

Memorandum

To: BCWMC Board of Commissioners
From: Barr Engineering Co. (Stephanie Johnson, PhD, PE, and Karen Chandler, PE)
Subject: Item 5D. Consider Approval of Scope of Work for Bassett Creek Valley Floodplain and Stormwater Management Study Update
BCWMC March 20, 2025 Meeting Agenda
Date: March 5, 2025

5D. Consider Approval of Scope of Work for Bassett Creek Valley Floodplain and Stormwater Management Study Update

Recommendations:

1. Consider approving this scope of work and budget along with cost share agreement with the City of Minneapolis and direct the Engineer to complete an update to the Bassett Creek Valley Floodplain and Stormwater Management Study to incorporate existing conditions within the area.

Background

The Bassett Creek Valley is located within the Bryn Mawr Neighborhood of the City of Minneapolis, extending along the Bassett Creek corridor from Interstate 94 to Cedar Lake Road. The area receives stormwater runoff from over 20,000 acres of upstream and surrounding drainage areas and lies within a natural low area where the open channel of Bassett Creek enters the Bassett Creek tunnels. The Bassett Creek Valley area is plagued by historic contamination, poor soils, and high groundwater. In addition, the 100-year floodplain within the Bassett Creek Valley extends up and beyond the creek's channel and into surrounding neighborhood and commercial areas, negatively impacting existing properties and hindering redevelopment opportunities.

The BCWMC and City of Minneapolis partnered to complete a floodplain feasibility study within the Bassett Creek Valley in 2019 (the "Bassett Creek Valley – Floodplain and Stormwater Management Study"). This study also included an additional 70 acres to the west of the Bassett Creek Valley (along the creek) as part of the study area. Stated goals for the 2019 study were to identify opportunities to provide flood storage, improve water quality, and bring regional amenities to the study area. Results from the study included several concepts for large capital improvement projects to improve floodplain and stormwater management within the study area, including a proposed concept to expand the Bassett Creek cross-sectional channel area throughout the valley to increase available floodplain storage. Concepts also included the identification of potential regional stormwater management opportunities to provide supplemental storage within the local drainage area and achieve some water quality treatment.

Outcomes of the 2019 study included several recommendations for next steps and future phases of planning for improvements within the study area, including:

- Meeting with regulatory agencies to confirm permitting requirements for proposed work within the creek corridor;

- Gathering additional information on environmental and geotechnical conditions within the proposed project area;
- Updating the most recent XPSWMM models for this area with proposed project concepts and also quantifying impacts under additional storm events;
- Advancing project concepts to the next level of planning by refining designs to incorporate comments from agency partners and regulatory agencies;
- Considering land availability and potential for acquisitions, as needed, for advancing project concepts.

Since completion of the 2019 study, additional information has become available on soil and groundwater conditions within the Bassett Creek Valley study area, updated regional stormwater modeling and floodplain extents have been developed, and surrounding capital improvement projects that were considered as opportunities to provide additional stormwater management as part of the 2019 effort have now been completed.

We understand that the BCWMC and their partners at the City of Minneapolis would like to revisit results of the 2019 study and update the estimated costs and benefits of the proposed project concepts taking into account new information on: current land ownership and development considerations within the Bassett Creek Valley; capital projects completed over the past 5 years; updated hydrologic and hydraulic models; and recently completed environmental review and capital improvement projects within the study area.

We also understand that the BCWMC has identified additional agency partners to be included within the next phase of planning for floodplain and stormwater management improvements within the Bassett Creek Valley. The information developed within this study will be used to help inform next steps for evaluating the feasibility of proposed floodplain and stormwater improvements within the Bassett Creek Valley.

Proposed Scope of Work

The core tasks involved within the proposed scope of work include:

1. Gather and review past materials.
2. Reconvene project stakeholders to continue discussion on the planning for proposed concepts to increase flood resiliency, reduce flood risk, and improve stormwater management within the Bassett Creek Valley. A project kickoff meeting with project partners will be focused on: the review of outcomes from previous planning initiatives, confirming project partner goals for improved water management, and identifying additional and updated data that's available for use.
3. Update most recently available stormwater models for the study area to reflect current conditions, including key capital improvement projects completed within the past few years, and to incorporate regional planning-level scenarios.

4. Revise previously proposed project concepts to incorporate new information. Review and identify potential alternatives for regional water management. Considerations regarding environmental contamination and permitting requirements based on our past project experience in the proposed project corridor will be included.
5. Update cost-benefit estimates.
6. Develop recommendations for next steps based on findings.

Following is a description of proposed tasks to complete this work:

Task 1: Project Kickoff Meeting with Project Partners

We will begin the project with a project kick-off meeting between Barr, BCWMC staff, staff from the City of Minneapolis, Minneapolis Park and Recreation Board, and Hennepin County. The intent of this meeting will be to bring the project partners back together, introduce new partner representatives to the water management challenges within the Bassett Creek Valley, review recommended concepts and findings from the previous phase of work, confirm partner goals and priorities related to floodplain and stormwater management within the study area, and identify any updated / newly available information that should be included within this next phase of the study.

We assume that the project kickoff meeting will be held in-person. We also assume that the BCWMC Administrator will schedule the meeting and secure the meeting location. In preparation for the kick-off meeting, Barr will gather and perform an initial review of the available files and final deliverables for the 2019 study and compare those with Barr's most recent understanding of stormwater conditions within the study area. Following the meeting, we will distribute meeting notes that include documenting any requests for additional information.

Deliverables

- Project kickoff meeting agenda, meeting materials, and notes, including requests for information.

Task 2: Review and Update Watershed Models

Within this task, Barr will compile the best available stormwater modeling and stormwater infrastructure information for the study area with the primary focus on the portion of the study area from the tunnel inlet upstream to Highway 55. We believe this will include, but may not be limited to, the following information:

- Models from Stantec (formerly Wenck) for the scenarios evaluated in the 2019 Bassett Creek Valley Study
- Most current version of the BCWMC XPSWMM model (approved in 2022)
- Most current version of the City of Minneapolis XPSWMM or PCSWMM models for the study area
- Construction drawings for capital improvements and other projects recently implemented in the study area including the improvements at Bryn Mawr Meadows Park and the BNSF Bridge Replacement project

- Other project information provided by project partners (including information provided as a result of Task 1)

Barr will update the BCWMC XPSWMM model, adding in the major capital improvement projects completed since the model was last updated (as noted above) to create a baseline existing conditions model. Additionally, using the City of Minneapolis modeling, we will add resolution to the BCWMC XPSWMM model subwatersheds, storage, and storm sewer conveyance immediately adjacent to Bassett Creek in up to 6 locations. To identify locations that may benefit from additional resolution, we will review and compare the updated BCWMC model results with the City's model results for the creek as well as key inflows to the creek within the study area to confirm similar performance for the 100-year event. However, given the original development of the BCWMC model was based on the City's model we assume the models will perform similarly and no other revisions will be needed to achieve similar results.

We will run the existing conditions model for the Atlas 14 100- and 500-year, 24-hour rainfall events. We will summarize results and develop existing conditions inundation mapping for the study area for these events. This information will be presented in a single plan view map of the study area. Additionally, using the inundation mapping and available parcel data, we will estimate impacted properties for flooding under existing conditions.

Using the updated BCWMC existing conditions model, we will then review and segregate the key inflow hydrographs for the main storm sewer inflows to the creek in the project area for the 100-year event. The goal of this assessment is to identify those discharges having the most significant impact on the first flood peak observed within the Bassett Creek channel just upstream of the tunnel inlet. Previous studies identified that this first flood peak is primarily the result of local runoff from drainage areas downstream of Highway 55 that first drain through this location before the larger regional drainage area peak comes through later.

Next, we will model the three creek expansion scenarios of the Bassett Creek corridor as presented in the 2019 Bassett Creek Valley Floodplain and Stormwater Management Study to evaluate expected impacts of the proposed concepts based on current conditions for both the 100- and 500-year events. We assume that these concepts will not include the proposed potential additional storage within Bryn Mawr Meadows Park, as the park redevelopment project has now been completed.

Deliverables

- Updated BCWMC XPSWMM model for existing conditions within study area.
- Existing conditions inundation mapping.
- Summary of results for the Atlas 14 100- and 500-year, 24-hour rainfall events under existing conditions and the three creek expansion scenarios.

Task 3: Refine Preferred Water Management Scenarios

Task 3a: Refine Preferred Water Management Scenarios / Review for Additional Regional Treatment Options

Based on information received in Task 1 related to partner goals, input on project concepts from the 2019 plan, current state of capital projects, land ownership considerations, etc., and the evaluation of previously recommended scenarios, Barr will review the study area in terms of additional water

management opportunities. We assume we will identify up to three water management scenarios, including further refinement of the channel storage and modification concept considering findings from Barr's work up to this point. If the recommended opportunities for regional treatment identified in the 2019 study are no longer viable, we will identify other potential stormwater management opportunities targeting alternative locations within the local watershed that could potentially reduce flood elevations and/or provide water quality treatment.

Also, within this task, Barr will review information that we have previously collected and developed related to area contamination, soils, top of bank estimates as a proxy for MNDNR ordinary high water levels, and regulated wetlands within the proposed project corridor as part of past projects. Referencing this information, we will perform a screening-level review of properties immediately adjacent to the creek within the proposed project corridor, and classify them as having a 'high', 'medium', or 'low' potential for environmental contamination.

Based on the information reviewed and Barr's past project experience within the study area, we will identify the various state and federal permits that we anticipate would be needed or should be confirmed if needed for the proposed creek expansion scenarios. Findings from this and the environmental contamination screenings will be referenced when developing the three water management scenarios noted above. Results will also be used to inform the cost-benefit analysis (Task 4).

We will develop up to three concept figures for the three water management scenarios. We will model these scenarios in the updated BCWMC XPSWMM model for the 100- and 500-year, 24-hour rainfall events and will summarize the results in comparison to the baseline conditions.

Task 3b: Meeting #2 with Project Partners

A second (in-person) meeting will be held with staff from the BCWMC, City of Minneapolis, Minneapolis Park and Recreation Board, and Hennepin County to share the updated water management scenarios and supporting information developed in Task 3a. The desired outcome of this meeting will be to receive feedback on the three refined water management scenarios before moving forward into quantifying benefits. Feedback received in this meeting will be incorporated back into the concepts before proceeding to the next tasks.

Deliverables

- Updated BCWMC XP-SWMM model for proposed water management scenarios.
- Preliminary results on impacts to area flooding for up to 3 refined water management scenarios for the Atlas 14 100- and 500-year, 24-hour rainfall events, including modeling, results summary, and concept figures.
- Project area map with parcels ranked for potential for contamination.
- List of anticipated permits.
- Project meeting agenda, materials, and notes.

Task 4: Benefits and Costs Analysis

Task 4a: Estimate Costs / Benefits

Within this task, we will estimate planning-level costs and quantify the anticipated benefits for the water management scenarios resulting from the preliminary evaluation and conversations with project partners in Task 3. Anticipated benefits to be considered as part of this task include:

- increased flood storage and reductions in flood elevations;
- reduced number of negatively impacted properties from flooding;
- increased developable land area.

For each water management scenario, we will develop inundation mapping using the available LiDAR data and proposed channel modifications, based on the estimated flood elevations for the 100- and 500-year events. We will leverage the proposed inundation mapping, along with available parcel data, to estimate impacted properties and increases in developable land area.

Planning-level cost estimates will include considerations for expected future engineering/design costs, anticipated capital project costs, and a high-level range for potential permitting costs.

Task 4b: Meeting #3 with Project Partners

A third (virtual) meeting will be held with staff from the BCWMC, City of Minneapolis, Minneapolis Park and Recreation Board, and Hennepin County to share results from this task. Any feedback received from this meeting will be incorporated back into the summary of benefits analysis and planning-level costs before final reporting. We assume that feedback received during this third meeting will not require the re-running of stormwater models, regeneration of inundation mapping, or other technical analyses.

Deliverables

- Planning-level cost estimates
- Summary of flood benefits, including proposed scenario inundation mapping
- Project meeting agenda, materials, and notes.

Task 5: Reporting

We will prepare a technical memorandum summarizing the results of Tasks 1 – 4. The memorandum will describe the analyzed floodplain and stormwater management concepts, summarize results from the project area screening performed in Task 3, present a summary of estimated planning-level costs and benefits for the various water management scenarios, and include recommendations for future analyses and next steps.

The scope of work assumes one round of review comments will be provided by BCWMC and partner staff. This task also includes one additional (virtual) meeting, if needed, to discuss feedback on the draft project report and next project steps before finalizing the report.

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Deliverables

- Draft project report.
- One meeting with BCWMC administrator and partner staff to discuss feedback on draft report and next steps (if needed).
- Final report, including final electronic deliverables.

Task 6: Final Presentation

Barr will develop a presentation summarizing results from the study and present the information to the Board of Commissioners of the BCWMC at a regularly scheduled meeting.

Deliverables

- PowerPoint presentation summarizing study results.

Budget

The total estimated cost to complete Tasks 1-5 is \$85,400. Table 1 summarizes the estimated project work by task. Project expenditures will be billed on a time and expense basis.

Table 1 **Estimated project cost**

| Task | | Estimated Cost of Task |
|---------|---|------------------------|
| Task 1: | Project Kickoff Meeting with Partners | \$6,600 |
| Task 2: | Review and Updates to Watershed Models | \$20,500 |
| Task 3: | Refine Preferred Water Management Scenarios; Project Meeting #2 | \$23,600 |
| Task 4: | Benefits and Costs Analysis; Project Meeting #3 | \$17,000 |
| Task 5: | Reporting; Project Meeting #4 (if needed) | \$14,900 |
| Task 6: | Final Presentation | \$2,800 |
| Total | | \$85,400 |

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Schedule

Table 2 summarizes the proposed project schedule associated with each task described in the scope of work. The proposed schedule assumes we will start work in early April.

Table 2 **Proposed project schedule**

| Task | | Estimated Completion Schedule |
|---------|---|-------------------------------|
| Task 1: | Project Kickoff Meeting | April 2025 |
| Task 2: | Review and Updates to Watershed Models | Early June 2025 |
| Task 3: | Refine Preferred Water Management Scenarios; Project Meeting #2 | August 2025 |
| Task 4: | Benefits and Costs Analysis; Project Meeting #3 | October 2025 |
| Task 5: | Reporting; Project Meeting #4 (if needed) | November 2025 |
| Task 6: | Final Presentation | January 2026 |