MINNEHAHA CREEK
WATERSHED DISTRICT
QUALITY OF WATER, QUALITY OF LIFE

Meeting: Board Meeting
Meeting date: 4/14/2022
Agenda Item #: 10.1
Item type: Permit Consideration

Title: Permit 22-016: Morningside Flood Risk Reduction Project

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Purpose:
Present staff review of the Morningside Flood Risk Reduction Project permit application for Board of Managers consideration, and review the proposed cooperative agreement recommended as a condition of permit approval.

Executive Summary:
The City of Edina (Applicant) has applied for a Minnehaha Creek Watershed District (MCWD) permit for the Morningside Flood Risk Reduction Project. The project's principal goal of reducing flood risk for the Morningside Neighborhood is proposed to be accomplished by excavating and expanding two stormwater detention ponds in the Lynn/Kipling and Weber Park areas. During normal precipitation events, water will flow from Lynn/Kipling to Weber ponds. The Weber pond is proposed to be fitted with a pumping system that would manage water levels in the pond and create storage by moving water downstream before, during, and after storm events, while not exacerbating downstream flood risk. Water conveyed downstream from the proposed project passes through the municipal storm sewer system of St. Louis Park, before entering the City of Minneapolis' system and discharging into stormwater ponds constructed in the 1990s by the Minneapolis Park and Recreation Board, the City of Minneapolis and the Minnehaha Creek Watershed District (MCWD), adjacent to Bde Mka Ska in the City of Minneapolis.

Based on the submitted design information the project complies with applicable MCWD regulations (Erosion Control, Floodplain Alteration, Stormwater Management). The project meets volume control and downstream impacts requirements of the MCWD stormwater management rule and will not increase peak water levels in downstream Bde Mka Ska during design storm events. The rate control criteria of the rule do not apply, but nevertheless are met.

However, a consequence of the proposed pumping is a decrease in efficiency in the downstream stormwater management ponds adjacent to Bde Mka Ska, due to their receiving a larger annual volume of water under the proposed project conditions. Therefore, as presently designed, while providing upstream water quality improvements, the project would have the unintended effect of increasing total phosphorus (TP) on the order of 8lbs annually and increasing total suspended solids (TSS) on the order of 1900lbs annually to Bde Mka Ska. This represents roughly 1% of the annual watershed phosphorus load to Bde Mka Ska.

The MCWD stormwater management rule does not contain a specific criterion addressing this type of volume or water quality impact, although counsel advises that the Board of Managers, on the basis of the atypical nature of the impact, does have the authority to impose conditions to address it. The City of Edina is interested in working collaboratively with the Minnehaha Creek Watershed District and the Minneapolis Park and Recreation Board to explore solutions to offset this impact, which may also present the opportunity to create a net improvement in water quality by reducing phosphorus discharge to Bde Mka Ska beyond the eight pounds annually needed to mitigate the project increase. This collaboration would take place through a cooperative agreement which is a recommended condition of approval to the permit.

April 14, 2022 Board Meeting
At the April 14, 2022 meeting staff will summarize for the Board of Managers the proposed project, and how it meets applicable criteria in MCWD regulations, and frame opportunities for collaboration among the City of Edina the Minneapolis Park and Recreation Board, and the MCWD.

The permit is being brought before the Board due to the high level of interest expressed by the public and other agencies, in addition to the potential for a partnership project.

The Board will consider a decision on the permit application, including recommended condition requiring that a cooperative agreement be in place before permit issuance. Edina advises that this condition is acceptable. The Board also will be asked to authorize the Administrator to enter into the cooperative agreement.

Project Summary:
Location:
The Morningside neighborhood is in the northeast corner of the City of Edina. It is bordered by St. Louis Park on the west and north, and by Minneapolis on the east. The project is made up of three areas all within the Morningside Neighborhood of Edina: Weber Park, Weber Pond, and Lynn/Kipling areas (see attached site maps). Water flows east from the Lynn/Kipling area to Weber Pond via Edina storm sewer located on West 42nd Street and, in parallel, through pipes that run underneath the adjacent residential block, before entering Weber Pond. From Weber Pond, the stormwater travels northeast through St. Louis Park and Minneapolis stormwater conveyances before discharging into the Bde Maka Ska stormwater ponds (see attached flow map). Both Weber Pond and the Lynn/Kipling Area are groundwater fed and therefore, have baseflow entering and discharging from the ponding areas; this flow is interchangeably referred to as baseflow and/or groundwater flow throughout this memo and the accompanying Stantec memo.

Project Goals:
Below is a summary subset of project goals:

1. Reduce flood risk, and protect principal residential structures, in Morningside neighborhood through a combination of additional flood storage, increased storm sewer capacity, and smart infrastructure.
2. Maintain or lower flood levels on the surface in the adjacent cities of St. Louis Park and Minneapolis such that no principal residential structures in these cities have an increase in flood risk.
3. Limit increases in flood volume to Bde Maka Ska and the adjacent ponds, such that the estimated rise for modeled design storm events can be considered negligible by applicable regulatory standards
4. Maintain usability of Weber Woods as a recreational area, particularly its use as an informal dog park.

Project Areas and Proposed Improvements:
The proposed project consists of work in three areas:

- Area 1 – Lynn/Kipling
- Area 2 – Weber Park
- Area 3 – Weber Pond/Weber Woods

Lynn/Kipling:
This total area is around 3 acres in size and the existing pond footprint is 1.6 acres. The change to the pond footprint is negligible, while the pond bottom will be substantially lowered to provide additional storage capacity. Currently, the basin provides 10 acre-feet of storage between the Normal Water Level (NWL) of 865 feet and elevation of 870 feet (equal to elevation of Lynn and Kipling Avenues). The proposed area will provide a net 20 acre-feet of storage by lowering and expanding the ponding area. The outlet of the Lynn/Kipling area will be modified such that the NWL will be lowered from 865-feet to 862.5-feet.

Additionally, storm sewer infrastructure will be modified. Currently, the storm sewer pipe north of this area is lower than the inlets to the pond, which causes runoff to bypass this area and flow downstream. This pipe will be

decommissioned to force high flows into the pond, allowing for particulate settling and improving water quality after leaving the pond, The existing northeast outlet will be maintained at elevation 865.3 to convey these high flows to Bde Maka Ska stormwater ponds after bypassing Weber Pond. The pond will gain a larger inlet in the southwest corner to accept potential outflow from Lynn Avenue area which will protect homes from flooding. Finally, low flows will be routed to Weber Pond via a new southeast pipe at elevation 862.5-feet that outlets to storm sewer infrastructure on West 42nd Street.

Weber Park:
Improvements proposed in 12-acre Weber Park include new pedestrian trails, reoriented baseball/softball areas, and a stormwater drainage swale. The drainage swale and adjacent corridor will provide (1) local drainage of the park during rainfall and snowmelt events, (2) overflow and conveyance of water from Grimes Avenue to Weber Pond during larger (5-year or 3.6-inches in a 24-hour period) storm events, and (3) a walking trail that connects the park to the trails in Weber Woods.

Weber Pond and Weber Woods:
Weber Pond is an existing stormwater pond of 3.1 acres, bordered by single-family homes on the south and east, Weber Park on the west, and Weber Woods to the north. Weber Pond is proposed to be expanded in footprint to 6.1 acres, via excavation into the Weber Woods. The expanded pond will be accompanied with an earthen trail system around the perimeter, and two boardwalks traversing the ponds which will provide walking loops for the public. In addition to the existing gravity outlet, the expanded Weber Pond will include a pumped outlet, which will have three modes of operation:

1. Periodic pumping:
    a. The pond will be pumped for several hours each day to maintain the normal water level (NWL) below the gravity outlet to compensate for groundwater inflows. The current design proposes periodic pumping occurring over the course of 1-3 hours daily in order to draw pond levels down from 859.2-859.5 (depending on groundwater inflow) back to 859 feet. This will discharge around 0.82 acre-feet daily downstream.
2. Predictive pumping:
    a. The pump will also be used in advance of storm events to draw the water level down. The amount of drawdown will be determined through monitoring data from the water level in Weber Pond and the National Weather Service forecast. The predictive pumping is only proposed to be used for 10-year (4.3-inches in a 24 hour period) and above storm events. In advance of these storm events, the pond will be lowered by up to 3 feet (~16.7 acre-feet discharged downstream). The system will receive updated weather forecasts and water level data every 15 minutes and adapt accordingly. By pumping ahead of storms, the City will create more storage in Weber Pond to accept water from the surrounding neighborhood. The pond will draw down below the NWL in advance of large storm events.
3. Pumping during and after events:
    a. The pond will be pumped during and after large (10-year and above) storm events to manage Weber Pond water levels. The amount pumped will be determined by water levels at Weber Pond and the National Weather Service forecast. The exact parameters for this operation mode will be based on the developed algorithm.

District Rule Analysis:
The proposed project will trigger MCWD regulations for Erosion Control, Floodplain Alteration and Stormwater Management. Based on review to date, the project meets all criteria in applicable MCWD rules. Below is a summary of applicable rules and project compliance.

Erosion Control

The District's erosion control rule requires a sediment and erosion control plan for sites that disturb greater than 5,000 square feet of land or excavate, fill, or stockpile 50 cubic yards of material. The project is proposing close to 700,000 square feet (16-acres) of land disturbance; therefore, the rule is triggered.

Per section 5(a) and 5(b) of the rule, an erosion and sediment control (ESC) plan is required. The Applicant has opted to turn in the ESC plan once the contractor is selected, to allow the contractor to prepare a plan that is best coordinated with the contractor's construction sequencing. Submission and approval of an ESC plan is recommended as a condition of permit issuance.

Per section 6 of the rule, a geotechnical report and soil boring results have been provided.

Section 7 of the rule does not apply, no additional information was requested.

Section 8 of the rule does not apply as the applicant is a public entity.

In summary, upon satisfaction of 5(a) and 5(b), the project meets the requirements of the Erosion Control rule.

Floodplain Alteration

The District's Floodplain Alteration rule regulates grading, fill and excavation within the 100-year floodplain of waterbodies and requires no net loss of floodplain storage by requiring projects to provide compensatory flood storage to offset any fill. The project proposes excavating below the 100-year high water elevation of Weber Pond; therefore, the rule is triggered.

Per section 3(a) of the rule, fill shall not cause a net decrease in storage capacity below the projected 100-year high water elevation of a waterbody. The project proposes a net increase in floodplain storage capacity of ~130,000 -cubic yards.

Section 3(b) of the rule does not apply, the alteration occurs in the floodplain of a waterbody, not a watercourse.

Section 3(c) of the rule does not apply.

Per Section 3(d), impervious surface within the 10-year floodplain cannot account for more than 10% of the floodplain area of the parcels. ~3,000 square-feet of the new trails in Weber Park are in the 10-year floodplain which is 0.8% of that floodplain, and therefore within the allowable amount.

Section 3(f) of the rule only applies to construction of new structures; therefore, the rule does not apply.

In summary, the project meets the requirements of the Floodplain Alteration rule.

Stormwater Management

The project will include concrete pad additions to ballfield areas and sidewalk reconstruction. The District's Stormwater Management Rule is applied to projects that propose the creation of new or replacement of existing impervious surface. The project proposes redevelopment of a site greater than five acres; greater than 40% of the site will be disturbed; the site impervious surface is proposed to decrease from 1.27 to 1.24 acres. Therefore, per paragraph 4(e) of the rule, volume control will be required for the site's non-exempt impervious surface. The Applicant has proposed to meet the District's Stormwater Management rule by amending site soils to provide for enhanced infiltration per MCWD's Abstraction Credit Schedule in Appendix A of the Stormwater Management Rule. Paragraph 8(b) of the rule, limiting impact to downstream waterbodies, also is applicable.

Table 1: Existing and Proposed Site Conditions	
Existing impervious	*Proposed impervious*
1.27 acres 57, 014 square feet	1.23 acres 53,771 square feet

Section 3(a) does not apply as the applicant is only required to provide volume control for the site.

Section 3(b) does not apply as the applicant is only required to provide volume control for the site.

Per section 3(c), the Project proposes redevelopment of a site greater than five acres with more than 40% site disturbance. Therefore, volume control is required for the entire site's non-exempt impervious surface (12,470 square feet of proposed trail surface would be exempt under District rule, due to pervious buffer at least half the width of the trail on either side). The site's proposed non-exempt impervious surface is 1.23 acres (approximately 53,500 square feet). The Applicant is required to abstract the first 1-inch of rainfall from the site's non-exempt impervious surface and is proposing to accomplish the abstraction through soil amendments in the irrigated sport fields and greenspaces. The Volume Abstraction Credit Schedule of MCWD's Stormwater Management Rule states that soil amendments will receive a 0.5-inch credit over the soil amendment area. For this site, this is equivalent to approximately 108,000 square feet of required soil amendment area. The Applicant has exceeded this requirement by proposing 120,900 square feet of soil amendment area. Soil amendments must be designed in compliance with the Minnesota Stormwater Manual and MCWD guidance. The guidance requires that of the top one foot of soil, the bottom four inches be loosened and eight inches of compost amended soil be added on top.

Section 3(d) does not apply as the applicant is required only to provide volume control.

Per section 3(e) of the rule, the applicant must provide two-feet of vertical freeboard between the 100-year high water level (HWL) and the low openings of structures, from stormwater BMPS and waterbodies. The applicant has provided sufficient modeling to confirm that the HWLs of the Lynn/Kipling and Weber Ponds will be reduced.

Section 7 of the rule does not apply as the Applicant does not propose using a regional stormwater facility for treatment.

Section 8(a) of the rule regulates new point source discharges into waterbodies. The project does not propose a new point source to any waterbody.

Per section 8(b) of the rule, no activity subject to this rule may alter a site in a manner that results in an increase in the bounce of water level for any downstream lake or wetland, beyond those specified in Table 1 of the rule. In this instance the downstream receiving waterbody is Bde Mka Ska. For lakes, the rule does not permit any water level rise during the 1-, 10-, and 100-year design storms. Modeling shows that there will be no impact to water level during these events. The project as proposed is in conformance with the impact on downstream waterbody requirements of the rule.

Table 2: Existing and Proposed Peak Water Levels for Bde Maka Ska			
	1-year	*10-year*	*100-year*
Existing	853.66	854.33	855.68
Proposed	853.64	854.29	855.65
Change ft	-0.02	-0.04	-0.03

Section 9 of the rule does not apply as the Applicant is a public agency.

Rate Control:

As noted above, paragraph 3(b) limiting an increase in peak flows from a site during specified storm events, does not apply to the project. Nevertheless, because of the public interest in the project, the City of Edina modeled peak flows at

the City of Edina boundary, and at the point of discharge into Bde Maka Ska, during one-, 10-, and 100-year storm events. The modeling results indicate no increase in peak flow at these locations during any event:

Table 3: Existing and Proposed Rate Summary			
Location	*Storm Event*	*Pre-Development Discharge Rates CFS*	*Post-Development Discharge Rates CFS*
City Boundary	1-year	20	12
	10-year	29	14
	100-year	65	34
Bde Maka Ska	1-year	59	58
	10-year	91	90
	100-year	229	227

Increased Pollutant Load:
As noted at the top of this memorandum, this project will have an atypical water quality impact on the downgradient receiving water, Bde Maka Ska. The drainage catchment area of about 340 acres outlets into the District-managed stormwater ponds adjacent to Bde Maka Ska for treatment before ultimately discharging into Bde Maka Ska. The added volume discharged from the project will reduce the residence time, or the average length of time water spends, in the District ponds. This will reduce the pond's efficiency in removing total phosphorus (TP) and total suspended sediment (TSS). The District engineer estimates that the net effect of the project will increase total phosphorus loading by eight additional pounds per year of TP, and about 1,900 additional pounds of TSS, entering Bde Maka Ska.

The District stormwater rule regulates TP increase resulting from land disturbance and increase in hard surface. It does not contain criteria to address TP increase resulting from an engineered system that will collect and discharge added volumes of water to a downgradient receiving water. District counsel advises that there is legal authority to impose a condition to mitigate an unusual impact even where there is not a specific criterion in the rule. There is not District permitting experience with this sort of system or volume impact, and so the District has not had a reason to develop specific rule criteria.The City of Edina advises that the condition is acceptable.

The District engineer advises that there are means within the catchment of removing TP such that a net increase in annual TP discharge to Bde Maka Ska can be avoided, with TSS incidentally managed as well. The City of Edina has indicated a willingness to undertake such a project in conjunction with the Morningside Flood Risk Reduction project. If the Board exercises its authority to require that the TP increase be addressed, staff recommends that an agreement between the District and the City, by which the City commits to providing for no net TP increase at Bde Maka Ska, be a condition of the permit. The City concurs in the condition.

Additional Partnership Opportunity
As the Board is aware, the Minneapolis Park and Recreation Board (MPRB) and the City of Minneapolis have been engaged in the District review of this project, with concerns about impacts on Bde Maka Ska. The MPRB and the City of Edina have expressed a willingness to explore a cooperative project that can achieve the eight-pound annual reduction for the purpose of this permit, but also provide for a perhaps substantially larger water quality benefit for the lake.

MCWD has had numerous conversations with the Cities of Edina and Minneapolis and the MPRB to investigate this opportunity. Through these conversations, Edina and MPRB staff have agreed to bring to their boards a proposed cooperative agreement for a feasibility study. City of Minneapolis staff have advised that they are not advancing participation in the agreement to policymakers at this time. The District prepared an agreement, which has been reviewed and modified and now has the concurrence of staff of all three agencies. Under the agreement, the City of Edina would contract with its engineer, Barr Engineering, to identify and assess both larger projects that the parties might undertake collaboratively, and smaller projects that Edina could undertake on its own, to meet its permit obligation, if a collaborative project does not proceed for any reason. The feasibility process would engage the parties in identifying the universe of project options to be reviewed, and in support and review of Barr's assessment. The report

will provide, for selected alternatives, conceptual designs and concept-level performance and cost estimates. The proposed cost allocation is as follows: Edina would bear that part of the cost relating to its own, unilateral project options; of the cost to assess collaborative projects, the MPRB would contribute $15,000, Edina would contribute $17,225, and the MCWD would contribute $36,675. The proposed agreement is included in the meeting packet.

The cooperative agreement would not commit any party to participating in or contributing funding to a project. Staff will meet to review the feasibility report and will report to their boards. If there is interest in a collaborative project, a second cooperative agreement, for project implementation, would be negotiated and brought before the Board for review. It is possible that the City of Minneapolis could be reengaged at this time as well. Absent a collaborative project, the City of Edina would be obligated to proceed with a smaller project.

Conclusion

At the April 14, 2022 Board Meeting, staff will present the Morningside Flood Risk Reduction project, a regulatory summary, and a cooperative agreement to work in partnership with the City of Edina and the Minneapolis Park and Recreation Board to study solutions to mitigate or go beyond the eight-pound annual reduction in phosphorus loading to Bde Mka Ska.

Staff recommends permit approval with:
The following conditions for permit issuance:

1. Submission of Erosion and Sediment control plan to comply with sections 5a and 5b of the Erosion Control rule
2. Submission of name and contract information for individual responsible for compliance with ESC plan
3. Signing of cooperative agreement under which the City of Edina commits to securing an annual eight- pound reduction in TP discharge to Bde Maka Ska

And the following stipulation:

4. Within 60 days of permit approval, the City of Edina will prepare and obtain the District administrator's approval of a pumping plan that conforms the volume and frequency of water discharge into the conveyance system to design assumptions in the application, and includes volume monitoring sufficient to compare operation against assumptions. The plan will provide that if operation may increase total phosphorus load to Bde Maka Ska beyond design assumptions, the City, after consulting with the District, will take reasonable steps to modify operation to address the increase.

In addition, staff recommends that the Board approve permit #22-016 and authorize the District administrator to sign the proposed cooperative agreement, with any appropriate minor modifications.

Supporting documents (list attachments):

- Cooperative agreement
- Barr Feasibility Scope
- March 10th Operations and Programming Committee Packet Items
    - Memo
    - Weber Pond Site Map
    - Lynn/Kipling Site Map
    - Flow Map
    - Stantec Memo

COOPERATIVE AGREEMENT
Bde Maka Ska Water Quality Improvement Project

This Cooperative Agreement ("Agreement") is made by and among the City of Edina, a statutory city ("Edina"); the Minneapolis Park and Recreation Board, a department of the City of Minneapolis governed independently by a board of nine elected commissioners (MPRB); and the Minnehaha Creek Watershed District, a watershed district with purposes and powers as set forth at Minnesota Statutes Chapters 103B and 103D (MCWD) (together, the "parties").

Recitals

A. Pursuant to Minnesota Statutes §103D.345, Edina has applied to the MCWD for a permit to construct the Morningside Flood Risk Reduction project. The project purpose is to reduce flood risk for the Morningside neighborhood, in Edina, by excavating and expanding two stormwater detention ponds and employing a pumping regime to maintain flood storage and move water into the municipal conveyance system, and ultimately to Bde Maka Ska, in a manner that reserves storage capacity for large rainfall events.

B. The project as designed will reduce the annual load of total phosphorus by 34 pounds, and of total suspended solids (TSS) by 14,600 pounds, at the Edina municipal boundary. Before reaching Bde Maka Ska, the conveyance discharges into a system of stormwater treatment ponds adjacent to the lake, constructed in the 1990's in a cooperative effort of the City of Minneapolis, the MPRB and the MCWD, and maintained by the MCWD. As a result of the altered flow regime that Edina proposes, the MCWD has determined that these ponds will operate less efficiently, so that at the point of discharge into Bde Maka Ska, there will be a net increase in annual loading of about eight pounds of total phosphorus and about 1,900 pounds of TSS.

C. As a condition of the MCWD permit, Edina agrees to prevent this water quality impact by effecting an equivalent removal of total phosphorus from the stormwater flow within the catchment before its discharge into Bde Maka Ska. The need for a water quality project auxiliary to the Morningside project offers an opportunity for a project with a more substantial water quality benefit.

D. Bde Maka Ska is a highly valued public resource within Minneapolis and is subject to intensive recreational use. The MPRB and the MCWD prioritize the careful management of the lake for its water quality, its ecological health and its other beneficial uses. Their cooperative efforts over the past 30 years have served to substantially reduce phosphorus level within Bde Maka Ska and to maintain it at a level of quality exceeding state standards.

E. The parties wish to cooperate to identify and evaluate project options for Edina to meet the permit condition ("Edina project"), and for the parties together to achieve a more substantial water quality benefit for Bde Maka Ska ("cooperative project"). Accordingly, the parties enter into this Agreement, intending it to be legally binding.

Terms

1. Edina Commitment

a. Edina will provide for a durable structural or designed practice that reduces total phosphorus, at the point of discharge into Bde Maka Ska, by at least eight pounds per year. A "durable" practice is one that

is reliable, is designed for at least a 20-year life, can be measured for performance, and is subject to a legally enforceable maintenance operation. Edina will calculate the TSS flux to Bde Maka Ska, and the reduction in flux, resulting from the practice.

b. If the practice is not constructed pursuant to a subsequent agreement to which the MCWD is a party, the following terms apply:

(i) The practice design is subject to MCWD review and MCWD concurrence as to design performance and durability within the meaning of paragraph 1.a, before construction.

(ii) Edina and the MCWD will agree to a reasonable performance measurement and reporting regime. If the practice does not sustain a removal of eight pounds per year of total phosphorus at the point of discharge into Bde Maka Ska during the first ten years, Edina will take feasible steps to achieve that performance.

(iii) Edina and the MCWD will enter into a maintenance agreement by which Edina will provide for maintenance of the practice in perpetuity.

c. Edina's obligation under this section 1 arises on the MCWD's written determination and notice to the Parties that a cooperative project will not move forward. Edina's unilateral practice will be functional within 18 months of the notice date.

2. Commitments of the Parties

a. Each party will fulfill its obligations under this Agreement.

b. Each party will contribute technical and data resources, and coordinate in good faith, to support the feasibility scope under this Agreement with respect to the identification and assessment of both Edina and cooperative projects.

c. This Agreement does not commit a party to a cooperative project. However, each party recognizes that the public expenditure to be made hereunder, to identify and assess potential cooperative projects, rests on its representation that it is willing to contribute human and financial resources to implement such a project. Any binding commitment of the parties with respect to project implementation will be made by means of a further agreement.

d. In parallel to the feasibility work under this Agreement, the parties will review financing, funding and scheduling elements of a cooperative project. Each party will participate in good faith to: (i) determine, at a staff level, its capacity and willingness to participate in a cooperative project and (ii) share this information with the parties, in order to foster a timely and efficient transition to project implementation in the event the parties determine to proceed.

e. The MCWD, with the cooperation of the parties as it may request, will explore sources of external project funding or financing.

3. Feasibility Study

a. Edina will retain Barr Engineering to perform a feasibility review of both cooperative and unilateral practices. Edina will circulate a proposed scope of services for the parties' review and concurrence.

b. The scope of services will conform to the following:

(i) Barr will develop a proposed set of Edina and cooperative project alternatives for its assessment. The parties will consult to adjust and concur on the set of alternatives. The set will include Edina alternatives sufficient to provide a high level of certainty that a feasible Edina project exists if a cooperative project does not proceed.

(ii) Review of project alternatives will assess feasibility to a degree of confidence typical for such assessments. The review will consider, but not be limited to, the following:

- Technical function
- Operation and maintenance requirements
- Performance reliability (uncertainties surrounding 20-year operation)
- Site ownership, availability, existing encumbrances and potential use conflicts
- Permits and approvals needed
- Need for historic site or species of concern review
- Need for review of environmental site conditions

(iii) When Barr has assessed technical, siting and construction feasibility, the parties will consult to concur on deletion of infeasible alternatives. As to remaining alternatives, the scope will provide for the following:

- Conceptual design
- Expected performance (total phosphorus and TSS removal, other water quality benefits)
- Concept-level construction, operation and lifecycle cost estimates

(iv) The final feasibility report will be issued about six months from Barr's initiation of work.

c. Each party will be responsive to information or data requests from Barr, and will provide staff-level guidance as to feasibility questions within that party's control.

d. The assessment will include the following participation of the parties. The form in which engagements occur (in-person or remote meeting, correspondence, etc.) will be decided by informal party consensus. The parties will:

(i) Review and concur in the Barr scope of services.

(ii) Collaboratively identify and concur in the minimum sets of Edina and cooperative alternatives to be assessed.

(iii) Support Barr's work by providing information and data.

(iv) Review Barr's preliminary assessment and concur in elimination of infeasible alternatives prior to step 3.b(iii), above.

(v) Review Barr's draft feasibility report, provide comment, and consult on request of a party.

(vi) Review final report and consult to consider feasible project alternatives, select one or more preferred project(s), and frame process to determine desire to proceed on cooperative project and transition to project development.

e. Edina will provide for the Barr project-specific agreement to name the MCWD as a third-party beneficiary with respect to performance of the project-specific scope and duty of care. However, only Edina will direct Barr in the performance of the work.

f. Edina will provide in the Barr project-specific agreement that Barr retains no right of property in the final feasibility report or any products derivative thereof. All such materials will be public materials and no party will assert a property interest or copyright therein. The agreement may state that any reuse of such materials without written verification or adaptation by Barr for the specific purpose intended will be at the user's sole risk and without liability to Barr.

g. If, in performing the work, Barr requires from a party any data or information in which the party asserts an intellectual property right or a trade secret classification, the party will consult in good faith to determine how Barr may make use of the necessary data or information while the party's interest or legal duty is protected. A party shares data and information without representation or warranty including but not limited to a warranty of fitness, merchantability, accuracy or completeness.

4. Cost of Feasibility Assessment.

a. The Barr scope will be in the form of task lump sum or hourly not-to-exceed. The scope will separate tasks relating to Edina projects and those relating to cooperative projects, except that tasks common to both categories of project will indicate an appropriate allocation of cost to each category.

b. Edina will bear the cost of the feasibility review for Edina projects. Of the $68,900 cost of the feasibility review for cooperative projects, the MPRB will contribute $15,000, Edina will contribute $17,225, and the MCWD will contribute $36,675. Edina will be responsible for any cost in excess of that set forth in the Barr scope. On transmittal of the final feasibility report, Edina may invoice the MPRB and the MCWD for their reimbursement shares, which each will pay within 30 days.

c. Each party will bear the cost of its participation under the Agreement.

5. Parties Independent. This Agreement is not a joint powers agreement. No party hereto agrees to be responsible for the actions or omissions of another party within the meaning of Minnesota Statutes §471.59, subdivision 1a(a). No employee, representative or contractor of a party acts in any respect as the agent or representative of another party. Nothing in this Agreement limits or waives any immunity, defense or liability limit with respect to any other party or any third party, nor does anything herein create any right in any third party.

6. Public Communication. Each party may communicate with the public as to the Agreement and the work being performed under it, but will note the participation and collaboration of the other parties. At the request of a party, the parties will consult to consider common public communication activity.

7. Party Representatives. The following individuals will represent their party under this Agreement. By executing this Agreement, each party delegates to its representative the authority to take or direct all actions of its party for which the Agreement provides. A party may change its representative by advising the other parties in writing.

[insert representative, title and contact information]

8. Legally Binding. The Agreement incorporates the above Recitals, is made for mutual consideration and is legally binding on the parties.

9. Effective Date; Termination. The Agreement is effective when fully executed by the parties and terminates six months after delivery of the final feasibility report.

MINNEHAHA CREEK WATERSHED DISTRICT

Approved for Form & Execution

_____
MCWD Attorney

_____ Date:
Sherry White, President

CITY of EDINA

MINNEAPOLIS PARK & RECREATION BOARD

resourceful. naturally.
engineering and environmental consultants

BARR

April 5, 2022
Chad Millner, Ross Bintner, and Jessica Wilson
Engineering Department
City of Edina
7450 Metro Boulevard
Edina, MN 55439

Re: Proposal for City of Edina MFIP Clean Water Retrofit

Dear Mr. Millner, Mr. Bintner and Ms. Wilson:

This letter presents our proposed scope of services and associated cost estimate for providing services to evaluate clean water (water quality) retrofit alternatives related to the city of Edina's (City's) Morningside Flood Improvement Project (MFIP). The scope of services presented below is based on general work tasks discussed with the City's engineering staff and informed by our previous work on the MFIP and associated meetings with other stakeholders and potential project partners including Minnehaha Creek Watershed District (MCWD), the City of Minneapolis, and the Minneapolis Park and Recreation Board (MPRB).

When signed by both parties, this proposed scope of work services constitutes a Project Specific Supplemental Agreement (PSSA) to the Master Services Agreement between the City of Edina and Barr Engineering Co (Barr).

1.0 Project Understanding

Final design of the Morningside Flood Improvement Project (MFIP) is nearing completion. Construction is anticipated to begin in May 2022, in conjunction with street reconstruction planned for the Morningside neighborhood in both 2022 and 2023. While the MFIP will provide a water quality benefit to the water leaving Edina (lower total phosphorus and lower total suspended solids), the additional volume of water passing downstream and into stormwater ponds adjacent to Bde Maka Ska has the potential to decrease the efficiency of those ponds (i.e., flush them out more quickly, not allowing for as much "settling"), which results in an estimated average increase of 8 pounds of total phosphorus and about 1,900 lbs of total suspended solids leaving the stormwater ponds and entering Bde Maka Ska on an annual basis. Mitigating the estimated additional load is not a requirement for the MCWD permit; however, we understand the City of Edina would like to partner with MCWD, City of Minneapolis, and the MPRB (collectively referred to as "project partners" throughout this document) on a separate project to identify and evaluate retrofit project alternatives to improve the water quality performance of the stormwater system extending from the MFIP to Bde Maka Ska with the goal of not only mitigating the additional 8 pounds (annual average) of total phosphorus and 1,900 pounds (annual average) of total suspended solids, but also further improving the quality of water entering Bde Maka Ska.

Construction of the MFIP requires a permit from the MCWD. The permit has been submitted and has been reviewed and deemed complete by MCWD staff, and will go before MCWD's Board on April 14th,

2022, for consideration of granting the permit. We understand that at the same meeting, MCWD's Board will also consider a partnership to evaluate a clean water (water quality) retrofit project.

We understand the City would like to collaborate with project partners to investigate two separate but related clean water retrofit project alternatives. The first (Scope 1, Edina Project Alternatives), described below in Section 2.1 is limited to what the City can do within the City of Edina's municipal limits, either with more infrastructure or modifications to the function of the currently proposed MFIP. The second (Scope 2, Cooperative Project Alternatives), described below in Section 2.2 would evaluate additional alternatives outside the City of Edina, to reduce loading to Bde Maka Ska and further improve the water quality entering the lake. We also understand that Scope 1 is intended to develop alternatives sufficient to provide a high level of certainty that a feasible Edina project exists if a cooperative project does not proceed.

While the City is seeking a cooperative agreement with project partners, we understand that we will be directed only by City of Edina staff. We also understand that City staff will be leading collaboration and coordination with the project partners who will be providing (1) relevant data, (2) input on and review of project alternatives, (3) guidance related to feasibility questions, and (4) review of our final feasibility report.

2.0 Project Scope of Work

The following subsections provide Barr's detailed scope of work, associated assumptions, and estimated costs to evaluate potential water quality retrofit alternatives related to the MFIP.

2.1 Scope 1 – Evaluate Retrofit Alternatives Within Edina ("Edina Project Alternatives")

The focus of Scope 1 will be to modify physical components of the MFIP or function of the MFIP within the City of Edina's municipal limits to reduce total phosphorus and sediment loads to Bde Maka Ska, such that the future average annual loading to Bde Maka Ska is equal to or better than the existing water quality condition.

2.1.1 Task 1 - Define Alternatives for Further Evaluation

The first task will be to collaborate with the project partners to define retrofit alternatives for further evaluation during an initial project kick-off meeting (Meeting 1 – All Project Partners). For the purposes of developing a cost estimate associated with this first task, City and Barr staff have identified four likely alternatives to evaluate further and our cost estimate also assumes evaluation of a fifth alternative (please note that all retrofit alternatives will be further adjusted and agreed upon during the initial project kick-off meeting with all project partners):

1. Operate Weber Pond at a higher normal water level to reduce influx of water and mass.
2. Predictively pump Weber Pond prior to smaller events (smaller than the 10% annual-chance event) when the water is less turbid, to make room for more storage volume and holding time, to improve particle settling.

3. Amend the bottom and/or banks of Weber Pond with iron-enhanced sand to remove dissolved phosphorus load as it flows into the pond.
4. Operate filtration system downstream of Weber Pond, which may require a pump system, or modifications to the currently proposed pump system.
5. Additional alternative to be determined.

If more than five alternatives are identified during the initial project kick-off meeting with the project partners, this scope of services and associated cost estimate may need to be amended.

2.1.2 Task 2 – Conduct Quantitative Analysis, Modeling, and Feasibility Assessment

Barr will estimate the reductions that can be achieved by each of the five alternatives defined in Task 1. We intend to continue using P8 where feasible, however P8 may not be able to model or represent the pumping system strategy described in Alternative 2 listed in Section 2.1.1. We expect that the other four alternatives can be modeled in P8 by adjusting flow rates, removal rates, and other parameters. The goal is to determine the magnitude of the modifications necessary so that the future total phosphorus and sediment loading is equal to or better than the existing loading to Bde Maka Ska.

Beyond assessing the technical function as described above, this task will also include concept-level assessments of the following:

- operation and maintenance requirements
- performance reliability
- site ownership, availability, existing encumbrances and potential use conflicts
- permits and approvals needed
- need for historic site or species of concern review
- need for review of environmental conditions

This task will include one meeting with City staff (Meeting 2 – Barr and City of Edina) to provide an update on the preliminary modeling results and make any necessary revisions based on City input, and then an additional meeting with the project partners (Meeting 3 – All Project Partners) to discuss the preliminary results and agree upon removal of alternatives that are infeasible or are cost-prohibitive.

2.1.3 Task 3 – Refine Alternatives and Develop Planning-level Opinion of Probable Costs

This task will consist of refining the remaining alternatives and developing planning-level opinion of probable construction costs, including both initial capital and future operating expenses to estimate an annual, long-term cost for each of the remaining alternatives (5 or less). The cost estimates will be considered screening-level, order-of-magnitude estimates, based on the limited level of project detail. The cost estimates are valid in the context of a relative comparison of the alternatives. The costs developed are intended to be used as criteria in comparing the different alternatives.

2.1.4 Task 4 – Develop Feasibility Report

Finally, we will develop a feasibility report to document the work conducted during Tasks 1 through 3 and to provide a summary of the feasible retrofit alternatives within the City of Edina's municipal limits that could reduce the loading into Bde Maka Ska. The feasibility report will include descriptions of each option, a quantitative summary of water quality and flow results, concept level figures/sketches of each option where applicable, and planning-level opinions of probable cost. The report will also include a description of potential drawbacks or limitations of the physical or functional retrofits, where applicable.

The draft feasibility report will be shared with all project partners for their review and comment.

One meeting will be held after the draft feasibility report is shared with the project partners (Meeting 4 – All Project Partners) to discuss any remaining review comments and to identify the most likely path(s) forward.

2.1.5 Scope 1 ("Edina Project Alternatives") Deliverables

- Task 1 - A documented list of alternatives to be evaluated within Edina's municipal limits.
- Task 2 – Model files will be delivered to MCWD's consultant (Stantec) for review, and will be made available to any other project partners upon request.
- Task 4 – A feasibility report (draft and final versions will be provided).

2.1.6 Scope 1 ("Edina Project Alternatives") Assumptions

- Up to five (5) alternatives for consideration, limited to within Edina's municipal limits, to reduce the future loading to Bde Maka Ska to match, or improve, the existing loading.
- Up to four (4) meetings, assumed to be held virtually unless the group preference is in person at that time:
    - Meeting 1 – All Project Partners - to define alternatives.
    - Meeting 2 – Barr and City of Edina - to discuss preliminary model results.
    - Meeting 3 – All Project Partners - to discuss the preliminary results and agree upon removal of alternatives that are infeasible.
    - Meeting 4 – All Project Partners - to discuss any feasibility report review comments and to identify the most likely path(s) forward.
- Meeting format (in-person, remote, hybrid) will be decided by informal project partner consensus.
- For the draft feasibility report, project partners will provide one set of review comments per partner. Each project partner will provide review comments within 2 weeks of receiving the draft report.
- Barr will incorporate one round of review comments from the project partners after their review of the draft feasibility report.

2.2 Scope 2 – Evaluate Retrofit Alternatives to Achieve Greater Loading Reduction ("Cooperative Project Alternatives")

The focus of Scope 2 will be to modify physical components of the larger stormwater management system, extending from within the Morningside neighborhood to Bde Maka Ska, to gain additional phosphorus and sediment load reduction to Bde Maka Ska, such that the future average annual loading to Bde Maka Ska is improved over the existing condition. While the modifications will primarily be focused on opportunities in Minneapolis, some but may include alternatives from Scope 1 that are limited to Edina's municipal limits.

2.2.1 Task 1 - Define Alternatives For Further Evaluation

The first task will be to collaborate with the project partners to define retrofit alternatives for further evaluation during an initial project kick-off meeting (Meeting 1 – All Project Partners). Based on initial input from project partners, and for the purposes of developing our cost estimate, we anticipate five alternatives to evaluate that would be located within Minneapolis, and our cost estimate assumes evaluation of two additional alternatives that may be defined during the initial project kick-off meeting (please note that all retrofit alternatives will be further adjusted and agreed upon during the initial project kick-off meeting with all project partners):

1. Stormwater reuse, such as in the Minikahda Golf Course.
2. Pumped iron-enhanced sand filter at Bde Maka Ska water quality ponds.
3. Pumped cartridge filter at Bde Maka Ska water quality ponds.
4. Alum dosing of the Bde Maka Ska water quality ponds.
5. Split flow in Minneapolis to send regular low flows with largely a dissolved nutrient load straight to Bde Maka Ska, bypassing the Bde Maka Ska water quality ponds.
6. Additional option determined by the project partners.
7. Additional option determined by the project partners.

If more than seven alternatives are identified during the initial project kick-off meeting with the project partners, this scope of services and associated cost estimate may need to be amended.

2.2.2 Task 2 – Conduct Quantitative Analysis, Modeling, and Feasibility Assessment

Barr will estimate the load reductions that can be achieved by each of the seven alternatives defined in Task 1. We intend to continue using P8 where feasible. The goal is to determine the magnitude of the benefits that can be achieved with realistic retrofit projects within Minneapolis. We also anticipate that XPSWMM modeling will need to be performed for any alternatives where there are flow routing changes, such as the alternative to split flow in Minneapolis.

Beyond assessing the technical function as described above, this task will also include concept-level assessments of the following:

- operation and maintenance requirements
- performance reliability
- site ownership, availability, existing encumbrances and potential use conflicts
- permits and approvals needed
- need for historic site or species of concern review
- need for review of environmental conditions

This task will include one meeting with City staff (Meeting 2 – Barr and City of Edina) to provide an update on the preliminary modeling results and make any necessary revisions based on City input, and then an additional meeting with the project partners (Meeting 3 – All Project Partners) to discuss the preliminary results and agree upon removal of alternatives that are infeasible.

2.2.3 Task 3 – Refined Alternatives and Develop Planning-level Opinion of Probable Costs

This task will consist of refining the remaining alternatives and developing planning-level opinion of probable construction costs, including both initial capital and future operating expenses to estimate an annual, long-term cost for each of the remaining alternatives (7 or less). The cost estimates will be considered screening-level, order-of-magnitude estimates, based on the limited level of project detail. The cost estimates are valid in the context of a relative comparison of the alternatives. The costs developed are intended to be used as criteria in comparing the different alternatives.

2.2.4 Task 4 – Develop Feasibility Report

Finally, we will develop a feasibility report to document the work conducted during Tasks 1 through 3 and to provide a summary of the feasible retrofit alternatives that could be undertaken to reduce the loading into Bde Maka Ska. The feasibility report will include descriptions of each option, a quantitative summary of water quality and flow results, concept level figures/sketches of each option where applicable, and planning-level opinions of probable cost. The report will also include a description of potential drawbacks or limitations of the physical or functional retrofits, where applicable.

The draft feasibility report will be shared with all project partners for their review and comment.

One meeting will be held after the draft feasibility report is shared with the project partners (Meeting 4 – All Project Partners) to discuss any remaining review comments and to identify the most likely path(s) forward.

2.2.5 Scope 2 ("Cooperative Project Alternatives") Deliverables:

- Task 1 - A documented list of alternatives to be evaluated to provide the most benefit to Bde Maka Ska regarding phosphorus and sediment load reduction.

- Task 2 – Model files will be delivered to MCWD's consultant (Stantec) for review, and will be made available to any other project partners upon request.
- Task 3 – A feasibility report (draft and final versions will be provided).

2.2.6 Scope 2 ("Cooperative Project Alternatives") Assumptions:

- Up to seven (7) alternatives for consideration, to reduce the future loading to Bde Maka Ska.
- Four (4) meetings:
    - Meeting 1 – All Project Partners - to define alternatives (same meeting listed in Scope 1)
    - Meeting 2 – Barr and City of Edina - to discuss preliminary model results. (same meeting listed in Scope 1, or can be separated into two shorter meetings if necessary)
    - Meeting 3 – All Project Partners - to discuss the preliminary results and agree upon removal of alternatives that are infeasible. (same meeting listed in Scope 1)
    - Meeting 4 – All Project Partners - to discuss any feasibility report review comments and to identify the most likely path(s) forward. (same meeting listed in Scope 1)
- Meeting format (in-person, remote, hybrid) will be decided by informal project partner consensus.
- For the draft feasibility report, project partners will provide one set of review comments per partner. Each project partner will provide review comments within 2 weeks of receiving the draft report.
- Barr will incorporate one round of review comments from the project partners after their review of the draft feasibility report.

2.3 Project Management

Project management and coordination with both internal staff, City staff, and all project partners will be critical to keep the project on schedule and within scope and budget. We anticipate bi-weekly internal meetings, and bi-weekly email updates to City staff and/or Teams meetings with City staff, depending on preference.

3.0 Quality Control Plan

Barr will establish review and checking procedures for deliverables for the project. The Quality Assurance/Quality Control (QA/QC) measures will generally include review of all technical work by internal independent QA/QC reviewers. Quality control includes quality control checks of data, computations, concept figures/sketches, report text, opinions of cost, materials received, and deliverables. Project quality control will generally be accomplished via two levels of review: task lead review (typically conducted Barr's task leads or someone designated by them), and QA/QC review team review (conducted by Barr's Senior Reviewer assigned to the relevant task - the purpose of this review will be primarily to offer "big picture" advice).

4.0 Project Cost Estimate and Estimated Schedule

The total estimated cost for the scopes of work described above is $123,900; $55,000 for Scope 1 and $68,900 for Scope 2. The table below summarizes the cost and estimated completion date for each task. Our cost estimate and estimated schedule assumes the project will be completed based on the assumptions listed in Sections 2.01.6 and 2.2.6 above.

Scope 1 – Tasks	Estimated Total Cost[1,2]	Estimated 2022 Completion Date[3]
Meeting 1 (all project partners)	--	Mid-May
Task 1 – Define Alternatives for Further Evaluation	$10,200	May 30
Meeting 2 (Edina/Barr)	--	Mid-June
Meeting 3 (all project partners)	--	Late-June / Early-July
Task 2 – Conduct Quantitative Analysis, Modeling, and Feasibility Assessment	$19,000	July 22
Task 3 – Refine Alternatives and Develop Planning-level Opinion of Costs	$10,600	August 3
Meeting 4 (all project partners)	--	Early-August
Task 4 – Develop Feasibility Report	$15,200	September 15
Project Total:	**$55,000**	--

[1]Based on project assumptions detailed in Section 2.1.6
[2]Costs associated with quality control and project management are included with each separate task listed above
[3]Assumes Barr is provided notice to proceed by May 1, 2022

Scope 2 – Tasks	Estimated Total Cost[1,2]	Estimated 2022 Completion Date[3]
Meeting 1 (all project partners)	--	Mid-May
Task 1 – Define Alternatives for Further Evaluation	$11,600	May 30
Meeting 2 (Edina/Barr)	--	Mid-June
Meeting 3 (all project partners)	--	Late-June / Early-July
Task 2 – Conduct Quantitative Analysis, Modeling, and Feasibility Assessment	$24,700	July 22
Task 3 – Refine Alternatives and Develop Planning-level Opinion of Costs	$14,200	August 3
Meeting 4 (all project partners)	--	Early-August
Task 4 – Develop Feasibility Report	$18,400	September 15
Project Total:	**$68,900**	--

[1]Based on project assumptions detailed in Section 2.2.6
[2]Costs associated with quality control and project management are included with each separate task listed above
[3]Assumes Barr is provided notice to proceed by May 1, 2022

We propose to complete this work on a time and expense basis and will begin work as soon as the City provides notice to proceed, which we assume to be by May 1, 2022. As to the City of Edina only, Barr will complete the proposed scope of work in accordance with the Master Agreement for Professional Engineering Services and this PSSA.

Per this PSSA:

- Barr names the signatories of the Morningside Feasibility Partnership Cooperative Agreement as third-party beneficiaries with respect to performance of services under this PSSA only. However, only Edina will direct Barr in the performance of the work. The Master Agreement for Professional Engineering Services between Barr and the City of Edina is not incorporated by reference into this PSSA as to any third-party beneficiaries. A named third-party beneficiary is a third-party beneficiary with regard to the PSSA only.

- Barr retains no right of property in the final feasibility report or any products derivative therefrom. All such materials will be public materials and no party will assert a property interest or copyright therein. Any reuse of such materials without written verification or adaptation by Barr for the specific purpose intended will be at the user's sole risk and without liability to Barr.

- Barr shall perform its services consistent with the professional skill and care ordinarily provided by firms practicing in the same or similar locality under the same or similar circumstances. This is Barr's sole commitment with respect to the performance of professional services.

We appreciate the opportunity to continue providing engineering services to the City of Edina and look forward to working with you on this project. If the proposed scope of services is satisfactory, please sign a copy of this letter in the space provided and return it to us. If you have any questions about the scope of services, please contact Sarah Stratton (Principal-in-Charge) at 952-832-2860 (sstratton@barr.com) or Cory Anderson (Project Manager) at 952-832-2872 (canderson@barr.com).

Sincerely yours,

BARR ENGINEERING CO.

Sarah Stratton

Its Vice President

Accepted this _____ day of _____, 2022

City of Edina

By _____

Its _____