PROPOSAL FOR ENGINEERING AND TECHNICAL SERVICES 2020–2022

Prepared for the Lower Minnesota River Watershed District

Submitted by Young Environmental Consulting Group, LLC

June 5, 2020

1. Cover Letter

Lower Minnesota River Watershed District
Attention: Linda Loomis
112 East Fifth Street, Suite 102
Chaska, Minnesota 55318

June 5, 2020

RE: Proposal for Engineering and Technical Services for 2020–2022

Dear Ms. Loomis:

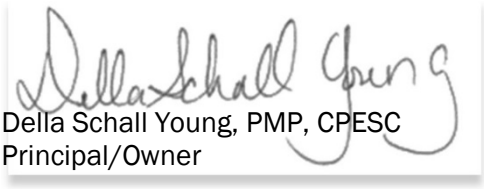
Thank you for the opportunity to submit our proposal/qualifications to provide engineering and technical services to the Lower Minnesota River Watershed District (District) between 2020 and 2022.

Since the 2018 approval and adoption of its watershed management plan, the District (under the current board's leadership and with your management) has focused on developing procedural elements, including developing the new District rules, initiating and completing resources for health and management studies such as the Geomorphic Assessment of Trout Streams and the Fens Sustainability Gaps Analysis, funding or designing capital restoration projects such as the East Chaska Creek and the Amazon Stormwater Correction Project to further the District's mission to protect, and restore and preserve high value resources (calcareous fens, trout streams, lakes, and Minnesota River bluffs). Recognizing the challenges and enormous opportunities the District faces, Young Environmental Consulting Group, LLC (Young Environmental) has assembled an experienced team of professionals with not only a historical perspective but also the technical knowledge and skills to continue providing the full-service engineering, technical, and planning services you have grown accustomed to receiving. Our team comprises Young Environmental (your current technical and planning consultant) as the prime, with support from our current partner, Barr Engineering Company (a regional water and natural resource management service leader).

I will lead our team as principal consultant, and Katy Thompson will serve as district engineer. As a credentialed project management, erosion and sediment control, and facilitation professional, I will continue to use my knowledge of the issues and opportunities facing the District developed over more than 20 years of professional experience to assist the board of managers and the administrator. Since joining Young Environmental, Katy, a State of Minnesota-registered professional engineer and certified floodplain manager, has coordinated the online permitting application process and facilitates project reviews. She is managing and leading this year's interns on the gully inventory and condition assessment project. A presentation of our team's qualifications, experience, and rate schedule is attached.

Thank you again for the opportunity to submit our proposal to continue the work we started with the District. If you have any questions regarding our composition or qualifications, please contact me at (651) 249-6974 or della@youngecg.com.

Sincerely,



Della Schall Young, PMP, CPESC
Principal/Owner

2. Company Profiles

Our team is led by Young Environmental Consulting Group, LLC (Young Environmental) and supported by Barr Engineering Company (Barr). Below are company profiles.

YOUNG ENVIRONMENTAL CONSULTING GROUP, LLC

Our team is led by Young Environmental Consulting Group, LLC (Young Environmental) and supported by Barr Engineering Company (Barr). Below are company profiles.

Young Environmental is a State of Minnesota Unified Certification Program and Central CERT Certification Program-certified, small, woman- and minority-owned, disadvantaged business enterprise and State of Minnesota-targeted group business program consulting firm headquartered in Hopkins, Minnesota. Founded in 2016, the firm specializes in project management, water and natural resources management and planning, stormwater and environmental compliance and permitting, and stakeholder engagement. Our passionate, highly skilled team of professionals will work with you to develop strategies and create final products based on our knowledge and practical experience.

Our clients and project partners are important to us. We show our integrity by respecting and honoring our commitments. Young Environmental is steadfast and unwavering when it comes to project guidelines and outcomes. We explore every possible option, and we want to work with you to achieve the best possible results through efficient, effective project management combined with our passion for environmental stewardship and consensus-based decision-making.

Our scientific experience and expertise position us for excellence in every project we complete. With more than 50 years of combined local and national experience, our professionals are fully capable of working in a variety of situations. We are directly involved in every step of the project development process and have a demonstrable ability to collaborate through excellent facilitation, straightforward communication, and attention to detail. Our focus is on more than the task at hand; it is on the resources of our clients, partners, and the community at large.

BARR ENGINEERING COMPANY

Incorporated as an employee-owned firm in 1966, Barr provides engineering and environmental services to public and private clients. Our areas of expertise include water resources and natural resources design and management; civil, structural, and geotechnical design; environmental management and compliance assistance; and assessment and remediation of contaminated sites.

Of our 900 engineers, scientists, and support specialists, more than 100 Bloomington-based employees, including seven certified floodplain managers, are engaged in water resources engineering and design; floodplain and stormwater management; wetlands, limnology, landscape ecology, hydrogeology, and geographic information systems. We have worked with more than 20 watershed management organizations and have served several of them continuously for more than 40 years, providing us with insight into the challenges that watershed organizations face.

Conflict of Interest Policy Statement

Our team understands that real and perceived conflicts of interest may arise on projects for cities within the District or with its partners. We will proactively review opportunities; upon discovery of anything that might affect our performance on the project, we would immediately notify the Lower Minnesota River Watershed District administrator and take steps to resolve the conflict.

3. Summary of Qualifications and Sample Relevant Projects

Above failed bank on Riley Creek near Dell Road, 2020.

Watershed, Subwatershed, and Water Resources Management and Planning: Our team includes professionals with a rich history and experience of planning and managing water and natural resources policies, strategies, and enforcement activities on behalf of water management organizations (WMOs). Young Environmental guided the District through the development and amendment of the *Third Generation Watershed Management Plan* and development of the District's first set of governing rules. It has been (and, if selected, will be) exciting to see recommended activities transition into active or completed projects. Our team of engineers and scientists look forward to implementing the District's mission and goals of protecting, preserving, and restoring calcareous fens, trout streams, trout lakes, and Minnesota River bluffs through science-based data collection and evaluation and the development of efficacious projects.

Lake, Wetland, and Streambank Restoration and Management: We have implemented a variety of techniques in both rural and urban riparian environments to stabilize, restore, and protect lakes, fens, wetlands, streams, and rivers. Services provided include, but are not limited to, ecosystem restoration, flood control, erosion repair, and property protection. As illustrated in the *East Chaska Creek Restoration Feasibility Study*, our professionals observe stream and river systems to determine the stage of degradation and the degree of incision and to develop stepwise solutions that consider the desires of local partners and the health of the natural system. The study, its transition to a project with support from the City of Chaska, and its design have been authored by our team; and we look forward to having our professional engineers ensure that it is constructed to specifications this winter.

Hydrologic, Hydraulics, and Water Quality Modeling and Analysis: Although hydrology, hydraulics, and water quality are components of many of our projects, the best example of our staff's ability is exhibited by the numerous large-scale analyses for stormwater master plans, total maximum daily load (TMDL) reports, and watershed studies that we have completed. Our team has been involved in these analyses and planning, including floodplain management efforts, for many watershed management organizations, municipalities, and state and federal agencies, with projects ranging from small ephemeral streams to large, complex river systems. We are experienced with a variety of water quality, hydrologic, and hydraulic computer models. We often work with our clients to evaluate and select the model(s) that best meet(s) the specific needs and budgets of a project.

Urban Stormwater BMP Design and Construction Management: Our team's experience in stormwater management services encompasses stormwater drainage studies, master plans, and planning and design of stormwater control facilities. We have assisted governmental and private clients by developing management and financing plans that result in a coordinated, prioritized response to complex demands for the management of urban stormwater systems. We draw upon our previous experiences, company-wide résumé, and industry resources to generate particularly unique site-specific designs for complex infrastructure improvements, BMP design, and construction management. We believe that this breadth and depth of experience with large, complex projects is rare and sets us apart.

Flying Cloud Drive Project, 2019.

Water Resources Permitting: As the District looks to approve state transportation projects, municipal permit applications, and individual projects in unincorporated areas, our team has extensive experience assisting the District and several other watershed management organizations with developing and administering their water resource permit review programs. We recently implemented the online permit application service for the LMRWD and maintain the current project database to track permit applications and project reviews. Our team also currently assists the following with permitting and/or project reviews: Valley Branch, Riley-Purgatory-Bluff Creek, and Nine Mile Creek watershed districts; the Bassett Creek and Elm Creek water management commissions; and the Lower Rum River water management organization.

ADDITIONAL SERVICES

Groundwater Protection and Management: Declining, degraded, or fluctuating aquifer levels pose tough challenges to drinking water supply areas and high value resources such as the District's coveted trout streams and lakes and its calcareous fens. Our team's groundwater professionals have experience in site analysis, permitting issues, well field design, and construction services. As demonstrated in the District's recent *Fens Sustainability Gaps Analysis* for Carver, Dakota, and Scott Counties, our scientists and engineers evaluated and addressed groundwater concerns through data collection, review and analysis (and much more), and coordinated outreach and engagement with the Minnesota Department of Transportation, the Metropolitan Council, the Board of Water and Soil Resources, and Dakota County.

Grants Research, Writing, and Acquisition: Leveraging resources is paramount to successful implementation of partner-driven solutions. Our team includes grant writers and is well versed in researching, targeting, completing applications, obtaining grants, and administering grants for our clients. Because of our intentional approach to grants, our win rate is high.

Stakeholder Engagement: Young Environmental understands that the successful development and implementation of an integrated, user-friendly engagement and outreach plan must be an intentional focus of authentic stakeholder engagement. An emerging issue facing most organizations is that the audiences they serve are experiencing stakeholder fatigue and feelings of being used as simply a box to be checked along the way to a predetermined solution. Recognizing this dilemma, Young Environmental augments stakeholder engagement and outreach strategies by incorporating the technology of participation's (ToP) participatory process. The process, based on internationally applied ToP facilitation methods, is designed from start to finish to build commitment, engagement, and the full participation of all stakeholders involved. This allows the development of a plan that people actually enjoy working on because buy-in is created during the collective collaboration and participatory dialogue is embedded in the process. This process provides the opportunity to think creatively and collectively about issues to be addressed within the watershed, to get to the heart of certain long-standing concerns, and to identify targeted, catalytic actions that will help address those concerns.

Saint Louis Park Stormwater Management Plan Project Open House, 2019

YOUNG ENVIRONMENTAL TEAM'S RELEVANT PROJECTS

Client: Lower Minnesota River Watershed District | Program Management and Technical Consulting Services (2016–Present): Our team provides technical services such as project and task management, project plan reviews, local surface water management plan (SWMP) reviews, stakeholder coordination, and other special projects identified by the District's managers and administrator within the District's boundary. In addition to guiding the District's rule-development process, below are a few of the projects we are currently managing for the district:

Gully Inventory and Condition Assessment Project. In 2006–2007, the District inventoried gullies and pipe outfalls within its boundaries. Now, in 2020, the District intends to replicate that inventory and enhance it with an assessment of the current conditions of gullies and outfalls identified in 2006, documentation of new gullies that have formed since the original inventory, identification of areas of flow and sediment contribution into the Minnesota River, and prioritization of gullies by their erosion potential.

Dredge Site, 2017.

Dredge Site Restoration Project Design, Permitting, and Construction. The Dredge Site Project is being modified to maintain separation between the US Army Corps of Engineer's sandy dredge materials and the fine-grained materials from private facilities. The project will also optimize dewatering and consolidation of the private material and design structurally sound berms around the storage piles. Our team has completed the design, permitting, and bidding services. Since 2017, and in preparation for the Dredge Site Project, we completed the following: wetland evaluation and delineation; preliminary threatened and endangered species survey; hydrologic and hydraulic modeling and no-rise certification; geotechnical evaluation; topographic survey; 30%, 60%, 90%, and final engineering plans for the site and supporting probable cost estimates; and the City of Savage's Conditional Use Permitting process.

Monitoring Plan Project. We reviewed the District's Third Generation Watershed Management Plan and its Strategic Resource Evaluation, monitoring locations and the Minnesota statutes governing lakes, rivers, and streams. Using the information we collected and analyzed, we provided recommendations for how the District should monitor lakes, streams, rivers, wetlands, and fens within its authority. The monitoring activities will assist the District in assessing water resource health. By helping track long- and short-term trends in resource quality, the report will enable the District to manage its resources to address emerging water quality issues more effectively.

East Chaska Creek Channel Stabilization Project. The District identified East Chaska Creek as a source of sediment entering the Minnesota River. In 2012 the District completed a Strategic Resources Evaluation in which several streams, including East Chaska Creek, were assessed for current and ongoing erosion and maintenance issues. The project is located on a portion of East Chaska Creek in the City of Chaska, starting at Crosstown Boulevard and extending approximately 1,500 feet downstream. The project implements erosion control measures and debris removal; constructs grade control structures; and incorporates root wads, riprap armoring, and cross vanes to armor and protect the banks of the stream. We have completed the design, permitting, construction bid documents, and bidding process for the East Chaska Creek Stream Stabilization Project.

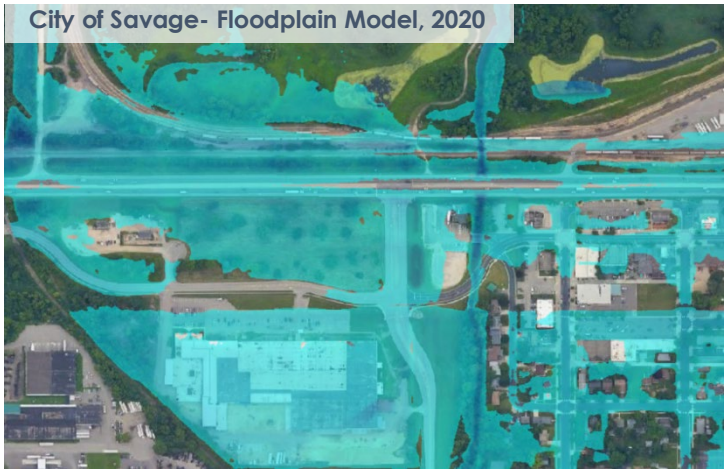
Client: City of Minneapolis | Stormwater Ordinance and Utility Credits Program Update Project (2018–Present)

The City of Minneapolis recently finalized its surface water management plan. A condition of approval by the four affected watershed management organizations (WMOs)—Mississippi Watershed Management Organization, Bassett Creek Watershed Management Commission, Minnehaha Creek Watershed District, and Shingle Creek Watershed Management Commission—was that the City would update official controls, specifically City Code Chapter 54, Storm Water Management. To comply with the WMOs' imposed conditions, the City retained Young Environmental to assist in managing updates to Chapter 54, its companion stormwater utility credits program, and stakeholder engagement. Young Environmental developed an adaptive stakeholder engagement plan and facilitated an interdepartmental partners' meeting as well as a community and technical advisory partners' meeting. Young Environmental's project management services included participating in a qualifications review and selecting a national consultant to complete a national benchmarking study; coordinating the selected consultant's scope, schedule, and budget; and managing the project tasks and schedule.

Client: City of St. Louis Park | Surface Water Management Plan and MS4 Stormwater Pollution Prevention Program (2017–2019)

Young Environmental worked with the City of St. Louis Park to develop its Surface Water Management Plan (SWMP) and municipal stormwater pollution prevention program (MS4 SWPPP). As part of the project, Young Environmental reviewed and updated the City's SWPPP, supporting ordinance, standard operating procedures, and emergency response protocols. Young Environmental completed the review, held conversations with municipal staff, and facilitated stakeholder meetings with City staff of the Minnehaha Creek Watershed District and Bassett Creek Watershed Management Commission. Young Environmental developed the resulting draft and final SWMP and SWPPP, which have gone through the state and watershed management organization regulatory review processes.

Client: City of Savage| Floodplain Management Services (2019–present)


City of Savage- Floodplain Model, 2020

The Credit River flows north through the City of Savage, crossing Highway 13 and three sets of railroad tracks before joining the Minnesota River. FEMA is expected to publish revised Flood Insurance Rate Maps for Scott County in the fall of 2020, which will digitize the floodway and flood fringe for the Credit River. The City of Savage hired Barr to review and update the hydraulic model of the Credit River and evaluate whether the current FEMA floodway boundary could be modified to allow more flexibility for redevelopment. The culvert under Highway 13 and the railroad bridges create significant restrictions to flows during large flood events, creating the potential for floodwaters to expand east and west into developed areas, including the downtown business district east of the river. To help the City of Savage better understand its flood risk, Barr is updating the hydrologic model for the Credit River to calculate 100-year and other recurrent interval flows based on NOAA Atlas 14 precipitation data. Earlier hydrologic modeling used for FEMA mapping is based on data published in the 1960s. As the City of Savage continues to grow and redevelop, it will need to ensure that development complies with the recently adopted LMRWD rules.

Client: Valley Branch Watershed District | Watershed District Permit Administration (1972–present)

As technical advisors to the Valley Branch Watershed District managers, Barr reviews approximately 20 to 40 permits per year for conformance to the District's rules and regulations and the Minnesota Wetland Conservation Act. Some of the review items include stormwater rate, volume, and quality; sediment and erosion control; wetland hydrology, impacts, and buffers; and flood levels and associated minimum floor elevations. Barr works with permit applicants to achieve the projects' goals while simultaneously conforming to the District's rules and regulations. We prepare permit review memoranda and forward them to the permit applicant and officials of the community to which the proposal applies, present the permit application to the managers, and process the approved permit. Although the managers have their own inspector, who handles the day-to-day inspections of permitted activities, at the direction of the managers, Barr inspects projects that could affect wetlands and performs other inspections as needed.

Client: Riley-Purgatory-Bluff Creek Watershed District | Stormwater Reuse at Chanhassen High School (2016 - 2018)

Barr assisted the Riley-Purgatory-Bluff Creek Watershed District in securing a grant for the design of a stormwater reuse system for irrigation at Chanhassen High School. Our design was developed to help offset the school's use of potable water for irrigation and protect Bluff Creek. The project included retrofitting the existing irrigation system at the school site with a pump and treatment system that provides filtration and ultraviolet disinfection of stormwater being drawn from an existing stormwater pond on the site.

4. Key Personnel and Team

role: **Principal Consultant /Client Manager**

2020 billing rate: **$130/hr**

Della Schall Young, PMP, CPESC, CTF

Principal Scientist/ Planner

BS, MS Water Resources Science and Water Quality

Della is a practicing hydrologist with 20 years of stormwater management, watershed planning, and water quality modeling project experience. She is a certified professional in erosion and sediment control (CPESC) and uses her expertise to manage and coordinate efforts for Municipal Separate Storm Sewer System (MS4) stormwater management programs, Army Corps of Engineers feasibility studies, and watershed districts/watershed management organizations. Her computer skills include the following applications: hydrologic/hydraulic (conveyance) models - XPSWMM, HydroCAD, Geopak Drainage; water quality models – Minimal Impact Design Standards (MIDS) calculator.

role: **District Engineer**

2020 billing rate: **$138/hr**

Katy Thompson, PE, CFM

Senior Associate Water Resources Engineer

BS, Civil Engineering and BA Environmental Engineering

Katy is a water resources engineer with 17 years of experience in water resources design across the United States. She applies her engineering background to support work in public infrastructure, stormwater, and drainage design and construction related to rivers and streams. She has worked on and managed projects ranging from large-scale federal flood-control projects to small-scale best management practices (BMPs) for private property owners. Her background includes extensive hydrologic and hydraulic modeling of river and urban storm drainage systems using software platforms. As a Certified Floodplain Manager, she has worked with permitting agencies to ensure that proposed projects meet all federal, state, and local criteria for floodplain impacts, fish passage, and scour potential. She has also worked successfully with many communities and private residents by leading community workshops, trainings, and outreach efforts to educate the public and city councils and staff on the National Flood Insurance Program and its requirements.

role: **Construction Mgmt., Permitting**

2020 billing rate: **$175/hr**

John Hanson, PE

Principal Civil Engineer

BCE, Civil Engineering

John has 28 years of experience and has worked with watershed districts since joining Barr in 1992. He has served as Barr's principal-in-charge of our teaming efforts with Young Environmental in assisting the Lower Minnesota River Watershed District. Our project teams have worked on the District's dredge site, stream and ravine stream restoration studies and stabilization projects, and fen surveys. He has also served as Valley Branch Watershed District's district engineer since 1998, a role in which he supervises implementation of VBWD's 2015–2025 watershed management plan, including completing studies, developing design and construction documents, and implementing construction projects. In addition, he administers the VBWD's permitting program and reviews project plans ranging in size and complexity from 300-lot subdivisions to roadway reconstructions to individual homes for compliance with VBWD rules and the Minnesota Wetland Conservation Act.

role: **Floodplain Modeling**

2020 billing rate: **$155/hr**

Joseph J. Waln, PE, P.Eng., CFM

Senior Water Resources Engineer

BS, Civil Engineering and MEd, Science

Joe has 16 years of experience in civil and water resources engineering. He has served as project manager and project engineer for public and private clients in both the United States and Canada. His project work frequently involves floodplain management design and analysis, detailed hydraulic and hydrologic modeling, scour analysis, mine water management, dam breach analysis, stormwater management, watershed best management practice (BMP) studies, cost estimating, and preparation of plans and specifications. Joe is a certified floodplain manager

4. Key Personnel and Team

Service areas of key personnel are provided in the table below and their resumes are attached. We have also added a very capable bench of professionals that ready to assist the District, as needed.

Services Areas	Key Personnel and Team
Geographic Information Systems (GIS)	Aaron Mielke, Eddie Anderson, Katy Thompson, Tim Anderson
Geotechnical Engineering and Sediment Transport	Aaron Grosser, Eric Brandner, Joel Toso
Grant Research and Writing	Annie Breitenbucher, Della Schall Young, Katy Thompson, Kent Lokkesmoe, Steve, Woods, Tyler Olson
Groundwater Monitoring and Evaluation	Evan Christianson, John Greer, Ray Wuolo
Hydrologic and Hydraulic Modeling	Brandon Barnes, Cory Anderson, Della Schall Young, Heather Hlavaty, Katy Thompson, Steve Woods
Lakes Restoration and Mgmt.	Della Schall Young, Keith Pilgrim, Kevin Menken, Lan Tornes, Meg Rattei
Stakeholder Outreach and Engagement	Della Schall Young, Heather Wright Wendel, Janna Kieffer, Katy Thompson, Sarah Stratton, Steve Woods
Streams Restoration and Mgmt.	Della Schall Young, Jessica Olson, Katy Thompson, Samantha Beck, Steve Woods, Tom MacDonald
Urban Stormwater BMP Construction Mgmt.	Katy Thompson, Matt Metzger, Nathan Campeau, Patrick Brockamp
Urban Stormwater BMP Design	Fred Rozumalski, Katy Thompson, Kurt Leuthold, Marcy Bean, Steve Woods
Water Quality Modeling	Della Schall Young, Greg Wilson, Jay Hawley Katy Thompson, Peter Hinck, Steve Woods
Water Resources Mgmt. and Planning	Anthony Vecchi, Della Schall Young, Jen Koehler, Katy Thompson, Scott Sobiech, Steve Woods
Water Resources Permitting	Della Schall Young, Josh Phillips, Katy Thompson, Louise Heffernan, Rachel Walker, Shanna Braun
Watershed and Subwatershed Mgmt. and Planning	Della Schall Young, Erin Wenz, Greg Williams Karen Chandler, Katy Thompson, Steve Woods
Wetlands and Fens Restoration and Mgmt.	Brian Burgner, Dan Tix, Katy Thompson, Lan Tornes, Nicolas Anderson

5. Approach to Service

Contract Administration

Critical elements for successful management and execution of the District's engineering contract are experienced project management, technical excellence, and quick client response to District requests. Della, in her role as client manager, will be responsible for negotiating contract terms, task orders, and other administrative activities as required, working with our team and the District. This structure provides the District a single responsible and accountable point of contact.

Project Controls: Scope, Schedule, and Budget

After the contract has been successfully negotiated, Della will work with the District's administrator to develop a work plan for every project requested by the District. The work plan will highlight on-call services, timelines, budgets, and District invoicing requirements. We plan to maintain schedule and budget controls through weekly meetings. During weekly meetings, Della will communicate the status of task orders, identify potential schedule and budget issues, and reconcile conflicts.

Quality Assurance/Quality Control (QA/QC)

Our team will implement a comprehensive QA/QC process to make certain our team delivers high-quality work products. Della will identify reviewers and coordinate completion of QA/QC reviews. All reports and work products will be thoroughly reviewed by our technical editors and an internal expert who is not related to the project to ensure clarity and completeness before reports are submitted to the District.

Nichols Fen, 2019

6. Rate Schedule

The Young Environmental team fee schedule summarizes the range of billing rates for each staffing category. In many cases, these billing rates represent a wide range based on varying levels of experience and expertise of staff within these categories. When building a team, appropriate staff are selected considering both applicable experience and staff billing rates to ensure the District receives high-value services for a reasonable cost.

Billing rates for 2021 and 2022 will be established at the end of the previous year. Although we do not anticipate significant changes to these rates, we will be happy to provide 2021 and 2022 billing rates near the beginning of each respective year.

Staff Classification	2020 Rate+ (U.S. dollars)
Principal	$125–$295
Advisor/Associates/Senior Engineer	$125–$250
Engineer/Scientist/Specialist III	$125–$175
Engineer/Scientist/Specialist II*	$95–$120
Engineer/Scientist/Specialist I*	$65–$90
Technician III*	$125–$150
Technician II*	$95–$120
Technician I*	$50–$90
Support Personnel II*	$95–$150
Support Personnel I*	$50–$90

+Rates do not include sales tax on services that may be required in some jurisdictions.

Notes:

1. Rates for litigation support services or other support requiring corporate officers will include a 30% surcharge.
2. For any nonexempt personnel in positions marked with an asterisk (*), overtime will be billed at 1.5 times the hourly labor billing rates.
3. A 10% markup will be added to subcontracts for professional support and construction services to cover overhead and insurance surcharge expenses.
4. Invoices are payable within 30 days from the date of the invoice. Any amount not paid within 30 days shall bear interest from the date 10 days after the date of the invoice at a rate equal to the lesser of 18% per annum or the highest rate allowed by applicable law.
5. Reimbursable expenses including, but not limited to, the actual and reasonable costs of transportation, meals, lodging, parking, postage, and shipping will be billed at actual cost.
6. Materials and supplies charges, printing charges, and equipment rental charges will be billed in accordance with a standard rate schedule.
7. Mileage will be billed at the IRS-allowable rate.

Appendix - Resumes

Young Environmental Consulting Group, LLC

Della Schall Young, CPESC, PMP, CTF

Service Areas:
Program Management

Watershed Planning

Stormwater Compliance

Facilitation

Hydrology, Hydraulics, and Water Quality Modeling

Certifications:

Certified Professional in Erosion and Sediment Control (CPESC)

Certified Technology of Participation Facilitator (CTF)

Project Management Professional (PMP)

Education:
Master of Science, Water Resources Science, University of Minnesota, 2008

Bachelor of Science, Natural Resources and Environmental Studies, University of Minnesota, 1997

**Projects completed prior to Young Environmental Consulting Group, LLC*

Della is a practicing hydrologist with over 20 years of stormwater management, watershed planning, and water quality modeling project experience. She is a certified professional in erosion and sediment control (CPESC) and a professional project manager (PMP) who uses her expertise to manage and coordinate efforts for Municipal Separate Storm Sewer System (MS4) stormwater management programs and Construction Erosion, Sediment and Stormwater Management Compliance and Inspections, Army Corps of Engineers feasibility studies, and Watershed Districts/WMOs. She is a skilled certified facilitator who generates consensus in both agreeable and disagreeable settings. As an accomplished speaker, she can convey the most complex engineering concepts to both technical and lay audiences. Her computer skills include the following applications: hydrologic/hydraulic (conveyance) models—XPSWMM, HydroCAD, Geopak Drainage; water quality models—P8, Pondnet, SWAT, and Minimal Impact Design Standards calculator.

Key Project Experience

Technical Consultant| Chaska, MN. *Client*: Lower Minnesota River Watershed District (LMRWD) *Role*: Since 2016, Young Environmental has provided technical consulting services to the LMRWD in the areas of watershed planning, engineering and project reviews, stream restorations studies, feasibility studies and design. Young Environmental has also represented the District at meetings with residents, local partners, state agencies and members of the Minnesota State legislature. The partnership with the District allows them to respond to challenges and opportunities that require technical presence and/or expertise that the District does not maintain in-house. Della serves as the contract manager, principal hydrologist and watershed management plan writer.

LMRWD Dredge Site Probable Cost Analysis | Savage, MN. *Client*: **LMRWD.** *Role:* The District serves as the local sponsor, responsible for providing placement site(s) for the U.S. Army Corps of Engineers (COE) to place dredge material from the Minnesota River to maintain a 9-foot-deep river channel. The purpose of the cost analysis was to develop budgetary estimates for potential capital improvement projects at the Site and for the operation and management (O&M) of the Site over a 10-year period and a 25-year period. Using the information generated, the District was successful in securing $240,000 in both 2017 and in 2018 from the State of Minnesota. Della was the lead regulatory specialist responsible for identifying and summarizing federal, state and local requirements.

Stormwater Ordinance Update Project | City of Minneapolis, MN. *Client*: City of Minneapolis. Role: The City of Minneapolis recently finalized its SWMP. A condition of approval by the four affected WMOs—the Mississippi Watershed Management Organization, Bassett Creek Watershed Management Commission, Minnehaha Creek Watershed District, and Shingle Creek Watershed Management Commission—was that the city would update official controls, specifically City Code Chapter 54, Storm Water Management. To comply with the WMOs' imposed condition, the city retained Young Environmental to assist in managing updates to Chapter 54, its companion stormwater utility credits program, and stakeholder engagement. Young Environmental developed an adaptive stakeholder engagement plan and facilitated an interdepartmental partners' meeting as well as a community and technical advisory partners'

meeting. Young Environmental's project management services include participating in a qualifications review and selecting a national consultant to complete a national benchmarking study; coordinating the selected consultant's scope, schedule, and budget; and managing the project tasks and schedule. Della's role project manager, and developer and facilitator of the stakeholder engagement process

SLP Surface Water Management Plan| St. Louis Park, MN. *Client*: RESPEC and St. Louis Park. Role: Young Environmental is working with the City of St. Louis Park to develop its surface water management plan and municipal SWPPP. As a part of the project, Young Environmental has reviewed the City's SWPPP, supporting ordinance, standard operating procedures and emergency response protocols. Young Environmental completed the review, conversation with municipal staff and facilitated stakeholder meetings. Young Environmental has also developed the resulting Draft SWPPP which is being prepared for regulatory review. Della's role is project manager, lead author and stakeholder facilitator.

Illicit Discharge Detection and Elimination Plan| St. Paul, MN. *Client*: Capitol Region Watershed District. Role: Young Environmental was retained to develop the District's IDDE plan component of its SWPPP. Young Environmental research two local and two national IDDE plans, reviewing the current District IDDE program information (standard operating procedure, IDDE manual, and the District's MS4 Stormwater Pollution Prevention Plan), and gathered data from the MPCA) MS4 Digital Document Library. This collected will be used to develop an internal and stakeholder response process flowchart, discharge sampling protocol and program/division procedural recommendations. Della's role is project management and lead plan author.

Goldline Bus Rapid Transit| St. Paul, MN. *Client*: HNTB and Metropolitan Transit. *Role*: The planned nine-mile dedicated bus rapid transit line will connect St. Paul, Maplewood, Landfall, Oakdale, and Woodbury generally along Interstate 94, connecting people across the region to job centers, housing options, transit stations and key destinations in the I-94 corridor. Young Environmental Consulting Group, LLC (Young Environmental) provides environmental permitting research, assessment, and stormwater compliance services to the project management team. Della serves as the project manager and stakeholder coordinator.

Hiawatha Golf Course Assessment of Pumping Groundwater and Stormwater Project | Minneapolis, MN. *Client*: Minneapolis Park and Recreation Board (MPRB). *Role*: MPRB and the City of Minneapolis (City) needed surface, storm, and groundwater management issues related to the Hiawatha Golf Course area modeled and evaluated to protect neighboring homes and the existing recreational facility. Della serves as the project manager for the MPRB. Her role included managing tasks of the MPRB's consultant and staff, reviewing hydrology, hydraulic and water quality memos, assisting with the organization and facilitation of public meetings to meet schedule and budgetary goals.

Underground Stormwater Infrastructure Cost Research Project | Saint Paul, MN. *Client*: City of Saint Paul. Role: Della is collecting underground stormwater management facility design and installation cost data. Upon completion of data collection, she will analyze the data and present the results in a technical memorandum.

Young Environmental Consulting Group, LLC

Katy Thompson, PE, CFM

Service Areas:
- Water Resources Design
- Public Infrastructure Design and Construction
- Hydrologic and Hydraulic Modeling
- Watershed Planning
- Project Permitting

Certifications:
Professional Engineer in California, Colorado, Minnesota, Montana, and Texas

Education:
Bachelor of Science in Civil Engineering, University of Minnesota, 2003

Bachelor of Arts in Environmental Engineering, Macalester College, 2003

**Projects completed prior to Young Environmental Consulting Group, LLC*

Katy Thompson is a water resources engineer with 17 years of experience in water resources design across the US. She applies her engineering background to support work in public infrastructure, stormwater, and drainage design and construction related to rivers and streams. She has worked on and managed projects ranging from large-scale, federal flood-control projects to small-scale best management practices (BMPs) for private property owners.

Katy's background includes extensive hydrologic and hydraulic modeling of river and urban storm drainage systems using various software platforms. As a Certified Floodplain Manager, she has extensive experience working with permitting agencies to ensure that proposed projects meet all federal, state, and local criteria for floodplain impacts, fish passage, and scour potential. She has also worked successfully with many communities and private residents by leading community workshops, trainings, and outreach efforts to educate the public on the National Flood Insurance Program and its requirements.

Key Project Experience

On-Call Engineering Services | Lower Minnesota River Watershed District. Since joining Young Environmental, Katy has been the primary lead for project reviews and funding requests for the Lower Minnesota River Watershed District. She coordinates with District staff to review permit applications and provide feedback to the Board on how to proceed and any actions that need to be taken.

Fen Sustainability Gaps Analysis | Lower Minnesota River Watershed District. Katy provided quality control reviews and managed the final coordination of the LMRWD Fens Sustainability Gaps Analysis, including managing the development and review of the District's climate assessment, monitoring recommendations, and responses to agency comments.

East Chaska Creek Bank Stabilization | Chaska, MN. Katy provided quality control reviews for the final construction plans and documents for the LMRWD East Chaska Creek Restoration Project. She worked with partners to apply for and ultimately obtain a no-rise certification and public waters permit from the Minnesota Department of Natural Resources.

Area 3 Slope Stabilization Project | Eden Prairie, MN. In concert with the District and City of Eden Prairie staff, Katy attended a site visit of the Area 3 bluff erosion and is currently working on developing a comprehensive desktop analysis of the area using available GIS data, historic aerial images, and literature sources to determine the current rate of erosion and potential hot spots for future erosion in the area.

Online Permitting Development | Lower Minnesota River Watershed District. Working closely with the District Administrator and technical consultants, following the implementation of the LMRWD Rules, Katy developed a new LMRWD Rules and Permitting pages for the LMRWD website. These new pages cover the District's authority to implement rules, rule administration process, and online application forms for both individual municipal permits.

Gully Inventory Update | Lower Minnesota River Watershed District. Katy has led the coordination of an updated gully inventory in the LMRWD, including coordination of intern training and workloads, review of background data from partner cities, and development of online data collection forms and mapping to facilitate field data collection efforts.

Gold Line Bus Rapid Transit | Saint Paul, Maplewood, Oakdale, Woodbury, MN. Katy has provided reviews of the preliminary designs and facilitated discussions with municipal and county partners on the potential permitting needs the project may have in their individual jurisdictions.

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Shell Rock – Winnebago River One Watershed One Plan | Albert Lea, MN* Katy led the data aggregation efforts, reviewing and consolidating data from multiple sources, to determine the priority concerns in the watershed from the perspective of residents, landowners, and local and state regulators. She also facilitated the first local Advisory Committee meeting to help prioritize the resources and issues first identified by the local Steering Committee for the final One Watershed One Plan.

Shell Rock River Water Quality Credit Trading Program | Albert Lea, MN* Katy oversaw the development of several water quality models to determine the baseline pollutant loading scenario for the Shell Rock River Watershed District and City of Albert Lea Water Quality Credit Trading Program. By using EPA-SWMM, her team determined the existing conditions total phosphorus and total suspended solids loading from the City of Albert Lea into Fountain Lake. The results from this baseline analysis will be used to establish the water quality credit trading ratios and prices. As a part of this work, Katy and her team also evaluated several other modeling platforms using selection factors that included software costs, ease of use, and accuracy compared to the SWMM models for several example watersheds. These case studies were used to develop suggestions for alternative methods, including MPCA Estimator and HydroCAD, to reduce costs for future water quality credit trading programs in Minnesota.

Stormwater and Development Permit Programs | Cities of Circle Pines and Hugo, MN* As Tier II cities, the Cities of Circle Pines and Hugo assumed permitting authority from the Rice Creek Watershed District for stormwater management, erosion control, wetland mitigation and floodplain management. Katy was the permit program manager for both cities and issued stormwater permits for development and redevelopment within the cities' jurisdictions while ensuring compliance with Rice Creek Watershed District Rules, as well as local stormwater ordinances. She also coordinated with the District on complicated development reviews, variance applications, expired permits, re-development compliance, construction inspections, and annual program audits.

Federal Emergency Management Agency (FEMA) Floodplain Assistance | Various Municipalities; Anoka, Hennepin, and Wright Counties, MN* As a CFM, Katy has extensive experience in assisting clients through the FEMA map-revision process, as well as with providing them guidance on how to effectively manage floodplain developments. She has facilitated community trainings for the public and internal trainings for municipal staff on how to file individual Letters of Map Changes using the MT-1 forms following FEMA map updates and regularly provides assistance with Conditional Letter of Map Revisions for individual developments and flood mitigation projects, such as floodwalls and levees, with the FEMA MT-2 forms and the new eLOMA and Online LOMC websites.

Savage Fen Stormwater Management Plan | Savage, MN* Katy developed a complex hydraulic model for the City of Savage to determine the existing flows into the Savage Fen Special Resource Area. Data was collected from the City GIS department and from record drawings and used to build a complex XPSWMM model that covers the majority of discharges to the Savage Fen and the Credit River. This model will be used to help the City plan future land developments by protecting the existing hydrology of the Fen.

City of St. Louis Park On-Call Hydrology and Hydraulics Services | St. Louis Park, MN* Katy has served as point of contact with the City of St. Louis Park, coordinating short-notice model reviews and updates as requested by city staff. Example projects have included evaluation of the short- and long-term effects of the Hannan Lake emergency pump station, coordination of regional

stormwater model development with the City of Minneapolis, and review of Dakota Park flood elevations.

Surface Water Management Plan | St. Louis Park, MN* Katy served as project manager and lead modeler to develop comprehensive EPA SWMM models of the entire City of St. Louis Park, inclusive of multiple stormwater lift stations and diversions. The SWMM models cover an area of 9,500 acres, including 2,483 nodes and 83 miles of storm sewer. Deficiencies in the existing stormwater conveyance system, flood-prone areas, and water quality mass loading were identified using the modeling results. The modeling results are included in the City's Surface Water Management and 2040 Comprehensive Plans and will be used to identify future projects and update the Capital Improvement Plan.

Northeast Lino Lakes Comprehensive Stormwater Management Plan | Lino Lakes, MN* As project manager, Katy worked closely with City and Rice Creek Watershed District staff to develop a Comprehensive Stormwater Management Plan (CSMP) for the future build-out of the Northeast Lino Lakes area. This plan included detailed hydraulic modeling from 30 InfoSWMM and unsteady-state HEC-RAS models. The proposed plan includes regional stormwater and flood-control management facilities to preserve the agricultural drainage system rights, provide additional capacity for future stormwater needs, and provide flood control and water quality treatment for downstream impaired water bodies. The project used the City's Conservation Design Framework to develop a multifunctional greenway corridor design, in lieu of a traditional stormwater sewer system. Additional components of this project included stakeholder outreach and public engagement through public mailings, resident and landowner workshops, and multiple presentations at planning commission and city council meetings. The plan has been approved and construction began in the spring of 2019.

Local Surface Water Management Plan | Lino Lakes, MN* Katy led the development of the updates to Lino Lakes' Local Surface Water Management Plan, including coordination with the overall 2040 Comprehensive Plan development and agency requirements. She presented the revisions and updates to the planning commission and city council on multiple occasions.

Roseau River Wildlife Management Area Pool 3 Outlet, Greenbush, MN* Purpose of the project was to prepare a preliminary engineer's report to address combining goals of the Roseau River Watershed District and Minnesota Department of Natural Resources to increase the effectiveness of the RRWMA to store or convey water for flood prevention. Structure capacities will be increased to allow better regulation of water levels during nesting periods, as well as several other resource enhancements. Katy developed an ecological systems function model to evaluate the potential impacts of project alternatives on wild rice habitat.

Experience

John has 28 years of water resources experience. His project work emphasizes water resources management; public policy discussion facilitation; hydrologic and hydraulic modeling; development of designs, plans, and specifications; and project management. John's project work at Barr includes:

- Currently serving as engineer to the Valley Branch Watershed District (VBWD). Responsible for engineering services and several administrative services provided to the VBWD. Work includes helping the board of managers implement the 2015-2025 watershed management plan; supervising all worked prepared for the VBWD; maintaining relationships with representatives of other government units, communicating with constituents, and representing the VBWD at meetings and public forums; helping prepare and track VBWD budgets, processing monthly invoices, securing grants, submitting information to the VBWD auditor, and submitting annual levy information to state and county officials; supervising Barr's VBWD team members as in completing hydrologic and hydraulic studies, water-quality protection and improvement studies, flood relief studies, and aquatic plant survey analyses and develop design and construction documents; reviewing grading, erosion-control, and wetland-replacement plans for compliance with VBWD rules and regulations and the Minnesota Wetland Conservation Act and preparing permit review memoranda; overseeing the preparation of annual reports; and overseeing the inspection of dams, pipelines, and maintenance activities.

  Previous work for the VBWD includes assisting in revising the VBWD's watershed management plan; working with the board of managers to update VBWD rules and regulations to incorporate stormwater runoff volume control, updated wetland standards, illicit discharge and connection regulations, and other minor changes; summarizing data and preparing annual reports; collecting data and performing hydrologic analyses with the Barr watershed model, TR-20, and/or HydroCAD; preparing studies and presenting options for managing landlocked lakes; preparing contract documents for projects; inspecting dams and pipelines; and overseeing projects, including but not limited to stream and ravine stabilization projects, lake water quality studies, and a district-wide wetland function and value assessment study.
- Serving as the principal in charge of Barr's teaming efforts with Young Environmental to assist the Lower Minnesota River Watershed District. Barr's project teams have worked on the district's dredge site, various stream and ravine restoration studies and stabilization projects, and fen surveys. On the district's dredge site, we evaluated and designed a dredge material management plan, including evaluating the hydrologic and hydraulic effects of stockpiled material on the river's flood level as well as potential wetland and threatened and endangered species impacts. Barr prepared design plans and specifications to reconfigure the site to more efficiently dry the dredged material and conform to regulations.
- Overseeing the Barr team that assisted the South Washington Watershed District in developing plans for managing risk for Minnesota's changing climate. Work included collaborating with the district's member communities and stakeholders to identify top concerns and priorities related to climate change. These groups identified groundwater, natural resources, and storm sewer for further assessment for climate resilience. Barr then performed an inventory and risk analysis of climate-related issues confronting these resources, developed recommendations and implementation actions, and prepared tailored reports for communities and the watershed district.

- Managing Barr's work and working with the Minnesota Pollution Control Agency and a 36-member work group to develop performance standards, design standards, and other tools to enable and promote the implementation of low-impact development and other stormwater management techniques through the minimal impact design standards (MIDS) project. Oversaw Barr's work on the MIDS calculator and integration into the *Minnesota Stormwater Manual*.
- Managing a watershed restoration and protection program of five lakes and one stream with the Minnesota Pollution Control Agency to determine which phosphorus load reductions and future efforts are needed—and the relative priority of each action—to improve water quality and remove the waters from the 303(d) impaired waters list for excessive nutrients. The program also identified sources of *E. coli* and developed a plan to address high levels found in a creek.
- Leading Barr's team in conducting a third-party review of a site that failed to contain stormwater runoff and released sediment to and impacted high-quality downstream natural resources. Barr's original scope included reviewing exhibits submitted for the watershed district permit and developing a mitigation plan. Pleased with our quick responsiveness, the client then hired Barr to develop construction drawings to contain all runoff on the site, address impacts related to the stormwater release, and assist through the permitting process. John continued to lead those efforts.
- Overseeing Barr's team in evaluating various stormwater management practices to meet a window manufacturer's industrial stormwater discharge requirements. Barr's analyses included life-cycle costs and benefits.
- Supervising the design of stormwater management components associated with the $40 million manufacturing campus expansion. Served as principal in charge of Barr's team, which provided preliminary and final designs for stormwater management features intended to meet local regulatory requirements and grading and site layout plans. Barr also helped obtain permits and assisted in the design-build process.
- Supervising Barr's work with the Mississippi Watershed Management Organization for a 2014 watershed management plan amendment to update the organization's stormwater management standards.
- Working with the City of Northfield and an advisory committee to develop a trout stream policy document and stormwater management ordinance.
- Severing as principal in charge for a project with the Minnesota Department of Transportation. Barr evaluated the water-quality monitoring protocol and reviewed eight years of monitoring data to determine the effectiveness of an iron-enhanced infiltration/filtration basin constructed on Trunk Highway 610.
- Assisting with wetland-mitigation plan development for a variety of clients. Work included:
  - Helping design a pipe system and overflows to restore wild rice fields to wetlands in Aitkin, Minnesota, for Minnesota Steel.
  - Assisting in developing grading, drainage, and erosion-control plans to create wetlands in Warba, Minnesota, for a petroleum pipeline company.
  - Assisting in the design of ditch blocks and ditch filling to restore wetlands for an iron mining operation in Minnesota.

  - Reviewing hydrologic effects of a proposed mining project to determine wetland replacement requirements for Ispat-Inland Steel Mining Co.
  - Reviewing an existing ditched bog in Babbitt, Minnesota, to determine the feasibility of restoring its hydrology for Polymet Mining, Inc.
- Reviewing grading, erosion control, and stormwater management plans for compliance with rules and regulations of the Elm Creek Water Management Organization, and preparing permit review reports for the organization.
- Reviewing the Nine Mile Creek Watershed District's, Riley-Purgatory-Bluff Creek Watershed District's, Minnehaha Creek Watershed District's, and Bassett Creek Watershed Management Commission's watershed management plans for the City of Minnetonka to determine requirements of the city's water management plan.
- Assisting Steele County, Minnesota, with converting a rural-section roadway with ditches to an urban roadway with storm sewer. Sized the storm sewer system, specified the appropriate style of catch basins to capture the runoff, evaluated three alternatives for crossing a railroad, analyzed various water-quality treatment methods, and determined the appropriate permits that would be required.
- Reviewing the portion of the Hiawatha Light Rail Transit project that falls within the Lower Minnesota River Watershed District for conformance with the district's rules and regulations. Prepared a permit review memorandum, and discussed the findings with the district's board. Worked with the Metropolitan Council to obtain funding to review additional water-quality and stormwater volume reduction techniques.
- Developing the "probable maximum precipitation" storm event hydrograph for Bonne Terre, Missouri, to evaluate how the closure of a mine would impact stormwater runoff.
- Preparing a HydroCAD computer model for a mine tailings reclamation site in Missouri for the Doe Run Company. The model analyzed the hydrology and hydraulics of the stormwater control plan for the site.
- Preparing a computer model that analyzed the peak discharge stormwater runoff rates and flood levels produced from the 100-year, 24-hour event as well as the 24-hour "probable maximum precipitation" event for a confidential iron mining client. As the mining company expands and because the mine is near the continental divide, stormwater runoff needs to be correctly channeled.
- Serving as project manager for a water-quality improvement project for Kohlman Lake in Maplewood, Minnesota. Responsible for administrating the construction contract and supervising the construction observation. Past work on the project includes designing a stormwater pipeline system, sedimentation pond, permeable weirs, and impermeable weirs; preparing plans and specifications; determining wetland impacts and necessary mitigation; coordinating the wetland replacement plan with regulatory agencies; and observing construction of the 1997 phase of the project.
- Serving as project manager for a report that discusses alternatives to relieve pressurization in a trunk storm sewer in Saint Paul. Work includes leading the team to identify and analyze the feasibility and construction costs of 10 alternatives.
- Serving as project engineer for two stormwater management plans for flood-prone areas of New Brighton, Minnesota. Work included analyzing the existing and proposed hydrologic conditions, developing a report of the different options, preparing permit information, preparing the plans and specifications for a stormwater pond and the storm

sewer of the first phase of the project, administering the construction contract of the first phase, and preparing the hydraulic computations for Minnesota Department of Transportation state aid for the second phase of the project.

- Designing a stormwater management plan for a commercial development and highway realignment in Grand Marais, Minnesota. Work included gathering regulatory information, compiling hydrologic information, and designing storm-sewer and ponding facilities to meet regulations. John has worked on similar projects in Fridley, Saint Paul, New Brighton, Victoria, and Blaine, Minnesota, some of which included complying with Wetland Conservation Act rules.
- Reviewing and preparing reports regarding development plans for Sherburne County and its compliance with water management regulations.
- Assisting in designing a stormwater sewer system for the City of Wayzata, Minnesota, which included compiling cost-sharing distributions, determining construction quantities, and assisting in writing the technical specifications for the project.
- Designing a storm sewer system for a 130-acre area along a county highway in Hastings, Minnesota.
- Assisting in preparing construction plans for a channel improvement project on Bassett Creek in Minneapolis. Responsible for the estimation of construction quantities for the project.
- Preparing plans for modifying Smetana Lake's water level for flood control and water-quality management in Eden Prairie, Minnesota.
- Designing the lot layout, grading plan, and utility plan for a housing development on an 80-acre site in Hutchinson, Minnesota, which included meetings with the developer, city officials, adjacent property owners, and grading contractors.
- Developing oxygen utilization rate curves for sequencing batch reactor experiments for the Metropolitan Waste Control Commission at the wastewater treatment plant in Saint Paul, Minnesota.
- Compiling and analyzing data and preparing reports pertaining to bridge scour for the I-35W bridge over the Mississippi River; the U.S. Highway 14 bridge over the Minnesota River; the Robert Street bridge in Saint Paul, Minnesota; multiple bridges in Austin, Minnesota; 11 bridges in southwestern Minnesota; six bridges in Karabee County; six bridges in Kittson County; five bridges in Dakota County; one bridge in Sherburne County; and the Trunk Highway 23 bridge over the Mississippi River in St. Cloud.
- Providing construction observation during remedial actions at the former coke plant of the USX Duluth Works site. This included writing a report to the Minnesota Pollution Control Agency regarding all cleanup activities.
- Evaluating data and writing and preparing monthly, quarterly, semiannual, and annual reports for landfills in Cass Lake and Spring Valley, Minnesota.

Education BCE, Civil Engineering (Water Resources and Environmental Emphasis) with Economics Minor, University of Minnesota, 1991

Registration Professional Engineer: Minnesota, Michigan

Experience

Joe has 16 years of experience in civil and water resources engineering. He has served as project manager and project engineer for public and private clients in both the United States and Canada. His project work frequently involves floodplain management design and analysis, detailed hydraulic and hydrologic modeling, scour analysis, mine water management, dam breach analysis, stormwater management, watershed best management practice (BMP) studies, cost estimating, and preparation of plans and specifications. Joe is a certified floodplain manager. Examples of his project experience include:

- Managing the evaluation of a potential conditional letter of map revision (CLOMR) application to modify the Credit River floodway in Savage, Minnesota. Conducted hydraulic modeling to test alternative floodway delineations and evaluated options to mitigate floodplain impacts.
- Managing the permitting of a stream bank stabilization project for East Chaska Creek, in Chaska Minnesota. Coordinating permits with MnDNR, USACE, and established wetland jurisdiction with Wetland Conservation Act Technical Evaluation Panel.
- Managing Barr's technical services contract with the Elm Creek Watershed Management Commission (ECWMC). Overseeing permit reviews for development projects within the watershed. Serving on the Technical Advisory Committee for the commission. Attending commission meetings and providing input on rule interpretation and engineering questions.
- Managing hydrologic modeling, hydraulic modeling, and regulatory floodplain map updates for the Elm Creek watershed.
- Managing the levee certification process with FEMA for a levee along the south side of Bear Creek in Rochester, Minnesota.
- Managing the hydraulic and hydrologic modeling and design support for multiple phases of the Mouse River enhanced flood protection project. Work included development of hydrologic modeling for ungaged portions of an 8,000-square-mile watershed and a 400-river-mile unsteady-flow hydraulic model for the sizing of proposed flood risk reduction measures. The hydraulic and hydrologic modeling is being used to for design and permitting of improved flood risk reduction measures.
- Managing design of a stormwater pond expansion in Apple Valley, Minnesota, to provide extended detention that helps the city reach phosphorous and total-suspended-solids removal targets for a watershed.
- Managing a feasibility study investigating abnormally high water loss from a water feature in Burnsville, Minnesota. Created a water balance model to quantify estimated and unknown sources of water loss. Provided recommendations to the city for various levels of improvements.
- Managing a CLOMR application to modify the Willow Creek floodway near Rochester, Minnesota.
- Managing culvert sizing and U.S. Army Corps of Engineers permitting for Bridgewater Township, Minnesota.
- Completing two-dimensional hydraulic modeling and mapping of flood hazards for 21 kilometers of the South Saskatchewan River for the Rural Municipality of Corman Park near Saskatoon, Saskatchewan. Developed velocity maps at various return frequencies to inform the community about its flood risk and assisted with managing development in the floodplain.

- Reviewing development permits for developments within the Valley Branch Watershed District in Minnesota. Work includes providing comments to developers to help them generate plans that comply with watershed district rules for rate control, volume control, water quality, flood risk mitigation, and related requirements.
- Conducting a quality control review of hydraulic modeling to document no-rise certification for work in the St. Louis River floodplain, near Duluth, Minnesota.
- Updating the long-term flood study for the Red River Basin Commission. Researched floodplain and stormwater ordinances and developed recommendations for creating better regulatory consistency across jurisdictions in the basin.
- Providing hydraulic design of a pipe slope drain to convey runoff from a capped landfill down a steep slope near Duluth, Minnesota.
- Preparing a floodplain development permit application for completing maintenance activities on a natural gas pipeline in the floodplain of the Des Moines River.
- Managing the development of a feasibility study and planning-level cost estimates to address severe water loss at the Nicollet Commons Park water feature in Burnsville, Minnesota.
- Creating a feasibility study evaluating options for addressing bank stabilization issues for a reach of the South Fork Zumbro River in Rochester, Minnesota. Identified and prioritized bank stability issues, identified potential stabilization measures, and developed concept-level cost estimates for the various options.
- Performing one- and two-dimensional hydraulic modeling to evaluate options for reducing flood risk along Cascade Creek in Rochester, Minnesota.
- Completing hydrologic and hydraulic modeling updates to flood inundation maps for Cascade Creek, Silver Creek, Bear Creek, Badger Run, Willow Creek, Hadley Valley Creek, and the South Fork Zumbro River in Rochester, Minnesota. Updated mapping to account for Atlas 14 hydrology, which generally increased the flood inundation extents for the 100-year flood event. Helped the planning department draft an updated floodplain ordinance based on the revised maps to allow the city and county to regulate development in the floodplain to the best available flood risk data.
- Developing final plans and specifications for levee improvements in Des Moines, Iowa, so that the levee system is certifiable with FEMA.
- Managing the design of a low-head dam for flood mitigation and water quality improvements for an area tributary to the Cedar River in Minnesota.
- Creating a floodplain management plan for the City of Arcadia, Wisconsin, in accordance with USACE guidelines.
- Conducting hydraulic analysis of modifications to a bridge over the Vermillion River in Hastings, Minnesota, to address levee inspection comments for a USACE levee system.
- Conducting a feasibility study to evaluate options for mitigating the frequency and magnitude of flooding of agricultural areas along the Mouse River in North Dakota. Created a two-dimensional HEC-RAS model to evaluate hydraulic scenarios.
- Designing a process water discharge system for a semi-conductor manufacturing facility in Bloomington, Minnesota. The system is designed to allow discharged process water to bypass an existing stormwater pond, avoiding the need to reconstruct the pond with an impermeable liner.

- Developing an emergency action plan for a power plant in Mandan, North Dakota. The plan includes a dam breach analysis.
- Developing an emergency action plan for a power plant in Grand Rapids, Minnesota. The plan includes a dam breach analysis.
- Managing the development of a stream bank stabilization feasibility study and design for a Rocky Creek ravine in Rochester, Minnesota. Used hydraulic modeling to design drop structures as well as channel and embankment armoring.
- Providing technical assistance to the City of Savage for the review of a conditional-use permit application, conditional letter of map revision (CLOMR), and letter of map revision (LOMR) permit applications from a private entity attempting to obtain FEMA accreditation of a reconstructed levee along the Minnesota River.
- Managing the development of an inflow design flood control system plan to comply with new coal combustion residuals rules at a coal power facility in North Dakota.
- Preparing a no-rise certificate for a floodwall project for a hospital in St. Louis Park, Minnesota.
- Conducting a stormwater analysis for the permitting of a proposed solar installation in Eagan, Minnesota.
- Reviewing an unsteady-flow HEC-RAS model developed for the Grafton, North Dakota, flood diversion project.
- Reviewing hydrologic and hydraulic modeling for the White Earth River stream crossing in White Earth County, North Dakota.
- Managing the Cascade Creek hydrologic and hydraulic modeling restudy in Rochester, Minnesota, to reflect proposed watershed development and changes in local hydrology.
- Performing hydrologic and hydraulic oversight for the Minnesota Department of Transportation for the final design of drainage features for the I-90 TH 61/14 bridge and interchange over the Mississippi River in Dresbach, Minnesota.
- Designing stormwater detention basin for the decommissioning of the coal-fired power plant for Xcel Energy in Burnsville, Minnesota.
- Developing plans and specifications for managing water at a proposed sand mine in Eau Claire, Wisconsin. Coordinated design and permitting activities related to stormwater, groundwater, and process water management.
- Conducting an external review of an unsteady-flow HEC-RAS model developed for the design of a flood diversion project for the City of Grafton, North Dakota.
- Performing hydrologic analysis of an industrial site for the City of Duluth, Minnesota, to evaluate the feasibility of connecting to an existing storm drainage system without adversely impacting its capacity.
- Preparing plans and specifications for stormwater management at a potash mining plant site in Saskatoon, Saskatchewan, including a large stormwater retention basin designed to allow the site to be internally drained for up to twice the 100-year recurrence interval storm event.
- Conducting hydraulic and hydrologic analysis of flooding problems on Interstate 90 near Austin, Minnesota, and developing concept-level alternatives for alleviating the frequency and duration of freeway closures.

- Conducting a feasibility study for managing runoff from a laydown yard at Pine Bend Refinery in Rosemount, Minnesota.
- Developing a water-balance model using GoldSim software for the management of water surface elevations in large tailings basins at a soda ash mining client in Wyoming.
- Preparing a conditional-use permit and LOMR to raise drinking-water wells out of the 100-year floodplain for Owatonna Public Utilities in Owatonna, Minnesota.
- Managing the hydrologic and hydraulic modeling work associated with stormwater treatment improvements for a concept-level feasibility assessment prepared for a Minnesota Power's Boswell Energy Center in Cohasset, Minnesota.
- Preparing a conditional-use permit application for modifications to a stormwater pond for St. Paul Park Refinery.
- Preparing plans and specifications for stream restoration work on a quarter-mile segment of Willow Creek in Rochester, Minnesota.
- Designing a 4,000-acre storage area using an unsteady-flow HEC-RAS model for the preliminary design of the Fargo-Moorhead Red River diversion project.
- Developing a GIS-based flood mitigation planning tool for the City of Rochester, Minnesota. The tool enables the city to use flood forecasts from the National Weather Service to develop inundation maps showing the potential extent of flooding.
- Conducting hydrologic and hydraulic analysis of stormwater management at an ethanol plant in Welcome, Minnesota, to evaluate options for reducing discharges to an adjacent property.
- Conducting hydrologic and hydraulic analysis of four existing ash pond systems at the Xcel Energy Black Dog Generating Plant in Dakota County, Minnesota.
- Conducting hydrologic and hydraulic analysis of a proposed development of a high school facility in Rochester, Minnesota, to document compliance with local stormwater and floodplain ordinances.
- Reviewing wave run-up analysis for levee design project for the City of Oslo, Minnesota.
- Preparing specifications for levee improvements for the cities of Alvarado, Oslo, and Rushford, Minnesota.

Education MEd, Science, University of Notre Dame, 2001
BS, Civil Engineering, University of Portland, 1999

Registration Professional Engineer: Minnesota, Iowa, North Dakota, Oregon, Wisconsin, Utah, Saskatchewan

Certification Certified Floodplain Manager