PROJECT UPDATE

Big Lake Restoration

Shoreland Restoration

Sherburne Soil and Water Conservation Dsitrict (SWDC) staff would conduct a survey of the entire Big Lake / Lake Mitchell shoreline, along with lake residents and City of Big Lake staff. Shoreland areas exhibiting a high level of degradation or need for restoration would be identified and marked on a map. Sherburne SWCD would reach out to these property owners to offer a free site consultation and discussion of SWCD cost share services. Eligible property owners interested in pursuing restoration efforts would be considered in the cost share program.

Project activities: Coordination, shoreline survey, site visits and restoration project drafting.

Timeframe: Conduct shoreline survey and site visits in fall 2016, draft restoration plans for interested landowners during winter 2016/2017, implement shoreland restorations during spring / summer 2017.

Estimated total cost: Water Resource Specialist and District Technician – variable time, no direct cost to BLCLA or City of Big Lake (funded through SWCD cost share services).

Sub-watershed analysis (storm water management)

Sherburne SWCD staff would complete a study of areas contributing storm water runoff to each lake. Existing infrastructure would be obtained from the City of Big Lake to determine flow paths and current storm water retainment. Individual catchments would be delineated and modeled using WinSLAMM, an urban drainage modeling program, to determine potential pollutant loads. Following a field verification survey with SWCD and City Big Lake staff, restoration or mitigation projects would be identified on a number of priority locations. WinSLAMM software would again be used to determine potential for improving the quality of storm water runoff. Practices would be ranked according to a cost-benefit analysis and a list of the top recommended projects provided to the BLCLA and City of Big Lake. Sherburne SWCD would be available to assist in grant writing opportunities to implement chosen practices.

Project activities: Coordination, desktop analysis, field visit, modeling and report writing.

Timeframe: Begin drainage basin mapping during winter 2016, conduct field verification visits with City of Big Lake staff in spring 2017, model restoration practices in spring 2017, complete report early summer 2017. Potential projects could be funded through a Clean Water Fund grant (August 2017).

Estimated total cost: Water Resource Specialist (90 hrs) and District Technician (32 hrs) - **$6,710.00**

Water quality analysis

Available water quality data would be compiled and analyzed for both Big Lake and Lake Mitchell. If applicable, a trend detection analysis would be completed to understand if trends were occurring. For this study, the three primary water quality parameters as related to eutrophication would be targeted: total phosphorus, chlorophyll-*a*, and Secchi disk clarity. Additional parameters such as pH, nitrogen-series, dissolved oxygen and temperature would be examined as available. A report would provide charts/graphs, accompanying descriptive text, and any applicable recommendations.

Project activities: Data acquisition, analysis, trend modeling and report writing for both lakes.

Timeframe: Complete data analysis and report during winter 2017.

Estimated total cost: Water Resource Specialist (16 hrs) - **$880.00**

Aquatic plant analysis

Minnesota Department of Natural Resources and Big Lake Community Lake Association records indicate that two prior aquatic plant studies have been completed on Big Lake and Lake Mitchell, one in 2004 and one in 2008. Big Lake Community Lakes Association anticipates hiring a contractor to complete an aquatic plant point-intercept survey in 2017 to update knowledge of the aquatic plant community in both Big Lake and Lake Mitchell. Should this survey occur, Sherburne SWCD staff would complete an analysis of the collected data. The data analysis would include a full examination of the 2017 dataset including species spatial distribution, abundance and overall community health. Comparisons, where appropriate, would be made between the 2004, 2008 and 2017 datasets in an effort to understand trends in aquatic plant community characteristics. A detailed section devoted to non-native species of concern (Eurasian water milfoil and curly-leaf pondweed) would be provided. A complete report of the results would include charts/graphs, descriptive text and full color maps of aquatic plant community metrics.

<u>Note</u>: vegetation survey should be utilize DNR approved point-intercept methodology. An early season (early June) survey would determine abundance of curly-leaf pondweed within each lake but would under represent the abundance of Eurasian water milfoil and also native aquatic plant abundance. A late summer (August) survey would provide an accurate representation of Eurasian water milfoil and native plants, but would under represent curly-leaf pondweed abundance. A survey completed both in early and late summer would maximize the amount of analysis and comparisons that could be completed.

Project activities: Dataset acquisition, correspondence, data analysis, and report writing for both lakes.

Timeframe: Contractor completes vegetation survey during summer 2017. Analysis and report writing to be completed 2-3 months following acquisition of data from contractor.

Estimated total cost: Water Resource Specialist (30 hrs) - **$1,650.00**