



A PROPOSAL FOR

Interstate Valley Creek Study

FOR LOWER MISSISSIPPI RIVER WATERSHED MANAGEMENT ORGANIZATION

May 3, 2022

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



Re: Proposal for Interstate Valley Creek Stabilization and Volume Reduction Feasibility Study

Dear Joe,

On behalf of WSB, thank you for this opportunity to submit our qualifications. The requested feasibility study will position the Lower Mississippi River Watershed Management Organization (LMRWMO) to take action to address erosion along the high priority stream reaches of Interstate Valley Creek and its tributaries. In addition to streambank stabilization measures, the study will identify best management practices (BMPs) in the tributary watershed, giving the LMRWMO a plan to reduce stormwater volume and discharge rates to the Creek, reducing erosion and improving water quality long-term.

Experienced Team | A team spanning the breadth and depth of streambank restoration, hydrologic and hydraulic modeling, and BMP design will be able to efficiently identify potential solutions, while recognizing their various opportunities and potential pitfalls. This is what WSB's proposed team will provide the LMRWMO. Our team's ability to see an eroded streambank, recognize its root cause, and choose the right improvement is born from our work on many comparable projects. Similarly, our team's capacity to interpret model results and use them to identify realistic BMPs has been developed over many years and many models.

Actionable Solutions | WSB's proposed team has brought streambank stabilization and volume reduction projects from concept and feasibility, through design and construction. Because we understand the project lifecycle from start to finish, we know what it takes to implement long-term solutions. The LMRWMO gains the most value from the requested feasibility report if it can be used to move directly to final design and construction of the recommended improvements. We will present clear, easy-to-understand solutions to position the LMRWMO for action.

Familiarity with the Watershed and its Communities | WSB's drainage team has a history of completing successful projects within the watershed and is extremely familiar with the member communities. We updated and created the City of Mendota Heights' HydroCAD and P8 models respectively for the study area as part of their Surface Water Management Plan update in 2018 and understand the complexities of the watershed. Our team is currently working on Seidl's Lake improvements in South St. Paul and Inver Grove Heights and erosion improvements in West St. Paul.

Please contact me at 612.990.3576 or jnewhall@wsbeng.com with any questions about our qualifications or availability.

Sincerely, WSB

A handwritten signature in black ink, appearing to read "Jake Newhall", is written over a light grey circular background.

Jake Newhall, PE
Project Manager



TABLE OF CONTENTS

Firm Overview.....	1
Proposer’s Team	2
Qualifications and Experience	3
Key Personnel	9
Support Personnel.....	13
Work Plan and Budget for	
Scope of Services.....	14
Conflict of Interest	16
Project Schedule and Fee	17

Firm Overview



Forge ahead.

WSB is a design and consulting firm specializing in engineering, community planning, environmental, and construction services. Together, our staff improves the way people engage with communities, transportation, infrastructure, energy and our environment. We offer services that seamlessly integrate planning, design and implementation.

We share a vision to connect your dreams for tomorrow to the needs of today—the future is ours for the making.

600+
STAFF

30+
SERVICE AREAS

15
OFFICES

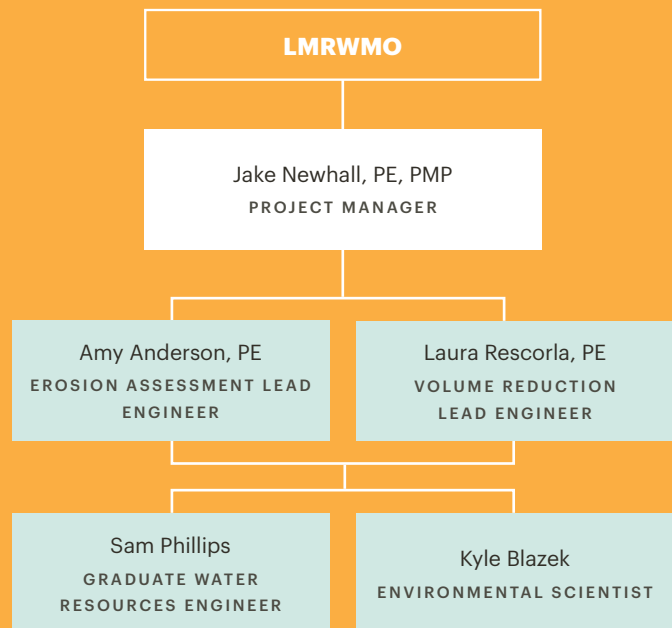
5
STATES

Alternative Project Delivery | Biogas | Bridges & Structures | City Engineering | Community Planning | Constructability Review | Construction Materials Testing & Special Inspection | Contractor Modeling | Drinking Water | Economic Development | Environmental Compliance | Geohazard Risk Management | Geospatial | Geotechnical Engineering | GIS Services | Grants & Funding | Health & Safety Compliance | Intelligent Transportation Systems | Investigation & Remediation | Land Development | Landscape Architecture | Managed Services | Natural Resources | Pavement Management | Pipeline | Project Management & Construction Administration | Public Engagement | Public Works Management | Right of Way | Roadway Design | Smart Cities | Solar | Survey | Technology Solutions | Traffic Engineering | Transit Planning | Transportation Planning | Urban Design | Vibration Monitoring | Visualizations | Water Resources | Water Reuse | Wind



Proposer's Team

The LMRWMO will be best served by our experienced, collaborative team that works together frequently to deliver high quality studies and projects. Jake Newhall has extensive experience executing a wide-variety of streambank stabilization and subwatershed assessment projects and will manage the team to deliver a comprehensive study on-time and on-budget. Amy Anderson specializes in streambank restoration and watershed management. Assisted by Kyle Blazek and Sam Phillips, she will lead the field review of the stream reaches and the development of recommendations for streambank stabilization. Laura Rescorla will lead the watershed BMP analysis, combining her experience identifying City-wide volume reduction opportunities with Sam Phillips's subwatershed assessment experience, to model the subwatershed and identify the most suitable BMP locations.





Qualifications and Experience

Mississippi Gateway Regional Park Shoreland Stabilization Assessment

CLIENT: THREE RIVERS PARKS DISTRICT

LOCATION: BROOKLYN PARK, MN

DURATION: MAY 2021 - NOV 2021



WSB completed an assessment of shoreline erosion issues along the banks of the Mississippi River within Mississippi Gateway Regional Park. WSB completed a qualitative erosion survey and a quantitative estimate of sediment loading from each erosion area to the Mississippi River. WSB also completed preliminary stabilization designs for each erosion area and a preliminary cost estimate to assist Three Rivers Park District in finding grant funding to support future project construction costs.



REFERENCE: MATT SWENSON, PLA | PROJECT MANAGER

| 3000 XENIUM LANE NORTH | PLYMOUTH MN 55441 |

612.434.1035 | MATT.SWENSON@THREERIVERSPARKS.ORG



Amy Anderson, Project Engineer:

Performed sediment loading estimates, designed proposed stabilization measures, and wrote final report.

Watertown Streambank Feasibility Study

CLIENTS: CARVER COUNTY WATER MANAGEMENT ORGANIZATION,
CARVER COUNTY SOIL AND WATER CONSERVATION DISTRICT
LOCATION: CARVER COUNTY, MN
DURATION: MAY 2021 - OCT 2021



WSB teamed with Carver County Water Management Organization (CCWMO) and Carver County Soil and Water Conservation District (CCSWCD) staff to survey all streambanks along the South Fork of the Crow River within the City of Watertown. The survey documented 19 properties with erosion issues ranging from minimal to severe. Working with CCWMO staff, WSB developed a feasibility level stabilization plan for each site which favored vegetation-based stabilization methods over hard armoring techniques and included a feasibility-level cost estimate. WSB developed estimates of sediment loading from each site to quantify proposed water quality improvements and related them to the existing Total Maximum Daily Load (TMDL) which is in place for the South Fork of the Crow River. Finally, WSB made quantitative assessments of the relative instability of each site and the risk of no action if stabilization activities were not completed.

REFERENCE: TIM SUNDBY | WATER RESOURCES
TECHNICIAN | CARVER COUNTY, MN | 952.361.1816 |
TSUNDBY@CO.CARVER.MN.US



Table Property #1	1	-	-
Goal Course 2	1.38	2	04/2011 - 04/2017
Goal Course 3	1.87	2	09/2012 - 04/2017
Goal Course 1	1.38	2	04/2017 - 05/2018

No apparent change in bank location or drainage. Bank erosion is minimal and no erosion is apparent during the survey. Bank erosion is minimal and no erosion is apparent during the survey.

To calculate sediment load, we used the following equation with bank heights and lengths as measured during the survey, assumed soil bulk density and average bank recession rate as calculated above:

$$\text{Average Recession Rate} = \text{Bank Height} \times \text{Bank Length} \times \text{Soil Bulk Density} \times \text{Average Bank Recession Rate} / 2000 \text{ Billion}$$

Table 2 summarizes the average recession rate and estimated sediment load from each site surveyed.

Table 2					
Average Recession Rates and Sediment Loads by Site					Estimated Sediment Load (tons/yr)
Group Name	Field Erosion Assessment	Length (ft)	Average Height (ft)	Average Recession Rate (ft/yr)	Sediment Load (tons/yr)
Johnson Property	Severe	247	18	0.57	133.4
Overton	Moderate	630	20	0.29	102.5
BE Properties	Moderate	884	6	0.1	22.6
Bender Property	Moderate	187	8	1.35	146.9
Angel Ave SW	Severe	203	10	1.21	134.1
Kendall	Discontinued	291	8	0.1	6.8
Marken Property	Moderate	116	9	0.52	108.2
Proctor Property	Moderate	116	12	1.85	108.2
Mullen Property	Low	790	8	1.04	199.9
Low	Low	794	8	0.1	26.8
Snyder Property	Moderate	303	8	1.04	108.2
Kinder Property	Severe	248	20	1.34	250.7
Overton	Severe	278	14	1.83	267.8
NE Ave SE	Moderate	283	8	0.1	7.2
NE Ave SE	Severe	679	8	0.1	25.7
WWTP South	Moderate	383	10	0.1	15.3

Facility Erosion
Bioscience Center Facility Study
City of West Valley Management Organization
Wild Area Management

Page 4

Sam Phillips, Water Resources Engineer:

Worked with Amy Anderson to draft figures and feasibility level plans of proposed improvements. Assisted on sediment loading estimate calculations.

Amy Anderson, Project Manager:

Conducted field survey with CCWMO staff, performed sediment loading estimates, designed proposed stabilization measures, and presented study findings to the clients.

Volume Reduction and Water Quality Improvements Master Plan

CLIENT: CITY OF BLAINE

LOCATION: BLAINE, MN

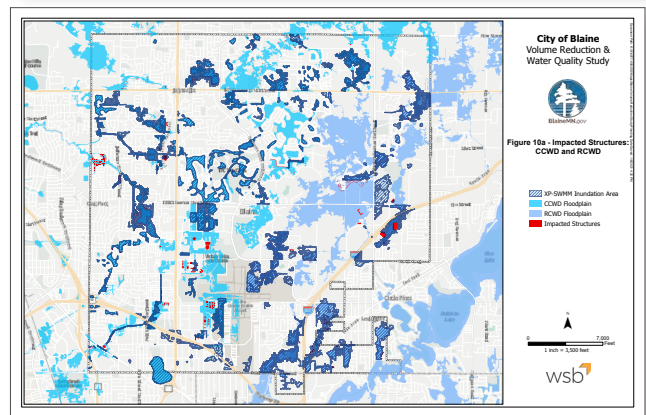
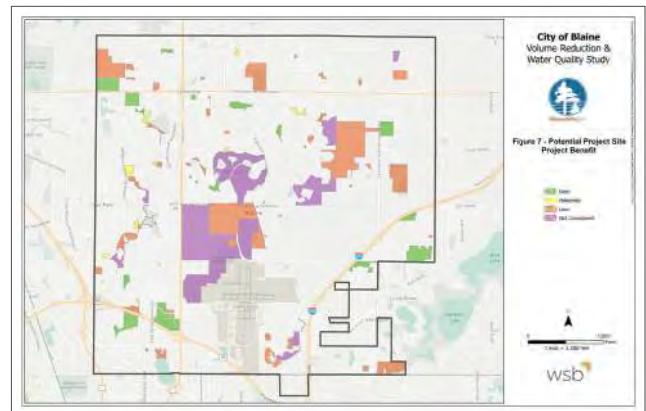
DURATION: MAY 2020 - AUGUST 2021

WSB assisted the City of Blaine in their goal to be proactive and efficient in their approach to volume reduction and water quality improvements in the city. WSB identified future opportunities for stormwater management on city or publicly owned property to offset the impacts of future linear reconstruction projects, provide flood reduction, and work toward addressing TMDLs within the city.

Stormwater management locations were identified and prioritized based on their potential for volume reduction via infiltration, drainage area size, and the downstream receiving water. While volume reduction is a goal of the city, general water quality improvements are too. Those locations with low infiltration potential were considered for other water quality interventions. The city's Capital Improvement Plan (CIP) was overlaid with these locations to determine where opportunities existed to mitigate future improvements.

Sites with high potential for either volume reduction or water quality improvements were analyzed further to develop recommended options. The recommendations include the type of stormwater improvement and its associated treatment capacity, load reduction, anticipated cost, and potential funding sources.

This master plan provides the city with a valuable resource and road map for holistic water quality improvements throughout the city.



REFERENCE: DAN SCHLUENDER | CITY ENGINEER | CITY OF BLAINE, MN | 763.785.6158 | DSCHLUENDER@BLAINEMN.GOV

Laura Rescorla, Water Resources Engineer:

Used GIS data and previously completed subwatershed studies to identify future opportunities for BMPs (with a priority for volume reduction) on City or publicly owned parcels.

Eagle Creek Study

CLIENT: CITY OF SAVAGE

LOCATION: SAVAGE, MN

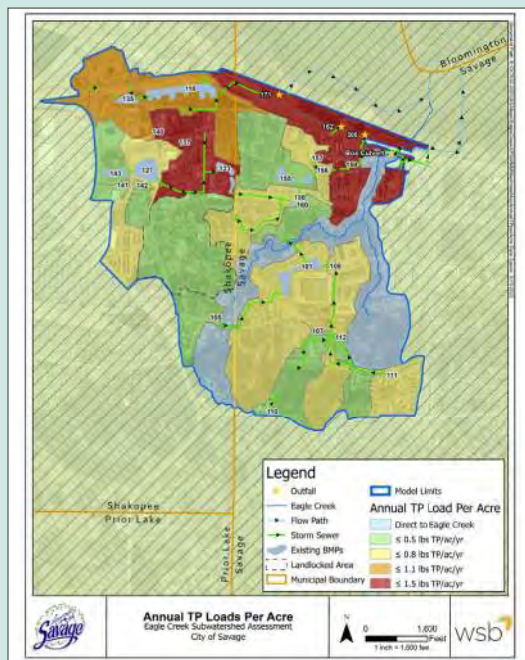
DURATION: SEPTEMBER 2021 - APRIL 2022

WSB worked with the City of Savage and the Lower Minnesota River Watershed District to study, identify, and evaluate opportunities for water quality improvements within the tributary areas to Eagle Creek. As a part of this effort, an XPSWMM and P8 subwatershed models were created and undertreated subwatershed areas were prioritized with water quality improvement options and cost estimates. MPCA Clean Water Fund grants were utilized in this study.

REFERENCE: JESSE CARLSON | WATER RESOURCES

MANAGER | CITY OF SAVAGE, MN | 952.882.2686 |

JCARLSON@CITYOFSAVAGE.COM



Sam Phillips, Water Resources Engineer:

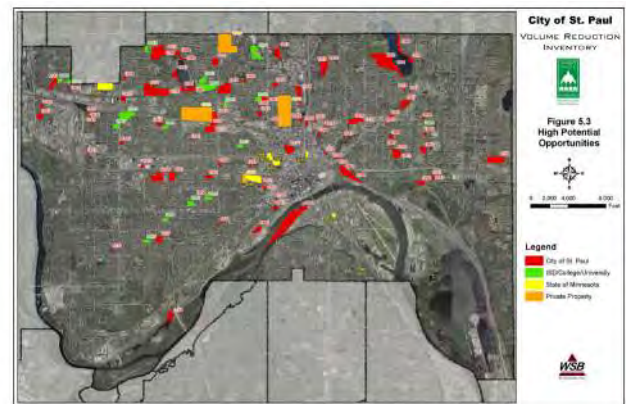
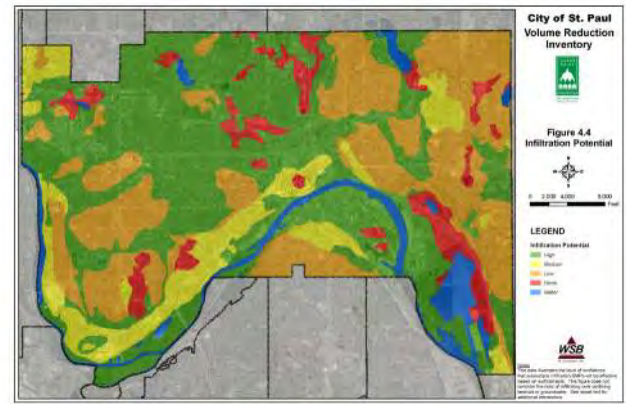
Created XPSWMM and P8 models of the subwatersheds to identify and evaluate potential BMPs. Prioritized the BMP options and provided cost estimates.

Subwatershed XP-SWMM Model and Volume Reduction Studies

CLIENT: CITY OF ST. PAUL
DURATION: 2011 - PRESENT

To aid the City of St. Paul in achieving their goal of becoming a leader in stormwater management and in meeting the requirements of local agencies, WSB developed stormwater volume reduction strategies to be used by City of St. Paul staff. We reviewed numerous parameters and hydrologic characteristics in GIS to identify the highest potential locations to construct regional best management practices to infiltrate and treat stormwater runoff. WSB also developed many additional options to incorporate stormwater treatment into the City's street reconstruction projects. In addition, WSB developed XPSWMM and P8 models of the existing storm sewer system throughout three major subwatersheds within the City to identify flooding issues and ideal locations for future stormwater treatment BMPs.

Although the volume reduction inventory was originally completed in 2011, it has continued to be an important resource for the City. Recently, including in 2022, WSB has updated the volume reduction inventory in several subwatershed to reflect additional site characteristics and permitting requirements that impact the suitability and need for volume reduction. This project provided City staff with valuable tools necessary to continue improving the quality of the City's water resources.



REFERENCE: PATRICK MURPHY | CIVIL ENGINEER,
SEWER UTILITY | ST. PAUL, MN | 651.266.6254 |
PATRICK.G.MURPHY@CI.STPAUL.MN.US

Laura Rescorla, Water Resources Engineer:

Updated volume reduction considerations for two subwatersheds in 2022. Provides ongoing support to the City as they consider planning for and implementing projects.

Mt. Olivet and Parkers Lake Streambank Improvements

CLIENT: CITY OF PLYMOUTH

LOCATION: PLYMOUTH, MN

DURATION: JAN 2021 - FEB 2022

WSB worked with the City of Plymouth and the Bassett Creek Watershed Management Commission (BCWMC) to address erosion along two intermittent streams in the City. The goals of the project at both sites, Mt. Olivet and Parkers Lake, were to slow the velocity of water through the channels and provide permanent stabilization of the streambanks to reduce the pollutant loads to the downstream impaired water bodies. To techniques employed to meet these goals included the installation of rock or rock log ditch checks to hold and slow down water within the channel, the installation of plunge pools, regrading and widening the channel, and native seeding along with live stakes. Hard armoring of the banks was used in the locations with the most evidence of or susceptibility to erosion.

WSB completed hydraulic modeling using a HEC-RAS 2D model to determine the areas along the streambanks with the highest velocities and therefore highest susceptibility to erosion. We also completed water quality modeling to quantify the reductions in downstream Total Phosphorus (TP) and Total Suspended Solids (TSS) loads as a result of the improvements. Annually, this project will reduce TP and TSS loads by 27 pounds and 27 tons respectively.

REFERENCE: BEN SCHARENBRICH | WATER RESOURCES

SUPERVISOR | PLYMOUTH, MN | 763.494.6354 |

BSCHARENBRICH@PLYMOUTHMN.GOV

This project also provided an opportunity for the City and BCWMC to clear out debris and brush that had accumulated within the stream channels and along their banks. At the Mt. Olivet site, the project also included approximately 0.67 acres of wetland restoration. The area was regraded to provide varying types of wetland (Types 2, 3, 4) habitat, invasive vegetation was removed, and the area reseeded with native species.



EXISTING CONDITIONS DOCUMENTED IN SITE VISIT



MAX VELOCITY OF MT. OLIVET PROJECT SITE

Jake Newhall, Project Manager:

Jake coordinated the project team and the relationship between WSB, BCWMC, and the City to deliver final plans that fit the desires and needs of all parties. He and Laura collaboratively designed the final stabilization measures and drainage improvements throughout the project area.

Laura Rescorla, Water Resources Engineer:

Laura combined information from a previously completed feasibility study with observations from site visits and 2D modeling results to design the proposed improvements. She performed sediment loading calculations to quantify the impacts of the proposed improvements.

Sam Phillips, Water Resources Engineer:

Sam created the 2D model for the project area to inform the design of the proposed stabilization measures.



Key Personnel



Jake Newhall, PE, PMP

WATER RESOURCES PROJECT MANAGER



Jake has more than 15 years of engineering experience and has managed and designed many types of water resources projects, including modeling, planning, design, maintenance programs, and construction. He has worked with numerous watershed municipalities, counties and state agencies. Jake's well-rounded water resources skills and experience allow him to collaborate and be innovative while solving challenging water quality and water quantity problems.

SERVICE GROUP:

Water Resources

REGISTRATION:

PE MN #49170

EDUCATION:

Bachelor of Civil Engineering, University of Minnesota, 2006

MEMBERSHIPS + CERTIFICATIONS:

Certified PMP #1989038

Prior Lake Subwatershed Assessment | Prior Lake, MN

CLIENT: CITY OF PRIOR LAKE

PROJECT DURATION: OCT 2021 - APRIL 2022

Jake was the project manager that led the development of a subwatershed assessment within the Upper and Lower Prior Lake Subwatershed. BMP options to achieve total phosphorus removal and volume control were outlined and evaluated. The goal of the study was to find effective regional BMP solutions to obtain credits and help offset future permitting needs for situations with restrictive conditions. Both P8 modeling and the recently completed City-wide XPSWMM model were utilized in the study. A comparison matrix was developed to rank and prioritize BMPs for consideration. Recommendations for implementation were provided.

Mt. Olivet & Parkers Lake Stabilization Improvements | Plymouth, MN

CLIENT: CITY OF PLYMOUTH

PROJECT DURATION: JAN 2021 - FEB 2022

Jake worked with the City of Plymouth and the Bassett Creek Watershed Management Commission (BCWMC) to address erosion along two intermittent streams in the City. The goals of the project at both sites, Mt. Olivet and Parkers Lake, were to slow the velocity of water through the channels and provide permanent stabilization of the streambanks to reduce the pollutant loads to the downstream impaired water bodies. Techniques employed included the installation of rock or rock log ditch checks to hold and slow down water within the channel, the installation of plunge pools, regrading and widening the channel, and native seeding along with live stakes. Hard armoring of the banks, using rock as well as sustainably reusing tree trunks was completed in the locations with the most evidence of or susceptibility to erosion. The team completed hydraulic modeling using a HEC-RAS 2D model to determine the areas along the streambanks with the highest velocities and therefore highest susceptibility to erosion.

Everest Lane Streambank Improvements | Maple Grove, MN

CLIENT: CITY OF MAPLE GROVE

PROJECT DURATION: JUN 2021 - OCT 2021

Jake was the project manager responsible for design and construction services of the Everest Lane Streambank Stabilization Project located directly upstream of Elm Creek. Approximately 800 linear feet of streambank was significantly eroded and full of dead brush and debris. Improvements to the streambank include removal of debris and sediment, hard and soft armoring of the side slopes, ditch checks throughout the length of the project, and plunge pools to provide energy dissipation. 2D modeling techniques were utilized to determine the appropriate location for hard armoring of the side slopes and ditch checks based on anticipated velocities and shear stresses within the channel. the project also included sediment cleanout and streambank stabilization at the discharge point to Elm Creek.



Amy Anderson, PE

EROSION ASSESSMENT LEAD ENGINEER



Amy has over 10 years of professional experience in water resources engineering, specializing in stream restoration and watershed management. Amy's experience in water resources spans the project cycle, from surveying and design through construction observation and post-project monitoring. Amy works closely with all stakeholders in watershed projects and sees these types of projects as a way to improve connection between people and the natural environment.

SERVICE GROUP:

Water Resources

REGISTRATION:

Professional Engineer

MN #50820

EDUCATION:

Masters, Aquatic Science,
University of Michigan,
2010

Masters, Civil Engineering,
University of Michigan,
2010

Bachelors, Civil
Engineering, Marquette
University, 2008

TRAINING

Wildland Hydrology,
Applied Fluvial
Geomorphology

Wildland Hydrology,
River Morphology and
Applications

DNR River Science -
Applied Geomorphology
and Ecology; River
Restoration Design and
Application; Restoration
in Fragmented River
Ecosystems

Mississippi Gateway Regional Park Assessment | Various, MN

CLIENT: THREE RIVERS PARKS DISTRICT

PROJECT DURATION: MAY 2021 - NOV 2021

Amy was the project engineer on a feasibility study which assessed shoreline erosion within Mississippi Gateway Regional Park. Amy designed restoration practices for five separate erosion areas within the park which focused on reducing sediment loads to the Mississippi River using natural methods while protecting existing park infrastructure.

Watertown Streambank Feasibility Study | Watertown, MN

CLIENT: CARVER COUNTY WMO

PROJECT DURATION: MAY 2021 - OCT 2021

Amy led the WSB team that worked with CCWMO and Carver SWCD staff to assess erosion issues on the South Fork of the Crow River through Watertown, MN. Amy's responsibilities on this project included being part of the survey team, writing the feasibility study, producing draft designs and cost estimates, and project management.

North Fork Zumbro River Restoration | Mazeppa, MN

CLIENT: WABASHA COUNTY SOIL AND WATER CONSERVATION DISTRICT

PROJECT DURATION: AUG 2019 - DEC 2021

Amy was the engineer of record for a 3,000 foot stream restoration project through downtown Mazeppa. The project included floodplain restoration, installing toe wood and riffles for habitat improvement, and converting the remnants of an existing dam into a rock riffle. Amy supervised the use of a 2D model to assess the reductions in water surface elevation caused by the project.

Surface Water Management Plan Update | West St. Paul, MN

CLIENT: CITY OF WEST ST. PAUL

PROJECT DURATION: JAN 2018 - MAR 2020

Amy was the primary author of the Surface Water Management Plan for the City of West St. Paul. Amy's responsibilities included writing and editing text, preparing and updating tables and figures, presenting on the draft plan to the West St. Paul City Council, tracking comments received from all stakeholders, and submitting the plan for review and approval to the MetCouncil and neighboring communities and watershed districts.



Laura Rescorla, PE

VOLUME REDUCTION LEAD ENGINEER



Laura is a Project Engineer in WSB's Water Resources Group. She has over five years of engineering experience collaborating across technical groups to deliver quality products to clients in a variety of water resource project areas. Her experience includes planning, hydraulic and hydrologic modeling, design, permitting, and construction management. Laura's engineering computer skills include XPSWMM, HyrdoCAD, HY-8, ArcGIS, MircoStation, and P-8.

SERVICE GROUP:

Water Resources

REGISTRATION:

Professional Engineer

MN #58716

EDUCATION:

Bachelor of Science
in Engineering, Civil/
Environmental
Concentration, Calvin
College 2010

Volume Reduction and Water Quality Study | Blaine, MN

CLIENT: CITY OF BLAINE

PROJECT DURATION: MAY 2020 - AUGUST 2021

This project entailed developing a City-wide approach for volume reduction and water quality improvements. Laura identified future opportunities for stormwater management on City or publicly owned property to offset the impacts of future linear reconstruction projects, provide flood reduction, and work toward addressing TMDLs within the City. Sites with high potential for either volume reduction or water quality improvements were analyzed further to develop recommended options. The recommendations include the type of stormwater improvement and its associated treatment capacity, load reduction, anticipated cost, and potential funding sources.

Mt Olivet Streambank Restoration and Parkers Lake Drainage Improvement Project | Plymouth, MN

CLIENT: CITY OF PLYMOUTH & BASSETT CREEK WATERSHED MANAGEMENT COMMISSION

PROJECT DURATION: JAN 2021 - FEB 2022

This project, a collaboration between the City and Bassett Creek Watershed Management Commission, addressed erosion along two intermittent streams in the City. Laura conducted site visits and identified stabilization techniques to permanently stabilize the banks. Bioengineering was prioritized over hard armoring, where possible, including reusing trees from the site for bank stabilization and log ditch checks. Construction plans, specifications, and cost estimates were produced as final deliverables; WSB also provided construction support to the City.

Drainage and Stormwater Support | St. Paul, MN

CLIENT: CITY OF ST. PAUL

PROJECT DURATION: 2020 - CURRENT

Laura provides ongoing support to the City of St. Paul for stormwater and drainage design. She has assisted the City's sewer division on reviews of large projects including the Ford Site Redevelopment and the Gold Line BRT project. She has developed updated recommendations for the City regarding volume reduction opportunities based on additional site-specific considerations and new permitting requirements.

Support Personnel



Kyle Blazek

ENVIRONMENTAL SCIENTIST

Kyle has over three years of experience in water resources and environmental monitoring. Prior to joining the WSB team, Kyle held internships assisting with research as well as watershed management and stormwater monitoring. Since joining the WSB team in 2019, he has been involved with stormwater monitoring, nutrient modeling, BMP inspection, and pond monitoring and maintenance. Kyle is focused on detailed data collection and understands the importance of communication.



Samuel Phillips

GRADUATE WATER RESOURCES ENGINEER

Samuel was the lead CAD designer for proposed restorations on the South Fork Crow River in Carver County and Elm Creek Phase V in Champlin. He performed construction observation on Elm Creek Phase IV. Samuel also built HEC-RAS 2D models to inform design decisions on Lake of the Woods Ditch 1 and Mt. Olivet & Parkers Lake Stabilization projects. Samuel recently created XPSWMM and P8 models for the Eagle Creek Subwatershed Assessment, which were used to assess the feasibility of new BMPs in the City of Savage. Additionally, Samuel is skilled in many technical areas including ArcGIS Pro, AutoCAD Civil 3D, HEC-RAS 1D and 2D, HydroCAD, MIDS and SHSAM.

Work Plan and Budget for Scope of Services



The Interstate Valley Creek is a high priority area for the LMRWMO due to identified bank erosion and its impairment for e-coli/bacteria. Through a combination of streambank stabilization techniques and volume reduction BMPs in the tributary watershed, the LMRWMO desires to identify long-term, cost-effective solutions to reduce erosion, provide habitat, and improve water quality.

APPROACH AT-A-GLANCE



TASK 1

Review Existing Data and Plans

After the project is awarded and contracts are signed, WSB will facilitate a project kickoff meeting with LMRWMO and City of Mendota Heights' Staff. We will review existing data, including:

- GIS data from the City
- Marie Creek Feasibility Study (Barr Engineering, June 2006)
- Water Quality Modeling Study – Ivy Falls Creek, Interstate Valley Creek, and Highway 13 Watersheds (Barr Engineering, February 2003)
- Mendota Heights' Interstate Valley Creek and West Marie Creek P8 model (WSB, 2016)
- Mendota Heights' Interstate Valley Creek Watershed HydroCAD model (WSB, 2016)



TASK 2

Assessment of Interstate Valley Creek Erosion

WSB will conduct a field assessment of Interstate Valley Creek within the limits shown in RFP Exhibit A. WSB staff will walk all reaches which are safely accessible and where landowner permission has been granted and will document existing erosion issues using a survey-grade GPS as well as take photos and site notes.

Following the field assessment WSB will map areas of documented erosion and group them together into up to ten (10) project areas for feasibility-level assessment. WSB will discuss the overall findings of the field assessment as well as these areas with City and LMRWMO staff at the project progress meeting.

TASK 2 OPTIONAL ADD-ON

Development of 2D Model - \$7,500

If desired, WSB can perform a more detailed survey to gather the information required to develop a 2D model of the stream reaches. The survey will include points to generate detailed profiles and cross sections of the reaches, which will be used to create the model and can be used in final plan production. The 2D model will be used to produce a velocity “heat map” of the stream reaches to help guide final design decisions regarding stabilization techniques.

Following the project progress meeting, WSB will develop feasibility-level designs for each site to stabilize the existing banks and minimize future erosion issues. WSB will also use BWSR’s Water Erosion Pollution Reduction Estimator to estimate the sediment loading from each site under pre-project conditions. Post-project reductions will be estimated based on the proposed stabilization methods at each site.

Finally, as part of the feasibility-level design, WSB will qualitatively assess each site on the following issues:

- Potential impact to wetlands
 - WSB will not conduct a formal delineation but will work with our on-staff wetlands management experts to assess the likelihood of wetland impacts
- Potential impact to parks
- Potential impact to private property
- Potential impact to existing infrastructure
- Potential tree impacts

WSB will provide a list of expected permits required for each stabilization site; actual permits needed may vary based on the final design for each site. This proposal assumes that LMRWMO will coordinate access with all landowners prior to beginning the field review.



TASK 3

Assessment of Interstate Valley Creek Tributaries

The survey methodology for the Interstate Valley Tributaries will be the same as for the main stem. The project team will provide the same deliverables for up to five project areas for feasibility-level assessment. The 2006 Marie Creek Feasibility Study will be referenced and used as is still relevant based on the field review.



TASK 4

Watershed Analysis Study to Identify Volume Reduction BMPs

WSB will use the existing HydroCAD and P8 models, as listed under Task 1, as a basis for the watershed modeling. Drainage area and flow characteristics from the HydroCAD model along with GIS data – including soils, depth to bedrock, depth to groundwater, contamination, property ownership, land cover, existing stormwater infrastructure – will be used to identify the most suitable locations for BMPs. Volume reductions will be analyzed in HydroCAD and other computation methods as necessary; pollutant reductions will be computed in P8. Field visits will be conducted to further develop the conceptual designs for the top five potential BMP sites.

Characteristics for BMP prioritization include (but are not limited to):

- Drainage area size
- Pollutant reduction potential
- Volume or peak discharge reduction potential
- Construction cost
- Property/existing infrastructure impacts

TASK 5

Final Deliverables

At the conclusion of the project, LMRWMO will have a high-quality digital report that positions them to comprehensively address erosion, volume, and water quality in Interstate Valley Creek. The report will include detailed maps and photos of the streambank stabilization areas, along with graphics detailing the proposed improvements. Similarly, maps and graphics of the proposed volume reduction BMPs will be provided. These deliverables will bring to life the proposed improvements in a way that makes it easy for all stakeholders, including the LMRWMO, landowners, and potential future funding partners, to envision them. The report will also include proposed impact tables, documenting the pollutant and/or reductions and cost for the recommended improvements. The final deliverables will be developed with grant funding in mind to help position these projects for possible grant applications in the near future.

In addition to the report, all models and GIS data will be delivered to the LMRWMO at the conclusion of the project, on or before November 30, 2022.

Conflict of Interest

There are no conflicts of interest that WSB is aware of.

Project Schedule

TASK	2022						
	MAY	JUN	JUL	AUG	SEP	OCT	NOV
SELECTION OF CONSULTANT (MAY 11)	●						
EXECUTE CONTRACT (WEEK OF MAY 16)	■						
KICKOFF MEETING (WEEK OF MAY 23)	■						
REVIEW OF EXISTING DATA (MAY 23 - JUNE 3)	■						
FIELD REVIEW OF STREAM REACHES (WEATHER DEPENDENT, MAY 30 - JUN 24)		■					
PROGRESS MEETING WITH CITY AND LMRWMO STAFF (WEEK OF JULY 25)			■				
WATERSHED MODELING AND ANALYSIS (MAY 30 - SEP 30)		■	■	■	■	■	
EVALUATE AND RECOMMEND STEAMBANK STABILIZATION MEASURES (JUN 24 - SEP 30)		■	■	■	■	■	
PROGRESS MEETING WITH CITY AND LMRWMO STAFF (WEEK OF OCT 3)						■	
CITY AND LMRWMO DRAFT STUDY REVIEW (OCT 3 - 14)						■	
FINALIZE REPORT, GRAPHICS, AND ACCOMPANYING INFORMATION (OCT 17 - NOV 30)							■

Fee Schedule

TASK DESCRIPTION		PROJECT MANAGER	EROSION ASSESSMENT LEAD ENGINEER	VOLUME REDUCTION LEAD ENGINEER	GRADUATE WATER RESOURCES ENGINEER	ENVIRONMENTAL SCIENTIST	ADMIN	TOTAL HOURS	COST
		J. NEWHALL	A. ANDERSON	L. RESCORLA	S. PHILLIPS	K. BLAZEK	M. JAKES		
1	REVIEW EXISTING DATA PLANS								
	1.1	PROJECT MANAGEMENT AND KICKOFF MEETING	5	2	2			9	\$1,494
	1.2	REVIEW OF EXISTING DATA AND GAPS	2			10		12	\$1,424
		TASK 1 TOTAL ESTIMATED HOURS AND FEE	7	2	2	10		21	\$2,918
2	ASSESSMENT OF INTERSTATE VALLEY CREEK EROSION								
	2.1	PROJECT MANAGEMENT AND PROGRESS MEETING	8	2				10	\$1,766
	2.2	FIELD REVIEW OF STREAM REACHES		20		20		40	\$4,700
	2.3	EVALUATE STEAMBANK STABILIZATION MEASURES	10	25		50		85	\$10,995
	2.4	PRIORITIZATION AND COST ESTIMATE	5	8		30		43	\$5,330
		TASK 2 TOTAL ESTIMATED HOURS AND FEE	23	55		80	20	178	\$22,791
A3	ASSESSMENT OF INTERSTATE VALLEY CREEK TRIBUTARIES								
	3.1	FIELD REVIEW OF STREAM REACHES		15		15		30	\$3,525
	3.2	EVALUATE STEAMBANK STABILIZATION MEASURES	2	10		25		37	\$4,564
	3.3	REPORT WRITING		4		10		14	\$1,680
		ALTERNATE TASK 3 TOTAL ESTIMATED HOURS AND FEE	2	29		35	15	51	\$9,769
4	WATERSHED ANALYSIS STUDY TO IDENTIFY BMPS								
	4.1	PROJECT MANAGEMENT AND PROGRESS MEETING	8		2	2		12	\$1,942
	4.2	WATERSHED MODELING AND ANALYSIS	10		30	72		112	\$13,562
	4.3	PRIORITIZATION AND COST ESTIMATE	5		12	25		42	\$5,204
		TASK 4 TOTAL ESTIMATED HOURS AND FEE	23		44	99		166	\$20,708
5	FINAL DELIVERABLES								
	5.1	REPORT WRITING - INTERSTATE VALLEY CREEK EROSION	2	10		24	4	46	\$5,306
	5.2	REPORT WRITING - WATERSHED ANALYSIS & BMPS	2		10	24	6	42	\$4,806
		TASK 5 TOTAL ESTIMATED HOURS AND FEE	4	10	10	48	4	88	\$10,112
TOTAL ESTIMATED HOURS		59	96	56	272	39	12	534	
AVERAGE HOURLY BILLING RATE		182	155	137	106	80	88		
SUBTOTAL BASE FEE - TASKS 1,2,4		\$10,374	\$10,385	\$7,672	\$25,122	\$1,920	\$1,056		\$56,529
SUBTOTAL ALTERNATE FEE - TASK 3		\$364	\$4,495		\$3,710	\$1,200			\$9,769
TOTAL PROJECT COST									\$66,298
OPTIONAL ADD-ON: TASK 2 DEVELOPMENT OF 2D MODEL									\$7,500
TOTAL PROJECT COST WITH OPTIONAL TASK 2 ADD-ON									\$73,798