

# Engineer's Report

October 14, 2020

## Normandale Lake Water Quality Improvement Project:

Results from the August aquatic plant survey on Normandale Lake and the wetland area upstream of West 84<sup>th</sup> Street were received from Barr's subconsultant. Barr staff have conducted preliminary review of the findings and will summarize further later this year, along with other water quality and plant data collected in 2020.

District staff continue to work with Carp Solutions to monitor carp and other fish populations in Normandale Lake and evaluate potential carp removal techniques, including a late-September trap net survey and mid-October box netting to capture and remove carp.



Panoramic view of Normandale Lake from boat landing on west side of the lake. Photo(s) taken August 26, 2020.

## 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 September. Barr met with staff to discuss phase 3 of the restoration efforts. A scope of work to prepare plans and specifications for the eradication of the buckthorn in the northwest corner of the property and the establishment of woodland diversity along the northern edge of the property has been prepared and provided to the District. It is anticipated that the project will be designed this fall and a solicitation of quotes to conduct the work will be issued winter 2020/21. Buckthorn removals are likely to occur during the time period of frozen soils, with spring seedings and plantings to compliment the invasive removals and prevent erosion. District staff is working with the City of Eden Prairie to coordinate buckthorn removal up to the wetland trail which would include some removal on City property to create a seamless restoration area. This fall, the fescue turf area on the southeast side of the property will be prepared for restoration; the turf will be sprayed with herbicide and a native seed mix matching the established areas from phases 1 and 2 will be installed. Visitors to the site can expect to see dead turf grass in this area during the replacement process.



## Edina Stream Stabilization Project:

There were no new construction/maintenance activities associated with the project. Landbridge has provided a cost estimate for extending their maintenance work for an additional six months into 2021 to line-up with the completion of the maintenance work for Phase 2 of the project. The cost estimate received on September 6<sup>th</sup> was reviewed and we requested that the cost provided be revisited. A revisited cost has been received and we will have a recommendation for consideration at the November meeting.

### **Lake Level Management Plans for Arrowhead and Indianhead Lakes:**

Barr staff met by video call with the City of Edina and District staff on September 30, 2020. Results of the water balance models for the two lakes were presented, along with the findings that groundwater levels and runoff were primary drivers of the high lake levels and the annual lake level cycle. Edina provided guidance on their goals for lake level management. We are now in the process of assessing the potential pumping rates or other management strategies needed to minimize the risk of flooding for the homes around these lakes. The ultimate aim is to develop a management plan that will protect the houses around the lakes from flooding without adding water to Nine Mile Creek during periods of high flows.



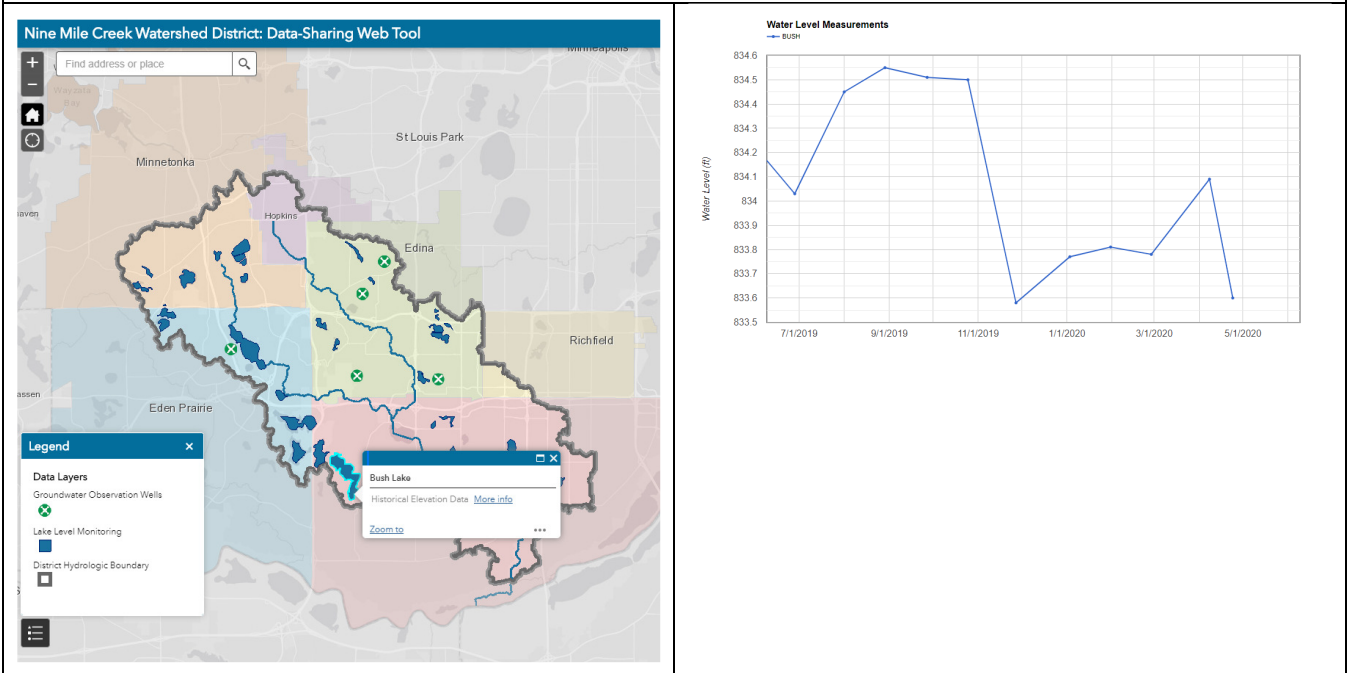
**Photo of Arrowhead Lake this fall.**

### **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. Quotes will be requested again in the fall for work to be completed in the spring. Slight redesign of the rain garden and associated plantings has occurred in recent weeks to better match the built conditions after architectural construction.

### Development of Data-sharing Web Map Tool:

Updates to the design and functionality of the web mapping application are underway following a draft review meeting with the District. Maintenance and updates to the database are ongoing as water level data is recorded.



### Bush Lake Shoreline Vegetation Management:

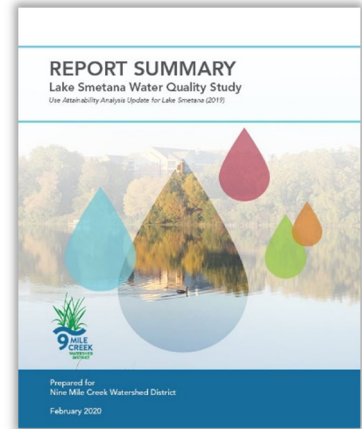
Barr has been coordinating ongoing shoreline vegetation management activities with the restoration contractor Landbridge. Landbridge has been out this week managing buckthorn and other woody species (cut and spray). In addition, they will continue to target any exotic species through the rest of the year. Barr staff plans to review the recent work and make any additional recommendations for control for the remaining part of the year.

### BMP Retrofits on Nonprofit Sites- Final Design and Construction:

All the rain gardens have been completed and substantial completion has been issued. Feedback from the property owners 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 structures for one year after substantial completion. All plants will be guaranteed for the warranty period. Sod around each garden is warranted for 60 days.

All of the constructed rain gardens have proven to draw down the accumulated stormwater runoff within 48 hours of a rain event. Drain tile was installed in some of the rain gardens because soil conditions indicated potential for poor infiltration capacity. It appears that some of these rain gardens are currently performing as infiltration basins (versus filtration basins), with the drain tile remaining capped, which results in additional stormwater volume and pollutant removal. Periodic monitoring of these basins is recommended in the future to assess the need for use of the drain tile (i.e., removal of the drain tile cap) in the future. A reanalysis of the gardens' effectiveness is underway to quantify the water quality improvement provided by the constructed BMPs.

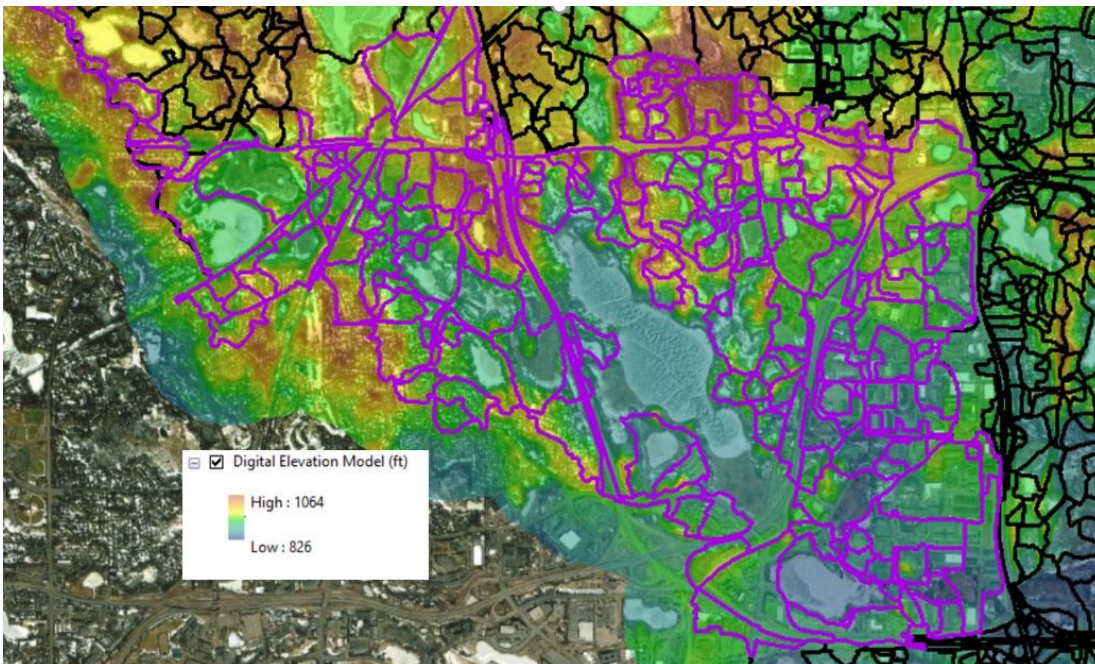
**Smetana Lake Use Attainability Analysis Update:** Barr has completed updating the Smetana Lake Use Attainability Analysis (UAA) to assess current water quality and re-evaluate implementation recommendations from the original UAA study completed in 2003. Results of the study and management recommendations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



**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 cities of Eden Prairie, Hopkins and Richfield, and have been updating the model in those areas. We also received requested storm water infrastructure data (GIS data, construction drawings) from Hennepin County for county roadways within Eden Prairie. We have been updating the model in Eden Prairie, Hopkins, and Richfield and have begun combining the Xp-SWMM models throughout the remainder of the watershed.



GIS screenshot of subwatershed divides (shown in purple) for a portion of the watershed in Eden Prairie. This area was modeled with less detail than other areas in the District’s original XP-SWMM model due to data limitations. As part of the 2020 updates, the subwatersheds are being refined to include better elevation data and storm sewer information from city and county sources, as well as to account for the significant amount of development and redevelopment that has occurred since 2004.

**Lake Cornelia and Lake Edina Water Quality Improvements: Aluminum Treatment**

An alum treatment of Lake Cornelia was completed in mid-May. Water quality monitoring of Lake Cornelia was conducted in late-April and throughout the 2020 summer months (June – September).

Monitoring results from August identified cyanobacteria (blue-green algae) concentrations in the lake that exceeded the World Health Organization (WHO) threshold of 100,000 per mL for moderate probability of adverse health impacts. Notification of the potential for harmful blue-green algae was provided to the City of Edina and posted on the District’s website. Microscopic analysis of water samples collected from Lake Cornelia (North and South basins) on September 8, 2020 and September 30 indicated that cyanobacteria counts remained about the WHO threshold of 100,000 per mL for moderate probability of adverse health impacts. Additional samples from Lake Cornelia will be collected and analyzed in mid- to late-October.

**Lake Cornelia and Lake Edina Water Quality Improvements: Rosland Park Stormwater Filtration BMP**

At the August 19, 2020 regular meeting, the Board ordered the Rosland Park Stormwater Filtration BMP project, authorizing Barr to proceed with project design. The Rosland Park Stormwater Filtration BMP was recommended in the June 2020 *Lake Cornelia and Lake Edina Water Quality Improvement Project Feasibility Study/Preliminary Engineering Report*.

As proposed, the Rosland Park Stormwater Filtration BMP project includes pumping water from Swimming Pool Pond to a 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.

Barr facilitated a meeting on September 4, 2020 with Minnesota Department of Natural Resources (MnDNR), City of Edina, and District staff to describe the proposed project design to agency staff and gain additional feedback on project permitting requirements. Feedback received from the MnDNR after the September 4, 2020 meeting and during a follow-up meeting on September 23, 2020 differed from what had been relayed in early 2020 project coordination efforts. As a result, the project team is considering alternate design options to meet project objectives, specifically related to the pumping configuration, while continuing to coordinate with MnDNR.

We anticipate collecting geotechnical data (soil borings) to support design by the end of October and are continuing with design efforts.



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

**Wetland Restoration and Protection Opportunity Identification:**

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 also begun identifying opportunities for wetland preservation, restoration, or protection throughout the watershed, with approximately 40 potential wetlands identified during a presentation for the September 3, 2020 Board of Managers special meeting. Barr is continuing based on guidance and comments received during this meeting. Site reviews of approximately 20 of the wetlands are being conducted, in which Barr staff will conduct functional and vegetation assessments. These sites were selected as potential high quality wetlands with unique or rare native wetland community types or containing rare species within a habitat corridor. Because limited data is available for many of these wetlands, and there are some discrepancies between several available datasets regarding the wetland community types and vegetation, the site reviews will be helpful to provide clarification of the current quality of these wetlands. We are also conducting assessments on some of the wetlands identified as having the potential for restoration within high priority areas that could enhance the habitat corridor connections and may have a link with future floodplain management efforts.

Next steps for the project include further characterization of wetland functions and values (e.g., biodiversity, plant community, habitat) to help the District prioritize protection and restoration opportunities.



**Photo of a high quality wetland in the City of Bloomington's Tierney's Woods.**

**Lower Valley Stabilization:**

No new activities.

**Regional Stormwater Volume Reduction Opportunity Study:** No new activities.

**Pentagon Park Stormwater Management:** No new activities.

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

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

- Preparing for and conducting WCA TEP site reviews of wetland replacement sites at Braemar Golf Course and Creek Valley Elementary School tennis court site.
- Addressing potential WCA issues and wetland disturbance resulting from County Ditch 34 dewatering into Tiller wetland, including preparing TEP findings summary.
- Preparing and submitting WCA Notice of Decision for wetland boundary and type approval for Highland Lake East Basin (Edina).
- Reviewing wetland application for West 62<sup>nd</sup> Street, preparing TEP Findings report, preparing and submitting WCA Notice of Application and Notice of Decision for wetland boundary/type, WCA no-loss, wetland impact sequencing, and replacement plan approval, and providing wetland impact and replacement credit summary.
- Shady Oak Lake outlet- reviewing wetland information and participating in pre-application TEP meeting.
- Other miscellaneous program administration