

Technical Memorandum

To: Linda Loomis, Administrator
Lower Minnesota River Watershed District

From: Katy Thompson, PE, CFM
Della Schall Young, CPESC, PMP

Date: May 6, 2020

Re: Ridge Creek Park—99% Project Review

The City of Shakopee provided the Lower Minnesota River Watershed District (District) 90 percent design construction plans, including the Stormwater Pollution Prevention Plan (SWPPP), SWPPP notes, and a water quality memorandum for the Ridge Creek Park Project (Project). The Project generally consists of the development of a new passive and nature-centric park on the Lennar Ridge Creek development outlots. This project will connect existing trails, enhance wetlands, incorporate water quality features to reduce sediment and phosphorus to Dean Lake, and realign and restore the Prior Lake Outlet Channel (PLOC).

While City projects are not generally subject to District review, this project is partially funded through the Board of Soil and Water Resources (BSWR) 2019 Watershed Based Funding program, with the District as the grant administrator. The District has requested Young Environmental Consulting Group (Young Environmental) to conduct the review on its behalf for compliance with the grant funding agreement, executed on November 6, 2019.

On April 2, 2020, Young Environmental provided the City with a review summary and 90 percent plan set comments. The City's representative, Barr Engineering, provided a response and a 99 percent plan set received by the District on May 1, 2020. Barr Engineering responses are provided below in **red** and updates to our review are provided below, in **blue**.

Background

The City of Shakopee provided the following documents for review:

- Email from K. Templin to LMRWD Administrator, dated March 25, 2020
- Agreement for pass-through funding for Prior Lake Outlet Channel Realignment/Wetland Restoration, executed November 6, 2019
- 90 percent construction plans, dated March 17, 2020, by MKSK
- Prior Lake Outlet Channel Realignment/Wetland Restoration Workplan
- WCA Minnesota Joint Application Form, dated November 20, 2019, by City of Shakopee
- Ridge Creek Park Water Quality Analysis Memo, dated March 20, 2020, by Barr Engineering
- [Draft bid set construction plans, dated April 29, 2020](#)
- [“Responses to Comments from Linda Loomis, Lower Minnesota River Watershed District on 90% Documentation Set Dated 3/17/2020” memo, dated April 16, 2020](#)

The project proposes to realign the Prior Lake Outlet Channel (PLOC) and restore adjacent wetlands to improve the water quality in Dean Lake and the downstream Minnesota River. The project proposes to increase the impervious area on the site by 0.70 acres through the construction of a bituminous trail and boardwalk and to disturb a total of 14.94 acres through site restoration and the construction of a new channel, culvert, and retention basin. The LMRWD signed an agreement with the City of Shakopee to provide pass-through funding for the BWSR 2019 Watershed Based Funding program.

The 2019 Watershed Based Funding agreement for \$71,750 outlines the following items, as it pertains to this review:

- Realignment of the Prior Lake Outlet Channel (PLOC) and wetland restoration
- Preparation of a feasibility study to determine the potential water quality benefits to Dean Lake and downstream Minnesota River resulting from the restoration of the PLOC by creating meanders and constructing a flow-through wetland complex to slow the flow of water
- Modeling to include estimates of water quality benefits and design and construction of water quality improvements

Findings

The documents provided for this review do not indicate whether a formal feasibility study has been conducted to evaluate project alternatives; however, the Ridge Creek Park Water Quality Analysis memo does provide analysis of the water quality benefits of the Project based on the proposed stabilization of the existing PLOC banks as well as the incorporation of two sedimentation ponds into the new PLOC alignment within Ridge Creek Park.

As proposed in the BWSR funding request, the Project is estimated to reduce total phosphorus and total suspended solids loading to downstream Dean Lake by 30–50 and 75,000–100,000 pounds annually, respectively. The updated analysis of the final design shows water quality load reductions of 66 pounds of total phosphorus and 202,300 pounds of total suspended solids annually, exceeding the original funding request estimate.

The memo does not discuss the hydraulics of the new PLOC alignment or the effects on the velocities within the PLOC, but one can reasonably assume that with the increased channel length resulting from the proposed meanders, the overall velocities within the PLOC would be less than or similar to existing conditions.

The provided 90 percent plans are consistent with the BWSR 2019 Watershed-Based Funding Agreement and workplan.

Recommendation

The Project, as presented, is consistent with the executed agreement, and Young Environmental offers the following comments related to the plans:

- Construction limits vary across the plan set, please review, and update the sheets to include the final construction limits if needed.

Construction limit discrepancies are corrected in the current plan set

- As noted previously, on Sheet C-04 the reconstruction of the existing box culvert is shown as outside of the project construction limits.
- Will the removal of the existing wooden weir on the box culvert (as shown on Detail 3, Sheet D-04) affect the existing hydraulics beyond the project limits?
- Proposed grading differs on the civil sheets versus the landscape architecture sheets, please review, and update the sheets if needed.

Discrepancies in the grading are corrected in the plan set. There still may be minor field adjustments during project construction due to accuracy of LIDAR data

- As noted previously, on Detail 3, Sheet C-04 shows 5-ft of cut at the proposed outfall, but no other grading is shown on the plan. While a note has now been added that water will discharge to the existing channel, however the channel is not shown on the plans.
- On Sheet C-03, channel fill shown in plan view does not follow the revised pipe alignment – is this still intended to provide cover over the pipe or is this fill being placed for another purpose?

- As noted previously on Sheet C-05, at approximate Station 0+75, the plan shows proposed riprap bank stabilization, but no contours, how will the old PLOC continue to flow?
- The civil design sheets only show 2-ft proposed contours, please show the 1-ft contours used in the landscape sheets.
- The existing PLOC is a public waterway and would require a permit from the Minnesota Department of Natural Resources for the realignment to confirm flood capacity is not diminished by the project.

This was checked on early in the design process. This reach of PLOC that flows through Ridge Creek Park is not listed as a public water and DNR determined a permit to construct a new meandering channel is not required

- Noted.
- Email from the City of Shakopee indicated the grading changed due to comments from the U.S. Army Corps of Engineers; however, the WCA Joint Permit indicates the pond slopes were 8H:1V for wildlife access, whereas the plans now show 4H:1V side slopes; please verify.

In telephone discussion with the USACE, an 8H:1V slope in the ponds is not required as the surrounding wetland leading to where the ponds are to be constructed, currently are flatter than 8H:1V and the grades leading to the ponds after construction will also be flatter than 8h:1V.

- Noted.
- The proposed 24-inch RCP storm sewer outfall appears to conflict with the proposed plantings and trail shown on the landscape architecture sheets; please verify.

The 24-inch RCP was lengthened slightly, and the planting plan was adjusted. The conflicts you point out have been corrected.

- As noted previously, on Sheet R-01, the proposed storm sewer outfall and riprap is located on top of the turf-reinforced mat access trail – will that impede maintenance access?
- In the revised Issued for Bid plans, dated April 29, 2020, there is a new note on Sheets C-03 and C-04 that states, “All wetland areas to be lowered by 1-foot.” What is the rationale for this change and has it been discussed with permitting agencies to confirm the previous wetland permitting is still valid?