



CITY of CRYSTAL

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February 14, 2019

Laura Jester
Administrator
Bassett Creek Watershed Management Commission
16145 Hillcrest Lane
Eden Prairie, MN 55436

RE: Winnetka pond sediment removal project - update

Dear Ms. Jester,

Please find attached the information from Barr Engineering regarding the contaminated material that has been found now that sediment removal has been started on the Winnetka Pond Project. The project will be incurring additional costs to remove the contaminated material. The City has committed \$25,000 to this effort, plus an additional \$9,050 in BCWMC channel maintenance funds. The City is requesting an additional \$114,301 for the project from the BCWMC closed CIP project account.

This project is being constructed by the city per the cooperative agreement between the City of Crystal and the BCWMC. I am requesting that this project be included with the Commission packet for the February 2019 regular meeting. City staff and the project design engineer will be at the meeting to provide an update on the project and answer any questions.

If you have any questions or need any additional information, please contact me at mark.ray@crystalmn.gov or 763-531-1160.

Sincerely,

Mark Ray, PE
Director of Public Works

February 14, 2019

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

**Re: Request for additional funding from the Bassett Creek Watershed Management Commission
Winnetka Pond Dredging Project – City of Crystal Project 2018-04**

Dear Mr. Ray:

This letter provides background and supporting information to accompany the city's request for additional funding from the Bassett Creek Watershed Management Commission (BCWMC).

Summary

The 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, with the BCWMC reimbursing the city for total project costs not exceeding \$1,000,000. Due to the discovery of contamination during project construction, an additional \$148,351 is needed to complete the project as designed (see Table 1). We recommend the city request \$114,301 in additional funding from the BCWMC's CIP closed project account or other sources and \$9,050 from the city's remaining allocated BCWMC channel maintenance funds to cover the additional construction and engineering costs to complete full construction of the project. We also understand that the city will allocate \$25,000 of its funds to the additional construction costs.

Background and supporting information

In September 2016, Winnetka Pond sediments were sampled as part of the BCWMC feasibility study for the CIP project. The sampling was performed in accordance with MPCA Best Management Practice (BMP) Guidance for Managing Stormwater Sediments (MPCA, 2015). Based on the size of the pond, the MPCA guidance recommended collecting and analyzing 3 samples of accumulated stormwater pond sediments (i.e., not native pond sediment) for PAHs, arsenic, and copper, as well as other contaminants that may have accumulated in the sediments based on the potential for a release from commercial or industrial operations near the pond. Field screening for evidence of contamination was completed during the sampling and no odors, oily sheen, or discoloration were observed. The field screening results indicated no analysis of Diesel Range Organics (DRO) or Gasoline Range Organics (GRO) or other chemicals was warranted. The laboratory results and field observations during the 2016 sediment sampling indicated the sediments met MPCA Unregulated Fill criteria, and could be managed as such and reused at offsite properties, as noted in the BCWMC feasibility study. Figure 1 shows the 2016 sampling locations (WPE-01, WPE-02 and WPE-03).

While it is common practice to analyze for DRO during a soil investigation at a contaminated property, DRO analysis is not required or recommended for stormwater pond sediment characterization (MPCA, 2015). The initial sediment characterization in 2016 followed the MPCA guidance, and based on the results

of the initial investigation and MPCA records, there was no reason to suspect significant DRO impacts would be present.

At their September 2017 meeting, the BCWMC ordered construction of the Winnetka Pond dredging project and entered into an agreement with the City of Crystal for design and construction of the project. The City of Crystal retained Barr Engineering Co. to design the project. In December 2018, the city executed a contract with Veit Construction to construct the project; the contract amount was \$525,617.50.

On January 3, 2019, Veit's subcontractor began tree removal work. Veit's work on the site started on January 21, 2019, when the contractor began grading the access road and excavating the pond. On January 22, 2019, Veit observed potential petroleum-related contamination in the southeast corner of the pond, in the rock layer adjacent to the storm water outlet structure. Barr staff mobilized to the site and completed field screening, and noted a rainbow sheen and strong petroleum odor in the impacted materials. The gravel/silty material by the outlet structure was also black in color and exhibited a volatile organic headspace reading of 12.5 parts per million (ppm), greater than the Minnesota Pollution Control Agency's (MPCA's) guideline of 10 ppm for Unregulated Fill.

A sample of the most noticeably impacted material near the outlet structure (WPE-04) was collected and submitted to the lab for chemical analysis of gasoline range organics (GRO), diesel range organics (DRO), volatile organic compounds (VOCs), RCRA metals, and polycyclic aromatic hydrocarbons (PAHs), to characterize the type and level of contamination. The results indicated a DRO concentration above the limit of 100 milligrams per kilogram (mg/kg) for Unregulated Fill. PAHs were detected at concentrations below Unregulated Fill criteria. RCRA metals concentrations were below criteria and VOCs were not detected above reporting limits. Based on the analytical results of sample WPE-04 (see Figure 1) and the generally low volatile content, the impacts consist of heavier weight organic compounds characteristic of an aged petroleum product.

Barr reported the release (on behalf of the city) to the Minnesota Pollution Control Agency (MPCA) Duty Officer on January 24, 2019 (report number 180334).

The original source of the contamination is unknown, but the contamination in the pond sediments near the outlet structure appears to have emanated from a layer of gravel pipe bedding in the abandoned and existing stormwater pipe trench in the southeast corner of the pond (see Figure 1). A pathway for the petroleum impacts to have migrated from documented release sites present around the area to the storm sewer trench has not been identified. Other unknowns include when the release occurred, the chemical that was spilled, how far it extends through the sewer line south of the pond, and whether it was deliberate dumping (e.g., into an open excavation) or from a known release from offsite. As noted above, the contamination is characteristic of an "aged petroleum product" which suggests the spill may have occurred many years/decades ago.

In addition to the initial sample collected near the outlet on January 22, 2019 (WPE-04), additional test pits were excavated on January 24, February 1, and February 6, 2019 to assess the extent of the impacts in the pond sediments (see Figure 1). Sample analysis was completed at multiple intervals of increasing radial distance from the outlet structure to determine the extent of the contaminated soil. After multiple rounds of analysis with DRO concentrations above the limit for Unregulated Fill, it appeared that DRO contamination could be present throughout the pond. A final round of sampling and analysis was completed on a pond-wide scale, which allowed for the delineation of two areas of contamination— 1) at the stormwater outlet structure where the petroleum impacts were first discovered and extending up to 150 feet north/northwest from the outlet; and 2) near the southern pond inlet where there was a DRO concentration of 153 mg/kg. PAHs were detected in the samples analyzed, but at concentrations below MPCA criteria for Unregulated Fill. In addition to identifying the extent horizontally, test results also

supported that the DRO contamination was only present in the top 2 feet of pond sediments. Figure 2 shows the test results and the areas where excavated accumulated sediment (top 2 feet) must be landfilled and where excavated material is Unregulated Fill.

The discovery, delineation, and management of contaminated soil created significant challenges and delays for construction. The location of the contamination (near the outlet structure) created significant challenges for the control of water within the pond. The contractor contained the contaminated water near the outlet using sand bags and earthen cofferdams to prevent a release to the storm sewer (and Bassett Creek).

The highly impacted rock layer extended under the existing concrete outlet structure. Originally, only a portion of the structure, the concrete weir, was planned to be replaced. However, the complete removal of the structure was required to remove the contamination. Once the outlet structure was removed, the contractor could completely remove the underlying contaminated rock layer, except where it extended under a section of storm sewer pipe that is to remain in place. Due to the location of the existing manhole, sidewalk, and utilities, it was not feasible to "chase" the contamination any further into the bank. At the face of the remaining rock layer, the contractor placed an impermeable clay liner to prevent additional contamination from seeping into the pond. The contractor completed backfilling this area and will rebuild the outlet structure to the original design.

The extra environmental work to investigate and manage contaminated water and soil has increased the construction cost. The contractor can no longer use/dispose of all of the excavated material as Unregulated Fill; rather, the contractor must dispose of the contaminated soil at a landfill, which is significantly more expensive. Based on the volume and increased unit price of contaminated soil, the city cannot complete the excavation of the pond to the 6-foot design depth without additional funding.

Barr worked with the city and the contractor to develop a plan for successful project completion. Any further schedule delays could pose significant weather risks to the project. Due to schedule and other factors, the city decided to proceed with the full 6-foot excavation starting near the east side of the pond. If additional funding cannot be secured, we recommend that the city reduce the pond excavation depth to stay within the original budget. The resultant average pond excavation depth would be approximately 4 feet, with the depth varying from 6 feet at the east end to a minimum of 2 feet at the west end. In this case, the contractor will remove all contaminated accumulated sediment and dispose of the material at a landfill. However, the reduced pond depth would mean less sediment storage, less total phosphorus removal, and future dredging required at an earlier date.

Although the additional pond sediment testing and analysis cost more initially, it ultimately saved on additional construction costs because the delineation between unregulated and contaminated material meant that a significant portion of the excavated accumulated sediment will not require landfill disposal (i.e., it can be used/disposed of as Unregulated Fill at a lower cost).

In addition to the extra work required to investigate and manage the contamination, an environmental report must be completed and coordination/communication with the MPCA must continue.

Budget

The table below summarizes the original budget, BCWMC costs, construction costs, additional costs resulting from the contamination, and the additional funding needed/requested:

Table 1 Summary of budget and project costs

Item Description	Cost
Original Budget	\$ 1,000,000.00
Feasibility Study and Other BCWMC Costs	\$ (61,500.00)
BCWMC 2.5% Administrative Costs	\$ (25,000.00)
Budget Available for Construction	\$ 913,500.00
Original Construction Contract Price	\$ (525,617.50)
Estimated Construction Contract Price Adjustments (Known)	\$ 37,642.38
Contaminated Soil Disposal Costs	\$ (306,376.00)
Estimated Contingency (Future Construction Change Orders)	\$ (50,000.00)
Current Engineering Fees	\$ (107,500.00)
Estimated Additional Engineering Fees	\$ (65,000.00)
Future Native Buffer Restoration (Under Separate Contract)	\$ (45,000.00)
Total Project Construction Costs	\$ (1,061,851.12)
Amount Over Budget	\$ (148,351.12)
Additional City Contribution to Project	\$ 25,000.00
BCWMC Channel Maintenance Funds (Requested)	\$ 9,050.00
Subtotal Additional Funding Currently Available	\$ 34,050.00
TOTAL Additional Funding Needed/Requested	\$ (114,301.12)

Recommendations

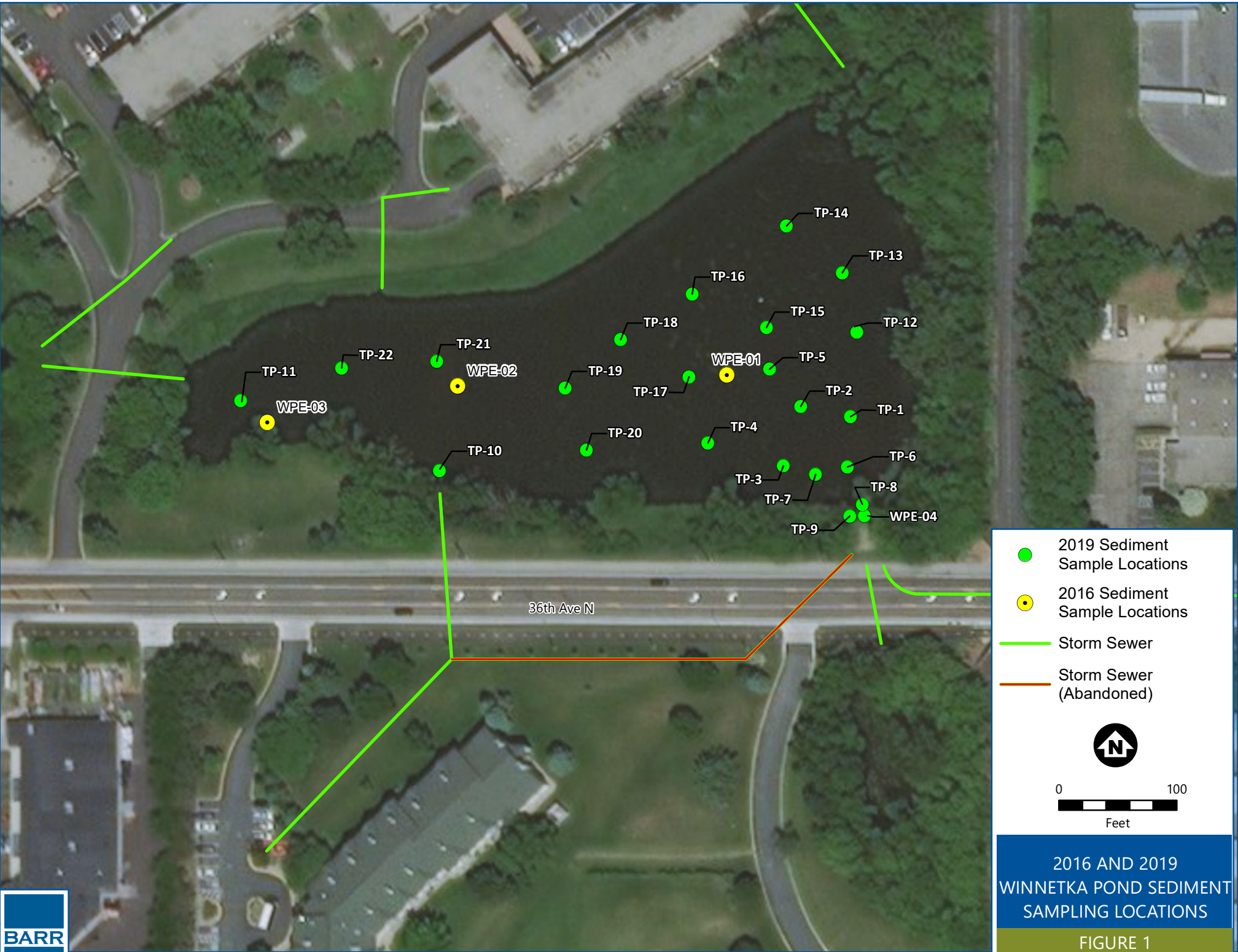
We recommend that the city 1) request the BCWMC approve use of the city's remaining allocated BCWMC channel maintenance funds (\$9,050) to help offset additional costs, 2) request an additional \$114,301 in funding from the BCWMC's CIP closed project account or other sources to complete this project, and 3) if the BCWMC approves the additional CIP funding, execute a revised agreement with the BCWMC, as required.

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

Sincerely,



Karen L. Chandler, P.E.
Vice President



2016 AND 2019
WINNETKA POND SEDIMENT
SAMPLING LOCATIONS
FIGURE 1

- UNREGULATED FILL
- DRO CONTAMINATED SOIL
- 880 — PROPOSED MAJOR CONTOUR
- 879 — PROPOSED MINOR CONTOUR
- TP-XX
52.60 2019 SAMPLE LOCATION
DRO CONCENTRATION (mg/kg)
- WPE-0X 2016 SAMPLE LOCATION
- NOTE: WPE-04 WAS SAMPLED IN 2019



1 PLAN: EXCAVATION PLAN 0 20 40 SCALE IN FEET

NO.	BY	CHK.	APP.	DATE	REVISION DESCRIPTION

I HEREBY CERTIFY THAT THIS PLAN, SPECIFICATION, OR REPORT WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

PRINTED NAME: PATRICK BROCKAMP
SIGNATURE: _____
DATE: _____ LICENSE # _____

CLIENT							
BID							
CONSTRUCTION							
RELEASED TO/FOR	A	B	C	0	1	2	3
DATE RELEASED							

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Scale	AS SHOWN
Date	02/13/2019
Drawn	PEB
Checked	JLB3
Designed	PEB
Approved	KLC

CITY OF CRYSTAL
CRYSTAL, MINNESOTA

WINNETKA POND
DREDGING PROJECT
EXCAVATION PLAN

BARR PROJECT No.	23/27-1622.00
CLIENT PROJECT No.	2018-04
DWG. No.	FIGURE 2
REV. No.	C

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