

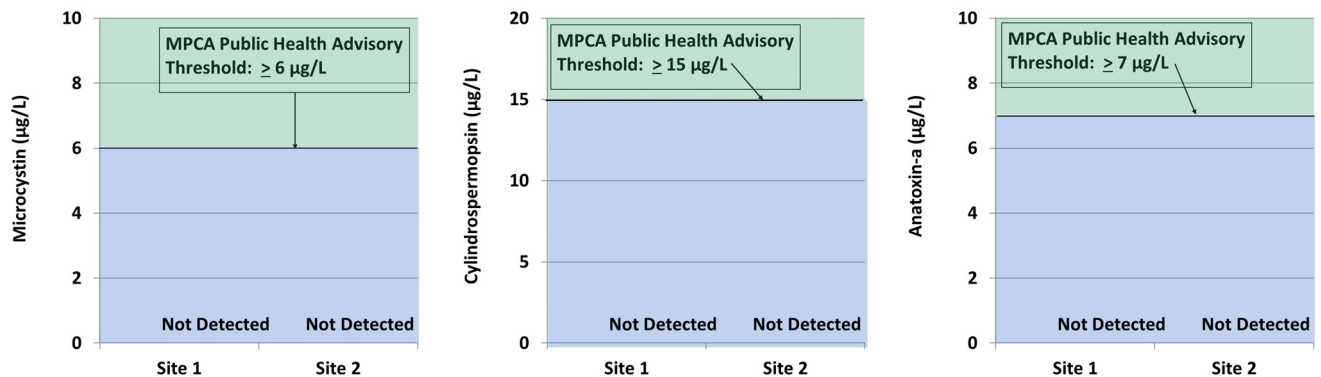
Engineer's Report

August 12, 2020

Normandale Lake Water Quality Improvement Project:

An herbicide treatment of Normandale Lake and an upstream portion of Nine Mile Creek was conducted in early May 2020 to further reduce the curly-leaf pondweed (CLP) remaining following the winter of 2018-2019 lake drawdown. Water quality monitoring of Normandale Lake is ongoing throughout the 2020 summer months, including sampling at the lake inlet, where Nine Mile Creek enters the lake, and the typical monitoring location at the deepest portion of the lake. An aquatic vegetation survey was conducted in June to help assess the location and extent of remaining curly-leaf pondweed and other aquatic plant species. Another plant survey will be completed in August. Results will be summarized upon completion of both surveys.

Per request of the Board of Managers, on July 23, 2020 Barr staff collected samples from Normandale Lake (just north of the boat ramp) and a small stormwater pond on the northwest side of the lake and submitted the samples for analyses for three cyanotoxins– anatoxin-a, microcystin, and cylindrospermopsin. Results from the algal toxin analysis indicate algal toxins were not detected in the samples from either site. Samples from the two sites were also sent to a separate lab for cyanobacteria (blue-green algae) analyses (a biological analysis). A qualitative analysis was conducted for the sample collected from the lake (just north of the boat ramp), as a large chunk of filamentous algae in the sample prohibited effective quantification. The results of the analysis indicated the sample primarily contained filamentous green algae, but some blue-green algae were also present in the sample. The sample from the stormwater pond contained a large number of blue-green algae and was dominated by Anabaena which could produce anatoxin-a. The total number of cyanobacteria in the sample from the stormwater pond was greater than 100,000 per milliliter, a World Health Organization threshold for moderate risk of adverse public health impacts. As indicated above, toxin analyses did not detect algal toxins – anatoxin-a, microcystin, or cylindrospermopsin – in the samples from the two sites.



Graphs above show results of the cyanotoxin lab analyses for site 1 (Normandale Lake, just north of the boat ramp) and Site 2 (stormwater pond northwest of the lake).

Edina Stream Stabilization Project:

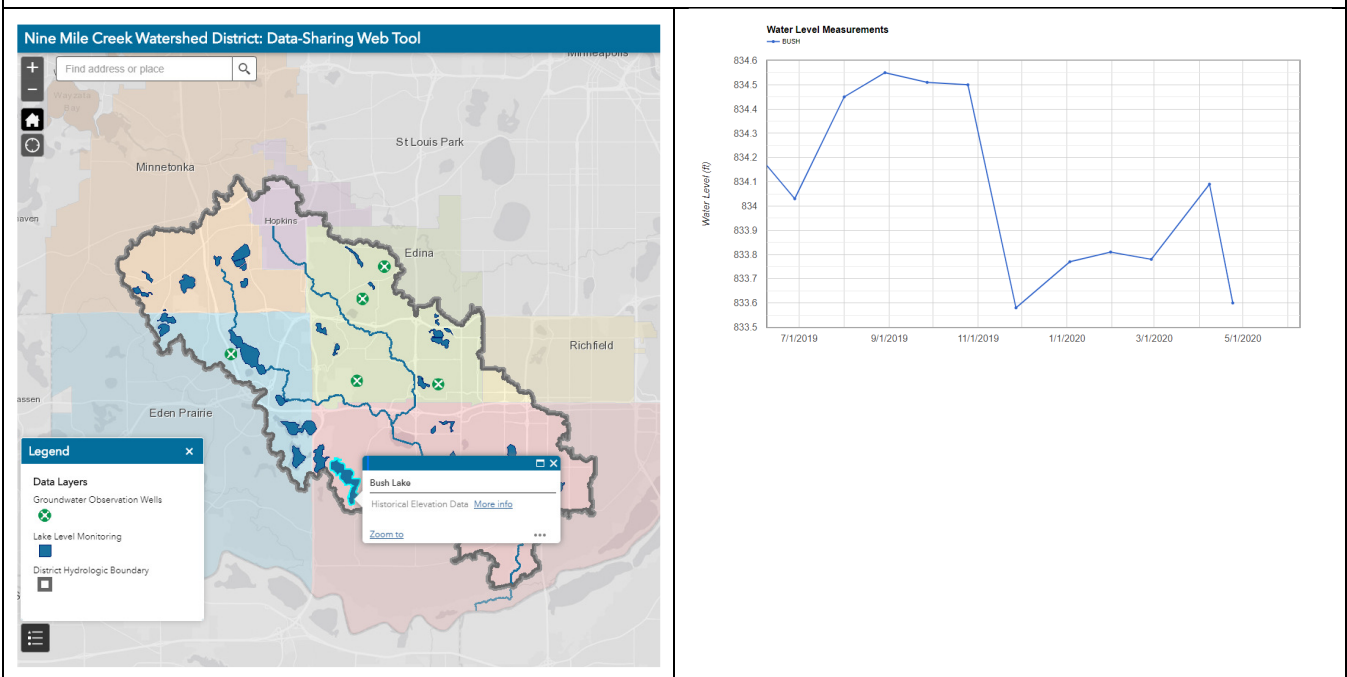
Pay application #7, Phase 1, was received for work completed by Sunram to address some erosion concerns and minor stabilization efforts identified by property owners following high water/flow conditions in Nine Mile Creek in May. The additional work included installation of sediment log, importing of additional topsoil, and additional seeding and installation of erosion control blanket. Barr is recommending payment of the pay application, in the amount of \$614.75.

Barr staff met with staff from NMCWD, City of Edina, and Three Rivers Park District (TRPD) and owner of the Schildkraut property on August 12, 2020 to discuss concerns related to flow patterns of the creek during high flows.

Barr staff discussed with District staff, District legal advisor and City of Edina staff review comments received regarding the maintenance agreement and Request for Quotations for on-going maintenance work on both Phase 1 and 2 of the project. Barr prepared a request of interest to Landbridge for extending the vegetation establishment and maintenance warranty work for Phase 1 of the project to coincide with the end of the Phase 2 warranty work (summer 2021).

Development of Data-sharing Web Map Tool:

Barr met with a board manager on August 11, 2020 to review the current draft of the application, specifically related to improving the user experience. Updates to the design and functionality will continue following this round of feedback. Maintenance and updates to the database are ongoing as water level data is recorded.



Discovery Point Restoration:

Barr has been coordinating with Landbridge Ecological for the Discovery Point landscape management for 2020. Landbridge continued on-site management of exotic species during the month of August.



Discovery Point Building Addition:

A request for quotes for the reconstruction of the northwest rain garden and site improvements associated with the ongoing building addition were sent to five landscaping contractors, with quotes due by June 12th. One quote was received for \$58,504.34, which was well above the engineer’s estimate of cost. The quote was rejected by the Board because of price at the NMCWD regular meeting in June. Quotes will be requested again in the fall for work to be completed in the spring.

Bush Lake Shoreline Vegetation Management:

Barr has been coordinating ongoing shoreline vegetation management activities with the restoration contractor Landbridge. Barr will continue to monitor management activities performed and make recommendations based on the site conditions throughout the summer of 2020. Cattail and purple loosestrife were key species targeted for management during the month of July.



Vegetation along the shoreline of Bush Lake.



Vegetation along the shoreline of Bush Lake.

BMP Retrofits on Nonprofit Sites- Final Design and Construction:

All the rain gardens have been completed and final approvals for substantial completion are being coordinated. Feedback from the church officials has been positive as Sunram and their planting subcontractor begin the plant establishment and warranty phase of the project. The contractor is responsible for weeding the gardens as well as cleaning out any built-up sediment in the step-down inlet structure for one year after substantial completion. All plants will be guaranteed for the warranty period. Sod around each garden is warranted for 60 days.

The first pay application was received from Sunram in the amount of \$206,693.07, which covers the construction completed to date. Barr is recommending payment of the pay application.



Plantings and mulch begin to establish at Oak Grove Church in Bloomington.



Plantings and mulch installed at St. Luke's Church in Bloomington.

Smetana Lake Use Attainability Analysis Update:

Barr has completed updating the Smetana Lake Use Attainability Analysis (UAA) to assess current water quality and re-evaluate implementation recommendations from the original UAA study completed in 2003. Results of the study and management recommendations were presented to the NMCWD Board of Managers at the February 6, 2020 special meeting.

Minor revisions to the draft report are underway. A revised copy will be shared with the City of Eden Prairie to solicit feedback.



Lake Cornelia and Lake Edina Water Quality Improvements: Aluminum Treatment

HAB Aquatic Services Inc. conducted an alum treatment of Lake Cornelia in mid-May. Water quality monitoring of Lake Cornelia is ongoing throughout the 2020 summer months.

Lake Cornelia and Lake Edina Water Quality Improvements: *Feasibility Study*

At the September 18, 2019 regular meeting, the Board approved a scope of work for Barr to complete a preliminary engineering/feasibility study to further evaluate other water quality improvement practices recommended in the UAA study for Lake Cornelia and Lake Edina. The feasibility study included the following:

- Stormwater Treatment BMP in Rosland Park- Feasibility Analysis/Preliminary Design
- High-level evaluation of other watershed BMPs, including BMPs in the Lake Edina watershed and management of ponds upstream of Lake Cornelia
- Curly-leaf pondweed management in Lake Cornelia
- Fishery management in Lake Cornelia

Barr provided a draft feasibility study report to the Board of Managers in early-June. Upon acceptance by the Board at the regular June board meeting, Barr finalized the report and distributed a copy to NMCWD and City of Edina staff.

NMCWD held a public hearing on the proposed Rosland Park stormwater BMP project on July 15, 2020, in which several residents that live adjacent to Lake Otto attended. As proposed, the project includes pumping water from Swimming Pool Pond to the stormwater filtration vault after it rains until water levels are about 3½ inches below normal. Since Lake Otto and Swimming Pool Pond are connected by large storm pipes under Highway 62, water levels between the two water bodies are typically equalized. Therefore, pumping from Swimming Pool Pond will also affect water levels in Lake Otto.

Lake Cornelia and Lake Edina Water Quality Improvements: *Feasibility Study (continued)*

A brief summary of the project was provided to the Edina city council as part their July 21, 2020 meeting materials, in anticipation of bringing additional information and a cooperative agreement to the council in August. During the meeting, a city council member indicated he had received correspondence from a resident that lives adjacent to Lake Otto relaying concerns about potential impacts to Lake Otto water levels. NMCWD and City of Edina staff have been in communication regarding potential options to minimize impacts to Lake Otto water levels and other lake management activities the District intends to evaluate that would benefit Lake Otto and its users.

Barr also worked with NMCWD staff and legal counsel on development of a cooperative agreement with the City of Edina for the proposed project. The draft cooperative agreement will be presented to Edina city council for approval at their August 18, 2020 meeting.



Rendering of proposed stormwater filtration vault in Rosland Park to treat water from Swimming Pool Pond before it flows to Lake Cornelia.

Lower Valley Stabilization:

Work on the two maintenance and repair locations in the most downstream section of Nine Mile Creek in Bloomington has been substantially completed. City of Bloomington staff continue to monitor the site, as needed.

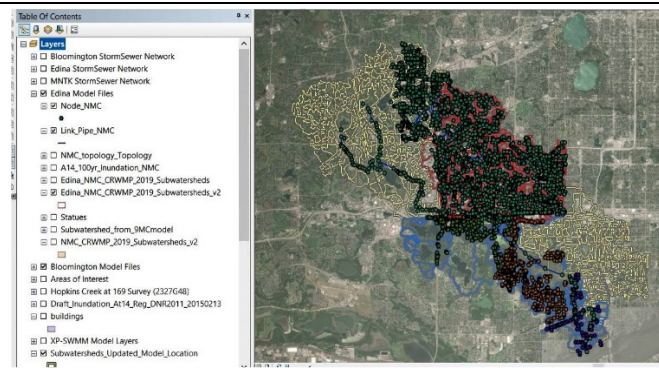
Regional Stormwater Volume Reduction Opportunity Study: No new activities.

Pentagon Park Stormwater Management: No new activities.

Atlas 14 Model Updates:

At the May 20, 2020 regular meeting, the Board approved a scope of work for Barr to complete updates to the NMCWD's watershed-wide Xp-SWMM model, including incorporating recent Atlas 14 updates completed by the cities of Edina, Richfield, Bloomington, and Minnetonka and review and revising model inputs (e.g., watershed divides and storm sewer information) for Eden Prairie and Hopkins (as needed).

We have received the requested GIS storm sewer and other data from the City of Eden Prairie and City of Hopkins and have begun updating the model in those areas. We have also begun combining the Xp-SWMM models throughout the watershed.



GIS screenshot of subwatershed divides and storm sewer for portions of the watershed.

Wetland Restoration and Protection Opportunity Identification:

During development of the NMCWD 2017 Water Management Plan, the NMCWD Board of Managers, local cities, and other stakeholders identified wetland protection as an important issue and identified the following specific priority issues/opportunities related to wetland protection:

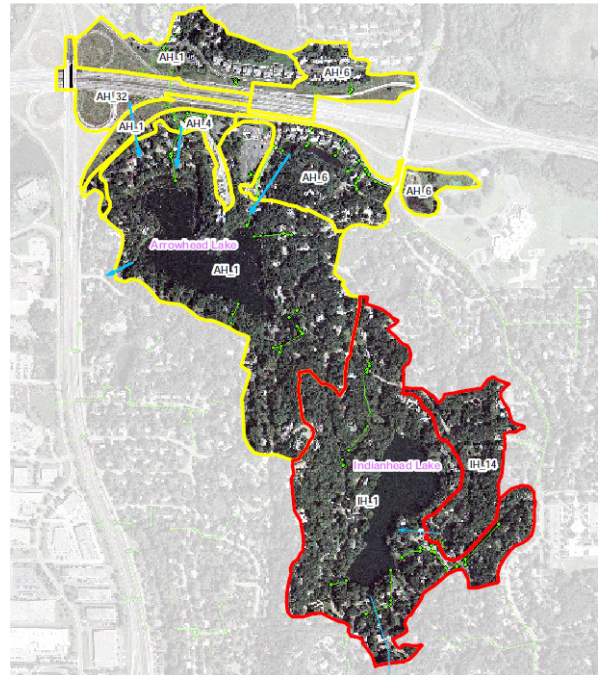
- Inventorying and assessing wetlands within the Nine Mile Creek watershed for function and value.
- Preserving the quality of existing wetlands and protecting high quality wetlands.
- Seeking opportunities to restore degraded wetlands.
- Improving wetland health by promoting diversity and abundance of native aquatic species and improving habitat.

In 2020, the NMCWD budgeted for a wetland restoration and protection opportunity study as a first step to 1) compile the best available information regarding wetlands within the Nine Mile Creek watershed, 2) use that information to identify high-value wetlands and/or wetlands with rare and high-quality wetland biological communities in the watershed, and 3) identify the highest-priority opportunities for wetland restoration or protection. Barr staff have begun compiling an inventory of "best available" wetland information, based on the latest National Wetland Inventory (NWI) data, wetland information (delineations and/or function and value assessment information) received through the NMCWD permitting program, and information available from the cities within the watershed. We have been meeting with each city to inform them of the ongoing study and incorporating relevant data they have shared to help inform the study.

Lake Level Management Plans for Arrowhead and Indianhead Lakes:

The water balance models for these two landlocked lakes are nearing completion. Preliminary calibration suggests that both runoff and groundwater levels are key to understanding the potential for flooding at Arrowhead lake. We hope to meet with the City of Edina in the next month to discuss what we are learning from the study, the results of their elevation survey, and to agree on the goals for lake level management. This will position us for the next step in the project – developing “triggers” to help define when action is needed in order to minimize the risk of flooding for the residents. After that, we will be looking at how to protect the houses around the lakes without adding water to Nine Mile Creek during periods of high flows.

Screenshot of an aerial photo showing land use, with superimposed subwatershed divides for Arrowhead and Indianhead Lakes.



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

Work administering the WCA and NMCWD wetland rule in the past month included:

- WCA administration and wetland permitting, including:
 - conducting wetland delineation site review, preparing WCA notice of decision, and permitting support for TRPD Nine Mile Creek Trail extension under TH 169
 - participation in wetland site review and discussions with TEP members and NMCWD regarding site conditions and previous wetland disturbance at Tiller Corporation in Eden Prairie
 - conducting site visit at 6117 Blake Circle wetland for potential wetland violation
 - responding to questions and data evaluation for wetland at West 62nd Street project in Eden Prairie
 - conducting site review to determine approximate wetland boundary at 5529 Warden Ave in Edina
 - conducting site review of wetland delineation and follow-up review/discussions regarding Highland Park wetland
 - follow-up activities for wetland at Trileaf MIN Daisy Cell Tower in Edina
 - reviewing jurisdiction of wetland at 7200 Ohms Lane
 - reviewing desktop data for historic wetlands at Topview Park in Eden Prairie
 - reviewing wetland replacement monitoring reports for Braemar Golf Course and Edina Schools and communicating with permittee’s agents regarding follow up actions
 - other miscellaneous program administration