



## Memorandum

**To:** Bassett Creek Watershed Management Commission  
**From:** Barr Engineering Co.  
**Subject:** Item 5A – Consider Approval of 50% Design Plans for 2021 Bryn Mawr Meadows Water Quality Improvement Project (2020 CIP Project BC-5) - BCWMC January 20, 2022 Meeting Agenda  
**Date:** January 13, 2022  
**Project:** 23271887.00

### **5A Consider Approval of 50% Design Plans for 2021 Bryn Mawr Meadows Water Quality Improvement Project, Minneapolis (2021 CIP Project BC-5)**

#### **Summary:**

**Proposed Work:** 2021 Bryn Mawr Meadows Water Quality Improvement Project, Minneapolis (2021 CIP Project BC-5)

**Basis for Commission Review:** 50% Design Plans Review

**Change in Impervious Surface:** N.A.

#### **Recommendations:**

- 1) Consider approval of 50% drawings
- 2) Consider options for reducing the increase in estimated construction cost
- 3) Authorize Commission Engineer to continue design and bring 90% design plans to a future Commission meeting

The Bassett Creek Watershed Management Commission (BCWMC) is funding the estimated \$912,000 "Water Quality Improvements in Bryn Mawr Meadows Project" (Main Stem Watershed) (2021 CIP Project BC-5):

- \$512,000 funded through a combination of CIP levies collected in tax years 2020 – 2021,
- Remaining \$400,000 funded through a Clean Water Fund grant from the Minnesota Board of Water and Soil Resources.

Unlike most CIP projects where the BCWMC enters into an agreement with a member city to design and construct the project, the BCWMC is designing and overseeing construction management of this project, in close coordination with the Minneapolis Park and Recreation Board (MPRB) and the City of Minneapolis (City). The water quality improvements project will be bid and constructed as part of Phase I of the MPRB's Bryn Mawr Meadows Park Improvements project. At their November 2020 meeting, the Commission approved a timeline for implementation and directed the Commission Engineer to prepare a

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**Page:** 2

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scope of work for project design and engineering. The Commission approved the engineering scope and budget at their June 2021 meeting.

The Commission Engineer completed the 50% design plans. Pursuant to the approved work scope, the Commission must review and approve the design plans.

## **Feasibility Study and Selected Project**

The BCWMC's *Feasibility Report for Bryn Mawr Meadows Water Quality Improvement Project* (Barr Engineering, January 2019) considered three concepts for diverting stormwater from City of Minneapolis storm sewer into Bryn Mawr Meadows Park, directing the water into new stormwater treatment ponds to achieve above-and-beyond water quality improvements. The Commission approved the *Bryn Mawr Meadows Water Quality Improvement Project Feasibility Study* in January 2019 and selected implementation of Concept #3 – Northwest Neighborhood Diversion and Penn Pond Low Flow Diversion. The approved concept would capture and divert stormwater runoff from 45.1-acres of residential area west of Bryn Mawr Meadows Park and low flows that discharge from the Minnesota Department of Transportation's (MnDOT's) Penn Pond. Stormwater runoff from the residential area currently flows to Bassett Creek untreated.

The concept includes the construction of two new stormwater ponds within Bryn Mawr Meadows Park and the diversion of stormwater runoff through the installation of two storm sewer system retrofits: 1) the installation of a low-diversion weir within an existing City of Minneapolis manhole located south of the intersection at Morgan Ave South and Laurel Ave West; and 2) the rerouting of an existing storm sewer connection at the intersection of Laurel and Morgan Avenues, to divert flows from the Northwest Neighborhood into the new stormwater ponds. The feasibility study concept for these two retrofits includes the installation of a new 12-inch pipe to capture and direct flow from the low flow diversion into the stormwater ponds. The rerouting of flows at the Laurel and Morgan Avenues intersection involves combining the flow from 4 existing catch basins into a 15-inch pipe, which would then transmit the stormwater under Morgan Ave and into the ponds at the park. The installation of two new catch basins near the intersection was also included.

As part of the feasibility study, it was estimated that the project would remove an average of 30 pounds of total phosphorus each year; keeping these pollutants from entering Bassett Creek and ultimately the Mississippi River.

The feasibility report for the project formed the basis for the project design. The feasibility report and further project information can be found online at <https://www.bassettcreekwmo.org/projects/all-projects/bryn-mawr-meadows-water-quality-improvement-project>.

## **Design Features – 50% Plans**

The water quality improvement project Concept #3 was included as part of the public engagement process for the MPRB's Bryn Mawr Meadows Park Improvements project. MPRB held public meetings to receive feedback on their proposed park concepts, including the stormwater treatment ponds.

Representatives of the BCWMC attended all four open house events hosted by MPRB, for the project. Public feedback on proposed park concepts was mainly focused on park features and not the water quality improvement project concept.

Project design began following the approval of the final Bryn Mawr Meadows Park concept by the MPRB Board of Commissioners in November 2021. The approved park concept included the relocation and adjustments to the footprints of the water quality project stormwater ponds from the location originally planned for in the feasibility study. Thirty percent plans for the water quality improvement project were developed to accommodate this change and provided to MPRB and City staff for review and comment in December 2021.

Comments received on the 30% plans include a desire to adjust the ponds' outer boundaries to achieve a more naturalized appearance and a request to add one additional catch basin at the corner of Laurel and Morgan Avenues to improve the capture and routing of stormwater from that location. City comments also included the need to replace the pedestrian ramps on the western side of Morgan Avenue at Laurel, given the likely impacts from construction. The requested catch basin and pedestrian ramps have been included in the attached 50% plan set and cost estimate. MPRB's park design team is updating the pond footprints, which will be incorporated into the water quality improvement project plans before the 90% submittal.

Similar to the feasibility study, the main components of the 50% design include:

- 1) Stormwater Ponds within Bryn Mawr Meadows Park. Two stormwater treatment ponds, a pond outlet structure, new storm sewer pipes to connect the ponds, and associated appurtenances will be installed in the northwest area of the park. Pond edges will be landscaped with native plants, that merge into the surrounding park's native planting area.
- 2) Low flow diversion weir within an existing City manhole south of the Morgan and Laurel Avenues intersection and addition of a 12-inch pipe diverting flow into the stormwater treatment ponds.
- 3) Rerouting of city storm sewer and addition of an 18-inch pipe to divert flows from the Northwest Neighborhood. Improvements also include the installation of a new catch basin at the intersection of Morgan and Laurel Avenues. The 15-inch pipe assumed in the project feasibility study was upsized to 18-inch to provide sufficient capacity to carry flow at this location. The 18-inch pipe will cross over the top of an existing 42-inch pipe within Morgan Ave, requiring the use of a pipe saddle to allow for the crossing.

It is estimated that the water quality project, updated to reflect the 50% design, will remove an average of 29 pounds of total phosphorus each year.

## **Site Environmental Considerations**

Environmental impacts and subsurface debris from previous filling and historical site use were identified in the park during investigations completed at the site between 2017 and 2020. These investigations were completed through a grant from Hennepin County on behalf of the City, BCWMC and MPRB in

preparation for the project, and with funding from the City in preparation for the sanitary sewer replacement project extending through the Project area. The investigations identified fill with debris and petroleum-related contamination in site soils. The petroleum contamination was identified in the subsurface soils at about 3 to 7 feet deep along the historical roadway that ran west – east across the site, between the two proposed stormwater pond locations. Debris and historical foundations in the subsurface are also present in a former residential area on the west side of the park as a result of demolition of former homes and filling. Since the time of the 2017 and 2020 investigations, the proposed water quality pond sizes and locations have changed, so limited information is available in the current planned pond areas regarding contamination, but it is anticipated a portion of the on-park stormwater pipe trenches and pond areas have contaminated soils or debris. Metals and petroleum-related contamination were also identified in a groundwater sample at the site.

The scope of work for engineering services for the Bryn Mawr Meadows Water Quality project includes the preparation of a Response Action Plan (RAP) to address soil and groundwater contamination during construction of the project. The scope identifies that the RAP may be developed as a stand-alone document or as part of a RAP being developed for the park reconstruction project. At the time of this presentation, the MPRB has determined they will also pursue the development of a RAP to address contamination that may be encountered during construction of park features. The two RAPs will be developed as a single document, with MPRB funding those portions of the document that address park features. The RAP will be submitted to the MPCA by the MPRB for technical review and approval for the project. The RAP will propose the following actions:

- Excavated soils with petroleum impacts or debris will be segregated and disposed of at a RCRA subtitle D non-hazardous waste landfill. If petroleum contamination is identified at the bottom or sides of the excavations, additional over-excavation will be performed to remove the contaminated soil and replace it with clean soil from onsite to provide a minimum 4-foot clean soil cover between the ponds and contaminated soils. In any areas where a heavy petroleum sheen is observed on soils, a 20-foot buffer is planned.
- Storm sewer trenches in contaminated areas will be lined with a bentonite collar near the ponds to prevent preferential flow through the sewer trench materials of contaminated water into the ponds. Contaminated soils will not be used to backfill utility trenches.
- Field screening and additional soil sampling will be performed to further delineate the extent of contamination in the planned excavation areas. Field observations during the sanitary sewer construction prior to the BCWMC pond construction will also be used to inform the extent of contamination expected during the pond and storm sewer excavations. Depending on those observations, follow up test pits may also be completed to further assess the soils prior to pond construction.
- Buried footings or debris will also be removed and disposed of offsite as needed to implement the project.

- Dewatering water will be discharged to the sanitary sewer under a Metropolitan Council Environmental Services (MCES) Special Discharge Permit.

## Opinion of Cost

The table below summarizes our Engineer’s Opinion of Probable Costs, based on the 50% design plans. The detailed Opinion of Probable Costs is included as an attachment.

**Table 1 Summary of Estimated Costs – Concept #3, 50% Design**

Description		Estimated Cost
Mobilization / Demobilization		\$ 50,000.00
Erosion & Sediment Control		\$ 10,000.00
Traffic Control		\$ 10,000.00
Removals: Curb & Gutter, Pavement, Storm Sewer		\$ 9,412.00
Earthwork: Excavation, Hauling, Disposal, Backfill, and Compaction		\$ 553,034.20
Environmental Response Contingency		\$ 108,000.00
Storm Sewer: Piping, Structures, Collars, and Riprap		\$ 189,975.00
Roadway Restoration: Class 5, Curb & Gutter, Paving		\$ 52,050.00
Vegetation: Seed & Mulch, Plugs, Shrubs, and 3-Year Establishment		\$ 59,500.00
Construction Subtotal <sup>1</sup>		\$ 1,042,000.00
Construction Contingency (15%)		\$ 156,000.00
<b>Total w/Construction Contingency</b>		<b>\$ 1,198,000.00</b>
<b>ESTIMATED ACCURACY RANGE</b>	<b>-15%</b>	<b>\$ 1,019,000.00</b>
	<b>20%</b>	<b>\$ 1,438,000.00</b>

<sup>1</sup> Estimate costs are reported to nearest thousand dollars.

The total estimated project costs including design and engineering are currently over the overall budget allowed for this project. The Opinion of probable construction costs within the feasibility study was estimated at \$611,000. Estimated construction costs at the 50% design are \$1,198,000.

There are several reasons for the difference between estimated costs at the feasibility stage compared to the 50% design, including:

- In the 3.5 years that have passed since the completion of the project feasibility study, unprecedented inflation has greatly increased construction unit costs.
- Additional environmental information collected at the site has shown increased contamination in the stormwater pond areas.
- Design has progressed and additional street removal and reconstruction is required to capture as much of the low flow as possible.
- Recommendations for landscaping along the pond edges have matured. Supplemental plantings in this area will help with vegetation establishment. Originally seed was estimated for costs,

however the ponds will bounce often enough that more mature plants should be used during establishment. This will help with erosion prevention and aesthetics.

Potential options for reducing project construction costs may include:

- Reducing the depth of the stormwater ponds. Multiple scenarios with different reduced depths, cost savings, and impact on pollutant removal and cost per pound pollutant removal will be presented at the meeting.
- Remove one of the ponds from the design and only build one pond. Cost savings and pollutant removal impacts will be presented at the meeting.
- Gather additional funds including possible use of FY2023 Watershed Based Implementation Funds of \$87,887; use of BCWMC Closed Project Funds; requesting additional tax levy funds through Hennepin County in 2023; or applying for a Hennepin County Opportunity grant (\$50,000 - \$100,000).

## Schedule

The Bryn Mawr Meadows Water Quality Project will be constructed as part of the larger park redevelopment project being managed by the MPRB. Park construction is planned to take place in 2022-2023. The table below summarizes the anticipated schedule.

Tasks and milestones	Estimated Schedule
Design – complete 50% plans and opinion of cost for Commission review and approval	January 2022 Commission meeting
Design – complete 90% plans and submit to MPRB and Minneapolis staff for review and approval	February 2022
Design – complete 90% plans specifications, and opinion of cost for Commission review and approval	Tentatively planning for March 2022 Commission meeting
Permitting (overseen by MPRB)	Ongoing through Spring/Summer 2022
Design – complete 100% plans specifications, and opinion of cost. Project will be bid with MPRB park redevelopment project.	Tentatively planning for April 2022
Bidding	April 2022
Construction	Summer 2022 – Spring 2023
Record drawings, final restoration, project closeout	Spring/Summer 2023

## Approvals/Permit Requirements

In addition to BCWMC approval of the plans, the following permitting and approvals are required for the project. Permitting for the water quality improvement project will be completed as part of the larger park reconstruction project and be led by MPRB and their consultants.

- 1) Minnesota Pollution Control Agency (MPCA) permitting. Because the CIP project features will be constructed as part of the larger park reconstruction project, which will result in more than one-acre of land disturbance, a Construction Stormwater General Permit will be required.
- 2) MPRB construction permit. This permit is required for all construction-related activities taking place on MPRB parkland.

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**Date:** January 13, 2022  
**Page:** 7

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- 3) City of Minneapolis Soil Erosion and Sediment Control Permit. Because construction of the CIP project features will result in more than 500-square feet of land disturbance, a Soil Erosion and Sediment Control permit will be required.
- 4) City of Minneapolis Stormwater Management Plan. Because the CIP project features will be constructed as part of the larger park reconstruction project, which will result in more than one-acre of land disturbance, a Construction Stormwater General Permit will be required.
- 5) MCES Special Discharge Permit. In order to comply with the project's RAP, groundwater will be discharged to the sanitary sewer, which requires issuance of a Special Discharge Permit from MCES.

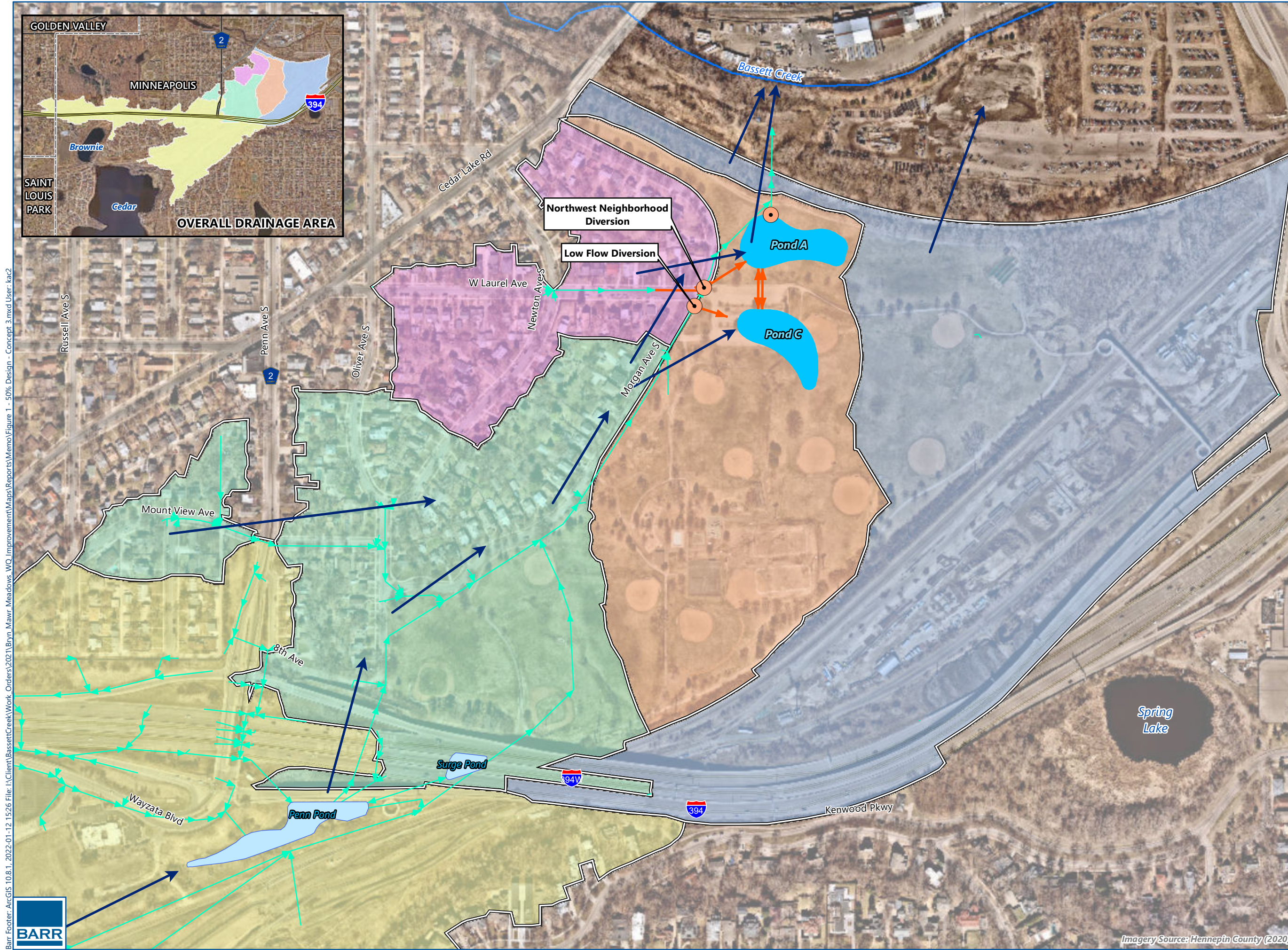
## **Recommendations**

- A) Consider approval of 50% design plans
- B) Consider options for reducing the increase in estimated construction cost
- C) Authorize the Commission Engineer to continue design and bring 90% design plans to a future Commission meeting.

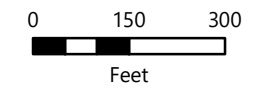
## **Attachments**

Figure 1 – Project Area Map – 50% Design

Figure 2 – Engineer's Opinion of Probable Costs – 50% Design



- New Structure
- Creeks
- General Flow Paths
- Proposed Storm Sewer
- Existing Storm Sewer
- Proposed Stormwater Pond
- Existing Stormwater Pond
- Proposed Watersheds
  - Drains to Low Flow Diversion Weir
  - Drains to Northwest Neighborhood Diversion
  - Park Area Contributing to Ponds A and C
  - Park Area Draining Away from Ponds A and C
  - Drains to Penn Pond
  - Municipal Boundary



50% DESIGN - CONCEPT 3  
 Northwest Neighborhood  
 Diversion and Penn Pond  
 Low Flow Diversion  
 Bryn Mawr Meadows Park  
 Water Quality Project BC-5


Barr Footer: ArcGIS 10.8.1, 2022-01-12 15:26 File: I:\Client\BassetCreek\Work\_Orders\2021\Bryn\_Mawr\_Meadows\_WQ\_Improvement\Maps\Reports\Memo\Figure 1 - 50% Design - Concept 3.mxd User: kac2



Imagery Source: Hennepin County (2020)

FIGURE 1



 <b>PREPARED BY: BARR ENGINEERING COMPANY</b> <b>ENGINEER'S OPINION OF PROBABLE PROJECT COST</b> PROJECT: Bryn Mawr Water Quality Improvements LOCATION: Bryn Mawr Park, Minneapolis PROJECT #: 23/27-1887.00 <b>OPINION OF COST - SUMMARY</b>	SHEET:	1	OF	1
	CREATED BY:	JMD	DATE:	1/11/2022
	CHECKED BY:	JPP	DATE:	1/11/2022
	APPROVED BY:	MAK	DATE:	1/11/2022
	ISSUED:	50% Concept Design		DATE:
ISSUED:		DATE:		
ISSUED:		DATE:		

**Engineer's Opinion of Probable Project Cost**  
**Above and Beyond Water Quality Improvement by BCWMC**  
50% Concept Design

Cat. No.	ITEM DESCRIPTION	UNIT	ESTIMATED QUANTITY	UNIT COST	ITEM COST	NOTES
A	MOBILIZATION/DEMOBILIZATION	LS	1	\$50,000.00	\$50,000.00	1,2,3,4,5,6,7
B	EROSION AND SEDIMENT CONTROL	LS	1	\$10,000.00	\$10,000.00	1,2,3,4,5,6,7
C	TRAFFIC CONTROL	LS	1	\$10,000.00	\$10,000.00	1,2,3,4,5,6,7
D	REMOVE CURB AND GUTTER	LF	297	\$8.00	\$2,376.00	1,2,3,4,5,6,7
E	SAWCUT PAVEMENT	LF	264	\$4.00	\$1,056.00	1,2,3,4,5,6,7
F	REMOVE PAVEMENT AND CLASS 5, 12" DEPTH	SY	692	\$5.00	\$3,460.00	1,2,3,4,5,6,7
G	REMOVE STORM SEWER	LF	168	\$15.00	\$2,520.00	1,2,3,4,5,6,7
H	COMMON EXCAVATION	CY	17,298	\$7.00	\$121,086.00	1,2,3,4,5,6,7
I	HAUL AND DISPOSE - LANDFILL	CY	5,189	\$40.00	\$207,576.00	1,2,3,4,5,6,7
	HAUL AND DISPOSE - LANDFILL (FROM STORM SEWER)	CY	2,133	\$40.00	\$85,320.00	1,2,3,4,5,6,7
J	HAUL AND DISPOSE - UNREGULATED FILL	CY	11,216	\$12.00	\$134,587.20	1,2,3,4,5,6,7
K	PLACE AND COMPACT FILL, ONSITE	CY	893	\$5.00	\$4,465.00	1,2,3,4,5,6,7
L	ENVIRONMENTAL RESPONSE CONTINGENCY	LS	1	\$108,000.00	\$108,000.00	1,2,3,4,5,6,8
M	RIPRAP, CLASS II	TON	100	\$60.00	\$6,000.00	1,2,3,4,5,6,8
N	12" HDPE PIPE	LF	138	\$40.00	\$5,520.00	1,2,3,4,5,6,7
O	12" HDPE FLARED-END SECTION	EA	1	\$400.00	\$400.00	1,2,3,4,5,6,7
P	15" PVC PIPE	LF	218	\$50.00	\$10,900.00	1,2,3,4,5,6,7
Q	16" DI PIPE, CLASS 52	LF	31	\$75.00	\$2,325.00	1,2,3,4,5,6,7
R	18" HDPE PIPE	LF	202	\$55.00	\$11,110.00	1,2,3,4,5,6,7
S	18" HDPE FLARED-END SECTION	EA	2	\$600.00	\$1,200.00	1,2,3,4,5,6,7
T	36" HDPE PIPE	LF	380	\$164.00	\$62,320.00	1,2,3,4,5,6,7
U	36" HDPE FLARED-END SECTION	EA	4	\$1,800.00	\$7,200.00	1,2,3,4,5,6,7
V	36" BENTONITE ANTI-SEEPAGE COLLAR	EA	4	\$3,200.00	\$12,800.00	1,2,3,4,5,6,8
W	2' X 3' REINFORCED CONCRETE CATCH BASIN	EA	6	\$2,500.00	\$15,000.00	1,2,3,4,5,6,7
X	48" REINFORCED CONCRETE MANHOLE	EA	2	\$3,500.00	\$7,000.00	1,2,3,4,5,6,7
Y	60" DIAMETER OUTLET STRUCTURE WITH WEIR, OVERFLOW GRATE ON PILES	EA	1	\$25,000.00	\$25,000.00	1,2,3,4,5,6,7
Z	CONNECT TO EXISTING STRUCTURE	EA	1	\$1,200.00	\$1,200.00	1,2,3,4,5,6,7
AA	CONCRETE COLLAR	EA	1	\$2,000.00	\$2,000.00	1,2,3,4,5,6,7
BB	SUBGRADE CORRECTION FOR UTILITIES	LS	1	\$20,000.00	\$20,000.00	1,2,3,4,5,6,7
CC	CONCRETE CURB AND GUTTER	LF	297	\$20.00	\$5,940.00	1,2,3,4,5,6,7
DD	CLASS 5	CY	128	\$50.00	\$6,400.00	
EE	BITUMINOUS PAVEMENT, 4" DEPTH	SY	692	\$50.00	\$34,600.00	1,2,3,4,5,6,7
FF	CONCRETE PAVEMENT, 5" DEPTH	SY	73	\$70.00	\$5,110.00	1,2,3,4,5,6,7
GG	TEMPORARY SEEDING	AC	2.8	\$2,500.00	\$7,000.00	1,2,3,4,5,6,7
HH	PERMENANT SEEDING	AC	2.8	\$4,000.00	\$11,200.00	1,2,3,4,5,6,7
II	HYDROMULCH OR STRAW	AC	2.8	\$3,500.00	\$9,800.00	1,2,3,4,5,6,7
JJ	PLUGS	EA	5,000	\$4.00	\$20,000.00	1,2,3,4,5,6,7
KK	SHRUBS, #2 CONTAINER	EA	50	\$50.00	\$2,500.00	1,2,3,4,5,6,7
LL	ESTABLISHMENT MAINTENANCE (3 YEARS)	YEAR	3	\$3,000.00	\$9,000.00	1,2,3,4,5,6,7
	CONSTRUCTION SUBTOTAL				\$1,042,000.00	1,2,3,4,5,6,7,8
	CONSTRUCTION CONTINGENCY (15%)				\$156,000.00	1,5,8
	ESTIMATED TOTAL CONSTRUCTION COST				\$1,198,000.00	1,2,3,4,5,7,8
	<b>ESTIMATED ACCURACY RANGE</b>		<b>-15%</b>		<b>\$1,019,000.00</b>	5,7,8
			<b>20%</b>		<b>\$1,438,000.00</b>	5,7,8

Notes

<sup>1</sup> Limited Design Work Completed (50%).

<sup>2</sup> Quantities Based on Design Work Completed.

<sup>3</sup> Unit Prices Based on Information Available at This Time.

<sup>4</sup> Limited Field Investigation Completed. Assumed 30% of excavated materials need to be hauled to landfill.

<sup>5</sup> This Class 2 (30-75% design completion per ASTM E 2516-06) cost estimate is based on 50%-level designs, alignments, quantities and unit prices. Costs will change with further design. Time value-of-money escalation costs are not included. A construction schedule is not available at this time. Contingency is an allowance for the net sum of costs that will be in the Final Total Project Cost at the time of the completion of design, but are not included at this level of project definition. The estimated accuracy range for the Total Project Cost as the project is defined is -15% to +20%. The accuracy range is based on professional judgement considering the level of design completed, the complexity of the project and the uncertainties in the project as scoped. The contingency and the accuracy range are not intended to include costs for future scope changes that are not part of the project as currently scoped or costs for risk contingency. Operation and Maintenance costs are not included.

<sup>6</sup> No costs included for soil correction or overexcavation.

<sup>7</sup> Estimate costs are to construct. The estimated costs do not include maintenance, monitoring or additional tasks following construction.

<sup>8</sup> Estimate costs are reported to nearest thousand dollars.