Environmental Assessment Worksheet

Normandale Lake Water Quality Improvement Project

Prepared for
Nine Mile Creek Watershed District

April 2018

4300 MarketPointe Drive, Suite 200
Minneapolis, MN 55435
952.832.2600
www.barr.com

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July 2013 version

ENVIRONMENTAL ASSESSMENT WORKSHEET

This Environmental Assessment Worksheet (EAW) form and EAW Guidelines are available at the Environmental Quality Board's website at: http://www.eqb.state.mn.us/EnvRevGuidanceDocuments.htm. The EAW form provides information about a project that may have the potential for significant environmental effects. The EAW Guidelines provide additional detail and resources for completing the EAW form.

Cumulative potential effects can either be addressed under each applicable EAW Item, or can be addresses collectively under EAW Item 19.

Note to reviewers: Comments must be submitted to the RGU during the 30-day comment period following notice of the EAW in the *EQB Monitor*. Comments should address the accuracy and completeness of information, potential impacts that warrant further investigation and the need for an EIS.

1. Project Title

Normandale Lake Water Quality Improvement Project

2. Proposer

Nine Mile Creek Watershed District (NMCWD)
Contact person: Randy Anhorn
Title: District Administrator
Address: 12800 Gerard Drive
City, State, ZIP: Eden Prairie, MN 55346
Phone: 952-835-2078
Email: ranhorn@ninemilecreek.org

3. RGU

Contact person: Steve Kloiber
Title: President, NMCWD
Address: 12800 Gerard Drive
City, State, ZIP: Eden Prairie, MN 55346
Phone: 612-770-4809
Email: steve.kloiber@comcast.net

4. Reason for EAW Preparation

Required:	Discretionary:
☐ EIS Scoping	☐ Citizen petition
☐ Mandatory EAW	☐ RGU discretion
	X Proposer initiated

If EAW or EIS is mandatory give EQB rule category subpart number(s) and name(s):

5. Project Location

- County: Hennepin
- City/Township: Bloomington
- PLS Location (¼, ¼, Section, Township, Range):

  NW¼SW¼ and SW¼SW¼ Section 16, T116N, R21W;
  NE¼SE¼ and SE¼SE¼ Section 17, T116N, R21W;
  NE¼NE¼ Section 20, T116N, R21W;
  NW¼NW¼ Section 21, T116N, R21W

- Watershed (81 major watershed scale): 33 – Lower Minnesota River
- GPS Coordinates: -93.3566, 44.8497 (center point; NAD83)

  Tax Parcel Numbers: 1611621310009, 1611621310010, 1611621320002, 1611621330001, 1611621330002, 1611621340001, 1711621410002, 1711621440001, 2011621110006, 2111621220001

At a minimum attach each of the following to the EAW:

- County map showing the general location of the project (**Figure 1**)
- U.S. Geological Survey 7.5 minute, 1:24,000 scale map indicating project boundaries (photocopy acceptable) (**Figure 2**)
- Site plans showing all significant project and natural features. Pre-construction site plan and post-construction site plan. Not applicable.

Figures are included in the "Figures" section at the end of the document text.

6. Project Description

a. Provide the brief project summary to be published in the *EQB Monitor*, (approximately 50 words).

Nine Mile Creek Watershed District (NMCWD), in coordination with the City of Bloomington, is planning a water-quality improvement project on Normandale Lake to address concerns associated with a prevalence of curly-leaf pondweed in the lake and release of phosphorus from lake-bottom sediments (internal loading). Improvement approaches include lake-level drawdown, herbicide treatment, alum treatment, possible aquatic plant harvesting, and possible in-lake oxygenation.

b. Give a complete description of the proposed project and related new construction, including infrastructure needs. If the project is an expansion include a description of the existing facility. Emphasize: 1) construction, operation methods and features that will cause physical manipulation of the environment or will produce wastes, 2) modifications to existing equipment or industrial processes, 3) significant demolition, removal or remodeling of existing structures, and 4) timing and duration of construction activities.

Project Background

Normandale Lake was created by NMCWD's Mount Normandale Lake flood control project in the late 1970's. That project included construction of a dam across Nine Mile Creek to the west of Normandale Boulevard. The U.S. Army Corps of Engineers (USACE) issued a permit for dam construction in 1979 that contained several special conditions, including restrictions on vegetation management or dredging in the western portion of the lake.

The lake now contains an abundance of curly-leaf pondweed, an aggressive invasive aquatic plant, which results in limited plant diversity. The low plant diversity in combination with low dissolved oxygen levels in the water column pose concerns for the lake's aquatic communities. Excessive aquatic plants and filamentous algae in Normandale Lake cause late-summer algal blooms, resulting in an occasionally strong hydrogen sulfide odor and impediment of recreational use (boating, walking paths, etc.) in and around the lake.

Development of engineering solutions to address water quality in Normandale Lake has been ongoing since 2005, with the NMCWD completing a Use Attainability Analysis (UAA) for the lake. The Normandale Lake UAA was a scientific assessment of the lake's physical, chemical, and biological condition and included both a water quality assessment and prescription of protective and/or remedial measures for Normandale Lake and the tributary watershed.

Following completion of the UAA, the City of Bloomington petitioned NMCWD to implement recommended water quality improvements for Normandale Lake. Since receiving this petition, the NMCWD has conducted several rounds of additional analysis and consideration of lake-management recommendations in coordination with the USACE. In more recent years, NMCWD has worked closely with the USACE to identify shared management goals for the shallow lake (e.g., a more healthy and diverse native aquatic plant population) and develop a lake management plan that will help achieve these goals within the terms of the existing USACE permit.

Water Quality Improvement Approaches

The proposed Project includes a series of water quality improvement approaches to address concerns associated with a prevalence of curly-leaf pondweed in Normandale Lake and the release of phosphorus from lake-bottom sediments (internal loading). A critical step in managing the water quality in Normandale Lakes is the management of curly-leaf pondweed. This should not just involve the management of curly-leaf pondweed such that phosphorus inputs are reduced. Rather, management actions must also remove curly-leaf pondweed from Normandale Lake to bolster populations of native plants, enhancing species diversity of the lake's macrophytes. Curly-leaf pondweed removal also has the added benefit of preserving native pondweed species adversely affected by the algal blooms that follow curly-leaf pondweed die-off. Improvement approaches are described further below to both manage and remove curly-leaf pondweed from Normandale Lake. Methods proposed to control curly-leaf pondweed and improve the overall ecological health of the lake include lake-level drawdown, herbicide treatment, and alum treatment. Additional methods that may be considered following the completion of the herbicide treatment (2024) include aquatic plant harvesting and in-lake oxygenation.

Lake Drawdown

One way to control curly-leaf pondweed, and to a lesser extent internal phosphorus release from sediment, is to draw down the water level in Normandale Lake to allow the lake-bed to freeze over the winter. Curly-leaf pondweed primarily propagates through production of dormant vegetative propagules called turions. Turions are produced in late spring, remain dormant in sediment through the summer, and germinate under cooler water conditions in the fall. However, exposure to a winter freeze can kill the turions, thus disrupting curly-leaf pondweed's reproductive cycle. As such, a drawdown of Normandale Lake to an elevation between 804 and 805 feet (with drawdown goal elevation of 804 feet) is the first method proposed to minimize curly-leaf pondweed in Normandale Lake (**Figure 3**).

Several timing guidelines influence lake drawdown. Based on project communications with the Minnesota Department of Natural Resources, (MDNR), the agency prefers that lake drawdown occur prior to September 15 to minimize impacts to the area's turtle community as it prepares for winter hibernation. In addition, the drawdown should ideally be able to maintain low lake levels from December to February to maximize sediment freeze and turion die-off.

An existing, 18-inch bypass pipe is located on the east side of Normandale Lake to convey flows below 808 feet from the lake into Nine Mile Creek. However, using the existing bypass pipe alone is not sufficient to draw down the lake in advance of turtle overwintering activities. As such, drawdown is expected to occur through one of three methods: 1) increasing the discharge capacity of the bypass outlet, 2) using the existing bypass outlet with supplemental pumping, or 3) installing a larger bypass outlet with temporary pumping.

Increasing the discharge capacity of the bypass system would entail installation of a new 30-inch bypass pipe immediately north of the existing bypass pipe located adjacent to the weir (**Figure 3**). The new pipe would be approximately 240 feet long to extend into the deepest spot of Normandale Lake, so it could convey water from the lake, under the embankment, and directly into Nine Mile Creek downstream of the existing outlet weir. A design alternative also under consideration is removing the existing 18-inch bypass pipe and installing a new 30-inch bypass pipe in the same location as the existing bypass. Regardless of the location, the larger pipe would have the capacity to draw the lake down much more quickly in the fall than the current bypass and would limit the impact of precipitation or snowmelt events on lake level during the freezing period. The third design alternative considered would consist of using a temporary pump and the existing bypass to begin drawing the lake down during late-summer, then installing a larger bypass outlet to maintain the lake drawdown and decrease potential impacts of rainfall or snowmelt events on lake level during the drawdown period. A new 30-inch pipe and sluice gate would be installed on the north side of the existing outlet structure.

A temporary, supplemental pump could also be used to supplement the discharge capacity of the existing bypass pipe, thus improving the odds that Normandale Lake will be dewatered prior to September 15 while also limiting the impact of precipitation or snowmelt events during the freezing period. A 10 cubic feet per second (cfs) diesel powered pump would be staged on the east side of Normandale Lake, near the outlet weir. The inlet pipe to the pump would extend into the deepest spot of Normandale Lake and convey water from the lake and over the embankment where it would discharge directly into Nine Mile Creek downstream of the existing outlet weir. A temporary structure would be constructed to secure the pump while it is on-site and reduce noise levels. It is expected that the temporary structure would also house a diesel

storage tank for pump refueling. Routine maintenance would be required to ensure the pump is operating properly and to maintain fuel.

Upon completion of either drawdown method, Normandale Lake would take approximately three to four weeks to refill, depending on baseflow conditions of Nine Mile Creek and precipitation during the refill period.

Environmental impacts are largely the same between drawdown methods. As such, they will predominantly be discussed jointly throughout this EAW. Impacts that differ between drawdown methods will be noted as applicable. A final decision on drawdown method will be made in advance of project permitting.

Herbicide Treatment

It is expected that drawdown will stunt curly-leaf pondweed by destruction of turions for the portion of the lake that is effectively drawn down. However, the proposed project includes an additional management method to control remaining actively-growing curly-leaf pondweed. Once the lake has refilled after the drawdown, herbicide treatment with Endothall, a curly-leaf pondweed-selective herbicide, is proposed. To maximize its effectiveness, Endothall would be applied in early spring when water temperature is 55-60°F (typically late-April or early-May). Since curly-leaf pondweed primarily grows in cooler water conditions, applying Endothall in early spring would remove curly-leaf pondweed when native plant species are seasonally suppressed. Endothall would be applied from a treatment boat or barge and, therefore, would require Normandale Lake to refill prior to treatment. Endothall application will also require an amendment to the existing USACE permit.

Due to the influence of inflow from Nine Mile Creek, maintaining the appropriate concentration of Endothall in the lake for long enough to kill curly-leaf pondweed (three days) is challenging – the creek would deposit untreated water into the lake, and then would carry some amount of treated water with it as it leaves the lake. To mitigate for this effect, the western third of Normandale Lake would be treated at a higher dose than the remainder of the lake (5 mg/L rather than 1 mg/L). Normandale Lake (near the inlet) would be treated when Nine Mile Creek inflows are approximately 5 to 13.5 cfs. Modeling indicates that applying this dosage at the given flow rates allows the concentration of Endothall across Normandale Lake to remain at 1 mg/L for 3 days following the treatment, long enough for curly-leaf pondweed to be affected.

It is expected that Normandale Lake would be monitored for 21 days after Endothall treatment to confirm that sufficient herbicide was applied to control curly-leaf pondweed. Since Endothall

typically degrades within 21 days of treatment, monitoring is also expected to confirm that the herbicide is degrading on schedule for native plants to subsequently grow.

To effectively remove curly-leaf pondweed, whole-lake treatment could be necessary for a period of up to five years. However, spot treatments on certain portions of the lake with continued curly-leaf growth may be considered appropriate, depending on future vegetation monitoring results.

Alum Treatment

The next water quality improvement method included as part of the proposed Project addresses internal loading, or release of phosphorus from lake-bottom sediments. When aluminum is applied to a lake as a solution of alum (aluminum sulfate), it forms an insoluble unit called floc that settles to the lake bottom. Once settled, the aluminum in floc binds with phosphorus in the sediment to prevent it from recycling back into the water column.

The proposed Project would apply an alum treatment to Normandale Lake in spring 2019, following winter drawdown and at approximately the same time as the Endothall treatment. It is expected that an alum dose applied as 470 gallons alum equivalent per acre (applied as a mixture of alum and sodium aluminate) would be required to effectively treat Normandale Lake. Sodium aluminate is often used in combination with alum to prevent a significant change in the lake's pH (alum is acidic, sodium aluminate is basic). As with the application of Endothall, alum would be applied from a treatment boat or barge and would require Normandale Lake to refill prior to treatment. Conducting the alum treatment before aquatic plants are re-established in the lake would allow the aluminum floc to reach the sediment more uniformly, subsequently more efficiently binding phosphorus in the sediment.

A single alum treatment is included with the proposed Project. It is expected that Normandale Lake will be re-assessed in approximately five years to determine if an additional alum treatment is warranted.

Aquatic Plant Harvesting

The fourth water quality improvement included with the proposed Project involves the possible harvesting of aquatic plant material at the conclusion of the Endothall treatment. When aquatic plants undergo senescence (i.e. winter die-off), they decay and release phosphorous contained in plant tissue into the aquatic environment, which subsequently reduces dissolved oxygen in the water column. Removing plant biomass helps remove plant-bound phosphorus from the system. Aquatic plant removal also helps increase the longevity of an alum treatment as it reduces the amount of phosphorus from plants that is deposited on the lake bottom.

In accordance with the 1979 USACE permit, harvesting, if necessary, would be limited to the eastern portion of the lake within an approximately 40-acre area and that up to two harvesting events would be conducted. It is expected that if harvesting is necessary, the cutting depth would be set to up to 2 feet deep in the water column to stunt plants, allowing opportunities for later-growing native plants to better compete with early-season species. Once harvested, aquatic plant material would be removed from the project area and disposed of at an appropriate composting facility.

In-Lake Oxygenation

If the water quality improvement methods proposed above do not yield desired results as quickly as anticipated, an in-lake oxygenation system may be installed to boost dissolved oxygen levels in Normandale Lake. Addressing low dissolved oxygen concentrations in Normandale Lake is recommended for several reasons, including: (1) to prevent the generation of foul smelling hydrogen sulfide, (2) to help keep the lake sediments aerated and prevent internal loading as new, incoming phosphorus is deposited onto the lake bottom, and (3) to provide oxygen to fish species that cannot survive at low oxygen concentrations (e.g., 2-3 mg/L) that persist in the lake during the summer and to prevent winter fish kill.

The proposed Project would use a hypolimnetic oxygenation system employing side-stream saturation (SSS) to mitigate low oxygen conditions in Normandale Lake. The SSS would withdraw water from the bottom of the lake, inject pure oxygen in a way that would allow oxygen gas to dissolve into the water, then pump the oxygenated water back to the bottom of the lake. The oxygenation system would be installed in a deeper portion of Normandale Lake, allowing dissolved oxygen input to be focused over the areas that are typically the most affected by low oxygen levels. It is expected that the oxygen supply would be generated on-site by a compressor supplying air to a pressure swing adsorption molecular sieve.

Project Schedule

The proposed Project is anticipated to begin with the drawdown of Normandale Lake starting in August 2018, allowing the drawdown to be largely complete in advance of the September 15 turtle overwintering recommendation. It is expected that the lake may experience fluctuation in water level (known as rebound) in the fall in response to large rainfall events, but that it could be drawn back down fairly quickly by either drawdown method. The lake would generally remain drawn down to an elevation of up to 804 feet until early-March 2019, at which point the bypass pipe would be closed to allow the Normandale Lake to refill. Under typical Nine Mile Creek baseflow conditions, Normandale Lake is expected to take 3-4 weeks to refill to its normal elevation of 808 feet.

In early- to mid-April, Endothall would be applied to Normandale Lake, depending on the timing of ice out. An alum treatment would follow the Endothall treatment, likely in mid- to late-May. Aquatic plant harvesting would follow if necessary, likely in June and August of 2024. The need for an in-lake oxygenation system would be determined in 2024 and installed as appropriate.

c. Project magnitude:

Table 1 provides a summary of the proposed project's magnitude.

Table 1 Project Magnitude Summary

Component	Applicability
Total project acreage	116 acres
Linear project length	Not applicable
Number and type of residential units	Not applicable
Commercial building area (in square feet)	Not applicable
Industrial building area (in square feet)	Not applicable
Institutional building area (in square feet)	Not applicable
Other uses—specify (in square feet)	Not applicable
Structure height(s)	Not applicable

d. Explain the project purpose; if the project will be carried out by a governmental unit, explain the need for the project and identify its beneficiaries.

The purpose of the proposed Project is to improve water quality and ecological health of Normandale Lake by addressing concerns associated with a prevalence of curly-leaf pondweed in the lake and release of phosphorus from lake-bottom sediments (internal loading). Beneficiaries of the proposed Project include users of recreational trails surrounding the lake, Normandale Lake boaters/fishermen, and downstream waters in the Nine Mile Creek watershed.

e. Are future stages of this development including development on any other property planned or likely to happen? ☐ Yes **X** No

If yes, briefly describe future stages, relationship to present project, timeline and plans for environmental review.

f. Is this project a subsequent stage of an earlier project? ☐ Yes **X** No

If yes, briefly describe the past development, timeline and any past environmental review.

7. Cover Types

Estimate the acreage of the site with each of the following cover types before and after development:

An assessment of land cover types was estimated using GIS; the results are summarized in **Table 2**. The proposed Project is not anticipated to alter land use. Though there would be temporary disturbances, land use would remain unchanged upon project completion.

Table 2 Summary of Cover Types (in acres)

Cover Type	Before	After
Wetlands	0	0
Deep water/streams	116	116
Wooded/forest	0	0
Brush/grassland	0	0
Cropland	0	0
Lawn/landscaping	0	0
Impervious Surface	0	0
Stormwater Pond	0	0
Other	0	0
Total Area	**116**	**116**

8. Permits and Approvals Required

List all known local, state and federal permits, approvals, certifications and financial assistance for the project. Include modifications of any existing permits, governmental review of plans and all direct and indirect forms of public financial assistance including bond guarantees, Tax Increment Financing and infrastructure. *All of these final decisions are prohibited until all appropriate environmental review has been completed. See Minnesota Rules, Chapter 4410.3100.*

Table 3 lists the permits and approvals required for the proposed Project.

Table 3 Permits and Approvals Required

Unit of Government	Type of Application	Status
U.S. Army Corps of Engineers	• Modification of existing Section 404 Permit (for Endothall treatment) • Nationwide Section 404 Permit (if larger bypass installed)	• To be obtained • To be obtained, if necessary
Minnesota Department of Natural Resources	• Work in Public Waters Permit • Invasive Aquatic Plant Management Permit • Lake Vegetation Management Plan • Variance Letter for Whole-Lake Herbicide Treatment	• To be obtained • To be obtained • To be obtained • To be obtained
Minnesota Pollution Control Agency	• General Stormwater Permit for Construction	• To be obtained for larger bypass drawdown option, as applicable
City of Bloomington	• Approval by City of Bloomington • Building Permits (as needed for oxygenation system)	• To be obtained
Nine Mile Creek Watershed District	• District Permit	• To be obtained

Cumulative potential effects may be considered and addressed in response to individual EAW Item Nos. 9-18, or the RGU can address all cumulative potential effects in response to EAW Item No. 19. If addressing cumulative effect under individual items, make sure to include information requested in EAW Item No. 19

All potential cumulative impacts are discussed in EAW Item 19 (Cumulative Potential Effects).

9. Land Use

a. Describe:

i. Existing land use of the site as well as areas adjacent to and near the site, including parks, trails, prime or unique farmlands.

The proposed Project is located within the approximately 181 acre Normandale Lake Park, which is part of the 2,611 acre Hyland-Bush-Anderson Lakes Park Reserve that includes Anderson Lake Park/Tierney's Woods, Bush Lake Beach, Corridor Park (North and South), Hyland Lake Park, and West Bush Lake Park (**Figure 4**). Nine Mile Creek flows through Normandale Lake, a shallow lake

that offers a number of recreational amenities such as trails, canoeing, picnic shelters, and parking for visitors.

Additional parks near the proposed Project area include Reynolds Park (approximately 1 mile west), Pauly's Pond Park (approximately 0.8 miles northeast), Poplar Bridge Playground (approximately 0.8 miles east), Skriebakken Park (approximately 1.2 miles east), Norman Ridge Playground (approximately 0.8 miles south), and Hyland Hills Ski Area (approximately 0.6 miles southwest).

The proposed Project area is immediately adjacent to commercial (north), residential (north and south), and public/conservation (east and west) land uses. The Normandale Lake walking path borders the proposed Project, which connects with other trails, sidewalks, and pedestrian paths.

ii. Plans. Describe planned land use as identified in comprehensive plan (if available) and any other applicable plan for land use, water, or resources management by a local, regional, state, or federal agency.

Comprehensive land use planning applicable to the proposed Project is discussed below. Unless noted, the proposed Project area would be located within the boundary of these plans.

City of Bloomington Normandale Lake District Plan

The *Normandale Lake District Plan* (City of Bloomington 2008) is part of the City's *Imagine Bloomington 2025 Strategic Plan*. The District Plan outlines eleven objectives to achieve the City's vision and goals, including:

- Maintain and enhance the public realm
- Foster revitalization
- Design with nature
- Encourage sustainable and balanced development
- Emphasize quality, comfort, and safety
- Commitment to implement and maintain

The Plan highlights a number of proposed improvements, including natural resources, parks and open space, and trail improvements. Furthermore, resource protection and enhancement was identified as an area of growing importance during the Plan's time horizon. Specifically, the Plan recommends implementing the Normandale Lake Water Quality Improvement Project, including the temporary drawdown to eradicate curly-leaf pondweed to reduce phosphorus loading and improve water quality. In 2017 the Plan was updated to reflect recent changes in land use and new plans to improve access from I-494 from East Bush Lake Road (City of Bloomington 2017).

The City's vision and goals are consistent with the 2008 Plan and the Normandale Lake Water Quality Improvement Project remains an objective of the Plan.

City of Bloomington Surface Water Management Plan

The City of Bloomington is presently updating its Surface Water Management Plan. The existing *Surface Water Management Plan* (City of Bloomington 2007) was developed to provide the City of Bloomington with direction concerning the administration and implementation of water resources within the City. A number of goals and policies were developed to complement County, Regional or State goals and policies as well as to preserve and use natural water storage and retention systems.

The goals and policies identified in the Plan address a number of issues including water quality, recreation, fish and wildlife, and enhancement of public participation. Specifically, the City has set the following goals:

- Maintain or improve the quality of water in lakes, streams or rivers within or immediately downstream of the City
- Protect and enhance recreational facilities and fish and wildlife habitat

Additionally, the Plan provides an assessment of existing and potential water resource related issues and corrective actions, including the following lake and stream water quality problems:

- Algal blooms and problem aquatic vegetation has been identified as a concern
- Occasional maintenance (i.e., bog control) of Nine Mile Creek/County Ditch No. 1 downstream of Normandale Lake has been necessary, as noted by the NMCWD

The Plan has recently been updated and a Draft Local Surface Water Management Plan is out for a 60-day agency review, with comments on the updated plan due April 16, 2018 (City of Bloomington 2018). The Normandale Lake Water Quality Improvement Project is listed in the Capital Improvement Projects section of the updated Plan (City of Bloomington 2018)

Nine Mile Creek Water Management Plan (2017-2027)

The *Water Management Plan* (NMCWD 2017) sets the vision, guidelines, and proposed tasks for managing surface water within the boundaries of the NMCWD. The general purpose of a watershed district is to conserve natural resources through land use planning, flood control, and other conservation projects that protect the public health and welfare and for the wise use of the natural resources, including:

- Identifying and planning for means to effectively protect and improve surface and groundwater quality
- Protecting and enhancing fish and wildlife and water recreational facilities

The Plan discusses a 2008 petition received from the City of Bloomington to implement the water quality improvement recommendations presented in the 2005 Normandale Lake Use Attainability Analysis. Specifically, additional analysis and discussions with the City and the USACE regarding watershed and in-lake management options are outlined as well as an anticipated improvement project commencing in 2018-2019 (i.e. the proposed Project). The implementation recommendations for Normandale Lake included in-lake alum treatment and/or aquatic plant management.

Metropolitan Council 2040 Water Resources Policy Plan

The *2040 Water Resources Policy Plan* (Metropolitan Council 2015a) is a framework for building strategies that integrate wastewater, water supply, and surface water as related areas of a comprehensive water picture. The plan carries forward the vision of the *Thrive MSP 2040*, the long-range plan for the Twin Cities region that is updated every 10 years. Thrive's regional vision includes five desired outcomes that provide policy direction for the 2040 Water Resources Policy Plan:

- *Stewardship* – advancing the Council's longstanding mission of orderly and economical development by responsibly managing the region's natural and financial resources, and making strategic investments in our region's future
- *Prosperity* – investing in infrastructure and amenities that make our region competitive in attracting and retaining successful businesses, a talented workforce, and strong economic opportunities
- *Equity* – connecting all residents to opportunity and creating viable housing, transportation, and recreation options for people of all races, ethnicities, incomes, and abilities so that all communities share the opportunities and challenges of growth and change
- *Livability* – focusing on the quality of our residents' lives and experiences in the region, and how places and infrastructure create and enhance the quality of life that makes our region a great place to live
- *Sustainability* – protecting our regional vitality for generations to come by preserving our capacity to maintain and support our region's well-being and productivity over the long term

The Plan provides a Priority Lakes List, based on whether they meet one of four criteria that is meant to provide useful information for the management of the region's lakes and their watersheds. Normandale Lake is listed as a Priority Lake due to its high regional recreational value, including a surface area of over 100 acres.

Metropolitan Council 2040 Regional Parks Policy Plan

The Regional Parks Policy Plan (Metropolitan Council 2015b) puts forward policy direction to ensure the fulfillment of outdoor recreation benefits for all residents of the metropolitan region. This Plan also advances the *Thrive MSP 2040* outcomes of Stewardship, Prosperity, Equity, Livability, and Sustainability by striving to, among other things:

- Expand the Regional Parks System to conserve, maintain, and connect natural resources identified as being of high quality or having regional importance
- Provide a comprehensive regional park and trail system that preserves high-quality natural resources, increases climate resiliency, fosters healthy outcomes, connects communities, and enhances quality of life in the region.

iii. Zoning, including special districts or overlays such as shoreland, floodplain, wild and scenic rivers, critical area, agricultural preserves, etc.

The proposed project is located in an area currently zoned Single-Family Residential (R-1) as shown in **Figure 4**. Regulations for single-family residential zones within the City of Bloomington are intended to provide for other necessary and related uses within residential neighborhoods, including the protection of natural resources.

The proposed Project would be located within the Flood Hazard overlay district. The Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map depicts the entire proposed Project within the mapped 100-year floodplain (**Figure 5**).

b. Discuss the project's compatibility with nearby land uses, zoning, and plans listed in Item 9a above, concentrating on implications for environmental effects.

The proposed Project would be compatible with the nearby land uses, and plans previously described in EAW Item 9aii (Land Use, Plans).

c. Identify measures incorporated into the proposed project to mitigate any potential incompatibility as discussed in Item 9b above.

The proposed Project would be compatible with current land uses.

10. Geology, Soils and Topography/Land Forms

a. Geology – Describe the geology underlying the project area and identify and map any susceptible geologic features such as sinkholes, shallow limestone formations, unconfined/shallow aquifers, or karst conditions. Discuss any limitations of these features for the project and any effects the project could have on these features. Identify any project designs or mitigation measures to address effects to geologic features.

Bedrock in the proposed Project area is the Prairie Du Chien formation (Minnesota Geological Survey 1989). The Prairie Du Chien formation consists of dolostone that varies greatly in thickness because its top is highly erodible. The Prairie Du Chien is karsted and may be rubbly where remnants less than 50 feet thick are covered by the St. Peter Sandstone. Depth to bedrock in the proposed Project area is up to 250 feet below ground surface. Surficial geology consists of loamy till, which is primarily loam in texture, underlain by Superior Lobe stratified sediment or till and small areas of thick, fine, loamy colluvium.

No karst features or other geologically sensitive features are known to occur in the vicinity of the proposed Project area.

b. Soils and topography – Describe the soils on the site, giving NRCS (SCS) classifications and descriptions, including limitations of soils. Describe topography, any special site conditions relating to erosion potential, soil stability or other soils limitations, such as steep slopes, highly permeable soils. Provide estimated volume and acreage of soil excavation and/or grading. Discuss impacts from project activities (distinguish between construction and operational activities) related to soils and topography. Identify measures during and after project construction to address soil limitations including stabilization, soil corrections or other measures. Erosion/sedimentation control related to stormwater runoff should be addressed in response to Item 11.b.ii.

Topography around the perimeter of Normandale Lake is approximately 808 feet above mean sea level (AMSL), with the deepest lake elevation at approximately 800 feet AMSL. Soil in the proposed Project area is mapped as water (U.S. Department of Agriculture – Natural Resources Conservation Service 2004).

If drawdown is completed through installation of a larger bypass pipe, ground-disturbing activities would take place within Normandale Lake and on upland immediately adjacent to the lake. Best management practices (BMPs) would be developed for site stabilization and sediment control. BMPs may include, but are not limited to, silt fencing, cofferdams, floating silt curtain, and other appropriate measures. Pumping is not expected to result in ground disturbance or erosion/sedimentation concerns.

11. Water Resources

a. Describe surface water and groundwater features on or near the site in a.i. and a.ii. below.

i. Surface water – lakes, streams, wetlands, intermittent channels, and county/judicial ditches. Include any special designations such as public waters, trout stream/lake, wildlife lakes, migratory waterfowl feeding/resting lake, and outstanding resource value water. Include water quality impairments or special designations listed on the current MPCA 303d Impaired Waters List that are within 1 mile of the project. Include DNR Public Waters Inventory number(s), if any.

The proposed Project is located in Normandale Lake, a 116-acre waterbody which was created in 1979 to help control downstream flooding. Normandale Lake is shallow enough (average depth of 3 feet and maximum depth of 9 feet) for aquatic plants to grow over the entire lake bed. The water level in the lake is controlled mainly by weather conditions (snowmelt, rainfall, and evaporation) and by the elevation of the outlet structure located at the east side of the Lake.

Nine Mile Creek (Hennepin County Ditch #1) flows through the lake on its way to the Minnesota River (**Figure 6**). Both Normandale Lake and Nine Mile Creek are listed on the MDNR Public Waters Inventory (PWI; #27-1045P and #27-050a, respectively).

Nine Mile Creek (from the headwaters to the Minnesota River) is on the Minnesota Pollution Control Agency (MPCA) list of impaired waters for chloride and fish bioassessments, with aquatic life as the affected designated use. Although Normandale Lake is not on the MPCA list of impaired waters, summer-average phosphorus concentrations have exceeded 60 ug/L (the MPCA's eutrophication criteria for shallow lakes) in recent years. Also, the lake experiences increasing densities of curly-leaf pondweed and excess filamentous algae, watermeal, and duckweed growths. Significant growth of watermeal and duckweed are typically associated with nutrient-rich environments, thus supporting the need for nutrient management in Normandale Lake.

According to the U.S. Fish and Wildlife Service (USFWS) National Wetland Inventory (NWI), the entire proposed Project area is mapped as wetland (**Figure 6**). The majority of Normandale Lake is mapped in the NWI as lake, with a few freshwater forested/shrub wetlands within the lake and freshwater emergent wetlands within the lake and along the northern and eastern edges of the lake (**Figure 6**). Riparian wetlands are present along Nine Mile Creek both upstream and downstream of Normandale Lake (**Figure 6**).

ii. Groundwater – aquifers, springs, seeps. Include: 1) depth to groundwater; 2) if project is within a MDH wellhead protection area; 3) identification of any onsite and/or nearby

wells, including unique numbers and well logs if available. If there are no wells known on site or nearby, explain the methodology used to determine this.

According to the Minnesota Hydrogeology Atlas, depth to the water table in the vicinity of the proposed Project area ranges from 0 feet to 10 feet (Minnesota Geological Survey 1989). There are no known springs or seeps in the proposed Project area.

The proposed Project is located within a Minnesota Department of Health Bloomington wellhead protection area. According to the County Well Index, there are no wells within the proposed Project.

b. Describe effects from project activities on water resources and measures to minimize or mitigate the effects in Item b.i. through Item b.iv. below.

i. Wastewater – For each of the following, describe the sources, quantities and composition of all sanitary, municipal/domestic and industrial wastewater produced or treated at the site.

1) If the wastewater discharge is to a publicly owned treatment facility, identify any pretreatment measures and the ability of the facility to handle the added water and waste loadings, including any effects on, or required expansion of, municipal wastewater infrastructure.

2) If the wastewater discharge is to a subsurface sewage treatment systems (SSTS), describe the system used, the design flow, and suitability of site conditions for such a system.

3) If the wastewater discharge is to surface water, identify the wastewater treatment methods and identify discharge points and proposed effluent limitations to mitigate impacts. Discuss any effects to surface or groundwater from wastewater discharges.

The proposed Project would not produce any sanitary, municipal/domestic, or industrial wastewater.

ii. Stormwater – Describe the quantity and quality of stormwater runoff at the site prior to and post construction. Include the routes and receiving water bodies for runoff from the site (major downstream water bodies as well as the immediate receiving waters). Discuss any environmental effects from stormwater discharges. Describe stormwater pollution prevention plans including temporary and permanent runoff controls and potential BMP site locations to manage or treat stormwater runoff. Identify specific

erosion control, sedimentation control or stabilization measures to address soil limitations during and after project construction.

Nine Mile Creek has two branches. The north branch is groundwater and stormwater fed, beginning in Hopkins, Minnesota. The south branch originates in Minnetoga Lake and surrounding wetlands in Minnetonka. The north and south branches join north of Normandale Lake in Bloomington. The Nine Mile Creek flows through Normandale Lake and continues southeast to the Minnesota River. Stormwater in the vicinity either infiltrates, travels to surface waters (Normandale Lake, Nine Mile Creek, etc.) as runoff, or is managed by the City of Bloomington storm sewer network.

As mentioned above, if drawdown is completed through installation of a larger bypass pipe, ground-disturbing activities would take place within Normandale Lake and on upland immediately adjacent to the lake. Appropriate BMPs would be developed for site stabilization and sediment control. BMPs may include, but are not limited to, silt fencing, cofferdams, floating silt curtain, and other appropriate measures. Pumping is not expected to result in ground disturbance or erosion/sedimentation concerns.

iii. Water appropriation – Describe if the project proposes to appropriate surface or groundwater (including dewatering). Describe the source, quantity, duration, use and purpose of the water use and if a DNR water appropriation permit is required. Describe any well abandonment. If connecting to an existing municipal water supply, identify the wells to be used as a water source and any effects on, or required expansion of, municipal water infrastructure. Discuss environmental effects from water appropriation, including an assessment of the water resources available for appropriation. Identify any measures to avoid, minimize, or mitigate environmental effects from the water appropriation.

Per correspondence with the MDNR, a water appropriations permit would not be required; project activities would be covered under MDNR's Public Waters Work Permit program.

iv. Surface Waters

a) Wetlands – Describe any anticipated physical effects or alterations to wetland features such as draining, filling, permanent inundation, dredging and vegetative removal. Discuss direct and indirect environmental effects from physical modification of wetlands, including the anticipated effects that any proposed wetland alterations may have to the host watershed. Identify measures to avoid (e.g., available alternatives that were considered), minimize, or mitigate environmental effects to wetlands. Discuss whether any required compensatory wetland mitigation for unavoidable wetland impacts will occur in the same minor or major watershed, and identify those probable locations.

Water levels in the wetland area between West 84th Street and Interstate 494 are also controlled by the Normandale Lake outlet. A temporary water control structure would be installed between the wetland area north of West 84th Street and the lake to prevent lowering of the water levels in this wetland area during the lake drawdown.

b) Other surface waters- Describe any anticipated physical effects or alterations to surface water features (lakes, streams, ponds, intermittent channels, county/judicial ditches) such as draining, filling, permanent inundation, dredging, diking, stream diversion, impoundment, aquatic plant removal and riparian alteration. Discuss direct and indirect environmental effects from physical modification of water features. Identify measures to avoid, minimize, or mitigate environmental effects to surface water features, including in-water Best Management Practices that are proposed to avoid or minimize turbidity/sedimentation while physically altering the water features. Discuss how the project will change the number or type of watercraft on any water body, including current and projected watercraft usage.

The goal of the proposed Project is to reduce the prevalence of curly-leaf pondweed in Normandale Lake and the release of phosphorus from lake-bottom sediments. The proposed Project would occur in Normandale Lake and would include lake-level drawdown, selective herbicide (Endothall) treatment, and alum treatment. Additional methods that may be considered following the completion of the herbicide treatment (2024) include aquatic plant harvesting and in-lake oxygenation. See EAW Item 6 (Project Description) for a summary of each management strategy.

As summarized in EAW Item 6 (Project Description), drawdown of Normandale Lake would occur through an existing 18-inch bypass outlet with a supplemental pump, a new 30-inch bypass outlet installed immediately north of the existing bypass pipe, or a hybrid option involving both

pumping and installation of a new 30-inch bypass outlet. If drawdown is completed through installation of the larger (30-inch) bypass pipe, construction of the pipe would result in approximately 0.13 acres of temporary impact and approximately 0.01 acres of permanent impact in Normandale Lake. As mentioned above, appropriate BMPs would be developed for site stabilization and sediment control.

Drawdown of Normandale Lake would begin in August 2018 and remain drawn down to an elevation of at least 804 feet until March 2019. Upon completion of either drawdown method, Normandale Lake would take approximately three to four weeks to refill, depending on baseflow conditions of Nine Mile Creek.

Once Normandale Lake refills in spring 2019, Endothall and alum treatments would be applied from a boat or a barge. Once the Endothall treatment have concluded, aquatic plant biomass removal may occur (2024). Removal of floating aquatic plants from Normandale Lake would result in lower levels of plant-bound phosphorus, while increasing oxygen transfer from the air to the water column, and improved sunlight penetration through the water column. This would in turn slow the growth of more aggressive native plants while giving less aggressive native plants an opportunity to establish. Application of Endothall and alum would be used within the parameters of the label's recommended dosage and is not expected to harm water resources.

The proposed project is not anticipated to affect Nine Mile Creek or the drainage capacity of Hennepin County Ditch 1. The proposed project is also not expected to impact recreational navigation once the lake refills.

12. Contamination/Hazardous Materials/Wastes

a. Pre-project site conditions – Describe existing contamination or potential environmental hazards on or in close proximity to the project site such as soil or ground water contamination, abandoned dumps, closed landfills, existing or abandoned storage tanks, and hazardous liquid or gas pipelines. Discuss any potential environmental effects from pre-project site conditions that would be caused or exacerbated by project construction and operation. Identify measures to avoid, minimize or mitigate adverse effects from existing contamination or potential environmental hazards. Include development of a Contingency Plan or Response Action Plan.

The MPCA's What's in My Neighborhood and Environmental Protection Agency Cleanups in My Community databases were reviewed to determine if sites with regulatory listings for contamination such as dumps, landfills, storage tanks, or hazardous liquids are located within or adjacent to the proposed Project area. Two underground storage tank sites (one active and one inactive), four active petroleum remediation leak sites, 15 hazardous waste generators (nine

active and six inactive), and six construction stormwater sites (two active and four inactive) are located within a quarter of a mile to the proposed Project as shown in **Figure 7**.

The nearest site is an inactive construction stormwater site located approximately 100 feet north of the proposed Project area. The leak sites are reported as closed and no non-compliances are reported for the underground storage tank sites or hazardous waste generator sites. The proposed Project would only involve earthwork or other ground disturbance if a new bypass pipe is installed; however, there is no known contamination in the vicinity. Therefore, it is not anticipated that contamination associated with these sites would be encountered during the proposed project activities.

b. Project related generation/storage of solid wastes – Describe solid wastes generated/stored during construction and/or operation of the project. Indicate method of disposal. Discuss potential environmental effects from solid waste handling, storage and disposal. Identify measures to avoid, minimize or mitigate adverse effects from the generation/storage of solid waste including source reduction and recycling.

Plant harvesting, if necessary, is anticipated in summer 2024 and is expected to result in approximately 714,290 pounds (425 cubic yards) of wet plant material. The plant material will be transported to an appropriate compost facility.

Waste generation from other sources is not anticipated.

c. Project related use/storage of hazardous materials – Describe chemicals/hazardous materials used/stored during construction and/or operation of the project including method of storage. Indicate the number, location and size of any above or below ground tanks to store petroleum or other materials. Discuss potential environmental effects from accidental spill or release of hazardous materials. Identify measures to avoid, minimize or mitigate adverse effects from the use/storage of chemicals/hazardous materials including source reduction and recycling. Include development of a spill prevention plan.

No belowground tank installations are planned for the proposed Project.

To assist with the management of curly-leaf pondweed, the use of the herbicide Endothall as well as one alum treatment is proposed to be applied throughout the proposed Project area. Endothall is a curly-leaf pondweed-selective contact herbicide that has been used to successfully manage the species. Alum (aluminum sulfate) is a material commonly used to control phosphorus in lakes. The appropriate doses for both chemicals have been calculated during the project design to ensure minimum but effective quantities would be applied in order to achieve the proposed Project's purpose and need. Aluminum toxicity is pH-dependent. To mitigate for

this, a buffered treatment is proposed. In addition, monitoring would take place during alum treatment to assure neutral pH is maintained.

Several Project activities will require refueling operations. If the lake is drawn down through pumping, a diesel pump would be staged on-site and would need to be refueled several times per week in order to maintain dewatering operations. Boats would be used for the Endothall and alum treatment activities, as well as during monitoring. Boat refueling would occur as needed. It is expected that all refueling activities would take place through use of either a fuel truck or fuel tank equipped with appropriate spill prevention equipment. Spill prevention equipment may include the following:

- Maintain spill kits containing a sufficient quantity of absorbent, booms, and barrier materials to adequately contain and recover foreseeable spills. This equipment shall be located near fuel storage areas and other locations as necessary to be readily available to control foreseeable spills.
- All fuel, and where necessary, service vehicles, shall carry spill containment materials adequate to control foreseeable spills on land and water. Such material may include but not be limited to absorbent pads and booms, commercial absorbent material, plastic bags with ties, and a shovel.
- All fuel nozzles shall be equipped with functional automatic shut-offs and over-flow alarms.

It is expected that refueling would take place in upland areas to the extent practicable in order to minimize the potential for fuel release into Normandale Lake.

In order to prevent releases before they occur, the construction contractor will be expected to perform a pre-construction inspection and test of all equipment to ensure that it is in good repair. Additionally, while work is taking place, it is expected that the construction contractor will regularly inspect equipment to ensure it is in good working order. Any equipment in need of repair will be repaired or removed from service.

Storage of fuels or stationary equipment with fuel (e.g., pumps, generators, boats) will have secondary containment installed to prevent spills. If a spill should occur during refueling operations or construction, the construction contractor would stop the refueling operation until the spill can be controlled and the situation corrected. The source of the spill would be identified, contained, and cleaned up immediately.

d. Project related generation/storage of hazardous wastes – Describe hazardous wastes generated/stored during construction and/or operation of the project. Indicate method of disposal. Discuss potential environmental effects from hazardous waste handling, storage,

and disposal. Identify measures to avoid, minimize or mitigate adverse effects from the generation/storage of hazardous waste including source reduction and recycling.

The proposed Project is not anticipated to generate any hazardous waste. Harvested organic materials (i.e. in-lake plant material) on site are not considered to be hazardous for disposal purposes.

13. Fish, Wildlife, Plant Communities, and Sensitive Ecological Resources (Rare Features)

a. Describe fish and wildlife resources as well as habitats and vegetation on or in near the site.

The proposed Project area consists of aquatic lake habitat, with a few small freshwater forested/shrub wetlands and freshwater emergent wetlands. During the summer, Normandale Lake experiences significant algal blooms. Filamentous algae, watermeal and duckweed, as well as a dense growth of aquatic plants, such as the invasive curly-leaf pondweed, are prevalent within Normandale Lake.

The landscape within and around the proposed Project area provides habitat for fish, turtles, amphibians, such as frogs, toads, and salamanders, birds, such as bald eagles, hawks, blue heron, and wood ducks and perching birds, and mammals, such as fox, deer, squirrels, beaver, and muskrats.

b. Describe rare features such as state-listed (endangered, threatened or special concern) species, native plant communities, Minnesota County Biological Survey Sites of Biodiversity Significance, and other sensitive ecological resources on or within close proximity to the site. Provide the license agreement number (LA-____) and/or correspondence number (ERDB _____) from which the data were obtained and attach the Natural Heritage letter from the DNR. Indicate if any additional habitat or species survey work has been conducted within the site and describe the results.

Barr Engineering Co. (Barr) has a license agreement (LA-898) with the MDNR for access to the Natural Heritage Information System (NHIS) database, which was queried in February of 2018 to determine if any rare species could potentially be affected by the proposed Project. The NHIS database indicates that state-threatened Blanding's turtles (*Emydoidea blandingii*) have been documented just under one mile from of the proposed Project area.

The Blanding's turtle inhabits wetland complexes and adjacent sandy uplands, with preferred habitat consisting of calm shallow waters, including wetlands associated with rivers and streams with rich aquatic vegetation (MDNR 2018a). Based on the NHIS and conversations with the

MDNR as part of the proposed Project, Blanding's turtles are not known to be found in Normandale Lake.

The USFWS technical assistance website and the USFWS Information, Planning, and Conservation System website list several federally listed species as occurring in Hennepin County, including the federally endangered Higgins' eye pearly mussel (*Lampsilis higginsii*; state-endangered) and snuffbox mussel (*Epioblasma triquetra*; state-endangered) and the federally threatened northern long-eared bat (*Myotis septentrionalis*; state-special concern). According to the NHIS database, none of these federally- or state-listed species have been documented within one mile of the proposed Project.

The Higgins' eye pearly mussel inhabits large rivers such as the Mississippi River and the St. Croix River but has been extirpated from the Minnesota River (MDNR 2018b). The snuffbox mussel also inhabits large rivers and was historically present in the Mississippi River but recent collections are limited to the St. Croix River (MNDR 2018). According to the NHIS database, no records of living Higgins' eye pearly mussel or snuffbox mussel have been reported in the Minnesota River or Nine Mile Creek.

The northern long-eared bat inhabits caves, mines, and forests (MDNR 2018c). According to the MDNR, the nearest hibernacula is over 6 miles east of the proposed Project area and no maternity roost trees have been identified within the vicinity of the proposed Project area (MDNR 2017).

The proposed Project area is located within a MDNR Regionally Significant Ecological Area (RSEA) and a Regional Ecological Corridor (**Figure 8**). The MDNR identifies RSEAs within the seven-county metropolitan area where intact native plant communities and/or native animal habitat are still found and continue to provide important ecological functions. Regional Ecological Corridors represent ecological connections between RSEAs.

No Minnesota Biological Survey (MBS) native plant communities, Sites of Biodiversity Significance (SBS), or MDNR Scientific and Natural Areas (SNAs) are present within the proposed Project area.

c. Discuss how the identified fish, wildlife, plant communities, rare features and ecosystems may be affected by the project. Include a discussion on introduction and spread of invasive species from the project construction and operation. Separately discuss effects to known threatened and endangered species.

As previously mentioned, the proposed Project involves the use of the herbicide Endothall to control curly-leaf pondweed. Application of Endothall would be used within the parameters of the label's recommended dosage and is not expected to harm terrestrial or aquatic wildlife in the vicinity of the Normandale Lake. Although Endothall is a curly-leaf-selective herbicide, it does have the potential to stunt growth of other native plant species, especially other species of pondweeds. However, the native plant population is expected to rebound within one growing season.

The proposed Project may have minor temporary adverse effects on terrestrial wildlife in the vicinity of the Project area. Temporary impacts to terrestrial wildlife may include increased noise and human activity during Project activities. Many species, even those accustomed to human proximity, could temporarily abandon habitats near the proposed Project area until the work is completed and the water level in Normandale Lake has returned to normal conditions. These temporary impacts are not expected to irreparably harm terrestrial wildlife individuals or populations.

Fish, mussels, and other aquatic organisms inhabiting Normandale Lake may be impacted during drawdown of the lake due to loss of habitat. It is anticipated that fish and other mobile aquatic organisms would generally relocate to adjacent aquatic habitats during drawdown of Normandale Lake. It is possible that mortality of more sessile aquatic organisms will occur if they reside within the lake once water levels have significantly lowered. Once complete, the proposed Project would likely enhance habitat for fish and other aquatic organisms by improving water quality and habitat diversity.

Turtles may be present in Normandale Lake and could be impacted by the proposed Project if the lake drawdown is not complete by September 15. If drawdown occurs after September 15, turtles may hibernate in Normandale Lake and ultimately not have enough water above them to survive the winter. If drawdown occurs before September 15, turtles would likely choose another adjacent habitat for hibernation.

Habitat is not present within the proposed Project areas for federally-listed Higgins' eye pearly mussels or snuffbox mussels. As such, impacts to these species from the proposed Project are not anticipated. Forested habitat suitable for the federally-threatened northern long-eared bat is present within the vicinity of the proposed Project area; however, it is not anticipated that tree clearing would occur as part of the proposed Project; as such, impacts to northern long-eared bats are not anticipated.

No MBS native plant communities, SBS, or MDNR SNAs are present within the proposed Project area, therefore impacts to these resources are not anticipated. The proposed Project would temporarily impact the MDNR RSEA and Regional Ecological Corridor during drawdown of Normandale Lake. However, removal of invasive curly-leaf pondweed would ultimately improve the quality of the RSEA and Regional Ecological Corridor. Contractors will comply with Minnesota regulations regarding the spread of aquatic invasive species (MDNR 2018d).

d. Identify measures that will be taken to avoid, minimize, or mitigate adverse effects to fish, wildlife, plant communities, and sensitive ecological resources.

Drawdown of Normandale Lake would not occur between March 15 and June 15 in order to avoid the primary months for fish spawning and migration. In addition, drawdown would likely occur before September 15 in order to minimize potential impacts to turtles, as described above. To further minimize potential impacts to turtles, silt fences may be installed along roadways in order to funnel turtles towards appropriate crossing locations (i.e. underpass locations).

Once complete, the proposed Project would reduce algal blooms and improve the overall water quality of Normandale Lake to the extent necessary to enhance fish habitat, promote native aquatic vegetation, reduce odor problems, and improve the recreational use of the parkland around the lake. Monitoring within the lake will occur for five years and fish restocking may occur if necessary.

14. Historic Properties

Describe any historic structures, archeological sites, and/or traditional cultural properties on or in close proximity to the site. Include: 1) historic designations, 2) known artifact areas, and 3) architectural features. Attach letter received from the State Historic Preservation Office (SHPO). Discuss any anticipated effects to historic properties during project construction and operation. Identify measures that will be taken to avoid, minimize, or mitigate adverse effects to historic properties.

The Minnesota State Historic Preservation Office (SHPO) was contacted on February 13, 2018 to request a summary of all archeological sites and historic structures located within one mile of the proposed Project. According to the SHPO data provided, there are three recorded archaeological sites and five recorded historic structures located within one mile of the proposed Project, the nearest of which is located approximately 0.4 miles north. Since the proposed Project would occur within the boundaries of Normandale Lake Park and more than 0.4 miles from the nearest recorded historic/archaeological resource, impacts to historic and archaeological resources are not expected.

15. Visual

Describe any scenic views or vistas on or near the project site. Describe any project related visual effects such as vapor plumes or glare from intense lights. Discuss the potential visual effects from the project. Identify any measures to avoid, minimize, or mitigate visual effects.

The proposed Project would occur within Normandale Lake, which can be seen from residences, trails, and roadways located adjacent to the lake. The drawdown would be visible for approximately 7 months until the lake fills again. This visual impact would be temporary in nature and would not affect the permanent viewshed of the lake.

16. Air

a. Stationary source emissions – Describe the type, sources, quantities and compositions of any emissions from stationary sources such as boilers or exhaust stacks. Include any hazardous air pollutants, criteria pollutants, and any greenhouse gases. Discuss effects to air quality including any sensitive receptors, human health or applicable regulatory criteria. Include a discussion of any methods used assess the project's effect on air quality and the results of that assessment. Identify pollution control equipment and other measures that will be taken to avoid, minimize, or mitigate adverse effects from stationary source emissions.

Not applicable – no stationary source emissions would be created by the proposed Project.

b. Vehicle emissions – Describe the effect of the project's traffic generation on air emissions. Discuss the project's vehicle-related emissions effect on air quality. Identify measures (e.g. traffic operational improvements, diesel idling minimization plan) that will be taken to minimize or mitigate vehicle-related emissions.

During treatment and management activities, there would be localized, short-term increases in vehicle related emissions from equipment operation. Equipment used for the proposed Project may include pumps and associated diesel generators, boats/barges, Endothall/alum re-filling equipment, aquatic plant harvesting machinery, and vehicles to transport workers to the proposed Project area. Emissions would be lessened by minimizing idling of vehicles and equipment, including pumps, when they are not in use. Emissions from powered equipment would be minor and temporary in nature during dewatering and in-lake management activities and are expected to have an overall negligible impact on air quality.

c. Dust and odors – Describe sources, characteristics, duration, quantities, and intensity of dust and odors generated during project construction and operation. (Fugitive dust may be discussed under item 16a). Discuss the effect of dust and odors in the vicinity of the project

including nearby sensitive receptors and quality of life. Identify measures that will be taken to minimize or mitigate the effects of dust and odors.

Generation of a sulfur-like odor may occur during the lake drawdown and plant harvesting activities as the lake sediments and plant material to be removed are highly organic. Additionally, the equipment (potential pump and associated supporting equipment) will emit some exhaust fumes while operated. Residences and commercial properties adjacent to the proposed Project and users of the Normandale Lake recreational trail may temporarily be exposed to these odors. Harvested plant material will be removed and disposed of promptly to minimize the potential for odors.

Occasional localized increases in dust may temporarily occur during dry conditions during plant harvesting along the shoreline, if necessary. The majority of work activities for the proposed Project will occur on the water; therefore, the generation of dust is generally not anticipated.

17. Noise

Describe sources, characteristics, duration, quantities, and intensity of noise generated during project construction and operation. Discuss the effect of noise in the vicinity of the project including 1) existing noise levels/sources in the area, 2) nearby sensitive receptors, 3) conformance to state noise standards, and 4) quality of life. Identify measures that will be taken to minimize or mitigate the effects of noise.

Existing noise in the vicinity of the proposed Project is typical of a suburban/industrial setting. Surrounding areas consist of residences, commercial buildings, roadways, and parks and associated trails. Noise is generated primarily by local roadway traffic and recreational activity.

Noise generated during the drawdown is expected to be temporary, minimal, and limited to noise generated by pumping equipment (if chosen for drawdown) and workers accessing the lake. Equipment associated with the drawdown of Normandale Lake is expected to be minimal and limited to a diesel powered pump set up on the east side of the lake; impacts to nearby residents is not anticipated. A variance from the City of Bloomington related to its noise ordinance may be necessary.

No change in long-term noise level is expected after completion of Project activities.

18. Transportation

a. Describe traffic-related aspects of project construction and operation. Include: 1) existing and proposed additional parking spaces, 2) estimated total average daily traffic generated, 3) estimated maximum peak hour traffic generated and time of occurrence, 4) indicate

source of trip generation rates used in the estimates, and 5) availability of transit and/or other alternative transportation modes.

Three existing parking lots currently serve the proposed Project area, with approximately 429 parking spaces. The proposed Project would not include additional parking. During the proposed multi-year treatment and management activities, parking for workers would be provided by existing parking areas. Workers accessing the site are anticipated to generate approximately four passenger vehicle trips per day and are only expected to access the site during times of active management activities. Traffic generated from workers accessing the site is expected to be minimal and generally limited to vehicles no bigger than a service truck.

Daily traffic volumes on Normandale Blvd. and West 84th Street are estimated at 27,000 and 10,000 average vehicles per day (based on 2006-2007 data), respectively, and are anticipated to increase to 40,000 and 11,000 average vehicles per day in 2030, respectively. The proposed Project is not expected to have a measurable contribution on local daily traffic volumes.

Hauling of plant material harvested from Normandale Lake in 2024, if necessary, is expected to generate up to 30 truck trips (assuming use of a 14 cubic yard truck) for the two week-long period during which harvesting would occur. These trips are expected to be spaced throughout the work day. Commercial vehicles may also be intermittently needed for specific tasks through the course of the proposed Project, but are not anticipated to be a constant traffic source. Project-generated traffic is expected to be temporary, lasting only for the duration of treatment and management activities.

The proposed Project is accessible by public transit with at least four bus routes serving the area as well as alternative transportation modes, including walking and biking. The proposed Project is not expected to impact public transit.

b. Discuss the effect on traffic congestion on affected roads and describe any traffic improvements necessary. The analysis must discuss the project's impact on the regional transportation system.

   If the peak hour traffic generated exceeds 250 vehicles or the total daily trips exceeds 2,500, a traffic impact study must be prepared as part of the EAW. Use the format and procedures described in the Minnesota Department of Transportation's Access Management Manual, Chapter 5 *(available at: http://www.dot.state.mn.us/accessmanagement/resources.html)* or a similar local guidance,

The proposed Project is not expected to affect traffic congestion or warrant traffic improvements.

c. Identify measures that will be taken to minimize or mitigate project related transportation effects.

The proposed Project would generate small, temporary increases in traffic for the duration of treatment and management activities. It is expected that the contractor would abide by local load restrictions and speed limits. Additional measures to minimize or mitigate Project-related transportation effects are not proposed due to the minimal level of impact.

19. Cumulative Potential Effects

(Preparers can leave this item blank if cumulative potential effects are addressed under the applicable EAW Items)

a. Describe the geographic scales and timeframes of the project related environmental effects that could combine with other environmental effects resulting in cumulative potential effects.

It is anticipated that the proposed Project drawdown would take approximately 7 months to complete, with Endothall and alum treatments completed within 1 to 2 months thereafter. The geographic area with which cumulative effects were assessed for the proposed Project includes the immediate vicinity of the proposed Project and watercourses and waterbodies adjacent to Normandale Lake.

b. Describe any reasonably foreseeable future projects (for which a basis of expectation has been laid) that may interact with environmental effects of the proposed project within the geographic scales and timeframes identified above.

Recent, current, or reasonably foreseeable future projects in the geographic assessment area are limited and include a NMCWD project and two construction projects in the City of Bloomington.

The NMCWD is continuing to address external nutrient loading to Normandale Lake by implementing the Edina Streambank Stabilization Project along Nine Mile Creek, upstream of Normandale Lake. This project is expected to provide a reduction of the external phosphorus loading to Normandale Lake. This project began in August 2017 and is expected to continue through 2019.

The City of Bloomington lists several construction projects on their website (https://www.bloomingtonmn.gov/eng/major-construction-projects); however, the majority of these projects are not located within the immediate vicinity of the proposed Project. The following construction projects in Bloomington are located within the immediate vicinity of the proposed Project:

- Normandale Boulevard (CSAH 34) Reconstruction Project – The safety improvement project includes reconstruction of approximately 1 mile of Normandale Boulevard from W 97th Street to Nine Mile Creek, just east of the proposed Project. Construction of this project started in fall of 2016, with two full construction seasons anticipated for project completion.

- East Bush Lake Road/I-494 Interchange – West Bound Ramp – The East Bush Lake Road (CSAH 28) at I-494 interchange has been without a westbound on-ramp since its construction in 1960. A westbound ramp will be constructed to relieve traffic problems in the area and assist in more efficient operation of the already congested interchange at TH 100/I-494. Construction started in 2017 and operation is scheduled for fall 2018.

c. Discuss the nature of the cumulative potential effects and summarize any other available information relevant to determining whether there is potential for significant environmental effects due to these cumulative effects.

The cumulative effects analysis for the proposed Project assesses both negative and beneficial potential environmental effects.

Negative Effects

In general, the potential for negative effects from the proposed Project would be short-term, lasting only for the duration of proposed Project work activities. As such, these effects are discussed in detail in the resource-specific sections above. Since these effects would be short-term and localized in nature, they are not likely to negatively interact with any of the projects identified in EAW Item 19b (Cumulative Potential Effects) above.

Beneficial Effects

As summarized above, the primary purpose of the proposed Project is to improve water quality and associated aquatic habitat in Normandale Lake. The Edina Streambank Stabilization Project along Nine Mile Creek, identified above in EAW Item 19b (Cumulative Potential Effects), would interact with and complement the proposed Project with regards to water quality improvements. The proposed Project is not likely to interact with the two construction projects in the City of Bloomington identified above in EAW item 19b (Cumulative Potential Effects).

Once complete, the proposed Project would reduce algal blooms and improve the overall water quality of Normandale Lake to the extent necessary to enhance fish habitat, promote native aquatic vegetation, reduce odor problems, and improve the recreational use of the parkland around the lake.

20. Other Potential Environmental Effects

If the project may cause any additional environmental effects not addressed by items 1 to 19, describe the effects here, discuss the how the environment will be affected, and identify measures that will be taken to minimize and mitigate these effects.

The proposed Project is not anticipated to cause any additional environmental effects beyond those addressed above.

RGU CERTIFICATION. *(The Environmental Quality Board will only accept **SIGNED** Environmental Assessment Worksheets for public notice in the EQB Monitor.)*

I hereby certify that:

- The information contained in this document is accurate and complete to the best of my knowledge.
- The EAW describes the complete project; there are no other projects, stages or components other than those described in this document, which are related to the project as connected actions or phased actions, as defined at Minnesota Rules, parts 4410.0200, subparts 9c and 60, respectively.
- Copies of this EAW are being sent to the entire EQB distribution list.

Signature: _____ **Date:** 4/20/18

Steve Kloiber

Title: President
Nine Mile Creek Watershed District

Figures

SAINT LOUIS PARK
HOPKINS
MINNETONKA
MINNEAPOLIS
EDEN PRAIRIE
EDINA
RICHFIELD
BLOOMINGTON
SHAKOPEE
SAVAGE
BURNSVILLE

Minnehaha Creek Watershed District
Richfield-Bloomington WMO
Riley-Purgatory-Bluff Creek Watershed District
Lower Minnesota River
Lower Minnesota River

Lake Holiday
Minnetoga Lake
Shady Oak Lake
Wing Lake
Glen Lake
Lone Lake
Lake Rose
Birch Island Lake
Bryant Lake
Mirror Lake
Highlands Lake
Hawkes Lake
North Branch Nine Mile Creek
Arrowhead Lake
Indianhead Lake
Lake Cornelia
Lake Edina
South Branch Nine Mile Creek
Smetana Lake
Northwest Anderson Lake
Normandale Lake
Southwest Anderson Lake
Southeast Anderson Lake
Bush Lake
Girard Lake
Penn Lake
Skreibakken Lake
Marsh Lake
Main Stem Nine Mile Creek
Oxboro Lake

7
169
494
62
212
100
35W

- Normandale Lake (Project Area)
- Nine Mile Creek
- Lakes
- District Hydrologic Boundary
- District Legal Boundary
- Adjacent District Boundaries
- Municipal Boundaries

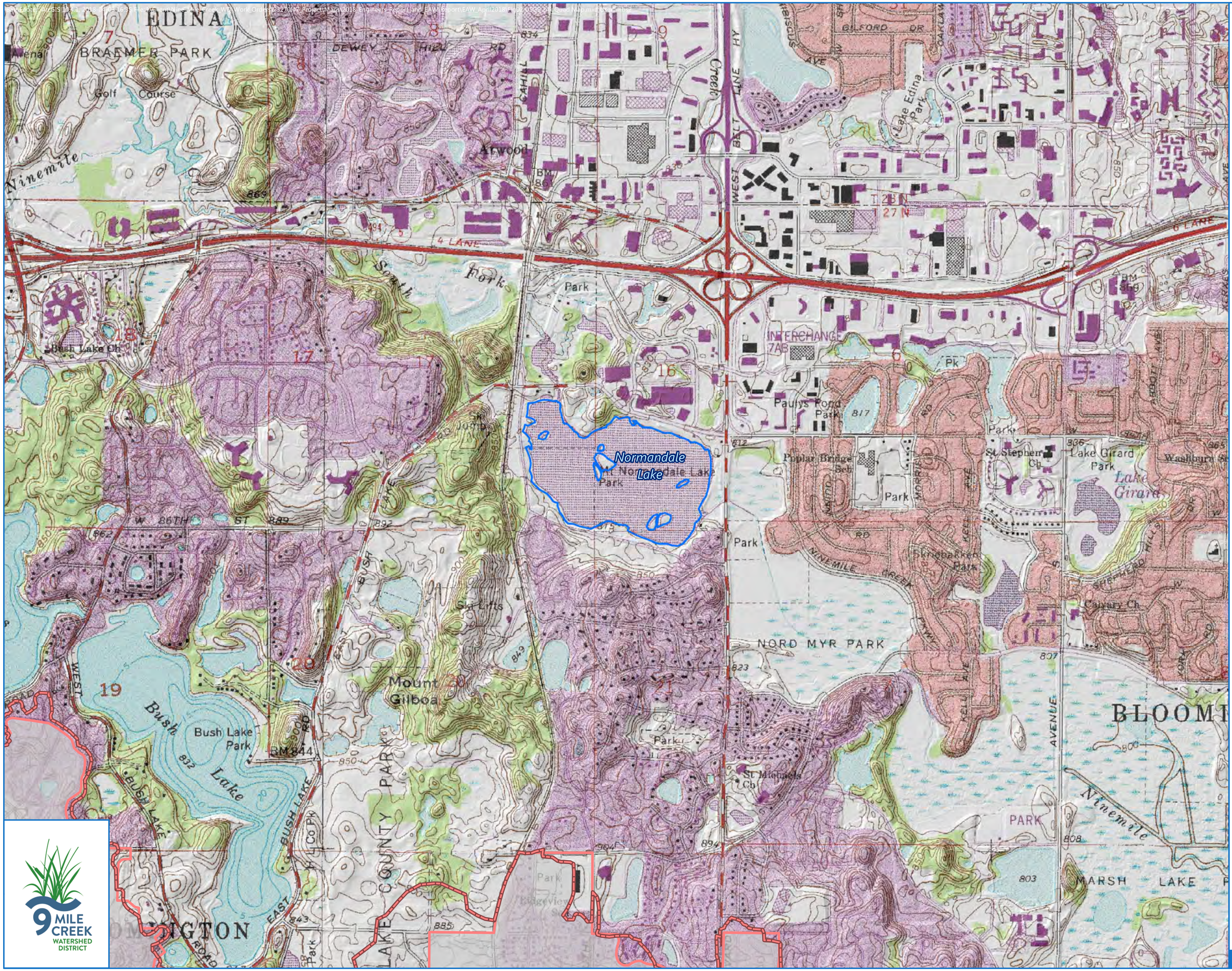
N

0 1 2
Miles

9 MILE CREEK WATERSHED DISTRICT

PROJECT LOCATION
Normandale Lake
Water Quality Improvement Project
Bloomington, Minnesota

Figure 1



Normandale Lake (Project Area)

District Hydrologic Boundary

District Legal Boundary

N

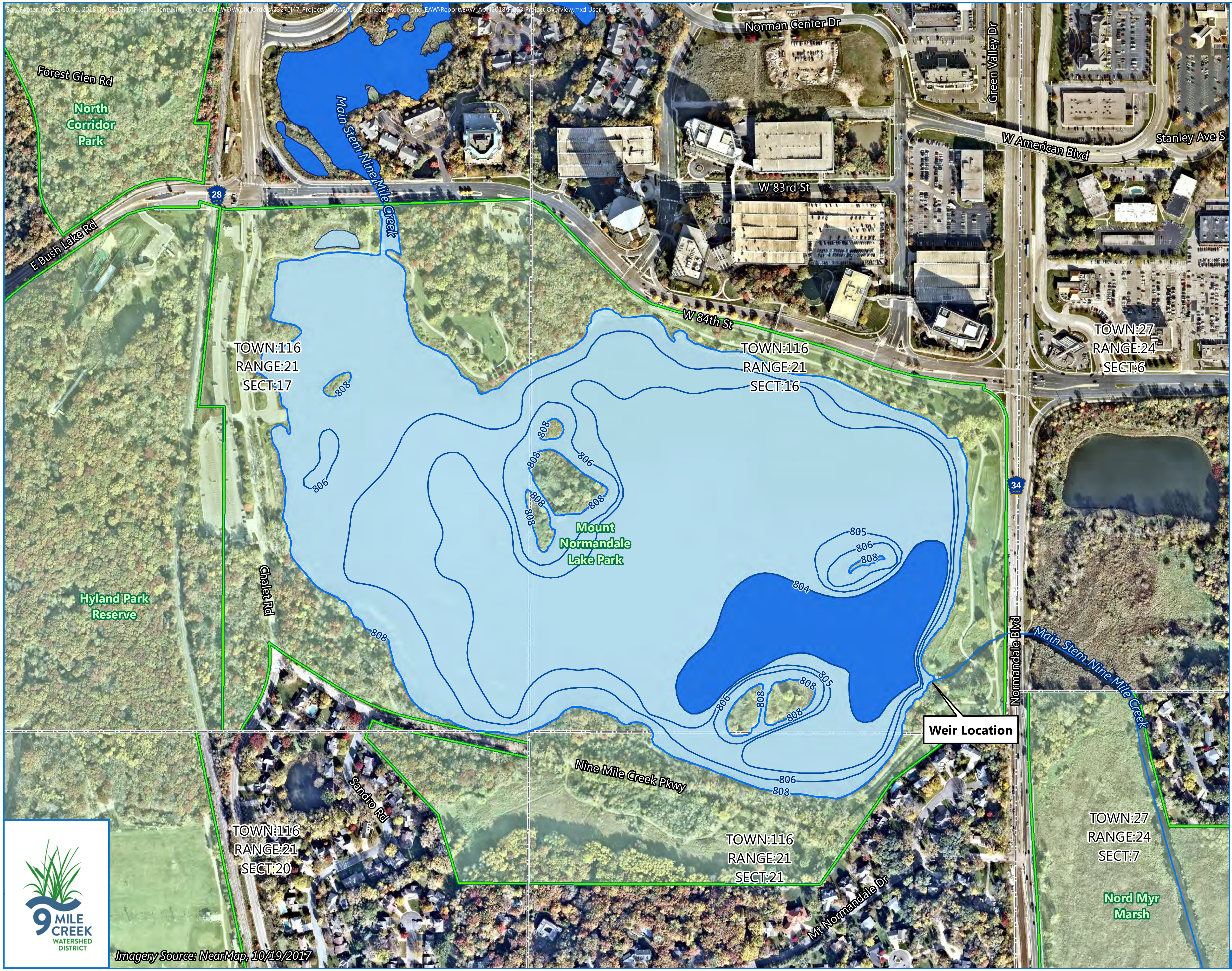
1,500 0 1,500

Feet

U.S. GEOLOGICAL SURVEY
24K QUAD MAP

Normandale Lake
Water Quality Improvement Project
Bloomington, Minnesota

Figure 2



Nine Mile Creek
Normandale Lake (Project Area)
Bathymetric Elevation Contour
Open Water Extents to Existing Controlling Elevation*
Open Water Extents after Proposed Draw Down*
Park Boundary
Public Land Survey Section

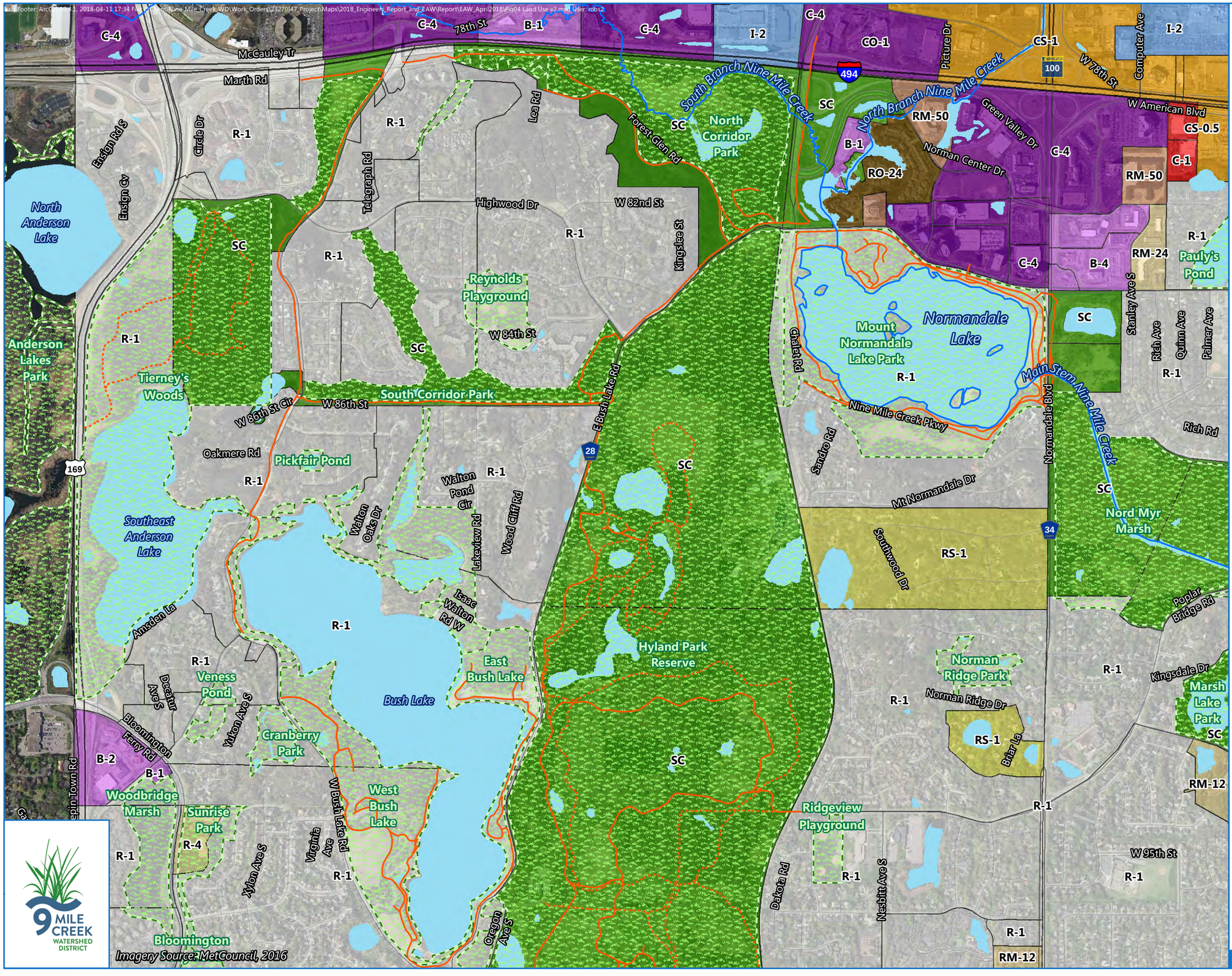
Note:
Existing controlling elevation at weir is 808.0 Feet.
Proposed drawdown elevation is 804.0 to 805.0 feet.
Elevations provided in NAVD88 vertical datum.

N

400 0 400
Feet

PROJECT OVERVIEW
Normandale Lake
Water Quality Improvement Project
Bloomington, Minnesota

Figure 3



Nine Mile Creek
Normandale Lake (Project Area)
Lakes and Streams

Bloomington Trails
Paved Trails
Unpaved Trails
Park

Zoning Districts (Bloomington, 2017)
R-1 - Single-Family Res.
RS-1 - Large Lot Single-Family Res.
R-4; RM-12; RM-24 - Multi-Family Res.
RM-50 - Multi-Family Res.
RO-24 - Residential Office
I-2 - Limited Industrial
B-1; B-2; B-4 - Neighborhood Office & Commercial
C-1 - Freeway Office & Service
C-4; CO-1 - Freeway Office
CS-0.5; CS-1 - Commercial Service
SC - Conservation

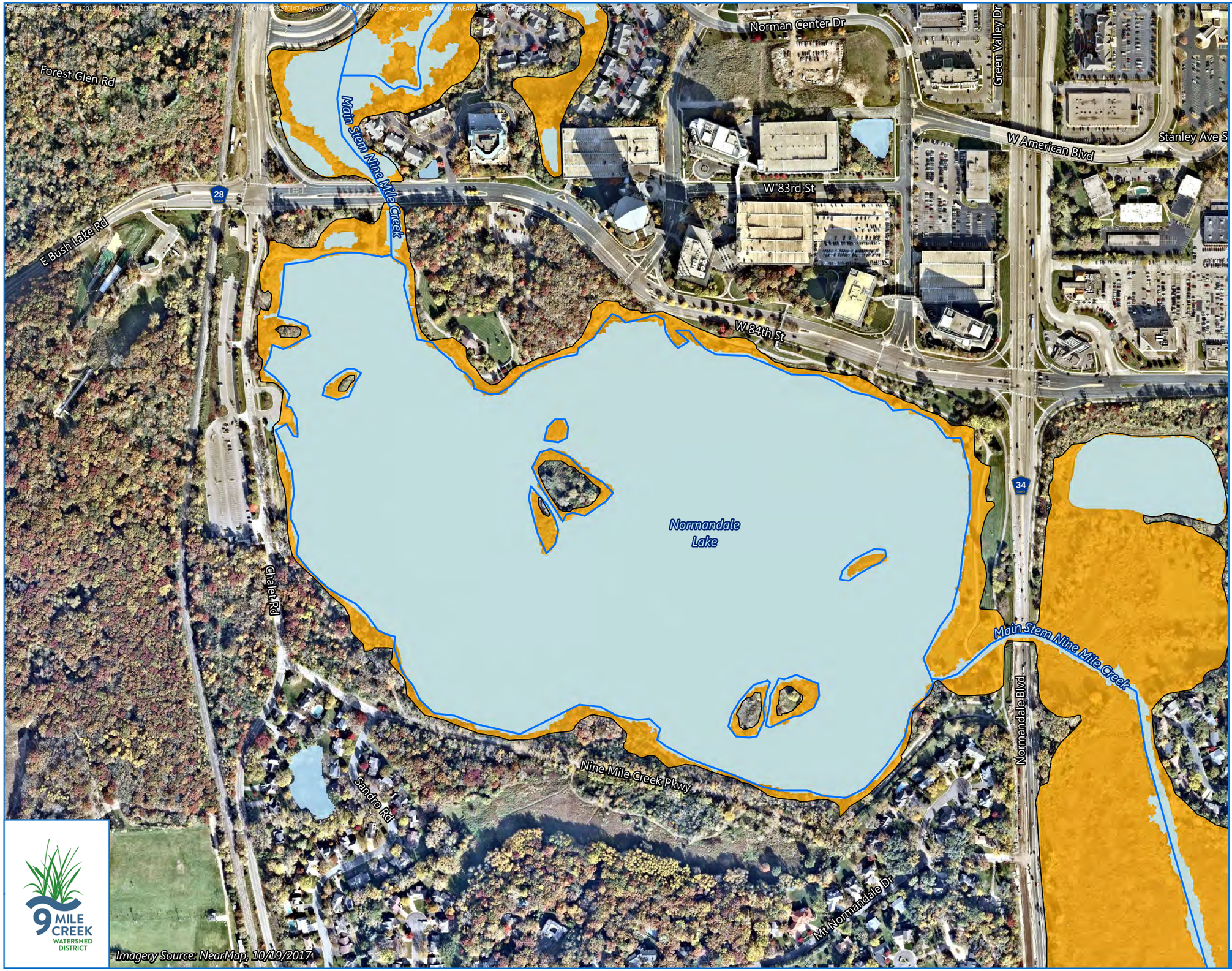
Data Source:
City of Bloomington. Zoning Districts. 2017.

N

1,200 0 1,200
Feet

LAND USE
Normandale Lake
Water Quality Improvement Project
Bloomington, Minnesota

Figure 4



Nine Mile Creek

Normandale Lake (Project Area)

Open Water

FEMA Flood Hazard Areas

Detailed 100-Year Flood Zone (AE, 1% Annual Chance)

Data Source:
Federal Emergency Management Agency. DFIRM, Hennepin County, MN - 27053C. 11/4/2016.

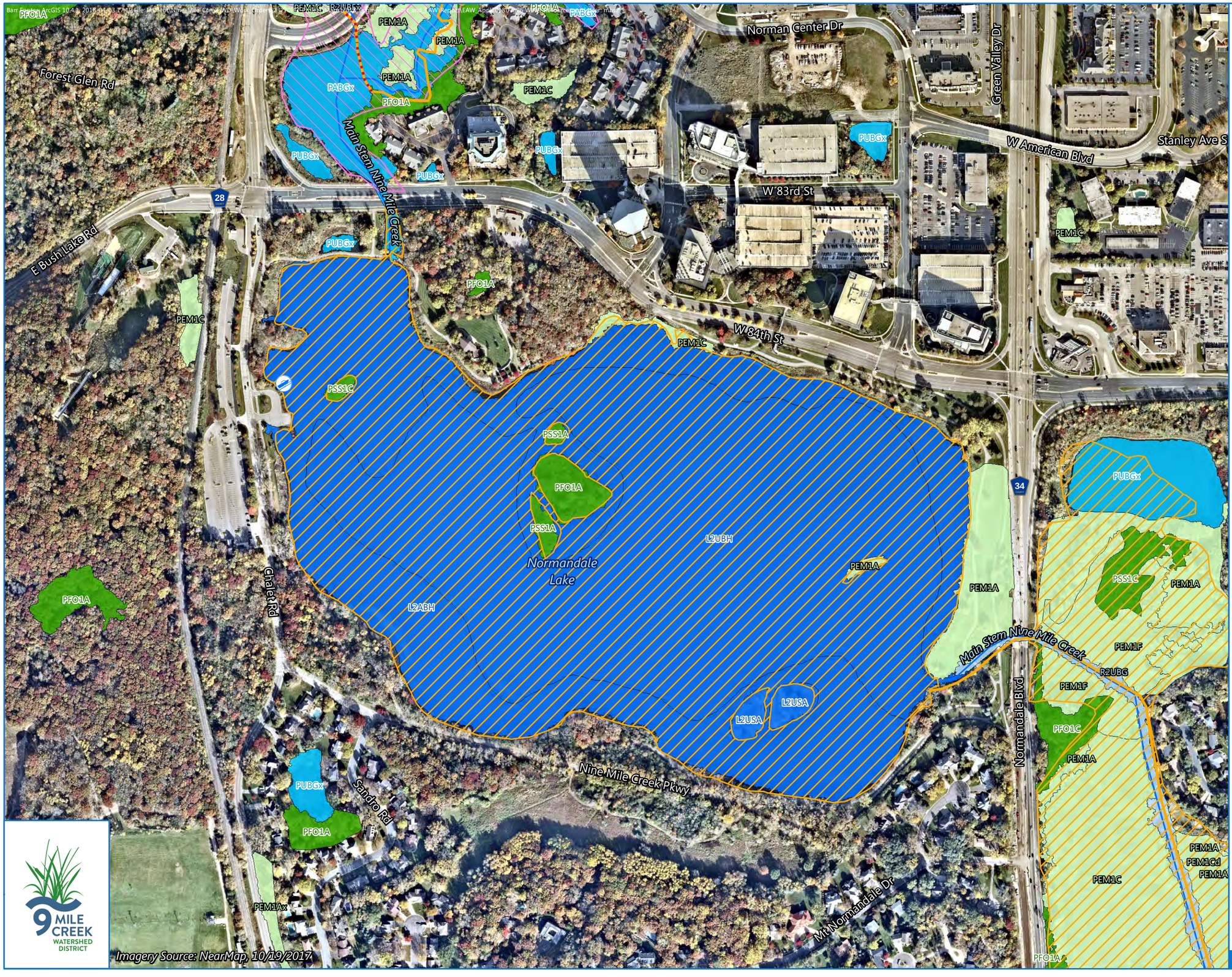
400 0 400

Feet

FEMA FLOODPLAINS

Normandale Lake
Water Quality Improvement Project
Bloomington, Minnesota

Figure 5



Nine Mile Creek

Normandale Lake (Project Area)

Boat Launch

Public Water Inventory (MNDNR)

Watercourse

Basin

Wetland

Impaired Waters (2018 Draft, MPCA)

Impaired Stream

National Wetland Inventory (MN Update)

(Labeled with Cowardin Type)

Freshwater Emergent Wetland

Freshwater Forested/Shrub Wetland

Riverine

Freshwater Pond

Lake

N

400 0 400

Feet

9 MILE CREEK WATERSHED DISTRICT

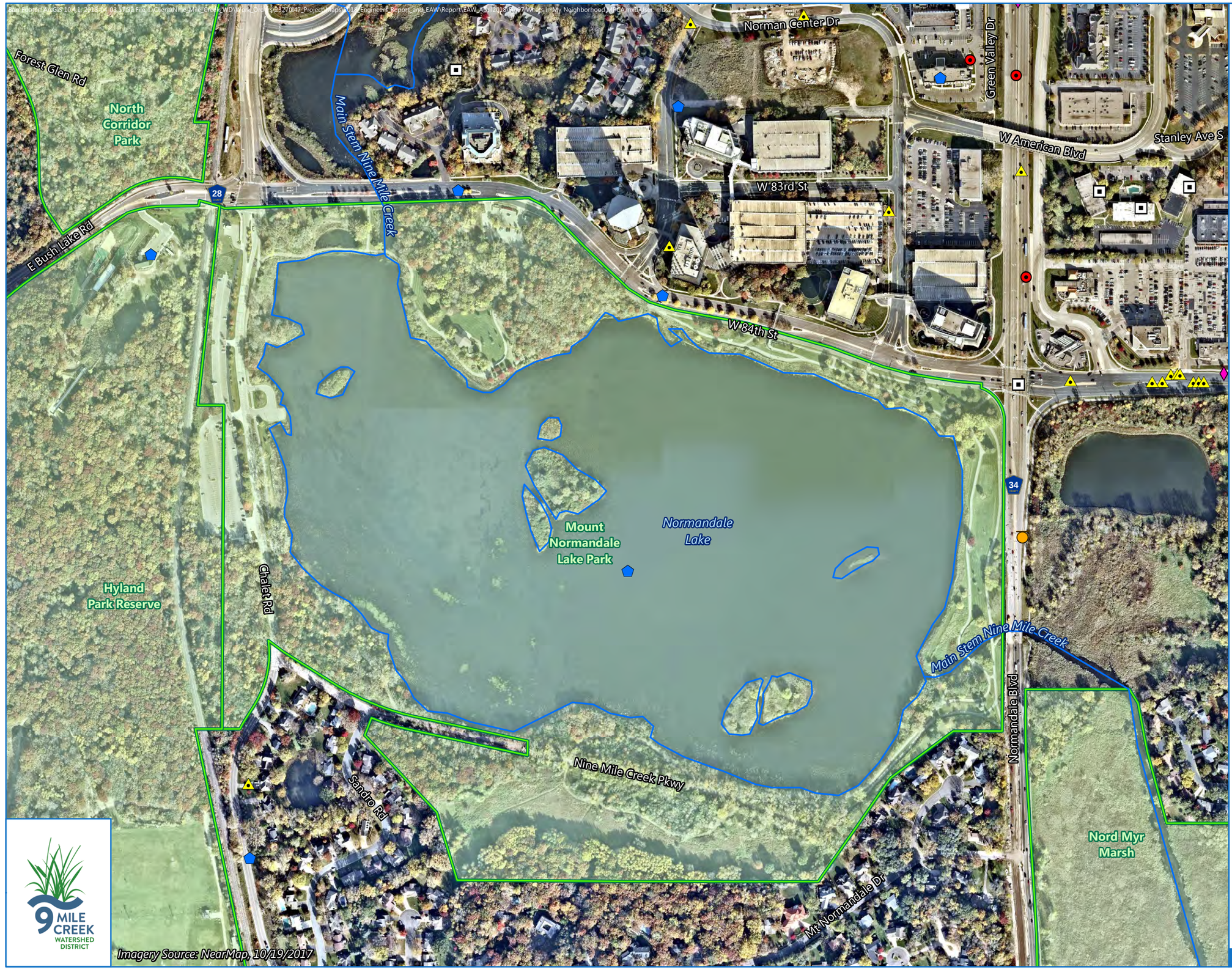
WATER RESOURCES

Normandale Lake

Water Quality Improvement Project

Bloomington, Minnesota

Figure 6



Nine Mile Creek

Normandale Lake (Project Area)

What's in My Neighborhood

Activity Type (MPCA, 7/14/2017)

- Construction Stormwater
- Hazardous Waste
- Underground Tanks
- Petroleum Remediation, Leak Site
- Brownfields, Voluntary
- Multiple Activities
- Park Boundary

N

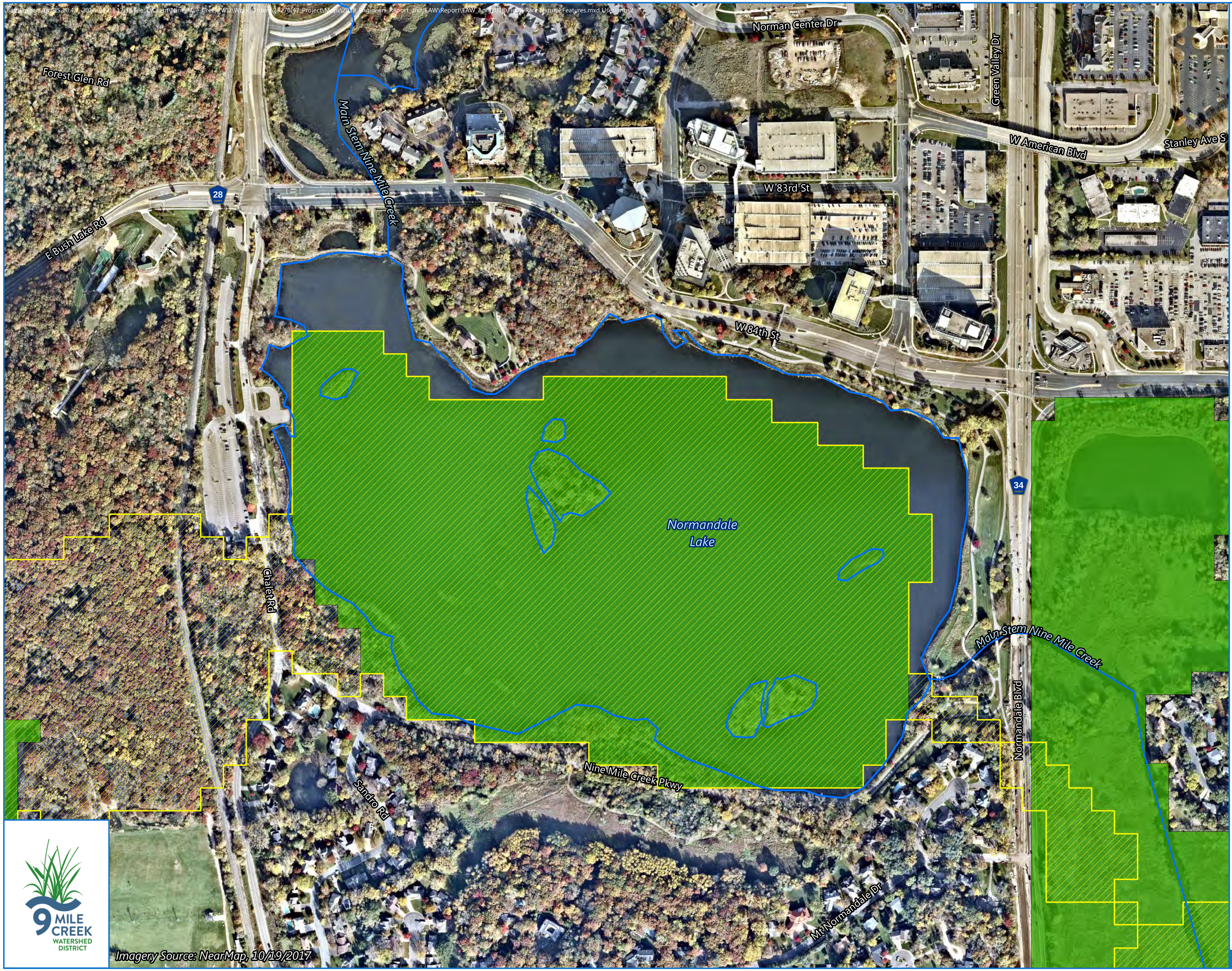
400 0 400

Feet

MPCA WHAT'S IN MY NEIGHBORHOOD

Normandale Lake
Water Quality Improvement Project
Bloomington, Minnesota

Figure 7



Nine Mile Creek

Normandale Lake (Project Area)

Regionally Significant Ecological Corridor

Regionally Significant Ecological Area

Data Sources:
Regionally Significant Ecological Areas and Corridors. Minnesota DNR, Minnesota Land Cover Classification System. Derived from National Landcover Dataset. 2008 and 2011.

N

400 0 400

Feet

RARE NATURAL FEATURES
Normandale Lake
Water Quality Improvement Project
Bloomington, Minnesota

Figure 8

Appendix A

References

References

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