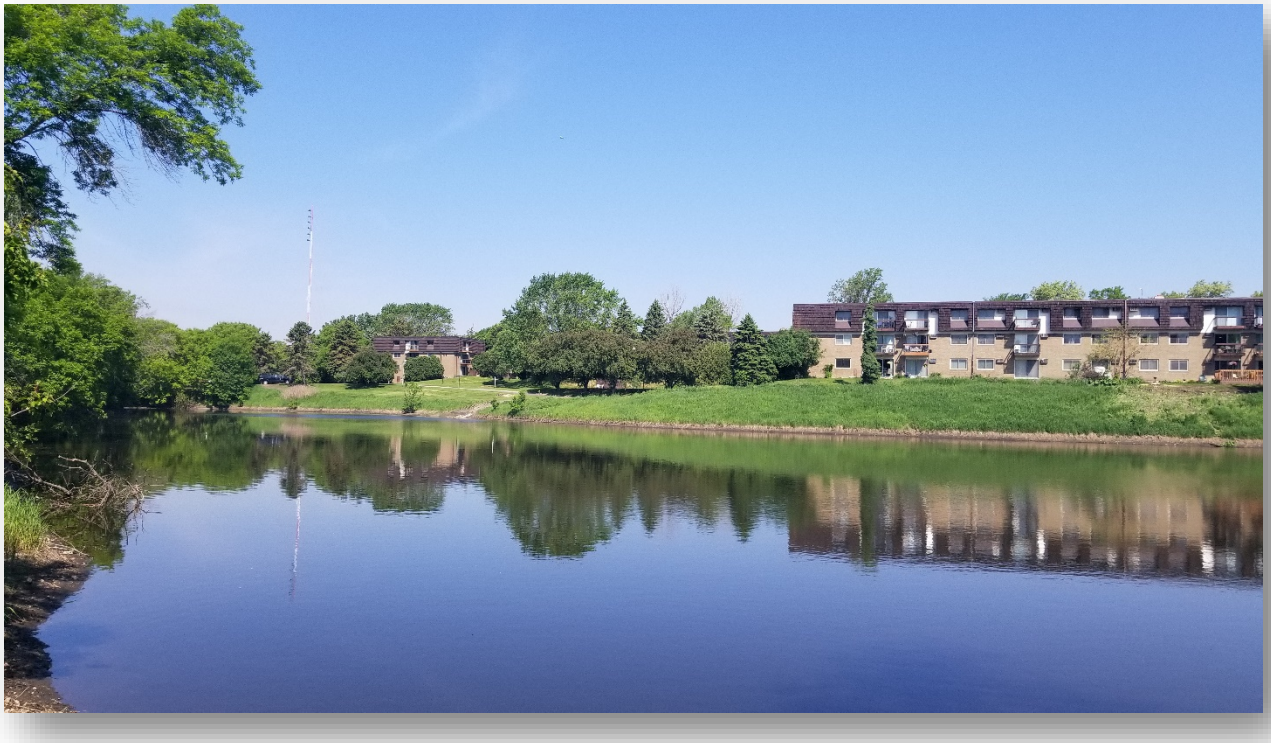
Bassett Creek Park Pond Phase I Dredging Project
Winnetka Pond
2018 BCP-2



FINAL REPORT
September 2020

Future addendum to include native buffer reporting

I. Project Overview

This Bassett Creek Watershed Management Commission (BCWMC) Capital Improvement Project in the City of Crystal dredged approximately 20,000 cubic yards (CY) of sediment from Winnetka Pond, increased the permanent pool volume to 14.6 acre-feet, and installed a native buffer around the pond to deter geese and improve pollinator and upland habitat. Winnetka Pond is located directly on the North Branch of Bassett Creek near the intersection of 36th Avenue North and Winnetka Avenue North (Figure 1). It's approximately 3 acres in size and drains roughly 243 acres of urban land from portions of Crystal and New Hope. This project is the first phase of the Bassett Creek Park Dredging Project aimed at reducing total phosphorus and total suspended sediment in North Branch of Bassett Creek. The project increased the depth of the pond from 0-2 feet average depth, to 6 feet deep across the entire pond. This project reduces total phosphorus by 51.7 pounds per year (based on professional judgement calculations) and total suspended solids by 1,823 pounds per year. Construction started in December of 2018 and pond dredging was completed in June of 2019. Once dredging was completed, work started on the 5-year native buffer restoration which will continue through at least summer of 2023.

II. Project Description and Outcomes

Through an agreement with the BCWMC, the City of Crystal designed and constructed this project. The city hired Barr Engineering Co. to design the project and provide construction oversight, and contracted with Veit & Company, Inc. (Veit) to construct the dredging project. The city also contracted Applied Ecological Services (AES) through 2023 for the construction and maintenance of the native vegetation buffer.

The project removed approximately 14,600 CY of sediment and 5,500 CY of contaminated sediment from Winnetka Pond. The environmental investigations and sediment sampling during the feasibility study showed that the dredged material could be reused as unregulated fill. However, during construction contaminated sediment was discovered near the outlet structure. Further investigation resulted in changes to the construction plans that added $65,000 in engineering fees, and $370,000 in construction costs for disposal of the contaminated sediment in a landfill. Additionally, in order to sufficiently remove the contamination, the existing outlet structure that was intended to remain had to be demolished and replaced.

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Prior to dredging, trees were cleared from the south and east sides of the pond. During construction of the native buffer, additional trees were cleared along the north and west sides of the pond to remove buckthorn and other undesirable species, and to allow more sunlight for native plants to thrive. The native buffer restoration is currently in its first full year of establishment and maintenance. The buffer is a minimum width of 30 feet, with an average width of 50 feet. Previous vegetation included buckthorn, reed canary grass, Canada thistle, and cocklebur. The native buffer includes such species as whorled milkweed, goat's rue, and purple prairie clover to improve pollinator and upland habitat and will deter geese from utilizing the area adjacent to the pond. Once complete, the results of the buffer restoration will be included in an addendum to this report.

III. Timeline and Key Documents

Dredging of Winnetka Pond was the first phase of the Bassett Creek Park Dredging Project aimed at reducing total phosphorus and sediment in North Branch of Bassett Creek and downstream in the Main Stem of Bassett Creek. The feasibility study for the Bassett Creek Park Dredging Project identified dredging of Winnetka Pond as a more cost-effective alternative to dredging the larger and more contaminated Bassett Creek Park Pond which lies downstream of Winnetka Pond. The project timeline is found below and documents can be found at: www.bassettcreekwmo.org/index.php?cID=403.

- May 2017: Final Feasibility approved
- September 2017: Project officially ordered
- September 2017: Agreement with City of Crystal executed
- April 2018: 50% Design Plans approved
- June 2018: 90% Design Plans approved
- December 2018: Construction began
- April 2019: Agreement with City amended to increase project budget for contaminated sediment disposal
- June 2019: Dredging completed
- Fall 2019 – 2023: Native buffer establishment

IV. Project Budget and Funding

This project was funded primarily through an ad valorum tax of $1,000,000 levied on watershed residents in 2018. Due to a project budget amendment, some BCWMC Closed Project Account funds were used as well as $9,050 of Channel Maintenance Funds allocated to the city of Crystal. No grant funding was sought for this project.

Original Total Project Budget: $1,000,000:
Feasibility Study Budget: $60,000
Administrative, Legal, Engineering Costs: $27,000
Design and Construction Budget: $913,000

Amended Total Project Budget (adjusted for disposal of contaminated sediment, additional engineering costs, replacement of outlet structure): $1,123,351

Final Costs:
Feasibility Study: $61,248
Administrative Costs: $7,994
Design and Construction (less buffer maintenance through 2023): $985,181
Estimated Buffer Maintenance Costs (including Engineering): $33,326
Total: $1,087,749

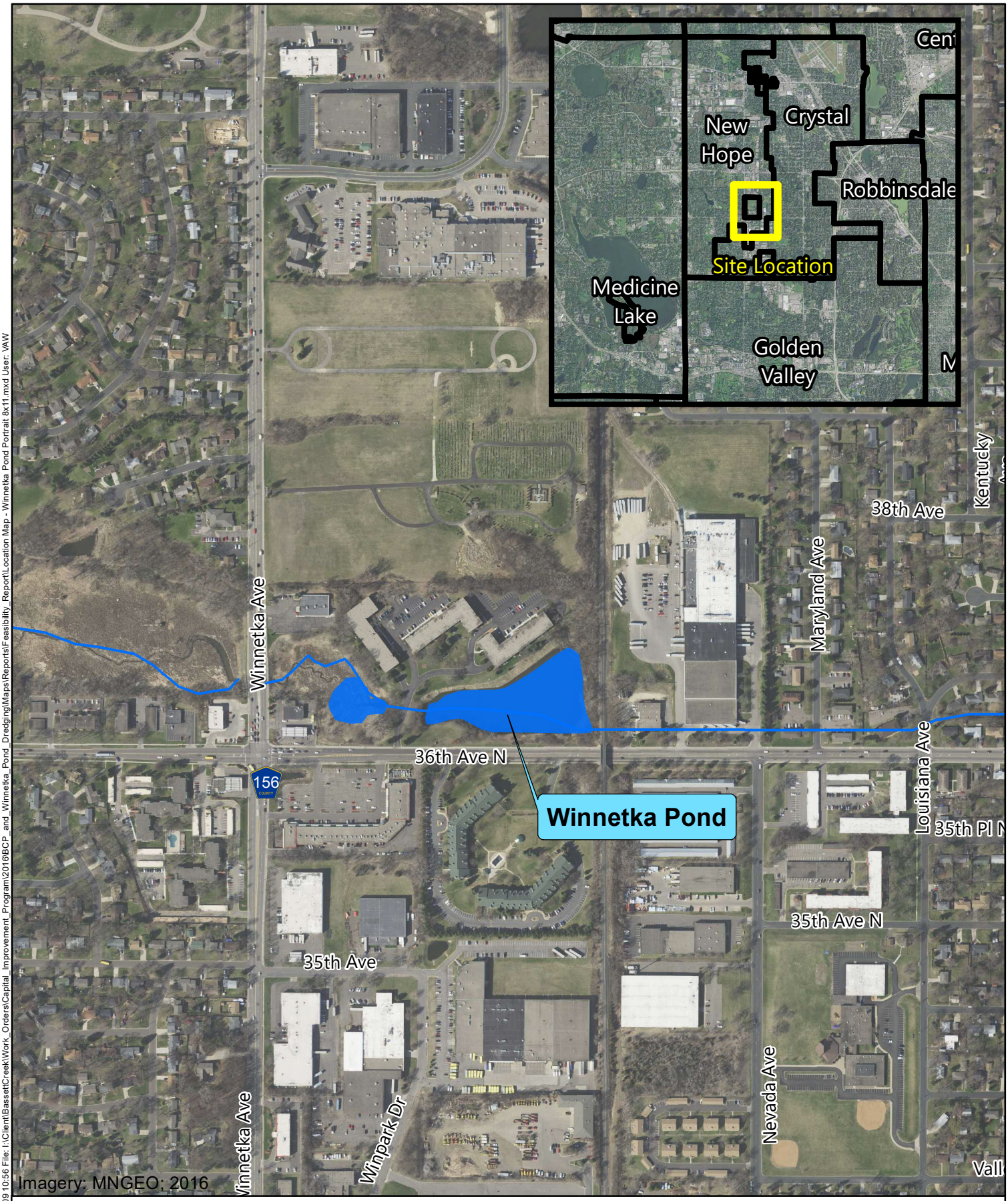
V. Lessons Learned

While Minnesota Pollution Control Agency (MPCA) guidelines for pond dredging were followed during the investigation phase, no excavation project is immune from uncovering unknown remnants of the past. Following the additional rounds of investigation during construction there still was no documented justification for the discovered contamination. Lessons learned include being responsive to changes in conditions and being flexible when design changes are required. Due to other BCWMC CIP projects coming in under budget, this project was able to receive additional funding to cover the increased costs and still be constructed to the full 6-foot depth as originally designed.

VI. Maintenance

The City of Crystal will perform any required maintenance of the pond outlet structure including debris removal. The improved trash rack allows for easy cleaning as well as reduced risk of plugging of the outlet. Very little maintenance of the pond is anticipated for the foreseeable future.

The native buffer is currently being maintained by AES. Their contract with the City of Crystal covers 5 years of establishment and maintenance which started in 2019 and extends through 2023. Years 1 & 2 are defined as the buffer establishment which includes seeding/re-seeding, mowing, and weed control with herbicide in order to achieve specified coverage standards for grasses and forbs. Years 3 – 5 are defined as buffer maintenance which include activities such as continued mowing, targeted weed control, and prescribed burns, as determined by the engineer. The entirety of the City's contract with AES is eligible for reimbursement through the project. At the end of the AES contract, the City will maintain the buffer. Per an easement agreement, Winnetka Village Apartments will reimburse the City for 90% of the cost of buffer maintenance in perpetuity.



Project Ponds

Bassett Creek

Feet

325 0 325 650

Meters

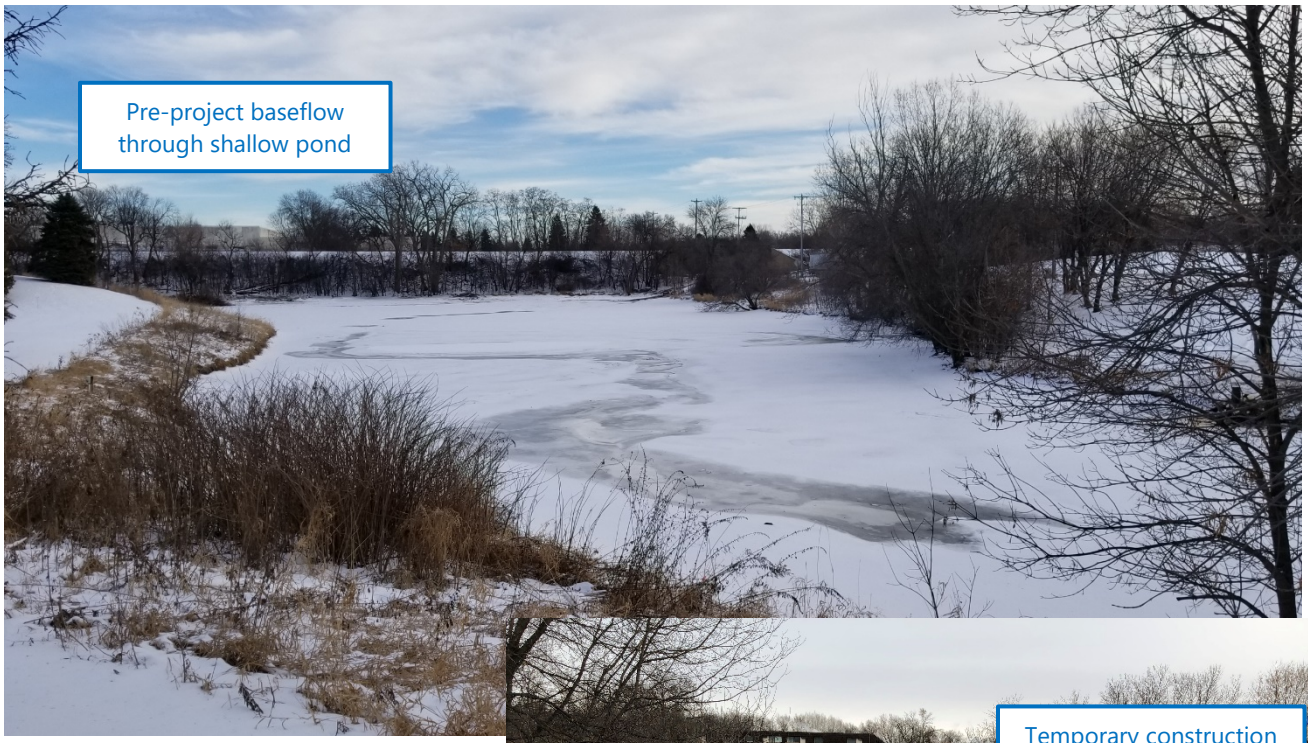
100 0 100 200

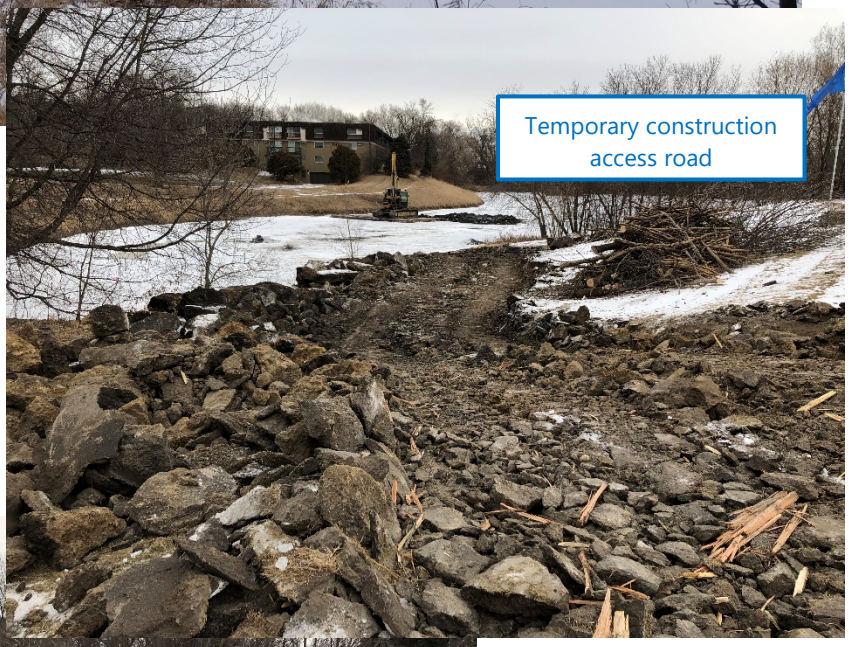
FIGURE 1

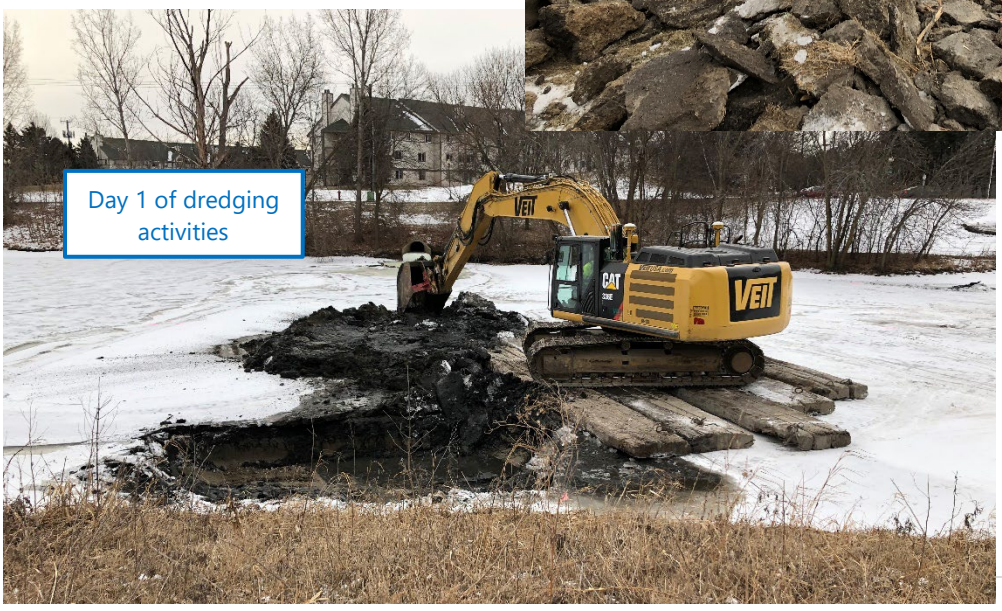
LOCATION MAP
Winnetka Pond Native Buffer
City of Crystal

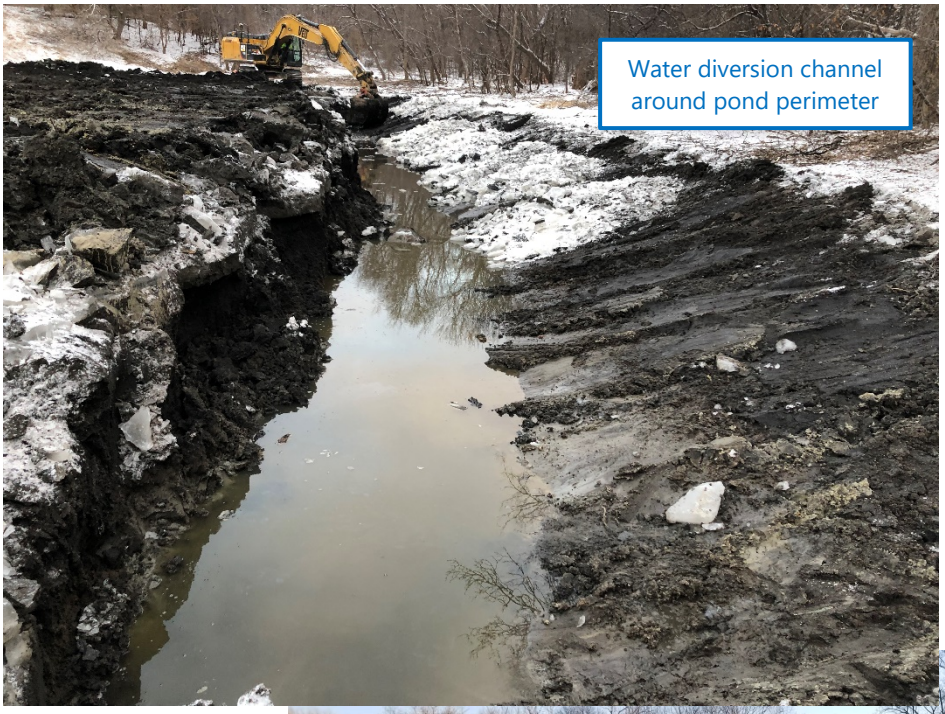
Barr Footer: ArcGIS 10.7.1, 2020-09-09 10:56 File: I:\Client\BassettCreek\Work_Orders\Capital_Improvement_Program\2016\BCP_and_Winnetka_Pond_Dredging\Maps\Reports\Feasibility_Report\Location Map - Winnetka Pond Portrait 8x11.mxd User: VAW

VII. Photos

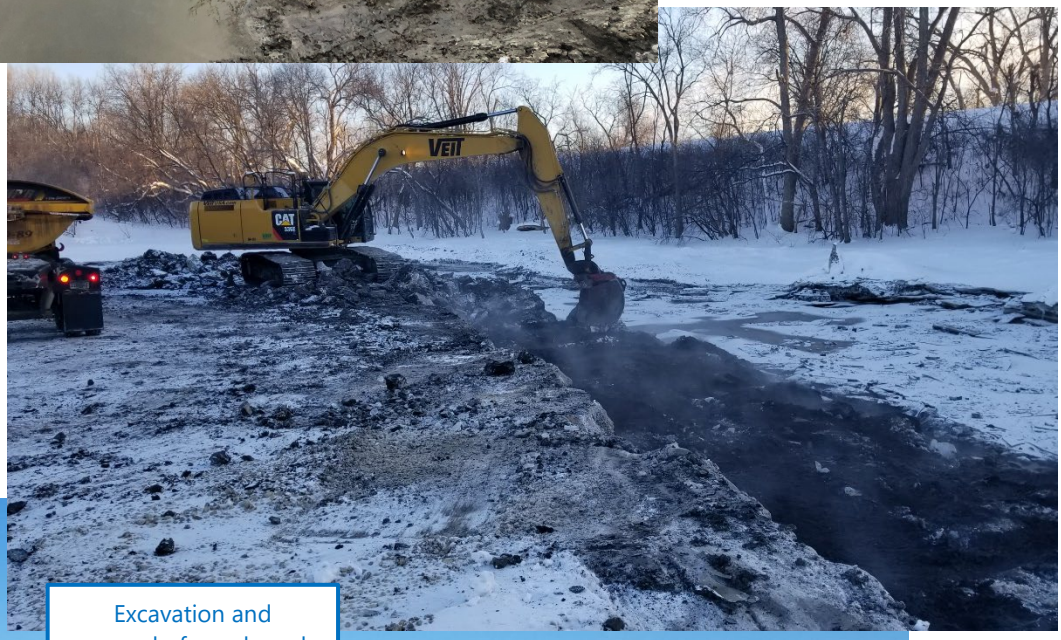

Pre-project baseflow through shallow pond

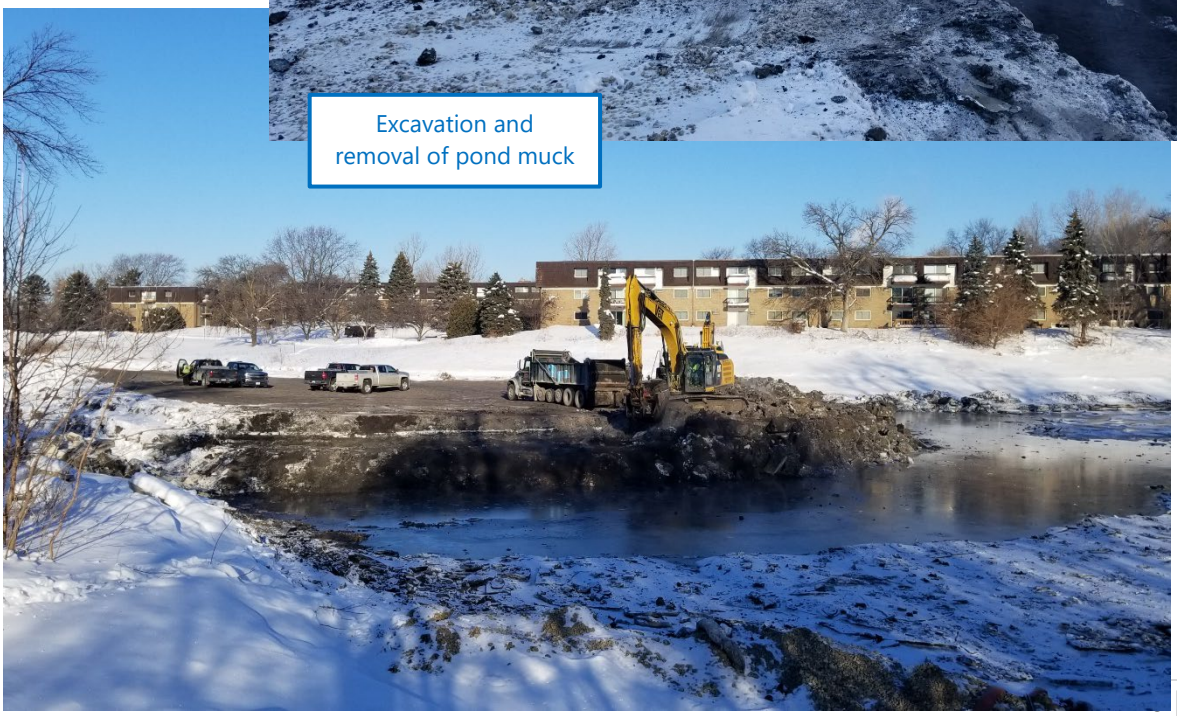

Temporary construction access road


Day 1 of dredging activities
CAT
VEIT

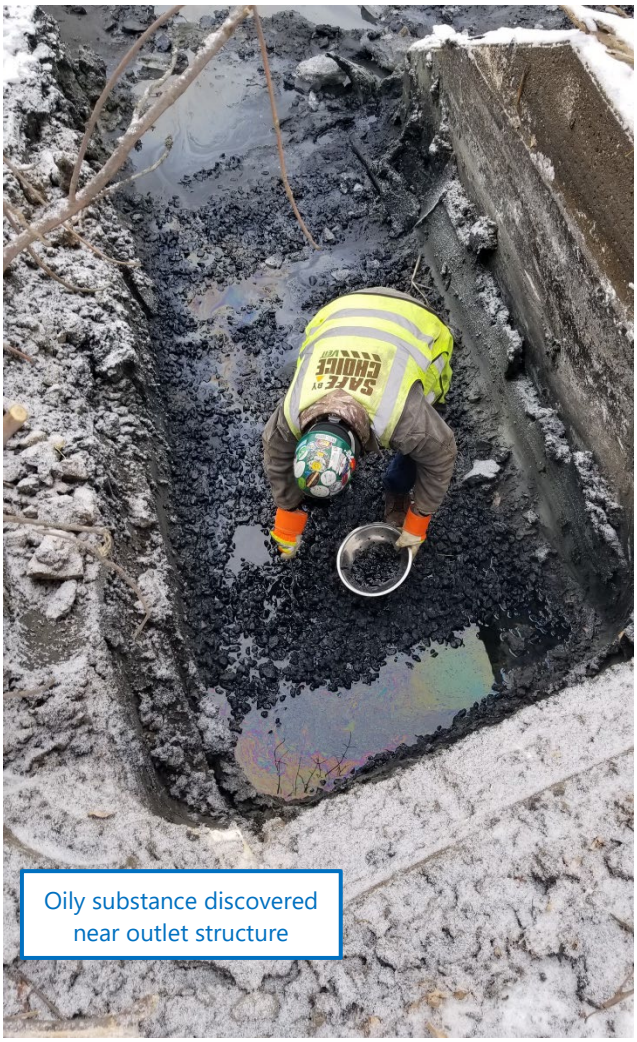


Water diversion channel around pond perimeter

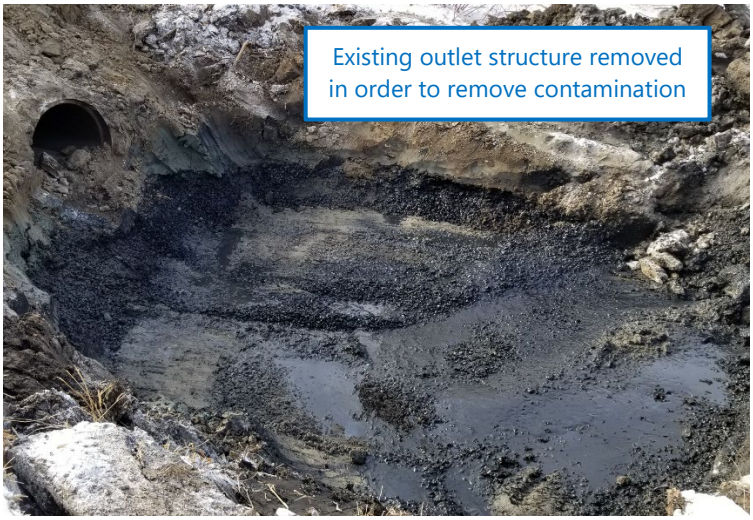




Excavation and removal of pond muck

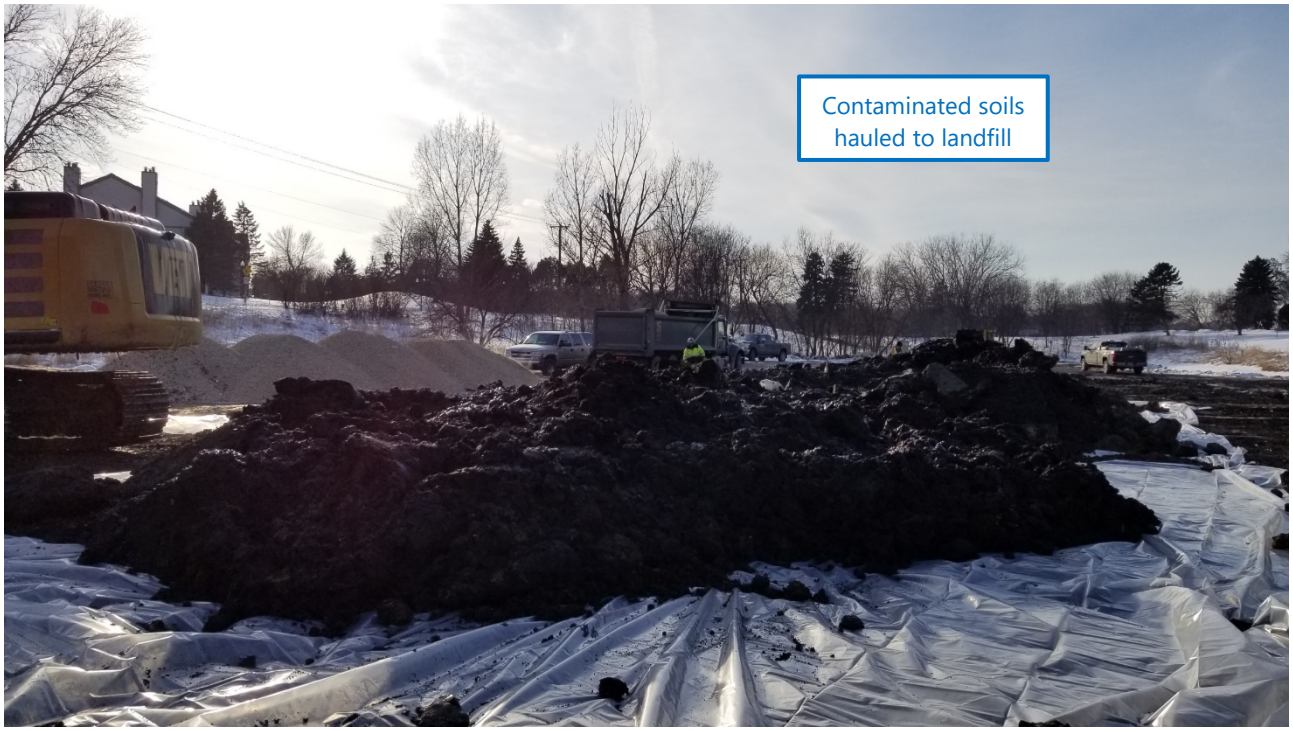


Oily substance discovered near outlet structure

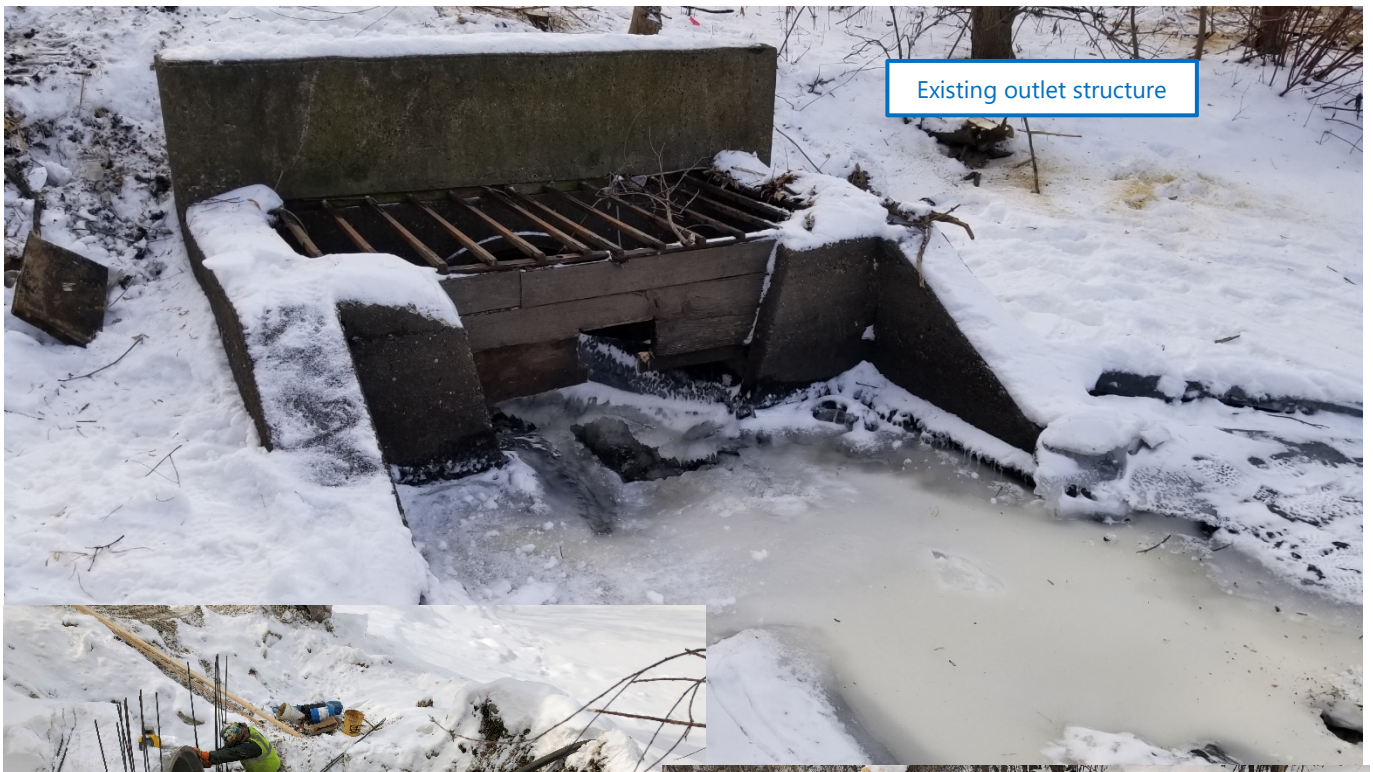


Existing outlet structure removed in order to remove contamination

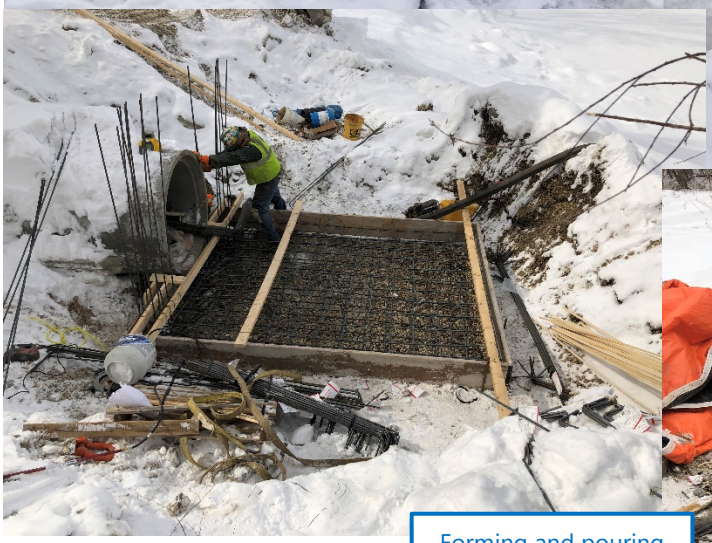
Bentonite barrier installed

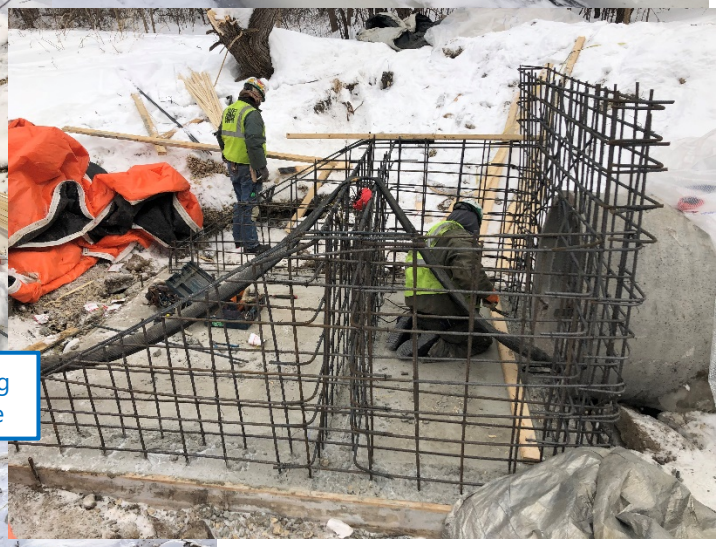


Contaminated soils hauled to landfill

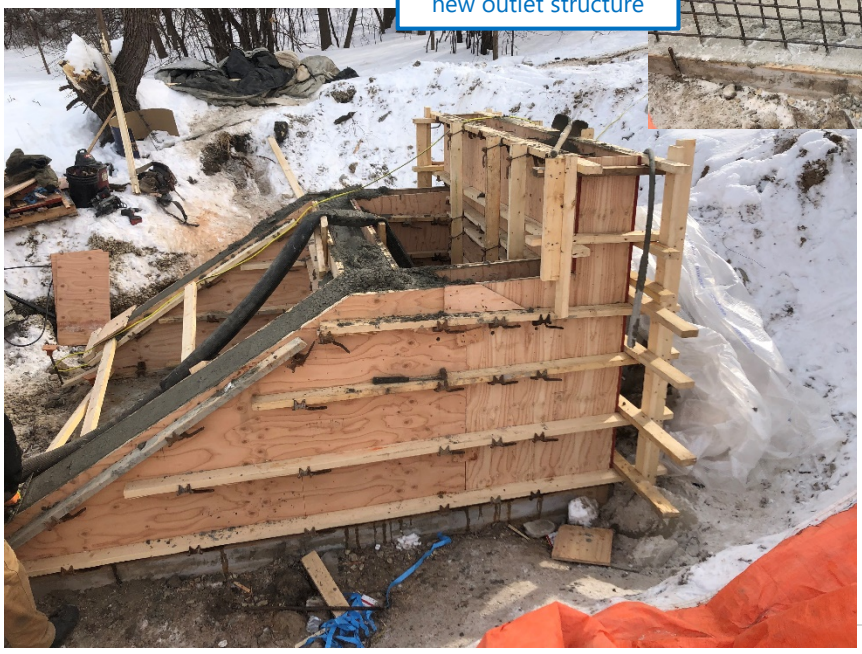


Existing outlet structure

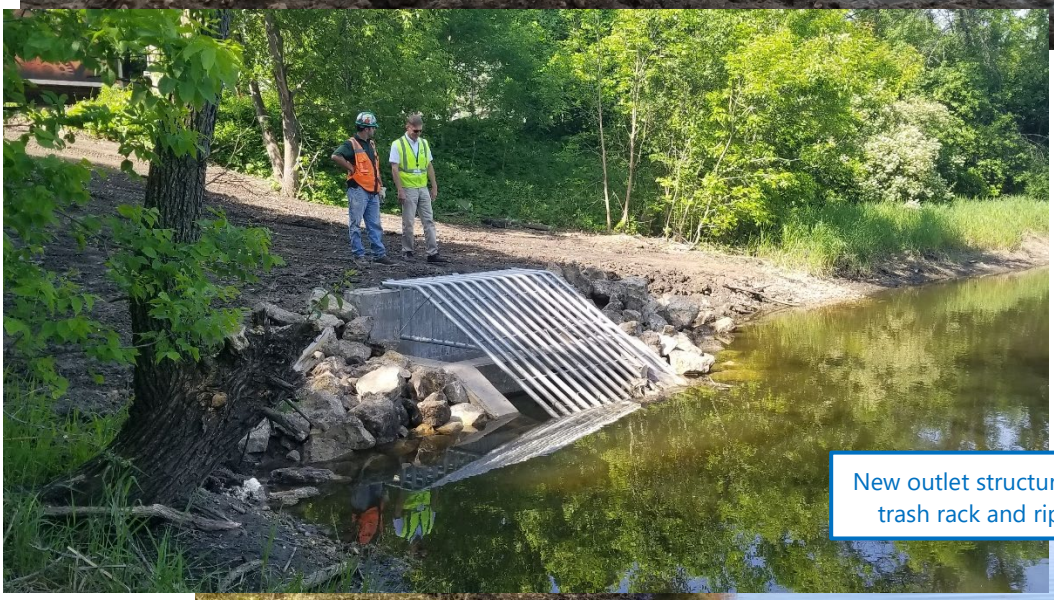




Forming and pouring new outlet structure



New outlet structure during March snowmelt / rain event



New outlet structure with trash rack and riprap