

Memorandum

To: Bassett Creek Watershed Management Commission
From: Barr Engineering Co.
Subject: Item 6D. Review Draft Feasibility Study for 2016 Honeywell Pond Enhancement/Improvement Project (CIP BC-4), Golden Valley
BCWMC September 18, 2014 Meeting Agenda
Date: September 10, 2014
Project: 23270051 2014 632

6D. Review Draft Feasibility Study for 2016 Honeywell Pond Enhancement/Improvement Project (CIP BC-4), Golden Valley

Summary:

Proposed Work: 2016 Honeywell Pond Enhancement/Improvement Project (CIP BC-4)

Basis for Commission Review: Draft Feasibility Study Review

Recommendations:

- 1) Consider approval of the draft feasibility study, with recommended changes, and provide direction to the City of Golden Valley regarding which alternatives should be implemented.

The 2016 Honeywell Pond Enhancement/Improvement Project (CIP BC-4) will be funded by the BCWMC's ad valorem levy (via Hennepin County). The City of Golden Valley provided the draft feasibility study to the BCWMC Engineer for review, as directed by the Commission at their February 20, 2014 meeting. The following is a summary of the draft feasibility study and the Commission Engineer's recommended revisions for the draft feasibility study.

Feasibility Study Summary

The City of Golden Valley's draft *Feasibility Report for the Honeywell Pond Enhancement/Improvement Project* (WSB, September 10, 2014) examines the feasibility of several enhancement/improvement projects in the Honeywell Pond and nearby areas that will provide treatment of runoff from the watershed. Additional improvement alternatives were evaluated to reduce runoff rate, reduce runoff volume, and provide habitat enhancements and educational opportunities in the area. The improvement options selected for implementation would be constructed as part of the Douglas Drive Improvement Project, scheduled for construction in 2016.

The draft feasibility report identifies nine improvement options for the Honeywell Pond and nearby areas, including:

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1. Diversion of low flows from the storm sewer along Douglas Drive into the Honeywell Pond
2. Expansion of the Honeywell Pond (size and depth) to increase the water quality treatment volume and flood storage volume
3. Creation of a habitat/buffer area around the perimeter of the pond
4. Construction of an iron-sand filtration system adjacent to the Honeywell Pond (pumping from Honeywell Pond to iron-sand filtration system)
5. Construction of an interpretive kiosk/outdoor area
6. Construction of an underground infiltration system at the Sandberg Learning Center ballfields (pumping from Honeywell Pond to the infiltration system)
7. Construction of a stormwater reuse system from Honeywell Pond for irrigation at the Sandberg Learning Center ballfields (pumping from Honeywell Pond to the irrigation system)
8. Construction of a stormwater reuse system from Honeywell Pond for irrigation at the Honeywell property (pumping from Honeywell Pond to the irrigation system)
9. Construction of a system to pump water from the Honeywell Pond to the (proposed) Douglas Drive Infiltration System

The draft feasibility report also presents the combination of options 4, 7, 8, and 9 as a tenth option.

The draft feasibility report recommends implementation of improvement options 1, 2, and 3, and implementation of other improvement options as funding allows. The study notes that options 4 – 9 could further enhance the performance (reduce pollutant load, discharge rate, and runoff volume) of the Honeywell Pond and nearby areas. The table below is an excerpt from Table 1.1 in the feasibility study:

Option	Estimated 30 Year Cost	Estimated lbs Phosphorus Removed per Year	Cost/lb removed
1. Construct Low Flow Trunk Diversion from Douglas Drive	\$76,000	10	\$250
2. Expand Pond Footprint/Pond Depth	\$939,362	12.8	\$2,400
3. Enhance Habitat around Pond Perimeter	\$40,000 – \$60,000	None	None
4. Construct Iron-Sand Filtration System	\$493,149	8.6	\$1,900
5. Construct Interpretative Kiosk/Outdoor Area	\$10,000 - 40,000	NA	NA
6. Construct Sandburg Learning Center Baseball Field Infiltration System	\$970,542	10.1	\$3,200
7. Use Stormwater for Irrigation of the Sandburg Learning Center Baseball Fields	\$370,271	12	\$1,000
8. Use Stormwater for Irrigation of Honeywell Site	\$370,271	12	\$1,000
9. Use Stormwater to Enhance Benefits of the Douglas Drive Infiltration System	\$338,181	8	\$1,200
10. Combination of options 7, 8, and 9 ¹	\$806,723	32	\$540

¹This does not appear to include the cost of option 4, which is included in the name/description of this option elsewhere in the feasibility study.

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The attached sheet from the City of Golden Valley (not included in the feasibility study) provides a summary of the project costs, funding, and the city's recommendations. As noted on the sheet, the city is able to contribute an estimated \$525,000 towards the project. This, combined with the estimated \$285,000 of BCWMC funding, results in an estimated \$810,000 of funding available for this project. The city recommends implementation of options 1, 2, and 3 (or 4.1, 4.2, and 4.3, as noted in the table) as the first priority, followed by implementation of options 7 and 8 (or 4.7 and 4.8), if additional BCWMC funding is available. The city recommends implementing one or more of the remaining options if additional funding sources are secured.

The feasibility report notes that the project may require the following permits/approvals:

- 1) Clean Water Act Section 404 permit from the U.S. Army Corps of Engineers, and Section 401 certification from the Minnesota Pollution Control Agency (MPCA)
- 2) Compliance with the Minnesota Wetland Conservation Act
- 3) MPCA National Pollutant Discharge Elimination System (NPDES) Construction Stormwater Permit
- 4) BCWMC approval
- 5) City of Golden Valley Stormwater Permit
- 6) City of Golden Valley Right-Of-Way Permit

The feasibility study should also note that the project will also follow the MPCA's guidance document for managing dredged materials, if applicable.

Recommendations

The Commission Engineer recommends the following revisions to the draft *Feasibility Report for Honeywell Pond Enhancement/Improvement Project* (dated 9/10/2014):

1. On page 2, Table 1.1 and the paragraph following Table 1.1 use the term "flood storage reduction," which is confusing, as it would appear the project (option 2, in particular) would increase the flood storage and reduce flooding. This term should be replaced with a more appropriate description/term.
2. Models should be used to evaluate the impact of the selected options on flood elevations and peak discharges, estimate water availability, and estimate annual volumes that might be sent to treatment and to predict the overall phosphorus removal for the project. Models like XP-SWMM and P8 would be effective tools for such an evaluation. The XP-SWMM model should evaluate all the improvement options under the Atlas 14 100-year design storm conditions.
3. The pumping scenarios outlined in paragraph 7 of Section 1.1 conflict with the discussion outlined in paragraph 1 of Section 4.6. Please clarify pumping assumptions, either in Section 1.1 or the discussion of the assumptions for each of the improvement alternatives, as necessary.

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4. There is conflicting information regarding the characteristics of the existing Honeywell Pond in Section 3.0 and in paragraphs 1 and 2 in Section 4.2 (page 8); this information needs to be corrected.
5. Figure 2 shows the direct drainage area to the Honeywell Pond and the drainage area along Douglas Drive (to the north of the Honeywell Pond). Paragraph 1 of Section 4.1 (page 7) indicates that the watershed along Douglas Drive that is proposed to be diverted into the Honeywell Pond is 15-25 acres. However, review of subwatersheds in this area indicate that the estimated area contributing to the Douglas Drive storm sewer is 67-80 acres, as it includes the watershed contributing to the stormwater pond to the north of the Honeywell Pond. Figure 2 should be revised to show the entire contributing watershed to Douglas Drive. With additional flows proposed to be diverted to the Honeywell Pond, the XP-SWMM model should be used to evaluate the diversion impacts on the Honeywell Pond 100-year flood elevation, using Atlas 14 rainfall amounts.
6. Should the Commission select the implementation of options 1, 2 and 3, the BCWMC's XP-SWMM and P8 models (already provided) should be used to estimate the combined phosphorus removal, estimated 100-year flood elevation, and the cost-benefit. The results of such an analysis should be included in the final feasibility study.
7. Should the Commission select the implementation of option 7, which includes stormwater reuse for irrigation, the feasibility study should include discussion related to the potential public health concerns related to stormwater reuse and the potential mitigation measures that will be considered during final design (including working with City of Golden Valley plumbing code reviewers, UV disinfection, timing of irrigation to minimize contact with athletic field users, and signs indicating that stormwater is being used for irrigation).
8. The study should provide more information about the methodology used to estimate total phosphorus removal for each of the options.
9. To allow for ease of comparison, the study should include a table that summarizes the peak flood elevation, peak discharge, and annual total phosphorus removals for existing conditions and each of the proposed alternatives.
10. For option 1 (4.1), the feasibility study should provide information about the annual runoff volume (and the percentage) from the watershed along Douglas Drive that is expected to be diverted to the Honeywell Pond and the estimated average annual total phosphorus removal. See also the earlier comment regarding the contributing area to the Douglas Drive storm sewer.
11. For all of the cost estimates, the study should define the types of costs that are included in the "25% Indirect Costs."

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12. In Table 4.2, there are no estimated maintenance costs; if there are maintenance costs, they need to be added to the table.
13. In Table 4.11, there are no costs included for a force main to tie into the Honeywell irrigation system; the study should explain why this cost is not included.
14. The cost-benefit analyses (and resulting tables), should be revised to reflect a 30-year cost using the appropriate engineering economic factors. The estimated total 30-year maintenance costs appear to be based on a 50-year factor rather than a 30-year factor, as required in the BCWMC Feasibility Study Criteria. The annualized cost should be deleted from the table, as it is not ultimately used in the final calculation of the Cost/Pound/Year and it reflects a 50-year lifespan (rather than a 30-year lifespan).
15. Section 5 lists the permits that may be required for the potential improvement options. The study should clarify which permits will be required for each of the potential improvement alternatives and if any additional specific permits will be required for select alternatives. Also, the pond expansion option (option 2) will likely require following the MPCA's guidance document for managing dredged materials.
16. In Section 7.0, the second bullet point in the introductory paragraph includes a statement that the project "will increase the TMDL of the existing pond." The project will help achieve phosphorus load reductions to Bassett Creek that are consistent with the BCWMC's water quality improvement goals for areas tributary to Bassett Creek. However, there are not any TMDLs within the BCWMC that are directly addressed by the proposed improvement project.

The revised (final) feasibility study must be submitted to the Commission Engineer for review and approval by the Commission.

**PROJECT COSTS AND FUNDING SUMMARY
HONEYWELL POND ENHANCEMENT/IMPROVEMENT PROJECT**

Pond / Water Quality Funding

City Storm Sewer / Water Quality Funding	\$900,000.00
<i>less Funds Needed for Douglas Dr Storm Sewer Work</i>	<i>-\$375,000.00</i>
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Remaining City Storm Sewer / Water Quality Funding	\$525,000.00
Available for Honeywell Pond Project	-----
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Estimated BCWMC Funding (From 2016-2020 CIP)	\$285,000.00
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Total Estimated Funding for Honeywell Pond Project	\$810,000.00

Summary of Recommended Options and Costs and Running Total of Costs

Number	Name	(Includes Indirect & Contingency)	
		Total Cost	Running Total
<i>Recommended Options for Implementation¹</i>			
4.1	Low Flow Trunk Diversion from Douglas Drive	\$76,000.00	\$76,000.00
4.2	Expand Pond Footprint / Depth	\$707,000.00	\$783,000.00
4.3	Enhance Habitat / Perimeter	\$60,000.00	\$843,000.00
<i>Recommended Additional Options²</i>			
4.7	Construct Lift Station and Force main to Sandburg Site for Irrigation	\$317,000.00	\$1,160,000.00
4.8	Construct Force main to Irrigate Honeywell	-	\$1,160,000.00
<i>Additional Options if funding is available³</i>			
4.4	Iron Sand Filtration System	\$175,000.00	\$1,335,000.00
4.5	Construct Kiosk	\$40,000.00	\$1,375,000.00
4.6	Construct Sandburg Infiltration System	\$427,000.00	\$1,802,000.00
4.9	Construct Force main to Infiltration area to south	\$27,000.00	\$1,829,000.00

¹ Funding from City and BCWMC should be available for options 4.1-4.3.

² If additional BCWMC funding is available, the City recommends adding 4.7 and 4.8.

³ These options are recommended if additional funding sources are secured

Notes:

** The Douglas Drive Reconstruction Project includes stormwater improvements independent of the proposed Honeywell Pond Project that meet NPDES, BCWMC and all other water quality requirements.

** The City and County are acquiring a large section of road right-of-way for the Douglas Drive Project. Necessary pond easements will be purchased concurrently at a cost to the Douglas Drive project.

