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**Title:** Long Lake Creek Subwatershed Partnership Update

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**Purpose:**

At the August 5, 2020 Citizen Advisory Committee (CAC) meeting, staff will provide an update on the Long Lake Creek Subwatershed Partnership. As a major District initiative and case study for the responsive model, staff want to keep the CAC informed as the project reaches key milestones. The project is currently transitioning from the technical analysis into development of the implementation roadmap.

The presentation will be framed primarily as a briefing with the intention that it will inform future discussions regarding the District's project implementation model, including how the District conducts system level planning, develops project opportunities, and plans for staff and financial capacity across its focal and responsive project areas.

**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. 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. 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. 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. These are long-term strategies that are not recommended to be pursued until significant progress is made in addressing external nutrient sources.

### *Project Ranking*

By integrating the District’s technical assessments 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.

Project Grouping	Project Count	TP Improvement (lb/yr)	Construction Cost	Lifecycle Cost (30-yr)	Cost/Benefit (\$/lb TP/30-yr)
<b>Watershed Loading Tier 1 (Priority)</b>	16	242.5	\$5,087,241	\$5,566,363	\$765
<b>Watershed Loading Tier 2 (Potential)</b>	12	277.2	\$6,456,242	\$8,138,224	\$979
<b>Watershed Loading Tier 3 (Not Recommended)</b>	12	35.3	\$2,050,247	\$2,485,969	\$2,347
<b>Internal Loading Projects <sup>3</sup></b>	11	1,263.0	N/A	\$2,659,000	\$70

Note: Values are estimated based on an initial engineering analysis and will be further 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 is in the process of further refining these project options through discussions with the partners and determining how they will be advanced. The general expectation that has been discussed to date with the Board and the partners is that the District will transition to primarily a supporting role as the project moves into near-term implementation. This will 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.

Staff will use the results of the partner discussions to develop the Implementation Roadmap. The Roadmap will lay out the priorities, roles, timeline, and funding strategy for the currently identified suite of projects as well as the partnership's approach for ongoing coordination and adaptive management as new opportunities are identified.

**Attachments:**

Long Lake Creek Subwatershed Overview Map

