



## Memorandum

**To:** Bassett Creek Watershed Management Commission  
**From:** Barr Engineering Co.  
**Subject:** Item 5A – Recommendations for 2023 Schaper Pond Effectiveness Monitoring (CIP Project SL-3)  
BCWMC March 16, 2023 Meeting Agenda  
**Date:** March 2, 2023

### 5A. Recommendations for Schaper Pond Effectiveness Monitoring (CIP Project SL-3)

#### Recommendations:

1. Approve a budget of up to \$18,000 from the remaining Schaper Pond Diversion Project CIP funds for the 2023 Schaper Pond effectiveness monitoring.

#### Background

Following installation of the floating water baffle in Schaper Pond (shown on Figure 1), several investigations in 2017 and 2018 identified problems with stormwater treatment in Schaper Pond and found carp populations exceeding the 100 kg/ha threshold associated with impacts on water quality (Bajer et al., 2009). In 2019, the Commission was awarded grant funding for the Sweeney Lake Water Quality Improvement Project, which included a goal to reduce carp biomass in Sweeney Lake and Schaper Pond during the spring and summer of 2020. The carp reduction part of this project also tracked carp movement to 1) assess the likelihood that carp from Sweeney Lake could re-populate Schaper Pond, and 2) assess the need to prevent movement of juvenile and adult carp from Schaper Pond to Sweeney Lake. The Commission Engineer hired Carp Solutions, LLC as its subconsultant on this investigation (and all previous investigations) to analyze carp impacts in the Sweeney Lake-Schaper Pond system. A 2022 carp survey and reassessment of biomass confirmed that carp populations in Schaper Pond and Sweeney Lake are still below the 100 kg/ha threshold for water quality impacts, and the Commission approved the Commission Engineer's recommendations and associated funds at their January 2023 meeting to resurvey and reassess the carp populations in the system in 2024.

At their January meeting, the Commission also directed the Commission Engineer to provide recommendations for future Schaper Pond effectiveness monitoring efforts, to assess the functionality of the diversion project, and to integrate that monitoring with the approved 2024 carp survey.

#### Recommendations for Schaper Pond Effectiveness Monitoring

The carp survey and effectiveness monitoring efforts need to be correctly timed to minimize confounding factors and improve interpretation of the data. Our recommended schedule for the Schaper Pond

effectiveness and carp monitoring (shown below in chronological order) considers the importance of timing these activities:

1. 2023 growing season—complete at least three and up to five water quality sampling events at the four sites shown on Figure 1, consistent with the monitoring we completed in 2017. (The \$18,000 budget would cover five sampling events.) The 2017 monitoring included a measurement of pond water level at the outlet weir and grab samples analyzed for total phosphorus (TP), total dissolved phosphorus (TDP), total suspended solids (TSS), volatile suspended solids (VSS) and chlorophyll-a. The monitoring will provide “snapshots” of how phosphorus and suspended solids concentrations differ in Schaper Pond as the stormwater and baseflow moves through the system.
2. Spring 2024—complete preliminary carp survey and biomass assessment (as approved at the January 2023 Commission meeting) to determine next steps:
  - a. If carp population and 2023 monitoring assessment results (if approved by the Commission) indicate a problem, complete carp box netting in the summer and plan on completing Schaper Pond effectiveness monitoring in 2025.
  - b. If carp population and 2023 monitoring assessment results DO NOT indicate a problem, or if the 2023 monitoring indicates a problem, but the carp population is below the water quality threshold, proceed to next step to estimate pollutant load reductions for Schaper Pond.
3. Summer/fall 2024 (not requesting budget approval at this time)—complete more detailed Schaper Pond effectiveness monitoring, consistent with the monitoring completed by the Commission Engineer in 2017, including automatic sampling and flow monitoring, and sample analysis for TP, TDP, TSS, VSS and particle size distributions at the Schaper outlet, Hwy 55 inlet and Railroad inlet sites to allow for detailed computations of pollutant load reductions for Schaper Pond.


The proposed 2023 monitoring does not include any continuous monitoring or automatic sampling; therefore, we cannot estimate phosphorus and solids loadings and pond treatment efficiency from the 2023 monitoring efforts. The 2023 monitoring involves a lower (screening) level of effort to see if there is an obvious problem with pond treatment (e.g., TP concentrations are higher at the outlet than at the inlet). It represents a hedge against the Commission dedicating more significant resources (both staff time and equipment) toward more-rigorous monitoring in 2024. As a result, we recommend that the Commission budget \$18,000 from the remaining Schaper Pond Diversion Project CIP funds for the Schaper Pond monitoring during the 2023 growing season (described in #1, above).

After subtracting the already approved carp survey and potential box netting activity (#2 above), the Schaper Pond Diversion Project CIP budget would have a balance of \$85,906.



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● Grab Sample Locations  
  
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**Figure 1**  
**MONITORING & BAFFLE**  
**LOCATIONS**  
 Schaper Pond Effectiveness  
 Monitoring  
 Bassett Creek Watershed  
 Management Commission