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**Title:** Authorization to Execute Contract for the 2D Pilot Model Build

**Resolution number:** 21-091

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**Reviewed by:** Name/Title: Brian Beck/Research and Monitoring Program Manager

**Recommended action:** Board authorization to execute contract for consultant services for the 2D pilot model build

**Schedule:** 1/3/22: 2D pilot model build contract signed, work begins  
12/31/22: Scope of work complete

**Budget considerations:** Fund name and code: 5-5001-4340  
Fund budget: \$312,500.00  
Expenditures to date: \$18,565.99  
Requested amount of funding: \$242,100.00

**Past Board action:**

Res #: 21-065	Title: Authorization to Release RFP for 2D Model Pilot Build
Res #: 21-051	Title: Authorization to execute memorandum of understanding (MOU) with City of Edina
Res #: 21-024	Title: Authorization to submit proposal to LCCMR for development of a 2D watershed model

**Climate Context:**

Climate change is measurably changing the distribution, frequency and intensity of rainfall in Minnesota. The Minnehaha Creek Watershed has experienced the wettest seven years ever recorded. Over the past 10 years, Minnesota has experienced both record flood conditions and statewide drought that has negatively impacted aquatic ecology, stressed stormwater infrastructure and created billions in property damage. To successfully adapt to the increasingly volatile extremes in weather, Minnehaha Creek Watershed District (MCWD or District) and communities must be able to identify what landscape interventions are needed, where they are needed, and how much investment is needed.

The first stage of the MCWD's Climate Action Framework is to "Understand and Predict" the impacts of climate change using new data sets and modeling to forecast scenarios, evaluate vulnerabilities, and make decisions about adaptation options. These data will create a foundation for MCWD to engage with partner agencies in climate conversations and develop actionable plans for resilience at a system and community scale.

## **2D Modeling Needs:**

To evolve and meet the growing demands of climate change, the District must develop new tools to collect and analyze data. Among the tools that need to be developed is a higher resolution watershed model that enables the District and its partners to predict future flooding in surface waters, in grid systems, and with groundwater.

Over the past 20 years, major advancements in computing power and the availability of new data make it possible for the District to develop a two dimensional model (2D model), that integrates land surface or topographic data, with stormsewer data, to provide a high resolution planning tool.

To pursue this work, on March 25th, 2021 the Minnehaha Creek Watershed District Board of Managers authorized staff to submit a proposal for \$790,000 to the LCCMR to develop a watershed wide 2D model. The LCCMR has preliminarily ranked MCWD's proposal in a category to receive funding, with funds being made available July 2022.

## **2D Pilot Model Need:**

Developing a 2D model at a watershed wide scale will require the District to develop automated workflows to acquire, process and integrate stormsewer datasets from the 29 municipalities within the District. To evaluate and manage this risk point, the District has determined to pursue a pilot 2D model build, as a prototype to provide early learnings that can support the effort to do this work at scale.

This pilot model build is being pursued in partnership with the City of Edina, pursuant to a Memorandum of Understanding approved by the Board of Managers on August 26, 2021. The City of Edina was a clear choice for partnering on the pilot model due to their strong history of collaboration with the District, recent efforts to implement climate change adaptation projects, strong technical understanding of modeling, and robust stormwater infrastructure dataset.

## **2D Pilot Model RFP Process:**

### Scope and Budget:

On October 7, 2021 the MCWD Board of Managers authorized the release of a request for proposals (RFP) for the pilot 2D model, with a budget of \$242,100, with a scope of work designed to:

- Develop automated workflows to transform municipal stormsewer data into model input formats, providing learning and prototypes that will support the District scaling the process watershed-wide.
- Evaluate the benefits and drawbacks associated with the development and usability of the 2D modeling platforms (InfoWorks ICM and ICPR4).
- Identify which of the modeling platforms is best suited to scale watershed-wide.

### Submitted Proposals:

As part of the solicitation process, staff conducted a national search of consulting firms which specialize in 2D hydraulic modeling and data automation. By the deadline for submittal, November 4, 2021, the District received submissions from four firms: Geosyntec, HDR, Kimley-Horn, and Stantec.

### Proposal Evaluation:

Four District staff and staff from the City of Edina evaluated the written proposals. Each proposal had areas of overlap, but also offered unique approaches and balance to the tasks related to stormsewer data automation and model development and evaluation. As a result the panel conducted interviews of all four firms.

The interview format provided consultant teams an opportunity to present their proposals, describe the roles and experience of the project team, and answer questions about their approach. The staff review panel evaluated firms based on project understanding, expertise and experience, and project approach.

Following the interviews, District staff issued additional follow up questions, to obtain clarification and specificity where needed.

District staff engaged MCWD Board Liaisons, Arun Hejmadi and Dick Miller at key milestones in the evaluation process, leading up to the framing of a recommendation.

Additionally, District staff consulted with outside expertise during the evaluation process on elements related to the automation of stormsewer data, obtaining feedback from a key contributor to the Metro Stormwater Geodata Project.

Recommendation:

Based on the evaluation of proposals, interviews, answers to supplemental questions, the evaluation from District partners, and dialog with MCWD Board Liaisons, staff is recommending that Kimley-Horn be selected as the consultant and awarded the contract for services detailed in the Kimley-Horn 2D Pilot Model Build Proposal, which is provided under separate cover to the Board of Managers.

Kimley-Horn's proposal, budget, and interview demonstrate a strong understanding of the District's strategic objectives for the pilot model. Their proposal provided clarity and depth in the team's approach to developing processes to automate stormsewer data, something the team has previous experience in completing successfully. The team also demonstrated capabilities with both modeling platforms, and included both modeling experts and software engineers, which staff believe will be beneficial to the overall functionality and scalability of the automated processes developed in this project.

In accordance with Minnesota Statutes 13.591, subdivision 3(b), the submitted proposals will not be part of the public record until the contract has been executed. A copy of all submitted proposals will have been distributed to the Board of Managers for review via email prior to the December 16, 2021 meeting, which demonstrates that the project will be completed within the budget approved by the MCWD Board of Managers.

Next Steps:

Following contract execution, work will commence with the project kickoff. Major anticipated milestones include:

- Project Initiation and Kickoff: Q4 2021/Q1 2022
- Data Automation Process Development: Q1/Q2 2022
- Model Development: Q1/Q2 2022
- Model Scenario Analysis and Reporting: Q2/Q3 2022
- Board Review of Project Findings: Q4 2022

The Board liaisons to the Pilot 2D Model Project will continue to be involved in the process to provide input and guidance to staff at major milestones in the project. Staff and liaisons will also provide periodic updates to the Board to ensure managers are fully informed of key decision points and overall project direction.



## RESOLUTION

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- WHEREAS climate change is measurably changing the distribution, frequency and intensity of rainfall in Minnesota;
- WHEREAS watershed managers, in partnership with local communities, must accelerate efforts to monitor, evaluate and adapt to these changes in order to fulfill shared goals of managing flood risk and improving water quality;
- WHEREAS a key pillar in Minnehaha Creek Watershed District's (MCWD) climate action strategy is to understand and predict the impacts of climate change using new data analytical and planning tools;
- WHEREAS to support this strategy, the District has identified the need to develop a watershed-wide two dimensional (2D) model that incorporates high resolution stormwater infrastructure and land surface data to improve our ability to inform current and future water resource management decisions in the face of changing climate;
- WHEREAS in order to answer outstanding technical questions related to building a watershed wide 2D model, including questions regarding the automation of stormsewer data and best suited modeling platforms, the District has determined to develop a pilot 2D model at a smaller scale;
- WHEREAS on August 26, 2021, the Board of Managers authorized the execution of a memorandum of understanding with the City of Edina to collaborate on stormsewer infrastructure data sharing and the development of the 2D Pilot Model;
- WHEREAS on October 7, 2021, the Board of Managers authorized the release of a request for proposals for consulting services for the 2D model pilot build;
- WHEREAS An evaluation panel of MCWD staff and a staff representative from the City of Edina evaluated four written proposals and interviews from Geosyntec, HDR, Stantec, and Kimley-Horn based on project understanding, relevant experience, and project approach;
- WHEREAS the evaluation of these firms was coordinated by staff with Board appointed Liaisons to this project, Manager Hejmadi and Manager Miller.
- WHEREAS on the basis of its evaluation, staff recommends the selection of Kimley-Horn, based on the quality of approach to data automation, team expertise and composition related data automation, team experience with the identified 2D modeling platforms, and cost;
- WHEREAS, the Board of Managers finds that the evaluation has been thorough and properly structured, and that the work proposed by Kimley-Horn is demonstrated to be competitive and within budget

NOW, THEREFORE, BE IT RESOLVED that the Minnehaha Creek Watershed District Board of Managers authorizes the District Administrator, on advice of counsel, to execute a contract with Kimley-Horn for consultant services for the 2D model pilot build, in accordance with the developed scope of work and in an amount not to exceed the amount set forth in the proposal, and authorizes the Administrator to execute contract amendments in his discretion up to an additional 10 percent, in aggregate, of the contract amount.

Resolution Number 21-091 was moved by Manager \_\_\_\_\_, seconded by Manager \_\_\_\_\_. Motion to adopt the resolution \_\_\_ ayes, \_\_\_ nays, \_\_\_ abstentions. Date: 12/16/2021

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Secretary Date: \_\_\_\_\_

DRAFT