

PROPOSAL

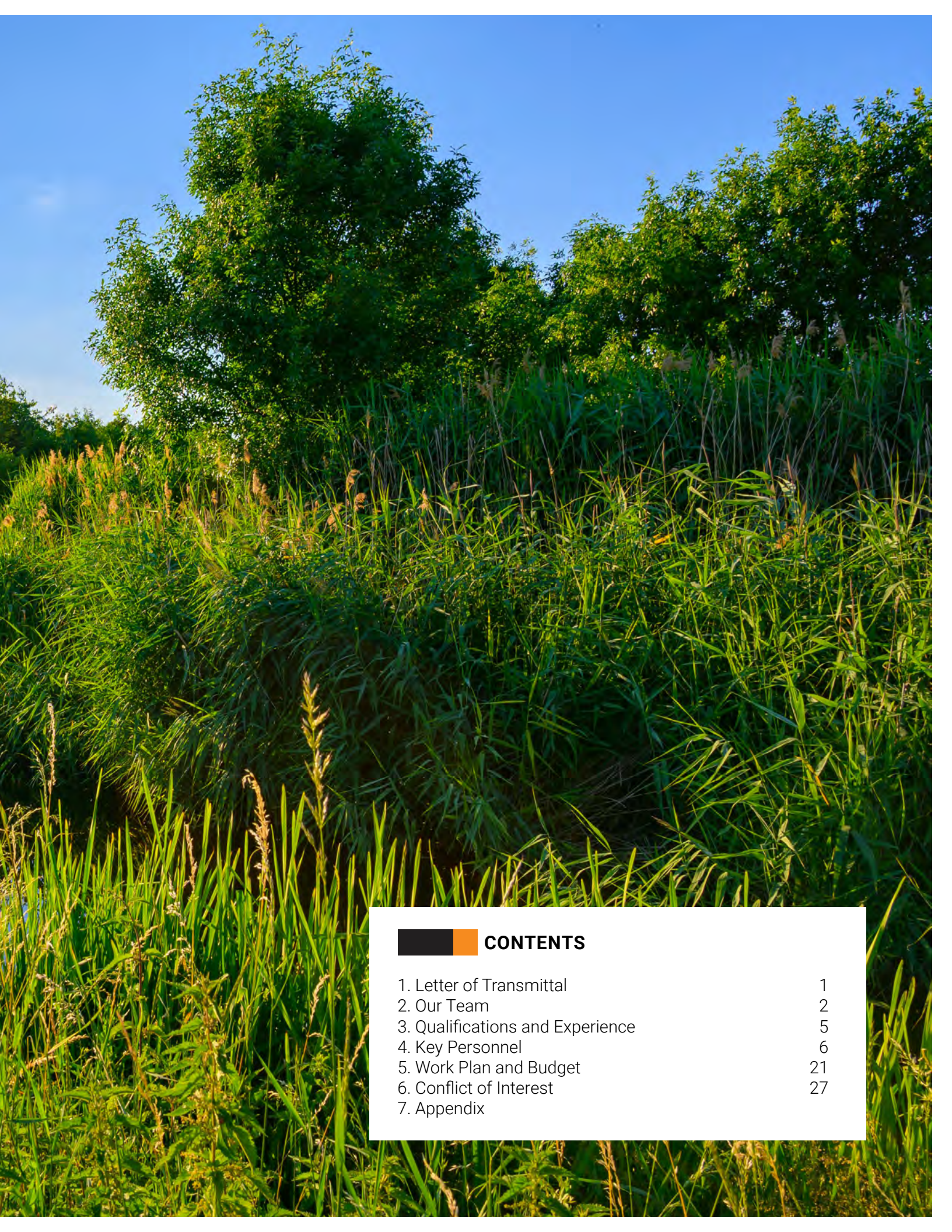
INTERSTATE VALLEY CREEK STABILIZATION AND VOLUME REDUCTION FEASIBILITY STUDY

Lower Mississippi River WMO

May 3, 2022







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Contact Person

Josh Accola, PE, CFM
Project Manager
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1 LETTER OF TRANSMITTAL



Stantec

Stantec Consulting Services Inc.

733 Marquette Avenue, Suite 1000, Minneapolis, MN 55402

May 3, 2022

Joe Barten, Administrator
Lower Mississippi River WMO
Dakota County Soil & Water Conservation District
4100 220th St. West, Suite 102
Farmington, MN 55024

RE: Lower Mississippi River WMO—Interstate Valley Creek Stabilization and Volume Reduction Feasibility Study

Dear Mr. Joe Barten and members of the selection committee:

People and water are inextricably linked at every level. The Mississippi River is one of Minnesota's, and our nation's, most valuable water resources and has influenced both the region's history and its future. The water resources within the Lower Mississippi River WMO (LMRWMO) are highly visible and form a pathway through the community. Like other metro watershed organizations, staff and elected officials recognize the need to strengthen the link between how urban stormwater is managed and the protection of these resources for the years to come.

We are excited to present this proposal in response to your Request for Proposals (RFP) for the Interstate Valley Creek Stabilization and Volume Reduction Feasibility Study. We understand that LMRWMO is looking to both address existing erosion and reduce future erosion within Interstate Valley Creek and possibly its tributaries, Wentworth and Marie Creeks. This will be addressed by the creation of a report detailing the assessment of Interstate Valley Creek. The report will document the watershed hydrology and hydraulic (H&H) analysis for reducing volume and peak rates of runoff within Interstate Valley Creek and its watershed. Upon selection, our erosion and stormwater experts will produce a report that will give City and LMRWMO staff the planning information needed to determine priority, design direction and approximate cost for implementing the conceptual-level solutions and other possible target locations and their expected benefits to the watershed. This report will be used to efficiently develop a plan to restore stability and help rehabilitate water quality and ecosystem characteristics of Interstate Valley Creek while providing feasibility studies to advance funding.

Our team will provide benefits to the watershed through:

Excellent communication. We believe that communication is key to a successful project. Our team will frequently communicate with the LMRWMO/Mendota Heights staff to provide progress updates and obtain feedback. Our team will be as transparent as possible to make sure that each step we take in the study will address the needs of the LMRWMO.

Project Manager, Josh Accola will facilitate meetings with appropriate LMRWMO and City Staff and/or other stakeholders, if desired, to make sure that we evaluate potential solutions with the local community in mind. Communication aids, such as geotagged photos, will be utilized as needed to aid in conveying the current erosion conditions.

Local team supported by national experts. Stantec has four offices in the Twin Cities metro area and works extensively with state agencies, counties, municipalities, watershed districts and organizations, as well as private entities. **We understand the regulations in place and implications for design, permitting and construction from a variety of perspectives.** This understanding will allow Stantec to eliminate unviable project ideas early in the process to streamline feasibility/conceptual design. Our team's experience in evaluating stormwater will lead to efficiencies in primarily addressing water quantity or peak rates, and secondarily addressing water quality concerns.

Planning and funding expertise. Stantec has developed stabilization plans, H&H and water quality models and associated plans for numerous clients around the world to help with watershed analysis. Not only are we technical experts, our work will help prioritize projects, inform capital improvement plans, and provide the documentation/justification for funding, designing and constructing viable solutions to Interstate Valley Creek's current issues. We have completed multiple projects of similar size and complexity in the metro and understand the City's need for additional study to provide resilient feasibility level solutions to current erosion issues and modeling to evaluate future solutions to reducing stormwater volume and peak rate within the Interstate Valley Creek. We will tap into Stantec's dedicated funding specialist team to inform our reporting process to allow projects to be eligible for more possible funding strategies. Our team has procured \$7M in funding for local projects.

Please contact Josh Accola if you have questions or require additional information. We acknowledge Addendum 1. This proposal will remain valid for a period of not less than 90 days from the date of the submittal.

Sincerely,

STANTEC CONSULTING SERVICES INC.

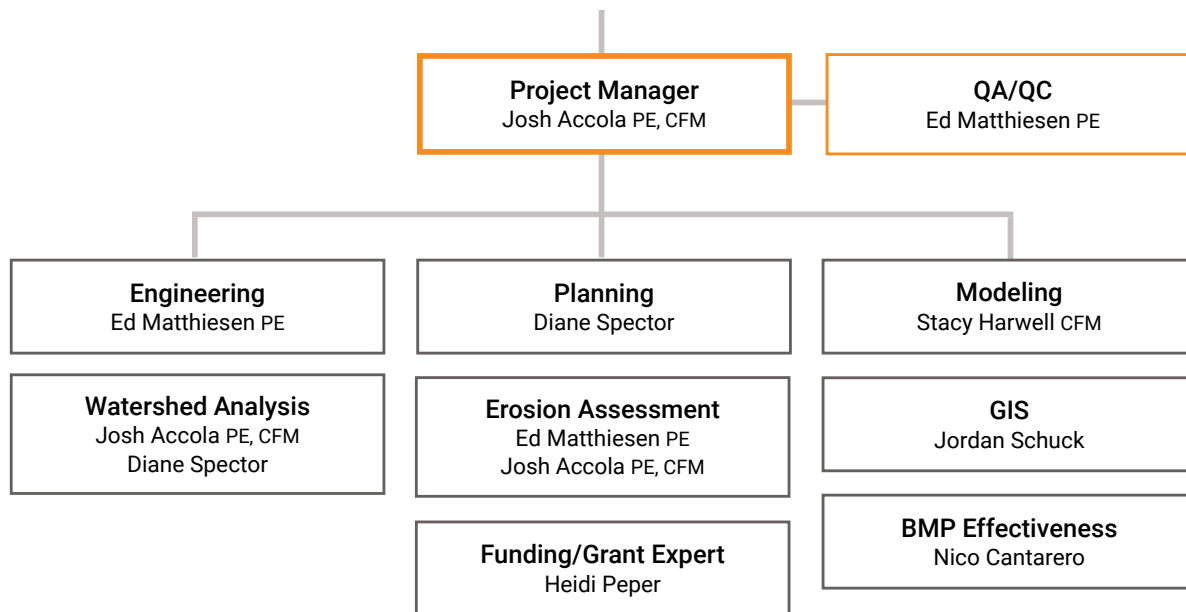
JOSH ACCOLA PE, CFM

Project Manager and Authorized Signatory
952-334-1418
josh.accola@stantec.com



Modeling Expertise

Our proposed lead modeler on this project, Stacy Harwell provided the modeling for this area while working for another firm. Her knowledge will allow our team to be more efficient throughout the project.



We want to help you get this right and you need the best experts to do that. We will work collaboratively with the LMRWMO and local stakeholders to set you on a path to realizing your vision.



Josh Accola PE, CFM | Project Manager, Watershed Analysis, Erosion Assessment

Josh is a water resource engineer and project manager with extensive experience in water resources planning, funding, modeling, design and permitting. His background runs the gamut of water resources management—working with both the private and public entities from single sites issues to watershed wide initiatives. His experience emphasizes a strong foundation of water quantity and quality modeling, stream restoration, floodplain and stormwater management, plan development/review, public engagement, and project management. He finds the intersection of floodplain management, ecological restoration, and community enhancement most rewarding. Josh leads and supports water resource-related projects throughout Minnesota and the Midwest. **He is a proactive and adaptable client/project manager that is focused on open and often communication.** To Josh, client and community satisfaction is what drives his measure of success. He is dedicated to understanding your priorities to help achieve your overall goals. Josh holds a MS in Biological Systems Engineering with a Natural Resources and Environment emphasis from University of Wisconsin-Madison. He is a Professional Engineer in Minnesota and Wisconsin, a Certified Floodplain Manager, and co-conference chair for the Minnesota Association of Floodplain Managers.



Ed Matthiesen PE | Engineering Lead, QA/QC Lead, Erosion Assessment

Ed has more than 40 years of experience in water resources and environmental engineering. **His water resources experience includes being the District Engineer for three Twin Cities area watershed districts and four Joint Powers Associations**, writing municipal comprehensive stormwater plans, outlet structure and storm sewer design, conducting evaporation studies, aquifer analysis, water quality protection plans, developing computer hydrologic and hydraulic models, as well as the design and construction of lift stations. In addition, Ed has experience in biological sampling techniques, virus isolation in surface runoff, and chemical modeling of leachate.



Diane Spector | Planning Lead, Watershed Analysis

Diane has more than 20 years of experience in water resources management, project planning and management, environmental policy, municipal public works operations, planning and analysis, as well as public participation planning. Her experience includes watershed and local water management plans, stream assessments, stream stressor identification studies, total maximum daily load (TMDL) studies, project management, educational program development, and public participation planning, in addition to **several years as a Twin Cities Suburban Public Works Director**. Diane also has experience with budget and policy planning at the state, county and local level.



Stacy Harwell CFM | Modeling Lead

Stacy is a Senior Water Resources Designer with more than 18 years of experience in H&H modeling, GIS, QA/QC, stormwater review and permitting and community outreach. Prior to Stantec she worked with the DNR

where she was the project manager for FEMA mapping and modeling updates for the entire Twin Cities HUC8 area. Stacy has developed hydrologic/hydraulic models using XPSWMM and HEC-RAS in both 1D and 2D. Her work has been primarily focused in urban areas that include complex infrastructure components. She is proficient at using the modeling software to develop proposed scenarios to meet both public and private needs. Stacy has served as a watershed commissioner on a nine member city joint powers commission for an urban watershed in the Twin Cities for the past 10 years. Additionally, **Stacy completed the modeling associated with the City of Mendota Heights' 2018 Surface Water Management Plan while with another firm.**



Jordan Schuck | GIS Lead

Jordan has 20 years of experience with a focus on GIS support for municipalities, water resources, and remediation projects. He has overseen large geospatial projects, and has **worked with multiple**

municipalities in creating and setting up their GIS Architecture. In addition, Jordan specializes in web and mobile mapping applications and has extensive knowledge in the entire Suite of ESRI Products.



Nico Cantarero | BMP Effectiveness Lead

Nico has more than 10 years of work experience, focusing on water resources and MS4 program management and compliance. Throughout his career, he has served as program coordinator for

municipalities in Nebraska, Kansas, and Minnesota; managing both NPDES MS4 phase 1 and phase 2 programs. **Nico's experience also includes managing a stormwater utility with an enterprise fund of over \$50M dollars per year,** developing and implementing mobile data collection tools and workflows, and conducting bacteria/pathogens monitoring. An intentional focus on critical thinking and problem solving, innovative solutions, and leveraging new technologies have helped to deliver efficient and successful enterprise wide solutions.



Heidi Peper | Funding/Grant Expert

With more than 25 years of experience in community and economic development, Heidi works on solving complex funding problems—her experience ranges from pedestrian trails to highways, wastewater to

drinking water projects. Heidi is one of the US leaders for Stantec's North American Funding Program, a coordinated network of more than 150 funding specialists across the country. Throughout her career, **Heidi has successfully secured more than \$200 million in grants for clients' projects.** Her experience in project development and securing affordable financing packages—including grants, legislative appropriations, and other financial incentive programs—has been a valuable resource in moving projects to a successful conclusion. This experience includes securing funding from the US Economic Development Administration (EDA) and similar federal agencies such as USDA Rural Development and securing multiple funding sources on projects.





Our Resources

Stantec has local and national experts who can offer a fresh perspective on this project.

Firm Overview

Dedicated to supporting the LMRWMO's vision, we're committed to continuing to evolve to achieving your goals for this project.

The Stantec community unites approximately 25,000 employees working in more than 350 locations across 6 continents. We're planners, scientists, designers, engineers, and project managers, innovating together at the intersection of community, creativity, and client relationships. Balancing these priorities results in projects that advance the quality of life in communities across the globe.

Since 1954, our local strength, knowledge, and relationships, coupled with our world-class expertise, have allowed us to go anywhere to meet our clients' needs in more creative and personalized ways. With a long-term commitment to the people and places we serve, Stantec has the unique ability to connect to projects on a personal level and design with community in mind.

DEDICATED TO WATERSHED CONCERNS

Our local engineers, scientists, and planners are recognized leaders in water resources. We serve more than two dozen water management organizations in Minnesota, as well as other water management organizations, counties, and municipalities throughout the country. With a reputation for innovation, we provide creative recommendations evaluated in terms of cost-effectiveness, reliability, practicality, implementability, and aesthetic qualities.

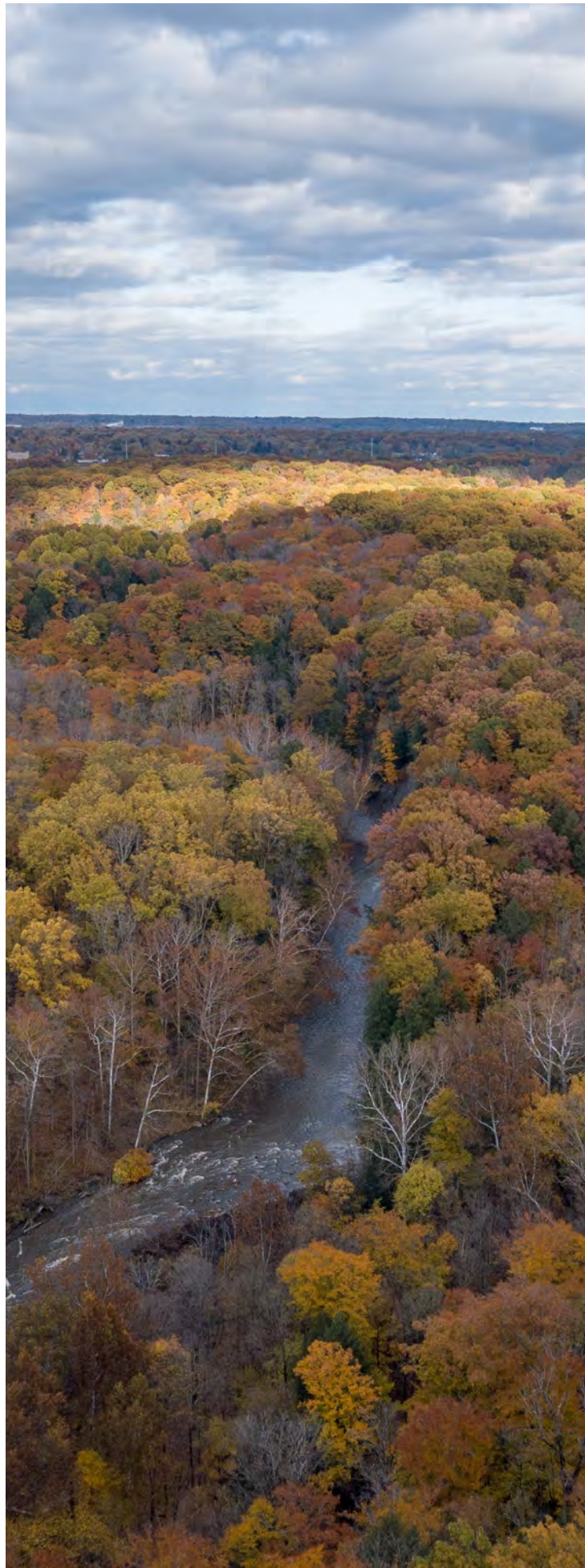
Our watershed expertise includes the full range of services from diagnostic studies, hydraulic and hydrologic, water quality monitoring, concept planning, final design to construction.

JOINING FORCES

In January 2021, Wenck joined Stantec. Through this transition, we continue our commitment to delivering responsive service and great projects. We are excited about our complementary capabilities and the opportunity to provide more clients with a broader range of services, worldwide. Stantec is now one of the largest A/E consultants in the Twin Cities.

COMMITMENT TO DIVERSITY AND INCLUSION

Stantec believes that diversity in our operations fosters a healthy range of views, facilitates innovation, improves results, creates opportunities, and is a moral responsibility. Diversity is our end goal and building an inclusive culture is how we get there. We work with industry-leading partners to guide us through the process, using industry best practices and helping us implement real change. Our programs address unconscious bias, champion organizational change, and hold people accountable.





JOSH ACCOLA PE, CFM

Role: Project Manager, Watershed Analysis, Erosion Assessment

Josh is a water resource engineer and project manager with extensive experience in water resources planning, funding, modeling, design and permitting. His background runs the gamut of water resources management—working with both the private and public entities from single sites issues to watershed wide initiatives. His experience emphasizes a strong foundation of water quantity and quality modeling, stream restoration, floodplain and stormwater management, plan development/review, public engagement, and project management. He finds the intersection of floodplain management, ecological restoration, and community enhancement most rewarding. Josh leads and supports water resource-related projects throughout Minnesota and the Midwest.

EDUCATION

- Master of Science, Biological Systems Engineering, University of Wisconsin-Madison
- Bachelor of Science, Biological Systems Engineering, University of Wisconsin-Madison

REGISTRATION

- Certified Floodplain Manager-Association of State Floodplain Managers
- Professional Engineer: Minnesota and Wisconsin

RELEVANT EXPERIENCE

City of Verona, Stormwater Services including Lincoln Street Channel Restoration, Verona, WI*. Performed hydrologic and hydraulic modeling, prepared reports and DNR documentation for multiple project areas. Developed WinSLAMM stormwater quality models; used ArcGIS, HEC-RAS, and other supporting software for drainage delineations, total suspended solids (TSS removal), and catch basin, pipe, culvert sizing. Additional tasks included involvement in the design, drafting, and all permitting of the Lincoln Street Channel Restoration and West Park Stormwater Basin dredging projects including coordination with WDNR and municipality. The Lincoln Street Channel (Tributary to Badger Mill Creek) restoration was primarily to remove an historic drop structure that was no longer functioning and to address channel bank erosion of approximately 2,000 feet of channel. This restoration utilized a combination of bio-engineering and natural materials to help reduce discharge of TSS to downstream aquatic habitat.

City of Verona, Municipal Engineering Services, Verona, WI*. Project engineer to prepare conditional and final letters of map revision for new crossing of the dry tributary to Badger Mill Creek via box culverts. Updated effective model in HEC-RAS with new survey data to create corrected effective model in vicinity of project. Added proposed culverts to corrected effective HEC-RAS model to create post-project HEC-RAS model of project. Prepared narrative justifying project and describing hydraulic modeling procedures used for project. Created table to compare water surface elevation impacts as a result of the project and prepared pertinent FEMA MT-2 forms for CLOMR/LOMR. Directed creation of pre-project, post-project, and topographic work maps and FIRM panel updates in GIS. Prepared Endangered Species Act review of project site per the requirements for a FEMA map revision. Prepared required alternatives analysis memorandum.

City of Verona, North Neighborhood Drainage Analysis, Verona, WI*. Provided drainage analysis with primary design of a regional stormwater management facility for a closed basin (kettle) development with wetlands and multiple property developers. Evaluated special conditions imposed on closed basin watershed by local and state regulatory authorities. Provided initial cost estimate and cost-sharing plan for city to distribute costs among developers and aided in drafting of the technical report.

** Completed prior to joining Stantec.*



ED MATTHIESEN PE

Role: QAQC, Engineering Lead, Erosion Assessment

Ed has more than 40 years of extensive experience in water resources and environmental engineering. His water resources experience includes being the District Engineer for three Twin Cities area watershed districts and four Joint Powers Associations, writing municipal comprehensive stormwater plans, outlet structure and storm sewer design, conducting evaporation studies, aquifer analysis, water quality protection plans, developing computer hydrologic and hydraulic models, as well as the design and construction of lift stations. In addition, Ed has experience in biological sampling techniques, virus isolation in surface runoff, and chemical modeling of leachate.

EDUCATION

- MBA, College of Saint Thomas, Saint Paul, Minnesota
- MCE, University of Minnesota, Minneapolis, Minnesota
- BA, Biology, Luther College, Decorah, Iowa

REGISTRATIONS

- Professional Engineer: Minnesota and Wisconsin

RELEVANT EXPERIENCE

Stream and River Restoration

- Haber Pasture | Ames, IA
- City of Fort Dodge, IA
- Dupont-Pioneer Seed | Johnston, IA
- Lackawanna Watershed
- Shingle Creek and West Mississippi Watershed Districts
- Lower Minnesota River Watershed District
- Minnehaha Creek Watershed District
- Brown's Creek Watershed Management Organization
- City of Eau Claire, WI
- City of Davenport, IA
- Coon Creek Watershed District
- Prior Lake-Spring Lake Watershed District
- Pike Creek | Maple Grove, Minnesota
- Hardwood Creek, Rice Creek Watershed District | MN
- Shingle Creek | Brooklyn Park, MN
- Chanhassen, MN
- Middle St. Croix Watershed | Afton, MN
- Eden Prairie, MN
- Glen Creek, Anoka Conservation District | Fridley, MN
- Bois Forte Indian Tribe | Tower, MN
- Deep Creek Ranch | Choteau, MT
- Lambert Creek, Vadnais Lake Area Water Management Organization | Vadnais Heights, MN
- Blackhawk Creek and Duck Creek | Davenport, IA
- Hay Creek | Winona, MN
- Spring Creek | New Ulm, MN
- Clearwater River | Annandale, MN
- Minneapolis Avenue Gully | Minnetrista, MN
- St. Croix River Gully Repair | St. Croix State Park, MN
- Lake Minnetonka Shoreline Restoration | MN
- Silver Lake Shoreline Restoration | Rochester, MN
- Connections at Shingle Creek, Master Plan | Brooklyn Park, MN



DIANE SPECTOR

Role: Planning Lead, Watershed Analysis

Diane has more than 20 years of experience in water resources management, project planning and management, environmental policy, municipal public works operations, planning and analysis, as well as public participation planning. Her experience includes watershed and local water management plans, stream assessments, stream stressor identification studies, total maximum daily load (TMDL) studies, project management, educational program development, and public participation planning, in addition to several years as a Twin Cities Suburban Public Works Director. Diane also has experience with budget and policy planning at the state, county and local level.

EDUCATION

- MS, Environmental Science and Policy, University of Wisconsin, Green Bay, Wisconsin
- BS, Environmental Policy, University of Wisconsin, Green Bay, Wisconsin

AWARDS

- American Council of Engineering Companies Honor Award, Comprehensive Water Resources Management Plan, 2008
- American Public Works Association 2008 National Excellence in Snow and Ice Control Award, Shingle Creek Chloride TMDL Implementation Plan

RELEVANT EXPERIENCE

Stream and River Restoration

- Shingle Creek Corridor Study, Shingle Creek Watershed Management Commission
- Stream Assessment Phase I, Vermillion River JPO
- Elk River Bacteria and Turbidity TMDL, Elk River Watershed Association
- Getchell, Unnamed, and Stoney Creeks Turbidity TMDL, Sauk River Watershed District
- Buffalo Creek Turbidity TMDL, Crow River Organization of Water (CROW)
- Connections at Shingle Creek, Hennepin Community Works
- TMDLs and TMDL Implementation Plans
- Ann River Biotic TMDL
- Shingle Creek and Bass Creek Stressor ID and Biotic TMDLs, Shingle Creek Watershed Management Commission
- Duck and Blackhawk Creeks Stream Assessments and Stormwater Master Planning, City of Davenport, IA
- Vermillion River and Tributaries Stressor ID
- Upper Minnehaha Creek Watershed Nutrient and Bacteria TMDL Study and Implementation Plan
- Elm Creek Watershed Wide TMDL and Restoration and Protection Strategies Study (WRAPS)
- Pioneer-Sarah Creek Watershed Restoration and Protection Strategies Study (WRAPS)-Streams



STACY HARWELL CFM

Role: Modeling Lead

Stacy is a Senior Water Resources Designer with more than 18 years of experience in H&H modeling, GIS, QAQC, storm water review and permitting and community outreach. Prior to Stantec she worked with the DNR where she was the project manager for FEMA mapping and modeling updates for the entire Twin Cities HUC8 area. Stacy has developed hydrologic/hydraulic models using XPSWMM and HEC-RAS in both 1D and 2D. Her work has been primarily focused in urban areas that include complex infrastructure components. She is proficient at using the modeling software to develop proposed scenarios to meet both public and private needs. She has served as a watershed commissioner on a nine member city joint powers commission for an urban watershed in the Twin Cities for the past 10 years. Throughout her career she has been a strong resource to others, with her technical/modeling experience and real world problem solving.

EDUCATION

- Master of Science, Civil Engineering, University of Minnesota, Twin Cities, Minnesota
- Bachelor of Science, University of North Dakota, School of Engineering and Mines, Grand Forks, North Dakota

REGISTRATION

- Certified Floodplain Manager, Minnesota Association of Floodplain Managers

RELEVANT EXPERIENCE

Stormwater Management | Multiple Projects for City Clients*

Stacy was the stormwater management expert and point contact for several urban communities in the Twin Cities Area, **including Mendota Heights**. She built original or modified existing hydrologic/hydraulic models for both small site specific and large citywide projects. Stacy developed a existing and proposed scenario XPSWMM model for a City client, simulating storm sewer upsizing, proposed grading along with creative alternatives such as stormwater surge basins that would allow water to surge and attenuate prior to re-entering the storm sewer system. Stacy used the models to develop preliminary cost estimates, totaling over \$8 million, that the City used for applying for State funding.

FEMA Mapping Updates | MNDNR | Twin Cities, MN*

Stacy was the project manager for the Twin Cities (MN) HUC8 FEMA mapping updates. In this role, Stacy was the point contact for all of the watershed management organizations, communities and consulting engineers throughout the process. Stacy not only managed the project but also used her expertise in XPSWMM and HEC-RAS modeling to perform the QAQC for all of the models. Once the models were approved she also worked with her team at the DNR to complete the mapping updates, QAQC and preparation of the DFIRM database. She presented the process and draft maps to all of the communities, Region V FEMA representatives and other stakeholders virtually in 2020 for each of the Flood Risk Review Meetings.

HEC-RAS 2D Model Build | MNDNR | City of Curry, MN*

Stacy built a 2-dimensional HEC-RAS model for the City of Curry Minnesota. The intent of the project was to evaluate the impacts and/or potential benefits of repairing an earthen berm that lies just downstream of a large lake and upstream of the City of Curry. The model included developing inflow hydrographs upstream of Lake Shetek that could be read into an unsteady 2-dimensional HECRAS model for the study area. Stacy used existing LIDAR and DEMs as input to the model along with manipulating the DEM for a proposed 'new berm' scenario. Along with the final report, Stacy also prepared a visual simulation using HEC-RAS Mapper that showed how water flows across the landscape for each condition. Ultimately this was a useful tool for others to better understand the complex flow regimes within the study area.

* Completed prior to joining Stantec.



JORDAN SHUCK

Role: Senior GIS Specialist

Jordan has more than 18 years of work experience with Stantec, primarily focusing on GIS support for municipalities, water resources, and remediation projects. He is the GIS manager at Stantec and has overseen large geospatial projects. In his time at Stantec he has worked with multiple municipalities in creating and setting up their GIS Architecture. In addition, Mr. Shuck specializes in web and mobile mapping applications and has extensive knowledge in the entire Suite of ESRI Products.

EDUCATION

- BA Geography/GIS, University of Minnesota-Duluth

CERTIFICATIONS AND TRAINING

- ESRI Suite of Applications
- ArcGIS Enterprise
- ArcGIS Online
- ArcGIS Mobile Applications including Field Maps, Collector, Story Maps, Survey 123 and Workforce
- ArcGIS Online and Enterprise Web Applications
- ArcGIS Spatial and 3d Analyst
- GPS Trimble R1, R2, R8 and R10
- Eos Arrow 100 GPS

RELEVANT EXPERIENCE

Minnehaha Creek Watershed District–Lake Shoreline Stabilization Project | Minnetonka, MN

Modeled the Fetch, Wave Height and Wave Period for Lake Minnetonka using Spatial Analyst and 3D Analyst. Created Shoreline Classification types of Lake Minnetonka using High Resolution Oblique Imagery. Combined the Fetch, Wave Height, Wave Period and Shoreline Classifications to determine high risk erosion areas.

Capitol Region Watershed District (CRWD) Villa Park Wetland Management Plan | MN

Phosphorus Reduction Completed GIS analysis by subwatershed using MCES land use/land cover and survey information. Subwatershed specific information was used to set the watershed phosphorus loads using unit area loading rates (UALs) in terms of pounds of phosphorus per year (lb/ac/yr). UALs were selected based on literature values that best represented land use (direct storm water runoff) conditions in the watershed. His project responsibilities also included processing of historical bathymetry information.

City of Delano, Minnesota City-Wide GIS | Delano, MN

Developed a workflow to create the GIS system for the City. The Workflow consisted of identifying data to collect, surveying the data, collection of other data using tablets, geodatabase design, creation of ArcGIS online system (AGO), creation of web applications and mobile applications for City Staff. Worked directly with City Staff to determine what publicly available information to collect and have available in AGO. Trained City Staff on using AGO in the office and using mobile applications, Stantec continues to train and work directly with staff to further their use of GIS. Delano has utilized field maps, survey 123, dashboards and story maps for multiple purposes to increase efficiency in the city. Created attachments for utility information to include photographs and record plans for each utility.

City of Corcoran, Minnesota City-Wide GIS | Corcoran, MN

Developed a workflow to create the GIS system for the city. The Workflow consisted of identifying data to collect, surveying the data, collection of other data using tablets, geodatabase design, creation of ArcGIS online system (AGO), creation of web applications and mobile applications for City Staff. Worked directly with City Staff to determine what publicly available information to collect and have available in AGO. Developed method of acquiring and integrating record plan information from developers to incorporate into their existing GIS system, Trained City Staff on using AGO in the office and using mobile applications, Stantec continues to train and work directly with staff to further their use of GIS.



NICO CANTARERO

Role: BMP Effectiveness

Nico has more than 12 years of experience, focusing on water resources and MS4 program management and compliance. Throughout his career, he has served as program coordinator for municipalities in Nebraska, Kansas, and Minnesota; managing both NPDES MS4 phase 1 and phase 2 programs. Nico's experience also includes managing a stormwater utility with an enterprise fund of over 50 million dollars per year, developing and implementing mobile data collection tools and workflows, and conducting bacteria/pathogens monitoring. An intentional focus on critical thinking and problem solving, innovative solutions, and leveraging new technologies have helped to deliver efficient and successful enterprise wide solutions.

EDUCATION

- Bachelor of Science Environmental Studies – Chemistry Concentration, Minors in Biology, Chemistry, and Mathematics , University of Nebraska, Lincoln, Nebraska

RELEVANT EXPERIENCE

Mn MS4 Program Management* | City of Dayton | Dayton, MN

Nico coordinated and tracked the implementation of the Stormwater Pollution Prevention Program (SWPPP) to comply with NPDES Phase 2 MS4 permit requirements. He prepared and maintained documentation related to MS4 phase 2 permit compliance and annual reporting requirements and updated Cities erosion and sediment ordinance to support program development and comply with MS4 permit requirements. Nico created new land disturbance permit forms and plan review workflow, including procedures and checklists. He developed new construction site compliance inspection program and Enforcement Response procedures and created a cloud-based Construction Site Management Tool with web forms and automated reports.

Water Resources Regulatory Coordinator* | City of Minneapolis | Minneapolis, MN

Nico coordinated and tracked implementation of the Stormwater Management Program (SWMP) to comply with NPDES Phase 1 MS4 permit requirements. His duties included: Develop and promote continuous SWMP improvements and coordinate updates (updates coordinated as a result of MS4 permit reissuance) Manage City Stormwater Utility Program (enterprise fund of 47 million per year), Stormwater Utility Credit Program, and Post-Construction Stormwater BMP Compliance Program Develop Stormwater Pollution Prevention Plans for 90 City-owned facilities.

Water Quality Specialist* | City of Overland Park | Overland Park, KS

Nico provided technical field, education and enforcement support to lead implementation of all aspects of the City's stormwater quality program and MS4 phase 2 permit. His duties included: Prepare and maintain documentation related to MS4 phase 2 permit compliance and annual reporting requirements Write and oversee development of 5-year Stormwater Management Plan, annual implementation of minimum control measures and ongoing reporting Develop pollution prevention plans for city facilities, inspect facilities.

Storm Water Specialist* | City of Lincoln | Lincoln, NE

Nico assisted with municipal and industrial NPDES Stormwater Program inspections. Nico's duties included: Compile inspection and annual reports Investigate and develop reports on illicit discharge complaints Act as department liaison to bring regulated entities into compliance with NPDES Industrial Program regulations Assist facilities in acquiring and completing necessary paper work to attain Stormwater No Exposure Certification/General Permit Conduct environmental inspections.

** Completed prior to joining Stantec.*



HEIDI PEPER

Role: Funding/Grant Expert

With more than 25 years of experience in community and economic development, Heidi works on solving complex funding problems—her experience ranges from pedestrian trails to highways, wastewater to drinking water projects. Heidi is one of the US leaders for Stantec's North American Funding Program, a coordinated network of more than 150 funding specialists across the country. Throughout her career, Heidi has successfully secured more than \$200 million in grants for clients' projects. Her experience in project development and securing affordable financing packages—including grants, legislative appropriations, and other financial incentive programs—has been a valuable resource in moving projects to a successful conclusion. This experience includes securing funding from the US Economic Development Administration (EDA) and similar federal agencies such as USDA Rural Development and securing multiple funding sources on projects.

EDUCATION

- Bachelor of Arts, Community Development/Public Relations, Saint Cloud State University, Saint Cloud, Minnesota

RELEVANT EXPERIENCE

Funding Assistance

- Transportation and Economic Development Grants | St. Cloud, Windom, Benton County, MN
- Utilities and Road Reconstruction - Holdingford, MN | Holdingford, MN
- Utilities and Road Reconstruction – Pine City, MN | Pine City, MN
- Industrial Park | Freeport, MN
- Mn/DOT Transportation Alternatives (TA, formerly SAFETEA-LU) | ROCORI Trail (2), River Country Bike Trail, Gaylord Trail Phase II, Lakeshore HWY 77 Trail, MN
- Multi Purpose Community Facility | Royalton, MN
- 2004 SCDP Program Administration | Elk River, MN
- Industrial Park Expansion Analysis | Annandale, MN
- Wastewater Treatment Facility Funding Services | Montevideo, MN
- Industrial Park | Cambridge, MN
- Waite Avenue Redevelopment | Waite Park, MN
- Wastewater Treatment Facility Improvements and Expansion | Princeton, MN
- River Country Bike Trail | Clearwater, MN
- Rogers Safe Routes to School Trail | Rogers, MN
- Richmond Safe Routes to School Trail | Richmond, MN
- Pierz Safe Routes to School Project | Pierz, MN
- TH 15 and 33rd Street Interchange | Saint Cloud, MN
- Highway 10 Interchange Improvements | Sauk Rapids, MN
- Highway 71 Access and Utilities | Windom, MN
- Neighborhood Stabilization Fund Grants | Buffalo and Elk River, MN
- Gaylord Public Library | Gaylord, MN
- Water Main Looping | Ironton, MN
- 2010 Street and Utility Rehabilitation | Holdingford, MN
- Princeton Wastewater Treatment Facility Improvements and Expansion | Princeton, MN
- Lester Prairie Wastewater Treatment Facility Improvements | Lester Prairie, MN
- Renville Wastewater Treatment Facility Improvements | Renville, MN
- 2010 Water System Improvements | Freeport, MN
- Horace Mann Site Demolition | Virginia, MN
- Five-Year Consolidated Plan | Rochester and Olmstead County, MN

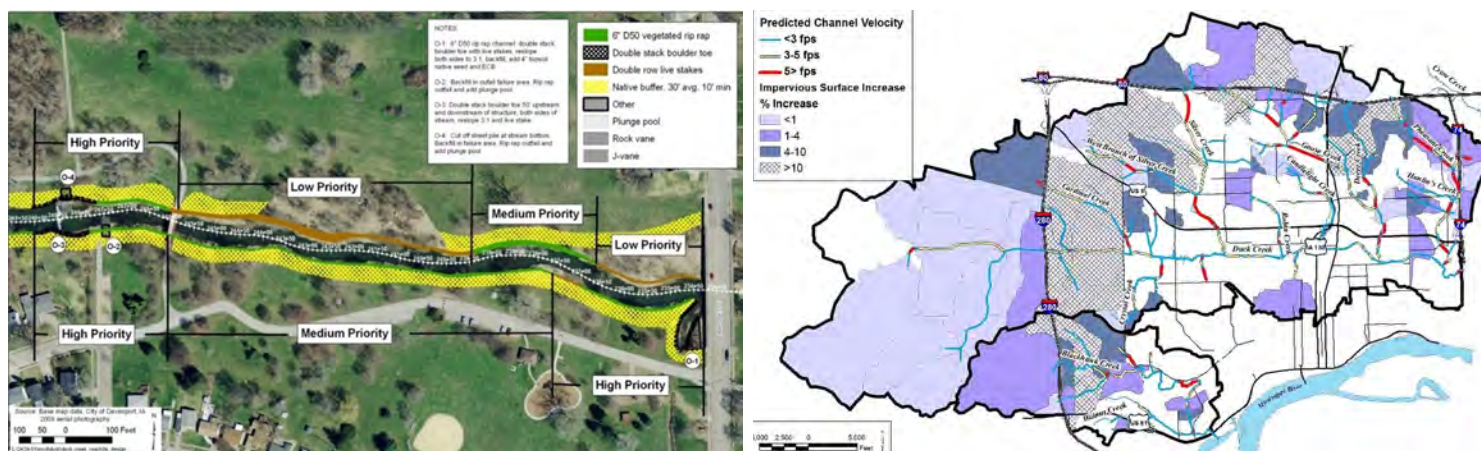


Funding Expertise

Stantec is one of the first substantial design firms to offer funding support as part of its services, and we work with both new and existing clients to help them reach their goals.

DUCK/BLACKHAWK CREEKS STORMWATER MANAGEMENT PLAN

DAVENPORT, IA



The City of Davenport, Iowa retained Stantec to develop a stormwater management plan for the City, including an assessment of conditions in two major streams that drain the City—Duck and Blackhawk Creeks. This management plan will allow the City to strategically locate stormwater facilities to provide the most efficient control of localized flooding, stream channel erosion, and water quality, as well as to mitigate the impacts of existing and expected development on its urban streams.

Stantec undertook four major tasks for this management plan. The first was developing SWMM hydrologic/hydraulic models for current and build out conditions in the 65 square mile watershed, which includes a significant area of rural watershed outside the City's corporate boundary. These models were used to better understand conditions impacting stream stability in Duck and Blackhawk Creeks and the significant number of other smaller streams and channels that drain the City. The models were also used to identify and site best management practices and to make zoning and regulatory requirement recommendations that the city can implement as it continues to develop its upper watershed area.

The second task was to evaluate conditions on ten miles of Duck Creek and six miles of Blackhawk Creek. Stantec and Davenport staff walked all 16 miles of the stream, surveying cross sections, inventorying conditions, and marking areas for restoration. Much of Duck Creek has experienced significant erosion and mass wasting; Stantec identified and conceptually designed stream restoration projects in high-priority areas. The Blackhawk Creek watershed is still developing and the prevention of degradation is a priority. Stantec also developed design guidelines for future restoration and repair projects.

A number of smaller streams are tributary to Duck and Blackhawk Creeks. Many of these streams are private and property owners are responsible for their maintenance and repair. As development has occurred and these streams have become important components of the storm water conveyance system, many are experiencing significant erosion that may be more than an individual property owner or group of neighbors can handle. As a third task, Stantec evaluated conditions on segments of two of these small tributaries and recommended options for maintenance and improvement. Stantec also assisted the city in evaluating the maintenance and financial impacts should the city decide to take on some or all the responsibility of maintenance and repair of these private streams.

Finally, Stantec designed two regional stormwater ponds to provide flood management and runoff rate control. One of these ponds was located in a city park, and included amenities such as native landscaping, a walking path, and interpretive signage.

Key Staff: Ed Matthiesen, Diane Spector, Todd Shoemaker

SHINGLE CREEK RESTORATION PHASE 1 AND 2

BROOKLYN PARK, MN



Before restoration the Creek was overwide, with a flat bottom and eroding banks. Turf grass was maintained up to the edge of the Creek.



The project included narrowing and meandering the Creek, installing rock vanes and structures, stabilizing the streambanks with live stakes, and planting a native buffer.

Stantec designed and provided construction management services for a City of Brooklyn Park, Minnesota, project that reconstructed 3,000 feet of Shingle Creek using a combination of rock structures and biorestation techniques. Shingle Creek is an 11-mile long urban stream in Hennepin County that conveys drainage from a 43-square mile watershed to the Mississippi River.

Shingle Creek has been channelized and dredged as a flat-bottomed, trapezoid-shaped channel to more efficiently convey high flows. However, at low flows the channel is overwide, and stream depth is just inches or even dry. Shingle Creek has been designated by the State of Minnesota as an Impaired Water, containing too much chloride from road salt and too little dissolved oxygen. It does not support a fish and macroinvertebrate community that would be expected in a stream of this size.

The City of Brooklyn Park hired Stantec to design a stream restoration project to stabilize eroding streambanks, improve water quality, and enhance habitat and aesthetics. Stantec's design modified the stream from a ditched to a meandering stream reach with a native vegetation buffer stabilizing the stream banks and rock vane riffles providing grade control, reaeration, and new in-stream habitat.

Working through residential back yards, the old trapezoidal channel was reconstructed with a meandering low flow channel. In-channel floodplains provide flood storage and conveyance for up to the 100-year flow.

A significant number of large cottonwoods and other trees were removed along the streambanks to increase light penetration to the Creek and to the streambanks, which were stabilized with willow live stakes and planted with a native buffer. Property corners were marked with decorative boulders indicating the edge of the buffer, to discourage property owners from encroaching into the buffer.

Following Phase I of the restoration project, the City of Brooklyn Park hired Stantec to design a 1,500-foot stream restoration project just upstream on Shingle Creek to stabilize eroding streambanks, improve water quality, and enhance habitat and aesthetics. Stantec's design retrofitted the stream within its existing channel with rock vanes, boulder toe, live stakes and brush mattresses to stabilize the stream and provide habitat and reaeration improvements. A significant number of trees on the streambank were removed to increase light penetration and to remove leaning and undercut trees. Storm sewer outfalls were stabilized and rock plunge pools added to prevent channel bottom scour. As during phase I of the project, property corners were marked with decorative boulders to indicate the edge of the buffer and discourage property owners from encroaching into City-owned property in the stream corridor.

Key Staff: Ed Matthiesen

ELM CREEK STREAM RESTORATION AND WATER QUALITY IMPROVEMENTS

PLYMOUTH, MN



Elm Creek is uniquely situated behind Wayzata High School in Plymouth. Half on property owned by the school, half on property owned by the City of Plymouth (City). The high school uses this area for education with biology class, physical education (high ropes course) and cross country running and skiing sports. Elm Creek is also listed as impaired with a TMDL requiring reductions in phosphorous and TSS and increases in DO. This project started as a feasibility study to see what projects could be done with approximately 5,000 lineal feet of Elm Creek and additional water quality improvements to satisfy the TMDL requirements.

This study and report were fast-tracked to be completed in four weeks so the client could present the study to council and pursue grant funding opportunities for construction in 2015-2016. Part of the stabilization strategy was to work with the school and City parks department to establish and program a greenway along Elm Creek. The project evaluated cross country trails, tree clearing, buffer reestablishment and working through their green space zoning which did not allow for prescribed uses and programming to be established. We also worked with the DNR to balance impacts to natural resources including priority maple-basswood forest plant communities and Threatened and Endangered species (northern long eared bat, Blandings turtle). The study concluded with a cost-benefit analysis to prioritize stabilization and water quality improvement projects.

After completion of the Elm Creek Stream Restoration Feasibility, Stantec worked with the City to continue with final design, bidding and construction of the project in the winter of 2015/2016. The design focused on the stabilization of eroding banks and addition of habitat features with a combination of natural bio-engineering practices (rootwads and logtoe, and bank resloping and revegetation) as well as hardscape features (vegetated riprap where needed and rip-rap cross vanes). Additional treatment of the contributing watershed's stormwater was achieved with the installation of two iron-enhanced sand filter benches on existing stormwater ponds. This \$650,000 construction project went from feasibility study to constructed in under 2 years, even with new endangered species (northern long-eared bat) regulations that delayed construction 6 months. This project was under construction at the same time that the Wayzata High School was undergoing a multi-million-dollar expansion and required coordination to ensure there were no impacts to each project's schedules.

As a follow up to this first project, the City of Plymouth along with Elm Creek Watershed Management Commission identified the need to restore the next reach of Elm Creek immediately upstream of the work Stantec previously completed in 2015. This section of Elm Creek is located on private residential and public high school property, within a City owned easement. The project goals were similar to the previous reach to improve downstream water quality by stabilizing the eroded banks of the creek and preventing future channel degradation while enhancing riparian buffer vegetation and habitat within the project area. Since the creek was located in a reed canary grass dominated riparian valley, the project provided a great opportunity to enhance the riparian vegetation community.

Stantec started the project with topographic, wetland and tree inventory (1,300+ trees). The survey data was used to develop the concept plans and secured the U.S. Army Corps of Engineers Nationwide Permit, MN DNR Public Waters work permit, Elm Creek Watershed Management Commission permit and the City of Plymouth grading permit. When the permits were in hand, Stantec finalized the technical specifications and contract documents, and successfully bid and awarded the construction contract. Construction was completed over the winter and early spring of 2019.

Key Staff: Ed Matthiesen

COON CREEK WATERSHED DISTRICT—GLEN CREEK

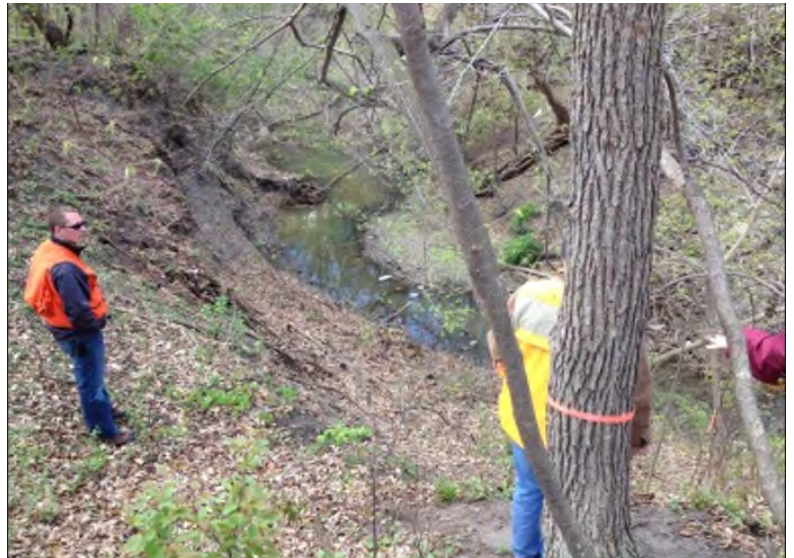
FRIDLEY, MN

Glen Creek is approximately 1,300ft of channel in a gully with significant erosion in Fridley, Minnesota. Historic air photos show the creek as highly meandered with a thick stand of trees on the south bank and more open vegetation on the north bank. There were no paved streets or homes in the project area. Present day finds homes on both sides of the gully, a 60-inch culvert at the head of the ravine the flows full during high rain fall events and the top of the ravine receding to the point that homes are on the brink of collapse. Stantec is working with Anoka County and Coon Creek Watershed District to stabilize the ravine before there is any physical damage to the homes at the top of the ravine.

Stantec first completed a feasibility study (later used to garner \$400,000 in state funding) to evaluate the creek and gully. The primary causes of bank erosion were found to be:

The abundance of trees appears to be causing much of the bank failure problems due to:

- The extensive tree canopy causes significant shading of the forest floor such that grasses and shrubs are unable to grow in any amount that would contribute to added rooting strength of the top soil.
- Many of the larger trees are leaning towards to creek and growing towards the open sun light. This causes a bending moment at the top of bank leading to collapsing top of bank.
- The root plates of the fallen trees are shallow and provide less soil strength than an equal area of grasses or shrubs.
- The tree roots provide a water channel that creates a shear plane at the point where they end. This causes soil loss below the rooting zone.
- The outside channel bends are eroding due to high channel flow forces from the 60" culvert flowing full.
- The roof runoff water from the homes lining the ravine creates problems by channelizing flow and creating gullies and saturating the top of bank creating added weight.



Because Glen Creek has very limited site access one of the goals in selecting stabilization methods was to make them constructible by hand labor. Stantec developed the approved design to include control of gutter downspout flows to the channel, tree thinning, stabilization of the slopes with the on-site trees as the base material and native vegetation where possible and boulder wall in areas of natural seeps. Bare root shrub plantings will provide additional stability to both the boulder walls and areas around the vegetated rip rap to make the stream channel support both low and very high flows. Construction is set to commence fall 2012.

Key Staff: Ed Matthiesen

PRIOR LAKE-SPRING LAKE WATERSHED UPPER WATERSHED BLUEPRINT

PRIOR LAKE, MN

The Prior Lake–Spring Lake Watershed District (PLSLWD) engaged Stantec to prepare a strategic plan to comprehensively manage stormwater in the 12,760-acre agricultural and rural residential watershed upstream of Spring Lake. Spring Lake does not meet state standards for nutrients, and a significant reduction in phosphorus from the watershed is needed. In addition, Spring Lake and downstream Upper Prior and Lower Prior Lakes experience high water and flooding issues, and additional runoff storage in the Upper Watershed would help mitigate those ongoing problems. Stantec comprehensively reviewed existing conditions, consulted with public and private stakeholders, updated hydrologic and hydraulic models, and developed a priority list of 17 potential capital projects and policy revisions to reduce pollutants and reduce flooding ranked by cost effectiveness. This analysis will be used as a prioritized implementation road map for the PLSLWD and local partners to improve water quality conditions and reduce flooding in the watershed.

Key Staff: Josh Accola, Diane Spector

DAKOTA COUNTY SWMM STUDY

DAKOTA COUNTY, MN

Stantec worked with the Dakota County Environmental Services Department to create a 450-square mile, county-wide stormwater model to evaluate flooding and water quality in rural reaches of the County. We collaborated with multiple stakeholders to direct project efforts. After reviewing and cataloging existing data from numerous studies and reports, we converted an existing XP-SWMM model to PC-SWMM and added in watersheds and conduits to model the lower reaches of the Vermillion River. Stantec created a new PC-SWMM model of the North Cannon River. Areas added were based on a combination of survey, LiDAR and GIS data and were calibrated to river gauge information.

After building the model, we ran storm simulations for several design storm events, created inundation maps and identified approximately fifty potential project locations. Potential projects identified included wetland restoration projects, flood storage projects, water quality improvement projects, or some combination thereof. Stantec calculated estimated pollutant loading and volumes of flooded water at each of the potential project locations to allow for ranking potential project sites by severity of flooding or pollutant loading.

The initial project list generated through this process was workshopped with project stakeholders to preliminarily design select projects. For the ten selected sites, we created preliminary grading plans, cost estimates and evaluated potential pollutant reduction and flood improvement. The ten projects were reranked to provide a list of high priority projects for the County to pursue as funding is available.

Key Staff: Todd Shoemaker

MIDDLE SAND CREEK NATURAL CHANNEL DESIGN

PRIOR LAKE, MN

Sand Creek is located in Coon Rapids Minnesota in the Coon Creek Watershed District. Sand Creek was over widened, incised, and degraded for habitat and biota pushing the Watershed District to seek designs to improve the quality of the creek. Stantec staff worked directly with DNR to use Natural Channel Design principles to re-meander 3,300 linear feet of the straitened section of creek. Multiple practices were utilized throughout the restoration reach including felled trees were used on outside bends for stabilization and habitat, the stream width was narrowed to increase the speed of the creek thus flushing fine particles and transferring gravel throughout the system. Rock riffles were added in multiple locations to increase oxygen and add to the adjacent pathway users auditory experience. The surrounding floodplain was lowered to allow the creek connection to the floodplain during larger storm events. The floodplain was seeded with native grasses and flowers which serve to hold the soil in place and increase the amount of pollinator friendly species in the developed environment. The project was constructed over two years to allow for the newly constructed meanders to vegetate before being brought online. Outside bends were reinforced with shrubs to increase the root systems that hold the banks in place. Multiple species of trees and shrubs were planted to increase the forest diversity and replace the trees that were harvested during construction. [Click here for a time lapse of the Middle Sand Creek Corridor Restoration project](#)

Key Staff: Ed Matthiesen

SOUTH CREEK TROUT STREAM RESTORATION

LAKEVILLE, MN

The City of Lakeville acquired land along South Creek in an easement as part of a development project and desired to implement a stream restoration project. The project reach was an approximately 1,500 ft section of channel upstream of a previous improvement project completed by the Minnesota DNR. South Creek is a designated trout stream and a priority recreation resource in Dakota County. Stantec teamed with the City and the Vermillion River Watershed (VRWJPO) to complete an initial concept design, which included narrowing sections of the channel using bioengineering practices of brush mattress and coir logs. The design also included adding rock riffles and cover boulders increase habitat complexity and installation of tree pins with rootwads to stabilize banks. The concept design helped the VRWJPO to secure grant funding for project construction. Stantec finalized the design, including consultations with the DNR on channel improvement features, permit authorizations, and analysis to document the project result would be “No Rise” to the floodplain. Stantec led the public bidding process for the City and also provided construction oversight during the project, adjusting bioengineering practices as there were installed to ensure a successful project. The overall project also includes approximately four acres of native prairie planting on City property. Construction was successfully completed in September 2019.

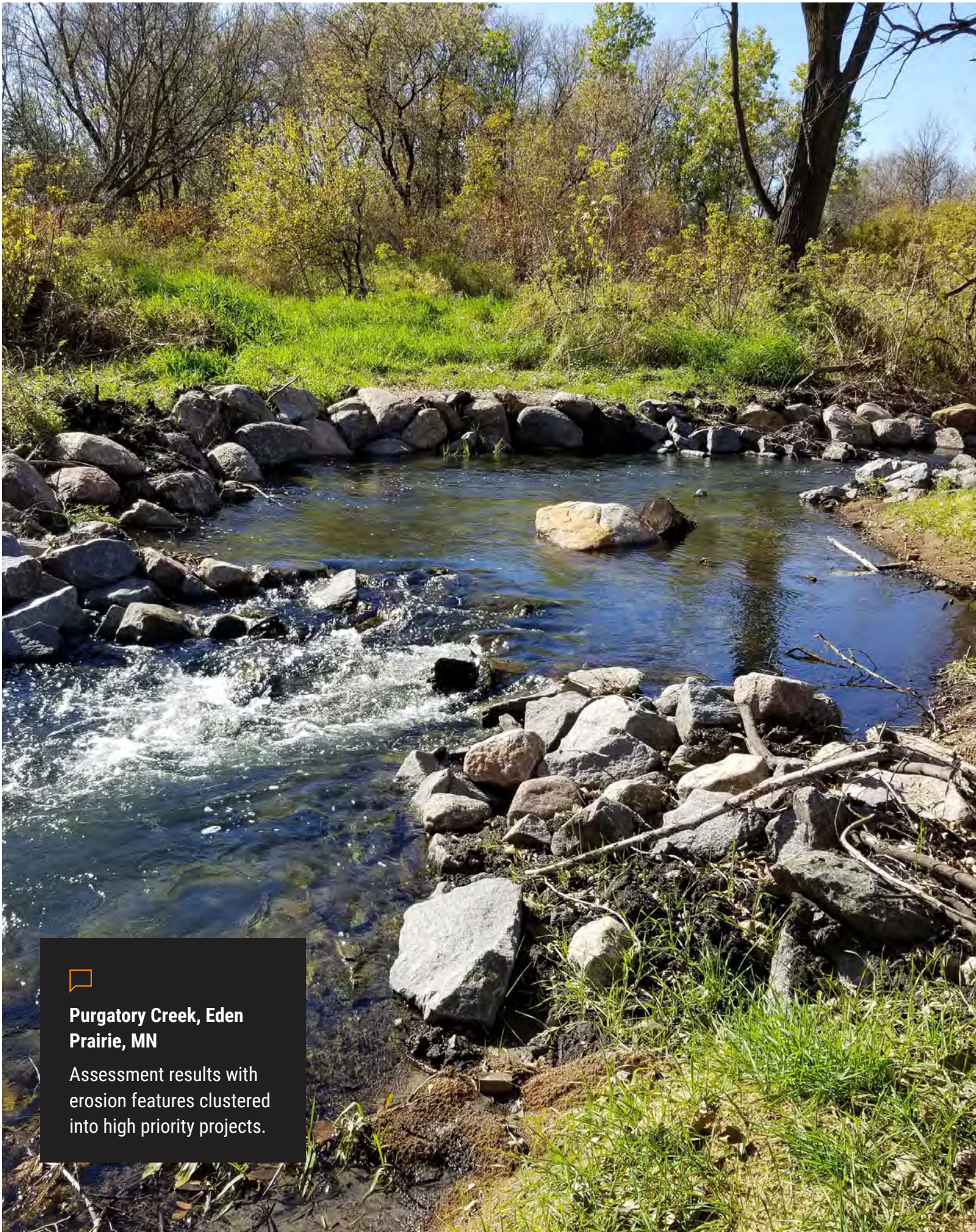
Key Staff: Ed Matthiesen

WEST CHASKA CREEK REMEANDER

CHASKA, MN

Carver County Water Management Organization, the City of Chaska, and Lower Minnesota River received a BWSR grant to stabilize and remeander a reach of West Chaska Creek to reduce turbidity and improve aquatic habitat. Aerial photography dating back to the 1930s suggested the target reach of Chaska Creek had been altered to a man-made channel with dredged material berms. Over-time, the creek has naturally started to meander within the stream valley. Stantec worked with the City to construct the improvement in phases starting in 2019. Phase I created the meanders on the south side of the creek and Phase II continued the meanders and connected the channel to the new route. The restoration added 190 feet of additional stream length. Root wads and vegetated riprap used harvested onsite upstream of restoration activity. Vegetated riprap was used sparingly to prevent the channel from migrating back to the original channel. The newly graded meanders were constructed offline during fall 2019 and remained offline through summer 2020 to allow the new channel to vegetate and stabilize. Phase II completed the final grading of the new meanders, filled in sections of the existing channel, and connected the new channel route.





**Purgatory Creek, Eden
Prairie, MN**

Assessment results with
erosion features clustered
into high priority projects.

Stantec has assembled a team of professionals experienced in completing the requested work. Based on the tasks identified in the RFP, our approach is proposed as follows.

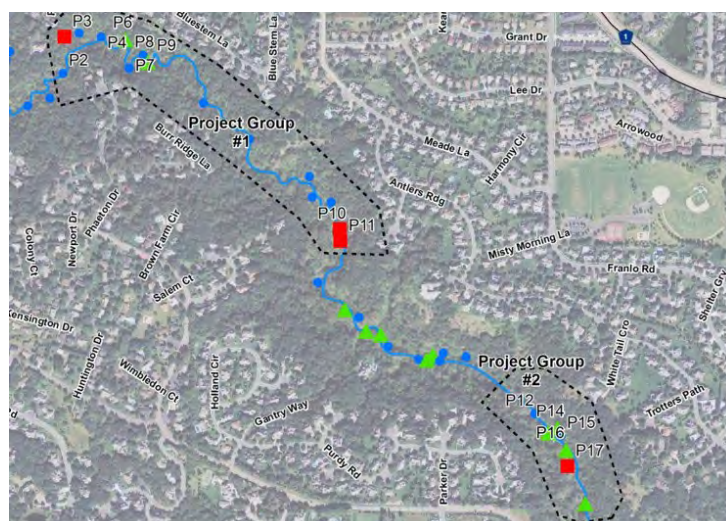
TASK 1—REVIEW EXISTING DATA AND PLANS

Stantec's project manager and lead modeler will meet with LMRWMO and City staff at a kickoff meeting to better understand the project background and objectives, to refine the project scope and schedule, and discuss the existing data available for the project. We understand your time is valuable and to minimize the watershed's and the City's efforts, our GIS lead and modelers will assemble basemap and other data and identify data gaps prior to this meeting. We will work with the project partners to fill those gaps or identify alternate information that may be useful to the project at this meeting. As a part of this task, our GIS and modeling staff will create or confirm subwatershed boundaries and stream reaches to guide the analysis in subsequent tasks. Stantec maintains a comprehensive library of base map GIS data that will be supplemented by any locally developed data, such as known areas of flooding, redevelopment opportunities, and opportunities to add storage in the watershed.

The final report will include a log of data sources used, gaps identified, and methods used to fill those gaps. As noted in Task 5, this GIS data will become part of the library of electronic information that will be provided to the LMRWMO at the conclusion of the project.

TASK 2—ASSESSMENT OF INTERSTATE VALLEY CREEK EROSION

Over the course of many stream condition assessments, Stantec has developed an approach that is proven and cost-effective. After the stream is subdivided into hydrologic reaches, we will create a field map book of aerial photos showing stream stationing. Our two-person crew will walk the stream periodically measuring stream dimensions such as bankfull depth and width and Rosgen BEHI and noting general conditions. Any problem areas are photographed and noted on the field book along with measurements (length, width, and height, and estimated rescession rate) of observed erosion and mass wasting. At the same time, the field crew will be led by Ed Matthiesen—a stream designer with more than 40 years of experience—will identify the most appropriate management strategies for each subreach based on observed conditions and engineering judgment. An experienced team can evaluate 4,000–5,000 linear feet of stream a day if it is wadeable, less if the stream is less accessible or requires a lot of clambering into and out of the stream. For purposes of this assessment we have assumed four, ten-hour days to complete the assessment of the approximately two miles of Interstate Valley Creek.



Prioritization of projects identified for purgatory creek defined

The field data is then used to develop a series of figures by stream reach that graphically portray general condition and ratings, with an indication of the generalized management recommendations for the reach (e.g. remove invasive buckthorn and selectively thin the tree canopy by removing leaning and at-risk trees to allow sunlight to penetrate and support the growth of stabilizing understory vegetation). High priority projects for stabilization and restoration within each reach will also be noted, along with more detailed design recommendations (e.g. regrade banks, install two-row boulder toe with live stakes to the bankfull elevation and riprap splash pool downstream of the storm sewer outfall), as illustrated on our project example completed for the City of Davenport, Iowa. Standard details and concepts for each class of management action will be provided for reference.

In our experience these stabilization recommendations are best organized into categories: 1) clusters of medium to high priority repair or stabilization needs that could be addressed by one or more capital improvement projects; 2) smaller spot repair-type projects that can be accomplished a few at a time as time and budget allow; 3) maintenance activities on publicly-owned or controlled lands, such as tree thinning, buffer establishment or enhancement; and 4) recommendations for private property owners.

Where it would be feasible to cluster actions into one or more capital improvement projects, we will develop conceptual-level designs and opinions of probable cost and use the BWSR Water Erosion Pollution Reduction Estimator to complete the pollutant removal calculations and cost benefit analysis. For the smaller spot-repair projects we will provide a typical cost per linear foot that can be used for budget planning purposes. We have found this as an extremely beneficial tool for budgeting purposes.

We have assumed two meetings for this task, including one with the project team to preliminarily review the findings and develop a prioritization scheme for the stream projects, and one to review the resulting prioritized list based on team input.

The final report in Task 5 will include the electronic map book with management recommendations by reach and subreach, the final list of prioritized projects, costs, and removals, and recommended maintenance strategies. As noted in Task 5, this GIS data, pollutant reduction spreadsheets, and cost estimate spreadsheets will become part of the library of electronic information that will be provided to the LMRWMO at the conclusion of the project.

+ ALTERNATE TASK 3—ASSESSMENT OF INTERSTATE VALLEY CREEK TRIBUTARIES

If this alternate is authorized, Stantec will complete an analysis similar to Task 2 on Wentworth and Marie Creeks. We understand that erosion issues were identified on Marie Creek in a 2006 Study; this assessment will include an estimation of how conditions may have changed in the 16 years since that work was completed and what that may mean for future stream stability. We have estimated a total of three days to complete the field work for the approximately 12,100 linear feet of stream. We have also included one team meeting to focus on these two streams and the findings. The deliverables for this task will be the same as shown in Task 2.

TASK 4—WATERSHED ANALYSIS STUDY TO IDENTIFY VOLUME REDUCTION BMPs

The purpose of this study is to identify options to reduce stream channel erosion through the implementation of stormwater volume and peak flow reduction BMPs. This study will use a combination of existing stormwater infrastructure,

GIS, and BMP data provided by the partners, along with stormwater modeling to determine existing and future conditions and identify potential BMP locations. City and County CIP plans will be considered to identify opportunities to partner and with implementing peak flow and volume reduction to piggyback on upcoming projects. The final deliverable will be a planning level report that will include methods, modeling results, and figures and lists of prioritized potential BMPs, their conceptual design, and estimated cost and removals. Subtasks include:

- **Perform hydrologic analyses** of the watershed using desktop analysis and GIS to estimate hydrologic parameters that are used for runoff calculations. **Stacy Harwell helped develop the existing HydroCAD model and is familiar with the input, which includes inflow hydrographs from the surrounding communities.** The existing model will be assessed against our hydrologic assessment in GIS and any necessary corrections will be made for accuracy.
- **Existing hydraulic inputs to the HydroCAD model will be compared** to available information provided by the communities within the study area. This includes storm sewer infrastructure and reviewing grading plans, LiDAR data and other GIS resources to confirm storage inputs to the model. Necessary updates will be made to the hydraulic components of the model that significantly impact the runoff rate and volume within the study area.
- **Results from our initial modeling will be reviewed** for accuracy against existing topographic data in GIS. Any necessary corrections, such as emergency overflow routing, will be made.
- From this point, Stantec will **identify potential locations for BMPs** that will reduce the runoff volume, phosphorus, sediment and e-coli on both public and private property. We will plot runoff results in GIS and compare to parcel data or



A reach improvement schematic for a subreach of Duck Creek in Davenport, Iowa.

other publicly available information along to locate the most feasible and effective BMP locations.

- **Potential locations identified will be drafted on fieldwork maps** that will be used during site visits. Field work maps will be drafted in GIS, including wetland areas, private land, park areas, infrastructure and other natural resources that impact the feasibility of a BMP. Stantec will host a preliminary meeting with the City prior to making a field visit to locations identified through the modeling effort. Stantec field staff, experienced in implementing stormwater BMPs, will gather field data to further refine the optimal BMP locations. Photographs and notes will be compiled for each of the sites and summarized in the report.
- Stantec will summarize potential **permitting requirements** at each of the identified BMP options, including a general timeline for what a typical permitting process may look like. This will be valuable to the project as the communities expectations evolve through the process.
- **Alternative BMP locations will be added to the existing conditions model** in order to determine feasibility and effectiveness. A cost breakdown for each of the BMPs will be provided along with a conceptual design. Pollutant calculations will be performed in P8 modeling software. The benefit and cost for each BMP will be looked at in terms of the cost per pound of phosphorus removed, or another metric identified by the City.

We have assumed two team meetings for this task to review and discuss model findings and to review and discuss potential BMPs and prioritization options.

The final report in Task 5 will detail modeling methods and assumptions and will include the final list of prioritized projects, costs, and removals, and if applicable recommended maintenance strategies. As noted in Task 5 below, these models, associated GIS data, pollutant reduction spreadsheets, and cost estimate spreadsheets will become part of the library of electronic information that will be provided to the LMRWMO at the conclusion of the project. This data will benefit LMRWMO in future watershed management activities.

TASK 5—FINAL DELIVERABLES

The work performed for this analysis will be delivered in a technical report that summarizes the project goals and



Middle Sand Creek Natural Channel Design, Prior Lake, MN

objectives and clearly details methods and findings. We expect that the bulk of this streamlined, user-friendly report will consist of a series of figures showing conditions and recommended improvements by reach; figures showing the locations of recommended priority BMPs and their potential footprint on the landscape; and tables of those recommended actions by cost-effectiveness and priority.

An important component of the final report is the recommended Implementation Plan. This will set forth list of recommended management activities, including capital improvement projects, maintenance strategies, education and outreach to homeowners, and funding options. Our goal is to provide the LMRWMO and project team not only with an actionable plan, but also to position the team for success in accessing grants and other outside funding. Our North American Funding Team has had great success in helping our clients secure grants, no-interest loans, bond funding, and special legislative funding to complete high priority work. We have included in this task time for one of our Stantec specialists to work with your team to explore these options.

Following completion of the work all work products, including working GIS, modeling, estimation, and other files will be organized into a library of electronic information to be provided to the LMRWMO.

SCHEDULE

Project Award and Kickoff Meeting
 Assemble Data and Identify Data Gaps
 Perform Stream Assessment
 Develop H&H Models
 Identify and Evaluate BMPs
 Preliminary List of Priority BMPs for Review
 Report Draft for Review
 Final Delivery

	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV
Project Award and Kickoff Meeting							
Assemble Data and Identify Data Gaps							
Perform Stream Assessment							
Develop H&H Models							
Identify and Evaluate BMPs							
Preliminary List of Priority BMPs for Review							
Report Draft for Review							
Final Delivery							

BUDGET

#	Tasks	Josh Accola (Level 12)	Ed Matthiesen (Level 16)	Rena Weis (Level 9)	Diane Spector (Level 14)	Stacy Harwell (Level 13)	Jordan Shuck (Level 13)	Nico Cantarero (Level 12)	Heidi Peper (Level 14)	Admin (Level 7)	Hours	Labor Cost	Expenses Cost	Total Cost	Assumptions
1	Review Existing Plans														
	Obtain and organize partner GIS and other data	1					4								
	Develop subwatersheds and reaches	2				2	2								
	Identify and fill data gaps	1				1	2								
	PM/meetings	8				2							\$30		1 meeting, 4 hours for PM
	SUBTOTAL	12	0	0	0	5	8	0	0	0	25	\$4,417	\$30	\$4,447	
2	Stream Assessment IVC														
	Set up field work books	2		2			2								
	Field Assessment	40	10	30									\$200		2 miles: .5 mi/10 hr day, 2 person crew, mileage 50 mi, RT 4 days + misc
	Collate data and annotate photos	4		4			4								
	Develop stream condition ratings and length by reach	8	1	2											
	Develop potential priority projects	12	4	8	2		2								
	Estimate cost per foot and load reductions	6	1	1											
	Summarize findings	8		1	1		2								
	PM/Meetings	12	2										\$100		1 staff meeting, 1 partner meeting, 8 hours for PM
	SUBTOTAL	92	18	48	3	0	10	0	0	0	171	\$29,517	\$300	\$29,817	
3	Alternate—Assessment of Tributaries														
	Set up field work books	1		2			2								
	Field Assessment	30	10	20									\$150		12K LF: 3 /10 hrday, 2 person crew, mileage 50 mi, RT 3 days + misc
	Collate data and annotate photos	3		1			4								
	Develop stream condition ratings & lengths by reach	4		2											
	Develop potential priority projects	8	2	8	2		2								
	Estimate cost per foot and load reductions	2		2											
	Summarize findings	4		1			1			2					
	PM/Meetings	6		2									\$50		1 meeting, 4 hours for PM
	SUBTOTAL	58	12	38	2	0	9	0	0	2	121	\$20,673	\$200	\$20,873	
4	Watershed Analysis														
	H&H Modeling: Baseline	1		24		8									
	BMP Siting Analysis: Desktop	1		16		8		4							
	BMP Siting Analysis: Field			8			2	4							
	Conceptual Design and Cost 20 BMPs			40		8		4		4					
	H&H Modeling: Future Conditions			24											
	Develop Prioritization Scheme	14													
	PM/Meetings	14				4							\$100		General PM
	SUBTOTAL	30	0	112	0	28	2	12	0	4	188	\$29,646	\$100	\$29,746	

#	Tasks	Josh Accola (Level 12)	Ed Matthiesen (Level 16)	Rena Weis (Level 9)	Diane Spector (Level 14)	Stacy Harwell (Level 13)	Jordan Shuck (Level 13)	Nico Cantarero (Level 12)	Heidi Peper (Level 14)	Admin (Level 7)	Hours	Labor Cost	Expenses Cost	Total Cost	Assumptions
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5 Watershed Analysis

Prepare Draft Report	8	1	8	4	1			4	4						
Final figures						8									
Incorporate comments	2	1	4												
Prepare Final Report	1	1	2	1					1						
Bundle and transmit electronic files															
PM/Meetings	6												\$50		1 meeting, 4 hours for PM
SUBTOTAL	17	3	14	5	1	8	0	4	5	57	\$9,665	\$50	\$9,715		

	Josh Accola (Level 12)	Ed Matthiesen (Level 16)	Rena Weis (Level 9)	Diane Spector (Level 14)	Stacy Harwell (Level 13)	Jordan Shuck (Level 13)	Nico Cantarero (Level 12)	Heidi Peper (Level 14)	Admin (Level 7)	Hours	Labor Cost	Expenses Cost	Total Cost
TOTAL WITHOUT ALTERNATE													
Hours without Alternate	151	21	174	8	34	28	12	4	9	441			
Cost without Alternate	\$25,972	\$4,977	\$25,578	\$1,496	\$6,154	\$5,068	\$2,064	\$748	\$1,188		\$73,245	\$480	\$73,725
Hourly Rate	\$172	\$237	\$147	\$187	\$181	\$181	\$172	\$187	\$132				

TOTAL WITH ALTERNATE													
Hours with Alternate	209	33	212	10	34	37	12	4	11	562			
Cost with Alternate	\$35,948	\$7,821	\$31,164	\$1,870	\$6,154	\$6,697	\$2,064	\$748	\$1,452		\$93,918	\$680	\$94,598
Hourly Rate	\$172	\$237	\$147	\$187	\$181	\$181	\$172	\$187	\$132				

Potential deduction if local staff take Rena Weis' place for the field work:

Task 2: \$4,410

Task 3: \$2,940

Total Deduction: \$7,350

Deduction Per Day: \$1,470

Potential deduction if local staff take Ed Matthiesen's place for alternate field work:

Task 3: \$2,370

Total Deduction: \$2,370



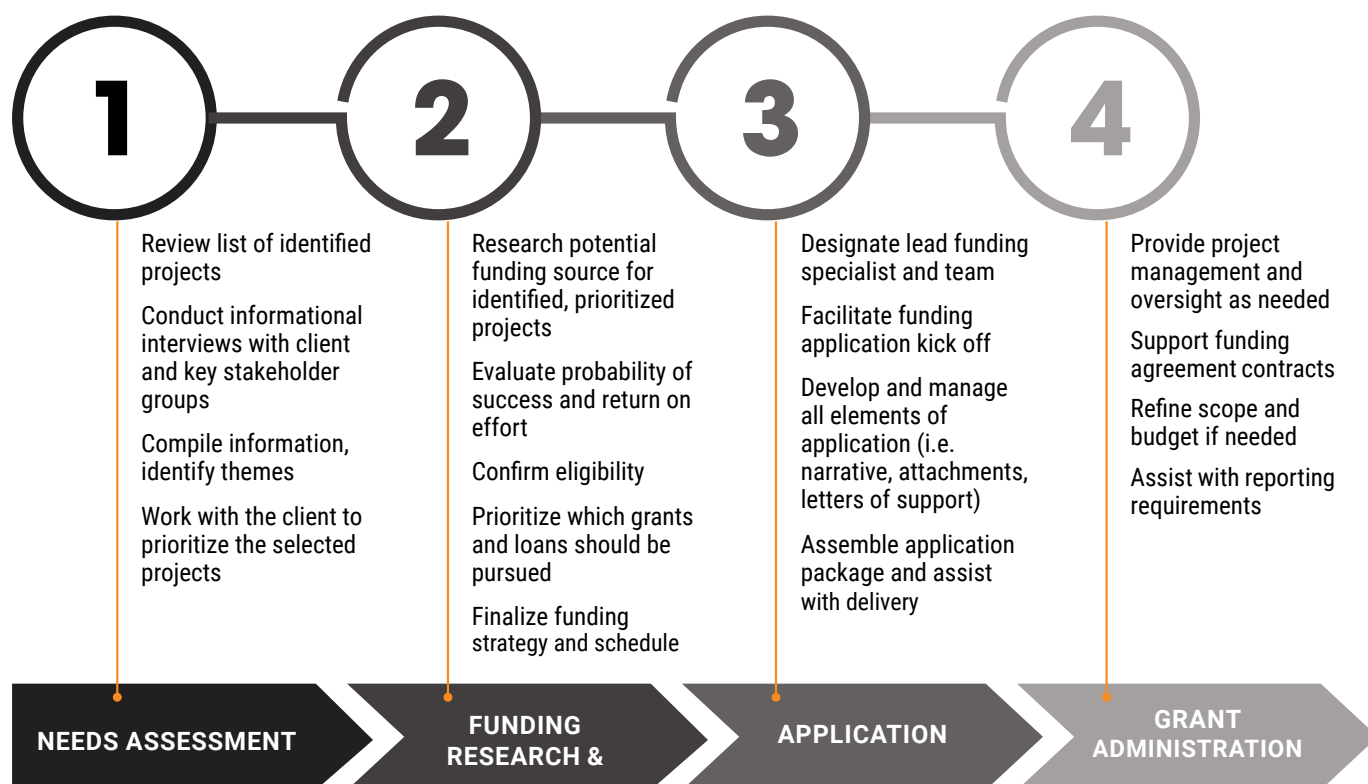
6 CONFLICT OF INTEREST

Our team has no conflict of interest for providing the services contemplated by the RFP.



7 APPENDIX

OUR FUNDING PROCESS





Design with community in mind