



June 13, 2018

Mr. Mark Ray, P.E.
Director of Public Works
4141 Douglas Dr. N.
Crystal, MN, 55422-1696

**Re: 90% Design Plans – Winnetka Pond Dredging Project
City of Crystal Project 2018-04**

Dear Mr. Ray:

Attached please find the 90% design plans for the Winnetka Pond Dredging Project. The Bassett Creek Watershed Management Commission (BCWMC) is funding the Winnetka Pond Dredging Project (BCWMC CIP project BCP-2: Bassett Creek Park Pond Phase I Dredging Project) through a 2018 ad valorem levy (via Hennepin County). Per the cooperative agreement between the City of Crystal and the BCWMC, the city is to construct the project, and the plans and specifications are subject to approval by the Commission. Also, per the agreement, the 90% design plans for this project must be submitted to the BCWMC for review and approval. If the attached 90% plans meet the city's approval, we recommend submitting them, along with this letter, to the BCWMC for inclusion in the meeting packet for their June 21st meeting. Barr staff will present the 90% plans to the BCWMC at the meeting and answer any questions from the BCWMC.

The remainder of this letter presents information about the feasibility study, the design features of the project, and approval/permitting needs.

Feasibility Study Summary and Selected Project

The BCWMC completed the *Feasibility Report for Bassett Creek Park Pond and Winnetka Pond East Dredging Project (May 2017)* to evaluate options for dredging accumulated sediment from Bassett Creek Park Pond and Winnetka Pond. The BCWMC selected completing the Winnetka Pond East alternative 3 project (deepening to 6.0 feet), along with add-on 1 (native buffer) and add-on 2 (goose management). The selected project will provide water quality improvement by (1) providing additional permanent pool storage for sedimentation and to prevent re-suspension of sediment, (2) minimizing downstream transport of sediment, (3) filtering pollutants such as phosphorus, sediment, and bacteria from stormwater runoff, and (4) reducing phosphorus and bacteria loads from geese.

Earlier in the design process, City of Crystal staff met with the Winnetka Village Apartments management staff to discuss the native buffer and goose management measures. As a result of these discussions and further discussion at the March 20th city council workshop, the city council decided to move ahead with installing the native buffer, and to continue to manage goose populations at Winnetka Pond (and other waterbodies along the North Branch).

Design features – 90% plans

The primary design features of the proposed work, as shown on the attached 90% plans, include:

1. Pond dredging. The design calls for removal of approximately 18,500 cubic yards of accumulated sediment and native soils to deepen the pond to a depth of 6 feet (the feasibility study estimated 18,400 cubic yards of excavation). As originally designed, the pond depth was only 2 feet. A large

portion of the original volume has now been filled in with accumulated sediment, allowing for increased sediment resuspension and transport downstream. (No change in pond dredging amounts from 50% design). Minnesota Department of Natural Resources (MDNR) staff have indicated that increasing the depth to 6 feet is justifiable, although formal approval is needed (see "Approvals/permit requirements" section).

2. Maintenance access. The design includes providing maintenance access at two locations. The west access point is a 12-foot-wide vehicle ramp at a 10% maximum slope. This access point will be used for construction hauling traffic. The east access near the outlet structure will allow for maintenance vehicle parking while city crews perform routine maintenance at the outlet structure. Both access locations will have turf reinforcement to prevent rutting and compaction and will be maintained as native buffer or turf grass. This design feature was not identified in the feasibility study. (No change from 50% design.)
3. Outlet structure modifications. To reduce the frequency of obstructed flows, the design includes removing the existing grate and installing a new hinged grate with sloping bars. The design will also allow maintenance crews to clean the new grate more effectively and easily than the current structure. The existing plywood weir will be replaced with a concrete weir of the same dimensions, elevations, and orifice size/shape to ensure no change in flood elevations or outflow. The joints of the downstream 42-inch pipe have separated, which allows soil to infiltrate into the pipe. The project includes replacing these sections of pipe. (No change from 50% design.)
4. Erosion repair and new storm sewer installation. The runoff from the existing driveway curb cuts has resulted in visible erosion along the slopes, forming channels on both sides of the driveway, and depositing sediment in the pond. The design calls for installing new storm sewer inlets at each curb cut location and directing that stormwater through pipes into the existing box culvert that connects the east and west ponds. This design feature was not identified in the feasibility study, as the issue was identified later, during the existing condition field evaluation, where it became apparent the project would need to address the problem. (No change from 50% design.)
5. Expanding the existing vegetated buffer. To improve erosion control and the filtering of stormwater runoff, the design calls for removing the vegetation within the existing buffer and expanding the footprint. The restored buffer will be planted with native plant species. The buffer will be a minimum 30 feet in width and includes a 10 foot wide mow strip along the driveway perimeter. The area of the expanded buffer is approximately 1.1 acres (the feasibility study estimated a buffer area of 0.85 acres). (No change in buffer area since 50% design.) Because a portion of the buffer is on private property and outside of any existing easements, the city is in the process of acquiring a permanent easement over both the buffer area that is located on private property (on the far west end of the pond) and the very west portion of the pond. Once acquired, the easement will allow the City to plant and maintain the buffer, and perform any future pond or storm sewer maintenance. The city anticipates completing the easement acquisition by August 2018.
6. Goose management. At the March 20th work session, the city council decided to continue goose management at Winnetka pond by city staff. The city is currently performing goose management in the form of egg addling at other locations within the city (Bassett Creek Park Pond). City staff performed goose management at Winnetka Pond in the past, turned it over to the apartment

management staff, but the apartment management staff subsequently discontinued goose management activities. (No change from 50% design.)

Opinion of cost

The table below summarizes our opinion of costs, based on the 90% design plans:

Table 1 Opinion of Cost Summary

Item Description	Cost
Project costs eligible for BCWMC reimbursement:	
Pond dredging and general work	\$ 536,000
Other pond improvements	\$ 47,000
Native buffer	\$ 17,000
Existing drainage corrections	\$ 23,000
Goose management	\$ 0 ¹
Total estimated construction costs	\$ 623,000
Contingency (+15%)	\$ 93,000
Engineering costs	\$ 82,500
Total construction and engineering costs	\$ 798,500
Other project costs that the city requests the BCWMC consider for reimbursement:	
Easement acquisition costs (engineering and legal services only)	\$ 3,000 ²

¹ Work already performed by city staff

² Costs include easement development and recording, but not purchasing of easement.

The total estimated construction and engineering costs (\$798,500) shown above are less than the 50% design estimated costs (\$830,000). However, the pond dredging costs are 75% of the total estimated construction cost. A small increase in the unit price (cost per cubic yard of pond dredging) will have a significant impact on total project cost. If the low bidder construction cost results in the total project cost being over budget the pond depth could be reduced to lower the total project cost accordingly.

The detailed cost estimate is also attached.

Per the cooperative agreement between the city and the BCWMC, the BCWMC's total reimbursement for this project may not exceed \$1,000,000, less Commission expenses. The current balance (as of May 9, 2018) in the CIP budget for this project is \$938,930.75. The total estimated construction and engineering costs (\$798,500), plus easement acquisition costs (engineering and legal services only) are well within the reimbursable costs allowed for this project.

Approvals/permit requirements

In addition to BCWMC approval of the plans, other permits/approvals will be required for this project.

Permit applications have been submitted for the following:

- MDNR public waters work permit. Winnetka Pond is a MDNR Public Water (#27062900P) and the MDNR requires a Public Waters Work Permit for any work below the ordinary high water level (OHWL). Winnetka Pond East was created in about 1968 as part of the Winnetka Village Apartments development. Because the project pre-dates permitting, MDNR and United States Army Corps of Engineers (USACE) permits were not required. Typically, removal of accumulated sediment is permitted with some documentation, such as the available original construction

drawings for the site. Deepening the pond to 6 feet involves additional permitting considerations because it requires excavating into native material in a MDNR public water wetland, which is also under jurisdiction of the USACE. Barr contacted the MDNR area hydrologist after we submitted the permit application and he indicated that the sediment removal and trapping that would be achieved by the 6-foot excavation are sufficient justification for the project. We anticipate MDNR permit approval around mid-August 2018.

- Wetland Conservation Act (WCA) permit. There is a narrow fringe of WCA wetland above the MDNR OHWL at the southeastern and eastern sides of the pond. Site access through this area is needed during construction, which will cause temporary wetland impacts within the WCA wetland (approximately 350 square feet). This will be considered a no-loss under MN Rules 8420.0415 H, as long as the disturbed areas are restored back to original elevation, and vegetation is restored within six months of the start of activity. The project will also result in permanent wetland impacts (approximately 130 square feet) due to the fill required to allow for routine maintenance access within this portion of WCA wetland; the area of permanent wetland fill is within the allowable de minimis exemption amount (≤ 400 square feet). We submitted a joint application form requesting approval of both the WCA no-loss and de minimis exemption.
- USACE joint permit application (Section 404 permit and Section 401 Certification), although the permit is not required. Submitting this application formally documents that the project will follow the rules for work in a USACE jurisdictional wetland. This is the same application as required for the WCA permit. The USACE may consider the pond a "previously-authorized structure," which will simplify permitting. As long as there is no re-grading of the pond bottom, the USACE does not consider it a wetland impact and therefore the USACE does not regulate the activity.

A Minnesota Pollution Control Agency (MPCA) Construction Stormwater General Permit is required for construction activity if land disturbance outside of the pond dredging is greater than 1 acre. However, the permit does not consider disturbance of less than 5 acres for the purpose of routine maintenance as construction activity. Managing or improving the existing vegetation around the pond falls under routine maintenance. The remaining construction activity that does not fall under routine maintenance is less than 1 acre, therefore a permit (along with a SWPPP) is not required. Although a SWPPP is not required, the plans include erosion and sediment control measures as needed.

Recommendations

We recommend that the city request 1) BCWMC approval of the 90% drawings, 2) BCWMC authorization for the city to proceed with final plans, contract documents, and permitting, and 3) BCWMC consideration of reimbursement for easement development and acquisition costs.

If you have any questions, please contact me at 952-832-2813 or kchandler@barr.com.

Sincerely,



Karen L. Chandler, P.E.
Vice President

CITY OF CRYSTAL
WINNETKA POND DREDGING PROJECT
ENGINEERS OPINION OF COST
DATED JUNE 13, 2018

M&P Item	ITEM DESCRIPTION	UNIT	ESTIMATED QUANTITY	UNIT PRICE	EXTENSION
POND DREDGING AND GENERAL WORK					
1.06.A	MOBILIZATION/DEMOBILIZATION	LS	1	\$ 31,000.00	\$ 31,000.00
1.06.B	CONTROL OF WATER/DEWATERING	LS	1	\$ 20,000.00	\$ 20,000.00
1.06.C	EROSION CONTROL CONSTRUCTION ENTRANCE	EACH	1	\$ 2,500.00	\$ 2,500.00
1.06.D	ROCK FILTER DIKE	LS	1	\$ 2,000.00	\$ 2,000.00
1.06.E	INLET PROTECTION	EACH	6	\$ 200.00	\$ 1,200.00
1.06.F	SILT FENCE	LF	850	\$ 2.50	\$ 2,125.00
1.06.G	REMOVE STORM SEWER PIPE 42" RCP	LF	28	\$ 35.00	\$ 980.00
1.06.H	REMOVE EXISTING WEIR AND TRASH RACK	LS	1	\$ 1,000.00	\$ 1,000.00
1.06.I	REMOVE TREE	EACH	1	\$ 500.00	\$ 500.00
1.06.J	REMOVE FALLEN TREES AND DEBRIS	LS	1	\$ 5,000.00	\$ 5,000.00
1.06.K	COMMON EXCAVATION	CY	600	\$ 12.00	\$ 7,200.00
1.06.L	POND DREDGING OF MPCA DREDGED MATERIAL LEVEL 1 REMOVAL AND DISPOSAL	CY	18,500	\$ 25.00	\$ 462,500.00
SUBTOTAL					\$ 536,005.00
OTHER POND IMPROVEMENTS					
1.06.M	STORM SEWER PIPE 42" RCP CLASS 3	LF	28	\$ 220.00	\$ 6,160.00
1.06.O	CONNECT TO EXISTING MANHOLE	EACH	2	\$ 300.00	\$ 600.00
1.06.P	RIPRAP AT PIPES AND STRUCTURES	TON	76	\$ 65.00	\$ 4,940.00
1.06.Q	CONCRETE WEIR	LS	1	\$ 3,000.00	\$ 3,000.00
1.06.S	OUTLET STRUCTURE TRASH RACK	LS	1	\$ 9,000.00	\$ 9,000.00
1.06.T	TOPSOIL SALVAGE AND REINSTALL	CY	170	\$ 12.00	\$ 2,040.00
1.06.U	TOPSOIL IMPORT	CY	100	\$ 30.00	\$ 3,000.00
1.06.V	MAINTENANCE ACCESS TURF REINFORCEMENT (NETLON)	LS	1	\$ 10,000.00	\$ 10,000.00
1.06.W	MAINTENANCE ACCESS SOIL	CY	100	\$ 60.00	\$ 6,000.00
1.06.Y	SEEDING LOW MAINTENANCE TURF	ACRE	0.4	\$ 1,500.00	\$ 600.00
1.06.BB	HYDROMULCH	LS	1	\$ 2,000.00	\$ 2,000.00
SUBTOTAL					\$ 47,340.00
NATIVE BUFFER					
1.06.X	POND BUFFER VEGETATION REMOVAL	ACRE	0.5	\$ 4,500.00	\$ 2,250.00
1.06.Y	SEEDING SHORT GRASS PAIRIE	ACRE	1.1	\$ 8,800.00	\$ 9,680.00
1.06.AA	DISC-AHCHORED STRAW MULCH	ACRE	1.1	\$ 2,000.00	\$ 2,200.00
1.06.CC	ONE YEAR SEEDING WARRANTY AND ESTABLISHMENT	LS	1	\$ 3,000.00	\$ 3,000.00
SUBTOTAL					\$ 17,130.00
EXISTING DRAINAGE CORRECTIONS					
1.06.G	REMOVE STORM SEWER 12" CMP FLARED END	LS	1	\$ 200.00	\$ 200.00
1.06.I	REMOVE TREE	EACH	1	\$ 500.00	\$ 500.00
1.06.M	STORM SEWER 12" ALUMINIZED CMP FLARED END	LS	1	\$ 300.00	\$ 300.00
1.06.M	STORM SEWER PIPE 12" PVC SDR-35	LF	153	\$ 30.00	\$ 4,590.00
1.06.N	STORM SEWER CATCH BASIN 24" PVC NYLOPLAST	EACH	3	\$ 2,000.00	\$ 6,000.00
1.06.N	STORM SEWER DROP STRUCTURE 24" PVC	EACH	2	\$ 2,500.00	\$ 5,000.00
1.06.O	CONNECT TO EXISTING BOX CULVERT	EACH	2	\$ 800.00	\$ 1,600.00
1.06.P	RIPRAP AT PIPES AND STRUCTURES	TON	8	\$ 65.00	\$ 520.00
1.06.R	CONCRETE AROUND CATCH BASIN	EACH	3	\$ 1,000.00	\$ 3,000.00
1.06.Z	REPAIR EROSION	LS	1	\$ 1,000.00	\$ 1,000.00
SUBTOTAL					\$ 22,710.00
CONSTRUCTION TOTAL					\$ 623,185.00
CONTINGENCY (+15%)					\$ 93,000.00
ENGINEERING TOTAL					\$ 82,500.00
PROJECT TOTAL					\$ 798,685.00