



Memorandum

To: Bassett Creek Water Management Commission
From: Barr Engineering Co.
Subject: Item 5G – Consider Adding Sediment Monitoring to Sweeney Lake Aeration Study
Date: March 8, 2017
Project: 23270051.38 AER 001

Recommendation

1. Consider approval for the Commission Engineer to conduct sediment sampling on Sweeney Lake, as an addition to the Sweeney Lake Aeration Study, at an additional cost not to exceed \$3,000.
2. If the Commission approves the sediment sampling, the Commission Engineer recommends that the additional funds come from the 2017 Surveys and Studies budget.

Background

A preliminary meeting in January with Sweeney Lake Association members, Golden Valley staff, Golden Valley commissioners and the administrator to discuss the aeration study generated a question about whether lake sediment monitoring would be conducted. While sediment monitoring was not viewed as a requirement, and thus was not included in the initial work scope for the aeration study, this memo presents the benefits of sediment monitoring and why the Commission Engineer recommends that the Commission fund this additional data collection for the aeration study.

The sediment monitoring would improve confidence in the study results and the reliability of study, but would not be a requirement for modeling Sweeney Lake. However, collecting sediment monitoring data from Sweeney Lake would be helpful for the following reasons:

- **Develop more-refined costs for potential improvement options identified in the study**—the cost to complete improvements, such as changes to the aeration system or a future alum treatment, can be based on the actual amount of “releasable phosphorus” in the sediment which would result in a more-refined conceptual design and associated cost estimate for each improvement option.
- **Better inform the aeration study modeling**—without sediment monitoring data, we would estimate the internal phosphorus load from lake monitoring data, as was previously done to evaluate aeration for the TMDL study. The sediment monitoring data allows us to determine the actual amount of “releasable phosphorus” in the sediment and better account for the internal phosphorus loading potential under all conditions.

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- **There are significant cost savings in performing the sediment monitoring at this time**—as a part of the Commission Engineer’s current work scope, Barr staff will already be on the lake collecting a mid-May lake water sample. Collecting sediment data at the same time would eliminate field and travel costs for the extra data collection. If sediment monitoring were to be performed outside of this study it would cost two or three times more than the estimated \$3,000 needed to perform the work now.
- **The results of sediment monitoring will be incorporated into the Sweeney Aeration Study Report**—there will not be additional costs to report on the results of the sediment monitoring as the sediment phosphorus concentrations will be plotted and shown (graphically) in a report appendix.