



December 8, 2014

Mr. Jeff Oliver, P.E.
City Engineer
City of Golden Valley
7800 Golden Valley Road
Golden Valley, MN 55427

**Re: 50% Design Plans – Schaper Pond Improvements Project
Golden Valley Project 13-28**

Dear Mr. Oliver:

Attached please find the 50% design plans for the Schaper Pond Improvements Project. The Bassett Creek Watershed Management Commission (BCWMC) is funding the Schaper Pond Improvements Project (BCWMC CIP SL-3) through a 2014 ad valorem levy (via Hennepin County). Per the cooperative agreement between the City of Golden Valley 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 BCWMC's CIP project flow chart, the 50% design plans for this project must be submitted to the BCWMC for review and approval. If the attached 50% 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 December 18th meeting. Barr staff will present the 50% 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 Sweeney Lake Total Phosphorus Total Maximum Daily Load Study (TMDL study) was completed in 2011, and the implementation program in the TMDL study included several BMP options to reduce watershed phosphorus loads. One of the options called for modifying the flow through Schaper Pond so that it would be more efficient in removing phosphorus before discharging to Sweeney Lake. Schaper Pond is immediately upstream (south) of Sweeney Lake.

Following completion of the TMDL study, the BCWMC completed the *Feasibility Report for the Schaper Pond Improvement Project* (February 2012) to evaluate modification options within Schaper Pond to improve the pond's phosphorus removal performance. The study found two options to be viable: 1) dredging to increase the pond depth to improve particle settling, and 2) diversion of water within Schaper Pond to direct more of the flows to the northwest part of the pond.

The BCWMC selected the diversion option from the feasibility study for construction, because it would be the most cost-effective approach to improve the total phosphorus removal performance of the pond and meet the external load reduction required by the Sweeney Lake TMDL.

In September 2014, Barr performed a detailed alternatives analysis of three potential diversion options: 1) earthen berm, 2) sheet pile wall, and 3) floating water baffle. The analysis considered various advantages and disadvantages of each option and included a detailed assessment of probable lifecycle costs. Based on the results of the analysis, the city determined that the best option was the floating water baffle.

Design features – 50% plans

The primary design features of the proposed work, as shown on the 50% plans, include:

1. Installation of a floating water baffle. An approximately 380-foot long baffle would extend from the east side of the pond across the middle of the northwest lobe of the pond, directing flows to the northwest lobe. Under flow conditions up to 25 cfs, the bottom of the baffle curtain would rest on the pond bottom and the top of the curtain would float. However, the northernmost section of the baffle curtain would be shorter (i.e., the bottom of the curtain would be about two feet off the bottom) to allow flows to pass underneath the curtain.

Under higher-flow conditions (above 25 cfs), the bottom of the baffle curtain would rise off the pond bottom as the pond water level rises. The floating water baffle is designed to operate in this manner up to the 100-year flood event, an elevation range of 9.2 feet, from a normal water level of 827.6 feet to elevation 836.8 feet.

2. Cattail removal and berm construction. Rather than extend the floating water baffle across the shallow, boggy (cattail) area on the east side of the pond, the design calls for cutting an approximately one-foot deep, five-foot wide, and 100-foot long trench through the area. The trench would be backfilled with clean material and up to about one foot above the existing ground/pond bottom. This would result in approximately 500 square feet of wetland fill.
3. Remove portion of existing berm. The design calls for the removal of a 27-foot portion of the existing berm that separates the northwest lobe from the east “channel” portion of the pond. The removal will prevent the occurrence of increased flow velocities between the floating baffle curtain and existing berm.

Other design features include the creation of two dedicated access areas for maintenance. One access would be located near the existing pond skimmer and result in approximately 200 square feet of wetland fill. The other access would be located near the north end of the proposed floating water baffle (no wetland fill would result). These access areas will allow city maintenance crews to more easily remove debris that accumulates on the upstream side of the skimmer and the floating water baffle. The access near the baffle would also provide for easier maintenance dredging of the northwest lobe of the pond.

As stated in the feasibility study, the project is anticipated to achieve reductions in total phosphorus ranging from 81 – 156 pounds per year.

Approvals/permit requirements

In addition to BCWMC approval of the plans, other permits/approvals will be required for this project. Of largest concern is the Minnesota Department of Natural Resources’ (MDNR) public waters work permit and the associated Minnesota Pollution Control Agency (MPCA) review.

On September 9, 2013, BCWMC staff and City of Golden Valley staff attended a "pre-application" meeting with MDNR and MPCA staff to discuss the likelihood of obtaining a MDNR permit for the proposed flow diversion in Schaper Pond. At that meeting, the MDNR requested an assessment of the potential impacts to the Schaper Pond wetlands and the pond's water quality with construction of the diversion. The BCWMC completed that assessment in November 2013 and submitted it to the MDNR and the MPCA. The assessment concluded that there would not be any notable water quality effects in Schaper Pond with the construction of the proposed diversion and redirection of flow within the pond. It also concluded that there would not be any wetland impacts in Schaper Pond with construction of the diversion and redirection of flow in the pond because the functions and values of the Schaper Pond wetlands would not change with construction of the project.

In January 2014 the MDNR concluded that the project was permissible, after reviewing the BCWMC's analyses of water quality and wetland impacts. However, the MDNR's summary of their review also added that according to the MPCA "...the Schaper Pond flow diversion project would not constitute a reduction in the waste load allocation for meeting the Sweeney Lake eutrophication TMDL. According to the MS4 permit such load reductions need to be made at the point of discharge to waters of the state..." These comments resulted in a delay in the project implementation as the city and BCWMC considered whether they should move forward with the project.

In their January 2014 email, the MDNR also offered suggestions for mitigation options to offset the "likely negative impacts to Schaper Pond from past and proposed alterations."

Barr performed a wetland delineation of Schaper Pond that covers the area of the pond likely to be impacted by the project. Schaper Pond is a MDNR public waters wetland (27064900W); therefore, the MDNR will have partial or entire jurisdiction for Wetland Conservation Act (WCA) purposes.

As noted above, under the "design features" section, the proposed project now includes approximately 700 square feet of wetland fill that was not anticipated at the time this project was discussed with the agencies. This means the project will require wetland permitting and mitigation through the WCA.

The 50% design plans do not yet incorporate the feasible MDNR-suggested wetland mitigation options or the WCA-required wetland mitigation; the 90% plan set will include/address these requirements. It is our understanding that the city plans to use its wetland banking credits to cover the required WCA wetland mitigation.

Recommendations

We recommend that the city request 1) BCWMC approval of the 50% drawings, and 2) BCWMC authorization for the city to proceed with final plans and contract documents, and permitting.

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

Sincerely,



Karen L. Chandler, P.E.
Senior Water Resources Engineer

