

Nine Mile Creek Watershed District Water Management Plan

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1.0 Executive Summary

This Nine Mile Creek Watershed District (NMCWD) Watershed Management Plan (Plan) sets the vision, guidelines, and proposed tasks for managing surface water within the boundaries of the NMCWD. This Executive Summary summarizes highlights of the Plan, including introductory information, the NMCWD vision statement, goals, policies to achieve goals, and actions that will be implemented to achieve objectives.

1.1 Introductory Information

The NMCWD was established on September 30, 1959 in response to a citizen's petition to the State of Minnesota to address water resource management issues.

Like all watershed districts, the NMCWD is a special purpose unit of local government that manages water resources on a watershed basis (a watershed is an area of land that drains to a given lake, river, stream or wetland). Watershed district boundaries generally follow natural watershed divides, rather than political boundaries.

The NMCWD is located in the south-central region of Hennepin County, and covers approximately 50 square miles. Figure 1-1 shows the location of the NMCWD and the communities that lie within, or partially within the NMCWD. The following is a list of these communities:

- Bloomington
- Edina
- Eden Prairie
- Hopkins
- Minnetonka
- Richfield

Watershed districts are governed by a local Board of Managers who are appointed by the boards of the counties with the land in the watershed district. In the NMCWD, the Board of Managers has five members appointed by the Hennepin County Board. The appointments are for staggered three-year terms.

The regularly scheduled meetings of the NMCWD Board of Managers are held on the third Wednesday of each month. The meetings are open to the public and are held at the District Administrative Office located at 7710 Computer Drive, in Edina.

The NMCWD employs a full-time Administrator. Other services, including engineering, legal, accounting, and secretarial assistance are provided by part-time consultants. The NMCWD has a website (www.ninemilecreek.org), which includes NMCWD permitting information, manager and consultant information, agendas, and minutes from Managers' meetings, and other pertinent information.

Watershed districts within the Twin Cities metropolitan area come under the guidance of both the Watershed Act (Minnesota Statutes 103D) and the Metropolitan Surface Water Management Act (Minnesota Statutes 103B). Minnesota Statutes 103B and 103D require watershed districts to prepare watershed management plans. In addition to the plan requirements given in statute, watershed districts in the Twin Cities metropolitan area must also follow the detailed plan requirements of Minnesota Rules 8410. This watershed management plan (Plan) is the fourth NMCWD Plan approved by the Minnesota Board of Water and Soil Resources (BWSR), or its predecessor. Previous plans were published in 1961, 1973, and 1996.

1.2 Watershed District Purposes

1.2.1 General Watershed District Purposes

The general purposes of a watershed district are to conserve natural resources through land use planning, flood control, and other conservation projects to protect the public health and welfare and for the wise use of the natural resources (Minnesota Statutes 103D.201).

Watershed districts can be involved with a number of issues, including protection or enhancement of water quality, prevention and alleviation of flood damage, prevention and alleviation of soil erosion and sedimentation, regulation of streams, lakes and water courses for domestic, recreational and public use, and protection and regulation of groundwater uses.

In addition, the purposes of watershed management organization water management programs in the metropolitan area (quoted from Minnesota Statutes 103B.201) are as follows:

1. Protect, preserve, and use natural surface and groundwater storage and retention systems.
2. Minimize public capital expenditures needed to correct flooding and water quality problems.
3. Identify and plan for means to effectively protect and improve surface and groundwater quality.
4. Establish more uniform local policies and official controls for surface and groundwater management.
5. Prevent erosion of soil into surface water systems.
6. Promote groundwater recharge.
7. Protect and enhance fish and wildlife habitat and water recreational facilities.
8. Secure the other benefits associated with the proper management of surface and groundwater.

1.2.2 Historical NMCWD Purposes and Past Successes

For its first 15 to 20 years, the NMCWD Board of Managers focused primarily on how to solve the flooding problems in the watershed. This major effort resulted in the construction of six major flood prevention projects, including: Marsh Lake Dam, Normandale Lake Improvement, Bredesen Park flood storage area, Bush Lake Outlet, Smetana Lake Outlet, and Hopkins Culvert improvements.

Also, a major streambank stabilization project in the lower valley reach of Nine Mile Creek was completed to reduce erosion and sediment export to the Minnesota River.

The NMCWD rules and regulations have been an essential tool in preventing problems. In 1973, the District adopted rules and regulations and began reviewing proposed developments and other projects in the watershed through its permit program. The NMCWD rules and regulations have always addressed the water quantity impacts of stormwater (e.g. flooding, rate control). At first, the NMCWD rules only indirectly addressed the water quality impacts of stormwater, but since 1997 they have directly addressed water quality impacts (upon implementation of the 1996 NMCWD Plan).

The NMCWD has been concerned about water quality since its formation. Since 1968 the NMCWD and other authorities have been monitoring the water quality of streams in the watershed. Lakes have been monitored by the District since 1997.

Since 1997, the NMCWD has concentrated on solving remaining flooding problems and conducting water quality studies. Between 1997 and 2005 the NMCWD completed 12 diagnostic-feasibility studies (termed *Use Attainability Analyses*, or *UAAs*) for lakes within the NMCWD. Three additional lake UAAs are on-going, scheduled for 2006 completion.

Additionally, the NMCWD has implemented several programs and projects over the years to improve the quality of life in the watershed. Some of the more significant programs and projects include:

- Collecting monthly water levels on more than a dozen lakes.
- Collecting groundwater levels from nearly a dozen NMCWD groundwater observation wells.
- Collecting water quality data, cooperating with other organizations (e.g., Metropolitan Council (MC)) in collecting water quality data from almost every surface water body within the NMCWD.
- Completing water quality studies to determine if a water body's quality is achieving its goal and developing water management plans to improve or protect a water body's quality.
- Cooperating with constituent cities, other agencies and organizations in studies and capital projects to address water quality and flooding issues of mutual interest.
- Reviewing and/or permitting about 40 development proposals per year.

Since the adoption of the its Water Management Plan in 1996, the NMCWD has completed the Bush Lake Outlet, Smetana Lake Outlet and the Minnetonka Lakes Water Quality Improvement Basic Water Management projects. The Minnetonka Lakes Water Quality Improvement Project implemented the recommendations presented in the Glen Lake, Lone Lake, Minnetoga Lake and Shady Oak Lake Use Attainability Analyses. The District has received a petition from the City of Eden Prairie for the implementation of the recommendations presented in the Use Attainability Analyses completed for Anderson Lakes, Bryant Lake and Birch Island Lake. It is anticipated that the project will commence in 2007. The District has also received a petition from the City of Hopkins

for the stabilization of Nine Mile Creek from Excelsior Boulevard to T.H. 169. The stabilization recommendation was presented in the *Nine Mile Creek Use Attainability Analysis*, (Barr, March 2004).

As previously stated, the 1996 Water Management Plan concentrated on solving the remaining flooding problems within the District and began conducting water quality studies of 15 lakes within the District. This was an orderly transition between water quantity and water quality management that received the support of the municipalities within the District and the regulatory review agencies. The accomplishments of the 1996 Plan provided the foundation for the programs/objectives of the 2006 Water Management Plan. The Managers noted that this resulted in additional administrative activities for the District, thereby resulting in the hiring of an administrator to guide the activities of the District. To establish greater public involvement and interaction the Managers opened a District Office in 2005. A possible shortfall of the District's accomplishments over the past 10 years was that the Rules and Regulations of the District that have been in place since 1973 were not revised during this time period. The District has identified revision of the District's Rules and Regulations as a primary objective in 2007.

1.2.3 NMCWD Vision Statement

The NMCWD Managers adopted a vision statement to guide them through this planning process, and in its future day-to-day operations.

Nine Mile Creek Watershed District (NMCWD) Vision Statement

It is the NMCWD Board of Managers' vision and intent to manage water resources within the District in a manner that will attain and preserve their highest and best intended beneficial uses. Intended use designations have been made in keeping with records of historical use, applicable state and federal water laws, and in consultation with the District's constituent cities, state and regional resource management agencies, and the general public.

The District seeks a proactive role in watershed runoff regulation that anticipates ultimate watershed land use development. The District also seeks to provide its residents with protection against both flood damage and water quality degradation by conducting diagnostic-feasibility studies of watershed runoff-related problems. Where these studies indicate the need for implementation of remedial measures to mitigate current or likely future problems that interfere with attainment of beneficial use goals, the District will sponsor reasonable cost cooperative projects in response to project petitions from its constituent cities.

Throughout all of its water management planning activities, the District will encourage increased stakeholder involvement in its decision-making, especially by public officials and concerned citizens.

1.3 NMCWD Plan Organization and Summary

This NMCWD Plan sets the course for future management of the water resources within the watershed. The NMCWD Plan provides data and other background information, outlines the applicable regulations, assesses specific and watershed-wide issues, sets goals and policies for the NMCWD and its resources, and lists planned actions to achieve the goals. The NMCWD Plan also discusses the financial considerations of implementing programs and actions, and funding sources that may be available to the District. The NMCWD Plan is organized into ten major sections, summarized as follows:

Section 1.0 Executive Summary—Summarizes the highlights of the NMCWD Plan, including introductory information, the District’s Vision Statement, Goals, Policies, Objectives, and planned Actions.

Section 2.0 Land and Water Resource Inventory—Provides background information about the NMCWD and provides a brief history of the District. It also provides technical information describing the surface and subsurface conditions of the Watershed, including: precipitation, land cover, soils, topography, geology, groundwater, surface water resources, unique features and scenic areas, and pollutant sources. This section also includes a number of maps and summary tables, such as a map of major and minor sub watersheds and a table of drainage areas.

Section 3.0 Impact on Other Units of Government—The NMCWD has used various methods to involve and inform its constituent municipalities and the general public about preparation of this Plan. This has included numerous public meetings, meetings with municipal Engineering and Public Works Department staffs (the District’s Technical Advisory Committee (TAC)) and use of the District’s website (www.ninemilecreek.org), principal among other efforts. The NMCWD will continue expanding these involvement efforts to increase awareness of the NMCWD, coordinate and cooperate with other groups (including its Citizens Advisory Committee (CAC)) to educate the public, recruit (and recognize) volunteers for monitoring efforts and involvement in NMCWD programs, promote positive behaviors that have a positive impact on water resources, and to use its advisory committees in meaningful ways. Through these efforts, the District will increase the public’s understanding of water resource management and issues in the watershed, and foster long-term public commitment to protecting these resources.

Section 4.0 Statement of Goals and Policies—Presents the issues, goals, and policies that pertain generally to the NMCWD. Section 4.0 contains an introductory preamble, plus nine subsections. These subsections, in tabular format, are organized around major topics, as follows:

| | |
|---------------------------------------|----------------------------|
| 4.1 Stormwater Management | 4.6 Land Use Management |
| 4.2 Surface Water Quality | 4.7 Floodplain Management |
| 4.3 Open Spaces and Recreational Uses | 4.8 Education and Outreach |
| 4.4 Wetlands Management | 4.9 Administration |
| 4.5 Groundwater Protection | |

These nine subsections are all organized in the same manner, with a summary table that describes:

- The importance of the topic area
- General issues related to the topic area
- Management goals of the NMCWD
- Policies adopted and followed to achieve these goals
- Specific management objectives, including planned actions of the District.

Section 5.0 Assessment of Problems—Discusses identified water resource problems associated with lakes, streams, wetlands, drainage ditches, recreational use opportunities, and fish and wildlife resources.

Lake Water Quality Problems

Lake water quality problems have been diagnosed for major recreational lakes within the NMCWD through the UAA process, as outlined by the Water Environment Research Foundation (WERF). This process involves the following seven basic steps intended to achieve or maintain water quality conditions that support beneficial uses such as swimming, fishing, aesthetic viewing, and wildlife habitat:

1. Determine current and historic water quality conditions.
2. Set water quality goals that support intended uses.
3. Assess attainment or nonattainment of goals for current watershed land-use conditions.
4. Estimate annual runoff water and pollutant inputs to water bodies.
5. Calibrate a computer simulation model to predict observed lake- or stream-water quality conditions from annual runoff inputs.
6. Using the calibrated lake- or stream-model, assess water quality goal attainment for current and ultimate watershed land-use conditions and range of climatic conditions.
7. If necessary, recommend feasible alternative remedial measures (i.e., best management practices (BMPs)) to achieve desired water quality.

UAAs are intended to be “Total Maximum Daily Load (TMDL) Equivalent” studies and implementation of their recommendations should result in removal of the subject water bodies from the Minnesota Pollution Control Agency’s (MPCA’s) Sec. 303(d.) Impaired Waters list. The following tabulation (Table 1-1) summarizes the findings and conclusions of the lake UAAs completed to date. A wide variety of water quality problems typical of lakes within urban watersheds were identified. These include, generally, pollutant loads from both external and internal sources and various biological imbalances in plant and fish communities. UAA Project synopses are included in Section 5.1 of the Plan and discuss diagnosed problems and recommended remedial measures in greater detail.

Table 1-1 UAA-Identified Water Quality Problems in NMCWD Lakes

| Lake | Water Quality Problems | | |
|---------------------|----------------------------|--------------------|----------------------|
| | Watershed Runoff Pollution | Internal P Recycle | Exotic Plant Species |
| <i>Bush</i> | | | ✓ - CLP, EWM & PL |
| <i>Bryant</i> | ✓ | ✓ | ✓ - CLP, EWM & PL |
| <i>Smetana</i> | | ✓ | ✓ - CLP & PL |
| <i>Anderson</i> | ✓ | ✓ | ✓ - CLP & PL |
| <i>Normandale</i> | ✓ | ✓ | ✓ - CLP & PL |
| <i>Penn (Lower)</i> | | | ✓ - PL |
| <i>Mirror</i> | ✓ | ✓ | ✓ - CLP & PL |
| <i>Cornelia</i> | } UAA's In-Process | | |
| <i>Indianhead</i> | | | |
| <i>Arrowhead</i> | | | |
| <i>Birch Island</i> | ✓ | | ✓ - PL |
| <i>Glen</i> | ✓ | | ✓ - PL |
| <i>Minnetoga</i> | ✓ | | ✓ - PL |
| <i>Lone</i> | ✓ | | ✓ - PL |
| <i>Shady Oak</i> | ✓ | | ✓ - EWM & PL |

* CLP = Curlyleaf Pondweed, EWM = Eurasian Watermilfoil, and PL = Purple Loosestrife

Stream Water Quality Problems

Nine Mile Creek experiences many water quality problems characteristic to urban streams. These all relate to the increased quantity and degraded quality of watershed runoff reaching the creek. In diagnosing Nine Mile Creek water quality problems, the entire creek was surveyed and classified according to the Rosgen Physical Classification system, using stream measurements of

- Entrenchment ratio
- Flood-prone area
- Width/depth ratio
- Bankfull discharge capacity
- Sinuosity
- Channel materials
- Water surface slope

Stream reach segments were then rated as to their sensitivity to disturbance, recovery potential, and actual condition. In this process numerous problems were identified that will require remedial attention in the future.

Results of the Nine Mile Creek physical classification were subsequently used in combination with biological and water quality survey information to perform Ecological Use Classification (EUC) assessments of Nine Mile Creek stream reaches. These assessments identified the potential suitability of the stream for aquatic life, including benthic macroinvertebrates and fish. In general, these assessments indicated biological impairments were related to habitat destruction caused by the scouring effects of the increased frequency of bankfull or greater flows in the creek. Desirable remedial measures were identified along with the need for further detailed surveys in the future.

Other Assessed Problems

Urban stormwater runoff has the potential to cause numerous problems to other water resources and pursuits, including:

- County ditches
- Runoff rate control and flooding
- Recreational opportunities
- Fish and wildlife resources
- Soil erosion
- Land use practices
- Regulatory controls to mitigate adverse impacts on public waters and wetlands

These and other potential future problems are assessed in Section 5.0, along with the adequacy of current Capital Improvement Programs to deal with these problems.

Section 6.0 Implementation Program—Discusses responsibilities of the NMCWD, its constituent cities, and other state and regional governmental agencies for managing water resources within the District. Included are:

- **Regulatory Controls**
 - Wetlands Conservation Act
 - Erosion and sediment control
 - Shoreland and floodplain ordinances
 - Water quality nuisances

- **Stormwater and Drainage Design Performance Standards**
 - Target in-lake nutrient concentrations
 - Maximum permissible runoff rate and volume
 - Flooding impact standards
 - Stormwater outlet structure design criteria
 - Water quality basin design methodology
 - Pollutant load limitations
 - Variances
 - Information Program

- **Data Collection**
 - Lake monitoring
 - Stream monitoring
 - Assessment and reporting

- **Management Programs**
 - Municipal Comprehensive Stormwater Management Plans

- **Potential Structural Solutions to Problems**
 - Capital Improvement projects
 - Financing

All of the above programs involve some level of shared responsibility between the NMCWD and others, as is discussed in Section 6.0.

Section 7.0 Impact on Local Government—This section outlines how the NMCWD’s implementation program will affect local government in terms of cost and administrative issues.

The NMCWD’s intention is to work cooperatively with its municipalities and to limit additional requirements imposed upon local units of governments as much as possible while still accomplishing the NMCWD’s purposes and implementing its Plan.

The District will work with its constituent cities on the initial stages of the permitting process to address District goals and objectives. The Cities may have to update and/or adopt ordinances or other regulatory controls to meet the goals and objectives of this Plan.

Section 8.0 Implementation Priorities—The NMCWD prefers to undertake Basic Water Management Projects on a cooperative basis in response to petitions from its constituent cities, but reserves the right to initiate projects itself. The District is now shifting its focus onto implementation of the recommended BMPs from the 15 lake/watershed UAAs completed during the past 10 years. No prioritization of projects has yet been made. The order in which projects are undertaken will depend, to some degree, on the receipt of petitions, but will likely concentrate on lakes, streams, and wetlands with the highest perceived public value (e.g. Level I swimming lakes) first. The District also reserves the right to initiate projects with a compelling need, even without a petition. Other flood control or water quality management projects not currently foreseen by this Plan may also be undertaken following the Plan Amendment process.

In addition to pending water quality improvement projects recommended by UAA reports, the District intends to be actively involved in TMDL studies and other programs that may lead to future capital improvement projects.

Section 9.0 Implementation Components—The NMCWD is ultimately responsible for implementation of all aspects of this Plan.

Each municipality within the NMCWD, in its local comprehensive stormwater management plan, must provide for the adoption of necessary regulatory controls, stormwater design standards, education programs, data collection programs, and maintenance programs that are identified in this Plan within 2 years from the adoption of the last Watershed District/Water Management Organization Water Management Plan. The District will work with the municipalities in achieving a coordinated effort between the requirements of the NPDES Permit/MS4 requirements and the statutory requirements of the Metropolitan Surface Water Management Act. As part of that plan, each municipality must develop a qualifying local wetlands management plan and assess the adequacy of specified management programs. Municipalities and other State Agencies designated as Local Government Unit (LGU) pursuant to the Wetlands Conservation Act (WCA) must also enforce that Act. Hennepin County is responsible for groundwater planning in accord with the BWSR-approved plan.

Where WCA duties have been assumed by municipalities, the responsibilities of the District are limited to providing technical assistance as requested by LGUs. For those municipalities that have chosen not to assume WCA responsibilities, the District has assumed those duties.

LGUs must adopt regulatory controls that, at a minimum, incorporate runoff BMPs and best available technologies as promulgated by the MPCA.

LGUs must adopt regulatory controls that address erosion and sedimentation for projects not subject to grading and land alteration requirements of the District. This requirement includes an obligation to consider single-family residential lot permitting.

LGUs will be responsible for enforcement of adopted floodplain and shoreland ordinances. The District will only undertake enforcement when the failure of the LGU to act leads to conditions that independently constitute a violation of the rules and regulations of the District or other governing law by which the District possesses a right of action.

The NMCWD has adopted a Capital Improvement Plan as part of their Water Management Plan (see Section 8.0)

Section 10.0 Amendment to the Plan—The NMCWD has established a procedure whereby this Plan may be amended.

Any amendment to this Plan must be made in accord with the procedure described in Section 10.0. This Plan extends for ten (10) years following the year in which it is approved and adopted as provided by law. This Plan shall remain in effect pending adoption and approval of any succeeding plan. Any person may propose to the Board of Managers, an amendment to the Plan. The Board of Managers may then initiate the amendment procedure.