Minnehaha Creek Watershed District *REQUEST FOR BOARD ACTION*

MEETING DATE: April 27, 2017

TITLE: Authorization to Execute the Development of Schutz Lake Phosphorus Budget

RESOLUTION NUMBER: **17-030**

PREPARED BY: Kelly Dooley, Water Quality Manager

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REVIEWED BY: ☐Administrator ☐ Counsel ☒ Dept. Director: Craig Dawson
☐ Board Committee ☐ Engineer ☒ Other: Eric Fieldseth, Yvette Christianson

WORKSHOP ACTION:

☐ Advance to Board mtg. Consent Agenda. ☐ Advance to Board meeting for discussion prior to action.

☐ Refer to a future workshop (date):_____ ☐ Refer to taskforce or committee (date):_____

☐ Return to staff for additional work. ☐ No further action requested.

☒ Other (specify): Recommend Approval

PURPOSE or ACTION REQUESTED:
Authorization to execute the development of Schutz Lake Phosphorus Budget. The cost of the developing the phosphorus for Schutz Lake is not to exceed $11,802.

PROJECT/PROGRAM LOCATION:
Schutz Lake

PROJECT TIMELINE:
April 28, 2017 – July 31, 2017

PROJECT/PROGRAM COST:
Fund name and number: Research and Monitoring: Diagnostic Monitoring/Analysis & 500-5001-4520
Requested amount of funding: $11,802
Budgeted amount in 2017 work plan: $20,000
Is a budget amendment requested? No
Is additional staff requested? No

PAST BOARD ACTION:
None.

RESEARCH AND MONITORING STRATEGIC PRIORITY SUMMARY:
On February 9, 2017, the MCWD Board of Managers approved a Strategic Direction for the District and its programs. Through that process, the priorities for MCWD's Research and Monitoring (R/M) have shifted towards diagnosing issues at a project specific scale across the watershed district to support planning and project implementation in order to protect and improve water resources.

The new Research and Monitoring priorities are outlined as follows:

1. Diagnose issues at a project-specific scale
2. Broadly characterize ecological health
3. Collaborate on management strategies
4. Communicate results

Schutz Lake Summary:

The water quality in Schutz Lake has been declining in recent years, but has not passed a tipping point for rapid deterioration. Staff has been working with the City of Victoria and lake residents to address this issue in a timely and effective manner. At this point, it is important to gain a thorough understanding of the phosphorus loads into and already within Schutz Lake.

Schutz Lake (106 acres) is the only lake that resides within the Schutz Lake Subwatershed. The water quality in the lake has been monitored since 2000, and the water quality draining into the lake from Madelyn Creek has been monitored since 2006. Schutz Lake has an algal problem, as the summer averages of algal concentrations (i.e., chlorophyll-a concentrations (CHLA)) in the lake often exceed the eutrophication standard (CHLA Std < 14 part per billion (ppb)) set by the Minnesota Pollution Control Agency (MPCA). Schutz Lake is not on the impaired waters list at this point in time. For a lake to be considered for listing, both phosphorus (TP) and chlorophyll-a concentrations or both phosphorus concentrations and water clarity measurements need to be not meeting the eutrophication standards for two consecutive years.

Phosphorus concentrations in the lake have met the standard 14 out of 17 years. Surface phosphorus concentration are often meeting the standard (TP < 40 ppb); however, the monitoring data indicates that the surface phosphorus concentrations are just below the standard (between 30-39 ppb), and that the lake sediments are releasing phosphorus into the water column. The monitoring data has also shown an increase in water being conveyed to the lake via Madelyn Creek over the past ten years.

The question that still remains is: what is the major source of phosphorus in Schutz Lake that is leading to the algal problem - external (from adjacent landscape and/or stream) or internal loading? A nutrient budget is a modeling exercise that will compute the amount of phosphorus Schutz Lake is receiving from all the different sources as well as how much phosphorus the lake can actually withstand (See Wenck's quote). A nutrient budget is computed once a lake is impaired as part of the Total Maximum Daily Load study (TMDLs). Since Schutz Lake is not impaired, a nutrient budget has not yet been computed.

Schutz Lake Subwatershed is not a focal geography for the Minnehaha Creek Watershed District (MCWD) at this time. In order to be responsive to our non-focal geographies, MCWD has offered to provide technical assistance. Providing nutrient budget for Schutz Lake is technical information that is valuable for not only the MCWD, but for the City of Victoria and the engaged lake residents for purposes of planning appropriate lake management to protect the lake from becoming impaired.

The development of the phosphorus budget for Schutz Lake could be conducted under MCWD's general service agreement with Wenck; therefore, a specific contract would not be necessary. The Research and Monitoring Department does not have the staff currently to conduct the analyses, but does have the funds in the 2017 budget to cover the cost. Per Wenck's proposal, the cost of the nutrient budget is not to exceed $11,802.

RESOLUTION

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TITLE: Authorization to Execute the Development of Schutz Lake Phosphorus Budget

WHEREAS, Schutz Lake has an algal problem, as the summer averages of algal concentrations in the lake often exceed the eutrophication standard (CHLA Std < 14 part per billion (ppb)) set by the Minnesota Pollution Control Agency (MPCA); and

WHEREAS, Surface phosphorus concentration in the lake are often meeting the standard (TP < 40 ppb); however, the monitoring data indicates that the surface phosphorus concentrations are just below the standard (between 30-39 ppb), and that the lake sediments are releasing phosphorus into the water column; and

WHEREAS, A nutrient budget is a modeling exercise that will compute the amount of phosphorus Schutz Lake is receiving from all the different sources as well as how much phosphorus the lake can actually withstand. The results will determine if external or internal loading of phosphorus is the major source of phosphorus; and

WHEREAS, Since Schutz Lake is not on the impaired waters list at this point in time, a nutrient budget has not been computed for the lake; and

WHEREAS, Schutz Lake Subwatershed is not a focal geography for the Minnehaha Creek Watershed District (MCWD) at this time. Providing nutrient budget for Schutz Lake is technical information that is valuable for not only the MCWD, but for the City of Victoria and the engaged lake residents for purposes of planning appropriate lake management to protect the lake from becoming impaired; and

WHEREAS, The 2017 budget and work plan identifies $20,000 to conduct diagnostic monitoring and analyses, which developing a nutrient budget would qualify as diagnostic activities.

NOW, THEREFORE, BE IT RESOLVED that the Minnehaha Creek Watershed District Board of Managers hereby authorize the District Administrator to execute the development of the Schutz Lake phosphorus budget for the cost not-to-exceed $11,802.

Resolution Number 17-030 was moved by Manager _____, seconded by Manager _____. Motion to adopt the resolution ___ ayes, ___ nays, ___abstentions. Date: _____.

_____ Date:_____

Secretary

WENCK ASSOCIATES

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April 18, 2017

Kelly Dooley
Water Quality Manager
15320 Minnetonka Blvd
Minnetonka, MN 55345

RE: Schutz Lake Phosphorus Budget Development

Dear Kelly:

It is our understanding that MCWD would like to develop a lake phosphorus budget to better understand in-lake nutrient cycling and watershed phosphorus loading in Schutz Lake. The purpose of this letter is to provide Minnehaha Creek Watershed District (MCWD) with a proposal for the development of a nutrient budget for Schutz Lake.

Scope of Work and Budget

Task 1 – Analyze Available Water Quality Data and Applicable Watershed Models

The first step is to compile available watershed and in-lake water quality data. Wenck will also review previously built water quality models, if available. Wenck will use the in-lake and watershed data to calibrate the lake response model and watershed model, respectively. Wenck will also use hypolimnetic orthophosphorus concentrations to estimate the internal phosphorus loading rate.

Task 2 – P8 Model Watershed Modeling

Wenck will build a P8 watershed model for the Schutz Lake to calculate an annual watershed phosphorus load and annual water budget. P8 modeling of the Schutz Lake watershed is necessary since the inlet flow data is not continuous. However, the water quality data and flow measurements collected by MCWD will be used to calibrate the model to improve the accuracy of the watershed load estimates.

Task 3 – Lake Phosphorus Budget Development

Wenck will build the lake response model based on P8 model output and internal phosphorus loading rates based on hypolimnetic water quality data. Surface water data collected by MCWD will be used to calibrate the lake response model.

Task 4 – Reporting

Wenck will develop a technical memorandum summarizing the Schutz Lake nutrient budget and submit it to MCWD.

Kelly Dooley
Water Quality Manager
MCWD
March 18, 2017

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Budget and Schedule

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The total budget for the four tasks discussed above is $11,802 (Table 1). If authorized by the end of April, we expect to complete the scope of work by July 31, 2017. We will invoice MCWD on a time and materials basis and will not exceed the total project budget without prior approval.

Table 1. Estimated budget to complete a lake management plan for Schutz Lake.

Task	Description	Labor Cost
1	**Water Quality Data Analysis**	**$1,350**
2	**P8 Watershed Modeling**	**$3,632**
3	**Lake Phosphorus Budget Development**	**$2,012**
4	**Reporting**	**$4,808**
Total		**$11,802**

Thanks for the Opportunity!

On behalf of the 300+ employee-owners of Wenck, thank you for this opportunity to continue working with the Minnehaha Creek Watershed District. Should you have any questions, or need clarification of anything presented in the attached proposal, please do not hesitate to call or email me.

Sincerely,

Wenck Associates, Inc.

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