MINNEHAHA CREEK
WATERSHED DISTRICT
QUALITY OF WATER, QUALITY OF LIFE

Meeting: Board of Managers
Meeting date: 8/22/2024
Agenda Item #: 11.1
Board Consent Item

Title:	Authorize 2D Model Data Collection Contract Extension and Surveying Equipment Rental
Resolution number:	24-047
Prepared by:	Name: Brian Beck Phone: 952-471-8306 bbeck@minnehahacreek.org
Reviewed by:	Name/Title: Chuck Holtman, Minnehaha Creek Watershed District Counsel
Recommended action:	Authorize a Contract Extension with Bolton and Menk to Continue Stream Cross Section Data Collection Authorize MCWD Staff to Rent Survey Equipment to Collect Culvert Data to Support the 2D Model Build
Schedule:	March 15, 2025: Project Completion Date
Budget considerations:	2024 MCWD Contract Services Fund name and code: 5-5001-4320 2024 MCWD Fund Budget: $163,730 2024 MCWD Expenditures to Date: $26,474 2024 LCCMR Contract Services Fund name and code: 5-5008-4320-001 2024 LCCMR Contract Services Fund Budget: $109,767 2024 LCCMR Contract Services Expenditures to date: $24,889 2024 MWCD Monitoring Fund name and code: 5-5001-4520 2024 MWCD Monitoring Fund Budget: $63,215 2024 MWCD Monitoring Fund Expenditures to Date: $21,361

Past Board action:

Res #: 24-012	Title: Awarding Contract for 2D Watershed Model for Climate Planning
Res #: 23-038	Title: Awarding Contract for Watershed-wide Model Input Refinement
Res #: 22-038	Title: Authorization to Submit Proposal to LCCMR for Development of 2D Watershed Mode

CLIMATE CONTEXT

Climate change is measurably changing the distribution, frequency, and intensity of rainfall in Minnesota. Between 2013 and 2019, the MCWD 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 cost billions in property damage. To successfully adapt to the increasingly volatile extremes in weather, MCWD 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 strategies. 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 WATERSHED MODEL BUILD

In July 2023, the District was awarded an Accelerated Implementation Grant from the Board of Water and Soil Resources (BWSR) in the amount of $738,000 to build a 2D watershed-wide model to support MCWD's Climate Action Framework.

Subsequently, on September 14th 2023, the MCWD Board authorized staff to issue a Request for Proposals (RFP) that would retain professional services to 1) collect stream channel cross sections, 2) refine the automated stormsewer processing system, and 3) identify culvert data gaps.

In late 2023 and early 2024, MCWD and the consultants completed the stormwater data processing system, identified ~2,500 culvert data gaps, and collected stream channel cross-sections. Collecting cross-sections in the Minnehaha Creek Subwatershed was straightforward due to the presence of a single, well-defined channel. However, the Upper Watershed presented a more challenging process for identifying stream channel cross-sections since the drainage area is represented by a series of interconnected wetlands instead of well-defined stream channels. These types of wetland dominated systems can be modeled in a variety of ways, which will ultimately dictate how the wetlands and channels are characterized through data collection.

During this period the MCWD Board had authorized staff to issue a request for proposals to support MCWD's build of the 2D Watershed-Wide Model. One of the key tasks in the 2D Watershed-Wide Model build included a series of discussions about how to characterize wetland volume and conveyance. Therefore, MCWD staff requested that Bolton and Menk pause their stream channel cross section data collection efforts until MCWD had discussed how stream channels and wetlands would be represented in the watershed model build.

NEXT STEPS

Stream Channel Data Collection

MCWD staff are currently facilitating discussions with HDR, Streamline Technologies, and Virginia Tech about how to incorporate stream channels and wetlands into the model. These discussions have continued to clarify how the model will be built and how storage and conveyance will be incorporated into the model. Based on these discussions, MCWD and HDR have collaboratively identified initial stream channel cross-sections that should be collected for the initial model build, which can be collected within the remaining budget of the Bolton and Menk scope of work.

Culvert Data Collection

Culverts are the primary conveyance and outlet structure in the Upper Watershed and can control water level elevations in wetlands. Consequently, missing culvert data could introduce significant errors if the model is based on assumed inlet and outlet elevations. To address this, MCWD staff recommend that survey equipment be rented for MCWD staff to accurately measure and collect the inlet and outlet elevations of the missing culverts. MCWD staff rented survey equipment identical to the equipment used by Bolton and Menk to identify how many culverts could be collected in a workday. MCWD staff found that approximately 50-75 culverts could be surveyed per day, which suggests that the majority of the culvert data could be filled if surveys were conducted over an 8-week period at a cost of $8,000 ($1,000 per week).

RECOMMENDATION

Staff recommend that the MCWD Board of Managers authorize the District Administrator to extend the contract with Bolton and Menk from March 15, 2024 to March 15, 2025 to continue collecting stream channel cross-sections. MCWD staff also recommend that the Board authorize MCWD to rent survey equipment to collect culvert elevation data in an amount not to exceed $8,000.

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RESOLUTION

Resolution number: 24-047

Title: Authorize 2D Model Data Collection Contract Extension and Surveying Equipment Rental

WHEREAS, climate change is measurably changing the distribution, frequency and intensity of rainfall in Minnesota;

WHEREAS, a key pillar in Minnehaha Creek Watershed District's (District) Climate action framework 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 its ability to inform current and future water resource management decisions in the face of climate change;

WHEREAS, in June 2022, the Board of Managers authorized staff to submit a proposal for $738,000 to the Legislative-Citizen Commission on Minnesota Resources (LCCMR) to develop a watershed-wide model;

WHEREAS, in advance of the watershed-wide build, the District chose to pursue a pilot 2D model build to constrain the technical and relational risk associated with a large scale, high-resolution model build;

WHEREAS, the pilot model was designed to identify a method to assemble, process, and incorporate unique stormwater infrastructure datasets from the multiple public agencies within the District;

WHEREAS, in December, 2021, the Board of Managers authorized a contract with Kimley-Horn to deliver on the pilot model's scope of work that would result in an automated and repeatable process for transforming model input datasets, including stormwater infrastructure datasets (phase 1) and the evaluation of two different models, ICM and ICPR (phase 2);

WHEREAS, phase one of the pilot model was completed and three key next steps were identified to position the District to utilize the automated framework and effectively construct the model: (1) standardize the stormwater infrastructure datasets within the District into the MetroGIS draft geodatabase transfer standard (MGIS), (2) refine the automated processes to account for issues and gaps within the watershed-wide stormwater infrastructure dataset, and (3) fill data gaps critical for the model build, such as channel cross-sections and culverts;

WHEREAS, based on learnings from the pilot model and to advance work for the watershed-wide build, in July, 2023, the Board of Managers authorized a contract with Bolton & Menk, in an amount not to exceed $189,767, for watershed-wide Model Input Refinement, which included three key elements: (1) acquiring stream channel cross-sections, (2) automated process refinement, and (3) culvert gap assessment;

WHEREAS, in August of 2022, the LCCMR recommended funding the project entitled "Leveraging Innovations in Data Analytics for Project Implementation" in the amount of $738,000, and in May of 2023 the Minnesota legislature approved funding in that amount;

WHEREAS, in February 2024 the Board of Managers approved a contract with HDR for the Development of a 2D watershed Model for climate planning in an amount not to exceed $611,560;

WHEREAS, Bolton and Menk, during the watershed-wide model input refinement process, identified significant gaps in the culvert dataset, which are critical for accurate model development;

WHEREAS to address these data gaps, MCWD staff will be conducting field surveys to collect the necessary culvert data, ensuring the integrity of the watershed model;

WHEREAS the contract with Bolton and Menk needs to be extended from March 15, 2024 to March 15, 2025 to continue the collection of stream channel cross-sections, a key component for the successful build of the 2D watershed-wide model;

NOW, THEREFORE, BE IT RESOLVED that the Board of Managers authorizes the District Administrator, on the advice of District counsel, to extend the contract with Bolton and Menk to continue the collection of stream channel cross-sections essential for the 2D watershed-wide model development; and

BE IT FURTHER RESOLVED that the Board of Managers authorizes the District Administrator to rent survey equipment in an amount not to exceed $8,000, for MCWD staff to collect the necessary culvert data to address identified gaps in the watershed model.

Resolution Number 24-047 was moved by Manager _____, seconded by Manager _____. Motion to adopt the resolution ___ ayes, ___ nays, ___abstentions. Date: 8/22/2024

_____ Date: _____

Secretary