MINNEHAHA CREEK WATERSHED DISTRICT
QUALITY OF WATER, QUALITY OF LIFE

**Meeting:** Operations and Programs Committee
**Meeting date:** 2/10/2022
**Agenda Item #:** 4.1
**Item type:** Discussion

**Title:** Climate Action Framework: Mitigation and Interim Actions

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**Purpose:**
The February 10, 2022 Operations and Programs Committee (OPC) meeting will be used to continue the Board's discussion of the draft Climate Action Framework (CAF). This series of discussions is intended to synchronize expectations around the Minnehaha Creek Watershed District (MCWD or District) response to climate change and further refine the framework for formal adoption. This meeting discussion will be focused on (1) MCWD's role in mitigation and (2) interim actions proposed over the next five years.

**Background:**
MCWD's mission is to collaborate with public and private partners to protect and improve land and water for current and future generations. Today's land use patterns and infrastructure have been designed over many decades, to a standard of acceptable engineering risk, based on stable precipitations patterns. Those consistent patterns have already begun to shift. In the last decade, the District has experienced the seven wettest years on record, including a flood of record and an additional year's worth of rainfall, as well as a significant drought resulting in the closure of Gray's Bay Dam for over six months of the year.

Given the scope, scale, and complexity of this challenge, the Board tasked the Citizens Advisory Committee (CAC) and staff to explore its role and strategy for responding to climate change. The synthesis of this work was assembled into a draft Climate Action Framework (CAF) that was presented to the Board in March 2021. The draft CAF defines the three pillars of the District's role as: (1) Understand and Predict; (2) Communicate, Convene, and Plan; and (3) Implement, Measure and Adapt. The intent of the draft CAF is to delineate MCWD's role for responding to climate change so the District can clearly and proactively communicate its strategy to its communities. The CAF will also define near-term actions needed to implement this strategy which will help to align Board and staff expectations on priorities and resources needed to support this work.

Board Climate Discussions To-Date
The Board has been engaged in a series of climate discussions to help refine the draft CAF. At the December 2, 2021 OPC meeting, the Board mapped out organizational strengths/weaknesses and external opportunities/threats anticipated from climate change (SWOT analysis). The Board's input on the SWOT analysis was closely aligned with feedback received from the CAC and staff. Building from this discussion, at the January 13, 2022 OPC meeting, the Board considered a range of questions MCWD must be able to answer for its partners, communities, and residents. Based on Board input, MCWD must prepare to respond to questions about current and future risk or vulnerability to water-related climate impacts, communicate real-time flood forecasting data, and understand potential project and/or policy implementation strategies and the associated costs and benefits.

It has become clear that MCWD's role is intended to inform, connect, and strategically integrate into the current patchwork of climate planning underway at the city, county/regional, state, and federal levels. Six themes, provided below, have been distilled to-date and will continue to be refined based on these climate discussions.

- *Priority on Flood Adaptation*: Flooding is the most significant threat, and there is a need for a strong understanding of current and future impacts across the watershed to inform adaptation

- *Need for Sound Science*: MCWD can build on its reputation as a science-driven organization to expand technical capabilities in order to develop a regional system-scale understanding

- *Proactive Engagement*: MCWD must begin engaging partners and proactively managing expectations about the District's role and action steps in responding to climate change

- *Partnership Approach*: In order to effectively respond to this threat, the District will need to forge new partnerships and leverage the power of convening to build consensus and develop a coordinated approach

- *Leverage Regional Role*: MCWD is uniquely positioned to serve as a convener and information broker to understand the water budget and upstream-downstream cause and effect across communities

- *Maintain Focus*: Climate change is a global crisis and MCWD must work within its sphere of influence and maintain its focus on implementing high-impact projects

**February 10, 2022 Meeting:**
At the February 10, 2022 OPC meeting, staff will recap the purpose of the climate discussions and reflect back the main takeaways from the previous two OPC meetings. To build on discussions to-date and continue to refine the CAF, staff will facilitate a two-part Board discussion focused on MCWD's role in mitigation and near-term, interim actions.

Part 1: MCWD Role in Mitigation
As discussed to date, the District has a significant and valuable role to play in helping its communities understand and predict the impacts of climate change across our watershed and develop a coordinated plan to adapt to those impacts. While there is consensus that this should be the primary focus of the District's role in climate action, it has also been discussed that the District has a responsibility to explore its role in mitigating climate change.

The 2021 International Panel on Climate Change (IPCC) Report highlights global surface temperature will continue to increase until at least 2050 due to existing emissions, and global warming of 1.5 and 2 degrees Celsius will be exceeded in the next 80 years unless deep reductions in greenhouse gas (GHG) emissions occur. As a result of GHG emissions to-date, Minnesota is already warming faster than other regions and is experiencing wetter and warmer trends. MCWD recognizes adaptation to prepare and manage for the current and future impacts will be critical to support thriving communities in the watershed. In tandem, MCWD must strategically contribute, along with other agencies, communities, and individuals, to minimize further impacts through mitigation efforts (reduction in GHG emissions).

Part 2: Interim Actions
MCWD has already been implementing projects, programs, and policies that provide both mitigation and adaptation benefits. While the District works on the longer-term effort of building out its technical capabilities (e.g., 2D model) and convening partners to inform implementation efforts under the next 10-year Watershed Management Plan, the District must also consider and communicate actions it is taking in the near-term. Below is a summary of near-term mitigation and adaptation actions the District has identified to date.

*Mitigation*
Mitigation is taking actions to limit the magnitude and rate of future climate change by reducing GHG emissions. The Minnesota Pollution Control Agency (MPCA) has been tracking GHG emissions since 2005 and has developed "GHG sectors" to prioritize reductions and track GHG emission reduction goals set under the 2007 Next Generation Energy Act (NGEA). Under the state's GHG sectors, MCWD primary mitigation work falls under Lands (agricultural, forestry, and land use) through projects such as carbon sequestration through native prairie, wetland, and forest restorations. In addition, there are operational improvements MCWD could implement to support Minnesota's GHG emissions reduction goals.

- **Landscape Improvements**
    - Continue implementation of landscape protection and restoration efforts through the District's capital projects, land conservation, and Permitting programs
    - Consider quantification of mitigation benefits (i.e. carbon sequestration) from MCWD's past projects and programs
    - Consider integrating mitigation benefits into MCWD's project prioritization framework for the multi-year CIP and evaluation of partner projects through the Land and Water Partnership Program
- **Operational Improvements**
    - Consider conducting an assessment to quantify and prioritize potential GHG emission reductions related to MCWD's building, fleet, and other operational policies

*Adaptation*

Adaptation is taking action to prepare for and adjust to both the current and projected impacts of climate change. MCWD has identified three areas with completed and on-going adaptation work:

- **Emergency Preparedness and Management**
    - Continue advances in dam management through optimization models and automation technology
    - Continue to expand flood forecasting capabilities and consider ways to communicate and share the information
    - Develop a watershed flood response plan to provide role clarity among internal departments and external agencies and enhance our ability to respond
- **Planning and Technical Support**
    - Consider and frame the type of planning and technical support the District can provide based on case studies like the Nokomis White Paper and Zumbra Lake Assessment
- **Landscape Improvements**
    - Continue implementation of projects and regulations to protect or increase flood storage capacity
    - Consider a more comprehensive quantification of past project and program benefits

*Draft Interim Actions*

Attachment 1 provides a draft summary table of near-term actions MCWD can take to continue to provide value in the areas of mitigation and adaptation. These actions are grouped by the CAF's three pillars: (1) Understand and Predict; (2) Communicate, Convene, and Plan; and (3) Implement, Measure, and Adapt.

**Pre-Meeting Engagement:**

Below are discussion questions to consider in preparation for this meeting. Staff will be sending a pre-meeting survey in advance of the meeting.

- <u>MCWD Role in Mitigation:</u>
    - How does the Board view the District's role and level of effort in climate mitigation?
    - What additional information is needed to clearly frame MCWD's role in mitigation?
- <u>Draft Interim Actions:</u>
    - What other actions should MCWD consider regarding work in both mitigation and adaptation?
    - How would the Board prioritize these actions?

**Attachments:**

- Attachment 1 – Draft Interim Action Summary

| Attachment 1<br>Draft Interim Actions<br>Summary Table | |
|---|---|
| **Understand and Predict** | |
| *Utilize and expand MCWD capabilities in data collection and analysis to understand and predict the impacts of climate change, establish goals, and evaluate potential solutions* | |
| Climate Actions | Timeframe |
| **Machine Learning**<br>• Develop a machine learning model using the remote sensing data to predict future water levels at 25 locations throughout MCWD | Ongoing |
| **Real Time Sensor Network (RESNET)**<br>• High resolution water level, flow, and water quality data collection to provide real time water level information to partner agencies and the public and support future model development | Ongoing |
| **Gray's Bay Dam Optimization**<br>• Develop model for dam optimization to (1) reduce flooding; (2) retain water in creek during dry periods; (3) enhance recreation, wildlife, and aquatic life; (4) improve or maintain conditions on lake and creek | Near-term (2022-2027) |
| **2-Dimensional (2D) Pilot Model**<br>• Develop a pilot 2D model to test and prove the concept of how to automate the collection of municipal storm sewer data, while also evaluating two different modeling software | Ongoing |
| **Data Aggregation and Analysis**<br>• Identify all data across organization to help understand and predict mitigation and adaptation opportunities<br>• Data collection of pipe networks and other natural/built assets in coordination with cities and other partners | Near-term (2022 -2027) |
| **2-Dimensional (2D) Watershed Model**<br>• Develop a tool that can characterize and quantify current and future climate change impacts to inform decisions on climate adaptation projects and policies by integrating state topographic, regional land use, and municipal infrastructure data | Near-term (2022-2027) |
| **Communicate, Convene and Plan** | |
| *Convene MCWD partners to build consensus around the issues, align goals, and guide the development of a coordinated watershed-wide implementation framework* | |
| Climate Actions | Timeframe |
| **Partnership Development**<br>• Ongoing coordination with state, regional, and local level staff and policymakers to build consensus around issues, strategy, and roles | Ongoing |
| **TAC Formation**<br>• Formation of TAC to support MCWD initiatives, including climate that will help inform climate planning scenarios and 2027 Watershed Management Plan (WMP) development | Near-term (2022-2027) |
| **Flood Response Plan Development**<br>• Review 2014 MCWD Flood Report to integrate lessons learned and recommendations into a "response plan" | Near-term (2022-2027) |

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| • Continue to improve multiple government entities' communication and decision-making during hazard/impact event | |
| **Capital Project Planning**<br>• Incorporate climate mitigation and adaptation benefits into project prioritization framework for multi-year CIP and evaluation of partner projects through Land and Water Partnership Program | Near-term (2022-2027) |
| **Operations Assessment**<br>• Evaluate opportunities to reduce greenhouse gas emissions through changes to the District's operations (e.g. building, fleet, hybrid work policy) | Near-term (2022-2027) |
| **Scenario Planning**<br>• Utilize 2D model to run scenarios, set metrics/goals and evaluate strategies with communities and other agency partners | Near-term (2022-2027) |
| **Policies and Programs Direction Setting**<br>• Develop climate policy direction, implementation actions, and roles with communities that will be incorporated into 2027 WMP | Near-term (2022-2027) |
| **Implement, Measure, and Adapt** | |
| *Implement projects, programming, and policy changes, in coordination with its partners, to achieve measurable progress toward the set goals* | |
| Climate Actions | Timeframe |
| **Capital Project Planning**<br>• Quantify mitigation and adaptation benefits of past District projects, land conservation, and permitting<br>• Ongoing implementation of landscape improvement projects that provide mitigation and adaptation benefits | Near-term (2022-2027) |
| **MCWD Operations**<br>• Implement updates to MCWD operations based on assessment | Near-term (2022-2027) |
| **Gray's Bay Dam Modernization and Automation**<br>• Retrofit the dam structure with automation technology for remote operation | Near-term (2022-2027) |