



Title: Authorization to Submit Proposal to LCCMR for Development of 2D Watershed Model

Resolution number: 22-038

Prepared by: Name: Brian Beck Phone: 952-471-8306
bbeck@minnehahacreek.org

Reviewed by: Name/Title: Chuck Holtman, Legal Counsel

Recommended action: Ratify submittal of District proposal to the Legislative-Citizen Commission on Minnesota Resources (LCCMR), to develop an updated watershed wide hydrologic and hydrology model

Past Board Action

Res #: 21-065	Title: Authorization to Release RFP for Pilot 2D Model Build
Res #: 21-051	Title: Authorization to execute memorandum of understanding with the city of Edina
Res #: 21-024	Title: Authorization to submit proposal to LCCMR for development of a 2D watershed-wide model .
Res #: 20-030	Title: Authorization to submit proposal to LCCMR for development of a 2D watershed-wide model

Schedule:

May 22, 2022 – LCCMR staff inform MCWD staff that MCWD project will not receive funding due to a legislative appropriation bill error

May 26, 2022 – MCWD staff submitted an updated proposal based on LCCMR staff recommendation

July 25, 2022 – High ranking proposals selected for further consideration

Dec 2022 – Proposals selected for recommendation to the Legislature for funding

July 1, 2023 – Money from Environment Resources Trust Fund becomes available

Budget considerations:

Fund name and code: Research and Monitoring, 5001

Fund budget: Research and Monitoring 2022 Budget \$1,164,580.

Expenditures to date: \$190,967.16

Requested amount of funding: \$10,000 in 2023 budgeted expenditures as grant match

Summary:

Purpose:

At the June 9th, 2022 meeting the MCWD staff will:

1. Request that the Board ratify the MCWD's \$738,000 proposal that was submitted to the Legislative-Citizen Commission on Minnesota Resources (LCCMR) on May 26, 2022, to develop innovative 21st century planning tools that more effectively forecast the impact of changing precipitation patterns on the watershed, and target public investments to protect water, homes, businesses, and infrastructure.
2. Provide an overview of the progress that has been made on the pilot 2D model, 2D watershed-wide model build, and machine learning model.
3. Explain why MCWD's project will not receive 2022 funding from LCCMR and why MCWD staff has had to re-apply to the LCCMR 2023 request for proposal process without authorization from the Board of Managers.
4. Provide an overview of the changes in the MCWD's proposed workplan and budget.

Project Background

A critical first step in MCWD's Climate Action Framework is building a high resolution 2D watershed model to quantitatively assess the impact of climate change on our watershed. This modeling tool will also support policy development and long range planning with communities, by simulating the impact of future climate forecasts on the watershed, which will drive project identification and design – enhancing MCWD's ability to pinpoint, quantify and evaluate the costs and relative benefits of gray and green by infrastructure investments on the landscape.

In 2020 and 2021, the MCWD Board of Managers authorized District staff to submit an application to LCCMR to support the 2D watershed model and machine learning model development to support MCWD's Climate Action Framework. MCWD's application in 2021 was selected by LCCMR as a project to receive funding, however, it will not receive funding due to a clerical error by LCCMR members.

MCWD staff were informed about LCCMR's omission of MCWD's project from the legislative process on May 22nd, 2022. LCCMR staff urged the MCWD to reapply. However, the deadline to respond to the 2023 RFP was May 26th, 2022. There was no Board meeting during this several-day period, and no opportunity before the deadline for MCWD staff to bring this matter to the Board's attention and obtain formal Board direction to resubmit a proposal. Therefore, MCWD staff proceeded to develop and submit a new proposal based on the learnings from the 2D pilot model project and work that could occur prior to obtaining funding from the LCCMR in 2023.

2020, 2021, and 2022 Watershed Modeling Progress

In 2021, the MCWD Board of Managers articulated the importance of continuing to move the watershed modeling initiatives forward in the event the LCCMR proposal was not successful. Therefore, District staff spent the remainder of 2020, 2021, and the beginning of 2022 to:

- Develop a working machine learning model that predicts Minnehaha Creek water levels using National Weather Service forecasts, which is being used by PMLM to support dam management decisions
- Formalize our partnership with the City of Edina with a Memorandum of Understanding (MOU) to support the development of a Pilot 2D Watershed Model
- Began building the Pilot 2D Watershed Model Project, which will be completed in the 4th quarter of 2022
- Work with internal staff, the MCWD Citizen Advisory Committee (CAC), and the MCWD Board of Managers to formalize MCWD's Climate Action Framework

These steps have expanded staff's technical capacity, improved the organization's understanding of how the modeling tools will support MCWD's Climate Action Framework, and strengthened partner support for development of critical watershed management tools.

Cost:

The proposal requests \$738,000 in funds from the LCCMR for work in the following areas:

*See attached grant application for additional detail

*Staff will provide further information regarding how the project scope of work represented in the current LCCMR project has changed since the 2021 LCCMR proposal.

1. Collecting critical geographic data and building the external data information processing system
 - a. Collect wetland, stream, and bridge data to support development of the watershed wide model
 - b. Develop consensus and adopt plan for GIS processing system based on findings from Task 1
 - c. Build the GIS infrastructure data processing system

2. Building the 2D Watershed Model
 - a. Select and build watershed 2D model
 - b. Calibrate model with stream flow and lake level data and developing the 2D model report

The proposal will require an estimated \$203,000 of in-kind match from MCWD, in the form of staff time. This is the equivalent of 3,790 hours or 1.8 existing full-time employees, over the two and a half year period of the grant. This represents time spread across a multi-disciplinary team of research and monitoring, policy, planning, GIS and outreach staff. No new staff are proposed under this grant application.

LCCMR Category	Task Description	Grant Request	In-Kind Match	Grant Match
1) Data Collection and Developing the External Data information Processing System	Wetland, Stream, and Bridge Data Collection	\$361,000	\$156,000	\$0
	Implementation of Automated Intake Processing for Geographic and Stormwater Infrastructure Plan			
2) 2D and Machine learning model build	Build and Calibrate 2D model	\$377,000	\$47,000	\$10,000
Subtotals		\$738,000	\$203,000	\$10,000
Total LCCMR Project Cost		\$951,000		

Conclusion and Next Steps:

On June 9, 2022 MCWD Staff will be asking the Board to ratify the \$738,000 proposal submitted to the LCCMR on May 26, 2022.

Supporting documents (list attachments):

1. Grant Application
2. Letters of Support



RESOLUTION

Resolution number: 22-038

Title: Authorization to submit proposal to LCCMR for development of 2D watershed model

- WHEREAS, climate change is measurably changing the distribution, frequency and intensity of rainfall in Minnesota;
- WHEREAS, these shifting precipitation patterns are stressing our natural and built environments, impacting pollutant loading, stream channel erosion, wetland functions, surface and surficial groundwater interactions, habitat, and homes, businesses and public infrastructure;
- WHEREAS, watershed managers, in partnership with local communities, must accelerate efforts to monitor, evaluate and adapt to these changes;
- WHEREAS, the Minnehaha Creek Watershed District, in partnership with Hennepin County and the U.S. Geological Survey, has developed a real-time remote sensing network (RESNET) to monitor precipitation and watershed response in high resolution;
- WHEREAS, that RESNET data, if combined with local stormsewer and state topographic data sets and developed into appropriate tools, provides the potential to (1) Support policy development and long range planning with communities, by simulating the impact of future climate forecasts on the watershed; (2) Drive project identification and design – enhancing MCWD’s ability to pinpoint, quantify and evaluate the costs and relative benefits of gray and green by infrastructure investments on the landscape;
- WHEREAS, the District submitted a project proposal to the Legislative-Citizen Commission on Minnesota Resources (LCCMR) in 2021 for 2D modeling tools to produce these outputs, and the LCCMR selected this proposal for funding, but LCCMR staff advised the District that due to a clerical error, funding for the work was not included in the legislative appropriation;
- WHEREAS, the District resubmitted a proposal for the above-described work, with appropriate updating, on May 26, 2022, in order to conform to the LCCMR proposal deadline; and
- WHEREAS, the Board of Managers is knowledgeable of the proposal and associated costs to develop 2D modeling tools, finds the potential outputs to be strategically aligned with the District’s mission to collaborate with public and private partners to protect an improve land and water for current and future generations; and finds that the contribution for the work required from District funds aligns with the District’s identified goals and priorities.

NOW, THEREFORE, BE IT RESOLVED that the Minnehaha Creek Watershed District Board of Managers hereby approves and ratifies the District’s proposal for funding submitted on May 26, 2022 to the Legislative-Citizen Commission on Minnesota Resources in an amount of \$738,000, for the development of machine learning and 2D modeling tools

Resolution Number 22-038 was moved by Manager _____, seconded by Manager _____. Motion to adopt the resolution ___ayes, ___nays, ___abstentions. Date: 6/9/2022

_____ Date: _____ Secretary



Environment and Natural Resources Trust Fund

2023 Request for Proposal

General Information

Proposal ID: 2023-238

Proposal Title: Leveraging Innovations in Data Analytics for Project Implementation

Project Manager Information

Name: Brian Beck

Organization: Minnehaha Creek Watershed District

Office Telephone: (952) 471-8306

Email: bbeck@minnehahacreek.org

Project Basic Information

Project Summary: Integrating local and statewide datasets into a 21st-century planning tool, widely called for by our communities, that forecasts the impacts of changing precipitation patterns and quantitatively compares cost-effective solutions.

Funds Requested: \$738,000

Proposed Project Completion: December 31, 2024

LCCMR Funding Category: Water Resources (B)

Project Location

What is the best scale for describing where your work will take place?

Statewide

What is the best scale to describe the area impacted by your work?

Region(s): Metro

When will the work impact occur?

During the Project and In the Future

Narrative

Describe the opportunity or problem your proposal seeks to address. Include any relevant background information.

Water systems throughout Minnesota were built for stable climate patterns that no longer exist. Extreme swings in precipitation are stressing our natural and built environments, impacting pollutant loading, stream erosion, wetland function, surface and groundwater interactions, habitat, and the safety of homes, public infrastructure, and businesses.

Watershed managers must help communities understand and adapt to these changes. However, the ability to do so is hampered by sparse and static historic data sets, which make it difficult to predict how specific areas will be impacted and quantitatively compare potential solutions.

Fortunately, advances in data science have made it affordable to collect exponentially more data and analyze it in more sophisticated ways. These advances allow water planners around the world to understand and predict changes with unprecedented accuracy and detail, allowing for more effective use of scarce public investment to address these issues. In Minnesota, data collection has outpaced the tools used to make sense of the information. Realizing the full potential of these advances requires new systems to integrate this data to identify existing issues, forecast future ones, and guide local decisions.

What is your proposed solution to the problem or opportunity discussed above? Introduce us to the work you are seeking funding to do. You will be asked to expand on this proposed solution in Activities & Milestones.

In partnership with the DNR, USGS, and Hennepin County, and with formal support from 14 federal, state, and regional agencies and local communities, the Minnehaha Creek Watershed District (MCWD) is proposing a pioneering program to maximize the value of recent public investments in data collection.

For example, MCWD has created a remote sensing network that collects more than 1 million data points per year about surface water levels, shallow groundwater levels, and pollutant loading. State leaders have invested in mapping the detailed topography of the state. Municipal partners have digitized data about their storm sewer systems.

MCWD wants to partner with LCCMR to develop a reproducible process that brings these disparate data sets together into a quantitative planning tool. Using advances in 2-dimensional modeling, these tools will be able to pinpoint, quantitatively evaluate and drive decisions on climate adaptation projects and policies.

Such a tool will be critical to the climate adaptation planning efforts as watershed managers and communities begin to understand the impact of changing precipitation patterns on our built and natural systems. The result will be more effective green and gray infrastructure solutions that protect and conserve the watershed's iconic water resources.

What are the specific project outcomes as they relate to the public purpose of protection, conservation, preservation, and enhancement of the state's natural resources?

- A single, continuously-updated tool that integrates previously-siloed public data sets to quantitatively compare proposed natural resource projects
- A high-resolution understanding of the balance of all surface and groundwater inputs and outputs in the system, to identify natural resources and public assets in need of protection
- Improved ability to predict the impact of changes in precipitation and land use, to enhance infrastructure planning
- Improved ability to quantify and compare the cost-effectiveness of potential conservation projects needed to address predicted impacts

Activities and Milestones

Activity 1: Building the External Data Information Processing System

Activity Budget: \$361,000

Activity Description:

Because land use and stormwater infrastructure are constantly changing, watershed managers face the recurring challenge of using tools that are not based on up-to-date information. Historically, the process of updating watershed models has been a time-intensive endeavor because all data collection and processing has been done manually. However, recent advances in data science have resulted in frameworks that automate complex data processing, which will dramatically reduce the cost of future model updates for MCWD and other public agencies throughout the state that could use this process as a template for enhancing and automating their own watershed model development.

MCWD will develop a reproducible data processing system that can incorporate publicly available datasets into a watershed modeling framework. Then, MCWD will work with technical experts to plan and build a GIS system that automatically updates based on changing landuse and infrastructure datasets to ensure the watershed model used for natural resource project identification is using the most current landscape and infrastructure information.

In addition, MCWD will use this automated process to identify and fill critical data gaps such as wetland volumes, stream channel surveys, and bridge surveys to improve the accuracy of the watershed planning tool.

Activity Milestones:

Description	Completion Date
Develop Automated Intake Processing System for Municipal Stormsewer Data	December 31, 2023
Collect Wetland, Channel, and Bridge Data for Model	June 30, 2024

Activity 2: Building the 2D Watershed Model for Natural Resource Climate Adaptation Planning

Activity Budget: \$377,000

Activity Description:

MCWD will incorporate the data produced from the automated processing system developed in activity 1 into a high-resolution watershed model that can predict, in unprecedented detail, how water and pollutants will move through the system under current and predicted scenarios. The outcome from building the watershed model will be a tool that can help watershed managers meet their water quality, water quantity, and ecologic improvement goals.

Building this model will involve an iterative process to ensure that the automated processes developed in activity 1 can be incorporated into a high-resolution watershed planning tool. In addition, the consultant will use streamflow data collected by MCWD staff to calibrate the model to ensure it can accurately predict how water moves through the built and natural environment.

MCWD and the consultant will meet with local municipalities and engineers to communicate the use cases for the model to ensure it can be used by other entities to identify water quality, natural resource, and flood reduction projects.

Activity Milestones:

Description	Completion Date
Build and Calibrate Two Dimensional Watershed Hydrology and Hydraulics Model	November 30, 2024
Write Technical Report for Two Dimensional Watershed Model	December 31, 2024

Project Partners and Collaborators

Name	Organization	Role	Receiving Funds
Tim Cowdery	U.S. Geological Survey	Assist with identifying groundwater well monitoring locations, conducting groundwater data analysis, suggesting methods for incorporating groundwater data into the 2D model, and providing oversight on 2D model build.	No
Dan Lais	Minnesota Department of Natural Resources	Collect and analyze additional groundwater and surface water interactions to integrate this data, along with other datasets, into the development of a high-resolution two-dimensional (2D) watershed model.	No
John Evans	Hennepin County	Hennepin County will assist with data collection, assessing climate impacts, and providing input on the tools needed to effectively plan and adapt to changing hydrology, in partnership with our communities.	No

Long-Term Implementation and Funding

Describe how the results will be implemented and how any ongoing effort will be funded. If not already addressed as part of the project, how will findings, results, and products developed be implemented after project completion? If additional work is needed, how will this work be funded?

This project will yield a sophisticated tool, drawing on state of the art data analytics, to enhance MCWD’s organizational ability to partner with its member communities to identify, evaluate, and implement natural resource capital improvement projects that improve water quality, control water quantity, improve ecological integrity, and reduce flooding in the face of a changing climate. The products of LCCMR’s investment are expected to help MCWD and its partners populate, focus, and prioritize capital improvement plans that will be funded locally. The long-term sustainment costs for maintaining the watershed tools will be borne by MCWD.

Project Manager and Organization Qualifications

Project Manager Name: Brian Beck

Job Title: Research and Monitoring Program Manager

Provide description of the project manager’s qualifications to manage the proposed project.

Education:

M.S. 2012 University of Minnesota-Duluth (Water Resources Science)

B.S. 2008 University of Minnesota Twin Cities (Environmental Science with emphasis on aquatic chemistry)

Mr. Beck is a water resource scientist with 11 years of experience quantifying the impact of landscape change on water quality and quantity at a municipal, watershed, and statewide scale. The focus of his academic and professional career has been obtaining data from disparate sources for data analysis and building quantitative tools to develop insights about complex aquatic systems. Mr. Beck’s professional career in the private and public sector has been built upon developing deterministic and empirical water quality models such as P8, GWLF, HSPF, SWAT, PONDNET, CEQUAL, BATHTUB, and GLM to inform management decisions of water quality, water quantity, and ecological integrity.

Mr. Beck will oversee the development of the watershed-wide two dimensional (2D) model. He has extensive experience developing quantitative water quality models for cities, watershed districts, and the State of Minnesota for feasibility studies, watershed diagnostic assessments, and regional Total Daily Maximum Load studies. His blend of technical expertise in watershed modeling and understanding of local government will allow him to facilitate the interaction between watershed managers and technical consultants to ensure that the model is technically sound and can be used to inform watershed management decisions.

Organization: Minnehaha Creek Watershed District

Organization Description:

Minnehaha Creek Watershed District is a local unit of government responsible for managing and protecting the water resources in one of the largest and most heavily-used urban watersheds in Minnesota. MCWD's legal boundary encompasses about 178 square miles within the western Twin Cities metropolitan area and includes 29 communities. Of this area, about 148 square miles lie within Hennepin County and about 30 square miles lie within Carver County. To manage water resources and ecological integrity in this large area, MCWD has prioritized the need to bridge the governance gap between land use and water resource planning to achieve its goals of improving water quality, water quantity, ecological integrity, and thriving communities. MCWD's approach to bridging this gap is to understand the goals of others; apply sound science to creative solutions; and align investments, technical expertise, streamlined permitting, and collaborative planning.

Budget Summary

Category / Name	Subcategory or Type	Description	Purpose	Gen. Ineligible	% Benefits	# FTE	Classified Staff?	\$ Amount
Personnel								
							Sub Total	-
Contracts and Services								
TBD through competitive bid	Professional or Technical Service Contract	The consulting engineer will provide technical support for data processing and model development.				2.44		\$738,000
							Sub Total	\$738,000
Equipment, Tools, and Supplies								
							Sub Total	-
Capital Expenditures								
							Sub Total	-
Acquisitions and Stewardship								
							Sub Total	-
Travel In Minnesota								
							Sub Total	-
Travel Outside Minnesota								
							Sub Total	-
Printing and Publication								

							Sub Total	-
Other Expenses								
							Sub Total	-
							Grand Total	\$738,000

Classified Staff or Generally Ineligible Expenses

Category/Name	Subcategory or Type	Description	Justification Ineligible Expense or Classified Staff Request
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Non ENRTF Funds

Category	Specific Source	Use	Status	Amount
State				
			State Sub Total	-
Non-State				
In-Kind	Minnehaha Creek Watershed District Tax Levy	Minnehaha Creek Watershed District staff will be contributing a total of 3790 hours of in-kind support for the project.	Secured	\$203,100
Cash	Minnehaha Creek Watershed District Tax Levy	MCWD will contract with the USGS to oversee the selection of groundwater sensor monitoring locations and the development of the 2D watershed model	Secured	\$10,000
			Non State Sub Total	\$213,100
			Funds Total	\$213,100

Attachments

Required Attachments

Visual Component

File: [61f1f181-ad1.pdf](#)

Alternate Text for Visual Component

The attached graphic demonstrates how the proposed tools will convert a variety of disparate data sources into usable information to inform natural resource management decisions. It demonstrates how data sources about our built and natural environment – soils, topography, wetlands, hydrology, groundwater, precipitation, land cover, future land use, and storm sewer – will be integrated into a 2-dimensional model that will predict how water moves through the landscape under a variety of scenari...

Board Resolution or Letter

Title	File
MCWD Board Resolution Placeholder for LCCMR Application	4e409351-013.pdf

Optional Attachments

Support Letter or Other

Title	File
USGS Letter of Support	de56a77b-280.pdf
MN DNR Letter of Support	2f72934d-205.pdf
Met Council Letter of Support	b0553570-10b.pdf
Minnesota Cities Stormwater Coalition Letter of Support	69c682c6-fb2.pdf
Hennepin County Letter of Support	306c750a-ab4.pdf
EQB Letter of Support	da7c900a-a25.pdf
Minneapolis Park and Recreation Board Letter of Support	0d2f38c5-2d0.pdf
City of Edina Letter of Support	c31c2f7f-880.pdf
City of Minneapolis Letter of Support	b03378ab-d1d.pdf
City of Minnetonka Letter of Support	08497ccb-20c.pdf
City of Mound Letter of Support	667fb967-295.pdf
City of St. Louis Park Letter of Support	35e72525-f56.pdf
City of Victoria Letter of Support	8164d10e-d55.pdf
City of Wayzata Letter of Support	10977cbe-a91.pdf

Administrative Use

Does your project include restoration or acquisition of land rights?

No

Does your project have potential for royalties, copyrights, patents, or sale of products and assets?

Yes

Do you understand and acknowledge IP and revenue-return and sharing requirements in 116P.10?

Yes

Do you wish to request reinvestment of any revenues into your project instead of returning revenue to the ENRTF?

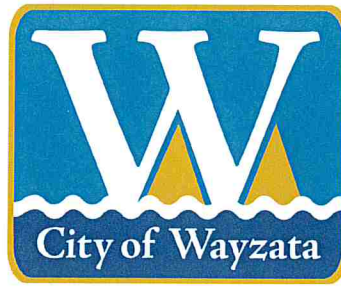
No

Does your project include original, hypothesis-driven research?

No

Does the organization have a fiscal agent for this project?

No



City Council
Mayor Johanna Mouton
Jeff Buchanan
Cathy Iverson
Molly MacDonald
Alex Plechash

City Manager
Jeffrey Dahl

March 19, 2021

Legislative-Citizen Commission on Minnesota Resources (LCCMR)
100 Rev. Dr. Martin Luther King Jr. Blvd.
State Office Building, Room 65
St. Paul, MN 55155

Dear LCCMR Members,

The City of Wayzata wishes to express its support for the Minnehaha Creek Watershed District's (MCWD or District) funding proposal to the LCCMR.

Wayzata is a forward-thinking lakeside community that is in the forefront of prioritizing sustainability, with a healthy environment, vibrant parks and enticing city spaces. The community's proximity to Lake Minnetonka, large growth forest land, and significant wetlands have served as important natural amenities for the City's growth and development.

As the City grows, care must be taken to balance changes in the built form against their impact to the community's important natural resources. MCWD's proposal to build a two-dimensional model, that leverages state LiDAR and local municipal stormsewer data will provide a collaborative planning tool will do just that.

The City of Wayzata and MCWD have a long history of collaboration, and the development of these tools will continue that tradition. With an understanding of changes in hydrology at a system scale, we can continue to work in partnership to identify capital improvements and policy that will protect and enhance the natural environment while guiding sustainable investments in development and infrastructure.

For these reasons I am writing to ask that LCCMR members consider the City of Wayzata's support when making their funding decision on the Minnehaha Creek Watershed District's proposal for 2022 funding.

Sincerely,

Jeffrey Dahl
Wayzata City Manager
jdahl@wayzata.org
(952) 404-5309

City of Victoria

March 23, 2021

LCCMR

100 Rev. Dr. Martin Luther King Jr. Blvd.
State Office Building, Room 65
St. Paul, MN 55155

Dear LCCMR Members,

The City of Victoria is writing in support of the Minnehaha Creek Watershed District's (MCWD or District) application to the Legislative-Citizen Commission on Minnesota Resources (LCCMR).

The City of Victoria and the District have a strong history of partnership, and have worked closely to integrate plans and investments for the built and natural environments – to ensure the protection of our valuable water resources while sustainably guiding our community's growth.

As outlined in our 2040 Comprehensive Plan vision – Victoria actively preserves and enhances the natural features and environmental qualities that make it an attractive place to live, work and play. The District was an integral partner in that planning process and worked with the City to develop a “greenprint” for growth policy - promoting the intentional integration of natural systems into future planned development.

Meanwhile, over the course of our partnership, during the last six years record rain has stressed municipal infrastructure and waterbodies across our community and made it apparent that, as the City of Lakes and Parks, new tools and data driven approaches are needed to effectively plan for the future.

As we collectively look towards an uncertain future, we need to embrace next-level data driven approaches to community development and natural resource planning. MCWD's innovative proposal to stitch together digital municipal stormsewer data, with statewide topographic and land cover information made available through LIDAR, and insights drawn from the large volumes of District remote sensing data, will achieve that next level.

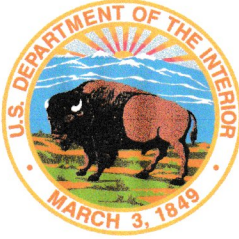
This work will strengthen our partnership and support the City's strategic goals to protect our natural systems in balance with our planned growth and economic development. These investments will provide us with high resolution tools to quantitatively evaluate when, where and how to most cost effectively manage increasing runoff volumes to reduce pollutant loading, manage stream channel erosion, reduce impacts to wetlands, better understand surface and groundwater interactions, and mitigate the impacts of high water to homes and businesses.

MCWD is a valued partner in sustainably planning for our community's future, and we would like the LCCMR to consider the City of Victoria's support in its decision to fund this project.

Sincerely,



Dana Hardie
City Manager



United States Department of the Interior

U.S. GEOLOGICAL SURVEY

Upper Midwest Water Science Center

Minnesota Office
2280 Woodale Drive
Mounds View, MN 55112
763.783.3100

Wisconsin Office
8505 Research Way
Middleton, WI 53562
608.828.9901

Michigan Office
6250 Mercantile Way
Lansing, MI 48911
517.887.8903

March 22, 2021

Legislative-Citizen Commission on Minnesota Resources (LCCMR)
100 Rev. Dr. Martin Luther King Jr. Blvd.
State Office Building, Room 65
St. Paul, MN 55155

Dear LCCMR Members,

The U.S. Geological Survey (USGS) wishes to express its support for the Minnehaha Creek Watershed District's (MCWD) application to the Legislative-Citizen Commission on Minnesota Resources (LCCMR).

The USGS strives to be a world leader in the natural sciences through our scientific excellence and responsiveness to society's needs. Information on water is fundamental to our national and local economic well-being, protection of life and property, and effective management of the Nation's water resources. As such, the USGS works with partners to monitor, assess, conduct targeted research, and deliver information on a wide range of water resources and conditions including streamflow, water quality, and water use and availability.

A key strength of the USGS is its ability to develop partnerships to leverage limited multiple funding sources. Through Cooperative Matching Funds, the USGS partners with more than 1,800 State, Tribal, county, local, regional, and watershed agencies to accomplish our mission. Using these Federal funds, the USGS and MCWD have partnered together for 15 years to collect high quality hydrological data on MCWD's water resources. During this partnership, the USGS and MCWD have invested significant time and resources to monitor, analyze and interpret water level, water flow, and water quality data across MCWD.

MCWD's LCCMR proposal would build on our existing partnership, leverage our past investments, and support a USGS priority to develop new science-based tools that use observation-network data to assist communities with hazard planning, response, and recovery. MCWD's proposed two-dimensional watershed model would create a new science-based tool and would utilize and optimize past and current datasets to provide a much higher resolution model than is available today. This data-driven analytical tool would inform where future green infrastructure investments should be implemented on the landscape to mitigate future flood impacts.

Having the ability to predict changes to the water cycle from factors such as land-use change and climate variability will be critical as we strive for sustainable and resilient ecosystems and communities. MCWD's approach to monitoring, assessment and modeling will provide the forward-looking tools needed to understand, predict and mitigate hazardous situations. For these reasons we wholeheartedly support the work being proposed by MCWD.

Sincerely,

JOHN WALKER Digitally signed by JOHN WALKER
Date: 2021.03.21 21:05:14 -05'00'

John F. Walker
Director, Upper Midwest Water Science Center



Experience LIFE in the Park

March 22, 2021

Legislative-Citizen Commission on Minnesota Resources (LCCMR)
100 Rev. Dr. Martin Luther King Jr. Blvd.
State Office Building, Room 65
St. Paul, MN 55155

Dear LCCMR Members,

The City of St. Louis Park wishes to express its support for the Minnehaha Creek Watershed District's (MCWD) funding proposal to the LCCMR.


The City of St. Louis Park is a community that continually reinvents itself to best meet its future challenges and opportunities. In order to provide a livable community, we have committed to leading in environmental stewardship and have made it a priority to protect and improve the quality of our natural resources, parks, lakes, creek, and wetlands. St. Louis Park and MCWD have a strong history of partnership that has worked to fulfill this environmental stewardship and restore water resources across our city.

Since 2010, the City and MCWD have proactively coordinated public and private development to manage regional stormwater and expand and connect the riparian Minnehaha Creek Greenway to the St. Louis Park community. Through early coordination of land use planning and innovative public and private partnerships, efforts to-date have resulted in hundreds of acres of regional stormwater management, two miles of restored stream, over ten acres of wetland restoration, public access to over 50 acres of previously inaccessible greenspace, and two miles of new trail network. Building on these shared endeavors, MCWD will continue to focus within this area of St. Louis Park – part of the Minnehaha Creek Greenway – to continue corridor restoration and stormwater management efforts while maximizing community goals of St. Louis Park.

As St. Louis Park looks to continue its work to protect and improve our city's natural resources, we recognize that climate change will continue to stress these systems. MCWD's recent installation of a real time sensor network collects more than one million data points a year on surface water levels, shallow groundwater levels, and pollutant loading. MCWD's LCCMR proposal would harness all this data and other state data to develop a 2D watershed model that will provide our city a tool in which we can evaluate future green and gray infrastructure investments and enhance our ability to protect and improve our natural resources.

MCWD is a critical partner to St. Louis Park as we work to provide a livable community, which is why we are asking the LCCMR to consider the City of St. Louis Park's support in its decision to fund this project.

Sincerely,

DocuSigned by:

36BD16ED14BB443...

Tom Harmening
St. Louis Park City Manager



Minneapolis Park & Recreation Board

Administrative Offices

2117 West River Road North
Minneapolis, MN 55411-2227

Northside Operations Center

4022 1/2 North Washington Avenue
Minneapolis, MN 55412-1742

Southside Operations Center

3800 Bryant Avenue South
Minneapolis, MN 55409-1000

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Al Bangoura

Secretary to the Board

Jennifer B. Ringold

March 23, 2021

Legislative-Citizen Commission on Minnesota Resources (LCCMR)
100 Rev. Dr. Martin Luther King, Jr. Boulevard
State Office Building, Room 65
St. Paul, Minnesota 55155

Dear LCCMR Members,

The Minneapolis Park and Recreation Board (MPRB) is writing in support of the Minnehaha Creek Watershed District's (MCWD) funding proposal to the LCCMR.

The MPRB exists to provide places and recreation opportunities for all people to gather, contemplate, and engage in activities that promote health, well-being, community and the environment. Central to our park system are its natural resources and regional parks, drawing 23 million visits annually. Within the nearly 7,000 acres of parkland and 180 park properties are 22 lakes, half of which lie within the Minnehaha Creek watershed. Those parks and trail include some of the most popular park destinations in the state, such as the Minneapolis Chain of Lakes Regional Park which draws more than seven million visitors each year, Minnehaha Regional Park which features the iconic 53-foot Minnehaha Falls, and Minnehaha Parkway Regional Trail which traces the flow of the creek through Minneapolis.

Urbanization has led to drastic changes in the historical patterns of water movement that impact the health of these treasured resources. The use of storm sewers has caused an increase in the amount of water, pollutants and sediment entering Minneapolis lakes and creeks. Within this context, MPRB and the MCWD have a long history of partnership and considerable investment to address water quality, stream health and ecological issues that are inherent to the park system's urban setting.

In recent years the MPRB system has been on the front lines in experiencing the impact of Minnesota's increasingly wet climate. The increased volume, frequency and intensity of runoff producing rain events impacts water quality, interactions between surface water and surficial groundwater, and contributes to flooding.

Accredited



2010-2020

As the MPRB develops strategic plans for the future of its park system, adapting to these changing precipitation patterns is a key focus. The 2-dimensional (2D) modeling tool that MCWD is proposing to develop will improve MPRB's ability to plan for and implement strategies to manage the predicted increases in rainfall. Utilizing a 2D model, coupled with MCWD's robust watershed monitoring, will enable MPRB to pinpoint and evaluate the solutions needed to implement stormwater management facilities, restore stream geomorphology, expand floodplain storage, and better manage flooding.

Protecting our natural resources for future generations, while rising to address the challenges of a changing climate, requires innovative partnerships and next-level tools to aid us in identifying the projects and polices requiring public investment. For these reasons, please consider the MPRB's support for the MCWD's proposal when making your 2022 funding decisions.

Sincerely,

A handwritten signature in black ink, appearing to read "Michael Schroeder", followed by a period.

Michael Schroeder
Assistant Superintendent, Planning Services



March 19, 2021

LCCMR
100 Rev. Dr. Martin Luther King Jr. Blvd.
State Office Building, Room 65
St. Paul, MN 55155

Dear LCCMR Members,

The City of Mound wishes to express its support for the Minnehaha Creek Watershed District's (MCWD or District) application to the Legislative-Citizen Commission on Minnesota Resources (LCCMR).

Located on the western shores of Lake Minnetonka, Mound is a full service community that recognizes and appreciates its unique setting. Our commitment to preserving the natural environment ensures everyone can enjoy the community's four lakes, numerous wetlands, open space and parks.

With goals of creating land development patterns that fulfill social and economic needs, while enhancing and preserving natural resources, we have a long history of partnership with MCWD to implement low impact development practices to address water quantity and quality issues.

To continue to strike balance in the future between the built and natural environments, land use and water planning decisions must be integrated and based on best available information. The District's proposal to integrate watershed, city stormsewer and state topographic and land cover into a 2 dimensional watershed model will provide a detailed understanding of the patterns of water, and the tools needed to help us collectively evaluate the need, opportunity, and benefits of investing in gray and green infrastructure.

Having such a detailed understanding of the function and constraints of our local watershed systems, under changing precipitation patterns, will support the ability to make wise decisions related to the need for increased volume storage on the landscape, where to locate water quality improvement projects, assess upstream and downstream considerations, and guide policy planning to support sustainable growth.

Please consider the City of Mound's support for this proposal as you make decisions related to 2022 funding.

Sincerely,

Eric Hoversten
Mound City Manager



14600 Minnetonka Blvd. | Minnetonka, MN 55345 | 952-939-8200 | minnetonkamn.gov

March 24, 2021

Legislative-Citizen Commission on Minnesota Resources (LCCMR)
100 Rev. Dr. Martin Luther King Jr. Blvd.
State Office Building, Room 65
St. Paul, MN 55155

RE: Letter of Support for Minnehaha Creek Watershed District Grant Funding

Dear LCCMR Members,

The City of Minnetonka supports the Minnehaha Creek Watershed District's (MCWD) funding proposal to the LCCMR.

Climate change brings many challenges, and the City of Minnetonka is focused on carefully balancing growth and development with preservation efforts that protect the highly valued water resources within our community. As the city's natural environment is one of woods and wetlands, we are particularly aware of the balance between the need for urban services and the importance of protecting and managing our natural surroundings.

The city understands that MCWD's proposal to the LCCMR will position the watershed district as a partner to help communities plan for and respond to climate change issues. It will also support the level of detailed evaluations needed to make informed decisions and investments in infrastructure.

Please consider the City of Minnetonka's support when evaluating the Minnehaha Creek Watershed District's proposal for 2022 funding.

Sincerely,

Geralyn Barone
City Manager
City of Minnetonka

March 31, 2021

Legislative-Citizen Commission on Minnesota Resources (LCCMR)
100 Rev. Dr. Martin Luther King Jr. Blvd.
State Office Building, Room 65
St. Paul, MN 55155

Dear LCCMR Members,

The City of Minneapolis – Surface Water and Sewers Division is writing to express its support for the Minnehaha Creek Watershed District’s (MCWD) proposal to the LCCMR.

Minneapolis’ vision is to provide a growing and vibrant world-class city with a flourishing economy and a pristine environment, where all people are safe, healthy and have equitable opportunities for success and happiness. To help accomplish this vision, the City and MCWD have implemented a long history of partnership and have made considerable investments to improve water quality and reduce flooding across the city.

Over 2013-2019 the Twin Cities recorded the wettest seven years on record which resulted in stressed storm sewers and increased stormwater runoff entering Minneapolis lakes and creeks. This record wet weather also brought the City and MCWD together to partner resources to evaluate climate change impacts along the Minnehaha Creek corridor, including the interaction between surface and groundwater. MCWD’s LCCMR proposal would leverage data and insights gained from this evaluation into the development of a watershed-wide planning tool.

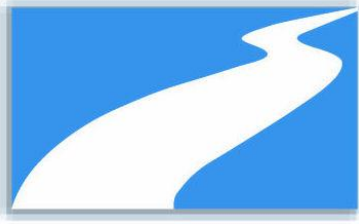
MCWD’s proposed watershed model would provide insights into changes in runoff volumes, surface and groundwater interactions, and pollutant load distribution associated with climate change and be able to quantify and evaluate solutions across the watershed. Development of this tool will improve our partnership’s ability to forecast and plan for the impacts of a changing climate.

MCWD is a valued partner to Minneapolis and we ask that the LCCMR please consider our support when making their 2022 funding decisions.

Sincerely,



Stephanie Johnson, PhD, PE
Director, Surface Water and Sewers
City of Minneapolis Public Works



Minnesota Cities Stormwater Coalition

Municipal stormwater professionals
working together for clean water

Steering Committee:

Elizabeth Stout
City of Minneapolis
Chair

Rick Baird
City of Mankato

Bob Bean
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Andrew Hogg
City of Brooklyn Center

Ryan Johnson
City of Roseville

John Paulson
City of Hutchinson

Kristin Seaman
City of Woodbury

Staff:

Randy Neprash, P.E.
Stantec
(651) 271-5535
randy.neprash@stantec.com

MCSC is an affiliate of the
League of Minnesota Cities



April 1, 2021

Legislative-Citizen Commission on Minnesota Resources
100 Rev. Dr. Martin Luther King Jr. Blvd.
State Office Building, Room 65
St. Paul, MN 55155

Dear LCCMR Members,

The Minnesota Cities Stormwater Coalition (MCSC) would like to express its support for the Minnehaha Creek Watershed District's (MCWD) application to the Legislative-Citizen Commission on Minnesota Resources (LCCMR).

The mission of MCSC is to help cities in Minnesota navigate the complex nature of stormwater, urbanization, and regulation. In recent years, cities have been on the front lines of climate change because Minnesota is getting more rainfall and these rainfalls are coming in the form of intense storms.

The MCSC has taken an active role in advocating the needs of cities to regional and state agencies to ensure they have the tools to adapt to more frequent and intense precipitation events. The information used to support stormwater design standards, such as the 100-year 24 hour storm, has increased from 6 inches historically to 8 inches in recent years. MCSC has identified the tools needed to predict the impact of more precipitation and create more resilient city stormwater infrastructure.

The tools needed for cities to plan for more frequent and intense precipitation include high resolution system-wide models that incorporate city stormwater asset management systems, updated historical precipitation data, standardized

digital stormwater databases. MCWD's proposal to develop a standardized method for combining cities' stormwater infrastructure data with the State of Minnesota's topography and land use data leverages existing investments to build the tools needed for the future. MCWD's effort to improve watershed resiliency by leveraging advances in data science is a leading example of how watersheds can help cities plan for climate change and anticipate problems.

Climate change will require Minnesota cities to invest in new tools and innovative technology solutions. MCWD's proposal answers this call and the MCSC strongly urges the LCCMR to support this proposal.

Sincerely,

A handwritten signature in blue ink, appearing to read "Randy Neprash", is written over the typed name.

Randy Neprash, PE
Staff, Minnesota Cities Stormwater Coalition



HENNEPIN COUNTY BOARD OF COMMISSIONERS
A-2400 GOVERNMENT CENTER
MINNEAPOLIS, MINNESOTA 55487-0240

March 22, 2021

Legislative-Citizen Commission on Minnesota Resources
100 Rev. Dr. Martin Luther King Jr. Blvd.
State Office Building, Room 65
St. Paul, MN 55155

Dear LCCMR Members,

Thank you for all you do to maintain and enhance Minnesota's environment and natural resources.

I write to you today in strong support of the Minnehaha Creek Watershed District's (MCWD) funding application to the Legislative-Citizen Commission on Minnesota Resources (LCCMR).

Hennepin County has an abundance of natural resources, including 200 lakes, 640 miles of stream, and more than 45,000 acres of wetlands; which are under increasing pressure from population growth, development and climate change. More and more, Hennepin County residents are starting to notice the effects of climate change, from warming winter temperatures to more extreme precipitation-driven flooding events. The number of declared natural disasters has grown significantly in Hennepin County in recent decades. Climate vulnerability assessments make it clear that the risks posed by climate change to Hennepin County residents, infrastructure, and natural resources warrant a significant and coordinated response.

Recently the county published our draft Climate Action Plan (CAP) which identifies strategies to adapt to our changing climate in ways that enhance the natural environment, protect residents, reduce vulnerabilities, and ensure a more equitable and resilient future for Hennepin County. Central to our continued success are strategic partnerships that align priorities and leverage scarce resources.

MCWD and Hennepin County have a long history of successful collaboration. We are now actively working together to collect data, assess climate impacts, and build the tools needed to effectively plan and adapt to changing hydrology, in partnership with our communities. To date this work has involved partnership with the National Weather Service, the United States Geologic Survey, Hennepin County, and MCWD to install a network of high-resolution sensors to monitor and evaluate the watershed's real-time response to changing precipitation regimes. The work of this unique coalition links weather forecasts with measured precipitation data, soil saturation data, and stream and lake responses, to arm emergency managers and dam operators with predictive capabilities – which significantly boosts the accuracy and lead time of flood predictions and allows communities to proactively respond ahead of storms to reduce property damage.

MCWD's proposal to the LCCMR would leverage these existing investments to deliver on several target strategies in the County's CAP. Specifically, the proposed planning tool would allow counties, cities, and other agencies to identify areas most at risk for surface and groundwater flooding with a level of detail far beyond what is currently possible. Being able to quantify and evaluate climate driven impacts to the natural resources and structures most at risk will allow the District, County and their partners to take focused strategic action. This work would also serve as a model that the County would look to replicate in the other ten watershed management organizations across Hennepin County.

Protecting our residents, communities and natural resources from the effects of climate change requires strong partnerships, innovative solutions, and maximizing the use of the data and systems we already have in place. MCWD's proposal represents an innovative step in leveraging our existing tools to improve the resilience of the county and watershed, as well as other watersheds, and we ask that the LCCMR please support this proposal.

Sincerely,



Marion Greene
Commissioner, District 3



Debbie Goettel
Commissioner, District 5

m MINNESOTA
ENVIRONMENTAL QUALITY BOARD

March 25, 2021

Legislative-Citizen Commission on Minnesota Resources (LCCMR)
100 Rev. Dr. Martin Luther King Jr. Blvd.
State Office Building, Room 65
St. Paul, MN 55155

Dear LCCMR Members,

The Minnesota Environmental Quality Board (EQB) is writing to express its support for the Minnehaha Creek Watershed District's (MCWD) application to the LCCMR.

Minnesota's way of life is intertwined with water. We depend on water for drinking, food production, healthy ecosystems and recreation. Climate change is already impacting our more than 10,000 lakes, 100,000 miles of rivers and streams, abundant groundwater, and all of us. The effects of climate change are expected to accelerate in the coming decades.

Planning for the future of Minnesota's water must include an honest appraisal of the effects our changing climate is having on this vital resource and how these changes will impact Minnesotans, wildlife, habitat and landscapes across the state. The purpose of EQB's 2020 State Water Plan (Plan) was to establish a framework for aligning state agencies, legislative priorities, and local government policy, programs and actions for the coming decade.

The EQB's Plan outlined that as Minnesota works to plan for the future, we will need accurate climate data and new tools to incorporate current conditions and future projections. MCWD's effort to improve watershed resiliency by using advances in monitoring and data science is a leading example of this and was featured in the EQB's Plan. MCWD's proposal would leverage these monitoring and data investments while also integrating state topographic and municipal infrastructure data to provide a high resolution two-dimensional (2D) watershed model. This 2D model would improve MCWD's ability to understand and predict the impacts of climate change and potential adaptation strategies for communities.

In addition to allowing MCWD to quantitatively assess the impacts of climate change, development of this 2D model would also implement a strategy from the EQB's 2020 State Water Plan to manage built environments and infrastructure for greater resiliency by improving data sources and modeling.

Climate change will require Minnesota to invest in new tools and innovative technology solutions. MCWD's proposal answers this call and the EQB strongly urges the LCCMR to support this proposal.

Sincerely,



Katie Pratt
Executive Director

KP:bt
Equal Opportunity Employer



March 16, 2021

Legislative-Citizen Commission on Minnesota Resources (LCCMR)
100 Rev. Dr. Martin Luther King Jr. Blvd.
State Office Building, Room 65
St. Paul, MN 55155

Dear LCCMR Members,

The City of Edina wishes to express its support for the Minnehaha Creek Watershed District's (MCWD) funding proposal to the LCCMR.

Edina prides itself in being a model of a successful, mature, and progressive urban community, that strives to lead in a modern and evolving world. Given this, we recognize the need to be an innovator that seeks to implement creative solutions to local and regional issues.

In an effort to implement creative landscape solutions, the City of Edina and MCWD have a long history of innovative partnership. Collectively our agencies have agreed to collaborate on land use planning, stormwater management, economic development, flood mitigation, parks and public land management, greenway development, and water resources improvements. The current restoration of Edina's Arden Park meets the goals of both the City and MCWD by restoring over 2,000 feet Minnehaha Creek, connecting the creek to its floodplain to reduce flooding, treating 80 acres of stormwater and improving water quality, while also improving park facilities and recreational opportunities.

Restoring the capacity of our natural systems is important because we recognize that flooding issues within Edina will continue to increase in frequency and severity, and climate change is the lead driver of this increased flood risk. Climatologists indicate that large, intense rainfall events are occurring more frequently, and models predict that large rainfall events will become more intense in the future.

Knowing that flooding is increasing in our community means we need new strategies, skill sets, and tools. MCWD's proposal to develop a 2-dimensional (2D) watershed model would incorporate digital municipal stormsewer data, topographic and land cover data, and insights drawn from the large volume of MCWD remote sensing water level data. Developing a 2D model will provide our city an innovative tool that will help pinpoint, evaluate, and drive solutions on climate adaptation projects.

The ability of our city to lead and evolve requires forward-looking tools and strategies, and for that reason I am writing to ask that the LCCMR consider the City of Edina's support for MCWD's proposal.

Sincerely,

Scott H. Neal
City Manager

CITY OF EDINA

4801 West 50th Street • Edina, Minnesota 55424
EdinaMN.gov • 952-927-8861 • Fax 952-826-0389



March 24, 2021

Legislative-Citizen Commission on Minnesota Resources (LCCMR)
100 Rev. Dr. Martin Luther King Jr. Blvd.
State Office Building, Room 65
St. Paul, MN 55155

Dear LCCMR Members,

The Department of Natural Resources (DNR) - Ecological and Water Resources (EWR) Division is writing to express our support for the Minnehaha Creek Watershed District's (MCWD) application to the Legislative-Citizen Commission on Minnesota Resources (LCCMR).

Minnesotans value many things about our state, including clean water, natural places, plants and animals, and using our state's vast natural resources for recreation and economic gain. However, shifts in land use, pollution and a changing climate are combining today to create some of the greatest challenges Minnesota's natural lands and waters have ever faced.

As our state's population grows and demands on resources intensify, our approach to conservation must evolve. Caring for the land, air, and water that supports us and other living things is more urgent than ever, and we must be prepared to address the challenge. As such, the DNR's EWR Strategic Plan for 2018-2028 identifies goals to improve and protect water quality in Minnesota's waters, to minimize the impacts of climate change on Minnesota's land and water, and to exemplify excellence in data management and delivery.

To help deliver on these goals the MCWD and DNR have already invested significantly together to monitor and evaluate climate change impacts within the Minnehaha Creek corridor, including the interaction between surface and groundwater and the watersheds response to changing precipitation regimes. In partnership with the DNR, MCWD's LCCMR proposal would leverage these existing investments and deliver on several DNR EWR strategies including providing leadership and expertise in climate adaptation and mitigation; to collect, analyze, and share important data on the status and trends of Minnesota's waters and their use to support decision-making; and investing in new information technology and expertise to support excellence in data management – while employing a systems based approach to water management and conservation.

Through this proposal, the DNR and MCWD would partner to collect and analyze additional groundwater and surface water interactions and integrate this data, along with other datasets, into the development of a high resolution two-dimensional (2D) watershed model. MCWD's proposed 2D model would provide deep and granular insights into the changes in runoff volumes, surface and groundwater interactions, and pollutant load distribution associated with climate change and be able to pinpoint, quantify and evaluate solutions. This 2D

model would serve as a model for other watersheds across Minnesota as they work to understand and predict the impacts of climate change and potential strategies for adaptation. As a partner to this proposal the DNR anticipates being able to provide approximately \$32,000 of in-kind support to collect and analyze groundwater data from across MCWD and provide technical review during the development of the 2D watershed model. To be prepared for the challenges of the future we will need innovative governance and scientific solutions. MCWD's approach to partnership and its data driven solutions answer this call to action, and we ask that the LCCMR please consider our support when evaluating this proposal.

Sincerely,



Ann Pierce- Acting Division Director

Ecological and Water Resources

Ec: Bob Meier, DNR Assistant Commissioner
Dan Lais, EWR Central Region Manager
Jason Moeckel, EWR Inventory Monitoring and Analysis Section Manager

Equal Opportunity Employer