

Engineer's Report

July 10, 2019

Normandale Lake Water Quality Improvement Project:

Rachel Contracting completed removal of the temporary weir located in the inlet channel to the lake on June 18th. The site has been seeded and erosion control measures are in place. Barr will be coordinating with the City of Bloomington in upcoming weeks to review the status of restoration activities, so Rachel Contracting can complete any remaining tasks and proceed with project close-out.

Pay Request #8 was submitted by Rachel in the amount of \$32,842.62. The pay application covers Change Order #6 (\$17,325.12), which was approved at 6/19 board meeting, removal of the temporary weir in the upstream channel, and a few other miscellaneous pay items. Barr is recommending payment of the pay application.

Although flows in Nine Mile Creek subsided enough for Rachel to perform the work to remove the temporary weir in mid-June, heavy rainfall in late-June resulted in high water levels in the lake and creek again (see photos below).

An aquatic plant survey was conducted on Normandale Lake on June 20th. Anecdotal observations indicate minimal surviving plants beyond the immediate shoreline. Some curly-leaf pondweed plants were observed, but were scattered and not bed-forming. Upon completion of the report, results will be reviewed and discussed by Barr and District staff to assess the need and extent of herbicide treatment in spring of 2020 to further reduce the presence of curly-leaf pondweed.



Removal of temporary weir in channel at lake inlet (June 17, 2019)



Flotation silt curtain downstream of the footbridge by the inlet channel collects sediment and debris from upstream (June 18, 2019).



Photo shows high water levels in the inlet channel just downstream of West 84th Street (July 2, 2019).



Photo shows the trail under water between the lake and the stormwater pond on the north side of Normandale Lake. (July 2, 2019).

Normandale Lake Water Quality Improvement Project (continued):

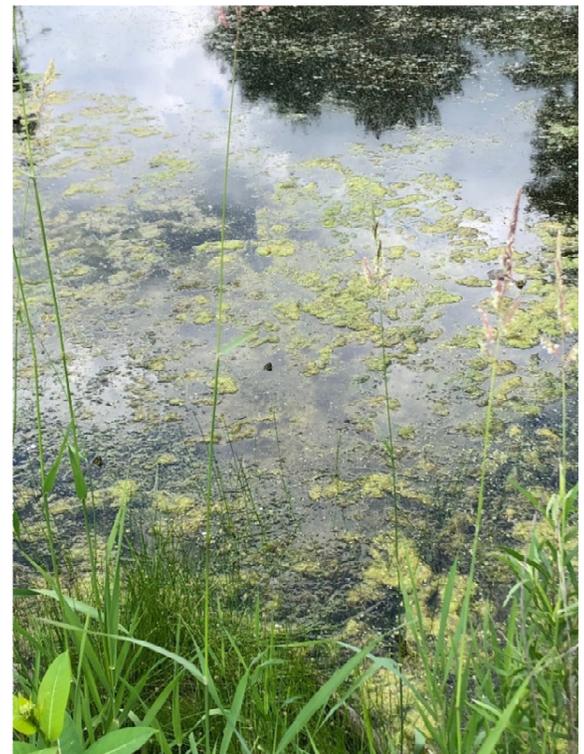
During mid- to late-June, some filamentous algae mats were observed throughout portions of Normandale Lake. In anticipation of questions from lake users, Barr assisted the District in preparing content for the District’s website regarding expectations for water quality in the summer of 2019. Below are excerpts (full text is available at https://www.ninemilecreek.org/wp-content/uploads/2019_Normandale-Lake-Water-Quality-Expectations_Algae.pdf):

“Filamentous algae are colonies of microscopic plants that link together to form threads or mesh-like filaments. Filamentous algae typically grow on the surface of hard objects, like the lake bottom or other aquatic plants, then break loose and form floating mats (see photo to the right). The floating mats can be unsightly and cause problems such as stagnancy in ponds and lakes. When mats of filamentous algae grow to the extent that they cover large areas of a pond or lake surface, they can be more problematic, limiting the exchange of oxygen between the water and the atmosphere and preventing photosynthesis from producing oxygen in the water.”

“With the two recent management activities, it can be expected that 2019 will be a transition year in terms of the amount of algae and overall water quality. We anticipate that the amount of native aquatic plants in the beginning of the 2019 summer season will be lower than normal. Aquatic plants compete directly with planktonic and filamentous algae by taking up nutrients (phosphorus) and by causing shading. With the potential for lower aquatic plant abundance in 2019, the filamentous and planktonic algae may thrive due to the reduced competition for nutrients and sunlight. The result may be increased filamentous algae and more variable phytoplankton populations. In following years, we anticipate the native plant population rebounding and the overall amount of algae reduced. While in the long-term we anticipate reduced algal blooms, it is important to recognize that there will likely always be moderate levels of algae in Normandale Lake, with Nine Mile Creek flowing through and serving as a daily source of phosphorus to the lake.”



Filamentous algae mats at the boat launch in Normandale Lake (June 19, 2019).



Filamentous algae in the stormwater pond on the north side of Normandale Lake. Can you find the three turtles in the photo? (June 19, 2019)

Nine Mile Creek Watershed District 60th Anniversary Story Map:

Design team members (District and Barr staff) have finalized the Story Map. Utilizing the content outline that has been created, GIS specialists at Barr have fine-tuned the final Story Map draft after comments were received from a select group of reviewers. The map will be made public prior to the 60th anniversary events scheduled for this summer.



A screen-grab of the Story Map shows a page from the “How can you help?” section. The Story Map has been designed to be both informative as well as a call to action.

Edina Stream Stabilization Project: Phase II of the project recently reached substantial completion at the end of October. The substantial completion deadline was December 31, 2019 so the project was completed ahead of schedule. Barr worked on a maintenance plan to establish clear roles for the District and the City of Edina for addressing future maintenance needs. The maintenance plan will be completed by the end of July. Barr visited all reaches to assess the conditions of plantings and determine if replacement plants are necessary as part of the vegetation maintenance agreements for both phases of the project. We also continued to discuss a schedule with the contractor for completing maintenance items on a couple of reaches, notably Reaches 2 and 12. The work was scheduled for the first week of July; however, high flows from heavy rains caused a delay.



Stabilized and vegetated shoreline on winding stretch of creek at Reach 11 (June 25, 2019).



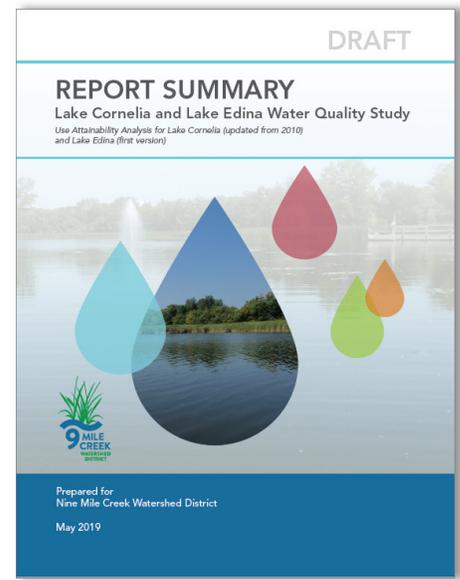
Vegetated shoreline along the creek at Reach 1 (June 25, 2019).

Lake Cornelia and Lake Edina Use Attainability Analysis (UAA):

Barr has completed the draft Use Attainability Analyses (UAAs) for North and South Lake Cornelia and Lake Edina. The full report and a report summary are available for review.

One of the recommended management strategies is to conduct an alum treatment of Lake Cornelia (North and South basins) to reduce the release of phosphorus from lake bottom sediments. Upon approval at the June 19, 2019 NMCWD regular board meeting, Barr has completed a draft feasibility study for conducting an alum treatment in the fall of 2019. Sediment cores collected from the lake in early-June were analyzed in Barr's lab to measure the amount of mobile phosphorus, aluminum-bound and calcium-bound phosphorus, and organically-bound phosphorus in the sediment (the analysis is called "phosphorus fractionation"). This information helps to calculate an alum dose that can most effectively bind the mobile phosphorus fraction and prevent internal loading. The phosphorus fractionation also helps determine whether a single dose or split alum dose would be most effective, depending on the amount of organically-bound phosphorus.

A draft of the feasibility study will be available for review prior to the July 17th NMCWD regular board meeting. A public hearing on the proposed alum treatment project is tentatively planned for August 21st at NMCWD's regular board meeting.



A summary of the Lake Cornelia and Lake Edina Water Quality Study report has been prepared to provide an easy-to-read overview of the conclusions and recommendations from the study.

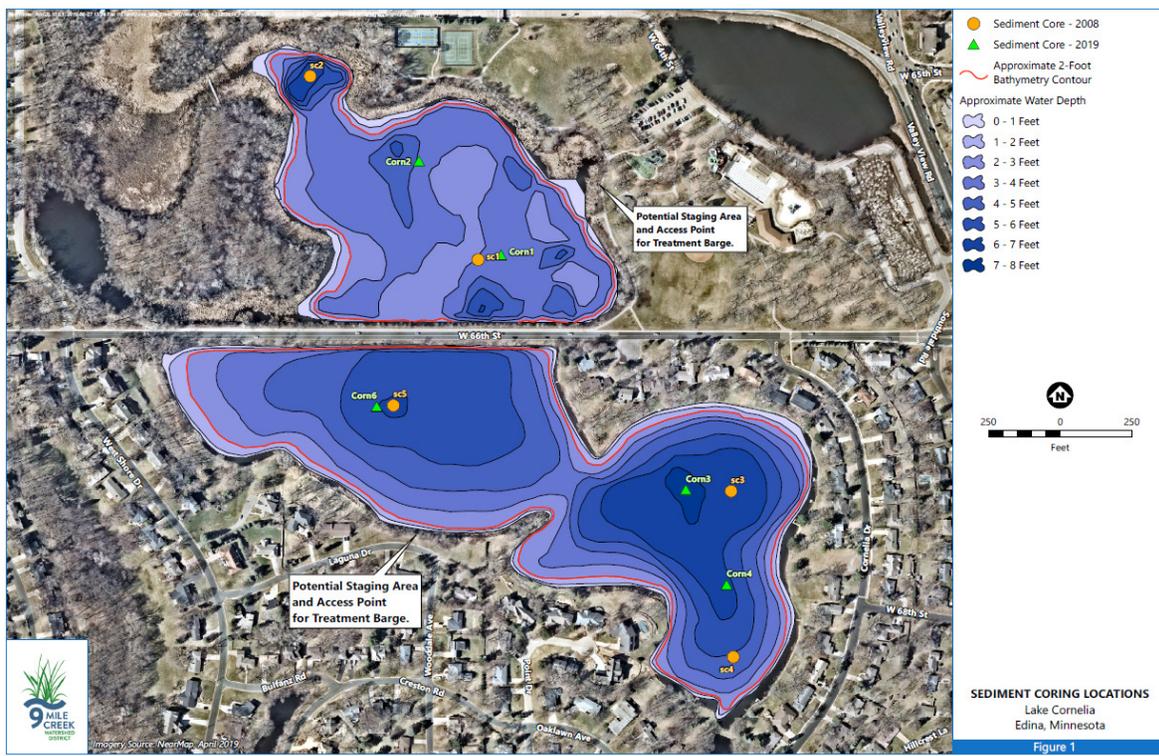
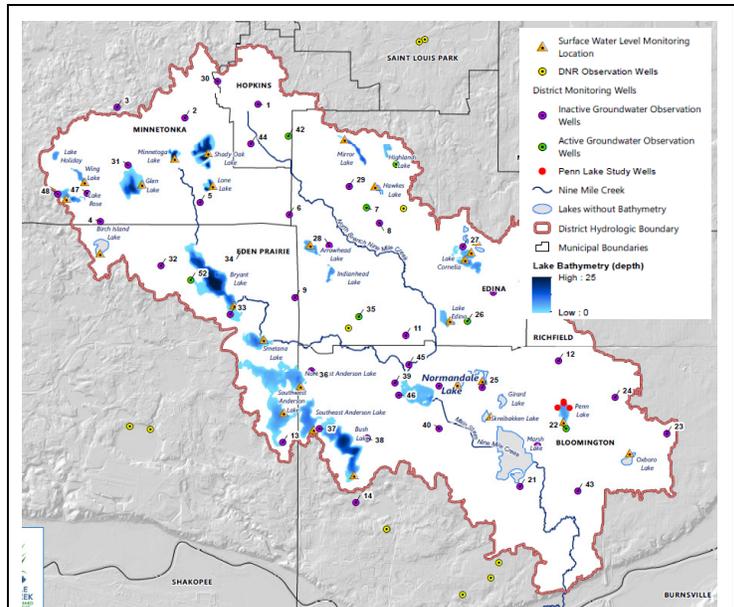


Figure showing the locations of sediment cores taken in 2008 and 2019 for evaluation of the phosphorus content for alum dosing.

Groundwater/Surface-Water Interaction Study and Assessment of Surface Water Vulnerability to Changes in the Groundwater System: Barr is evaluating how groundwater and surface water interact across the Nine Mile Creek watershed and then will use that data to identify surface waters and wetlands that may be particularly sensitive to changes in the groundwater system.

Understanding how changes in the groundwater system may affect surface water levels, stream flow, and water quality is an important component of long-term planning and protection of water resources in the Nine Mile Creek watershed. How connected, or disconnected, surface waters are to the groundwater system affects how they may respond to seasonal changes (drought), long-term climate change, or anthropogenic stresses (groundwater pumping).

Barr has completed compiling pertinent information and is nearing completion of the assessment for groundwater and surface water interaction and the vulnerability of surface waters to changes in the groundwater system. This analysis includes approximately 2000 lakes, ponds, wetlands, and stream reaches across the District. Results from the assessment will be available in mid-July with a summary report to follow.



This map shows locations of available data throughout the watershed. Historic lake and groundwater level data collected by NMCWD will be used, along with lake bathymetry, geologic information, groundwater modeling and other data, to evaluate groundwater/surface water interaction throughout the Nine Mile Creek watershed.

Bush Lake Outlet Project: No new activities.

BMP Retrofits on Nonprofit Sites- Final Design and Construction: On Tuesday, June 25th, quotes were opened for the 2019 Non-Profit BMP Retrofits project. Unfortunately, quotes came in very high. The engineers estimate was based on the last several years of similar BMP construction projects (rain gardens of similar size and scale at church sites and elementary schools) in other watershed districts. The estimate for total construction costs was \$114,000. Six quotes were received with the low quote submitted being \$163,892, well above the engineers estimate plus 10%, which was the contract amount the Administrator was previously authorized by the Board to approve without further Board action. Calls to contractors confirmed that the construction climate for this scale of project currently is extremely tight, with work crews running well past capacity due to the wet spring.

Based on preliminary discussions between Barr and District staff, project construction will likely be delayed and quotes will be requested again this fall or next spring. Barr and District staff will be meeting prior to the July Board meeting to discuss the options and next steps regarding bidding and construction of the projects in more detail.

District Office (Discovery Point): Barr is assisting District staff in the preparation of a Request for Qualifications in order to find a contractor that will perform Discovery Point landscape management. The intention is to form an on-going relationship with a qualified contractor that will thoroughly understand the expectations (aesthetics, ecological restoration, native plants, budgets and reporting, etc.) of the District and act as a groundskeeper with intimate knowledge of the site for years to come. This contractor will perform management of the restoration areas including weed eradication, as well as maintenance of the planted areas near the building and even turf management, including the overflow parking area.

Pentagon Park Stormwater Management (in partnership with the cities of Edina and Bloomington): No new activities.

Regional Stormwater Volume Reduction Opportunity Study: No new activities.

Wetland Conservation Act (WCA) and NMCWD Wetland Rule Administration:

- Review wetland delineation report, wetland impact, and replacement plan application for Birch Island Road Quiet Zone project in Eden Prairie and submit notice of incomplete application with a list of missing items to the applicant's agent.
- Review wetland delineation report for Ebert Site at 7725 Washington Ave S in Edina, prepare and submit WCA Notice of Application, send comments to delineator, and schedule site review.
- Review wetland assessment for 7120 Gerard Drive in Eden Prairie and determine NMCWD wetland management classification.

Review previous submittals and approvals for Fred Richards Golf Course in Edina and provide summary information.