MINNEHAHA CREEK
WATERSHED DISTRICT
QUALITY OF WATER, QUALITY OF LIFE

Meeting: Board of Managers
Meeting date: 8/22/2024
Agenda Item #: 11.2
Item type: Action

Title:	Authorization to execute contract with Stantec for the Flood Action Plan
Resolution number:	24-048
Prepared by:	Name: Kate Moran Phone: 952-641-4520 kmoran@minnehahacreek.org
Reviewed by:	Becky Christopher, Policy Planning Director
Recommended action:	Authorization to execute contract with District Engineer (Stantec) to develop a Flood Action Plan in collaboration with Minnehaha Creek Watershed District staff
Schedule:	August 2024: Authorization contract for Flood Action Plan September 2024: Kickoff of Flood Action Plan development December 2024: Adoption of Flood Action Plan
Budget considerations:	Fund name and code: Project Maintenance & Land Management, 2003-4340 Fund budget: $689,926.00 Expenditures to date: $237,261.11 Requested amount of funding: $41,591
Past Board action:	Resolution #22-084 Adoption of the Climate Action Framework

Summary:
Background
Within the Minnehaha Creek Watershed, more extreme flooding and drought are already impacting water resources and communities. On December 15, 2022 the Minnehaha Creek Watershed District (MCWD) Board of Managers adopted the Climate Action Framework (CAF) that was the outcome of the MCWD's Board of Managers, staff, and Citizen Advisory Committee (CAC) participation in a process to review and examine the climate science, impacts and vulnerabilities, governance context, and MCWD's implemented work to-date. The CAF outlines MCWD's commitment to ongoing collaboration with partners, to continue planning and preparing for the future, and to ultimately memorialize shared climate goals and strategy in the 2027 Watershed Management Plan.

Appendix A of the CAF outlines MCWD's near-term work plan comprised of three pillars of work, and MCWD has prioritized 2024 actions under each pillar, including the development of a Flood Action Plan. The purpose of a Flood Action Plan is to delineate MCWD's role and operations in gathering and communicating real-term watershed information with emergency managers and the general public during flood events. The need for a flood action plan was also outlined under the next steps from the MCWD 2014 Flood Report which documented the extent of the historic 2014 flooding event, evaluated organizational impacts by programs, and provided guidance to be used to create a Flood Action Plan for future flood events.

Flood Action Plan

Based on experience over the last decade, MCWD recognizes it is critical to have an action plan for staff to follow during a flood event and to provide a clear delineation of roles and responsibilities by program to ensure MCWD can efficiently and effectively act internally and communicate externally to key stakeholders (e.g., city and county emergency managers, policymakers, and residents). During the 2024 season, the MCWD team comprised of staff from different programs and the District Engineer worked closely together to continue to refine and improve (1) a system understanding of how the watershed responds during rain events and (2) the decision-making process through a data-driven approach. MCWD's goals for the Flood Action Plan include:

- *Delineate Roles and Expectations:* Provide clear roles and responsibilities by each MCWD program based on flood phase (e.g., pre-, during-, post-flood) and severity of flood event.
- *Define Flood Event Categories:* As each flood is different in its magnitude and duration, the Flood Action Plan will need to define actions that are proportional to the level or severity of flooding.
- *Document Operational Protocols:* Create Standard Operating Procedures (SOPs) to establish a consistent, and documented process for the organization to follow during a flood event to ensure institutional knowledge and lessons learned from the 2014 flood through the 2024 spring season are documented.
- *Provide Recommendations for Future Improvements:* Provide strategic guidance and recommendations for future improvements to flood action planning and responses to support MCWD's goals, partners' goals, and support equitable, resilient communities.

Request for Proposal from the District Engineer

MCWD staff requested a proposal from the District Engineer based on the experience and organizational learning from this 2024 season including dam operations and management planning; forecasts and decision-making processes; communications strategy and management planning; and field condition verification processes. The District Engineer was an essential team member that acted as a strategic advisor and collaborated with program staff to refine how MCWD approaches its decision-making process for both dam and communication management based on forecasts, real-time data, and field conditions. Based on this collaborative work over the last year, in addition to the District Engineer's familiarity with the 2014 flood of record and the respective 2014 Flood Report, MCWD staff find the District Engineer to be uniquely qualified to develop the MCWD Flood Action Plan and achieve the plan's purpose and goals.

Recommendation

At the Board meeting, MCWD staff will provide an overview of the intent of the Flood Action Plan, the District Engineer and MCWD staff's lessons learned in 2024 that will help shape the development of the Flood Action Plan, and the proposed scope of work. MCWD staff recommends the Board of Managers' authorization to execute a contract with Stantec in an amount not to exceed $41,591 to develop a Flood Action Plan. The plan is scheduled to be completed by the end of 2024 and will inform and guide staff during future flood periods.

Supporting documents:

- Attachment 1: Stantec's Scope of Work for MCWD Flood Action Plan

MINNEHAHA CREEK
WATERSHED DISTRICT
QUALITY OF WATER, QUALITY OF LIFE

RESOLUTION

Resolution number: 24-048

Title: Authorization to Execute Contract with Stantec for the Flood Action Plan

WHEREAS**,** the District's region is already experiencing climate change impacts, including the 2014 flood of record and the wettest decade on record;

WHEREAS**,** in response to the 2014 flood of record the District Engineer developed a 2014 Flood Report to document the flood event impacts and recommended that the District prepare a Flood Action Plan to establish roles and protocols for future flood events in the watershed;

WHEREAS**,** the District recognized the need for a comprehensive strategy to respond to climate change impacts, including flooding, and conducted an internal planning process between 2019 – 2022;

WHEREAS, this internal planning process engaged the District's Citizens Advisory Committee (CAC), all District staff, and the Board of Managers through facilitated discussions and workshops to understand the climate science, climate governance, and threats and vulnerabilities to delineate the District's climate role and strategy;

WHEREAS, the outcome of the multi-year planning process is the District's Climate Action Framework (CAF) that was adopted on December 15, 2022 and defines the District's climate strategy by three pillars: (1) Understand and Predict; (2) Convene and Plan; and (3) Implement, Measure, and Adapt;

WHEREAS, the Convene and Plan pillar identifies the development of a Flood Action Plan to delineate the District's role and operations in gathering and communicating real-time watershed information with emergency managers and the public during flood events as a 2024 priority action;

WHEREAS**,** in 2024 the District staff and District Engineer collaborated on dam operations and management planning, forecasts and decision-making processes, communications strategy and management planning, and field condition verification processes;

WHEREAS**,** District staff requested a proposal from Stantec (District Engineer), based on the District Engineer's strategic advisor role in improving the District's data-driven dam management and communication decision-making during the 2024 season;

WHEREAS**,** the proposal outlines the purpose and project understanding from the District Engineer and presents an approach to developing the Flood Action Plan in collaboration with District staff, as well as a budget and schedule, that the Board, in alignment with the recommendation of staff, finds to be well-considered and reasonable; and

WHEREAS the District Governance Manual requires that the administrator use competitive process before the District enters a contract for professional services in excess of $25,000, however the Board finds in this case that Stantec is uniquely qualified to perform the work by virtue of its prior involvement and knowledge, that the contract price is reasonable, and therefore that a competitive process is unlikely to provide additional benefit.

NOW, THEREFORE, BE IT RESOLVED that the District Administrator is authorized, on advice of counsel, to enter a contract with Stantec to develop a Flood Action Plan for an amount not to exceed $41,591.

Resolution Number 24-048 was moved by Manager _____, seconded by Manager _____.
Motion to adopt the resolution ___ ayes, ___ nays, ___abstentions. Date: 8/22/2024

_____ Date: _____
Secretary

Stantec Consulting Services Inc.
One Carlson Parkway North, Suite 100
Plymouth MN 55447-4440

August 20, 2024

Project/File: 227780036

Board of Managers
Minnehaha Creek Watershed District

Dear Board of Managers,

Reference: Proposed Scope of Services for MCWD Flood Action Plan

Project Understanding

MCWD's Climate Action Framework (CAF) identifies the need for the development of a Flood Action Plan as a priority near-term action, as part of the Convene & Plan pillar. The 2014 Flood Report also identified a need for a cohesive District flood response. MCWD acts as a gatherer and distributor of flood-related information, not as a primary boots-on-the-ground emergency management organization, and therefore must develop a plan to delineate MCWD's role and operations for flood planning, collecting data and communicating real-time watershed information with emergency managers and the general public during flood events. The Plan's primary purpose is to provide a standard operating procedure to guide the District through flooding from flood predictions and preparation, to response during and after flooding.

Our close working relationship with MCWD, history with assisting in management of the Gray's Bay Dam (Dam), contribution to the development of the dam operations, and completion of the 2014 Flood Report makes us well prepared to create the District's Flood Action Plan. The plan will outline MCWD's operational roles and responsibilities and provide recommendations for future improvements. Dam operations and management has been performed by a select group of District staff and the District Engineer over the years, and information about how to effectively interpret hydrologic conditions and subsequently operate the Dam currently exists as institutional knowledge and standalone documents.

Operation of the Gray's Bay Dam has largely been accomplished via institutional knowledge and MCWD documentation held by a small group of MCWD staff and the District Engineer. These individuals possess a working knowledge of the resources available to inform dam operation decisions and about lessons learned from dam operations. It is vital that this information be compiled and integrated into a comprehensive document to inform future operations and effectively learn from the past. This effort will focus on the period ranging from the 2014 to 2024 and combine data review with collection of staff and engineer knowledge to reflect on past operations and synthesize lessons learned.

Approach and Methodology

Our approach for developing the Flood Action Plan is to characterize District and District Engineer actions over the course of the last 10 years and develop recommendations for future operations into a simple plan that can guide the District's response to precipitation events. We will synthesize data from previous flood

seasons to define key flood tiers, revisit selected dam operation scenarios to extract lessons learned, and develop and document district staff roles and responsibilities throughout the lifecycle of a flood event.

1 Identify Key Flood Categories

MCWD manages the Gray's Bay Dam, but also collects and leverages partner data throughout the District to help agency partners and their emergency response teams understand flood risk to allow appropriate responses to prepare for flooding (i.e. sandbagging, management of Lake Nokomis weir). The Flood Action Plan will establish flood event tiers and their hydrologic precursors to help evaluate the magnitude of flood risk based on readily available data and to subsequently inform decisions relating to engagement and communication with emergency management partners.

Since flood tiers are intended to be used to understand flood magnitude and associated risk, tiers will be defined for specific locations within MCWD. This scope assumes that five locations will be selected for flood tier definition. The following locations of known high water level concern are options for evaluation and development of flood tiers: Lake Zumbra, Mooney Lake, Lake Minnetonka, Meadowbrook Lake, Lake Hiawatha, Lake Nokomis, Lynnhurst Area, Minnehaha Creek at Portland Avenue, and Edina between W 54th Street and France Ave Stantec recommends focusing on the following five locations: Lake Zumbra, Lake Minnetonka, Lake Hiawatha, Lake Nokomis, and Minnehaha Creek at Portland Avenue. Stantec and MCWD will discuss which five locations will be considered in the scope prior to work starting.

Flood tiers will be based on magnitude, duration, and flashiness of flooding. It is anticipated that 2-4 flood tiers and their hydrologic precursors will be defined for each location of interest and may include low, moderate, and high-water levels and may include temporal parameters of slow or rapid flooding and brief or long-term duration flooding.

The process of defining relevant hydrologic precursors for identified flood tiers will vary slightly between locations based on available data and the hydrology and hydraulics of the system, but will generally follow the process of:

- Identify which types of flooding are relevant to the site in terms of magnitude and timing (e.g. establish critical water levels on a lake of interest, determine whether the hydrologic regime is "flashy" and poses a risk to infrastructure on a rapid timeline).
    - System flashiness will be determined by comparing hourly rainfall records to water level readings, to evaluate how long after rainfalls of various magnitudes / durations / intensities the waterbody of interest responds.
- Review records of water levels at the location of interest between 2014 and 2024 to identify time periods / events when water levels were consistent with a particular threshold (i.e. nuisance backyard flooding, rapid rise in water levels, structural flooding). We recognize that more detailed data is available for the 2024 season, therefore the development of flood tiers will prioritize use of 2024 data. Trends from the 2024 data will be extrapolated to other events dating back to 2014, as feasible. To best utilize the data available from 2014-2024, information regarding structural damages and partner-collected water levels at identified locations may need to be utilized, to

correlate flow at Gray's Bay Dam, flow in Minnehaha Creek, and precipitation records with relevant flood events.
- Identify hydrologic conditions prior to flood events of interest, based on available data (i.e. lake or stream water level, shallow groundwater levels, recent precipitation throughout contributing watershed).
- Correlate pre-event hydrologic conditions to flood conditions and identify trends to define hydrologic precursors to various flooding scenarios. Where data gaps exist, Stantec will leverage its expertise with criteria other flood management entities use to categorize the severity of floods and limit risk to the public and infrastructure.

Stantec will identify draft flood tiers and summarize the results for review and consideration by the MCWD Flood Action Core Team (James Wisker, Brian Beck, Samantha Maul, Chris Meehan) and the Flood Action Plan project manager (Kate Moran). Results may take the form of a bulleted list, a matrix or matrices, one-pagers for each location, or other appropriate communication method and will be developed in collaboration with MCWD staff. Once draft flood tiers are established, they will be reviewed during a workshop with the MCWD Flood Action Core Team to explain the process used and establish concurrence from the District team. One iteration of minor edits is anticipated after review with the MCWD team.

Assumptions: Identify Key Flood Categories

- Flood tiers will be developed for up to five (5) locations; additional locations can be considered for additional fee.
- Stantec will not generate new data, models, model scenarios, or rating curves.
- Review will consider data from 2014 – 2024, with emphasis on 2024 data which exists at higher resolution throughout MCWD. Learnings from the 2014 Flood Report will be considered.
- MCWD will provide the following data, with elevations in the NGVD29 datum as applicable: dam operation records, RESNET records (flow and elevation as available), shallow groundwater monitoring records, lake level records for lakes of interest (i.e. based on selected locations for flood tier development), hourly precipitation from 2014 to 2024 for gages within MCWD, and summary of all data provided (period of record, any known flaws, etc.).
- One 2-hour workshop with MCWD Flood Action Core Team and one set of revisions to the recommended tiers.
- Stantec will generate technical content and text, and MCWD will perform graphic design and branded formatting of the flood tier summary content (matrices, one-pagers for each location, etc.).
- Visual aids of flood categories on the landscape are not included, but could be created with additional project fees.

Deliverables: Identify Key Flood Categories

- Flood tier summaries for each of the 5 chosen locations

2 Operations Planning and Lessons Learned with District Staff

2.1.1 Operations Planning with District Staff

To effectively manage internal operations and external communications throughout the lifecycle of a flood event, MCWD staff roles during flooding events must be clearly defined for each MCWD Program. Utilization of a centralized command structure is recommended, such that one person at the District is the leader of flood response actions and activates other Programs for support.

Each District Program will prepare a summary or list of how they view their current role in flood action. Stantec will review those lists and the 2014 Flood Report to identify gaps and redundancies. Then, the Stantec team will conduct a workshop with the Core Team members (James Wisker, Brian Beck, Samantha Maul, Chris Meehan) to seek clarification on current roles, share recommendations to gain efficiencies and streamline process, discuss redundancies or gaps in operations, understand staff capacity to support flood action, whether Program strengths align with current Program flood action roles, and identify hurdles to successful contributions to flood action. This workshop will be followed by a meeting with all departments to discuss any other minor roles and outstanding questions.

Examples of topics to be discussed with each MCWD Program are listed below. These topics and more will ultimately be what is reflected in the developed roles for each Program.

Administrator:

- Serves as communication lead with policy makers; needs communication from other MCWD Programs when floods are anticipated to allow proactive inter-agency communication
- Understand additional recent responsibilities and discuss redistribution of workload amongst other MCWD Programs

Project Maintenance & Land Management (PMLM):

The Manager of the PMLM Program has historically been responsible for the operation of Gray's Bay Dam and the point person for flood related responses. As of the drafting of this document, MCWD does not have any staff within the PMLM Program. As such, the Administrator, R&M Manager, and District Engineer have collaborated to operate the Gray's Bay Dam.

- Discuss centralized command structure
- Identify a second-in-command staff member for redundancy
- Dam operations and lessons learned (discussed further below)
- Post-flood recovery implementation with public partners

Research & Monitoring:

- Field reconnaissance plans and when staff deploy to the field to assess flood extents
- Collection of survey data or drone imagery during flooding
- Management of data collection systems to inform hydrologic conditions throughout the watershed
- Development of dashboards to facilitate efficient information sharing with partner agencies and emergency managers
- Uses and limitations of machine learning model
- Communication internally with MCWD's PMLM manager to share and interpret data

Outreach:

- External communications approach – mass and targeted emails, personalized emails / phone calls, website, media inquiries
    - Identification of which MCWD Programs contribute to content development
    - Identification of which agency partners are engaged and when; this scope includes gathering of data on this topic. Recommendations will be limited to a high level, such as identifying which anticipated flood tiers should result in communications being pushed to partner contacts, rather than messaging.
- How incoming phone calls and emails are handled

Permitting:

- Emergency permitting (i.e. Erosion Control for eroded areas, Waterbody Crossings & Structures) and reasonable timelines

Policy Planning:

- Leverage relationships to foster communication and trust between MCWD and partner agencies

Project Planning:

- Leverage regional relationships to foster communication and trust between MCWD and partner agencies

Ultimately, each Program will have a defined role in flood response for each flood tier (and each location of interest, as applicable), which will be documented in a bulleted list, one-pager, or matrix/matrices.

Assumptions: Operations Planning

- One 1.5-hour workshop with all four Core Team members to ensure alignment amongst team.
- One 1.5-hour workshop with all members of MCWD Flood Action Team, including representative(s) from each MCWD Program, to review flood action roles as a larger group, discuss minor roles, and any outstanding questions.

Deliverables: Operations Planning

- Meeting documentation of current flood response roles by program.
- Recommended flood response roles by program and flood tier will be included in Flood Action Plan.

2.1.2 Lessons Learned

Dam Management Lessons Learned (Flood Action Core Team):

Understanding past dam operations, the decisions that lead to particular management operations, and system responses is critical to learn from the past and document lessons for future use.

As the District Engineer, Stantec will compile and document key parameters that serve as “rule-of-thumb” guidance for understanding hydrology and hydraulics as they relate to flood risk within MCWD. These parameters will be compiled into a summary document that serves as a reference to MCWD’s decision makers. Examples of parameters that will be documented include the following:

- The time it takes for the gage at Hiawatha to experience change implemented at the Gray’s Bay Dam,
- Duration of peak flows within Minnehaha Creek after a storm event,
- The time it takes for Lake Minnetonka to drawdown incrementally,
- Available storage in the creek corridor,
- Timing for runoff to reach Lake Minnetonka from various contributing watersheds, and
- Capacity of Lake Minnetonka between various water levels (normal water level, ordinary high water level) and flood stage.

This task also includes a methodical review of recent precipitation events and dam operations, to debrief and reflect on operational decisions. The team will review the information available at the time of decisions, what decisions were made, the impact of the subsequent rainfall and operational decisions on the landscape, and communications with agency partners. The team will also identify how data could have been interpreted differently or how decisions could have been made differently. Discussions will consider what data resources were used to make decisions and why. Discussions will also reflect and document how

partner agencies were engaged and their ability to assist MCWD in achieving flood response goals. This effort will consist of two workshops to discuss and document the thought process behind decisions to open or close the Gray's Bay Dam and will allow the reflection of lessons learned to inform dam operations in the future. Priority will be given to the 2024 season, due to robust data availability and those decisions being fresh for the Flood Action Core Team. This effort may identify data deficiencies and identify opportunities for collection of additional data in the future. Future recommendations for flood action response will consider the lessons identified through this process.

An example of a lesson learned is how flows in the creek are highly dependent on rainfall intensity, and how that information can be used to better inform communication decisions with external partners. Lessons learned can help develop and refine MCWD's understanding of hydrologic characteristics to better understand and communicate flood risk.

Assumptions: Lessons Learned

- Review of flood scenarios to inform lessons learned will consider up to five dam operation events.
- Up to two 2-hour workshops with Flood Action Core Team to discuss dam operations lessons learned.
- No new data or modeling will be completed.
- Engagement will be with the District Engineer and with District Staff and will not include District Partners or other external agencies.

Deliverables: Lessons Learned

- Workshop documentation of lessons learned
- Recommendations from lessons learned to be included in Flood Action Plan

3 Flood Action Plan

The resulting Flood Action Plan will be a concise document that will be used to guide the District through their flood response during each flood phase (i.e., pre-flood, during flood, and post-flood). Our goal is to write a plan that is usable and directive. The Plan will memorialize lessons learned from the 2014 through 2024 flood seasons but will primarily be used to guide the District's planning and response to future floods, providing clear roles, responsibilities, and timelines for District staff. The Plan will address all relevant District Programs (i.e., Administrator, Outreach, Permitting, Policy Planning, Project Planning, Project Maintenance and Land Management, Research & Monitoring). Standard Operating Procedures (SOPs) will be documented for each flood tier or phase (pre-, during, or post-flood), based on information gathered throughout the project. SOPs will identify which program is responsible for each component of the SOP.

A draft table of contents is as follows:

1. **Introduction & Purpose**

2. **Flood Tiers** – Task 1 will define key flood event thresholds. The plan document will provide clear, measurable or trackable metrics to identify future flood event thresholds. Flood event thresholds will impact the District's level of response to each event.

3. **Summary of key hydrologic and hydraulic parameters for the MCWD watershed to inform flood response decisions** – as identified and complied in task 2.1.2.

4. **District Roles & Responsibilities for each flood category and each District Program** - The plan will contain essential operational steps describing the District's response during an event. Working sessions with District staff and notes from the 2014 through 2024 flood seasons will inform the action steps. Steps may include:

    - Predicting flood order of magnitude using flood tiers and ongoing monitoring data
    - How incoming calls and emails are handled and passed along to relevant District staff
    - When relevant agencies or the public should be informed of flooding via communications like calls, website updates, etc.
    - Plans for collecting data during flooding (drone for photos, survey flood extents, localized gage readings)
    - Clarifying how emergency permits should be handled by permitting staff and what type of work / damage might require emergency permits
    - Post flood recovery implementation

5. **Recommendations -** The plan will also contain recommendations for future flood action planning and response, such as opportunities to improve data, leverage technology, advance partnerships, and tailor communications.

To ensure a plan that will serve as a useful resource for the District, the review process will be critical. Stantec will deliver a plan draft that District staff will review, mark-up, and discuss. Following review, a meeting between Stantec staff and District staff will be held to ensure the final draft aligns with the project goals.

Assumptions: Flood Action Plan

- Stantec will provide MCWD with a rough draft outline of the Flood Action Plan at about 25% along in plan writing. A check-in meeting between key District staff and Stantec following the outline will ensure plan is on track.
- Stantec will provide MCWD with a 90% complete draft of the Flood Action Plan. A check-in meeting will be held to discuss MCWD edits before Stantec delivers the final product.
- Stantec's scope excludes development of plan sections about: identifying specific stakeholders, relationship of this plan to other District plans, how to coordinate field operations, notification messages and content to stakeholders, resource sharing and inter-agency coordination, external agency roles and responsibilities, and post flood recovery implementation actions.

Deliverables: Flood Action Plan

- Draft and final plan document. Document may take the form of a formal plan or a series of 1-page guidance documents.

3.1 Project Management

Stantec values and understands MCWD's desire for a collaborative approach to developing the Flood Action Plan. Thorough engagement with MCWD staff throughout the scope of work will allow Stantec to keep additional project management and coordination efforts to a minimum.

Assumptions: Project Management

- Up to six hours of project management check-in meetings with MCWD project manager, including time to prepare brief meeting notes.
- MCWD's Project Manager (Kate Moran) will facilitate all scheduling with other MCWD staff.

Deliverables: Project Management

- Brief meeting notes to document project management check-in meetings.

4 Budget, Roles, and Schedule

4.1 Team Roles

Rena Weis, PE will serve as project manager and will lead development of the plan content. Rena will lead meetings with District Staff and the District Engineer to ensure that we are gathering the necessary information and understanding the full scope of the District's operations.

Chris Meehan, PE, CFM is your District Engineer and will serve a critical role in plan content development. Chris understands the nuances of Gray's Bay dam operations and his institutional knowledge of watershed response and timing will ensure the plan reflects real operations.

Katie Kemmitt will serve as the lead plan writer. Katie's work developing comprehensive watershed management plans and other, more targeted plans for watersheds will ensure that you end up with a plan that is succinct, usable and directive.

Matthew Lieuallen will serve as senior technical advisor for the project. He is an expert in advancing programmatic approaches to strengthening the resilience of our communities. He has extensive experience in the areas of operational and emergency planning for dams.

4.2 Budget

Budget estimate by task is provided in Table 1 below.

Reference: **Proposed Scope of Services for MCWD Flood Action Plan**

Table 1. Fee Estimate and Schedule for the Flood Action Plan

Name	Meehan, Chris	Weis, Rena	Kemmitt, Katie	Lieuallen, Matthew
	District Engineer	Project Manager / Water Resources Engineer	Planner	Flood Response Specialist
Project Billing Rate	$230	$156	$156	$230
Total Hours	41	129	86	4
Fee	$9,430	$20,124	$13,416	$920

Task Number	Task Name	Hours by Team Member				Hours per Task	Total
1	Identify Flood Categories	19.5	56.0		2.0	77.5	$ 13,681
2	Operations Planning	17.0	47.0	29.0		93.0	$ 15,766
3	Plan Writing	4.0	13.0	50.0	2.0	69.0	$ 11,208
4	Project Management		6.0			6.0	$ 936
	TOTAL	40.5	122.0	79.0	4.0	245.5	$ 41,591

4.3 Schedule

Our anticipated project schedule starts from date of delivery of the requested MCWD data. An example of our schedule is shown in weeks below and assumes Board approval on August 22, with a signed contract in place by August 29, and all data received by September 5 (Table 2). In this example, we anticipate final delivery of the plan by the end of December 2024. The schedule would shift accordingly based on Board approval, contracting, and data delivery.

Table 2. Anticipated schedule from data delivery, in weeks.

Task	Week															
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Task 1 Identify Flood Categories																
Task 2 Operations Planning																
Task 3 Plan Writing																
Project Management																

5 Qualifications and Experience

Stantec serves as the District Engineer for MCWD and has a long history of advising the District through their water resources problems. We understand the nuances of the operations of Gray's Bay Dam. Stantec helped develop the dam operations and has been assisting in making decisions related to the dam for many years. Stantec (formerly Wenck) completed the 2014 Flood Report, which will be a key document used to draft the Flood Action Plan.

Our unique team of engineers and watershed planners understand the longstanding issues the District faces with precipitation, storms, and flood response and are eager to create a plan that will clearly guide staff through events, from tracking and planning, to community engagement.

Flood Action Core Team Engineer, *Minnehaha Creek Watershed District*, 2024

Chris Meehan, the District Engineer, has been a key holder of institutional knowledge and practical experience in operation of the Gray's Bay Dam. In absence of a PMLM program, Chris has been a vital component to managing dam flows to minimize flooding and high stream flows in Minnehaha Creek. Throughout the past decade, Chris has been consistently engaged in tracking rainfall forecasts and is

attuned to hydrology within the watershed. Chris' unmatched understanding of watershed hydrology and timing within MCWD is invaluable to the effort of preparing a Flood Action Plan. He has routinely provided advice on dam operations and level of flood risk throughout the 2024 season, in collaboration with the MCWD Flood Core Action Team via on-call services and weekly meetings with MCWD staff.

MCWD 2014 Flood Report, *Minnehaha Creek Watershed District,* 2014

2014 was a year of record flooding in the MCWD. Following the flood season, Wenck completed an all-encompassing report that documented flood conditions and extent across the watershed, organizational response, and lessons learned. The report highlighted a need for a cohesive District flood response.

MCWD experienced record flooding in 2014 that resulted in an estimate of over 1 million dollars in damages. Stantec completed a report memorializing the protocols and procedures implemented during 2014. The report documents the extent of the flooding events and the impact on District resources, evaluates the organizational impacts across all District departments, and serves as key background information to be used to guide the Flood Action Plan.

EV6057 2022 Spring Flood After Action Review, *Government of the Northwest Territories (GNWT), Canada,* In progress

Matthiew Lieuallen was the technical advisor for development of an after-action review of the Government of the Northwest Territories (GNWT) response and recovery-related activities following the 2022 flooding that impacted the Town of Hay River, K'atl'odeeche First Nation reserve, and neighboring communities. Through a partnership between our North America-based Ready and Resilient Communities Team and our Northwest Territories/Yukon Planning Team, Stantec was able to combine its disaster response and recovery experience with local knowledge of the area and the client to effectively engage with GNWT staff, first responders, Town of Hay River government officials, as well as the community. Following a thorough data review and public engagement, a final After-Action Report was delivered that identifies the observations and lessons learned associated with the preparedness and response related to the flooding. A separate AAR was developed to address lessons learned associated with recovery-related activities.

Josephine County Emergency Operations Plan, *Josephine County, Oregon,* 2021

In early 2020, Josephine County's Emergency Management department reached out to Stantec's Ready and Resilient Communities team to support the development of a global update to their County's Emergency Operations Plan (EOP). The Josephine County Community Emergency Operations Plan (EOP) is an all-hazards plan that describes how the County and its whole community of partners, will organize and respond to emergencies and disasters in the community. The EOP provides a framework for coordinated response and recovery activities during circumstances that exceed local capabilities and describes how various agencies and organizations in the County and its communities will coordinate resources and activities with other federal, State, local, tribal and non-governmental organizations.

Stantec, led by Matthew Lieuallen, worked with the County to develop a total refresh of their EOP to ensure that it would not be just another plan that is updated, then sits on a shelf with the hope it is rarely used. The global update to the County's EOP included development of easy to follow quick guides that could easily be picked up and understood in the event of an emergency that would require quick and efficient response, inclusion of the City of Grants Pass an Cave Junction as important partners in response and recovery, a refresh of the County's Emergency Support Functions into four easy to understand and manage annexes,

and overall visual improvements to the EOP with the inclusion of more tables, graphics, organizational charts and much more.

After a year of careful planning and workshops with the County to identify what was most critical for the EOP update, Stantec delivered the overhauled EOP to the County in October 2021.

Fourth Generation Watershed Management Plan, *Shingle Creek and West Mississippi Watershed Management Commissions,* 2023

Katie Kemmitt, water resource scientist and planner, led the Shingle Creek and West Mississippi Watershed Management Commissions (WMC) through development of their Fourth Generation Watershed Management Plan, which serves as the WMCs' guiding document for 10 years. Development of the plan required thorough self-evaluation, critique, and future thinking with the Technical Advisory Committee and Commission and facilitated by Katie and the Stantec team. The plan was developed and completed over the course of a year and is currently being used to guide the Watersheds' activities, from their Capital Improvement Program to their education and outreach activities. Through development of this plan, Katie and the Stantec team have demonstrated their ability to synthesize WMC operations into an easy-to-use guidance document to lead the WMCs through their annual actions.

6 District Resources

- Attendance at workshops and meetings with Stantec team.
- Records of dam operations (including time of day), hourly precipitation, water surface elevations, shallow groundwater levels, and flows, in a format that can be manipulated for analysis. MCWD should provide all these data in tabular and graphed format. MCWD should provide all data that has been collected by MCWD and other agencies.
- Cross sections of Minnehaha Creek and tributaries that are monitored by RESNET system.
- Dam operation SOPs.
- Copies of any existing SOPs or notes from past and current dam operators.
- Review of interim deliverables.

Best regards,

STANTEC CONSULTING SERVICES INC.

Rena Weis, P.E.
Water Resources Engineer
Phone: 763-252-6889
Rena.weis@stantec.com

Chris Meehan, P.E.
Senior Principal
Phone: 763-252-6844
Mobile: 612-321-6365
Christopher.meehan@stantec.com