



Title: Long Lake Creek Partnership Update

Prepared by: Name: Kate Moran and Becky Christopher
Phone: 952-641-4520
kmoran@minnehahacreek.org

Purpose:

At the May 28, 2020 Board of Managers meeting, staff will provide a status update on the Long Lake Creek Subwatershed Partnership. The project is transitioning from the technical analysis into development of the implementation roadmap. At this milestone the project briefing will enable staff and the Board to synchronize expectations before continuing the work with the project partners.

Background:

Five lakes within the Long Lake Creek Subwatershed are impaired for excess nutrients including Holy Name, School, Wolsfeld, Long, and Tanager (refer to attached Figure 1). In 2014, the Upper Minnehaha Creek Watershed TMDL was completed, assigning load reduction requirements to the Cities of Medina, Orono, and Long Lake.

In 2016, the three cities passed resolutions to enter a system-wide partnership to pursue water quality improvement in Long Lake Creek Subwatershed. The partnership outlined potential projects to pursue, which included regional infiltration projects, wetland/stream restoration, and carp management. In parallel, the Long Lake Waters Association (LLWA), a non-profit entity composed of residents throughout the Long Lake Creek Subwatershed, formed to protect and enhance water quality within the subwatershed.

Between 2016 and 2018, coordination between the District, Cities, and LLWA continued to strengthen, however, the sole focus of the partners' efforts was on carp removal. At that time, the District was supportive of the partners' interest in carp removal, but was hesitant to contribute funding since the scientific understanding of carp impacts in the system was limited.

In 2018, the Board and District staff decided that the best way to support the efforts of the partnership would be to assume the role of technical lead to develop a holistic understanding of water resource issues and drivers in the system. This data-driven approach will allow the partners to pursue the projects that will be most cost-effective. As a regional unit of government spanning the three cities, the District also assumed the role of convener to help coordinate and guide the efforts of the partnership.

In keeping with that role, and with the support of the partners, the Board authorized staff to apply for a Board of Soil and Water Resources (BWSR) Accelerated Implementation Grant (AIG) in August 2018. The District was awarded \$112,000 to assess natural resource issues, identify opportunities to improve water quality, and develop a roadmap for the partnership to reach its water quality goals. The roadmap will go beyond identification of project opportunities to also include non-project strategies, roles, timeline, and potential funding sources.

Work to Date:

After receiving the grant in early 2019, staff conducted a natural resource assessment of the subwatershed, which included the following components:

- Nutrient assessment:
 - Collected lake, stream, and lake sediment samples and conducted wetland assessments for major wetlands in the system
 - Developed watershed and in-lake models to identify sources of nutrient loading and allow the District to evaluate the benefit of potential projects
- Biotic assessment:
 - Conducted carp assessment to understand carp abundance, movement, and recruitment patterns within the subwatershed
 - Completed diversity and biotic communities assessment to refine ecological health understanding across the subwatershed

Once the natural resource assessment was completed, staff began efforts to understand and integrate land use plans to identify project opportunities. To date, this work has included the following:

- Individual partner meetings:
 - Shared natural resource assessment findings
 - Discussed local knowledge and land use plans and identify potential project opportunities
- Project identification and analysis:
 - Integrated technical understanding with partners' local land use knowledge to identify a range of project opportunities for both watershed loading and internal loading
 - Conducted an initial engineering analysis that developed load reduction and cost estimates to help prioritize project opportunities

Findings:

The Long Lake Creek Subwatershed has varying and unique conditions that influence water quality issues and drivers across the landscape, and within individual waterbodies. Attached to this memo is an overview table of issues, drivers, and corresponding management strategies to improve water quality for each impaired waterbody (see attachment 2). To address water quality impairments throughout the system, staff identified the following as key management strategies:

Stormwater Management Strategies

Stormwater runoff is a source of nutrients throughout the Long Lake Creek Subwatershed, but is particularly high in the downtown area that flows into the west side of Long Lake. Based on partner input and technical assessments, staff focused primarily on stormwater management projects that occur on:

- (1) public land such as city-owned parks or facilities;
- (2) areas planned for re-development; and
- (3) existing stormwater ponds with space for expansions and/or retrofits.

In addition, there are a series of regional ponds that the District implemented in the mid-1990s, two on the major tributary streams from the northern part of the watershed and one that treats the drainage from downtown Long Lake. Each of these ponds present some level of retrofit opportunity.

Stream and Wetland Strategies

There are high clay and silt soils present within the northwest portion of the subwatershed coupled with high topographic relief which make the area prone to erosion. Projects in this part of the subwatershed have been identified in areas with documented streambank erosion or ravines that occur on both public and private property.

In addition, based on wetland assessments and monitoring data, staff have identified key wetlands with high nutrient loads that would benefit from restoration. Partners also identified two areas of critical flooding concern located near these wetlands which may present opportunities to achieve multiple benefits.

Land Use-Specific Strategies

There are a number of parcels in the upper subwatershed with active agricultural land use. Partners have identified landowners that may be willing to implement best management practices. There are also a few parcels that are looking to sell in the near future that may present opportunities for conservation development and/or wetland restoration.

There is also a golf course that covers a significant portion of the subwatershed. The partnership could work with the golf course managers to understand current management practices and explore opportunities for improvement in areas like fertilizer use or water reuse for irrigation.

Internal Loading Strategies

Internal loading has been found to be a significant source of nutrients for all the impaired lakes in this system. In-lake alum treatments have been identified as a management strategy for five lakes in the system, as well as a potential drawdown for one shallow lake/wetland. These are long-term strategies that are not recommended to be pursued until significant progress is made in addressing external nutrient sources.

In addition, the Biotic Assessment found that carp are an issue in both Long Lake and Wolsfeld Lake and will likely need some level of carp management including removals and barriers at strategic locations. Staff are in the process of further evaluating the data to determine the recommended approach for this system, which will be informed by lessons learned in the Six Mile Creek-Halsted Bay Subwatershed.

Project Ranking

By integrating the District’s technical assessments of the subwatershed with partners’ land use plans and conducting an initial engineering analysis, staff identified 51 potential projects or strategies. In some cases, this includes multiple project alternatives for the same site. From this initial list, staff grouped the opportunities into three tiers based on potential load reduction, cost/benefit, timing considerations, land ownership, project complexity, and other considerations. The top tier represents projects that are most cost-effective and appear to be most feasible to implement. The second tier includes projects (or project alternatives) that are less cost-effective or may be less feasible, but are still worth further consideration. The third tier are projects that are not being recommended based on low estimated load reduction.

The following table shows the estimated total project costs and estimated total phosphorus (TP) load reductions for all projects, organized into the three tiers. Internal load management projects are listed separately. These project options will be further refined and vetted through discussions with the partners.

Project Grouping	Project Count	TP Improvement (lb/yr)	Construction Cost	Lifecycle Cost (30-yr)	Cost/Benefit (\$/lb TP/30-yr)
Watershed Loading Tier 1 (Priority)	16	196.5	\$4,797,045	\$5,253,467	\$891
Watershed Loading Tier 2 (Potential)	12	277.2	\$6,456,242	\$8,138,224	\$979
Watershed Loading Tier 3 (Not Recommended)	12	35.3	\$2,050,247	\$2,485,969	\$2,347
Internal Loading Projects³	11	1,263.0	N/A	\$2,659,000	\$70

Note: Values are estimated based on an initial engineering analysis and District experience from previous internal loading projects. These estimates will be further vetted and refined based on partner and engineering input. There are a few projects for which cost and load reduction estimates have not yet been developed due to the need for additional data or partner input.

Next Steps

Staff's planned next steps are to set up another round of individual partner meetings to review the results of the engineering analysis and vet the feasibility and priority level of the identified opportunities. Staff will also begin discussing proposed roles, potential funding sources, and timelines for advancing these opportunities. Once the list is refined based on partner input, staff will reconvene the full partnership to discuss priority projects that have been identified across the subwatershed and how the group will work together to advance them. The group will also discuss engagement of city councils.

Staff will use the results of these discussions to develop the Implementation Roadmap. Staff will provide the Board with updates from these discussions. Once the Roadmap is completed, it is anticipated that all the partners will bring the final document for adoption by their Board or Council.

Discussion:

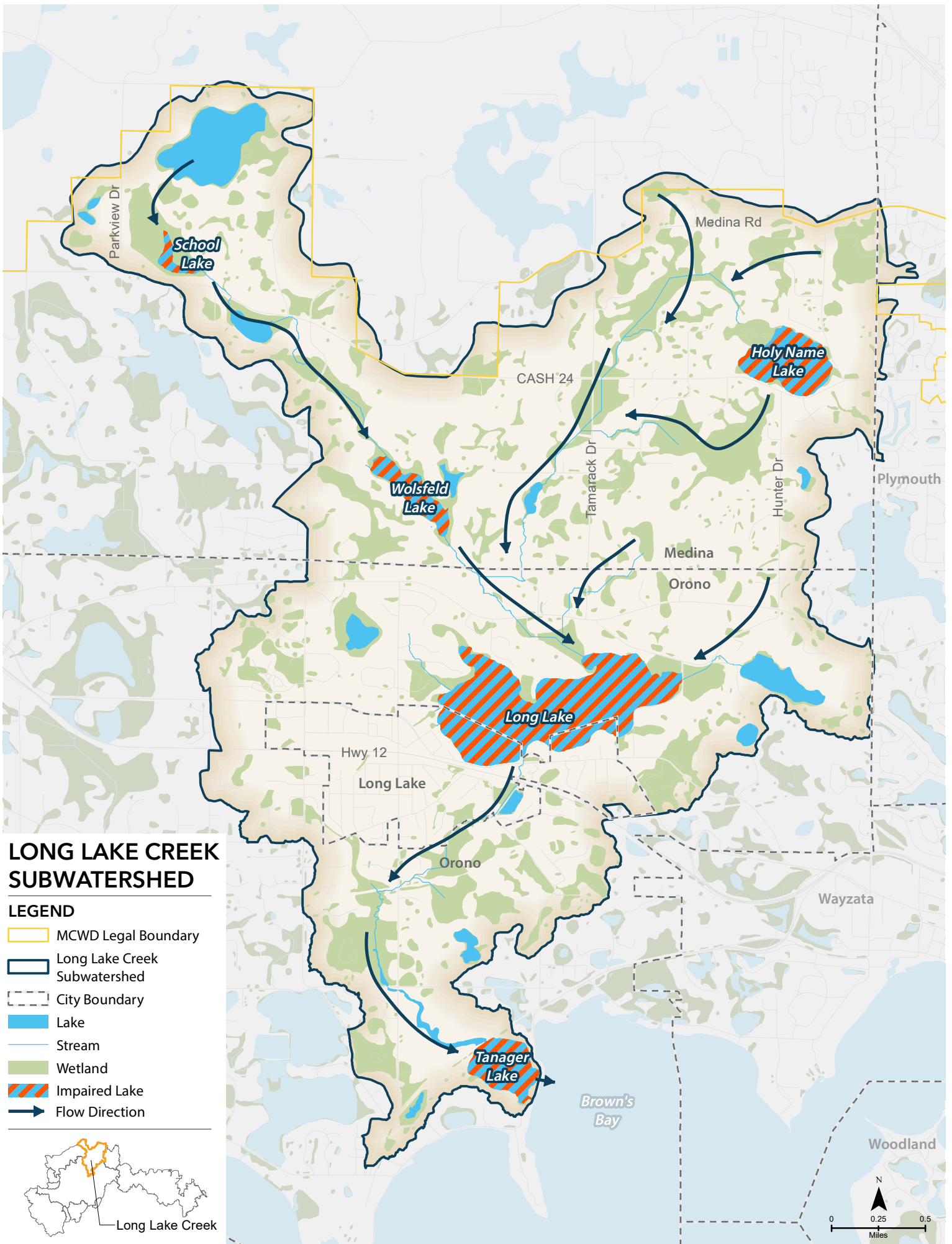
As staff prepare to meet with the partners to review the potential projects and begin discussing roles, timelines, and funding sources, staff would like to check in with the Board to ensure that expectations are aligned around the District's approach for the Long Lake Creek Partnership and the responsive model in general. At the May 28 Board Meeting, staff will provide an overview of the information outlined in the memo and facilitate a discussion about the District's role as the partnership moves into implementation.

The general expectation that has been discussed to date with the Board and Long Lake Creek partners has been that the District will transition to a supporting role as the project moves into near-term implementation. This would likely take the form of technical and financial support. In the long-term, as the District frees up capacity from its current focal geographies, the District may choose to take the lead on implementation of certain projects to which it is well suited, such as internal load management.

The Board will be asked to consider the District's role in project implementation moving forward, how this work balances with other District project priorities, and the level of financial support from the District, either on its own or as a fiscal agent for pass-through grants. Staff will provide their perspectives on these topics and seek Board feedback.

Supporting Documents:

1. Long Lake Creek Subwatershed Overview Map
2. TMDLs, Issues, and Recommended Strategies Summary Table



Impaired Waterbody Name	Cities with TMDL Requirements (Total Phosphorus Load Reduction)	Major Issues and Drivers in Water Quality	Recommended Priority Strategies
School Lake	City of Medina: 32 lbs/yr	<ul style="list-style-type: none"> • Stormwater runoff • Streambank erosion • Internal loading 	<ul style="list-style-type: none"> • Streambank stabilization • In-lake treatment (alum treatment, drawdown)**
Wolsfeld Lake	City of Medina: 76 lbs/yr City of Orono: 3 lbs/yr	<ul style="list-style-type: none"> • Agricultural practices • Degraded wetlands • Stormwater runoff • Streambank erosion • Internal loading 	<ul style="list-style-type: none"> • Agricultural BMPs (e.g., buffers, alternative tile intakes) • Streambank/ravine stabilization • Wetland restoration • Carp management* • In-lake treatment (alum treatment)**
Holy Name Lake	City of Medina: 26 lbs/yr Holy Name Lake has recently been meeting water quality standards.	<ul style="list-style-type: none"> • Agricultural practices • Degraded wetlands • Stormwater runoff • Internal loading 	<ul style="list-style-type: none"> • Agricultural BMPs • Land use policies (e.g., conservation development) • Wetland restoration • In-lake treatment (alum treatment)**
Long Lake	City of Long Lake: 135 lbs/yr City of Medina: 103 lbs/yr City of Orono: 125 lbs/yr	<ul style="list-style-type: none"> • Degraded wetlands • Excess stormwater runoff (urban) • Lack of treatment/undersized stormwater ponds • Stormwater runoff (agricultural and golf courses) • Upstream water quality 	<ul style="list-style-type: none"> • Increase regional treatment areas • Land use policies (e.g., fertilizer use, water reuse) • Stormwater pond expansions or retrofits • Wetland restoration • Carp management* • In-lake treatment (alum treatment)**