.

All information gathered during a Phase I ESA is presented in a comprehensive report, which will identify recognized environmental conditions (RECs) and provide recommendations for any additional actions that may be required for the Property.

Phase II ESAs

Our technical approach to conducting a Phase II ESA is first to prepare a Work Plan to present existing Site information and detail the appropriate methods and procedures necessary to investigate areas of concern that have been identified during a Phase I ESA, MPCA file search and/or a site walkover. The objectives of conducting these

investigations are to assess and confirm the location of areas of concern; define the horizontal and vertical extent of contamination; evaluate potential treatment and disposal options; assess impacts to potential receptors; evaluate the potential for natural attenuation of impacts and define the relationship between site geology, site hydrogeology, and/or ground water quality.

LSIs and RIs

As previously mentioned, petroleum release site investigations are a core part of our business. Carlson McCain staff have extensive knowledge of petroleum related investigations and remedial investigations, managing well over 600 petroleum related release sites in the last 20 years throughout Minnesota, all in accordance with MPCA Guidance Documents. Constantly conducting petroleum release investigations with updated guidance documents has been instrumental to maintaining and keeping up to speed with the evolution of these Guidance Documents. Our services include project management, investigation, remediation and reporting of results to regulatory agencies. We recognize no two sites are the same from an investigation and cleanup standpoint, and that approach must be integrated with the goals and objectives for each project.

The primary objective of an LSI is to identify and assess petroleum impacts to potential receptors. Potential petroleum contamination pathways investigated would include soil, groundwater, soil vapor intrusion, surface water features, direct dermal contact and utility corridors/trenches. Carlson McCain first assesses if an emergency condition exists, such as an indoor vapor concern or impacted water supply well. All available information about the site release (i.e. Phase I or II ESA reports, UST or AST removal reports, historical investigations, etc.) are reviewed to identify all potential source areas, site conditions and potential receptors to streamline the investigation. Carlson McCain conducts a subsurface investigation which involves soil boring advancement and collection of samples to determine the extent and magnitude of petroleum impacted soil, groundwater and soil vapor. Water well, surface water, buried utility and vapor receptor surveys are also conducted around each site.

If the LSI determines that a potential pathway exists between the release source area and an identified receptor, an RI is required for the site. The most common type of RI would be if an aquifer (determined during the LSI) is impacted and would require a network of monitoring wells to fully define the extent the groundwater contamination, identify plume features and calculate groundwater characteristics (i.e. hydraulic gradient, flow direction and rate, etc.).

As necessary, Carlson McCain staff will meet with MPCA and MDA staff to ensure that project objectives and schedules are adhered to. We also recognize that these investigations often occur while properties are still occupied and make every effort to ensure that there is minimal disruption to daily activities.

Conduct Surface Water, Groundwater, Air & Vapor Surveys

Carlson McCain has been conducting petroleum investigations for sites throughout Minnesota for over 15 years. Identifying receptors by conducting surveys play a key role during these investigations and ultimately assessing potential risks from contamination pathways.

Prior to completing soil, groundwater and vapor intrusion subsurface assessment activities during petroleum investigations, Carlson McCain completes receptor surveys following MPCA Guidance Document 4-02 (*Risk Evaluation and Site Management Decisions at Petroleum Release Sites*). Receptor survey procedures provide information to identify potential receptors and evaluate the risks associated with impacted drinking water, discharge to surface water features, high concentrations of petroleum vapors and

contaminated surface soil for potential run-off and dermal contact. For each petroleum investigation, Carlson McCain conducts the following:

- Surface Water Survey – Carlson McCain identifies surface water features within ¼ mile of the site release(s), using topographic maps, internet sources (i.e. Google® Earth), available aerial photographs and visual observations during site walkthroughs. In addition, Carlson McCain observes any ditches, drain tiles, storm sewers and other features which may act as potential contaminant migration pathways to impact identified surface waters during the 500-foot radius walking survey. Observations of petroleum sheens or staining from these potential direct pathways are conducted.

- Groundwater/Water Well Receptor Survey - Carlson McCain completes a walking survey of all properties within 500 feet of the release source area by first preparing an initial base map that would be used to identify existing features and confirm distances from the site. All properties within the 500 feet radius are typically identified for each investigation, unless directed otherwise by the MPCA. The identified properties are listed in a tabular form with property address and field observations. During the 500-foot walking survey, Carlson McCain attempts to interview any available personnel associated with each identified property (homeowner, business manager, tenant, etc.) and leave self-addressed, stamped questionnaire/postcards to gather information regarding the properties within 500 feet of the source area. Information requested includes whether private water wells, basements or sumps exist on each of the identified properties within 500 feet. If water wells are present, questions about known depth, construction and year installed are asked. In addition, the survey questionnaire asks the off-site property owners/tenants if they have observed any unusual odors, primarily in a basement or sump area.

  Also, as part of the water well survey, Carlson McCain submits the tabulated list of nearby properties to the City Public Works Department to confirm the water supply status for the addresses listed. Furthermore, water well records and review of drinking water supply management areas are conducted by Carlson McCain. We utilize the MDH online Minnesota Well Index (MWI) and the Minnesota Geological Survey (MGS) to locate any wells within ½ mile of the investigation site to provide information on groundwater usage, aquifers and local geology.

- Vapor Receptor Survey - Carlson McCain conducts a vapor receptor survey for each site investigation, identifying the location and type of nearby potential vapor receptors. Typically coinciding with the mentioned above water well survey, Carlson McCain will prepare a Vapor Receptor Survey Map identifying all potential vapor receptors and vapor migration pathways within 500 feet of the Site. Potential receptors may include sanitary and storm sewer, buried cables and nearby basements where petroleum vapors could accumulate. Carlson McCain contacts City Public Works officials for information regarding water, sanitary, storm sewer lines and other subsurface features they may have knowledge about. Occupants of nearby buildings and structures are interviewed and asked if they have smelled petroleum odors. A lower explosive limit (LEL) meter and a photoionization detector (PID) are used to measure explosive gas or organic vapors from potential petroleum vapor accumulation within identified vapor receptors. Specifically, Carlson McCain has experience with City public works officials to assess the identified utility lines (manholes and sewer grates).

  During the vapor receptor survey walkthrough, measurements and field notes are collected, noting air and fluid flow direction, potential sheens and odors, LEL and PID readings, and samples (if necessary). Ultimately, Carlson McCain uses the vapor survey information to assess if emergency conditions exist at and surrounding the investigation site.

- Contaminated Surface Soil Survey - Contaminated surface soil is a potential run-off and dermal contact risk. During site walkthrough and investigation activities, Carlson McCain completes a surface soil contamination survey as part of the initial investigation activities. Surface features and any observed petroleum staining are observed throughout the site. In addition, the first two feet of soil is screened during subsurface investigation activities to assess potential surface contamination.

Oversee Construction to Mitigate Vapors & Conduct Non-Construction Mitigation Measures Such as Fans, etc.

Carlson McCain has extensive experience mitigating petroleum vapors accumulating below building foundation and subsurface structures such as residential home and commercial business basements. Carlson McCain's approach depends on the type of receptor at risk, magnitude of vapor contamination and type of petroleum product released or causing vapor accumulation. If construction oversight is necessary, Carlson McCain, with the help of our engineers, typically prepare detailed design specifications, collect and assess bids, and then perform oversight duties to verify that the specifications are met. Vapor mitigation methods we have commonly proposed, designed and utilized are as follows:

- Excavating contaminated soil in contact with basement foundations or buried utility corridors
- Temporary venting of basements and storm sewers with blower fans
- Sealing cracks or stained concrete in basement slabs, walls, false walls (i.e. indoor AST bunkers) and along wall/slab sections
- Repairing or installing vapor barriers below re-developed or new buildings and around buried utility lines/corridors for PB program assurances
- Designing small-scale passive vapor venting systems below current or new buildings impacted by petroleum vapors
- Vapor mitigation BMPs – mitigation installation and diagnostics

As an example of our experience with this particular task, we offer the following example:

Alvina O'Brien Residence (closed MPCA Leak #LS0018339) – During fuel oil AST removal activities conducted in the basement of this historical home/mansion located on Grand Avenue in St. Paul, Minnesota, heavily impacted soil was encountered around the tank. The AST was located behind a "false wall", positioned within sand fill which was saturated with fuel oil. After sealing off the room, prior to removing the tank and disturbing the impacted fill sand, Carlson McCain reported the release and immediately contacted the MCPA Project Manager to discuss and recommend an action plan to prevent fuel oil odors from migrating throughout the home during tank removal. In addition, the MPCA Project Manager provided a bid waiver to complete the tasks.

Carlson McCain designed a plan with the tank removal contractor to have the room sealed, vented with fans and immediately have the impacted fill sand excavated as the AST was exposed, cut and cleaned. Two basement windows provided access to the room once the doorway to the remainder of the basement was sealed. A hydro-vacuum contractor was used to remove the impacted sand by suction through a hose entering the basement window. The tank removal contractor successfully cut and cleaned the AST, sending sections of the tank through the basement window, as well. Impacted soil was hauled off-site to an approved landfill. Throughout tank and impacted fill sand removal, Carlson McCain conducted indoor air screening utilizing an LEL meter and PID. Active venting and the suction to excavate impacted sand kept ambient vapors at a minimum within the basement.

Carlson McCain had a professional cleaning company on stand-by to clean/seal impacted concrete floor and walls. Once tank and impacted soil removal activities were completed, the cleaning company washed the impacted concrete areas with a high-concentrate solution and then placed a sealant to eliminate vapors and odors associated with the fuel oil release.

Carlson McCain collected confirmatory indoor air samples throughout the basement and main floor of the home. The samples were collected subsequent of tank removal activities, to verify fuel oil vapors had not migrated throughout the home and created potential health risks. Carlson McCain's success was evident by a very pleased property owner, full MDC-Petrofund reimbursement and MPCA Leak Site Closure.

Conduct and Oversee Operation & Maintenance on Remedial Systems

Carlson McCain has extensive and unique experience with soil and groundwater remediation systems. Specifically, our experience includes:

- Groundwater extraction systems
- Air stripping
- Vapor Mitigation systems
- Sparge and vent systems
- Soil vapor extraction systems
- Chemical injection
- Vaccum vaporizers
- In-well air sparging

An example of a recent mitigation system installed at the Reviva facility (SR00000027) is summarized to show an example of our experience:

Based on the results of sub-slab vapor sampling, Reviva implemented expedited vapor mitigation at their Facility. In general, the vapor mitigation system installation followed the guidelines and information provided in the MPCA's vapor mitigation best management practice (BMP) "*Diagnostic testing, installation and conformation sampling for active vapor mitigation systems in single-family residential buildings*" and MPCA guidance "*Best management practices for vapor investigation and building mitigation decisions*". In accordance with these BMPs, Carlson McCain and Reviva conducted a pilot test to determine the design of the mitigation system during the initial pre-mitigation testing. The pilot test was conducted using a 20-foot long horizontal vent installed directly below the concrete slab of the Facility, attached to PVC piping which was then connected to an AMG Force fan. The vent consisted of 4-inch perforated drain tile pipe surrounded by ¼-inch pea gravel and was capped with concrete to repair the floor. All floor cracks were sealed, prior to conducting the testing. A knife valve was place in-line in the PVC tubing connecting the vent to the fan to mimic reduced flow conditions. Vapor pins were installed into the concrete slab of the Facility at various distances to determine the differential pressure between the sub-slab and the interior of the Facility. Determination of backdrafting and in-take air to the plant was also conducted during the pre-mitigation testing. Using full air-flow (i.e. knife valve open the entire way), the pilot test was conducted under two conditions, one in the summer season during regular operating hour-with windows and several doors open, and one in the summer season during non-operating hours with windows and doors closed. Results indicated that the two conditions did not have a significant difference between the effect of vacuum under the slab. The system was also tested to replicate a larger system by using the knife valve the throttle the air-flow to nearly half of the full flow (which would represent two 20-foot long vents connected to one single fan). Results of the pilot test indicated that a 52-foot radius of influence under full-flow conditions was achievable for one fan.

The sub-slab depressurization system (SSD system) was constructed based on the design determined during the pilot testing. The system consists of eight horizontal vents constructed of 4-inch corrugated, perforated polyethylene drain tile located throughout the facility under the slab. The drain tile is buried in a 12-inch by 12-inch trench filled with ¼-inch pea gravel. The specified vent section of drain tile is connected to a solid 4-inch schedule 40 PVC carrier pipe. The carrier pipe is secured to vertical structural support columns and routed to the roof of the structure. The pipe penetrates the roof and is booted with an ethylene propylene diene monomer (EPDM) or a PVC boot depending on which section of the roof for the given fan. A knife gate valve was installed for future control of the vacuum or flow rate near the ceiling (under the roof). The knife gate valves were all fully open at the time of system start-up, and during system testing on December 19, 2017, completed by Carlson McCain. Where appropriate, all adjoining PVC pipes were welded together using a low VOC solvent.

Vacuum is applied to each vent by its own individual Festa Radon Technologies, AMG model, FORCE fan. The fans are rated for outdoor use and were mounted on the roof atop a treated wood stand-off frame and are protected from weather by a cover. Each fan is labeled and has its own on/off switch, and each vent has is equipped with its own manometer.

Post-mitigation diagnostic testing of the system was completed on December 19, 2017. Testing included measurements of the sub-slab differential pressures and indoor air sampling. The SSD system and plant operations were running at the time of testing. A Grey Wolf Zephyr II micromanometer was used to collect the differential pressure measurements to 0.1 pascals, and testing indicated a differential pressure of greater than five pascals at all eighteen testing locations. It is important to note, that the testing was conducted during winter conditions, during which conditions could be considered "worst case", as all doors, windows, etc. were closed, and all burners and exhaust vents were on and running.

Post-mitigation confirmation sampling consisted of six sub-slab vapor samples, six indoor air samples, and one outdoor air sample. Locations of each vapor sample corresponded to the same initial locations sampled during the investigation. Each sample was analyzed for volatile organic compounds (VOCs) using EPA method TO-15. These samples act as both heating season samples and post-mitigation confirmation samples. The results of the testing confirm that the no indoor or outdoor air samples exceed the MPCA intrusion screening values (ISVs). The ISV for trichloroethene was exceeded at four of the six sub-slab vapor locations, however all concentrations were below the action level of 33 times the ISV. No other volatile organic compounds (VOCs) were detected during post-mitigation confirmation sampling. Post-mitigation confirmation sampling also consisted of collecting pressure field extension measurements at all 18 pressure testing locations. The differential pressure at all testing locations indicated a differential pressure of greater than three pascals at all eighteen testing locations.

Results from the post-mitigation confirmation sampling indicate that the SSD system continues to be effective at removing sub-slab vapors from beneath the Reviva Facility, and that differential pressure requirements are met at the system in both the heating season and cooling season.

The SSD system will continue to be monitored and maintained by Reviva. Measurements to verify differential pressure requirements are being met will continue throughout the life of the mitigation system. No further vapor sampling is scheduled, unless Site or building conditions change.

Arrange for Transportation, Storage & Proper Management of Wastes

Addressing proper handling, transport and management wastes is a routine part of preparing Response Action Plans (RAPs), CAD and specifications on behalf of our clients. Furthermore, because of the number of construction, demolition and industrial waste landfill clients for which Carlson McCain provides environmental and engineering services, we are accustomed to knowing and understanding various waste streams and how to manage them from cradle to grave. At a minimum, Carlson McCain implements the following the requirements for excavation, hauling and disposal of contaminated soil, demolition debris, industrial waste, etc.:

- Stockpiling impacted media on-site with either poly-sheeting or lined roll-off dumpsters prior to or the need for waste characterization prior to disposal approval
- Composite characterization samples are collected following protocol of the waste disposal facility for assuring landfill or disposal facility approval
- Contractors are responsible for controlling fugitive dust and minimizing noise, odors, and off-site tracking to the extent possible;
- Excessive impacted soil or waste materials are removed from all trucks prior to leaving a Site. If necessary, trucks used to transport contaminated soil may require decontamination (i.e. steam cleaning) prior to leaving the Site, in order to minimize the tracking of contaminants off-site. If so, a decontamination pad is constructed at a designated location, just prior to exiting a Site. Prior to demobilization from a Site, all on-site equipment used for excavation is also to be decontaminated.
- Designated truck routes are to be used, so as to minimize the disruption of local residences and businesses.
- Contractors are responsible for properly manifesting all waste or impacted soil which leaves a Site.
- Contractors are responsible for taking the appropriate measures to ensure excavations are appropriately secured at the end of work each day.

Carlson McCain has arranged transportation, storage and management of petroleum impacted soil at several recently razed homes around the Lake Harriet, Lake Minnetonka, and Edina areas of Minnesota. Petroleum impacts associated with historical fuel oil USTs ware identified at each site during home demolition. Impacted soil was managed to facilitate new home construction and eliminate potential vapor risks. At each site, impacted soil was excavated and properly stockpiled/covered prior to landfill disposal. Once waste characterization sampling results were received from the laboratory, the approval forms were submitted to the lined landfill(s) and the excavation contractor ultimately loaded and hauled the impacted soil to the approved landfill.

In addition, Carlson McCain contracts with certified vacuum trucks to pump, transport and dispose remaining product, mixed water and/or sludge during UST or AST removal/replacement activities. Prior to tank removal, tanks are pumped free of product/liquid/sludge to assist achieving safe working levels and limiting a potential release prior to cutting, cleaning and during removal of the tank(s). In addition, piping and dispenser hoses are vacuumed to assure residual product causing a release. Tank contents are treated as hazardous waste and transported approved recycle facilities. Carlson McCain has many contacts and relationships with contractors/facilities due to the amount of tank removals we conduct in a yearly basis. Since conducting abandoned storage tank removals with the MDC – Petrofund, Carlson McCain was managed the

removal and disposal of approximately 144,745 gallons of residual liquid from removed or in-place abandoned tanks.

Evaluate the Need For & Oversee the Implementation of Alternative Drinking Water and Point-of-use Treatment

The most notable site in which Carlson McCain addressed petroleum impacting drinking water was for the Former Dalbo Foods (MPCA Leak-site #LS00019264) site in Dalbo, Minnesota, in which a significant release of petroleum had impacted soil and shallow groundwater. Through LSI activities, it was determined that the private well on-site had been contaminated. It appears that the well is acting as a conduit for direct plume impacts to the source water. Water supply well sampling confirmed the presence of benzene and several other VOC contractions above MDH HRLs.

As part of Emergency Response (ER) for the Site, Carlson McCain addressed the water supply well and supply lines. In short, the existing well was fitted with a carbon filtration system to eliminate the direct ingestion and contact with impacted water. Subsequent water sampling indicated that the carbon system is filtering petroleum constituents. The carbon system is in-place until a CAD (i.e. replace the Site well) is completed. In addition, other nearby private water wells were sampled to confirm the presence of impacts from the off-site impacted groundwater plume. Off-site water supply wells were not impacted.

Coordinate and Cooperate with other State-Contracted Services Such as Sampling and Analytical, Emergency Reponse Contractors & Hazardous Waste Services

It takes a great number of people and entities to successfully see a project from inception to completion and reach/ultimately meet our clients' goals and objectives. In order to meet these goals and objectives, there must be excellent communication between all parties, whether they are State-contracted services or subcontractors to Carlson McCain. It also takes an understanding by all parties that each entity may also have additional priorities, goals or timeframes in which they may need to complete their work.

Perhaps one of the best examples of Carlson McCain coordinating and cooperating with multiple entities was during redevelopment of the 29-acre Columbia Heights Industrial Park between 2003 and 2008. The Project was big enough that it was broken into three separate Phases. At its peak, there were times when investigation, remediation and construction/redevelopment were taking place at the same time and some very aggressive schedules were in place. To that end, our staff was working with staff from multiple MPCA Programs, the Community Development and Public Works Departments from the City of Columbia Heights, the developer (Schafer Richardson), drilling and laboratory subcontractors, remediation contractors in one Phase and construction contractors within another Phase. As environmental investigation, remediation, reporting and timely reviews from the MPCA were essentially the catalyst to keeping construction and redevelopment activities on schedule, a project like this could not have successfully been completed without effective coordination and cooperation between our staff and all other parties involved.

Arrange for Geophysical Activities

Several of Carlson McCain senior geologists have previous experience using borehole geophysical methods to help define geologic and hydrogeologic conditions, primarily for landfill expansion projects throughout the Midwest. Primary methods included natural gamma, conductivity, caliper and temperature logging. Furthermore, we have experience using surface geophysics (primarily seismic and electromagnetic surveys) to aid in defining geologic conditions (typically depth to bedrock) and/or defining the edge of waste. In addition to collecting field data, staff were also responsible for processing and interpreting the data.

Several years ago, Carlson McCain proposed a unique solution to define impacts to groundwater from an unlined landfill by working with a drilling contractor to use direct push methods and conductivity logging. All work had been approved by the MPCA and the investigation successfully defined the plume and aided in placement of monitoring wells.

We routinely conduct magnetometer surveys to help locate USTs (particularly as part of the pre-removal activities associated with our Abandoned Tank Contract with the MDC). This is critical to determining tanks, size, location and orientation, which further ensures more accurate specifications can be prepared when soliciting bids from tank removal contractors.

Oversee Subcontractors and State Contractors during Investigation and Clean-ups

Carlson McCain believes work provided by our sub-contractors is a reflection of our company. In addition, Carlson McCain takes a teamwork approach with our selected sub-contractors to reach a favorable project outcome. We have longstanding relationships with many drilling, laboratory analytical service, excavation, construction, tank removal and product removal contractors. We accomplish project goals by requesting detailed specifications and unit costs before our sub-contractor is selected for that given task or project.

Carlson McCain understands the importance of sub-contractor oversight for MPCA and MDC-Petrofund projects. As a contractor for the MDC Abandoned Tank Contract, we are fully aware that we represent the MDC and are present to ensure the project work is completed efficiently and safely, in accordance with specifications, acknowledge potential site hazards, proceeds according to time tables and completed in a favorable public image. Furthermore, detailed cost estimates are requested in the event a change order is necessary for unforeseen changes in the scope of work. These costs are used to apply appropriate costs for the additional work. These aspects of sub-contractor oversight are taken into account during all Carlson McCain site projects.

Oversee Tank Removals

Carlson McCain has provided UST and AST removal and approved abandonment in-place oversight, sampling and subsequent reporting at hundreds of sites throughout Minnesota and neighboring states. Tank removal oversight activities are part of the core business for our company. Carlson McCain's reputation for being efficient, cost effective, technically sound and readily available at a moment's notice, has formed strong relationships with certified tank removal contractors, fuel dispensing companies and MPCA tank inspectors.

Carlson McCain is a Certified Minnesota UST Closure Contractor (MPCA Certification #709).

Environmental oversight during tank removal consists of utility location, site background review, documenting site characteristics and field observations, photographs, field screening and collection of soil and/or groundwater and submitting appropriate samples for laboratory analysis in accordance with MPCA Guidelines. As an example, two soil samples are to be collected below a tank greater than 10,000-gallon in capacity; one soil sample collected below a tank with a capacity of less than 10,000-gallons and within a same tank basin as other tanks; or a soil sample collected at least five feet below each removed dispenser pump. A map depicting the removed tanks, basins, sampling locations and site characteristics is also completed.

If a petroleum release is discovered during tank removal oversight or during review of confirmatory laboratory analytical data from collected samples, Carlson McCain staff report the release to the Minnesota State Duty Officer, as required within 24 hours of discovery. Once the MPCA issues a Leak Site Number, Carlson McCain prepares an Excavation Report (Guidance Document 3-02) which documents tank removal activities,

identified release source(s), field screening results, sampling locations, laboratory analysis results, site information, site figures and recommendations.

Carlson McCain has successfully coordinated 319 tank removals and "in-place" abandonments for 227 properties associated with the 2004, 2008 and 2013 MDC Abandoned Tank Removal Program contracts. Tank sizes ranged from between 285 and 20,000-gallon capacity tanks. Prior to conducting abandoned tank removals, Carlson McCain is contracted by the MDC to conduct pre-removal assessments. We have the experience, tools and equipment to properly locate tanks, determine tank size and measure any remaining tank contents. Carlson McCain staff also has the experience to observe and document potential tank removal obstructions, surface cover and any components (i.e. utilities, dispenser pumps, piping, trees, vegetation, etc.) associated with an abandoned tank system that may affect removal activities. The pre-removal information is utilized to project a detailed scope of work and to request bids for efficient and cost-effective tank removal activities. Furthermore, to reduce the possibility of project delays and interference, Carlson McCain coordinates all of their projects with the tank removal contractor, Petrofund staff and as well as the property owner.

Carlson McCain has relationships with a number of subcontractors across the State of Minnesota that conduct UST and AST removals and "in-place" abandonment activities. In addition, we have strong relationships with several state approved product removal, transport and disposal companies. We select subcontractors to bid based on their ability to complete the specified work in a timely and cost-efficient manner, while maintaining a quality of work in agreement with Carlson McCain's standards for quality and safety. Specifically, all subcontractors are evaluated by the following criteria:

- Quality of services
- Price for services
- Previous relevant work experience or qualifications
- Timeliness to complete task
- Working relationship with Carlson McCain
- Location of company
- Commitment to safety

Prepare and Evaluate Reports

Carlson McCain has successfully and continues to complete detailed reports for all tank removal, investigation and remedial investigation sites mentioned above. Our primary objective when completing the reports is to provide to the MPCA and the client for the understanding of potential pathways that contamination may impact identified receptors. Each report documents the results of sampling, studies, designs and recommendations. We take pride and value our reports, as they are a portfolio of our services and product to our project specific client and agency reviewing our work. Carlson McCain's reports for petroleum release sites in Minnesota are completed on MPCA approved Guidance Documents and forms, which include appropriate figures, tables and appendices.

Carlson McCain staff have completed many MPCA Guidance Documents reporting formats, which provide required documentation for reports listed below:

- Spatial Data Reporting Form
- Release Information Worksheet
- General Excavation Report Worksheet
- Investigation Report Form
- Monitoring Report
- Vapor Intrusion Building Interior Survey Form
- Corrective Action Excavation Report Worksheet
- Conceptual Corrective Action Design

Prepare Health and Safety Plans (HASPs)

Site-specific health and safety plans (HASPs) are developed for each project. These site-specific safety plans incorporate policies spelled out in our Corporate Health and Safety Manual, which is regularly audited by ISNetworld. The site HASP details the potential hazards that may be expected, levels of personal protection that are required on-site, emergency response direction and overall operational procedures that are to be implemented for safe project completion. Carlson McCain owns, rents or leases a wide variety of personal protection equipment (PPE), respiratory protection, and environmental monitoring instrumentation.

Carlson McCain personnel that conduct work at petroleum impacted sites have 40-hour hazardous materials/safety training and annual 8-hour refresher certification, as required by OSHA (1910.120). A trainer is selected annually to conduct training aspects that closely tie to the majority of our work we conduct and sites we encounter.

Carlson McCain's experience conducting site assessments for Enbridge Pipelines, LLC (Enbridge) and Xcel Energy, Inc. (Xcel) are very beneficial in adhering to site specific HASPs. Field personnel working at Enbridge or Xcel sites or facilities must go through training and complete a safety test before work can take place. In addition, Carlson McCain has to be an approved consultant on ISNetworld to conduct Enbridge work, which includes an impeccable safety record.

Arrange for Site Access

Some degree of site access is necessary for each release site. Carlson McCain has obtained access to the site by simply contacting the property owner or at sites where off-site investigation is necessary, gaining access by off-site property owners, municipalities, counties or state agencies.

Carlson McCain is very familiar with retaining proper permits or written access approvals to advance soil borings, install monitoring wells or conduct vapor surveys on adjoining, off-site properties, easements or road right-of-ways. In addition to site/off-site access, Carlson McCain has conducted projects that needed approval and watchdog services from utility companies, either conducting work near high priority buried utility locations or within the acceptable radius of overhead utility lines.

With each MPCA Fund Financed contract project, site and off-site access agreements are necessary between the MPCA and property owner. Carlson McCain has prepared MPCA access agreement forms for site and off-site property owners for over 40 projects since 2013. Some projects, have required up to five access agreements to potentially define off-site migrating contaminant plumes.

Coordinate Utility Locates by Contacting the Appropriate Entity and if Applicable Coordinate Traffic Control

Carlson McCain's corporate policy is to make clearing of public and private utilities the responsibility of each individual contractor that will be conducting subsurface work. This entails coordinating clearing of public utilities through the Minnesota Gopher One system and when necessary, retaining a private utility contractor. Our staff typically provide all pertinent site information to each contractor, along with a site map and proposed work (i.e. soil boring, monitoring well, etc.) locations.

As necessary, we are also accustomed to working with landowners, City and/or County officials, utility companies, MnDOT, etc. to assess the identified utilities or arrange for special circumstances.

Carlson McCain has trained flaggers on staff for specific project related needs when working within the right-of-way and utilizes a wide array of safety and signaling equipment

including signage, cones and barricades, provide safe work and minimize disruption to traffic, businesses and/or residences. Furthermore, our staff has worked with railroads on several occasions, which are known for having very strict policies in regards to access and traffic control requirements.

Prepare and Evaluate Bid Specifications

Carlson McCain has proven our ability to prepare and evaluate bid specifications for over 200 tank removal sites associated with the MDC – Petrofund Abandoned Tank Removal Program contract and over 40 sites associated with the MPCA Fund Financed contract. For instance, prior to tank removal activities at each site, Carlson McCain conducts a pre-removal site assessment to gather as much information possible about the size, quantity, type, remaining contents and locations of each abandoned tank. In addition, Carlson McCain observes and notes current or past dispenser pump locations, potential tank excavation obstructions, accessibility to the site, travel time/mileage and other site characteristics to make sure tank removal contractor bids are "apples to apples" and complete. The bid specifications provided to the tank removal contractors provides proper equipment needed to remove tanks, mobilization/demobilization, surface feature removal, inertion & purging, safety measures and personnel needed, which ultimately minimizes the potential for any change orders and work stoppages.

Evaluate Invoices and Data Reports

Carlson McCain has several project management tools which assist in establishing, tracking and ensuring that projects are completed as planned and invoiced properly. Employee time is tracked on the Vision by Deltek software program which was specifically developed for companies like ours who distribute direct time and expenses to different projects. This software program has greatly increased the efficiency or our project work, budget management, generation of invoices and data reports.

Carlson McCain has experience working under contract with multiple state agencies (MPCA, MDC, MnDOT and the DNR). Under contract, we have provided accurate, itemized and properly formatted invoices. Furthermore, detailed and itemized invoices have been key for our petroleum sites to receive maximum available MDC - Petrofund reimbursement. Our itemized invoices help MDC – Petrofund staff efficiently review and determine reimbursement amounts.

Assist and Provide Training as Requested by the MPCA or MDA

Carlson McCain will provide technical assistance to the MPCA and MDA in support of training, community outreach, public relations and programming efforts. Furthermore, we are accustomed to working directly with government agencies and will work closely with the MPCA and MDA to maintain positive public relations. As necessary, we will provide support, including preparation of informational materials and technical presentations. All project documentation and/or materials will be prepared to a standard to uphold public scrutiny during public hearings/meetings, outreach programs and/or educational meetings. We know that in environmental industry perception often becomes reality. To that end we are sensitive to this fact when dealing with the public.

Follow MPCA Green Practices/Procedures Relative to Remediation Projects

Whenever possible, Best Management Practices (BMPs) will be used to incorporate green remedial practices throughout our projects and are typically designed by Carlson McCain and implemented by demolition, earthwork and construction contractors. Prior to execution, consideration is given to methods, processes and/or products which can minimize impact to the environmental and provide protection of land and ecosystems.

One of the more notable practices implemented as part of remediation for redevelopment projects includes recycling or beneficial re-use (i.e. concrete crushing) of building material. Another common practice is the beneficial re-use of soils on-site whenever possible, thereby minimizing fuel consumption required for transport and reducing air space within a landfill. Carlson McCain has conducted soil remediation on a number of former salvage yard or dump sites, where physical screening of debris from soils has resulted in great benefits for the environment, not to mention the considerable financial savings for these projects. As an example, our Lee's Wrecking redevelopment project in Blaine, Minnesota successfully re-used over 15,000 cubic yards of impacted soil for parking lot construction resulting in a project savings of over $400,000 in landfill costs. Additional considerations during remediation also include location of backfill sources and disposal facilities (again, reducing the fuel consumption required to transport materials to or from a site).

Preliminary design at sites which will be redeveloped also include infiltration/filtration best management practices for storm water treatment. Whenever possible, green space is incorporated into Site design in accordance with City Ordinance standards. Infiltration/filtration practices to be used will utilize native vegetation whenever possible, as the root structure is more aggressive and deeper than traditional lawn turf.

Carlson McCain has also implemented "green practices" during MPCA contract work and day to day operations. Practices implemented have included utilizing at least 30% recycled paper content for report copies, work plans, cost proposals, survey letters, field forms, etc. Using laboratories with Green Chemistry really cuts down on the amount of paper used. Carlson McCain contracts with laboratories that provide online data and electronic deliverables. In addition, all reports sent to the MPCA are now sent via electronically. Each report is PDF'ed and sent via email to the MPCA for review, eliminating bound copies and significantly reducing paper use.

Carlson McCain also reduces VMTs by hiring local contractors and managing the number of trips to a site. Anti-idling and increasing fuel economy (vehicle maintenance, tire pressure, cruise control, etc.) are ways Carlson McCain reduces fuel usage for the efficiency of a given project.

Oversee Hydrogeologic Investigations Including Fate and Transport Modeling

In order to fully comprehend analytical results and understand what they mean in terms of defining vertical and horizontal extent, risk to human health & the environment and evaluating migration pathways to potential receptors and engineering considerations for remediation systems, having a solid understanding of site geologic and hydrogeologic conditions is paramount. And while this is true of all sites, regardless of size, Carlson McCain has an excellent grasp conducting hydrogeologic investigations, based on our extensive experience in permitting large acreage sites for landfills across Minnesota and throughout the Midwest, for which we have seen a wide variety of geologic and hydrogeologic settings.

Prior to conducting a hydrogeologic investigation, we conduct thorough research to gain a general understanding of the regional geologic and hydrogeologic setting. This can be completed by using a wider variety of resources such as the Minnesota Geologic Survey (MGS), United States Geologic Survey (USGS), MDH Minnesota Well Index (MWI), Soil County Surveys, etc. Using this preliminary information as a foundation, provides rationale for developing a sound scope of work, selecting the best field methods and procedures (i.e. drilling methods) and creating a conceptual model, prior to the start of field work.

Our hydrogeologic investigations typically include, but are not limited to:

- Mapping and identifying exposed surface soils or bedrock, site features, topography, structures and/or utilities;
- Advancing soil borings;
- Performing detailed logging and classification of the subsurface materials at each boring location;
- Collecting samples for physical testing to evaluate geotechnical and/or engineering properties of soils;
- Installing monitoring wells;
- Developing each new well;
- Collecting water level data;
- Conducting hydraulic testing (i.e. rate-of-recovery or slug tests;
- Surveying each new soil boring or well;
- Conducting an updated well search/receptor survey;
- Conducting water quality testing; and
- Preparing a Site Characterization Report

Carlson McCain has experience with different types of modeling, as noted below:

Because of our extensive work with petroleum and other contaminated sites, as well as landfill siting and monitoring, we frequently evaluate aquifer characteristics and model groundwater flow for our projects, particularly from the standpoint of contamination fate and transport. This ranges from simple water table contouring and gradient calculations to more complex computer modeling. We have used single or layer analytic element modeling (i.e. SLAEM or MLAEM) to assess steady-state problems, such as well capture zones, particle flow paths from a source area, and instantaneous drawdown at a well. We recently performed such a model for a proposed sand and gravel mine to assess the impact of a water supply well and the water table lake that will result from mining. We also have the capability to perform transient modeling using finite-difference programs such as MODFLOW.

Models are powerful tools; however, the results are only as good as the model inputs and assumptions. We understand the importance of obtaining reliable aquifer properties and have experience with various methods of doing so. We routinely conduct in-situ hydraulic conductivity testing (slug testing) during site investigations and hydrogeologic assessments. We also have experience conducting and analyzing data from broader tests such as specific capacity tests and pumping tests. We frequently employ geostatistical methods such as Kriging to allow us to interpolate data (e.g. contaminant concentrations, water elevation data, etc.) based on limited observations. In addition, by utilizing tools such as variograms, we are able to incorporate the effects of spatial variability and anisotropy that are common in geologic settings.

Another type of modeling Carlson McCain staff has experience using is the Industrial Waste Management Evaluation Model (IWEM). IWEM evaluates the effectiveness of waste disposal units by modeling the engineered liner systems (or a no liner scenario). The EPA's Composite Model for Leachate Migration with Transformation Products (EPACMTP) fate and transport model is incorporated into IWEM to simulate the migration of chemicals released in both the unsaturated and saturated zones. IWEM is typically used to estimate the concentration of various chemicals at the monitoring wells down gradient of a source area, based on site-specific engineering, climactic and hydrogeologic information.

Capture Zone Analysis

In addition to capture zone analysis at the proposed sand and gravel mine referenced in the previous section, Carlson McCain also utilized recent groundwater modeling at the

Former Dealers Manufacturing (Reviva Manufacturing) site in Fridley, Minnesota in an attempt to more accurately interpret the site hydrogeologic conditions of the aquifer. We accomplished this using MODFLOW and MODPATH software to analyze and illustrate the capture zone of impacted groundwater in area of the aquifer in the area of an extraction well.

Perform Aquifer Pump Tests

Carlson McCain also conducted recent groundwater extraction pump testing at the Reviva Manufacturing Facility (Former Dealers Manufacturing). The pump testing included slug-in/slug out and 24-hour groundwater extraction pump test and a 24-hour recovery test. The primary purpose of the pump test was to determine the optimum flow rate and capture zone which was used for the design of a groundwater extraction system to contain and treat contaminated groundwater at the site, as well as to stress the aquifer system to estimate hydraulic parameters such as hydraulic conductivity, storativity and drawdown. Initially, an electric submersible pump capable of achieving approximately 125 gallons per minute (gpm) was installed into the extraction well.

Prior to starting the pump test, a five-step draw-down test was conducted to define the pumping capacity of the water table aquifer. The purpose of the step-drawdown test was to evaluate aquifer response at varying pumping rates, determine the specific capacity of the well and evaluate the potential for non-laminar flow into the well and to determine an appropriate pumping rate for the pump test. Each pumping rate was sustained for a one-hour period without any recovery time between increases in the pumping rates. Upon completion of the fifth and final rate increase, a four-hour recovery test was performed to evaluate the rate of aquifer recovery. Based on the results of the step-drawdown test, it was determined that the pump test would be conducted at a rate of 100 gpm for a minimum of 24 hours. Through the use of MODFLOW, the optimum pumping rate was determined to be 20 gpm.

Though Carlson McCain conducts pump tests when necessary, we routinely conduct rate-of-recovery (slug) testing new wells to estimate hydraulic conductivity of the geologic material (formation) in the vicinity of each screen. The procedure begins by lowering a pressure transducer connected to a data logger in the well. A stainless-steel slug is then lowered into the well to displace water stored in the screen/casing and sand pack into the aquifer. The data logger then records the change in water level (falling head) versus time, as the well returns to a static condition. Each test is stopped when the water level has recovered to at least 90 percent of the measurement recorded prior to the start of the test. Subsequently, the slug is then removed and the change in water level (rising head) is recorded as the well recovers. In general, rising head data are preferred for wells screened across the water table, whereas falling head data are preferred for wells which are screened below the water table. The rate of recovery is directly proportional to the hydraulic conductivity of the screened portion of the aquifer.

Following completion of the slug tests, we typically evaluate the data following the Bouwer and Rice (1976) method using AQTESOLV computer software (HYDROSOLVE, 2007). This method determines the hydraulic conductivity from a data plot of the natural logarithm of displacement versus time and a linear regression is applied to the straight-line portion of the graph.

Prepare Engineering Evaluation Cost Analysis (EECA)

Once investigation work has been completed and it has been determined the remediation is necessary, consideration must be given as to the alternatives selected to address contaminated soil or groundwater and/or address soil vapor issues. Carlson McCain has extensive experience in preparing feasibility studies or alternatives analysis for such sites. These studies or analyses serve to establish soil, groundwater or soil vapor clean up goals, evaluate potential clean up technologies, develop a comprehensive site cleanup strategy

and provide a cost estimate for the various cleanup activities. Consideration must be given to the nature of the contaminants, vertical and horizontal extent of contamination, co-mingling of contaminants, potential receptors, end use of the site, time frame and cost.

Inevitably, costs analysis has a significant impact on determining which alternatives are ultimately selected for a given project. Though our staff have often used their extensive experience from previous projects when preparing estimates, we also rely on the valued relationships with a wide array of contractors and vendors to ensure we are selecting a cost effective approach to deliver effective solutions in meeting cleanup goals and objectives. Factors such as unique circumstances related to site condition, current market conditions, aggressiveness of the cleanup approach, etc. are also considered for each individual project.

And once cost estimates have been completed, Carlson McCain has extensive experience with cost recovery through various reimbursement and grant programs. Primary funding sources include reimbursement through MDC Petrofund and the MPCA Drycleaner Fund. We are also very proud of our track record in acquiring in excess of $8 million in grant funding for Brownfield projects through the Minnesota Department of Employment and Economic Development (DEED), as well as the Metropolitan Council's Tax Base Revitalization Account (TBRA), for projects which reside in the Twin Cities' seven county metropolitan area. As an example of our resourcefulness, Carlson McCain also worked with the City of Spring Lake Park and Anoka County to obtain funding the Housing and Redevelopment Authority (HRA) and Community Development Block Grant (CDBG), when no other funding source was available for the investigation and cleanup of contaminated soil and groundwater.

Oversee Bench-Scale Lab Treatability Studies and Pilot-Tests/Field Demonstrations

There have been relatively few jobs in which Carlson McCain was required to conduct bench-scale treatability studies or pilot tests. Most frequently, we've found the need to conduct this type of exercise when concentrations of lead in soil are very high and stabilization is required.

Oversee Equipment Start-Up and Work Out Problems with the Contractor/Vendor

Carlson McCain staff oversee equipment start-up for all projects to ensure that on-site personnel are knowledgeable of the project, familiar with equipment used and the project scope of work. Overseeing equipment start-up also confirms that equipment is working correctly and that all safeguards and personal protective equipment (PPE) are in use.

Constant communication between Carlson McCain staff, contractors and vendors is crucial in order to identify potential problems or concerns before a project begins. By expressing concerns and/or potential problems regarding a project before it begins, allows time for discussion and problem solving to prevent any issues that may occur on-site and ensures the health and safety of all involved parties. Carlson McCain finds that strong, professional relationships with contractors and vendors significantly decrease potential problems on-site, often caused by miscommunication.

Prepare and Determine if the Stormwater Pollution Prevention Plan (SWPPP) is Being Followed and Make Recommendations if Revisions are Needed During the Life of the Construction Project

Minnesota's construction stormwater permit is an extension of the National Pollution Discharge Elimination System (NPDES) Stormwater Program, which is part of the federal Clean Water Act. Carlson McCain has prepared numerous SWPPP's for projects in which stormwater runoff from a site could migrate and potentially harm/pollute surface water features. The SWPPP provides information on the existing and proposed site

conditions, control measures for stormwater pollution prevention before, during and after construction, inspection, maintenance and information related to the permanent stormwater management system. During the course of construction, it may be determined that the implemented SWPPP measures for the project are not performing adequately and additional or upgraded measures are needed. Conversely, due to unforeseen complications, it may not be practical to install and/or maintain certain stormwater pollution prevention measures. In these cases, an amendment to the SWPPP shall be made.

Install Stainless Steel Soil Gas Sampling Ports Using an Electric Drill to Bore through Floor Slabs

Sub-slab soil vapor sampling is often conducted in conjunction with a field investigation in an effort to quantify the current risk of soil vapor intrusion into the site building and to determine whether or not soil gas is migrating off-Site, creating a potential risk to nearby receptors. Carlson McCain has collected many sub-slab vapor samples from sites were vapor intrusion is migrating and potentially accumulating below a building. Sampling methods used are consistent with U.S. EPA protocols and procedures for collecting air samples using Summa® canister sampling and analysis methods. Sampling is also conducted in accordance with the most recent MPCA BMP's for Vapor Investigation and Building Mitigation Decisions and MPCA Document c-rem 3-01 "*Vapor Intrusion Technical Support Document*".

Sub-slab soil vapor samples are collected by drilling a small diameter hole through a concrete floor with a rotary hammer drill to provide access into the sub-surface soil at each location. A stainless-steel Vapor Pin® or vapor port is installed within the drill hole as a semi-permanent sub-slab vapor sampling location (in the event additional testing or monitoring is required). Prior to collecting the soil gas sample, a sample train (purge manifold assembly) consisting of three valves is installed to connect the vapor port to the sample canister. The tubing, canister, and vapor pin are leak tested by installing a water dam around the vapor pin and leak tightness of the system was verified by leaving the water dam in-place through the duration of the sample collection. In addition, prior to sampling, the sampling train is also verified for air tightness by performing a shut-in test. Before collecting the sample, a syringe is then used to purge two volumes of air from the sample train and tubing. Once purged, the canister fitted with a flow controller (which, in turn, is connected to a Summa® canister), is opened to collect the sub-slab soil gas sample at a flow rate of 200 milliliters per minute. Upon completion, the tubing is then connected to a PID to obtain a field measurement for the presence of organic vapors. The tubing is then removed and the Vapor Pin® covered with a protective cap. In addition, a stainless steel protective cover may be installed at the slab surface to prevent damage to the pin in high traffic areas.

Each canister is then labeled with the name of the sampler, date, time, initial/final vacuum gauge readings and PID readings from the sample tubing. This information is also recorded on the laboratory COC form for the canisters. The canisters are then placed in a box, fitted with bubble wrap or laboratory canister foam containers, and delivered to the laboratory for analysis.

Laboratory batch-certified clean Summa canisters and gauges, and new disposable tubing, fittings and disposable gloves are used at each vapor sampling location to minimize the potential for cross-contamination.

Collect and Manage Field and Laboratory Data for Electronic Submittal in a Format Specified by the MPCA

Carlson McCain understands the importance of collecting and managing both field and laboratory data in a way the MPCA can interpret. We are knowledgeable and familiar with the MPCA Environmental Quality Information System (EQuIS) by attending the 2017 Petroleum Remediation Program (PRP) MPCA Consultant's Day and familiarizing with the MPCA's EQuIS worksheet. Carlson McCain currently does not have any Sites that require or request the use of EQuIS. However, Carlson McCain does provide the MPCA with all field and laboratory data in an electronic portable document format (PDF) reports.

Carlson McCain is very familiar with the MPCA's online eServices database. Prior to commencing field work, Carlson McCain notifies the MCPA through e-Services about the scope of work, timeframe on-site, field staff conducting sampling and subcontractor(s) utilized.

5. Scenario B: Petroleum Only Environmental Services

The completed Example Workplan (Attachment A) and the Example Scenario Spreadsheet (Attachment B) are included as Appendix A and Appendix B, respectively. The Example Workplan and Scenario Spreadsheet are also separately uploaded into SWIFT, per the RFP.

6. Required Certifications and Forms

The following certifications and forms are included as the following Appendices and uploaded into SWIFT, per the RFP.

- An example of our current Certificate of Insurance is included in Appendix C.
- Affidavit of Noncollusion is attached as Appendix D.
- Affirmative Action Certification of Compliance is attached as Appendix E.
- Certification Regarding Lobbying is attached as Appendix F.
- Our Equal Pay Certificate is attached as Appendix G
- The Resident Vendor Form is attached as Appendix H.
- The Veteran-owned Preference Form is attached as Appendix I.
- The signed Request for Proposal (RFP) Addendum is attached as Appendix J.

7. General Requirements

- Carlson McCain accepts the Classification and Rates associated with Schedules 1 and 2 of the RFP.
- Carlson McCain accepts the Equipment and Supplies List, which lists equipment to perform services with prices outlined with the RFP. The prices listed include all costs including but not limited to applicable taxes, fees, insurance costs, direct costs, overhead and profit.
- Conflicts of Interest: *Carlson McCain has no conflict of interest with the work contemplated in this RFP.*
- Certification Regarding Debarment, Suspension, Ineligibility, and Voluntary Exclusion: In the event of an award, *Carlson McCain certifies compliance with Executive Order 12549.*
- E-Verify Certification: By submission of this Proposal and in the event we are awarded a contract, Carlson McCain certifies that will have implemented or be in the process of implementing the Federal E-Verify program for all newly hired employees in the United States, who perform work on behalf of the State of

Minnesota, in accordance with Minnesota Statute §16C.075. Furthermore, Carlson McCain will be responsible for collecting all subcontractor certifications using the E-Verify Subcontractor Certification Form and that all said Forms will be kept on file and be made available to the State upon request.

Appendix A

MINNESOTA POLLUTION CONTROL AGENCY
520 Lafayette Road North
St. Paul, MN 55155-4194

Example Workplan

Project Title: Western MN Service Station (Scenario B - Petroleum Only Environmental Services Work Plan)

1. Project Summary:

Organization:	Carlson McCain, Inc.
Contractor contact name:	Mr. Chris Loch
Title:	Project Manager
Address:	15650 – 36th Avenue North; Suite 110 Plymouth, MN 55446
Phone:	952-346-3913
Fax:	952-346-3901
E-mail:	cloch@carlsonmccain.com

Subcontractor(s)/Partner(s):

Organization:	Range Environmental Drilling, Inc.
Type of organization:	Direct-push and monitoring well drilling company
Project manager:	Mr. Todd Knuckey
Address:	2114 – 2nd Avenue East Hibbing, MN 55746
Phone:	218-966-6054
Fax:	218-263-8159
E-mail:	todd@rangeenvdrilling.com

Organization:	Stevens Drilling & Environmental Services, Inc.
Type of organization:	Well drilling company
Project manager:	Mr. Mike Stevens
Address:	6240 US Highway 12 Maple Plain, MN 55359
Phone:	763-479-1797
Fax:	763-479-1872
E-mail:	main@stevensde.com

Organization:	Pace Analytical Services, LLC.
Type of organization:	Laboratory analytical services
Project manager:	Ms. Tina Soltani
Address:	1700 Elm Street; Suite 200 Minneapolis, MN 55414
Phone:	612-607-6384
Fax:	612-607-6400
E-mail:	tina.soltani@pacelabs.com

Organization:	Interpoll Laboratories, Inc.
Type of organization:	Laboratory analytical services
Project manager:	Ms. Robin Worlie
Address:	4500 Ball Road NE
	Circle Pines, MN 55014
Phone:	763-786-6020
Fax:	763-786-7854
E-mail:	rworlie@interpoll-labs.com

MPCA contact(s):

MPCA project manager:	MPCA Project Manager
Title:	Project Manager
Address:	520 Lafayette Road
	St. Paul, MN 55155
Phone:	651-296-6300
Fax:	651-296-9707
E-mail:	www.pca.state.mn.us

2. Statement of Problems, Opportunities, and Existing Conditions

The following background information was provided by the Minnesota Pollution Control Agency (MPCA) in regards to a recently discovered petroleum release:

A petroleum release has been identified at an active fueling station with a connected 24-hour restaurant (Site) located in a small rural town in western Minnesota. The petroleum release is assumed to be have been reported to the Minnesota State Duty Officer and subsequently assigned an MPCA Leak Site ID number. The fueling station has been in operation since the 1950's. The 24-hour restaurant was an addition (connected) along the east side fueling station building in the late 1990's. The Site is located along the north side of Main Street in a small rural town, surrounded by mixed commercial and residential properties. The Site is adjoined by single-family homes to the north; a residential service road/scenic drive followed by single-family lake homes to the east; Main Street followed by commercial properties to the south; and a street followed by commercial properties to the west. The nearest observed surface water feature is a lake which is located within 500 feet to the east of the Site.

The Site currently operates one diesel fuel and two gasoline underground storage tanks (USTs); and a fueling area consisting of four fuel dispensers. The active USTs are present within the tank basin located to the west of the Site building. The four fuel dispensers are located to the south of the Site's fueling station. An active fuel oil aboveground storage tank (AST) is also located to the north of the Site building. Reportedly, two USTs (unknown product contents) were removed from the Site prior to the addition of the slab-on-grade restaurant. The removed USTs were located within the footprint of the restaurant. Little is known about the condition and sampling results of the removed USTs. However, the MPCA provided information that strong petroleum odors were noted and photoionization detector (PID) readings of up to 1,263 parts per million (ppm) were recorded during historical tank removal activities.

In addition to the petroleum impacts acknowledged during historical UST removal activities, the active tank system is showing product loss within the last few months and a significant amount of petroleum staining has been observed near the fuel dispenser islands. Conversations with the fuel station owner also indicated that some neighboring home owners have been complaining about petroleum odors in their drinking water.

The MPCA provided information indicating that municipal services are available in the area and that the Site is connected to municipal water and sanitary sewer services. Municipal water, sanitary and storm sewer main lines transect along Main Street. However, it is known that the neighboring lakeside single-family homes obtain water from private water supply wells. In addition, the two single-family homes neighboring the Site to the north were acknowledged to have private water supply wells but unknown if these homes are currently connected to municipal services or obtain resource water from the respective wells. The private water supply wells in the area are acknowledged to be completed at depths of 80 feet below ground surface (bgs).

Based on the well logs for the identified off-site private water supply wells, geology consists of interbedded sand and gravel

units from near the surface to depths between 40 and 45 feet bgs. Bedrock is then encountered at depths of 45 feet bgs in each well log. The interpolated groundwater flow is to the east, towards the nearby recreational lake.

The RFP requests that the proposer submit a work plan, including a schedule for specific tasks to be performed that define the extent and magnitude of petroleum contamination; identify and assess potential health; safety and environmental risks; and provide sufficient information to justify MPCA Site file closure, design a potential monitoring plan, or select a potential corrective action. This work plan scenario describes the sequence of work and the tasks necessary to provide decision making and recommendations to MPCA staff associated with the Site petroleum release. To help demonstrate our understanding of the scenario specifics/Site conditions described above, we have taken the liberty of preparing conceptual drawings (Figures 1 and 2), tables and example survey letters. We understand that some of the drawings shown are not typically included with a work plan. However, we felt these would provide graphic representation of some of the assumptions we are using for this scenario. In addition, we also wanted to provide the MPCA with an example of the type of figures and data reduction that would be included with reporting documentation.

3. Goals, Objectives, Tasks, and Subtasks

Goal:

Carlson McCain's primary goal of the proposed work plan is to identify and assess potential pathways for which existing petroleum contamination may or may not impact potential receptors. Identified receptors may be linked with groundwater that has or may affect human health, led or may lead to dangerous conditions from the exposure of petroleum vapors, affect or may affect surface water quality or caused or may cause direct human (dermal) contact. Proposed objectives will provide the information to assess the risks to identified receptors and corrective action, if necessary.

Objective 1: Limited Site Investigation (LSI)

Based on the available data and knowledge of the MPCA Petroleum Remediation Program (PRP) Guidance Documents, Carlson McCain intends to complete an LSI as the initial step of environmental investigation for this Site. Some available data support the fact that the LSI will eventually translate to a full Remedial Investigation (RI). Because much of the information is circumstantial and many unknowns exist, the most appropriate initial approach is to conduct an LSI. The proposed LSI will include the advancement of Site and potential off-site soil and vapor borings to define soil contamination associated with two Site release source areas (historical tank basin and active fuel dispensers), assess impacts to a shallow groundwater unit and potential vapor intrusion impacts to the Site building, underground utilities and off-site property structures. Associated with the initial LSI are surface water, vapor, and water well receptor surveys. Because several neighboring single-family home owners acknowledged petroleum odors from their drinking water, initial LSI activities will also include off-site access to sample nearby water supply wells and potentially advance soil and vapor borings to define a contamination plume migrating off-site. A total of six private water supply wells were previously identified at residential properties neighboring the Site to the north, northeast, east and southeast directions.

Subsequent to discussions with the MPCA assigned Project Leader and acquisition of available Site data (as summarized above and included with the RFP), Carlson McCain will prepare a work plan and cost estimate for the initial stage of work. Carlson McCain and the MPCA Project Leader would potentially discuss the amount of work associated with the initial LSI to get a full understanding of the scope and limit the need for any future change orders. This initial cost estimation would include solicitation of bids from MPCA contracted direct-push probe companies for the projected scope of services assumed to exceed $5,000. In this case, Carlson McCain acquired drilling bids from Range Environmental Drilling, Inc. (Range) and Thein Well Company (Thein), both MPCA contracted drilling companies. For the purpose of this scenario, Range was selected to conduct push probes services for being a veteran owned company, lower bid amount, availability and accessibility with their mobile track drill-rig. Typically, Carlson McCain obtains multiple bids as a means of cost comparison and to select a subcontractor that is the most cost effective, qualified, may provide a drill unit to meet Site accessibility demands, veteran or minority ownership, and proximity from the Site. Carlson McCain will also utilize MPCA contracted laboratories for the required analytical services. Costs for these services would be calculated based on current Pace Analytical Services, LLC. (Pace) and Interpoll Laboratories, Inc. (Interpoll) MPCA contracted rates.

To accomplish the LSI, Carlson McCain will identify receptors to evaluate potential risks; and assess the risk to the identified receptors potentially impacted by petroleum contamination for future investigation or RI activities. Future activities may include MPCA Site file closure, developing a Site monitoring plan or selecting corrective action.

Task A: Project Administration

Carlson McCain will conduct administration activities to effectively investigate the Site petroleum release(s) in an approved, safe and efficient manner. These subtasks are outlined below.

Subtask 1: Background Review

Prior to scheduling and completing LSI activities (soil, groundwater and soil vapor intrusion assessments; and receptor survey walkthrough), Carlson McCain will complete a background review to obtain any reasonably ascertainable information (not previously provided) pertaining to the Site. The background review would include any available tank removal documentation for the former USTs and a review of installation information for the current UST system. Reviewing the MPCA online "Tanks" database, contacting the regional MPCA Tank

Inspector and telephone interviews with the current property owner and the local Fire Department may assist with gathering important information about the past and current tank system components. Specific details to be ascertained would include (but are not necessarily limited to): former UST, piping and dispenser locations; current UST, piping and dispenser locations; any known spills or past tank removal documentation which may have been reported to the local Fire Department; identifying other potential contamination sources; and understanding the contaminant conditions identified at the Site.

Carlson McCain will also prepare initial Site Location and Aerial Plan Views for the Site and surrounding area from available topographic maps, aerial photographs and/or Google Earth®. These maps are invaluable in locating potential receptors near the Site and planning investigative activities prior to mobilization. The maps will also assist our selected driller for Gopher State One Call and private utility locates.

Available well logs will be obtained through the Minnesota Department of Health (MDH) online Minnesota Well Index (MWI) database. Well logs of nearby private water supply wells would be reviewed to initially assist and confirm the area's geology, hydrogeology, type of supply well, well construction, elevations, off-site property owner information for potential off-site access, active or abandoned well, depth, bedrock, aquifer(s), etc.

The following Site characteristics and project details were additionally determined through research and data collection from the information initially provided by the MPCA in this Work Plan Scenario:

- The former USTs were confirmed through local Fire Department records to have stored gasoline and diesel. However, the timeframes for use of leaded gasoline is unknown. A sketch provided by the fire department indicated two fuel dispensers were located directly to the south of the historical tank basin.
- Contact with the property owner and review of an aerial view indicated that the fuel oil AST is located on a small curbed concrete pad;
- The MPCA's online "Tanks" database indicated that the current UST system is in compliance and provided sizes, contents and type of USTs and associated piping present at the Site. However, correspondence with the regional MPCA Tank Inspector indicated that they haven't conducted a Site visit in the past two years and a Site compliance inspection is due within the year.
- The City Public Works Department was contacted and able to provide utility maps (water, sanitary sewer and storm) and indicates that municipal water is available for the area. It was also confirmed that the Site, neighboring commercial properties and the two single-family homes to the north are connected to municipal water and sanitary sewer services.
- A search of well logs from the MDH online MWI database indicates that a total of six private domestic wells are located within 500 feet of the Site. Each well obtains resource water within a bedrock aquifer. In addition to the geology initially provided by the MPCA, static water levels were measured in each domestic well from depths between 12 and 16 feet bgs. It should be noted that the one of the two off-site private water wells to the north of the Site is listed as abandoned/sealed.
- Water supply well logs and review of Google Earth® indicates a relative elevation decrease from the Site towards neighboring homes and the Lake to the east.
- The Site is located approximately two hours (120 miles) to the west of our Plymouth office.

Subtask 2: Site Specific Health & Safety Plan

Carlson McCain will prepare a Site-specific Health and Safety Plan (HASP) prior to investigation activities. The HASP will be consistent with CERCLA Section 104(f) and U.S. Environmental Protection Agency (EPA) Occupational Health and Safety requirements. Carlson McCain will require that all field personnel and contractors conducting work on-site review and sign the HASP. The HASP will include exposure risks to possible contamination, outline the route to the nearest hospital/emergency center and identify standard Occupational Safety and Health Administration (OSHA) requirements set forth in 29 CFR 1910.120 to maintain a safe working environment. The names and telephone numbers of Carlson McCain's designated Safety Officer and project management staff will be included. Telephone numbers for the MPCA, State of Minnesota Duty Officer, local fire department and related agencies will also be included.

In addition, Carlson McCain's HASP will contain Site information, summary of the scope of work and a narrative about historic and current Site operations. The HASP will take into account that petroleum compounds may be encountered.

Subtask 3: Site and Off-site Access/Initial Site Visit

Before conducting Site investigation activities, Carlson McCain will obtain information from the MPCA regarding the current Site owner/applicant. The current Site owner will be contacted about access, schedule Site investigation activities and answer any questions or concerns that may include information about the scope of

work, type of equipment, Site access or hinder business operations. If an access agreement form was not previously completed between the MPCA and the Site owner, Carlson McCain would complete the form and send to the Site owner for review and signature. Once completed, the Site owner may either send the access agreement back to Carlson McCain or directly to the MPCA for their approval and signature.

Carlson McCain will also complete an initial Site visit and/or Site meeting to assess soil and vapor boring locations in regards to the release source area(s), provide information to assist with utility locates, and gather off-site property information for private water supply well sampling and potential soil and/or vapor boring advancements. An attempt to meet with off-site property owners would be conducted to discuss upcoming investigation work, including the need to sample water supply wells and off-site access agreements. If off-site property owners are not available during the initial Site visit, Carlson McCain will document each home address and send letters discussing the scope of work. Carlson McCain may also contact the City and Site owner to assist with neighboring property contact information. Off-site agreement forms between the MPCA and each identified property owner would be completed prior to water supply well sampling and potential soil and vapor boring advancements.

Subtask 4: Non-Specific Administration

Subsequent to receiving the work order, MPCA State Contract Order Forms (SCOFs) will be completed and signed by Carlson McCain and the selected State subcontractors. The SCOF form is used by the MPCA Contractor when hiring a State Subcontractor. Non-specific administration activities may also include budget tracking, project status, subcontractor work review, updates with property owners, assisting field staff, data review, etc.

Subtask 5: Field Work Notification

Carlson McCain will initially schedule drilling activities and off-site water supply well sampling with Range, the Site owner/manager and neighboring property owners/tenants. Carlson McCain's main goal would be to conduct all initial field work within a one or two-day timeframe, limiting costs and mobilizations to the Site. Carlson McCain will try to accommodate all aspects of involved parties schedule, availability and Site operation interference. If an off-site property owner cannot be home during private water well sampling, Carlson McCain will coordinate with the off-site property owner for permission and the best available location to sample the well from outside of the home or advance an off-site soil and/or vapor boring(s). Once the schedule is set with all involved parties, Carlson McCain would contact the MPCA prior to field work. Carlson McCain will utilize the MPCA e-Services online database to login and notify when field work is proposed to commence. Field work notification states the Site leak number, date of field work, start time, Carlson McCain field personnel on-site, field staff cell phone number, drilling sub-contractor selected and work to be performed (i.e. number of soil and vapor borings, receptor survey walkthrough, private water well sampling, etc.).

Associated with Field Work Notification, Carlson McCain prepares field supplies, sampling kits and checks equipment prior to conducting field work. Also, Carlson McCain orders laboratory supplies with the contracted laboratory and confirms requested sampling containers are included or are not damaged.

Subtask 6: Utility Clearance

Prior to conducting subsurface investigation/soil boring advancement activities, Carlson McCain's drilling subcontractor will arrange for clearing public and private utilities. Initial coordination and scheduling for the push probe assessment will include Site information to the drilling subcontractor to complete the Gopher State One Call notification. The drilling subcontractor will also coordinate with a private utility locator to clear private utilities at the Site. All necessary drilling permits will be secured by either Carlson McCain or our subcontractor. The initial visit will also assist in the locating of public and/or private utilities. Proposed soil and vapor boring locations will be marked during the initial Site visit in the event a utility meet is not scheduled or necessary.

Subtask 7: Travel Time

Costs for a field technician from our Plymouth office, nearest to the Site, to conduct the initial Site visit would be proposed for travel to and from the Site located in Western, Minnesota. From the background review, the Site is located approximately 120 miles from our Plymouth office. A total of four hours and respective mileage (240 miles total) at the current Federal rate would be included with this work plan.

Task B: Receptor Surveys

Prior to or while on-Site completing soil, groundwater and vapor intrusion assessment activities, Carlson McCain will complete receptor surveys following MPCA Guidance Document 4-02 (*Risk Evaluation and Site Management Decision at Petroleum Release Sites*). Survey procedures will provide information to identify potential receptors and evaluate the risks associated with impacted drinking water, discharge to surface water features, high concentrations of petroleum vapors and contaminated surface soil for potential run-off and dermal contact.

Subtask 1: Water Well Receptor Survey

- Walking Survey - Utilizing the data from the background review and evaluation of available databases to provide valuable insight for the Site and surrounding area, Carlson McCain will then complete a walking survey of all properties within 500 feet of the Site and release source areas. An initial base map would be used to identify existing features near the Site and confirm distances from the Site. An example of the base map (utilizing data provided for the PRP Scenario 1 Site) is attached as Figure 2. All properties within the 500 feet radius would be identified, listed in tabular form with address and field observable features. During the 500-foot walking survey, Carlson McCain will also attempt to interview any available personnel associated with each identified property (homeowner, business manager, tenant, etc.) and leave self-addressed, stamped questionnaire letter to gather information regarding the properties within 500 feet of the source area. An example of the Property Owner Notification and Questionnaire are attached as Exhibit A. Information requested would include whether water wells, basements or sumps exist on each of the identified properties within 500 feet. If water wells are present, questions about known depth, construction and year installed are included. In addition, the survey questionnaire asks the off-site property owners/tenants if they have observed any unusual odors, primarily in a basement or sump area. Data acquired during the walking survey and questionnaire distribution is tabulated on the property summary table (see example attached as Exhibit B) and utilized to help confirm public water supply.

- Public Water Supply Confirmation - Carlson McCain will submit to the City Public Works Department the tabulated list of properties identified during the 500-feet walking survey to confirm the water supply status for the addresses listed. In addition, information about municipal line construction, depths, diameters, etc. and future development plans would be requested. An example submittal form and property listing table are attached for reference as Exhibit C.

- Well Records Search and Review/Drinking Water Supply Management Areas - Carlson McCain will utilize the MDH online MWI database and the Minnesota Geological Survey (MGS) to locate any wells within ½ mile of the Site to provide information on groundwater usage, aquifers and local geology. Copies of any wells logs identified within ½ mile of the Site will be included as an Appendix to the Investigation Report.

For the purpose of this scenario, the City confirmed that the Site and neighboring properties (commercial and residential) to the north, south and west of the Site are connected to municipal water and sanitary sewer services. The City also provided information about the depth, construction and diameters of Site and off-site municipal service and main lines. Information about municipal service and main lines are included on exhibit figures and discussed throughout the scenario work plan. The City Public Utility Supervisor also acknowledged that plans to install water and sanitary sewer main lines along the Service/Scenic Drive are in the works. The receptor survey also confirmed that six domestic water supply wells are present at single-family homes located to the northern and eastern directions from the Site. The wells associated with the two single-family homes located directly to the northwest and northeast of the Site's former tank basin are either sealed or not in operation and noted that they obtain municipal water from the City. However, the private water supply wells present at the lakeside single-family homes, located to the northeast, east and southeast of the Site, are active. Personal contact and survey letters from two of the four lakeside neighboring homes also acknowledged petroleum odors coming from their well water.

Subtask 2: Surface Water Receptor Survey

Initially, a scaled Site map of the surrounding area will be prepared utilizing both available internet sources (i.e. Google Earth® and/or USGS topographic maps). Using these topographic maps or internet sources, Carlson McCain will identify all surface water features within ¼-mile of the Site. Again, review of the Site maps would provide a basis for completing the walking survey. During the 500-foot walking survey, Carlson McCain would also document any other identifiable surface water features. In addition, potential pathway features such as ditches, drain tiles and storm sewers will be identified. Based on this information, Carlson McCain will evaluate the risk of potential impacts to nearby surface water features. Based on the given Site information and data obtained during initial background review and contact with the City Public Works Department, it is determined that a lake exists approximately 230 feet to the east of the Site. Storm water is collected municipally through roadway catch basins and is assumed to discharge to the lake (via culvert). During the walking survey, the discharge outfall is inspected for signs of contamination (unusual odors, stained soil and/or sheen on discharge water) and these observations are documented. For purposes of this scenario, the observations made during the walking survey do not provide evidence of contamination near the storm water sewer outfall.

Subtask 3: Vapor Receptor Survey

Carlson McCain will conduct a vapor receptor survey in accordance to MPCA Guidance Document 4-02. The vapor receptor survey will identify the location and type of nearby potential vapor receptors. Carlson McCain will prepare a Vapor Receptor Survey Map identifying all potential vapor receptors and vapor migration pathways within 500 feet of the Site. Potential receptors may include sanitary and storm sewer lines, buried cables and

nearby basements where petroleum vapors could accumulate. Carlson McCain will contact City officials for information regarding sanitary and sewer lines, buried utility lines and other subsurface features they have knowledge about. Occupants of nearby buildings and structures will be interviewed and asked if they have smelled petroleum odors. Lower explosive limit (LEL) meter readings will be collected first to check for possible explosive conditions and PID readings will be collected for potential petroleum vapor accumulation within these nearby building, structures and sanitary and storm sewers. Specifically, Carlson McCain will arrange with City public works officials to assess the identified utility lines (manholes and catch basins). We would coordinate with the local police department and/or public works department (and MnDOT District personnel, as necessary) to provide traffic control while working in or near the public roadways, if necessary. Our staff has working experience with MnDOT and railroads to provide safe working areas and signage.

During the vapor receptor survey, measurements and field notes would be collected noting air and potential fluid flow direction, potential sheens and odors, LEL and PID readings, samples (if necessary) and an evaluation of branch locations (with particular attention to locations with unusual readings and/or observations). Two eastern neighboring home owners have observed petroleum odors, but only in their drinking water. Carlson McCain will coordinate efforts to field screen and evaluate the well water at the eastern neighboring properties. In addition, any other floor or wall penetrations, cracks and areas of low air flow such as crawl spaces, sumps and building corners will be screened by utilizing an explosimeter and PID.

Ultimately, the vapor survey information will be used to assess if emergency conditions (i.e. elevated vapors) exist at and surrounding the Site. The assumptions made with this scenario indicated that petroleum vapors were not detected within the open storm water grates identified to the southeast and southwest of the Site. Nearby residents and commercial property owners also did not acknowledge petroleum odors within the basements of each off-site structure. Observations and PID readings were collected from the two eastern homes indicating petroleum odors from their well water. Relatively low petroleum odors and PID readings were identified when the water was turned on at each indoor and outdoor faucet.

Subtask 4: Contaminated Surface Soil Survey

Carlson McCain will complete a surface soil contamination survey as part of the initial soil boring advancement activities. Because the Site is predominantly paved (operation of the Site as a fuel service station and restaurant with parking), risks through this exposure pathway will be significantly reduced. Specific attention will be placed on the area of the aboveground fuel oil AST, fuel dispensers and other areas with no permanent cover (historical tank basin below the restaurant section of the building). For purposes of this evaluation pathway, the completed work results in surface soil contamination (between 0-2 feet bgs) directly below the active petroleum dispensers (present beneath 6-inch thick concrete pad). Visual observations of the concrete pad did not identify staining below or around the fuel oil AST. In addition, a soil boring advanced next to the AST did not identify impacts to the depth of exploration (25 feet bgs - at least five feet below the shallow groundwater table and deepest measurable Site contamination).

Subtask 5: Petroleum Release Notification

Effective August 1, 2008 tank owners are responsible for providing petroleum release information (i.e. release notification, results of the receptor survey and any corrective actions) to all property owners/tenants contacted as part of the receptor survey. On behalf of the current Site owner, Carlson McCain will use the letter template provided by MPCA Guidance Document 2-08 (*Release Notification Follow-up Template*) to facilitate communication to all contacted residents. The example letter template and its Site-specific narrative should satisfy the Petroleum Release Notification Bill (*Sec. 11. [116.482]*).

Task C: Subsurface Investigation

Carlson McCain will complete the first phase of soil, groundwater and vapor assessment with direct-push probe soil borings. Borings will be drilled in accordance with Minnesota Department of Health (MDH) Well Construction Code (Minnesota Rules 4725). As previously indicated, Range will provide drilling services as they are a licensed and registered well contractor in the State of Minnesota. In addition, they are a Veteran Owned company contracted with the MPCA. The soil and vapor borings will be advanced at locations throughout the Site and potentially off-site to determine the extent and magnitude of contamination.

At this point in the project, a Site map has been prepared and will be utilized to locate the appropriate number of soil and vapor borings. The Site map is included as Figure 1. Based on given Site characteristics and assumed conditions obtained during background review for the Site, up to 12 soil borings and 10 vapor borings are initially proposed and agreed upon with the MPCA to initially evaluate the degree and extent of Site and potential off-site soil, groundwater and vapor intrusion impacts in regards to the two identified release source areas. Furthermore, collecting up to six water samples from the previously identified private water supply wells located at single-family homes neighboring the Site is initially proposed. Coordination and scheduling for the push probe assessment and water well sampling would include Gopher State One Call notification (provide drilling contractor with Site information and map with proposed Site and off-site boring locations), contact with City officials regarding any required permits, and ordering of laboratory supplies. Soil and vapor boring locations may be marked during the initial Site visit and receptor

survey walkthrough. Prior to mobilizing to the Site, the current property owner would be notified of our schedule and determine preferred times to complete work in busy areas. Off-site single-family home owners/tenants would also be contacted for collecting water supply well samples and potential soil and vapor boring advancement. As mentioned above, the MPCA field work notification through e-Services will be completed once the field work is scheduled.

It should be noted that prior and subsequent to soil and vapor borings advanced at the Site for soil, groundwater and soil-gas sample collection, the push probe rig tools and sampling equipment will be decontaminated to minimize the potential for cross-contamination. During drilling, all soil sampling equipment (i.e. Macro cores, rods, etc.) will be thoroughly decontaminated between uses using a Liquinox® or dish soap with tap water wash, followed by a tap-water rinse.

Subsequent to soil and vapor boring advancement and sample collection, boreholes will be abandoned according to the current MDH regulations and guidelines. Immediately prior to abandonment, the depth to water (if applicable) and the total depth of the borehole will be measured and recorded to the nearest 0.1 foot. Each borehole will be sealed by backfilling the boring with bentonite in two-feet lifts, topped off with soil cuttings and marked (i.e. staked) for future reference. Each borehole will be measured with a walking wheel in regards to Site and off-site features for completion of a detailed and scaled Site map. Carlson McCain field staff and the drilling contractor will be responsible for restoring the Site and/or off-site properties back to their original condition, as reasonable. Boreholes advanced on asphalt or concrete surfaces will be capped with asphalt patch or sealed with concrete surfacing. Ruts on grass surfaces will be restored to the extent possible. All disposable sampling equipment will be properly bagged and collected and removed from the Site and/or off-site properties for disposal.

Subtask 1: Water Supply Well Sampling

Carlson McCain will collect water samples from the off-site water supply wells identified during initial Site visit and receptor survey activities. The samples will be collected from either directly from the well or before any treatment or filtration system. Prior to sample collection, the water will be allowed to run for at least 10 minutes. The water samples, five total (well to the northwest is confirmed sealed), will be submitted to Pace for analysis of gasoline range organics (GRO), diesel range organics (DRO), volatile organic compounds (VOCs) and lead. Lead analysis may be held with the laboratory until subsurface investigation results confirm the presence of lead or not within impacted soil and groundwater. The purpose of sampling the off-site water supply wells is to determine if petroleum impacts are present. Because two eastern neighboring property owners are smelling petroleum in their well water and an impacted groundwater plume may be migrating to the east, Carlson McCain suspects that the respective water supply wells are impacted by the plume. PID readings will be collected while the water is running during sample collection at each off-site single-family home.

Subtask 2: Soil and Vapor Boring Oversight and Sampling

Out of the 12 proposed soil borings, a total of 11 will be advanced to provide the best possible Site and off-site coverage to address the vertical and horizontal extent of soil and groundwater contamination. Two soil borings will be advanced in or immediately adjacent to the likely release source areas (historical tank basin/dispensers and active dispenser islands). Other soil borings will be placed to sufficiently define the horizontal extent of soil and potential groundwater contamination. Soil borings will be advanced to a minimum of five feet below the water table, 10 feet below the deepest contamination or until significant refusal is encountered. One soil boring will be advanced 20 feet below deepest Site contamination to evaluate Site stratigraphy. In addition, soil borings will be advanced directly next to the fuel oil AST and current UST basin to assess a potential release and provide radial definition from the known release source areas. During soil boring advancement at the Site, the impacted groundwater plume was not defined to the east. A total of three additional off-site soil borings were advanced adjacent to the two eastern adjoining homes and near the shoreline of the Lake. Soil boring locations are visually depicted on the attached Figure 1. Soil boring advancement methods, locations and sampling will follow procedures outlined in MPCA PRP Guidance Document 4-01 (*Soil and Groundwater Assessments Performed During Site Investigations).*

All soil borings will be continuously logged and screened for organic vapors. To determine if contamination is present in soil, visual and olfactory observations will be noted and vapor monitoring will be conducted using a PID equipped with a 10.6 eV lamp. In addition, soil samples will be manually and visually classified by a Carlson McCain field technician according to methods outlined in the American Society for Testing and Materials (ASTM) D2488 and entered onto a field boring log. Soil descriptions will include depth, recovery, consistency, color (using a Munsell Color Chart), physical description/classification of the material, angularity and grading (coarse soils), cohesiveness and plasticity (fine soils), moisture content and depositional environment. Data collected during soil boring advancement will be utilized to create Site geologic cross-sections. Organic vapors will be monitored in soils using bag headspace methods, as outlined in MPCA Guidance Document 4-04 (*Soil Sample Collection and Analysis Procedures*). The PID will be calibrated according to factory specifications, using the benzene equivalent of an isobutylene standard prior to the start of field work, each day or between relatively long work stoppages. Soil samples will be collected from each sampling interval and placed into sealed polyethylene baggies. Each sample will be shaken and placed in a warm environment to allow organic vapors to develop. After letting each sample stand by for at least 10 minutes, the PID probe will be inserted into the plastic bag. The highest detected PID reading for each sample within the first five seconds will be recorded on the boring log.

Vapor monitoring may also be conducted to ensure atmospheric conditions are sufficient to provide a safe working environment.

Select soil samples will be collected from each push probe boring and submitted under Chain of Custody (COC) for laboratory analysis. Soil samples will generally be collected from either the soil interval indicating the highest PID readings, above the water table and/or from the bottom of each boring. Soil samples would be collected from the bottom of the respective boring that did not indicate the presence of soil contamination or the presence of groundwater during field screening activities. All collected soil samples will be preserved, as required, and placed into clean, laboratory supplied sample containers. Each sample container will be uniquely numbered and labeled using indelible ink. The samples will be placed on ice and maintained at a temperature of 4º C. A chain-of-custody will be initiated and kept with the samples until custody is relinquished to the laboratory.

Soil samples will be analyzed for specific analytical parameters based on the contaminants of concern as outlined in MPCA Guidance Document 4-04. Because groundwater is encountered, soil samples will be analyzed for DRO, GRO, petroleum volatile organic compounds (PVOCs), and lead. Samples will be submitted to Pace, a MPCA contract laboratory certified in the State of Minnesota for chemical analysis. The analytical methods for each parameter analyzed at the Site are summarized below:

- PVOCs – Method EPA 8260
- GRO - Wisconsin DNR Modified GRO Method
- DRO - Wisconsin DNR Modified DRO Method
- Lead – Using EPA Method 6010/200.7

For quality assurance, one methanol blank will also be analyzed per sampling event for samples being analyzed for GRO/PVOCs. One temperature blank will accompany the samples per each sampling cooler.

A minimum of three grain size samples would be collected to classify sediments and estimate the hydraulic conductivity for transmissivity calculations. Typically, grain size samples would be collected from the saturated zone or from different horizons that appear to have a high permeability. Grain size samples would be analyzed using the ASTM Method D422 "*Standard Test Method of Particle Size Analysis of Soils*". The locations and depths of the grain size samples would be noted, along with the method of measurement (e.g. Hazen or Krumbein and Monk methods). Grain size samples will be submitted to a MPCA contracted laboratory, Interpoll Laboratories, Inc. (Interpoll), for analysis. Aquifer transmissivity would be calculated using the average hydraulic conductivity and aquifer thickness. For this hypothetical investigation, grain size will be analyzed without hydrometer due to sand and gravel units encountered. The transmissivity is estimated at greater than 50 ft^2/day and is considered an aquifer for the purpose of the MPCA PRP.

A groundwater sample will be collected from each advanced soil boring, if encountered in sufficient quantities to facilitate sample collection for chemical analysis. Temporary wells will be installed within the soil borings by the licensed drilling contractor which will consist of a temporary number 10-slot (0.01 inch), 1-inch diameter by 5-foot long polyvinyl chloride (PVC) screen completed to the surface using flush threaded PVC riser. Groundwater samples will be collected by lowering clean, dedicated polyethylene tubing down the temporary well and pumping groundwater using a check valve or peristaltic pump until it is relatively sediment free and directly into sampling containers. Waste water generated from purging is dispersed from the sampling location. All disposable supplies (i.e. gloves, paper towels, etc.) will be disposed of as solid waste. Sample handling procedures will be conducted as described in the section above and in accordance with MPCA PRP Guidance Document 4-05 (*Ground Water Sample Collection and Analysis Procedures*). Samples will be submitted to Pace, a certified laboratory in the State of Minnesota and contracted laboratory with the MPCA, for chemical analysis. The analytical methods for each parameter analyzed for the Site investigation are summarized below:

- GRO – Wisconsin DNR Modified GRO
- DRO – Wisconsin DNR Modified DRO Method
- VOCs – EPA Method 8260
- Lead – Using EPA Method 6010/200.7

Trip blanks, field blanks and duplicate samples will be collected for quality assurance. One trip blank and one temperature blank will accompany the samples per each sampling event/cooler. In addition, at least one duplicate groundwater sample will be collected to evaluate variability in analytical methods. Duplicate samples will be labeled in such a way as to avoid alerting State certified laboratories that the sample is a duplicate. Duplicate samples will be collected from temporary wells that have either moderate or high levels of contamination. The duplicate sample will be sampled for all parameters as the original samples. The trip blank will be analyzed for GRO and VOCs. A spreadsheet with the Proposed Sample Analysis Breakdown is included in Exhibit D. The Proposed Sample Analysis Breakdown spreadsheet outlines the analysis for each sample matrix, the number of proposed samples for each line item, and sample price.

As part of the initial Site investigation, Carlson McCain will conduct a vapor intrusion assessment in accordance with MPCA PRP Guidance Document 4-01a (*Vapor Intrusion Assessments Performed during Site Investigations*).

The vapor intrusion assessment will evaluate the potential risk of petroleum vapors migrating and accumulating toward and within potential receptors. Recent receptor survey activities identified that the Site building, neighboring commercial and residential property structures, and buried utility corridors, located within 100 feet of the Site petroleum release source areas, are considered potential receptors. Several neighboring properties acknowledged that they have basements and sumps.

In this scenario, the total proposed amount of 10 soil vapor borings were advanced for the collection of soil gas samples necessary to evaluate Site and off-site vapor intrusion impacts towards the Site building, nearby buried utility lines, and neighboring property structures. The soil gas samples will be obtained by advancing direct push borings to depths of eight feet bgs throughout the Site and towards the nearby buildings with basements and setting the drive point with an expendable screen and threaded steel rods at eight feet bgs. Two "worst-case" vapor borings will be advanced through the release source areas to evaluate the potential magnitude of soil-gas accumulating below the Site slab-on-grade building. Polyethylene tubing will then be inserted into the rods and at least two volumes of air shall be removed from the sampling point and tubing using a syringe. The soil vapor samples will be collected by attaching the top end of the tubing to a Summa® canister, which is instrumented with a vacuum gauge (EZ Can assembly). The initial vacuum gauge reading will be recorded and subsequent readings will be checked to identify when the canister is full. Subsequent to sample collection, a PID reading will be collected from the sample tubing and recorded for laboratory confirmation. Vapor boring locations are shown on Figure 1, attached.

Collected soil gas samples will be submitted to Pace and analyzed using the EPA TO-15 method for VOC compounds in the Minnesota Soil Gas List (62 compounds). To minimize cross-contamination of samples, clean disposable gloves and sampling canisters will be used. Summa® canisters received from the lab will be tracked and tagged to make sure clean canisters are used. Summa® canisters will be carefully labeled with the name of the sampler, date, time, initial/final vacuum gauge readings and PID readings from sample tubing. This information will be recorded on a chain-of-custody form. Samples will be placed in a box with bubble wrap and delivered to a certified laboratory in accordance with chain-of-custody procedures. The amount, analysis and sample price of proposed soil gas analysis and EZ Canister Assembly are included in the Proposed Sample Analysis Breakdown (Exhibit D).

Subtask 3: Sample Shipping and Transportation

Preparation and review of the laboratory COCs for all collected soil, groundwater, well water and soil gas samples will be conducted. In addition, this task includes making sure sampling containers are labeled correctly and that the delivery coolers are iced with temperature and laboratory trip blanks. Soil gas sample canisters will be placed in boxes with bubble wrap or fitted shipping containment provided by the laboratory. The laboratories will be notified of delivery procedures and proper COC relinquishment will be conducted.

Subtask 4: MPCA Status Update

Carlson McCain will correspond with the MPCA Project Leader summarizing the results of the LSI. Assumed from the initial investigation, the following information would be relayed/discussed with the MPCA as necessary:

- Groundwater appears to flow to the east as indicated by impacted plume migration.
- The shallow groundwater unit, encountered in Site and off-site soil borings at depths between 12 and 16 feet bgs, is considered an aquifer per the MPCA PRP Program.
- Impacted soil was identified directly below the concrete pad surrounding the active fuel dispensers in soil boring GP-2.
- Soil contamination identified in soil borings GP-1 and GP-2, advanced within and/or adjacent to the former tank basin location and active fuel dispensers (release source areas), are in contact with the shallow groundwater unit. Soil impacts appeared vertically defined by the shallow groundwater unit, as PID readings or petroleum odors were no longer identified below 20 feet bgs.
- Soil and groundwater samples collected from the soil boring advanced next to the fuel oil AST resulted in no contaminant concentrations. Surface staining was also not observed on the curbed concrete pad below the AST.
- Soil, groundwater and soil gas samples collected from soil and vapor borings advanced to the north, west and south of the Site release source areas did not identify the presence of petroleum contamination or evidence of elevated vapor intrusion impacts.
- Laboratory analysis of groundwater samples collected from Site soil borings GP-1, GP-2 and GP-6 (Figure 1) identified elevated DRO and GRO concentrations with several VOCs exceeding MDH Health Risk Limits (HRLs).
- Off-site soil borings were advanced toward the eastern neighboring homes subsequent to impacts identified in Site soil boring GP-6. Laboratory analysis of collected groundwater samples identified GRO, DRO and several VOCs present at concentrations just above MDH HRLs, indicating that the plume

migrated off-site and toward private water supply wells.

- The impacted groundwater plume appears defined with an additional off-site soil boring (GP-11) advanced to the east of the neighboring homes, near the western Lake shoreline.
- A petroleum sheen or Light non-aqueous Phase Liquid (LNAPL) were not observed in the groundwater samples collected in each advanced Site and off-site soil boring.
- Laboratory analysis of the off-site water supply wells located to the northeast and southeast of the Site did not identify constituents present at concentrations above laboratory detection limits.
- Laboratory analysis of the two off-site water supply wells located to the east of the Site indicated several petroleum derived VOCs detected just above MDH HRLs and low DRO and GRO concentrations.
- The soil vapor samples (VP-1 and VP-2) collected from within the release source areas at depths of eight feet bgs detected several petroleum concentrations which exceed MPCA Commercial Intrusion Screening Values (ISVs) by 33X their concentration.
- Soil vapor sample VP-6 (8'), collected from the vapor boring advanced along the Site's eastern boundary, identified several VOC concentrations above 33X Residential ISVs, but below 33X Commercial ISVs.
- The soil gas samples collected from the off-site vapor borings (VP-9 and VP-10), advanced directly to the west of the eastern neighboring homes, did not identify VOC concentrations above 33X Residential ISVs.
- The storm sewer drains easterly to the nearby Lake.
- Petroleum vapors and elevated LEL readings were not detected in "open" storm sewer grates or throughout the inside of the Site building.
- Natural gas, municipal water and sanitary sewer service line depths were acknowledged by the City Public Works Supervisor and estimated between 6 and 12 feet above the shallow groundwater unit encountered throughout the Site.
- The water and sanitary sewer service lines are constructed of material (copper and ductile iron), known to withstand direct petroleum impacts.
- Radial soil and vapor borings provide evidence that petroleum impacts are not migrating toward nearby utility mains.
- The City Public Works Supervisor also confirmed that the four lakeside single-family homes are the only properties in the area not connected to municipal services. The City confirmed that plans to run a water main line along the Service/Scenic Drive, located to the east of the Site, are in the works to potentially provide the lakeside homes municipal water and sanitary sewer services.

Objective 1 Timeline:

Carlson McCain estimates to complete the above identified tasks associated with the initial LSI objective within four to five weeks due to off-site access and scheduling. This also allows at least 6-7 days for soil, groundwater and soil vapor samples to be analyzed by the lab and Carlson McCain to review the analytical data assess the situation.

Objective 1 Deliverables:

Based upon the results of the LSI, an Emergency Response to reduce or eliminate the intake or direct contact of petroleum impacted water from the two off-site water supply wells is necessary. In addition, a full Remedial Investigation (RI) is required at the Site. A deliverable, such as the Investigation Report Form (MPCA Guidance Document 4-06) will be completed subsequent to RI activities. The following data supports the Emergency Response and RI recommendation/requirement:

- Two neighboring private water supply wells appear directly impacted from the groundwater plume.
- Both eastern property owners acknowledged that they do not drink the water from the Site water wells due to the odor and taste. They currently drink bottled water or have a water delivery service (water cooler). However, they do shower/bathe with the well water.
- The calculated transmissivity for the hydrologic unit is greater than 50 ft^2/day based on grain size distribution samples collected during the LSI;
- Groundwater contaminant concentrations from borings advanced within or adjacent to the the historical tank basin and active dispenser pumps resulted in elevated DRO and GRO concentrations with several VOCs exceeding respective MDH HRLs;

- A vapor intrusion sample collected within the former tank basin (source area) and near the Site building resulted in concentration detections of various TO-15 compounds (petroleum related) that exceed MPCA Commercial ISVs by 33 times their concentration;
- Soil and groundwater samples collected from borings advanced to the east of the release source areas (historical tank basin and active fuel dispensers) provide evidence of moderate petroleum contamination and groundwater plume dispersion toward the eastern neighboring single-family homes and the Lake.
- Because impacts were discovered around the active dispenser pump islands, we recommend that the property owner contract with a company to conduct leak tests on the tank system to determine what is failing and have it repaired to prevent current and future product loss.
- The private well that is not in-use at the northeastern neighboring home should also be sealed through the MDH.

Objective 2: Emergency Response/Remedial Investigation (RI)

Based on the initial LSI data, knowledge of the PRP Guidance Documents, recent MPCA Vapor Intrusion Best Management Practices (BMPs) and correspondence with the MPCA assigned Project Leader, Carlson McCain intends to complete a RI as an additional step of environmental investigation for this Site. In addition, immediate actions to limit or eliminate direct contact and potential ingestion of impacted water identified from private water supply wells at the eastern neighboring residential properties should be conducted. Carlson McCain recommends the installation of five Site and off-site monitoring wells to monitor contamination plume characteristics, calculate groundwater flow rate and direction, and define/confirm the extent of the down-gradient impacted groundwater plume. Once wells are installed, Carlson McCain will conduct two quarterly groundwater sampling events from each well to assess groundwater contamination magnitude and extent. Also associated with the RI, Carlson McCain is recommending an additional soil vapor assessment, which includes vapor pin installations through the Site building's floor for sub-slab soil-gas sample collection. Carlson McCain will provide the MPCA with the Investigation Report Form (MPCA Guidance Document 4-06) once the field work is completed, documenting all initial LSI, RI and ER activities.

Subsequent to discussions with the MPCA Project Leader, Carlson McCain will prepare a cost estimate for the recommended ER and RI scope of work. This cost estimate would include solicitation of bids from well contractors versed in carbon filtration systems and monitoring well installation for the proposed scope of services. Again, Carlson McCain normally obtains multiple bids as a means of cost comparison and to subcontract the most cost effective, qualified service provider. Range was ultimately selected to install the five relatively shallow monitoring wells. In addition, Stevens Drilling & Environmental Services, Inc. (SDE) provided a bid to install carbon filtration systems at the eastern neighboring properties wells. SDE is fully licensed contractor to conduct this work. Pace is also selected for their lab services and electronic deliverables. Costs for these services have been calculated based on Pace's current state contract rates and summarized on the Proposed Sample Analysis Breakdown spreadsheet, included in Exhibit D.

To accomplish the ER and RI scope of work, Carlson McCain will assess the risks to the identified receptors potentially impacted by petroleum contamination for future activities. Future activities may include MPCA Site file closure, continued groundwater monitoring or selecting corrective action.

Task A: Project Administration

Carlson McCain will conduct administration activities to effectively conduct the Emergency Response and Remedial Investigation Tasks in a safe, an approved, cost effective and efficient manner. These subtasks, similar to administration tasks previously documented during initial LSI activities, are outlined below.

Subtask 1: Update Health & Safety Plan

The previously prepared H&S plan will be updated to include the work included as part of the proposed RI. Site information has not changed since initial LSI activities.

Subtask 2: MPCA Status Updates

Carlson McCain will correspond with the MPCA Project Leader summarizing the results and status updates of the ER and throughout RI activities.

Subtask 3: Site & Off-site Property Owner Status Updates

Contact with involved property owners will be necessary. Carlson McCain would contact the two off-site home owners about the carbon filtration system installed with their private water supply wells and subsequent sampling results confirming that petroleum concentrations have significantly lowered or no longer present above laboratory detection limits. The Site owner will also be updated about the additional work, sub-slab soil gas sampling in the building, and best locations to install vapor sampling points.

Subtask 4: Non-specific Administration

Subsequent to receiving the additional work order, MPCA State Contract Order Forms (SCOFs) will be completed and signed by Carlson McCain and the selected State subcontractors. The SCOF form is used by the MPCA Contractor when hiring a State Subcontractor. Non-specific administration activities may also include budget tracking, project status, subcontractor work review, updates with property owners, assisting field staff, data review, etc.

Subtask 5: Field Work Scheduling

Carlson McCain will initially schedule off-site water supply well carbon filtration system installation, monitoring well installation, and sub-slab vapor pin installation with Range, the Site owner, and off-site home owners/tenants. Carlson McCain's main goal would be to conduct ER and RI work in conjunction with each other, limiting costs and mobilizations to the Site. Carlson McCain will try to accommodate all aspects of involved parties schedule, availability and Site operation interference. Once the schedule is set with all involved parties, Carlson McCain would contact the MPCA prior to field work. Carlson McCain would utilize the MPCA e-Services online database to login and notify when field work is proposed to commence. Scheduling with the Site and off-site property owners would also be conducted for quarterly groundwater sampling (two events), seasonal sub-slab vapor sampling and subsequent water supply well sampling.

As mentioned above during initial LSI work plan, Carlson McCain prepares field supplies, sampling kits and checks equipment prior to conducting field work. Also, Carlson McCain orders laboratory supplies with the contracted laboratory and confirms requested sampling containers are included or are not damaged.

Subtask 6: Utility Clearance/Well Permitting

Carlson McCain will assist the selected drilling contractor with utility locate clearance information at the Site and eastern neighboring property. Utility locates will be conducted similar to LSI activities. The well driller is legally obligated to contact the Gopher State One-call for each property conducting subsurface work on. In addition, Carlson McCain will assist the driller in obtaining well permits. Carlson McCain assumes that the MPCA is the well owner and permit fees would be waived. Well and property owner contacts will be provided to the drilling contractor to complete the monitoring well permits.

Subtask 7: Sample Shipping and Transportation

Preparation and review of the laboratory COCs for all collected soil, quarterly groundwater, well water and seasonal sub-slab soil gas samples will be conducted. In addition, this task includes making sure sampling containers are labeled correctly and that the delivery coolers are iced with temperature and laboratory trip blanks. Soil gas sample canisters will be placed in boxes with bubble wrap or fitted shipping containment provided by the laboratory. The laboratories will be notified of delivery procedures and proper COC relinquishment will be conducted.

Task B: Water Supply Well Carbon Filtration System Installation (ER)

Previous LSI activities confirmed that the off-site private water supply wells associated with the two lakeside single-family homes, located directly to the east of the Site, are directly impacted from the shallow groundwater plume. Laboratory analysis of water samples collected from each off-site well identified several VOCs present at concentrations above MDH HRLs. It appears that petroleum impacted groundwater is in direct contact with the well casing and acting as a conduit for contamination to enter the water supply stream. The impacted wells are considered High Priority and Emergency per the MPCA PRP.

Each property owner acknowledged that they do not drink the well water. However, they use well water to bathe, wash and water the lawn. Actions to eliminate or reduce direct dermal contact and potential ingestion would be completed immediately. Installing carbon filtration systems to the private water supply well service lines would be the quickest, temporary (interim) technology to eliminate the human health risk until municipal service can be supplied to each home.

Subtask 1: Filtration System Installation Oversight

Carlson McCain will be on-site to meet with the property owners, discuss the carbon filtration system, and oversee installation. SDE proposed costs to install the filtration system, which include 12X40 mesh carbon filters and 1354 in/out filter tanks. Expediated shipping may also be included based on the necessary response to install the systems. SDE will plumb the carbon system to the service lines coming into the basements of each of-site home. Accessibility next to water heaters and/or softeners located in the utility rooms of each home is available. Carbon filtration systems have eliminated petroleum impacts in the past for similar situations and magnitude of contamination. The systems installed at the two off-site wells are calculated to provide clean water for up to three years. At this time, either replace the filter or another corrective action would be in place at each

off-site home (i.e. install new double-cased water supply wells or connect to municipal water). Scheduling, updates, non-specific administration and sample shipping associated with this subtask are included above in Task A.

Subtask 2: Water Supply Well Sampling

Carlson McCain will collect water samples from the impacted off-site water supply wells subsequent to carbon filtration system installation. Sampling would be conducted during the same mobilization to the Site for monitoring well installation. The samples will be collected from a sampling point past the treatment or filtration system. Prior to sample collection, the water will be allowed to run for at least 10 minutes. A total of two water samples will be submitted to Pace for analysis of GRO, DRO and VOCs. The purpose of sampling the off-site water supply wells is to confirm that the carbon filtration system is eliminating petroleum impacts for current and temporary well use.

Task C: Monitoring well installation

Carlson McCain will complete RI activities to assess groundwater plume characteristics by installing monitoring wells. Monitoring wells will be drilled in accordance with MDH Well Construction Code (Minnesota Rules 4725). Drilling services will be provided by Range who is a licensed and registered well contractor in the State of Minnesota, contracted with the MPCA, a veteran owned company and has prior knowledge of the Site. The monitoring wells will be advanced at locations throughout the Site and off-site (down-gradient direction from the release source areas) to determine the magnitude of contamination, indications of stabilization and/or natural attenuation, hydraulic gradient, flow direction and plume characteristics.

Carlson McCain will proceed with RI activities to include the installation of five monitoring wells at proposed locations shown on Figure 1. The hydrogeologic unit is considered an aquifer and data indicate that it has become impacted by two releases of petroleum from the Site, diesel fuel and gasoline related. One of the five monitoring wells will be advanced off-site, to assess the down-gradient extent and stabilization of the impacted groundwater plume. The Site monitoring wells will be installed within the source area (between the historical tank basin and directly down-gradient from the active dispenser pump islands; side-gradient directions (north and south Site boundaries) of the plume and up-gradient direction from the release source areas (west of the active fuel dispensers). Prior to mobilizing to the Site, the current property owner and the off-site property owner would be notified of our schedule and determine preferred times to complete work in busy areas as outlined above (Task A). In addition, MPCA field work notification will be completed once the field work is scheduled.

It should be noted that prior and subsequent to monitoring well installation activities, the drill rig tools, sampling split spoons and hollow stem augers (HSA) will be decontaminated to minimize the potential for cross-contamination. Again, Equipment will be thoroughly decontaminated using Liquinox® or dish soap and pressurized wash. HSA will be steamed cleaned between monitoring well boring advancement by the drilling contractor.

Subtask 1: Monitoring Well Installation Oversight

Carlson McCain will oversee the advancement and installation of five Site and off-site monitoring wells. The HSA borings will be advanced to depths of 20 feet bgs for the completion as monitoring wells. Four flush-grade monitoring wells will be installed at the Site and one aboveground monitoring well installed on the eastern neighboring property (down-gradient between the plume extent and Lake). The proposed monitoring well locations are shown on Figure 1. The two-inch inner diameter (ID) HSA boreholes will be fitted with a 10-foot factory slotted (Number 10-slot), PVC well screens, allowing the screened interval to straddle the water table. Well screens will be connected to flush threaded, Schedule 40 PVC riser pipe to the surface. Carlson McCain will complete a field boring log and construction diagram for each installed monitoring well. Once installed and allowing the grout to set for each well, the drilling contractor will develop each monitoring well to ensure adequate hydraulic connections with the aquifer and to remove any drilling fluids and sediments.

At this time, it appears that a deep monitoring well is not necessary at the Site. The LSI soil boring advanced within the source area appeared to vertically define soil contamination within the shallow groundwater unit.

Because the LSI appeared to define the vertical and horizontal extent of soil contamination and no other release source areas were identified, soil samples will be collected from the HSA borings at five-foot intervals from two-feet split-spoon sampling cores. Collected soil samples will be classified, observed for petroleum impacts and screened for organic vapors with a PID. Field screening and sample collection information will be included on the boring log and well construction diagram. One soil sample from each boring will be submitted to Pace for laboratory analysis of DRO, GRO and PVOCs. Please note that lead impacts were not identified during initial LSI sampling and analysis is no longer requested.

Subtask 2: Monitoring Well Surveying

Carlson McCain will survey the ground surface and top of riser pipe for each of the monitoring wells and tie to the soil borings elevations previously advanced at the Site. A bench mark (typically a permanent Site feature, county coordinates or a nearby MnDOT control point if available) will be surveyed in to be used for any further boring

activities at the site. Monitoring wells will be surveyed to the 0.1 of an inch from the ground surface and the top of casing (TOC).

Subtask 3: Quarterly Groundwater Sampling

Prior to sampling the monitoring wells, they will be purged a minimum of three well volumes. Clean, new disposable high-density polyethylene tubing (HDPE) and a peristaltic pump will be used to purge and collect groundwater from each well. If the contaminant concentrations are known, the monitoring well network would be sampled from the least contaminated well and would proceed to increasingly contaminated wells. If the contaminant concentrations are unknown, Carlson McCain will begin with the wells in the up-gradient and side-gradient locations, which would be the least likely to be contaminated.

Immediately prior to monitoring well purging and sample collection, water level measures will be collected using an electronic water level indicator. The water level measurements would be used to prepare water table maps for inclusion into the RI report. In addition, field parameters (temperature, pH, dissolved oxygen, specific conductance and turbidity) will be collected using a flow through cell water quality meter. Monitoring wells will be sampled only after stable water quality readings are achieved. Groundwater elevations and samples will be collected from each monitoring well in accordance with MPCA Guidance Document 4-05 (*Groundwater Sample Collection and Analysis Procedures*).

Groundwater samples collected from each monitoring well during the quarterly sampling events will be submitted to a Minnesota State certified laboratory (Pace). Based on the results of the LSI and following MPCA Guidance Documents, groundwater samples will be collected for analysis of GRO, DRO and VOCs. Trip blanks, field blanks and duplicate samples will be collected for quality assurance. One trip blank and one temperature blank will accompany the samples per each sampling event/cooler. One field blank will be collected if using re-usable sampling equipment. In addition, at least one duplicate groundwater sample will be collected during each sampling event to evaluate variability in analytical methods. Duplicate samples will be labeled in such as a way as to avoid alerting the laboratory that the sample is a duplicate. A duplicate sample will be collected from the monitoring well that has either moderate or high levels of contamination. The duplicate samples will be sampled for all parameters as the original samples. The trip blanks will be analyzed for GRO and VOCs. A spreadsheet with the Proposed Sample Analysis Breakdown for ER and RI sampling activities included in Exhibit D.

Subsequent to receiving laboratory analytical reports and Pace's EDD, Carlson McCain would upload field and groundwater sampling data into MPCA's Environmental Quality Information System (EQuIS) as requested.

Subtask 4: Travel Time

Costs for a field technician from our Plymouth office (nearest to the Site) would be proposed for travel between the Site located in Western, Minnesota. Travel time is necessary for staff to be on-Site during Emergency Response activities, additional private water supply well sampling, Site building sub-slab vapor sampling, monitoring well installation and quarterly (two rounds) groundwater sampling. Carlson McCain would be able to conduct minimal trips to the Site by conducting monitoring well installation oversight, development, surveying and sub-slab vapor pin installation with the non-heating sampling event in two days (see section below). In addition, a trip to conduct the sub-slab heating season sampling event, a quarterly groundwater sampling event and additional water supply well samples subsequent to filtration system installation would be conducted in one day. Carlson McCain estimates that a total of five trips to the Site would be necessary to complete proposed ER and RI activities. Travel time and mileage to conduct work associated with Tasks B, C, and D are included with this subtask.

Task D: Sub-Slab Vapor Sampling

The initial vapor intrusion assessment identified constituent concentrations exceeding 33X Commercial ISVs from soil gas samples collected from vapor borings advanced alongside the Site building. Therefore, two seasonal (non-heating and heating seasons) sub-slab soil gas sampling events are proposed to determine whether or not soil gas is accumulating below the Site building. Sub-slab vapor sampling would follow MPCA Vapor Intrusion BMPs. Per MPCA BMPs, the Site building size will determine the number of installed sub-slab vapor points. Prior to mobilizing to the Site, the current property owner would be notified of our schedule and determine preferred times to complete work in busy areas as outlined above (Task A). In addition, MPCA field work notification will be completed once the field work is scheduled. Travel, non-specific administration, Site owner updates, and sample shipping subtasks would also be conducted as part of Task A.

Subtask 1: Sub-slab Vapor Pin Installation & Sampling

Carlson McCain proposes up to five sub-slab vapor points to be installed throughout the Site building to assess potential vapor intrusion migration and accumulation below the Site buildings foundation. Carlson McCain will work with the Site owner for "best placement" of each sampling points. Vapor pins will be installed for the two seasonal (non-heating and heating seasons) sampling events required for the Site. Sampling methods used are

consistent with U.S. EPA protocols and procedures for collecting sub-slab samples using Summa® canister sampling and analysis methods included in MPCA PRP Guidance Document 4-01a and Vapor Intrusion Technical Support Document. Sampling is also conducted in accordance with the most recent MPCA BMP's for Vapor Investigation and Building Mitigation Decisions.

Sub-slab soil vapor samples will be collected by drilling small diameter holes at select locations through the concrete floor with a rotary hammer drill to provide access into the sub-surface soil. A stainless-steel Vapor Pin® will be installed within the drill hole as a semi-permanent sub-slab vapor sampling location (two seasonal sampling events are necessary). Prior to collecting each soil gas sample, a sample train (purge manifold assembly) consisting of three valves is installed to connect the vapor port to the sample canister. The tubing, canister, and vapor pin are leak tested by installing a water dam around the vapor pin and leak tightness of the system was verified by leaving the water dam in-place through the duration of the sample collection. In addition, the sampling train is also verified for air tightness by performing a shut-in test. Before collecting the sample, a syringe is then used to purge two volumes of air from the sample train and tubing. Once purged, the canister fitted with a flow controller (which, in turn, is connected to a Summa® canister), is opened to collect the sub-slab soil gas sample at a flow rate of 200 milliliters per minute. Upon completion, the tubing is then connected to a PID to obtain a field measurement for the presence of organic vapors. The tubing is then removed and the Vapor Pin® covered with a protective cap. In addition, a stainless steel protective cover may be installed at the slab surface to prevent damage to the pin in high traffic areas.

Each canister will be labeled with the name of the sampler, date, time, initial/final vacuum gauge readings and PID readings from the sample tubing. This information is also recorded on the laboratory COC form for the canisters. Each sub-slab soil gas samples will be submitted to Pace for TO-15 analysis. Costs are included with the Proposed Sample Analysis Breakdown spreadsheet included in Exhibit D. The canisters are then placed in a box, fitted with bubble wrap or laboratory canister foam containers, and delivered to the laboratory for analysis. Laboratory batch-certified clean Summa canisters and gauges, and new disposable tubing, fittings and disposable gloves are used at each vapor sampling location to minimize the potential for cross-contamination.

Task E: Remedial Investigation (RI) Report

Following the completion of the second round of groundwater monitoring data and seasonal sub-slab vapor sampling events from the Site building, Carlson McCain will complete the MPCA Investigation Report Form (Guidance Document 4-06). Carlson McCain typically initiates the report once data are initially collected and reviewed. Subsequent data and information is added to the document as it is collected and reviewed. The comprehensive Investigation Report Form would include all required information including: general Site and contact information; the Release Information Worksheet (Guidance Document 2-05); answers related to the emergency and high priority status of the Site and what actions were taken; Site and release information; details regarding the extent and magnitude of soil and groundwater contamination; initial LSI soil and vapor boring information; data and calculations for aquifer characteristics and the groundwater contamination assessment; data related to the monitoring well installation and extent and magnitude of the groundwater contamination plume; an evaluation of natural attenuation (if required by the MPCA); information related to the well receptor survey and assessment; data related to the surface water risk assessment; vapor risk assessment/survey data and evaluation; vapor intrusion screening assessment data; a Site Conceptional Model; and recommendations. Supporting attachments to the report include appropriate Site figures (i.e. plan view, geologic cross sections, receptor maps, potentiometric surface maps, groundwater plume extent and flow maps; data tables; concentrations and water level graphs; boring logs and well construction forms; and appendices including such information as laboratory analytical reports, field forms, methodologies and procedures, soil boring logs, water well logs from the area; receptor survey information; and grain size and transmissivity calculations.

Carlson McCain's recommendations, based upon the assumptions throughout this scenario, would be as follows:

- The groundwater contamination plume appears defined by relatively low DRO and GRO concentrations identified in groundwater samples detected in the down-gradient monitoring well (MW-4), advanced off-site toward the nearby Lake. Quarterly groundwater samples indicated concentration below the MPCA's threshold of 1,000 micrograms per liter (µg/L) for requesting additional investigation. However, concentrations within the release source area did not indicate stabilization, as it appears the "new" release associated with the active fuel dispensers have elevated the magnitude of the groundwater plume. Carlson McCain recommends at least one year of quarterly groundwater sampling of the five monitoring wells. Carlson McCain proposes that quarterly groundwater samples collected from up-gradient and side-gradient wells (MW-2, MW-3 and MW-5) be analyzed for DRO, GRO and PVOCs, as laboratory analysis from the two sampling events have indicated concentrations below laboratory reporting limits. Full VOCs should be continued to be analyzed for monitoring wells MW-1 and MW-4. Results would be included on the MPCA Monitoring Report (MPCA Guidance Document 4-08).
- The heating season sampling event identified several VOC concentrations detected in sub-slab soil gas samples collected from vapor pin locations SSV-1 through SSV-3 (Figure 1) exceeding 33X Commercial ISVs. Carlson McCain recommends a Corrective Action Design (CAD) to design and install a vapor mitigation system for the Site building. Indoor air and continued seasonal sub-slab soil gas sampling would

continue through post mitigation diagnostic and confirmation sampling outlined with the MPCA's Vapor Intrusion BMPs.

- Laboratory analysis of water well samples collected from the two off-site homes with recently installed filtration systems no longer identify petroleum constituents present at concentrations above laboratory detection limits. It appears that the carbon filtration systems are temporary providing "clean" resource water to the homes. However, this is a temporary solution and the potential to impact the resource aquifer remains. After discussions with the property owners and the City Public Works department, water main lines will be constructed along the Service/Scenic Drive and plans to hook-up the homes to City municipal services will be conducted. If they are not, a CAD would be recommended to install new, double cased water supply wells and sealing the impacted supply wells in regards to MDH guidelines.

Objective 2 Timeline:

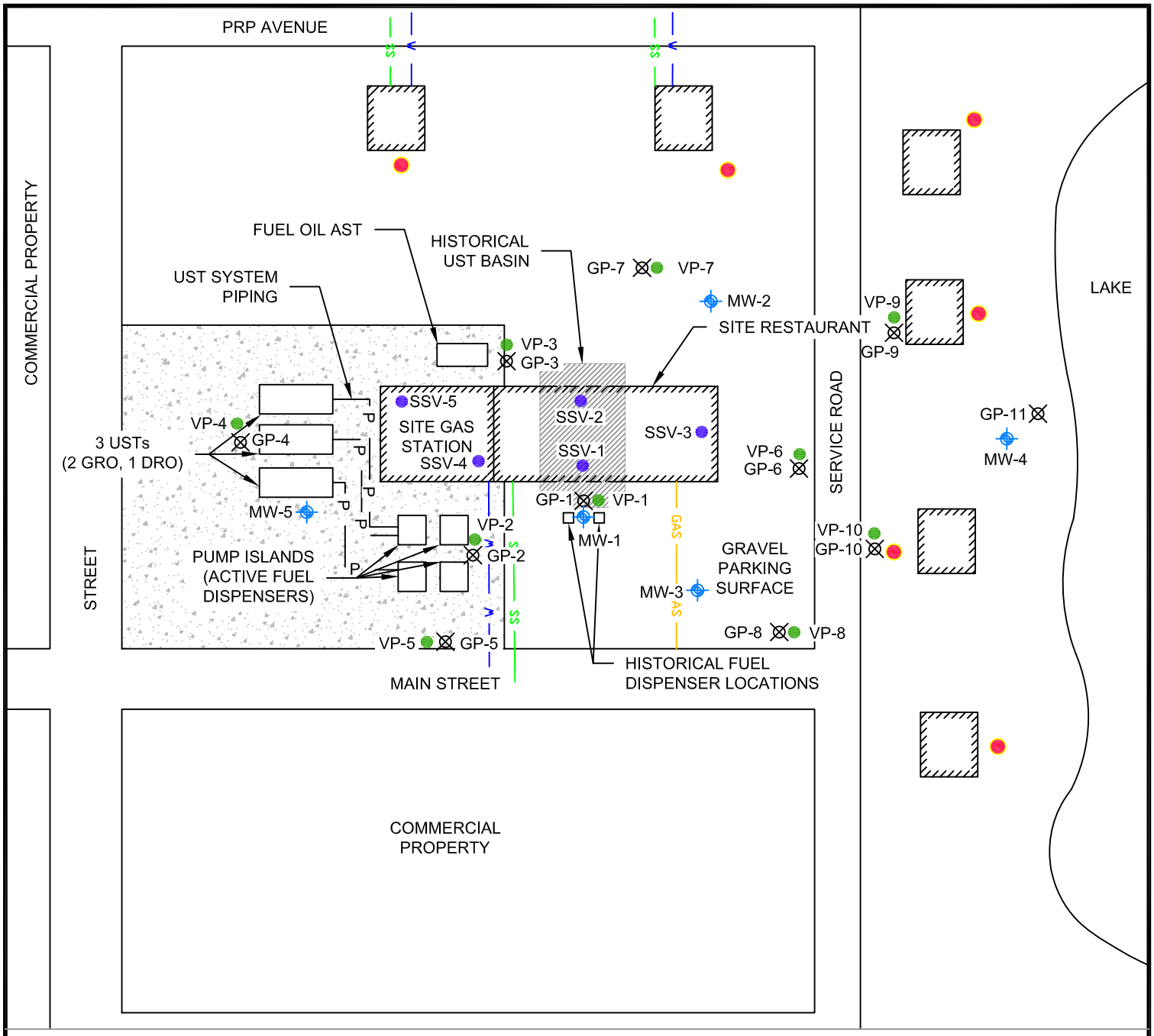
Carlson McCain estimates to complete the above identified tasks associated with the ER and RI objective within six months. This allows for off-site private water supply well filtration system installation and subsequent well sampling, monitoring well installation, development, surveying, assessment, the first two rounds of groundwater sampling (at least 3 months apart), seasonal (non-heating and heating) sub-slab vapor sampling events, and time to complete the Investigation Report once all analytical are received and reviewed.

Objective 2 Deliverables:

Subsequent to the ER activities, quarterly groundwater monitoring and Site building sub-slab soil vapor assessment, Carlson McCain will provide the MPCA with the Investigation Report Form (MPCA Guidance Document 4-06). The report will include the results, SCM and recommendations from data collected during LSI and RI activities. In conjunction with the deliverables provided from LSI activities (Objective 1) of this work plan, the following RI activities provided the following data for Carlson McCain to recommend additional monitoring and CAD mentioned above:

- Laboratory analysis of water samples collected from off-site private water supply wells, subsequent to carbon filtration system installations, indicate GRO, DRO and VOCs not present at concentrations above laboratory detection limits.
- Monitoring well installation and soil sampling activities did not identify any new release source areas.
- The impacted groundwater plume around the release source areas appear to not have stabilized, as fluctuations of DRO, GRO and several VOC concentrations above MDH HRLs were identified during the two quarterly sampling events. This may be in regards to the recent release identified around the active fuel dispensers.
- Two quarterly rounds of collected groundwater water samples from up-gradient and side-gradient monitoring wells did not identify the presence of petroleum contamination, verifying plume definition in these directions.
- The off-site, down-gradient monitoring well identified relatively low GRO and DRO concentrations, decreasing in concentration between the 1st and 2nd quarterly groundwater sampling events. Concentrations are also below the MPCA's threshold of 1,000 micrograms per liter (µg/L) for requesting additional remedial investigation.
- Potentiometric surface maps indicate a low hydraulic gradient, flowing the east of the Site.
- Sub-slab vapor samples SSV-1, SSV-2 and SSV-3, collected from vapor pins installed throughout the restaurant section of the Site building, identified several petroleum derived constituents present at concentrations exceeding 33X Commercial ISVs.

Figures



LEGEND

- GENERAL PRIVATE WATER SUPPLY WELL LOCATION
- RESIDENCE/SINGLE FAMILY HOME
- W — BURIED WATER SERVICE LINE (1" DIAMETER COPPER)
- SS — BURIED SANITARY SEWER SERVICE LINE (4" DUCTILE IRON)
- GAS — BURIED NATURAL GAS SERVICE LINE
- LSI SOIL BORING LOCATION
- LSI VAPOR BORING LOCATION
- RI MONITORING WELL LOCATION
- RI SUB-SLAB VAPOR POINT LOCATION
- PAVED SURFACE (CONCRETE AND ASPHALT)

N

0 50 100 200

SCALE IN FEET

Carlson McCain
15650 36th Ave N, Suite 110, Plymouth, MN 55446
Phone: 952-346-3900 Fax: 952-346-3901
www.carlsonmccain.com

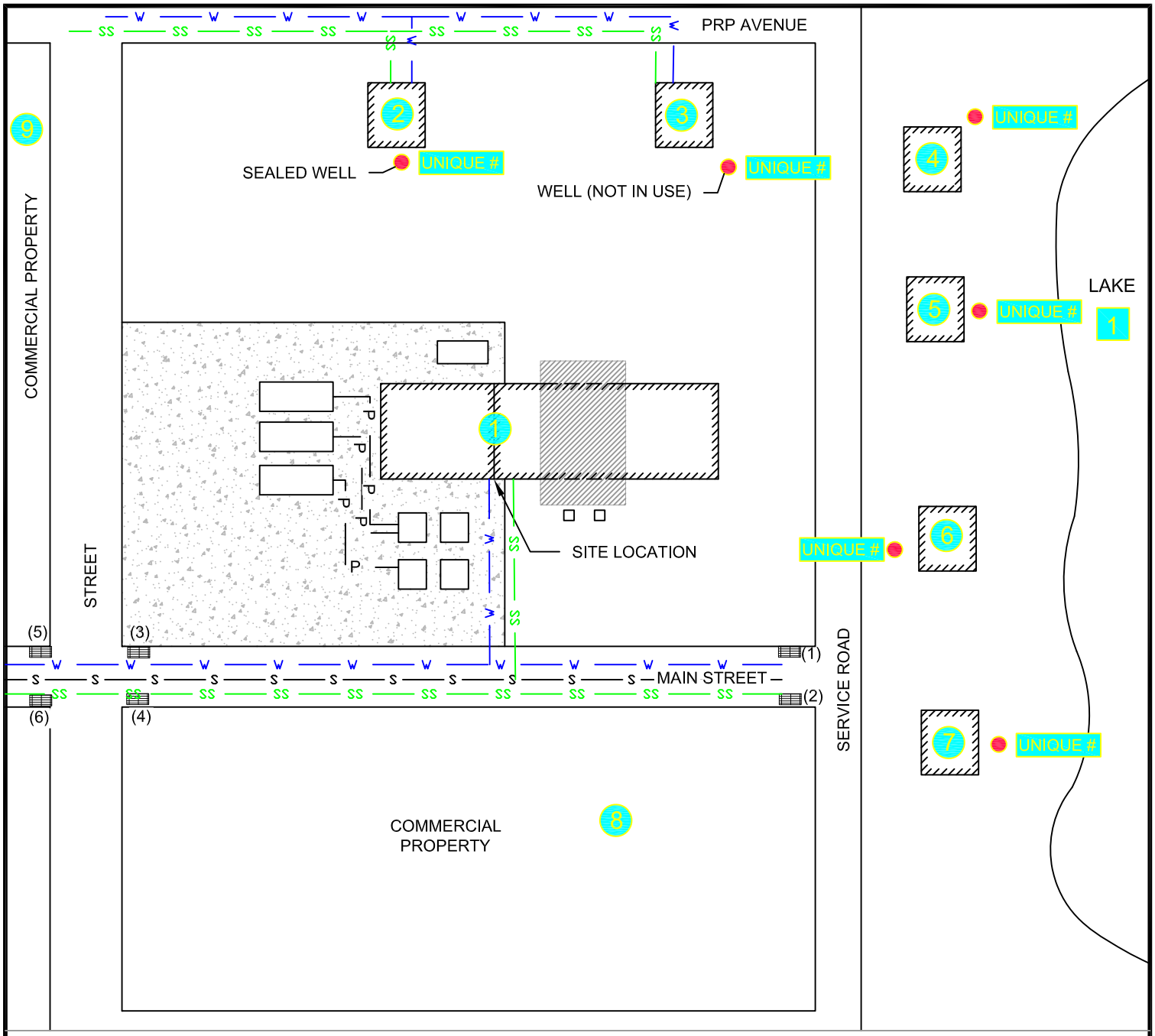
SITE INVESTIGATION

PRP SCENARIO B

SERVICE STATION
WESTERN, MN
CARLSON MCCAIN PROJECT NO.: xxxx-xx
MPCA LEAK SITE NO.: LS00xxxxx

FIGURE 1

SITE PLAN VIEW



LEGEND

- (1) STORM SEWER GRATE LOCATION CORRESPONDING TO TABLE 19 (RI REPORT)
- W BURIED WATER LINE
- SS BURIED SANITARY SEWER LINE
- S S BURIED STORM SEWER LINE
- 1 PROPERTY ID CORRESPONDS TO PROPERTIES LISTED ON TABLE 15 (RI REPORT)
- UNIQUE # GENERAL PRIVATE WATER SUPPLY WELL LOCATION LISTED ON TABLE 16 (RI REPORT)
- 1 SURFACE WATER ID CORRESPONDS TO TABLE 17 (RI REPORT)
- PAVED SURFACE (CONCRETE AND ASPHALT)

N

0 50 100 200

SCALE IN FEET

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SITE INVESTIGATION
PRP SCENARIO B
SERVICE STATION
WESTERN, MN
CARLSON MCCAIN PROJECT NO.: xxxx-xx
MPCA LEAK SITE NO.: LS00xxxxx

FIGURE 2
POTENTIAL RECEPTOR SURVEY BASELINE MAP

Exhibit A

Carlson McCain

ENVIRONMENTAL • ENGINEERING • LAND SURVEYING

April 12, 2018

Dear Property Owner/Tenant(s):

Carlson McCain Inc. (Carlson McCain) has been contracted by the Minnesota Pollution Control Agency (MPCA) to conduct a petroleum release investigation at the service station and restaurant (Site) located at 001 Main Street in Western City, Minnesota. The petroleum release was discovered during historical tank removal activities and recent product inventory loss. The petroleum release was notified to the Minnesota State Duty Officer and assigned MPCA leak number #####.

The MPCA requested the Limited Site Investigation (LSI) to assess and define the vertical and horizontal extents of subsurface soil, groundwater contamination and potential vapor intrusion impacts. The MPCA requires a well and vapor receptor survey at all petroleum release sites as part of this investigation. The objective of the survey is to determine whether any of the neighboring properties have active private water wells, or whether anyone has noticed any unusual petroleum odors on their properties, particularly in basements or underground structures (if present). The following survey is standard protocol for investigation activities. This type of survey is required during all petroleum release investigations to ensure the safety and well-being of neighboring tenants and property owners. Findings associated with this receptor survey will subsequently be provided to you for your information.

Please take a few minutes and fill out the enclosed survey. Once the survey has been completed to the best of your knowledge, please return it to Carlson McCain in the enclosed, self-addressed, stamped envelope. If we do not receive a completed survey from you before April 27, 2018, we will assume that you do not have a private water well and that you have not noticed any unusual petroleum odors at your property.

Your cooperation is greatly appreciated. If you have any questions, please feel free to contact me at (952) 346-3913 or email cloch@carlsonmccain.com.

Sincerely,

Carlson McCain, Inc.

Christopher J. Loch
Project Manager

Enclosure

NAME: _____

ADDRESS: _____

_____

PHONE NUMBER: _____

1. Are you currently hooked up to the city water supply (*circle one*)? *YES NO*

2. To the best of your knowledge, does your property have an active private water well? *(circle one) YES NO*

   If YES, Please supply as much information about the well as possible:

   Date installed: _____

   Depth (below ground surface) the well is completed to: _____

   Diameter of well casing: _____

   Use (irrigation/industrial/primary water supply): _____

3. To the best of my knowledge, the property does / does not *(circle one)* have an abandoned water well. If so, supply as much information about the abandoned well as possible.

4. Does your property have a sump or pit where natural water accumulates? *(Circle one) YES NO*

5. Do you have a basement? *(Circle one) YES NO*

6. Have you noticed any unusual petroleum odors on your property especially in basements or underground structures (if present)? *(Circle one) YES NO*

   If YES, please describe where and when you identified the vapors.

Exhibit B

Table 15
Properties Located within 500 feet of the Release Source

Prop ID[1]	Property Address	Distance From Site (ft)	Water Supply Well			Public Water Supply		Base-ment (Y/N)	Sump (Y/N)	Possible Petroleum Sources (Y/N)	Comments (including property use)
			Well Present (Y/N)	How Determined[2]	Well Use[3]	Utilized (Y/N)	Confirmed by City (Y/N)				
1	001 Main Street	Site	No	Contact	N/A	Yes	Yes	No	No	Yes	Site – active service station & restaurant (MPCA Leak-site #)
2	003 PRP Avenue	160’ NW	Yes	Survey letter/MWI	Sealed	Yes	Yes	Yes	Yes	No	Single Family Home
3	005 PRP Avenue	150’ NE	Yes	Survey letter/Contact/ MWI	Domestic – not in use	Yes	Yes	Yes	No	No	Single Family Home
4	100 Service Road	220’ NE	Yes	Contact/MWI	Domestic	No	Yes	Yes	Yes	No	Single Family Home
5	102 Service Road	195’ E	Yes	Contact/MWI	Domestic	No	Yes	Yes	Yes	No	Single Family Home – petroleum odors from well water
6	104 Service Road	210’ E	Yes	Survey letter/ Contact/MWI	Domestic	No	Yes	Yes	Yes	No	Single Family Home – petroleum odors from well water
7	106 Service Road	250’ SE	Yes	Observed/Contact/ MWI	Domestic	No	Yes	No	No	No	Single Family Home
8	011 Main Street	125’ S	No	Survey letter	N/A	Yes	Yes	Yes	Yes	No	Commercial business
9	010 Main Street	300’ W	No	Contact	N/A	Yes	Yes	No	No	No	Commercial business

[1] Property IDs should correspond to labeled properties in the Potential Receptor Map.
[2] For example, visual observation, personal contact, telephone, returned postcard, assumed (i.e., no postcard returned).
[3] For example, domestic, industrial, municipal, livestock, lawn/gardening, irrigation.
Add additional rows as needed.
Notes: *Unk. = Unknown; MWI = Minnesota Well Index; and N/A = not applicable. Distances to nearby properties were measured from either the former tank basin or active fuel dispensers, which ever was nearest to the off-site property. Property ID corresponds with Figure 2 (Potential Receptor Survey Baseline Map).*

Exhibit C

Carlson McCain

ENVIRONMENTAL • ENGINEERING • LAND SURVEYING

April 12, 2018

City Public Works
Attn: Public Works Manger
123 Main Street
Western City, MN 12345

Re: Water Supply Confirmation
Addresses Connected to City Public Utilities

To whom it may concern:

On behalf of the Minnesota Pollution Control Agency (MPCA), Carlson McCain, Inc. (Carlson McCain) is currently conducting an environmental Limited Site Investigation (LSI) for the Service Station and connected restaurant (Site) located at 001 Main Street in Western City, Minnesota. The LSI is being conducted to assess vertical and horizontal subsurface soil contamination, groundwater impacts and potential vapor impacts from a petroleum release identified during historical tank removal activities and recent tank system inventory product loss. As part of our investigation, we are required by the MPCA to confirm that the Site and surrounding properties are/are not connected to the City public water and sanitary sewer services.

Enclosed is a list of the addresses of concern for our investigation. We would like to request that the City confirm that each property is/is not connected to City water and sewer services. Responding **YES** (address is serviced by City water and sewer services) or **NO** (address is not serviced by City water and sewer services) placed/circled next to each property address would suffice ours and MPCA requirements. **In addition, information about the construction (i.e. copper, ductile, PVC, etc.), diameters and depth to public utilities (mains and services) to the Site would be appreciated.** Also, please state if there are any plans for groundwater development within 1/2 mile of the Site. Please add your name, title and telephone number on the attached page and return it to us in the enclosed self-addressed-stamped envelope.

We greatly appreciate your time and effort for this task. We are hoping to receive confirmation by April 27, 2018. You can send or email the documentation. If you have any questions, you may contact me at 952-346-3913 or cloch@carlsonmccain.com.

Sincerely,

Christopher J. Loch
Project Manager

Enclosure

Addresses of Concern

1.	001 Main Street, Western City, MN (Subject Site – gas station/restaurant)	Yes / No
2.	003 PRP Avenue, Western City, MN (Single family home)	Yes / No
3.	005 PRP Avenue, Western City MN (Single family home)	Yes / No
4.	100 Service Road, Western City, MN (Single family home)	Yes / No
5.	102 Service Road, Western City, MN (Single family home)	Yes / No
6.	104 Service Road, Western City, MN (Single family home)	Yes / No
7.	106 Service Road, Western City, MN (Single family home)	Yes / No
8.	002 Main Street, Western City, MN (Commercial Business)	Yes / No
9.	010 Street, Western City, MN (Commercial Business)	Yes / No

Are there any plans for groundwater development within ½ of the Site? Yes / No

If so, please explain:

Information about construction (i.e. PVC, ductile iron, copper, etc.), depth, and diameter of water and sewer service lines:

Please state your name, title and phone number:

Exhibit D

Proposed Sample Analysis Breakdown (Exhibit D - Initial LSI Only)
Western MN Service Station
001 Main Street
Western, MN 12345
MPCA Leak Site #LS00PRPScenario B

Sample Matrix	Analysis	Amount of Samples	Sample Price (per)	Total Cost
Soil	PVOCs - EPA 8260	24	$40	$960
	PVOCs - EPA 8260 (MeOH Blank)	1	$40	$40
	GRO - WIGRO	24	$22	$528
	GRO - WIGRO (MeOH Blank)	1	$22	$22
	DRO - WIDRO	24	$27	$648
	Lead - EPA Method 6010/200.7	24	$15	$360
	Grain Size - ASTM D422 Sieve w/o Hydrometer	3	$75	$225
Groundwater	VOCs - 8260B (includes duplicate)	13	$65	$845
	VOCs (Trip Blank) - 8260B	1	$65	$65
	GRO - WIGRO (includes duplicate)	13	$22	$286
	GRO (Trip Blank) - WIGRO	1	$22	$22
	DRO - WIDRO (includes duplicate)	13	$27	$351
	Lead - EPA Method 6010/200.7	13	$15	$195
Well Water	VOCs - 8260B (includes duplicate)	7	$65	$455
	VOCs (Trip Blank) - 8260B	1	$65	$65
	GRO - WIGRO (includes duplicate)	7	$22	$154
	GRO (Trip Blank) - WIGRO	1	$22	$22
	DRO - WIDRO (includes duplicate)	7	$27	$189
Soil Gas	VOC - EPA TO-15	10	$212	$2,120
	Flow Control Valve	10	$25	$250
			Total Cost:	**$7,802**

Proposed Sample Analysis Breakdown (Exhibit D - RI Only)
Western MN Service Station
001 Main Street
Western, MN 12345
MPCA Leak Site #LS00PRPScenario B

Sample Matrix	Analysis	Amount of Samples	Sample Price (per)	Total Cost
Soil	PVOCs - EPA 8260	10	$40	$400
	PVOCs - EPA 8260 (MeOH Blank)	1	$40	$40
	GRO - WIGRO	10	$22	$220
	GRO - WIGRO (MeOH Blank)	1	$22	$22
	DRO - WIDRO	10	$27	$270
Groundwater	VOCs - 8260B (includes duplicates)	12	$65	$780
	VOCs (Trip Blank) - 8260B	2	$65	$130
	GRO - WIGRO (includes duplicates)	12	$22	$264
	GRO (Trip Blank) - WIGRO	2	$22	$44
	DRO - WIDRO (includes duplicates)	12	$27	$324
Well Water	VOCs - 8260B (includes duplicate)	3	$65	$195
	VOCs (Trip Blank) - 8260B	1	$65	$65
	GRO - WIGRO (includes duplicate)	3	$22	$66
	GRO (Trip Blank) - WIGRO	1	$22	$22
	DRO - WIDRO (includes duplicate)	3	$27	$81
Sub-slab Soil Gas	VOC - EPA TO-15	10	$212	$2,120
	Purge Manifold Assembly	10	$25	$250
	Flow Control Valve	10	$25	$250
			Total Cost:	**$5,543**

Appendix B

MINNESOTA POLLUTION CONTROL AGENCY
520 Lafayette Road North
St. Paul, MN 55155-4194

Attachment B
*Example Scenario Project Spreadsheet

Project title: Western MN Service Station (Scenario B - Petroleum Only Envrionmental Services Work Plan)

	1. Personnel					2. Subcontracting	3. Equipment								4. Other Expenses			Totals (Extended)
	Hourly						Per Day							Per Point				
Project Budget	Project Manager	Scientist II	Scientist I	Field Technician	GIS/CADD Specialist	Bid Amounts	PID (10.6eV)	Multi-gas Meter	Water Level Indicator	Peristatlic Pump	Water Quality Meter (6 par.)	GPS Unit (Submeter)	Coreing Machine w/drill bits	Vapor Pin Install Kit	Mileage (per mile)	Per Diem (Breakfast)	Per Diem (Lunch)	Hours
	$137.52	$97.48	$78.09	$78.09	$78.09	Lump Sum	$99.00	$123.00	$27.00	$43.00	$102.00	$122.00	$110.00	$60.00	$0.545	$9.00	$11.00	
Objective 1: Limited Site Investigation (LSI)																		
Task A - Project Adminsistration																		
Background Review	2		4		2													8
Health & Safety Plan	0.5		0.5															1
Site & Off-site Access/Intial Site Visit	4	8	2	2														16
Non-Specific Administration	5																	5
Field Work Scheduling	4			1														5
Utility Clearance	0.5		1	1	1													3.5
Travel Time (Initial Site Visit)				4														4
Vehicle Mileage (1 trip - 240 miles)															$130.80			
Task B - Receptor Surveys																		
Water Well Survey	2		4	2														8
Surface Water Survey	1	1		1														3
Vapor Receptor Survey	1		2	1														4
Contaminated Surface Soil Survey				1														1
Petroleum Release Notification	1		1															2
Photoionziation Detector (PID) - 10.6eV							$24.75											
Multi-gas Meter (O2/CO/LEL/Methane)								$30.75										
Task C - Subsurface Investigation																		
Water Supply Well Sampling				3.0														3
Soil & Vapor Boring Oversight & Sampling				18.0														18
Sample Shipping & Transportation	0.5			1.0														1.5
MPCA Status Updates	3.0																	3
Travel Time (2 potential trips)				8.0														8
Vehicle Mileage (2 trips - 480 miles)															$261.60			
Photoionziation Detector (PID) - 10.6eV							$198.00											
Electric Water Level Indicator									$54.00									
Per Diem Breakfast (2 days)																$18.00		
Per Diem Lunch (2 days)																	$22.00	
Laboratory Analysis (Pace & Interpoll)						$7,802.00												
Soil and Vapor Boring Advancement (Range)						$6,480.00												
Total for Objective 1 Hrs	**24.5**	**9.0**	**14.5**	**43.0**	**3.0**													**94.0**
Objective 2: Emergency Response/Remedial Investigation (RI)																		
Task A - Project Administration																		
Update Health & Safety Plan			0.5															0.5
MPCA Status Updates	4																	4
Site & Off-site Property Owner Updates	4																	4
Non-specific Administration	6																	6
Field Work Scheduling	4			2														6
Utility Clearance/Well Permitting	0.5		1	1														2.5
Sample Shipping & Transporatation	1			4														5
Task B - Water Supply Well Carbon Filtration System Installation																		
Filtration System Install Oversight				4														4
Water Supply Well Sampling				1														1
Laboratory Analysis (Pace)						$429.00												
Carbon Filtration Install (SDE- two wells)						$7,000.00												
Task C - Monitoring Well Installation and Sampling																		
Monitoring Well Installation Oversight				16														16
Monitoring Well Surveying		1		2														3
Quarterly Groundwater Sampling (2 events)			4	15														19
Travel Time (up to 5 trips)				20														20
Vehicle Mileage (5 trips - 240 miles per trip)															$654.00			
Photoionziation Detector (PID) - 10.6eV							$148.50											
Electric Water Level Indicator									$81.00									
Peristaltic Pump										$129.00								
Water Quality Meter (6 parameter)											$204.00							
GPS Unit												$30.50						
Per Diem Breakfast (2 days)																$18.00		
Per Diem Lunch (2 days)																	$22.00	
Laboratory Analysis (Pace)						$2,494.00												
Monitoring Well Installation (Range)						$8,200.00												
Task D - Sub-slab Vapor Sampling																		
Sub-slab Vapor Pin Installation & Sampling				12														12
Coreing Machine w/Drill Bits													$110.00					
Vapor Pin Installation Kit (5 points)														$300.00				
Laboratory Analysis (Pace)						$2,620.00												
Task E - Remedial Investigation (RI) Report																		
MPCA GD 4-06 Report Preparation	2	12	24		10													48
Total for Objective 2 Hrs	**21.5**	**13**	**29.5**	**77**	**10**													**151**
Total Project Hours	**46.0**	**22.0**	**44.0**	**120.0**	**13.0**													**245.0**

Appendix C

CERTIFICATE OF LIABILITY INSURANCE

DATE (MM/DD/YYYY): 5/26/2017

THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AFFIRMATIVELY OR NEGATIVELY AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW. THIS CERTIFICATE OF INSURANCE DOES NOT CONSTITUTE A CONTRACT BETWEEN THE ISSUING INSURER(S), AUTHORIZED REPRESENTATIVE OR PRODUCER, AND THE CERTIFICATE HOLDER.

IMPORTANT: If the certificate holder is an ADDITIONAL INSURED, the policy(ies) must be endorsed. If SUBROGATION IS WAIVED, subject to the terms and conditions of the policy, certain policies may require an endorsement. A statement on this certificate does not confer rights to the certificate holder in lieu of such endorsement(s).

PRODUCER	CONTACT NAME: Certificates Department
Kraus-Anderson Insurance 420 Gateway Boulevard Burnsville MN 55337-2790	PHONE (A/C, No, Ext): (952)707-8200 FAX (A/C, No): (952)890-0535 E-MAIL ADDRESS: certificates@kainsurance.com
	INSURER(S) AFFORDING COVERAGE — NAIC #
	INSURER A : United Specialty Insurance Company
INSURED	INSURER B : Secura Insurance A Mutual Company
Carlson McCain, Inc. 3890 Pheasant Ridge Drive Suite 100 Blaine MN 55449	INSURER C : INSURER D : INSURER E : INSURER F :

COVERAGES **CERTIFICATE NUMBER:** 17-18 Certificate **REVISION NUMBER:**

THIS IS TO CERTIFY THAT THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED. NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.

INSR LTR	TYPE OF INSURANCE	ADDL INSD	SUBR WVD	POLICY NUMBER	POLICY EFF (MM/DD/YYYY)	POLICY EXP (MM/DD/YYYY)	LIMITS	
A	X COMMERCIAL GENERAL LIABILITY CLAIMS-MADE X OCCUR X Stop Gap Coverage-ND&WY X Contractual Liability GEN'L AGGREGATE LIMIT APPLIES PER: POLICY X PRO-JECT LOC OTHER:			USA4169560	6/1/2017	6/1/2018	EACH OCCURRENCE DAMAGE TO RENTED PREMISES (Ea occurrence) MED EXP (Any one person) PERSONAL & ADV INJURY GENERAL AGGREGATE PRODUCTS - COMP/OP AGG	$ 3,000,000 $ 100,000 $ 5,000 $ 3,000,000 $ 3,000,000 $ 3,000,000
B	AUTOMOBILE LIABILITY X ANY AUTO ALL OWNED AUTOS SCHEDULED AUTOS HIRED AUTOS NON-OWNED AUTOS			A3150593	6/1/2017	6/1/2018	COMBINED SINGLE LIMIT (Ea accident) BODILY INJURY (Per person) BODILY INJURY (Per accident) PROPERTY DAMAGE (Per accident)	$ 1,000,000 $ $ $
A	UMBRELLA LIAB X OCCUR X EXCESS LIAB CLAIMS-MADE DED X RETENTION $ 0			USA4169561	6/1/2017	6/1/2018	EACH OCCURRENCE AGGREGATE	$ 4,000,000 $ 4,000,000
B	WORKERS COMPENSATION AND EMPLOYERS' LIABILITY ANY PROPRIETOR/PARTNER/EXECUTIVE OFFICER/MEMBER EXCLUDED? Y/N: N (N/A) (Mandatory in NH) If yes, describe under DESCRIPTION OF OPERATIONS below			WC3150594	6/1/2017	6/1/2018	X PER STATUTE OTH-ER E.L. EACH ACCIDENT E.L. DISEASE - EA EMPLOYEE E.L. DISEASE - POLICY LIMIT	$ 1,000,000 $ 1,000,000 $ 1,000,000
A	Professional Liability Pollution Liability			USA4169560 USA4169560	6/1/2017 6/1/2017	6/1/2018 6/1/2018	Each Claim/Aggregate: Each Claim/Aggregate:	$3,000,000 $3,000,000

DESCRIPTION OF OPERATIONS / LOCATIONS / VEHICLES (ACORD 101, Additional Remarks Schedule, may be attached if more space is required)

CERTIFICATE HOLDER

For Informational Purposes Only

CANCELLATION

SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, NOTICE WILL BE DELIVERED IN ACCORDANCE WITH THE POLICY PROVISIONS.

AUTHORIZED REPRESENTATIVE

Mark N. Kampf/MARIEL

Appendix D

ATTACHMENT D

STATE OF MINNESOTA
AFFIDAVIT OF NONCOLLUSION

I swear (or affirm) under the penalty of perjury:

1. That I am the Responder (if the Responder is an individual), a partner in the company (if the Responder is a partnership), or an officer or employee of the responding corporation having authority to sign on its behalf (if the Responder is a corporation);

2. That the attached proposal submitted in response to the MPCA PT RFP - Remediation Master Request for Proposals has been arrived at by the Responder independently and has been submitted without collusion with and without any agreement, understanding or planned common course of action with, any other Responder of materials, supplies, equipment or services described in the Request for Proposal, designed to limit fair and open competition;

3. That the contents of the proposal have not been communicated by the Responder or its employees or agents to any person not an employee or agent of the Responder and will not be communicated to any such persons prior to the official opening of the proposals; and

4. That I am fully informed regarding the accuracy of the statements made in this affidavit.

Responder's Firm Name: Carlson McCain, Inc.

Authorized Representative (Please Print) Wade Carlson

Authorized Signature: [signature]

Date: 4/5/18

Subscribed and sworn to me this 9th day of April

REBECCA THOMPSON
Notary Public
State of Minnesota
My Commission Expires
January 31, 2022

Notary Public Signature: [signature]

My commission expires: January 31, 2022

Appendix E

ATTACHMENT E
STATE OF MINNESOTA – WORKFORCE CERTIFICATE INFORMATION

Required by state law for ALL bids or proposals that could exceed $100,000

Complete this form and return it with your bid or proposal. The State of Minnesota is under no obligation to delay proceeding with a contract until a company becomes compliant with the Workforce Certification requirements in Minn. Stat. §363A.36.

BOX A – MINNESOTA COMPANIES that have employed more than 40 full-time employees within this state on any single working day during the previous 12 months, check one option below:

☒ Attached is our current Workforce Certificate issued by the Minnesota Department of Human Rights (MDHR).

☐ Attached is confirmation that MDHR received our application for a Minnesota Workforce Certificate on _____ (date).

BOX B – NON-MINNESOTA COMPANIES that have employed more than 40 full-time employees on a single working day during the previous 12 months in the state where it has its primary place of business, check one option below:

☐ Attached is our current Workforce Certificate issued by MDHR.

☐ We certify we are in compliance with federal affirmative action requirements. Upon notification of contract award, you must send your federal or municipal certificate to MDHR at compliance.MDHR@state.mn.us. If you are unable to send either certificate, MDHR may contact you to request evidence of federal compliance. The inability to provide sufficient documentation may prohibit contract execution.

BOX C – EXEMPT COMPANIES that have not employed more than 40 full-time employees on a single working day in any state during the previous 12 months, check option below if applicable:

☐ We attest we are exempt. If our company is awarded a contract, we will submit to MDHR within 5 business days after the contract is fully signed, the names of our employees during the previous 12 months, the date of separation, if applicable, and the state in which the persons were employed. Send to compliance.MDHR@state.mn.us.

By signing this statement, you certify that the information provided is accurate and that you are authorized to sign on behalf of your company.

Name of Company: Carlson McCain, Inc. Date 4/5/18

Authorized Signature: _____ Telephone number: 763-489-7900

Printed Name: Wade A. Carlson Title: President/CEO

For assistance with this form, contact:

Minnesota Department of Human Rights, Compliance Services

Web: http://mn.gov/mdhr/ TC Metro: 651-539-1095 Toll Free: 800-657-3704

Email: compliance.mdhr@state.mn.us TTY: 651-296-1283

Minnesota Department of
HUMAN RIGHTS

WORKFORCE
CERTIFICATE OF COMPLIANCE

The Commissioner of the Minnesota Department of Human Rights by the signature below attests that **CARLSON MCCAIN INC** is hereby certified as a contractor under the Minnesota Human Rights Act, §363A.

Certificate start date: **6/28/2016**
Certificate expiration date: **6/27/2020**

Minnesota Department of Human Rights

FOR THE DEPARTMENT BY:

Kevin M. Lindsey, Commissioner

Appendix F

ATTACHMENT F

CERTIFICATION REGARDING LOBBYING

For State of Minnesota Contracts and Grants over $100,000

The undersigned certifies, to the best of his or her knowledge and belief that:

(1) No Federal appropriated funds have been paid or will be paid, by or on behalf of the undersigned, to any person for influencing or attempting to influence an officer or employee of any agency, a member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with the awarding of any Federal contract, the making of any Federal grant, the making of any Federal loan, the entering into of any cooperative agreement, and the extension, continuation, renewal, amendment, or modification of any Federal contract, grant, loan, or cooperative agreement.

(2) If any funds other than Federal appropriated funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any agency, A Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with this Federal contract, grant, loan, or cooperative agreement, the undersigned shall complete and submit Standard Form-LLL, Disclosure Form to Report Lobbying in accordance with its instructions.

(3) The undersigned shall require that the language of this certification be included in the award documents for all subawards at all tiers (including subcontracts, subgrants, and contracts under grants, loans and cooperative agreements) and that all subrecipients shall certify and disclose accordingly.

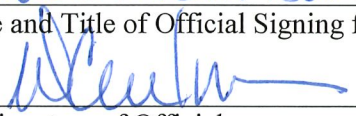
This certification is a material representation of fact upon which reliance was placed when this transaction was made or entered into. Submission of this certification is a prerequisite for making or entering into this transaction imposed by 31 U.S.C. 1352. Any person who fails to file the required certification shall be subject to a civil penalty of not less than $10,000 and not more than $100,000 for each such failure.

Carlson McCain, Inc.

Organization Name

Wade A. Carlson - President/CEO

Name and Title of Official Signing for Organization

By: 

Signature of Official

4/5/18

Date

Appendix G

ATTACHMENT G

State of Minnesota – Equal Pay Certificate

If your response could be in excess of $500,000, please complete and submit this form with your submission. **It is your sole responsibility to provide the information requested and when necessary to obtain an Equal Pay Certificate (Equal Pay Certificate) from the Minnesota Department of Human Rights (MDHR) prior to contract execution. You must supply this document with your submission.** Please contact MDHR with questions at: 651-539-1095 (metro), 1-800-657-3704 (toll free), 711 or 1-800-627-3529 (MN Relay) or at compliance.MDHR@state.mn.us.

Option A – If you have employed 40 or more full-time employees on any single working day during the previous 12 months in Minnesota or the state where you have your primary place of business, please check the applicable box below:

☒ Attached is our current MDHR Equal Pay Certificate.

☐ Attached is MDHR's confirmation of our Equal Pay Certificate application.

Option B – If you have not employed 40 or more full-time employees on any single working day during the previous 12 months in Minnesota or the state where you have your primary place of business, please check the box below.

☐ We are exempt. We agree that if we are selected we will submit to MDHR within five (5) business days of final contract execution, the names of our employees during the previous 12 months, date of separation if applicable, and the state in which the persons were employed. Documentation should be sent to compliance.MDHR@state.mn.us.

The State of Minnesota reserves the right to request additional information from you. **If you are unable to check any of the preceding boxes, please contact MDHR to avoid a determination that a contract with your organization cannot be executed.**

Your signature certifies that you are authorized to make the representations, the information provided is accurate, the State of Minnesota can rely upon the information provided, and the State of Minnesota may take action to suspend or revoke any agreement with you for any false information provided.

Authorized Signature	Printed Name	Title
	Wade A. Carlson	President/CEO

Organization	MN/FED Tax ID#	Date
Carlson McCain, Inc.	04-3684414	4/5/18

Issuing Entity	Project # or Lease Address

DEPARTMENT OF HUMAN RIGHTS

EQUAL PAY
CERTIFICATE OF COMPLIANCE

The Commissioner of the Minnesota Department of Human Rights by the signature below attests that Carlson McCain Inc is hereby certified as a contractor under the Minnesota Human Rights Act, §363A.44.

Certificate start date: March 13, 2018

Certificate expiration date: March 12, 2022

Minnesota Department of Human Rights

FOR THE DEPARTMENT BY:

Kevin M. Lindsey, Commissioner

DEPARTMENT OF HUMAN RIGHTS

March 13, 2018

Carlson McCain Inc
3890 Pheasant Ridge Dr NE STE 100
Blaine MN 55449
ATTN: Dawn Meyers

Re: Equal Pay Certificate of Compliance

Congratulations, the Minnesota Department of Human Rights has reviewed and approved your business's application for an Equal Pay Certificate of Compliance. This Certificate allows you to execute contracts with the State of Minnesota; state departments, state agencies, and the Metropolitan Council agencies, that are likely to exceed $500,000.

Please be aware that the Department will periodically request information from you to ensure compliance with equal pay laws and your good faith efforts to comply with equal pay laws.

For information regarding Equal Pay, go to the Department's website at www.mn.gov/mdhr/certificates. If you have any questions or need additional information, please contact Compliance Services at 651-539-1095 or Compliance.MDHR@state.mn.us.

Sincerely,

Kevin M. Lindsey, Commissioner
Minnesota Department of Human Rights

Enclosure(s)

Appendix H

ATTACHMENT H
STATE OF MINNESOTA
RESIDENT VENDOR FORM

In accordance with Laws of Minnesota 2013, Chapter 142, Article 3, Section 16, amending Minn. Stat. § 16C.02, subd. 13, a "Resident Vendor" means a person, firm, or corporation that:

(1) is authorized to conduct business in the state of Minnesota on the date a solicitation for a contract is first advertised or announced. It includes a foreign corporation duly authorized to engage in business in Minnesota;
(2) has paid unemployment taxes or income taxes in this state during the 12 calendar months immediately preceding submission of the bid or proposal for which any preference is sought;
(3) has a business address in the state; and
(4) has affirmatively claimed that status in the bid or proposal submission.

To receive recognition as a Minnesota Resident Vendor ("Resident Vendor"), your company must meet each element of the statutory definition above by the solicitation opening date and time. If you wish to affirmatively claim Resident Vendor status, you should do so by submitting this form with your bid or proposal.

Resident Vendor status may be considered for purposes of resolving tied low bids or the application of a reciprocal preference.

I HEREBY CERTIFY THAT THE COMPANY LISTED BELOW:

1. Is authorized to conduct business in the State of Minnesota on the date a solicitation for a contract is first advertised or announced. *(This includes a foreign corporation duly authorized to engage in business in Minnesota.)*
   X **Yes** ___ **No (must check yes or no)**

2. Has paid unemployment taxes or income taxes in the State of Minnesota during the 12 calendar months immediately preceding submission of the bid or proposal for which any preference is sought.
   X **Yes** ___ **No (must check yes or no)**

3. Has a business address in the State of Minnesota.
   X **Yes** ___ **No (must check yes or no)**

4. Agrees to submit documentation, if requested, as part of the bid or proposal process, to verify compliance with the above statutory requirements.
   X **Yes** ___ **No (must check yes or no)**

BY SIGNING BELOW, you are certifying your compliance with the requirements set forth herein and claiming Resident Vendor status in your bid or proposal submission.

Name of Company: Carlson McCain, Inc. Date: 4/5/18

Authorized Signature: _____ Telephone: 763-489-7924

Printed Name: Wade A. Carlson Title: President/CEO

IF YOU ARE CLAIMING RESIDENT VENDOR STATUS, SIGN AND RETURN THIS FORM WITH YOUR BID OR PROPOSA SUBMISSION.

Appendix I

ATTACHMENT I

STATE OF MINNESOTA
VETERAN-OWNED PREFERENCE FORM

Unless a greater preference is applicable and allowed by law, in accordance with Minn. Stat. §16C.16, subd. 6a, the state will award a 6% preference on state procurement to certified small businesses that are majority owned and operated by veterans.

Veteran-Owned Preference Requirements - *See* Minn. Stat. § 16C.19(d):

1) The business has been certified by the Office of Equity in Procurement as being a veteran-owned or service-disabled veteran-owned small business.

   or

2) The principal place of business is in Minnesota AND the United States Department of Veterans Affairs verifies the business as being a veteran-owned or service-disabled veteran-owned small business under Public Law 109-461 and Code of Federal Regulations, title 38, part 74 (Supported By Documentation).

Statutory requirements and appropriate documentation must be met **by the solicitation response due date and time** to be awarded the veteran-owned preference.

Claim the Preference

By signing below I confirm that:

My company is claiming the veteran-owned preference afforded by Minn. Stat. § 16C.16, subd. 6a. By making this claim, I verify that:

- The business has been certified by the Office of Equity in Procurement as being a veteran-owned or service-disabled veteran-owned small business.
  or
- My company's principal place of business is in Minnesota **and** the United States Department of Veteran's Affairs verifies my company as being a veteran-owned or service-disabled veteran-owned small business (Supported By Attached Documentation)

Name of Company: N/A _____ Date: _____

Authorized Signature: _____ Telephone: _____

Printed Name: _____ Title: _____

Attach documentation, sign, and return this form with your solicitation response to claim the veteran-owned preference.

Appendix J

MINNESOTA POLLUTION CONTROL AGENCY

520 Lafayette Road North
St. Paul, MN 55155-4194

REQUEST FOR PROPOSAL (RFP) ADDENDUM

Addendum No.: 1 Date of Addendum: March 19, 2018

Due Date, Time: April 11, 2018, 2:00 PM

Title: MPCA PT RFP – REMEDIATION MASTER

SCOPE OF ADDENDUM

The Request For Proposal (RFP) is revised as follows with additions underlined, and deletions are ~~struck out~~:

Revision 1. RFP Section 2: Project Goals, Page 3, is amended as follows:

The total amount of money available for work under this Master Contract is approximately ~~$120,000,000.00 (One Hundred Twenty Million Dollars)~~ $420,000,000.00 (Four Hundred Twenty Million Dollars) for five years between all Master Contracts issued under this RFP. No payments will be made except for work authorized by a Work Order that is issued from the State. No minimum payment is guaranteed by the State.

Revision 2. RFP Attachment C. Sample Contract, Page 2, Clause 4.1 Consideration. is amended as follows:

4.1 Consideration. The State will pay for all services satisfactorily performed by the Contractor for all Work Order Contracts issued under this Master Contract. The total compensation of all Work Orders may not exceed ~~$120,000,000.00 (One Hundred Twenty Million Dollars)~~ **$420,000,000.00 (Four Hundred Twenty Million Dollars)** for five (5) years between all Master Contracts

Revision 3. RFP Section 7. Proposal Content, Category A: Petroleum, Superfund, MDA, and Closed Landfill Program Environmental Services, A.3, Page 31, is amended as follows:

Provide a detailed description of the company's experience as it relates to the scope of services outlined in this RFP; specifically, describe the company's experience with each of the bullets listed in **Section 4 3** of this RFP. The Proposal shall contain the following additional details specific to Category A services:

- A summary of Proposer's experience with agricultural chemical investigation and cleanups.
- A list of remediation technologies with which the Proposer has experience.
- Provide a detailed description of the company's experience as it relates to the scope of services outlined in this RFP for Category A.

Revision 4. RFP Section 3: Scope of Services, Page 3, is amended as follows:

The Contractor shall submit a separate proposal for each Category of Service for which the Contactor would like to be considered. Proposals will be evaluated individually for each Category of Service for which they were submitted. Category B is a subset of Category A. If the Contractor submits Proposals for both Category A and Category B, Category A will be evaluated first for qualification. If the Contractor is not approved for Category A, they will then be evaluated for Category B. Category C will be evaluated individually. Contractors can submit Proposals for all three Categories if desired.

Should a Contractor be approved and selected for more than one Categories, the Contractor will receive only one Master Contract containing all the approved and selected Categories.

Joint ventures and teaming among groups of Contractors is not allowed.

Revision 5. RFP, Attachment C Sample Contract, Clause 38. C. Additional Insurance Conditions, Bullet #5, Page 21, is amended as follows:

- Contractor's policy(ies) shall include legal defense fees in addition to its liability policy limits, with the exception of ~~B.4~~ Professional/Technical, Errors and Omissions, and/or Miscellaneous Liability Insurance above;

Revision 6. RFP, Section 4. Personnel Classifications and Qualifications, Category C: Closed Landfill Program, Project Manager Qualifications,Second Bullet, Page 23, is amended as follows:

- Minimum of three years experience working with landfill, investigation and closure. ~~Minnesota Guidance and Policy with the Superfund/ Petroleum programs. https://www.pca.state.mn.us/waste/cleanup-guidance~~

Revision 7. RFP, Section 6. Supplies and Equipment Pricing, EQUIPMENT RATES, Pages 28 and 29, and RFP, Attachment C, Sample Contract, EQUIPMENT RATES, Pages 5,6,7, is amended as follows:

Equipment	Cost (per day)
Turbidity Meter	$52.00
Oxidation-reduction potential (ORP) Meter	$39.00
~~Hydrolab Quanta~~	~~$80.00~~
Dissolved Oxygen Meter	$46.00
Temperature, pH, conductivity, ORP meter	$68.00
Temperature, pH, conductivity	$35.00
~~YSI Multi Meter w/ Flow Cell~~	~~$117.00~~
Flow Cell	$77.00
Water Quality Meter (6 parameters)	$102.00
2" Trash Pump	~~$189~~75..00
Bladder pump	$118.00
Submersible Pump	$52.00
Peristaltic Pump	$43.00
Diaphram Pump	$53.00
Mechanical Pump Puller	$44.00
Water Level Indicator	$27.00
Hydrocarbon/Water Interface Probe	$55.00
Pump/Slug Testing Equipment	$110.00
Manual direct-push probe equip.	$165.00
X-ray Fluorescent (XRF) for Soil and Lead Paint	$468.00

Nuclear Density Gauge	$69.00
Multi Gas Meter (02/CO/LEL/Methane)	$123.00
O2/Combustible Gas Detector	$110.00
LEL/O2/CO2 Gas Meter	$66.00
LEL/O2Gas Meter	$55.00
Explosimeter	$52.00
Photoionization Detector (PID) 10.6	$99.00
Photoionization Detector (PID) 11.7	$138.00
Flame Ionization Detector (OVA)	$135.00
Velometer / Anemometer	$34.00
Micro Manometer	$64.00
Sound Level Meter	$53.00
Dust Meter	$70.00
Air Compressor	$54.00
Metal/Cable Detector	$47.00
Generator	$65.00
Sump Pump	$33.00
Pressure Washer	$69.00
Magnetometer	$151.00
Coreing Machine with Drill Bits	$110.00
Surveying Equipment - Rotary Laser	$104.00
GPS (Submeter)	$122.00
Laser Level/Lenker Rod	$127.00
Ground Penetrating Radar (GPR)	$426.00
EM-31 Ground Conductivity Meter	$440.00
EM-61 Ground Conductivity Meter	$688.00
55 gal Drums	$70.00
Sub-Slab Soil Gas Sampling Point Insert	$88.00
Screen for Soil Gas Monitoring Points	$51.00
Vapor Pin Installation Kit (per point)	$60.00
Lumex Mercury Monitoring	$187.00
Mercury Analyzer	$179.00
Canoe	$15.68
Boat (includes motor and trailer)	$58.24
ATV **(Hourly Rate)**	$16.80

Revision 8. RFP, Section 7. Proposal Content, Category B. Petroleum Only Remdiation Environmental Services B.5., Scenario 1: Petroleum Only Environmental Services, Page 39, is amended as follows:

5. Scenario ~~1~~ B: Petroleum Only Environmental Services

Scenario ~~1~~B:

Revision 9. RFP, Section 6. Supplies and Equipment Pricing, Item cc., Page 27 and RFP, Attachment C, Sample Contract, Clause 8, Page 5, is amended as follows:

cc. Tubing less than $100.00

Revision 10. RFP, Section 7. Proposal Content, 5. Scenario A., Page 33, is amended as follows:

The property owner conducted a limited investigation consisting of several push probes throughout the facility and adjacent property. This investigation identified chlorinated ethenes (most notably trichloroethylene [TCE]) and agricultural chemicals (nitrogen, dicamba, metolachlor, metribuzin, pendimethalin, and triclopyr) in soils and groundwater above agency-regulated cleanup goals. General geology was noted to generally consist of coarse grained sands with thin lenses of silt and clay. The investigation encountered shallow groundwater approximately 6-10 feet bgs, with an assumed flow direction heading into town. All groundwater samples (blue GW samples) were collected at 30 feet for domestic wells, and 15 feet for investigation borings. The investigation did not evaluate the stream.

A single round of vapor points were also advanced off-site as part of the property owner's investigation, with some of the detections exceeding the 33X ISV for TCE (Figure 1). Vapor samples (orange vapor samples) were collected above the water table. MPCA is aware there is a pregnant person at the property with the sub-slab point. A passive soil-gas sample collected in the vehicle/equipment maintenance garage was several orders of magnitude above screening criteria; however, additional characterization nor remediation occurred in the building by the property owner.

Revision 11. RFP, Section 7., Proposal Content, Category A..; Scenario A, 2nd Paragraph, Page 32, is amended as follows:

The site topography is mostly flat, however the elevation does dip downward toward a small stream running through the northern portion of the property. This stream continues into the town which is located in the west adjoining property (see Figure 1). Older portions of the town (situated closer to the former ag-chem plant) are on private well drinking water (blocks 3, 5, and 7) that are 30 feet deep. Newer portions of the town (farther from the former plant) are on community water from the local municipality (blocks 1, 2, 4, and 6).

Revision 12. RFP, Section 7., Proposal Content, Category B. #5. Scenario 1: Petroleum Only Environmental Sercices, 5th Paragraph , Page 39, is amended as follows:

Municipal services are available in the area; however, the lakeside homes are all on private wells. The wells are 80 feet deep. The fueling station is hooked up to municipal water and other utilities at the site include storm sewer, sanitary sewer, and water that run along main street.

This addendum shall become part of the RFP and MUST be returned with the RFP Response.

RESPONDER NAME: _____

TITLE: Wade A. Carlson - President/CEO

DATE: 4/5/18