

Chapter 4: Water Resource

Surface Water

1. EXECUTIVE SUMMARY

1.1. Surface Water Management Plan Purpose

The City of Circle Pines Surface Water Management Plan (plan, City plan, local plan, SWMP) is a local management plan that meets the requirements of Minnesota Statutes 1038.235, Minnesota Rules 8410, and the Rice Creek Watershed District (RCWD) Watershed Management Plan (adopted January 4, 2010, and amended November 9, 2016). Minnesota Statute 103B.201 states that the purposes of the water management programs are to:

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

The Circle Pines Surface Water Management Plan addresses these purposes.

1.2. Water Resource Management Responsibilities and Related Agreements

Well Head Protection Plan was approved by the Minnesota Department of Health on April 16, 2008. Future agreements could include joint powers agreements between the City and Watershed Management Organizations having jurisdiction within its boundaries, agreements between the City and adjoining communities, or agreements with other governmental units or private parties.

The City of Circle Pines is responsible for construction, maintenance, and other projects in or along the City's stormwater management systems (i.e., ponds, pipes, channels) that are not considered part of RCWD's public drainage system. Table 6.1 of this plan addresses the City of Circle Pine's stormwater system maintenance plans.

The City of Circle Pines is the LGU authority for the Wetland Conservation Act (WCA) and RCWD Rule F. The City has also assumed LGU permitting authority for stormwater management, erosion and sediment control, and floodplain alterations from RCWD in 2016. A copy of the MOU is found in *Appendix I*. Permitting reference documents can be found in *Appendix J*.

1.3. Executive Summary

- Section 1.0 Executive Summary provides background information and summarizes the plan contents.
- Section 2.0 Land and Water Resource Inventory presents information about the topography, geology, groundwater, soils, land use, public utilities, surface waters, hydrologic system and data, and the drainage system.
- Section 3.0 Agency Cooperation describes the City's ordinances and other governmental controls and programs that affect water resources.
- Section 4.0 Assessment of Problems and Issues presents the City's water management related problems and issues.
- Section 5.0 Goals and Policies outlines the City's goals and policies pertaining to water management.
- Section 6.0 Implementation Program presents the program elements and discusses the responsibilities, priorities and financial considerations associated with the implementation program.

1.3.1. Background

The City of Circle Pines (population 4,918) is located in Anoka County in the seven county Twin Cities metropolitan area (**Figure 1**). It is about 17 miles north of downtown St. Paul and covers approximately two square miles. Circle Pines is positioned between the City of Blaine to the north, City of Lino Lakes to the east, City of Lexington to the west, and Shoreview to the south. Interstate 35W runs north-south just outside the northwestern boundary of the City.

Circle Pines is located entirely within the Rice Creek Watershed District (RCWD). The RCWD regulates development impacts on water resources. This plan addresses the rules and regulations put forth by the Rice Creek Watershed District.

Water from the northern portion of Circle Pines generally drains westerly to County Ditch 53-62. This County Ditch conveys water southwest into Golden Lake which leads to the Golden Lake Wetland Treatment System. The City has utilized this treatment system to remove phosphorus. Water discharging from Golden Lake moves south to Rice Creek and leaves the City to the southwest. **Figure 5** shows the drainage patterns within the City.

Water from the northeast corner of Circle Pines drains to the south into Baldwin Lake and Rice Lake. Baldwin Lake outlets to Rice Creek. The southern portion of Circle Pines drains directly to Rice Creek, which then conveys water to the south leaving the City just north of the County line.

The City of Circle Pines is essentially fully developed (**Figure 3- Existing Land Use**). The City has land use practices that include residential, commercial and industrial development, as well as designated park and open space areas and public recreational areas.

1.3.2. Summary of Goals, Problems, and Potential Solutions

1.3.2.1. Goals

Section 5 of the Circle Pines plan outlines the City's goals and policies pertaining to water management. The goals are as follows:

- **Water Quantity and Quality.** Limit public capital expenditures that are necessary to control excessive volumes and rates of runoff. Maintain or improve the quality of water in lakes, streams or rivers within or immediately downstream of the City of Circle Pines.
- **Recreation, Fish and Wildlife Resources.** Protect and enhance recreational facilities and fish and wildlife habitat.
- **Enhancement of Public Participation and Education.** Educate and inform the public on pertinent water resource management issues and increase public participation in water management activities.

- Groundwater. To manage surface water runoff to the degree necessary to provide groundwater recharge and to prevent groundwater contamination.
- Wetlands. The City will protect wetlands in conformance with the requirements of the Wetland Conservation Act of 1991.
- Erosion and Sediment Control. To prevent erosion and sedimentation to the maximum reasonable extent.
- Shoreland Management Requirements. To protect shoreland areas within the City in accordance with the DNR.
- Financing. Minimize public capital expenditures.

1.3.2.2. Summary of Problems and Issues

Section 4 of this plan presents a detailed assessment of the water management related problems and issues in the City of Circle Pines. Some of the problems and issues identified include:

- Methods for funding projects and programs as well as partnering opportunities.
- Water quality in Golden Lake, Baldwin Lake, Rice Creek, Rice Lake, Upper Mississippi River and other public waters that provide recreational opportunities.
- Soil erosion in Ditch 53-62
- Importance of maintaining the City's stormwater management system.
- City's near full development condition makes it difficult for the City to provide additional treatment of stormwater runoff.
- Continued development of community education programs regarding water resource management.
- Importance of Capital Improvement Plan (CIP) and implementation program to adequately address identified problems.
- Importance of future NPDES stormwater permit requirements.

1.3.2.3. Summary of Implementation Section

Section 6 of this plan presents the implementation program for the City of Circle Pines, which includes defining responsibilities, prioritizing, and listing the program elements. Table 6-1 outlines the projects, programs, and studies that have been identified to address the problem areas contained in this Plan

2. LAND AND WATER RESOURCE INVENTORY

2.1. Topography and Geology

The topography of Circle Pines is generally flat with minor undulation. The most significant topographical change is present in the valley that runs through the center of the City that connects Baldwin Lake and Golden Lake. Most of the City's surface water drains southerly through this valley into Ramsey County.

The City of Circle Pines has 2-foot contour interval topographic maps that cover the entire City and are based on 2012 LIDAR (Light Detection and Ranging) data. Additional available mapping includes various Circle Pines development plans and the Minnesota USGS 10-foot contour interval topographic map.

The Anoka County Geologic Atlas, part of the Minnesota Geologic Survey, provides more information on the areas bedrock and surficial geology as well as quaternary and bedrock hydrogeology.

2.2. Climate and Precipitation

The climate within the Minneapolis/St. Paul metropolitan area is described as a humid continental climate with moderate precipitation, wide daily temperature variations, warm humid summers and cold winters. The total average annual precipitation in this area is approximately 30 inches, of which approximately one-third occurs in the months of June, July and August. The annual snowfall average is about 56 inches and is equivalent to approximately 5.6 inches of water.

Rainfall frequency estimates are used as design tools in water resource projects. Rainfall frequencies are summarized in Technical Paper No. 40, Rainfall Frequency Atlas of the United States, published by the U.S. Weather Bureau in 1961. This document was updated in 2013. Atlas 14 is the new document used as reference for rainfall frequencies. It has been adopted by RCWD in their respective stormwater management rules. Table 2.1 lists rainfall frequencies for Circle Pines.

Table 2.1 Atlas 14 Rainfall Frequencies

Recurrence Interval (Years)	24-hr Rainfall Depth (in)	Probability of Occurring Each Year
1	2.4	99%
2	2.5	50%
5	3.5	20%
10	4.2	10%
25	5.3	4%
50	6.2	2%
100	7.2	1%

This data was derived from the Atlas 14 report produced by the National Oceanic and Atmospheric Administration (NOAA). Additional climatological information for the area can be obtained from the State Climatologist website at <http://climate.umn.edu/>.

2.3. Soils

The Anoka Sandplain dominates the physical geography of the City. This region is known for its flat to slightly undulating topography, sandy soils, and shallow water table. More information about soils can be obtained from the Soil Survey of Anoka County. **Figure 2** shows the hydrologic soil groups within Circle Pines.

Infiltration capacities of soils affect the amount of direct runoff resulting from rainfall. The higher the infiltration rate for a given soil, the lower the runoff potential. Conversely, soils with low infiltration rates produce high runoff volumes and high peak discharge rates. According to the soil survey, most of the underlying soils in the City of Circle Pines are classified as A soils with moderate to high infiltration rates. However, there is a significant portion of the City covered in D soils, which are not recommended for infiltration. In addition, the soil survey also shows a significant area where the amount of land alteration has resulted in a soil classification of urban soils. These urban soils have high variability in runoff rates due to the amount of cut and fill that took place during development.

Since the City of Circle Pines is at full development, limited land grading will occur within the City in the future.

2.4. Land Use

The City of Circle Pines designation by the Metropolitan Council is that of a "developed community" meaning that over 85 percent of the community is developed. Circle Pines is almost fully developed with less than one percent of its usable land area still vacant, all of which consists of underutilized small lots and parcels less than one-third of an acre. Residential land uses comprise 39% of all of the city's useable land. Commercial development occupies 2% of the City's land area, and 4% is occupied by institutional uses. Parks and open space occupy 29%, while water occupies 11 % of the City's total land area. The remaining 15% of land in the City of Circle Pines is used for right-of way. The existing and future land uses in Circle Pines are shown on **Figure 3** and **Figure 4**, which are located in *Appendix A*. Land use data is an important factor for estimating surface water runoff. The hard or impervious surface areas associated with each land use greatly affect the amount of runoff generated from an area. Circle Pines has a vast network of regional open space which covers much of the southeast portion of the City. This regional open space acts as an important buffer between development and local waterbodies. Future land use projections indicate those areas that may be available for water resource enhancement and where improvements should be a priority. Significant changes in land use can increase runoff due to added impervious surfaces. Circle Pines expects very little change in land use.

Due to the lack of available land, the City of Circle Pines intends to focus its efforts on redevelopment opportunities to maximize land where possible by implementing appropriate densities (5 units plus in developed areas with access to amenities). Redevelopment has taken place in the City of Circle Pines with the Lake and Lexington Redevelopment, Pine Hollow Development, Fire Barn Development, and the Pine Manor Development. These projects collectively served the need for single-family housing, townhomes, mixed-use buildings, and senior apartments.

2.5. Public Utilities

Circle Pines is completely within the Metropolitan Urban Service Area. Sanitary sewer and water service is provided throughout the city. The Circle Pines sanitary sewer system consists of approximately 21 miles of sewer mains, 500 manholes, and three lift stations. Circle Pines handles its wastewater on a metropolitan level and is incorporated into the Metro Wastewater Treatment Plant located in St. Paul Minnesota. The Metropolitan Plant is the largest in the state of Minnesota, serving 1.8 million users with a maximum capacity of 251 million gallons per day. Since sanitary sewer is available in the City, the City will not allow installation of new individual sewage treatment systems where public sewer service is already located.

Storm sewers, ditches, curbs, and gutters provide drainage for the City. The individual watershed maps (**Figure 5** in *Appendix A*) show the City's stormwater system of pipes, channels and ponds. Future street maintenance and redevelopment will likely dictate the extension or reconstruction of the storm drainage system

2.6. Surface Waters

Figure 5 and **Figure 6** in *Appendix A* show the major water resources, watersheds, and drainage patterns in the City of Circle Pines. These figures also identify the DNR-protected lakes and wetlands located throughout the City. The following table lists the DNR-protected lakes and wetlands within the City.

Table 2.2 DNR Waterbodies

DNR ID#	Waterbody Name	DNR ID#	Waterbody Name
45P	Golden Lake	13P	Baldwin
41P	Unnamed	592 W	Unnamed

Wetland Conservation Act of 1991 (WCA)-Local Government Units (LGUs) are responsible for administering the rules. The intent of the WCA is to promote no net loss of wetlands. In the past, the Rice Creek Watershed District (RCWD) was the LGU responsible for administering the WCA in the City of Circle Pines. The City has since adopted RCWD Rule F and became the LGU responsible for administering the WCA rules. In 2016, the City was granted LGU permitting authority for Stormwater Management (Rule C), Erosion and Sediment Control (Rule D), and Floodplain Alteration (Rule E). A copy of the MOU can be found in the Appendices.

2.6.1. Water Quality Data

Water quality data for the City has been obtained from the Minnesota Pollution Control Agency (MPCA) Environmental Data Access site (**Figure 9**). This database is utilized by participating agencies to compile water quality testing data and is almost entirely used for the storage of water quality parameters. Water quality monitoring information/data and monitoring locations can be found at the MPCA's Environmental Data Access site at <http://www.pca.state.mn.us/index.php/water/water-monitoring-and-reporting/water-monitoring-and-reporting.html>. **Figure 9** shows water quality monitoring locations within the City.

2.6.2. Impaired Waters

The MPCA lists the following water bodies located within or near the City as being impaired:

- Golden Lake (ID - 02-0045-00) is listed as impaired by the MPCA due to nutrients/eutrophication and mercury. Golden Lake was added to the impaired waters list by the MPCA in 2010.
- Baldwin Lake (ID - 02-0013-00) is listed as impaired by the MPCA due to nutrients/eutrophication. Baldwin Lake was added to the impaired waters list by the MPCA in 2010.
- Rice Lake (ID -02-0008-00) is listed as impaired by the MPCA due to nutrients/eutrophication. Rice Lake was added to the impaired waters list by the MPCA in 2009.
- Lower Rice Creek (ID -02-0041-00) is listed as impaired by the MPCA due to aquatic macroinvertebrate bioassessments and E. coli. Lower Rice Creek was added to the impaired waters list by the MPCA in 2009.
- Middle Rice Creek (ID - 02-0013-00) is listed as impaired by the MPCA due to aquatic macroinvertebrate bioassessments and fishes bioassessments. Middle Rice Creek was added to the impaired waters list by the MPCA in 2010.
- Upper Mississippi River (ID - 070010206) is listed as impaired for mercury in fish tissue and fecal coliform. The Upper Mississippi River was added to the impaired waters list by the MPCA in 1998. A TMDL for bacteria was approved in 2016.

The locations of these impaired water bodies are shown on the water resource problem areas map, **Figure 7**, which can be found in *Appendix A*.

In addition to the water bodies listed above, the City is upstream of Lake Pepin, which is listed as impaired for excess nutrients. The City will be required to implement the TMDL plans for this water body once complete.

2.6.3. Floodplain

The City of Circle Pines has adopted a floodplain management ordinance. A copy of this regulation can be found on the City's website and in *Appendix C*. This ordinance generally regulates developments, land alterations and uses within each of the floodway, flood fringe, and general floodplain districts. The current ordinance requires that the lowest entry of a house be no lower than one foot above the elevation of the regional flood plus any increases in flood elevation caused by encroachments on the flood plain that result from designation of a floodway. However, the RCWD requires the lowest entry of the house to be greater than: 2-feet above the 100-year flood elevation and 1-foot above the emergency overflow. **Figure 8** in *Appendix A* shows the FEMA floodplain boundaries for the City.

The City also regulates floodplain development as part of the LGU Permitting Authority granted by RCWD through their Rule E. This permitting process is independent of the FEMA permitting process.

The City also has in place a Stormwater Management Ordinance, which is provided as an appendix to this plan and can be found in *Appendix D*.

The Federal Emergency Management Agency (FEMA) completed the map modernization process for its Flood Insurance Study (FIS) and Flood Insurance Rate Maps (FIRMs) to identify flood risk within Anoka County in July 2013. FEMA released updated maps for Anoka County in December 2015. A copy of the updated FIS and FIRMS can be obtained online through the FEMA Map Service Center at <https://msc.fema.gov/portal>.

2.6.4. Intercommunity Flows

The RCWD District Wide Modeling Program outlines the existing intercommunity flows in its district wide modeling program summary. The City of Circle Pines is committed to maintaining these flow rates under full buildout and will regulate development to ensure compliance with the CFS discharge rate. The City's adopted ordinances will ensure that these flows will be maintained. Table 2.3 below is an excerpt from the summary report showing these existing flows.

Table 2.3 Intercommunity Flows

Discharging City	Receiving City	Watercourse	Peak Flows (cfs)			
			2-Year 24-Hour Rainfall	10-Year 24-Hour Rainfall	100-Year 24-Hour Rainfall	100-Year 10-Day Snowmelt
Circle Pines	Blaine	Rice Creek	122	305	784	1256

2.7. Groundwater

Various agencies are responsible for groundwater management and protection. The DNR regulates groundwater usage rate and volume as part of its charge to conserve and use the waters of the state. For example, suppliers of domestic water to more than 25 people or applicants proposing a use that exceeds 10,000 gallons per day or 1,000,000 gallons per year must obtain a water appropriation permit from the DNR. Many of the agencies charged with regulating water usage are currently involved in assessing and addressing concerns of water usage. When and where feasible the City of Circle Pines will work with the associated agencies to be good stewards of water resources. The Minnesota Department of Health (MOH) is the official state agency responsible for addressing all environmental health matters, including groundwater protection. For example, the MOH administers the well abandonment program and regulates installation of new wells. The MPCA administers and enforces laws relating to pollution of the state's waters, including groundwater. The Minnesota Geological Survey provides a complete account of the state's groundwater resources. RCWD serves an advisory capacity with regard to groundwater protection and use. Its role is limited to cooperating and assisting the DNR, MOH and MPCA in their groundwater protection efforts.

The City's municipal well field consists of 2 wells ranging from 270 to 321 feet deep. These wells draw from the Quaternary Buried Artesian and Jordan-St. Lawrence aquifers.

The City of Circle Pines supports efforts to delineate, protect, and manage the recharge areas of the regional groundwater aquifers of the Twin Cities basin and believes this can be best accomplished at the regional/metropolitan level. The City has completed its Wellhead Protection Plan as of April 16, 2008. Groundwater appropriations are shown in **Figure 12**. **Figure 13** in *Appendix A* outlines the DWSMA sensitivity areas.

Anoka County has statutory responsibilities for groundwater management. The Current Anoka County Water Resources Management Report was adopted in October of 2014. The City of Circle Pines will work and coordinate with Anoka County to protect and enhance water resources within the City.

For areas of vulnerability, the City will incorporate the guidance developed by the MDH on evaluating proposed stormwater infiltration projects in vulnerable source water protection areas and also the guidance located within the Minnesota Stormwater Manual on designing infiltration BMPs while protecting groundwater. This will be of a particular concern in areas where infiltration is being considered in soils suitable for rapid infiltration adjacent to municipal and private wells.

2.8. Hydrologic System and Data

The City of Circle Pines is entirely within the RCWD watershed district. **Figure 5** in *Appendix A* is an index map showing all of the major drainage areas in the City. The major drainage areas are:

Baldwin Lake, County Ditch 53-62, Golden Lake, and Rice Creek. Each area is discussed in more detail below. Stormwater runoff rate and volume controls will be required to be in conformance with Watershed and State requirements.

With the additional precipitation data provided by Atlas 14, the City may choose to complete additional risk assessments for specific problem areas dependent upon funding.

2.8.1. Baldwin Lake Drainage Area

The Baldwin Lake Drainage Area is located in the northeastern portion of the City. **Figure 5 in Appendix A** shows the specific location of the Baldwin Lake Drainage Area. The Baldwin Lake Drainage Area discharges into Rice Creek and into the City of Blaine. The 235-acre subwatershed is broken up into minor watersheds and includes ponding areas. Rice Creek is the dominant feature of this watershed.

2.8.2. County Ditch 53-62

The 298-acre County Ditch 53-62 Drainage Area is located north of Lake Drive and extends north and west to the city boundaries. **Figure 5 in Appendix A** shows the specific location of the County Ditch 53-62 Drainage Area. These include lands that drain into Long Lake, downstream of Pike Lake. The Long Lake Drainage Area discharges into the Rice Creek Drainage Area.

2.8.3. Golden Lake Drainage Area

The Golden Lake Drainage Area is located in the west central part of Circle Pines. This 169 acre subwatershed includes the lands that drain into Golden Lake and is upstream of the Rice Creek Drainage Area. The Golden Lake Drainage Area discharges into the Rice Creek Drainage Area.

2.8.4 Rice Creek Drainage Area

The Rice Creek Drainage Area is located in the southern portion of Circle Pines extending north through the center of the City to Lake Drive. **Figure 5 in Appendix A** shows the specific location of the 537 acre Rice Creek Drainage Area as well as the Rice Lake Drainage Area in the northeast corner of the City which feeds into Baldwin Lake.

2.9. Natural Communities and Rare Species

The Minnesota DNR produces the Minnesota County Biological Survey (MCBS) identifying natural communities and rare species. Completed in 1994, the Anoka County survey identifies where evidence indicates the presence of rare plants and animals. The survey shows no natural plant communities or rare species within the Circle Pines city limits. However, a rare animal was indicated on an island of Baldwin Lake just outside the city limits. The survey identified the original vegetation of Circle Pines as mostly oak openings and barrens, which consist of scattered trees and groves of oaks of scrubby form with some brush and thickets. The entire City of Circle Pines has been categorized according to the Minnesota Land Cover Classification System (MLCCS). **Figure 10 in Appendix A** shows a map of the MLCCS as classified.

2.10. NPDES Phase II

The City of Circle Pines is required to have a Municipal Separate Storm Sewer System (MS4) permit through the MPCA's National Pollutant Discharge Elimination System (NPDES) Phase II Program. MS4s designated by rule are urban areas with populations over 10,000 or urban areas with populations greater than 5,000 with the potential to discharge to valuable or polluted waters. Permits for construction sites greater than one acre will also be required as part of Phase II.

As an MS4, the City will, as required, implement the following six minimum control measures:

1. Public Education and Outreach
2. Public Participation/Involvement
3. Illicit Discharge Detection and Elimination
4. Construction Site Stormwater Runoff Control
5. Post-Construction Stormwater Management
6. Pollution Prevention/Good Housekeeping for Municipal Operations

Each of these measures is outlined and described in Section 6: Implementation, under Table 6.1. For more information on the MS4 Permit requirements refer to www.pca.state.mn.us. Refer to **Appendix B** for a copy of the City's MS4 SWPPP (Storm Water Pollution Prevention Plan).

2.11. Water Resource Problem Areas

Water resource problem areas were identified through information obtained from City Staff, residents, and other agencies. Each site was analyzed and potential solutions to address the problems were developed as detailed in Section 4. Refer to **Figure 7** in **Appendix A** for the location of site-specific problem areas. The following is a list of some of the water resource problem areas within the City:

- Flooding and rate control issues at various locations
- Backyard drainage issues at various locations
- Water levels in landlocked basins
- Erosion and sedimentation of channels and creeks
- Deterioration of old corrugated metal pipe culverts
- Impaired surface waters: Golden Lake, Baldwin Lake

3. AGENCY COOPERATION

There are a number of local, state, and federal agencies that have rules and regulations related to water resource management. The City recognizes the roles of these other agencies and will cooperate, coordinate, and when possible partner with these agencies.

This Plan is in conformance with, but does not restate, all other agency rules that are applicable to water resource management. The following agencies deal with or regulate water resources throughout the City:

- Rice Creek Watershed District www.ricecreek.org
- Anoka Conservation District <http://www.anokaswcd.org/>
- Anoka County <https://www.anokacounty.us/>
- Minnesota Pollution Control Agency www.pca.state.mn.us
- Minnesota Department of Health www.health.state.mn.us

- Board of Water and Soil Resources www.bwsr.state.mn.us and the Wetland Conservation Act www.bwsr.state.mn.us/wetlands/wca/index.html
- Minnesota Department of Natural Resources www.dnr.state.mn.us
- US Army Corps of Engineers <http://www.usace.army.mil/>
- Minnesota Department of Agriculture www.mda.state.mn.us
- US Fish and Wildlife Service www.fws.gov
- Minnesota Environmental Quality Board www.eqb.state.mn.us
- Metropolitan Council www.metrocouncil.org

While these other agencies' rules, policies, and guidelines are not all restated in this Plan, they are applicable to projects, programs, and planning within the City. The MPCA Minnesota Stormwater Manual, which is a document intended to be frequently updated, is also incorporated by reference into this Plan and can be found at www.pca.state.mn.us/water/stormwater/stormwater-manual.html.

4. ASSESSMENT OF PROBLEMS AND ISSUES

Outlined below is an assessment of existing and potential water resource-related problems that are known at this time. These problems have been identified based on an analysis of the land and water resource data collected during the preparation of this plan and through information provided by the City, its residents, and the watershed organizations. A description of any existing or potential problem within the City has been listed and potential future corrective actions have been incorporated into an implementation plan. Refer to **Figure 7** in *Appendix A* for the location of many of the problem areas discussed below.

Problems & Corrective Actions

4.1. Financing and Partnerships

Problem 4.1.A. The City of Circle Pines is unable to completely fund the implementation of TMDL projects solely from the City's Stormwater Utility Fund.

Corrective Action 4.1.A The City will continue to develop a partnership with the RCWD as well as other state and regional agencies in an effort to secure important grant dollars for TMDL implementation.

Problem 4.1.B The Golden Lake TMDL was adopted by the EPA on September 30, 2009 and received by the MPCA Commissioners Office on October 5, 2009. Currently the RCWD Stormwater CIP, completed in 2010, does not include Golden Lake restoration efforts.

Corrective Action 4.1.B The City of Circle Pines will collaborate with the RCWD as they begin to update their Stormwater CIP to include Golden Lake restoration efforts and levy funds for implementation projects.

4.2. Water Quality Problems

Problem 4.2.A Degradation of water quality in Golden Lake. Additionally, Golden Lake has an approved TMDL for nutrients.

Corrective Action 4.2.A The City will operate and maintain a Golden Lake Wetland Treatment System and a lake aeration system in Golden Lake. The City will participate in the implementation of the TMDL for Golden Lake. The City will also develop and implement a plan to provide treatment for stormwater runoff prior to discharge to Rice Creek, Golden Lake, County Ditch 53-62, and Baldwin Lake where reasonable and practical to do so. The City will work with the Watershed District and/or upstream communities to improve the quality of water resources. The City of Circle Pines is currently partnering with Anoka Conservation District to design and construct an iron-enhanced sand filter for treatment prior to Golden Lake.

Problem 4.2.B RCWD prioritization of Golden Lake TMDL implementation efforts.

Corrective Action 4.2.B The City encourages the RCWD to reprioritize their funding to make the Golden Lake TMDL of the highest priority to allow its completion to take place as soon as possible.

Problem 4.2.C Rice Creek is listed as impaired water for biota.

Corrective Action 4.2.C The City will assist other partners in the implementation of the TMDL. The City will operate and maintain the Golden Lake Wetland Treatment System and lake aeration system. The City will work with RCWD and/or upstream communities to improve the quality of water resources.

Problem 4.2.D A TMDL was recently completed for the Upper Mississippi River to address the water quality standard for E. coli.

Corrective Action 4.2.D The Upper Mississippi River TMDL addresses reducing E. coli loading for different stream reaches in the metro area, including Rice Creek. The City continues to educate its residents on the importance of cleaning up after their pets to reduce pollutants entering the stormwater system. The City also has in place an ordinance requiring adequate disposal of animal waste from on public and private property. BMPs that are constructed will continue to provide some removal of E. coli prior to stormwater discharge into receiving water bodies. The City continues to administer a goose management plan of trapping geese around Golden Lake to reduce goose waste.

Problem 4.2.E The City of Circle Pines was assigned a categorical wasteload allocation (WLA) for Rice Lake and Baldwin Lake as regulated under the NPDES permit. These WLAs were approved as part of the Lino Lakes Chain of Lake Nutrient TMDL.

Corrective Action 4.2.E The City will continue to meet the requirements of the MS4 permit. The City will also continue to enforce RCWD Rules C and D as the LGU permitting authority to ensure that water quality requirements are being met for new and re-development. Areas to maximize stormwater treatment will be identified as development occurs.

4.3. Flooding or Stormwater Rate Control Concerns between the City of Circle Pines and Adjoining Communities

Problem 4.3.A High flow rates and high water levels in Rice Creek, the Rice Creek Chain of Lakes, and County Ditch 53-62 have been noted.

Corrective Action 4.3.A The City will work with the Rice Creek Watershed District to manage flooding and rate control concerns experienced within the City. Mitigation and flood control work will be completed as deemed necessary and feasible by the City of Circle Pines.

4.4. Impacts of Water Quantity or Quality Management Practices on Recreational Opportunities

Problem 4.4.A The City has experienced impacts to recreational opportunities in Golden Lake as the result of either water quantity or quality impacts including sedimentation, excessive algae growth, and variation in water levels.

Corrective Action 4.4.A The City will continue work toward the completion of the Golden Lake TMDL and associated programs. The City will also continue to work with the Watershed District to improve water quality in Ditch 53-62.

4.5. Impacts of Stormwater Quality on Fish and Wildlife Resources

Problem 4.5.A The City has experienced impacts to fish and wildlife resources due to pollution and sediment loading in Golden Lake.

Corrective Action 4.5.A The City will continue to operate and implement the Golden Lake restoration project and will work with the Watershed District to maintain the wetland treatment system for improving the water quality in County Ditch 53-62.

4.6. Impacts of Soil Erosion on Water Quality and Water Quantity

Problem 4.6.A In the past, soil erosion, particularly upstream in the City of Blaine, has degraded the quality of water in Ditch 53-62 with sediment loads which are then transferred to Golden Lake. The City of Blaine has addressed this issue to the extent necessary and does require new development to meet Watershed District standards.

Corrective Action 4.6.A The City will periodically inspect and remove sediment in the wetland treatment system to improve the water quality in Ditch 53-62 before entering Golden Lake. The Rice Creek Watershed District and upstream communities will be responsible for control of the upstream erosion problem.

4.7. The Adequacy of Programs to Maintain Water Level Control Structures

Problem 4.7.A The City has a program to maintain water level control structures

Corrective Action 4.7.A The City will implement the stormwater system maintenance program outlined in the City's Stormwater Management Plan. This system maintenance includes the annual inspection of the Golden Lake outlet/dam and periodic inspection of debris deposition and cleaning of deposition.

4.8. The Adequacy of Capital Improvement Programs to Correct Problems relating to Water Quality

Problem 4.8.A The City currently has limited funding sources available but will also attempt to secure grant funding through available programs to assist in funding some activities.

Corrective Action 4.8.A Stormwater funds and special assessment funding are not adequate to implement the studies, programs and capital improvements outlined in this plan. The City must apply for grants to fund the implementation of capital improvements identified in this management plan. The City may establish a fund for stormwater system maintenance.

Given the amount of fees that Circle Pines' residents have paid in taxes to the RCWD over the past 10 years, the City looks forward to collaborating with RCWD to fund more projects that will have a direct benefit to its residents. The City would be willing to collaborate with RCWD to identify the specific need for additional grant funding from the watershed and to identify feasible projects.

4.9. Impact of Land Use Practices and Development on Water Resource Issues

Problem 4.9.A The City of Circle Pines is near full development and contains varying topography with the presence of many different soil classifications. These conditions can make it difficult for the City to implement stormwater management BMPs to efficiently meet watershed requirements on a site by site basis.

Corrective Action 4.9.A The City will investigate opportunities to implement water quality and volume reduction BMPs during future reconstruction projects. In areas where project specific BMPs will be unfeasible, the City will look into completing regional water quality improvement projects, such as water reuse BMPs, to help meet future stormwater management requirements. The City would be interested in collaborating with RCWD to help identify opportunities for stormwater reuse.

Problem 4.9.B The majority of the City is served by a sanitary sewer collection system that conveys sanitary sewage to a treatment plant. However, there is one subsurface sewage treatment system (SSTS) in operation within the City.

Corrective Action 4.9.B The City will continue to work with the County to ensure that the SSTS remains in compliance and encourage connection to City sewer when feasible.

Problem 4.9.C The City of Circle Pines currently has a volume debit with RCWD of -24,623 cubic feet.

Corrective Action 4.9.C The RCWD Board of Managers took two actions regarding volume bank system debits:

1. Debit or credit could be addressed or utilized in non-public linear projects;
2. Cities could address debit using nonvolume control practices, with water quality treatment volume calculated in accordance with the current rule methodology.

The City will consider potential projects to address this debit as part of future street reconstruction and redeveloping areas, where feasible and cost effective. The City will coordinate with RCWD as potential sites become available for appropriate stormwater BMPs.

4.10. Education Program

Problem 4.10.A The City of Circle Pines recognizes the need for water resource education programs to increase public awareness of water resource management and improve the quality of stormwater runoff.

Corrective Action 4.10.A The City of Circle Pines will continue to provide educational content and opportunities to residents, businesses, developers, and others. These efforts may include regular notices in the City's monthly newsletter, articles in the local paper, postings on the City website, and flyers in the utility bill. The City may work with Rice Creek Watershed District to improve the efficiency of educational efforts and reduce duplication. Educational topics may include but are not limited to:

- Wetland buffers
- Yard/Pet waste management
- Illicit discharge to stormwater
- Utility Easements
- Stormwater Basin Function
- Controlling invasive species

4.11. Identification of Potential Problems which are Anticipated in the Next 20 Years.

Problem 4.11.A Inspecting and maintaining existing stormwater infrastructure throughout the City.

Corrective Action 4.11.A The City of Circle Pines is responsible for maintenance of its stormwater system in conformance with the MPCA's MS4 Program. This includes maintenance of pipes, constructed ponds, lakes, wetlands, ditches, swales, and other drainage ways. Proper maintenance will ensure that the stormwater system continues to provide the necessary flood control and water quality treatment.

Refer to **Appendix B** for a copy of the City SWPPP. Other units of government are responsible for maintaining the stormwater systems under their control.

For Example:

- Anoka County is responsible for maintaining storm sewer catch basins and leads in the county roads; however, the City is responsible for maintaining the trunk storm sewer lines.
- RCWD is responsible for maintaining the function of the District's public drainage system.
- Owners of private stormwater facilities are responsible for maintaining their facilities in proper condition, consistent with the original performance design standards. Responsibilities include removal and proper disposal of all settled materials from ponds, sumps, grit chambers, and other devices, including settled solids. The City/RCWD may inspect private stormwater facilities and notify the owners of needed cleaning and repairs.

Problem 4.11.B Increase in accumulation of debris and material on City Streets.

Corrective Action 4.11.B The City will continue to sweep debris and salt from City streets. More information regarding street sweeping activities can be found in the SWPPP in **Appendix B**.

Problem 4.11.C Future changes in peak water elevation at storage areas and/or critical road crossings within the City.

Corrective Action 4.11.C At this time, RCWD modeling did not identify specific areas within Circle Pines that are at risk for flooding due to future land use changes. The City will collaborate with RCWD to mitigate any potential flooding identified in future modeling efforts.

4.12. Availability and Adequacy of Existing Technical Information to manage Water Resources

Problem 4.12.A Atlas 14 (updated precipitation probability information) was recently released by NOAA (National Oceanic and Atmospheric Administration).

Corrective Action 4.12.A The City has adopted Atlas 14 to replace TP-40 (existing precipitation probability information). The City will continue to update its policies, codes, ordinances, and other appropriate documents as necessary.

Problem 4.12.B The City has completed a wetland inventory but has not completed a City-wide wetland classification to assess the quality of all wetlands within the City.

Corrective Action 4.12.B The City will investigate completing a City-wide MnRAM (Minnesota Routine Assessment Method) assessment to determine the functions and values of each wetland.

Until this City-wide study is complete, the City will continue to perform a MnRAM assessment on a site by site basis as required by development or construction activity that is impacting wetlands.

Problem 4.12.C The City has mapped the majority of its storm sewer system. As new and redevelopment projects are completed, the storm sewer GIS database needs to continually be updated.

Corrective Action 4.12.C The City will annually update its storm sewer GIS database to incorporate recent projects and associated storm sewer improvements.

Problem 4.12.D. The City needs to utilize the most up-to-date data and hydrologic modeling to ensure plan reviews are completed properly.

Corrective Action 4.12.D The RCWD has completed watershed-wide hydraulic and hydrologic models that includes the City of Circle Pines as part of their District-wide Modeling Program. These models include SWMM models for public drainage systems into Rice Creek, direct drainage into Rice Creek, water quality models, Future Conditions Modeling, and a HEC-RAS model for Rice Creek. The City is responsible for the use of the RCWD's models and concurs with model assumptions. The City understands that District models are continually evolving, and the City is subject to conditions for use of the model, including accepting the responsibility for model outputs.

The City intends to use the models for assessment of floodplain alterations as part of Rule E, peak rate requirements and intercommunity flows for Rule C, project design and permitting, identification of flood prone areas, and for sizing stormwater infrastructure. When the City requires use of District Models, a license agreement will be signed. When this occurs, the City will regularly coordinate with the RCWD to data-share any updated component of the models.

5. GOALS AND POLICIES

5.1. General

The goals and policies in the City of Circle Pine's Local Surface Water Management Plan are consistent with the goals of the Rice Creek Watershed District (RCWD) while meeting the more specific and changing needs of the City. The goals of this plan were established in accordance with the guidelines contained in Minnesota Statutes 1038 and Minnesota Rules 8410. Furthermore, each goal has several corresponding policies. These goals and policies provide for future development and redevelopment while minimizing surface water problems and enhancing the environment. These goals and policies are subject to conformance with current Watershed District policies and standards.

With the adoption of RCWD Rule C, D, E, and F by reference in 2016, the City of Circle Pines is currently the permitting authority for areas within its jurisdictional boundary within the RCWD. Execution of an MOU between the RCWD and City of Circle Pines was completed to transfer rule authority in 2016. The City currently administers RCWD Rules C, D, E, and F. The City adopts and enforces the most recent RCWD Rules, which can be found at www.ricecreek.org. Additional goals and policies of the City are contained throughout this section.

A general goal of the City is to cooperate, collaborate, and partner with other entities, such as the Watershed District and the MPCA as much as possible as the City implements this plan.

Cooperation, collaboration, and partnering results in projects that are less likely to conflict with the goals of the affected entities, are better able to meet long-term goals, and are generally more cost-effective.

In addition to the goals and policies outlined below, the City will annually review and update its Storm Water Pollution Prevention Plan (SWPPP) to effectively manage its stormwater system and be in conformance with the NPDES MS4 Program. Refer to *Appendix B* for the most recent version of the City SWPPP.

The City of Circle Pines had previously designated the Rice Creek Watershed District (RCWD) as the Local Governmental Unit (LGU) responsible for wetland management within its jurisdictional boundaries. However, with the execution of an MOU between the RCWD and the City, the City has obtained the ability to assume LGU responsibilities in conformance with Minnesota Rules Chapter 8420 as developed by the Board of Water and Soil Resources on June 26, 2018.

5.2. Water Quality

5.2.1. Limit public capital expenditures that are necessary to control excessive volumes and rates of runoff.

5.2.2. Policies

1. Circle Pines will develop Comprehensive Stormwater Management Plans (CSMP) for required treatment as an alternative approach to meeting the requirements of RCWD Rule C, sections 6 and 7. The RCWD is required to approve any CSMP.
2. Any development or redevelopment within the City of Circle Pines will be required to manage stormwater in conformance with the policies and content of the City's Comprehensive Stormwater Plan, the Rice Creek Watershed District rules, and all previous agreements the City has entered into for stormwater management.
3. The design of all major stormwater storage facilities shall attempt to accommodate a 100-year critical duration storm event. These facilities include lakes, ponds, and their outlets. New storm sewer systems shall be designed to accommodate a 10-year critical duration event.
4. For new development and redevelopment, future stormwater runoff rates must be less than or equal to the existing runoff rates for the critical 2-year, 10-year, and 100-year events.
5. Any new development or redevelopment within the City will require a minimum building opening of 2-ft above the anticipated 100-year high water elevation. However, if this 2-ft freeboard requirement is considered a hardship, the standard could be lowered to 1-ft if the developer can demonstrate the following:
 - i. That within the 2-ft freeboard area, stormwater storage is available which is equal to or exceeds 50% of the stormwater storage currently available in the basin below the 100-year elevation.
 - ii. That a 25% obstruction of the basin outlet over a 24-hour period would not result in more than 1-ft of additional bounce in the basin.
 - iii. An adequate overflow route from the basin is available that will provide assurance 1-ft of freeboard will be maintained for the proposed low building opening.

Freeboard	Regional Flood Elevations		Detention Basins, Wetlands & Stormwater Ponds		Infiltration and Biofiltration Basins			Rain Gardens
	100 -yr	EOF	100-yr	EOF	Bottom	100-yr	EOF	EOF
Low Floor	2.0 ft	1.0 ft	0.0 ft	NA	0.0 ft	NA	NA	NA
Low Entry	NA	NA	2.0 ft	1.0 ft	NA	2.0 ft	1.0 ft	.5 ft
Groundwater	NA	NA	0.0 ft	0.0 ft	3.0 ft	NA	NA	3.0 ft

6. The City will require setting minimum basement floor elevations to an elevation that meets the following criteria:
 - i. Basement floor elevations adjacent to landlocked basins will be required to be 2-ft higher than the highest water level of either the 10-day snowmelt event or back-to-back 100 year, 24-hour rainfalls.
 - ii. The basement floor elevation will be 2-ft above the elevation of any known historic high groundwater elevations for the area. Information on historic high groundwater

- elevations can be derived from any reasonable sources including piezometers, soil borings, percolation tests, etc.
- iii. The basement floor elevation will be 2-ft above the 100-year high water elevation for the area unless it can be demonstrated that the basement floor will be 1-ft above the highest anticipated groundwater elevation that could result from the high surface water elevations during a 100-year critical duration rainfall event. The impact of high surface water elevation on groundwater elevations in the vicinity of the structure can take into consideration that site's distance from the flood plain area, the soils, the static groundwater table and historic water elevations in the area.
 - v. Certified surveys verifying the permitted low floor elevations are required to issue a certificate of occupancy.
7. Wetlands will be protected within the City boundaries to assure that the value of wetlands in relation to their surface water quantity benefits are not significantly impacted by development. As stated in the City's Stormwater Management Ordinance, impacts on wetlands shall be in compliance with the Wetlands Conservation Act, and managed in accordance with RCWD Rule F which the City adopts by reference.
 8. It is the intention of the City to utilize natural ponding areas such as wetlands for the impoundment and treatment of surface water runoff in accordance with RCWD rules, as well as State and local laws and with policies outlined in the Stormwater Management Plan only if it can be shown that the functions and values of the wetland will not be adversely affected by excavation, substantially increased sediment load, tributary area, or water level fluctuations. These natural ponding areas are preferred over impoundments constructed in upland areas.
 9. The City may provide an outlet to landlocked basins, provided that the following can be demonstrated:
 - i. The 10-day, 100-year average runoff rate will not increase.
 - ii. The downstream flood profile will not be significantly impacted by increased discharge rates or volumes.
 - iii. Wetlands will not be dewatered (unless exempt as per the Wetland Conservation Act and Watershed District Rules).
 - iv. The stormwater storage volume below the outlet elevation is at least equal to the runoff generated from back-to-back 100 year, 24-hour rainfall events.
 10. The City will require compensatory storage equal to the storage losses resulting from floodplain fill. The City will, in accordance with RCWD Rule E, allow for a one-time fill of 10 cubic yards.
 11. The City will encourage the use of Best Management Practices (BMP'S) to promote infiltration of precipitation such as the use of grass swales and parking lot size reduction.
 12. Infiltration of the first 1.1 inch of runoff is required for all projects, except public linear projects from the new impervious surface area created by the new projects where there are A and B soils and where previous or existing land uses are appropriate for infiltration. Infiltration of the first $\frac{3}{4}$ inch of runoff will be required for public linear projects. For Water Quality Treatment Standard infiltration requirement equations see RCWD Rule C.6.
 13. Flood fringe encroachment within shoreland areas associated with public waters is not allowed except for in conformance with RCWD Rule E.3, and subsequent DNR regulations.
 14. The RCWD requires easements for open channel systems which are a variable width measured perpendicular to the direction of flow, to include the open channel itself and all areas within 16.5 feet from the top of the ditch bank.

15. For compensatory storage in wetland basins not wholly contained within a developer's property, compensatory live storage equal to or greater than the increased volume of runoff resulting from development will be required to protect downstream landowners and prevent the incremental volume and rate increased resulting from wetland fill. As such, the City adopts by reference RCWD Rule F.
16. The City will continue to implement the City of Circle Pines Local Surface Water Management Plan, as well as work with the County, Rice Creek Watershed District, bordering municipalities, DNR, and SWCD to maintain the tangible and intrinsic values of natural storage retention systems within the City.

5.3. Water Quality

5.3.1. Goal

Maintain or improve the quality of water in lakes, streams, and wetlands within or immediately downstream of the City of Circle Pines.

5.3.2. Policies

1. Circle Pine's water quality program seeks to replenish wetlands and lakes with clean water and maintain base flow in streams by letting runoff absorb into the ground.
2. Circle Pines requires that stormwater infiltration facilities include sufficient water quality pretreatment to preserve the function of these facilities.
3. Circle Pines will develop Comprehensive Stormwater Management Plans for required treatment as an alternative to meeting RCWD Rules C.6 and C.7 for individual permits. These plans will be allowed in defined areas, and only as deemed appropriate to meet the intent of providing regional planning within Resource Areas of Concern. The RCWD is required to approve any CSMP.
4. The City incorporates by reference the "Minnesota Stormwater Manual" for the use and design of stormwater management Best Management Practices (BMP's). This manual can be viewed at www.pca.state.mn.us/water/stormwater/stormwater-manual.html.
5. The City has developed a stormwater drainage system maintenance plan. This plan was developed to assure that the retention/treatment basin clean out and maintenance was addressed to the extent that is feasible and practical and to meet the requirements of the NPDES permit. The goal of this plan is to assure that the City's retention and treatment basins will have the capability to retain and treat stormwater in future years and includes TMDL requirements for phosphorus.
6. The City will adopt the Minnesota Pollution Control Agency "Individual Wastewater Treatment System Regulations" within three months of Stormwater Management Plan approval to ensure the two individual systems in the City located at 4573 County Road J and 4571 County Road J stay in compliance.
7. The City's preferred method to achieve desired water quality standards, specifically for TMDL requirements for phosphorus, as well as total suspended solids (TSS) reduction is through its volume management policies.
8. The design and construction of all new stormwater conveyance systems, and modifications to existing stormwater conveyance systems, must be designed to meet NURP water quality standards.
9. For stormwater discharged to slightly and least susceptible wetlands, storm water must be treated to remove 75% of the sediment.
10. The City of Circle Pines will sweep the streets at least two (2) times annually. Furthermore, future purchases of street sweeping units will give consideration to street

- sweepers which have the greatest ability to remove nutrients from the streets within the community.
11. The City will encourage homeowners with properties adjacent to water resources to establish a vegetative buffer strip at the shoreline. This strip should consist of legumes or other perennial grasses to limit erosion and nutrient transport across the buffer strip.
 12. The City has completed an MS4 permit which outlines the maintenance requirements of its stormwater system. This plan has been developed to assure that the retention/treatment basin clean out and maintenance will be addressed to the extent that is feasible and practical.
 13. The City will develop and implement a water quality monitoring program capable of establishing that the stormwater treatment basins constructed within the City are not only designed to NURP standards, but also meet the anticipated design removal efficiencies based on actual monitoring of the system. This program will be carried out to the extent deemed necessary and reasonable by the Circle Pines City Council. The City will keep the RCWD informed of all water quality monitoring program updates.
 14. For areas within the City that are redeveloping, projects that create or reconstruct 10,000 square feet or more of impervious surface will require a permit. This does not include public linear projects. For public linear projects, a permit is required to create 10,000 square feet or more of impervious surface through multiple phases or connected actions of a single complete project, as defined by the District, within a Resource of Concern Drainage Area.
 15. Flood fringe encroachment within shoreland areas associated within public waters is not allowed except for in conformance with RCWD Rule E.3, and subsequent DNR regulations.
 16. Any new development or redevelopment shall show sufficient drainage and ponding easements over hydrologic features such as floodplains, storm sewers, ponds, ditches, swales, wetlands, and waterways.
 17. All new and redeveloped stormwater management structures and facilities shall be maintained in perpetuity either through dedication of the facilities to the City through an easement or through a maintenance agreement between the landowner and the City.
 18. The City will partner with the Anoka Conservation District (ACD) to design and construct an iron-enhanced sand filter adjacent to Golden Lake to remove nutrients from runoff prior to entering Golden Lake.
 19. The City will continue to work with the Anoka Conservation District (ACD), Rice Creek Watershed District (RCWD), and MPCA (NPDES program) to implement Best Management Practices.

5.4. Runoff Management and Flood Control

5.4.1 Goal

Limit public capital expenditures that are necessary to control excessive volumes and rates of runoff.

5.4.2. Policies

1. Any development or redevelopment within the City of Circle Pines will be required to control runoff to the extent necessary to be consistent with this plan.
2. Areas located within RCWD's Flood Management Zone one shall provide peak rate control for the 2, 10, and 100 year 24-hour rainfall events beyond the existing condition

- peak rate by reducing the peak rate to less than 80% of the existing condition. This requirement does not apply if the project is a Public Linear Project.
3. The design of all major stormwater storage facilities shall attempt to accommodate a critical duration event with a 1 % chance of occurrence in any given year. These facilities include lakes, ponds, and their outlets. New storm sewer systems shall be designed to accommodate a critical duration event with a 10% chance of occurrence in any given year.
 4. Any new or redevelopment within the City will be required to meet the low floor and low entry freeboard requirements as shown in Table 5.1 of this LSWMP.
 5. Wetlands will be protected within the City boundaries to assure that the value of wetlands in relation to their surface water quantity benefits are not significantly impacted by development.
 6. The City will be allowed to discharge water from landlocked basins provided that the rates and volumes of water discharged from the area will be limited to the maximum extent reasonable taking into consideration downstream impacts, and complies with RCWD Rule C.5(e).
 7. The City will require compensatory storage equal to the storage losses resulting from floodplain fill. All floodplain permitting activities shall be subject to the respective flood sector requirements as assigned by Rice Creek Watershed District.
 8. Development that results in the creation of impervious surfaces must explicitly address use of best management practices (BMPs) to first limit the loss of pervious area; and second, to:
 - a. infiltrate runoff which does occur from impervious areas to the extent feasible considering site-specific conditions and/or
 - b. reuse runoff for irrigation and other appropriate uses
 9. All new and redeveloped stormwater management structures and facilities shall be maintained in perpetuity either through dedication of the facilities to the City through an easement or through a maintenance agreement between the landowner and the City. The City of Circle Pines prefers the development of municipal drainage system whenever possible to the development of private drainage systems shall attempt to accommodate existing drainage systems including tile lines. Existing drainage systems will be protected and drainage perpetuated.

5.5. Wetlands

5.5.1. Goal

The City of Circle Pines will protect and manage wetlands in conformance with the requirements of the Wetland Conservation Act of 1991.

5.5.2. Policies

1. Policies in areas such as volume management and water quality reduce the degradation of wetlands which preserves them as areas of ground water recharge.
2. Through the completion of this Local Surface Water Management Plan, and adoption by Reference of RCWD Rule F, and execution of an MOU between the City and the permitting as outlined by RCWD Rule F.
3. Prior to any site development activities, the City will require a site inspection to identify the location and extent of any wetlands present. The proponent of the site development shall have the burden of providing to the City a report showing the onsite inspection and delineation of all wetland areas by a qualified consultant. If any wetland encroachment is

- proposed, wetland values and impacts will be evaluated on a case by case basis in conformance with the rules associated with the Wetland Conservation Act of 1991 and those of the Watershed District. A functions and values assessment utilizing MnRAM will be required for all proposed wetland alterations. For any alteration of a wetland not regulated by WCA, a functions and values assessment must be completed. If it is determined that the functions and values of the wetland will be diminished, replacement must be at a 1:1 ratio.
4. Any review of a proposed wetland encroachment will initially address the issue of avoidance. It will be the City's policy that prior to allowing any wetland encroachment; all reasonable attempts to avoid such alteration must be demonstrated. This avoidance review must also consider the reasonableness of the no build alternative.

5.6. Erosion and Sediment Control

5.6.1. Goal

Protect the capacity of the City's stormwater management system by preventing erosion and sedimentation from occurring and correcting existing erosion and sedimentation problems.

5.6.2 Policies

1. Outlined in the City's Stormwater Management Ordinance, Circle Pines policies reduce runoff volume which prevents erosion in streams by preventing increases in stream flow. The City's Stormwater Management Ordinance has been updated to include Rice Creek Watershed District permitting rules, which includes sites under one acre.
2. Erosion and sedimentation control plans shall be reviewed and enforced by the City of Circle Pines for all new developments, redevelopments, and additions to existing sites. These plans shall conform to the general criteria set forth in the Minnesota Pollution Control Agency Division of Water Quality Document "Protecting Water Quality in Urban Areas", and Met Council's "Minnesota Urban Small Site BMP Manual".
3. The City will sweep the streets at least two (2) times annually. Furthermore, future purchases of street sweeping units will give consideration to street sweepers which have the greatest ability to remove nutrients from the streets within the community.
4. Erosion and sediment control plan must be submitted in accordance with RCWD rule D.2.a Measures must be installed prior to land altering activities and routinely inspected and maintained by the owner during the project until final turf and ground cover is established to a density of 70%. In addition, activity subject to a permit under rule D must conform to the standards of the NPDES construction general permit. The City's Stormwater Management Ordinance adopts RCWD's Rule D by Reference.

5.7. Groundwater

5.7.1. Goals

Protect the quality and quantity of groundwater resources.

5.7.2. Policies

1. The City will promote and coordinate with other agencies the continuation of existing groundwater monitoring, inventorying, or permitting programs
2. The City encourages the development of spill prevention, control, and counter measure plans that are consistent with State and/or Federal regulations for industrial facilities within its borders and for its own facilities, as well.

3. The City will encourage preservation of wetlands, ponds, and parks to encourage infiltration of precipitation in areas where land use is not anticipated to adversely affect surface water runoff.
4. The City will cooperate with Anoka County Environmental Health Department to ensure that all unsealed or improperly abandoned wells within the watershed are properly sealed. Technical requirements for the abandonment of these wells will be in conformance with the Minnesota Department of Health Water Well Code.
5. The City will enforce its well head protection plan in accordance with State requirements.

5.8. Shoreland Management

5.8.1. Goal

Protect and enhance fish and wildlife habitat and recreational opportunities.

5.8.2. Policies

1. The City will work with and support to the maximum extent practical the efforts of Minnesota Department of Natural Resources, the Army Corps of Engineers, the United States Environmental Protection Agency, the U.S. Fish and Wildlife Service, the Watershed Districts, and other appropriate agencies in promoting public enjoyment and protecting fish, wildlife, and recreational resource values in the City.
2. Preserve wetlands that provide habitat for wildlife and spawning of fish.
3. The City will encourage land owners to maintain wetlands and open space areas for the benefit of wildlife.
4. The City has adopted by reference RCWD Rule F, and enforces its Stormwater Management Ordinance which requires that all impacts on wetlands be in compliance with the Wetland Conservation Act.

5.9. Education and Public Involvement

5.9.1. Goals

Increase public awareness, understanding and involvement in water and natural resource management issues.

9. 2. Policies

1. The City will prepare and distribute a mailing to city residents a minimum of one time per year that provides information on pertinent water management issues. This mailing will provide an opportunity for residents to participate in watershed management activities.
2. The City will implement the public education requirements of NPDES Phase II. A copy of the description of the program to be implemented by the City is included in the MS4 SWPPP Application for Reauthorization located in Appendix B.
3. Coordinate education efforts with RCWD, ACD, Met Council and other agencies where appropriate.

5.10. Public Ditch Systems

5.10.1. Goal

Continue to work with the public ditch authorities to ensure systems are properly managed and maintained.

5.10.2. Policies

1. Work with the Rice Creek Watershed District to assure they adequately inspect, maintain and repair ACD 53-62 within the City.
2. The City of Circle Pines will maintain ditches in conformance with their MS4 permit, and City ordinances.

6. Implementation Program

6.1. Implementation Program Components

Table 6.1 contains a comprehensive list of the MS4 activities and projects, programs, and studies that make up the City of Circle Pines implementation program for the next 10 years (2018 through 2027). The City developed this program by evaluating the requirements in the MS4 permit (see MS4 SWPPP Application for Reauthorization in Appendix B), reviewing existing information (Section 2), identifying potential and existing problems (Section 4), developing goals and policies (Section 5), and then assessing the need for programs, studies or projects. The City estimated total costs, identified possible funding sources, and developed an approximate schedule to complete the implementation activities. It is anticipated these tables will be updated/revised on a yearly basis.

6.2. Implementation Priorities

The implementation components listed in Table 6.1 were prioritized to make the best use of available local funding, meet MS4 Permit requirements, address existing water management problems, and prevent future water management problems from occurring. Table 6.1 identifies which activities are MS4 Permit Requirements, MS4 Permit Requirements -within 12 months, Annual Requirements, or Capital Projects/Programs/Studies. The City's implementation plan reflects its responsibility to protect the public health, safety and general welfare of its citizens by addressing problems and issues that are specific to the City of Circle Pines.

6.3 Financial Considerations

The City plans to use funds generated from its Stormwater Utility as the primary funding mechanism for its implementation program including; maintenance, repairs, capital projects, studies, etc. If funds from this utility fee do not cover necessary costs, the City will consider adjusting the Stormwater Utility Fee as well as using general funds to cover associated costs. The City will continue to review the stormwater utility fee annually and adjust based on the stormwater related needs of the City and other funding mechanisms.

Although not proposed at this time, the City may consider using plan implementation taxes (MN Statutes 1038.241) in the future if general funds or stormwater utility funds are not sufficient to fund the projects. The City will also take advantage of grant or loan programs to offset project costs where appropriate and cost-effective.

6.4 Plan Revision and Amendments

The City may need to revise this Plan to keep it current. Any amendments that are made to the plan must be submitted to the RCWD and Metropolitan Council for review and approval before

adoption by the City. The City may amend this plan at any time in response to a petition by a resident or business. Written petitions for plan amendments must be submitted to the City Administrator. The petition must state the reason for the requested amendment, and provide supporting information for the City to consider the request. The City may reject the petition, delay action on the petition until the next full plan revision, or accept the petition as an urgent issue that requires immediate amendment of the plan. The City of Circle Pines may also revise/amend the plan in response to City-identified needs. This Plan is intended to be in effect for 10 years. The Plan will be revised/updated at that time, to the extent necessary.

Insert Appendix

SECTION VI

TABLE 6.1

LOCAL WATER MANAGEMENT IMPLEMENTATION PLAN																		
No.	Project Description	MS4 Permit Requirement	Initial 12 Month Requirement	Annual Requirement	Projects, Programs, & Studies	10 Year Cost Estimate ¹	Possible Funding Sources ³	Proposed Cost By Year ^{1,2}								Comments		
								2018	2019	2020	2021	2022	2023	2024	2025		2026	2027
1	<u>Education Activity Implementation Plan</u> - Complete outline of education activity implementation program and implementation schedule for the upcoming permit year. Education procedures including meeting requirements for the following stormwater educational programs: -City Web Page -City Newsletter -Environmental Webpage -Support RCWD education and public engagement programs (see SWPPP) -Other	✓	✓	✓		\$25,000	City of Circle Pines	\$2,500	\$2,500	\$2,500	\$2,500	\$2,500	\$2,500	\$2,500	\$2,500	\$2,500	\$2,500	See SWPPP Application for Reauthorization (Appendix B)
2	<u>Annual SWPPP Assessment & Annual Reporting</u> - City staff will conduct an annual SWPPP assessment in preparation of each annual report. Proposed SWPPP modifications are subject to Part II.G of the MS4 permit. The final annual report will be posted on the Water Resources webpage. City staff will submit the annual report to the MPCA prior to June 30th for the previous calendar year.	✓		✓		\$20,000	City of Circle Pines	\$2,000	\$2,000	\$2,000	\$2,000	\$2,000	\$2,000	\$2,000	\$2,000	\$2,000	\$2,000	See SWPPP Application for Reauthorization (Appendix B)
3	<u>Annual Public Meeting/Event</u> - The City will provide notice of a meeting and present the draft MS4 annual report to one public event per year to solicit public input regarding the adequacy of the City's SWPPP. Public input received (oral and written) will be recorded in a record of decision and evaluated by the City's MS4 General Contact. City responses (if relevant) will be made in writing to each commenter. Hold one event per calendar year of the MS4 permit cycle.	✓		✓		\$10,000	City of Circle Pines	\$1,000	\$1,000	\$1,000	\$1,000	\$1,000	\$1,000	\$1,000	\$1,000	\$1,000	\$1,000	See SWPPP Application for Reauthorization (Appendix B)
4	<u>Online Availability of the Stormwater Pollution Prevent Plan (SWPPP) Program Document</u> - The City will make the SWPPP and each year's annual report available on the Water Resources webpage within 12 months from the date the MS4 permit coverage is extended to the City.	✓	✓	✓		\$2,500	City of Circle Pines	\$250	\$250	\$250	\$250	\$250	\$250	\$250	\$250	\$250	\$250	See SWPPP Application for Reauthorization (Appendix B)
5	<u>Employee Training</u> - Continue to host a minimum of one staff training event per year to discuss illicit discharge recognition and reporting. City staff will develop an annual training schedule, record the employee names, topics covered, and date of each event, annually through the end of the MS4 permit cycle (July 31, 2018)	✓	✓	✓		\$5,000	City of Circle Pines	\$500	\$500	\$500	\$500	\$500	\$500	\$500	\$500	\$500	\$500	See SWPPP Application for Reauthorization (Appendix B)

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No.	Project Description	MS4 Permit Requirement	Initial 12 Month Requirement	Annual Requirement	Projects, Programs, & Studies	10 Year Cost Estimate ¹	Possible Funding Sources ²	Proposed Cost By Year ^{1,2}							Comments		
								2018	2019	2020	2021	2022	2023	2024		2025	2026
6	IDDE Program - The City will develop and implement a program to detect and reduce non-stormwater discharges, including illegal dumping. Procedures for detection may consist of visual inspections for non-stormwater discharges on City owned land and private property (as requested). Inspection frequency may be conducted concurrent with the outfall inspections and implementation schedule of the public works activities. This will be completed within 12 months from the date	✓	✓			\$2,500	City of Circle Pines	\$2,500									See SWPPP Application for Reauthorization (Appendix B)
7	IDDE Inspections - In Year 1, the City will map out areas that are identified as high-priority outfalls and around high-risk establishments (fast food restaurants, dumpster, car washes, mechanics, and oil changes.) in years 2-5, the City will integrate those sites into its annual inspection of MS4 activities. As needed, City staff or a consultant will be used to televise a section of the sewer system, collect and grab samples or perform other effective testing procedures to find illicit connections within the system.	✓	✓			\$20,000	City of Circle Pines	\$2,000	\$2,000	\$2,000	\$2,000	\$2,000	\$2,000	\$2,000	\$2,000	\$2,000	See SWPPP Application for Reauthorization (Appendix B)
8	IDDE Ordinance - The City will review and update (as necessary) the City's ordinance to prohibit illicit and non-stormwater discharges into the City's storm sewer and surface/ground waters. The goal of this BMP will be met by reviewing existing city ordinances and implementing updates related to illicit/non-stormwater discharges (if necessary).	✓				\$1,500	City of Circle Pines	\$1,500									See SWPPP Application for Reauthorization (Appendix B)
9	Construction Site Stormwater Runoff Ordinance - The City will annually review and update (as necessary) the City's erosion control ordinance.	✓	✓	✓		\$5,000	City of Circle Pines	\$500	\$500	\$500	\$500	\$500	\$500	\$500	\$500	\$500	See SWPPP Application for Reauthorization (Appendix B)
10	Construction Site Erosion and Sediment Control Inspections - City staff will continue to implement and enforce the construction site inspection program for erosion control on construction sites one acre or larger. City staff will document the number of site inspections conducted annually.	✓	✓	✓		\$5,000	City of Circle Pines	\$500	\$500	\$500	\$500	\$500	\$500	\$500	\$500	\$500	See SWPPP Application for Reauthorization (Appendix B)
11	Waste Controls for Construction Site Operators - The City will enforce the NPDES Phase II permit requirements through the City's construction site inspection program.	✓	✓	✓		\$2,500	City of Circle Pines, Developers	\$250	\$250	\$250	\$250	\$250	\$250	\$250	\$250	\$250	See SWPPP Application for Reauthorization (Appendix B)
12	Construction Site Plan Review - The City will require every applicant for a building permit, subdivision approval, or grading permit that triggers RCWD Rule C to submit a project specific stormwater management plan (if applicable).	✓	✓	✓		\$10,000	City of Circle Pines, Developers	\$1,000	\$1,000	\$1,000	\$1,000	\$1,000	\$1,000	\$1,000	\$1,000	\$1,000	See SWPPP Application for Reauthorization (Appendix B)

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No.	Project Description	MS4 Permit Requirement	Initial 12 Month Requirement	Annual Requirement	Projects, Programs, & Studies	10 Year Cost Estimate ¹	Possible Funding Sources ²	Proposed Cost By Year ^{1,2}							Comments		
								2018	2019	2020	2021	2022	2023	2024		2025	2026
13	Establishment of Procedures for the Receipt and Consideration of Reports of Stormwater Noncompliance - The City will establish a phone line and web page links for the public to report potential construction site erosion control and waste disposal infractions.	✓	✓	✓		\$500	City of Circle Pines	\$250					\$250				See SWPPP Application for Reauthorization (Appendix B)
14	Establishment of Procedures for Site Inspections and Enforcement - The City will inspect construction sites for conformance to NPDES construction permit standards and applicable City standards. This goal will be met by enforcing the City's erosion control and waste disposal standards.	✓	✓	✓		\$5,000	City of Circle Pines	\$500	\$500	\$500	\$500	\$500	\$500	\$500	\$500	\$500	See SWPPP Application for Reauthorization (Appendix B)
15	Permit Update - The City will update its Grading, Building, and ROW permits and Construction Site Stormwater Runoff ordinance to meet the new permit requirements within 12 months following the date permit coverage is extended.	✓	✓	✓		\$1,000	City of Circle Pines	\$1,000									See SWPPP Application for Reauthorization (Appendix B)
16	Post Construction Stormwater Management Mitigation - The City will develop written procedures for documentation of post-construction stormwater management mitigation as described in the Permit (Part III.D.5.c.). Procedures will be in place within 12 months following the date permit coverage is extended.	✓	✓	✓		\$1,000	City of Circle Pines	\$1,000									See SWPPP Application for Reauthorization (Appendix B)
17	Site Plan Review Program - The City will review and revise (if necessary, during the plan review process) permanent BMP designs and criteria for post-construction stormwater management associated with new development and redevelopment projects as required by RCWD Rule C. The City will also actively look for non-structural opportunities where prudent and feasible.	✓	✓	✓		\$25,000	City of Circle Pines	\$2,500	\$2,500	\$2,500	\$2,500	\$2,500	\$2,500	\$2,500	\$2,500	\$2,500	See SWPPP Application for Reauthorization (Appendix B)
18	Project Documentation - The City will maintain all related documents pertaining to each new or redevelopment project in more user-friendly filing system for better records management. Implementation within 12 months from the date permit coverage is extended.	✓	✓	✓		\$1,000	City of Circle Pines	\$500				\$500					See SWPPP Application for Reauthorization (Appendix B)
19	Employee Training - Building or Engineering Department staff (a minimum of one staff member) will maintain valid certification in NPDES Construction Stormwater Permit related training per NPDES-CSW training requirements.	✓		✓		\$1,500	City of Circle Pines	\$300		\$300		\$300		\$300		\$300	See SWPPP Application for Reauthorization (Appendix B)

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No.	Project Description	MS4 Permit Requirement	Initial 12 Month Requirement	Annual Requirement	Projects, Programs, & Studies	10 Year Cost Estimate ¹	Possible Funding Sources ²	Proposed Cost By Year ^{1,2}							Comments				
								2018	2019	2020	2021	2022	2023	2024		2025	2026	2027	
20	Review Building Dept. Inspection Checklist - The City will update the existing Erosion and sediment control checklist to meet current NPDES Construction Stormwater Permit requirements. This update will occur within 12 months from the date MS4 permit coverage is extended.	✓	✓	✓		\$3,000	City of Circle Pines	\$1,500						\$1,500					See SWPPP Application for Reauthorization (Appendix B)
21	Permit Application System - The City will develop written procedures to improve tracking and archiving all plan review and inspection documents within 12 months following the date permit coverage is extended.	✓		✓		\$3,000	City of Circle Pines	\$1,500						\$1,500					See SWPPP Application for Reauthorization (Appendix B)
22	Updated Cities Construction Site Stormwater Runoff Control Mechanism - Zoning Chapter 13, Section 1350 - The City will update its mechanism to be at least as stringent as the MPSC CSW permit. This effort will be completed within 12 months of the date permit coverage is extended.	✓	✓	✓		\$3,000	City of Circle Pines	\$1,500						\$1,500					See SWPPP Application for Reauthorization (Appendix B)
23	Develop Priority Site Inspection Procedures - Develop internal procedures for identifying priority sites for inspections (e.g., near sensitive receiving waters, projects larger than 5 acres).	✓	✓	✓		\$2,000	City of Circle Pines	\$1,000						\$1,000					See SWPPP Application for Reauthorization (Appendix B)
24	City Ordinance Review - The City will complete Ordinance updates for post construction runoff from new development and redevelopment within 12 months of the date permit coverage is extended.	✓	✓			\$1,000	City of Circle Pines	\$500						\$500					See SWPPP Application for Reauthorization (Appendix B)
25	Enforcement Response Procedures (ERP's) - The City will update its Enforcement Response Procedures to meet the requirements of the MS4 permit within 12 months of permit coverage being granted.	✓	✓			\$1,500	City of Circle Pines	\$750						\$750					See SWPPP Application for Reauthorization (Appendix B)
26	Storm Sewer System Map and Inventory - The City will require new developments to provide electronic as-build data in accordance with the GIS Information Requirements located in the City Design Standard. The City's GIS specialist updates and maintains all of the City's GIS information.	✓	✓			\$500	City of Circle Pines, Developer	\$250						\$250					See SWPPP Application for Reauthorization (Appendix B)
27	Storm Sewer Mapping - The City will annually update its storm sewer system map.	✓	✓	✓		\$4,000	City of Circle Pines	\$400	\$400	\$400	\$400	\$400	\$400	\$400	\$400	\$400	\$400	\$400	See SWPPP Application for Reauthorization (Appendix B)

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No.	Project Description	MS4 Permit Requirement	Initial 12 Month Requirement	Annual Requirement	Projects, Programs, & Studies	10 Year Cost Estimate ¹	Possible Funding Sources ²	Proposed Cost By Year ^{1,2}							Comments		
								2018	2019	2020	2021	2022	2023	2024		2025	2026
28	Street Sweeping - The City will begin to conduct street sweeping operations of all public streets twice annually. (record the sweeping route and date per occurrence). Review and revise (as needed) street sweeping operations (including schedule, equipment, and disposal), stormwater quality priority areas, and routes annually through the end of the MS4 permit cycle (July 31, 2018).	✓		✓		\$150,000	City of Circle Pines	\$15,000	\$15,000	\$15,000	\$15,000	\$15,000	\$15,000	\$15,000	\$15,000	\$15,000	See SWPPP Application for Reauthorization (Appendix B)
29	Structural Stormwater BMP Inspections - Continue to inspect 100% of all SPCD's each year of the MS4 permit cycle (July 31, 2018)	✓	✓	✓		\$5,000	City of Circle Pines	\$500	\$500	\$500	\$500	\$500	\$500	\$500	\$500	\$500	See SWPPP Application for Reauthorization (Appendix B)
30	Inspect MS4 Outfalls and Ponds - Continue to inspect 20% of all MS4 outfalls each year, until 100% of all MS4 Outfalls and Ponds have been inspected within the MS4 permit cycle (until July 31, 2018)	✓				\$3,600	City of Circle Pines	\$1,800				\$1,800					See SWPPP Application for Reauthorization (Appendix B)
31	Review Inspection Reports - Annually, review all pond, outfall, and SPCD inspection records to determine if maintenance, repair, or replacement is needed. Include a description of the findings and any maintenance, repair, or replacement as a result of the inspection findings. Evaluate each structural pollution control device (SPCD) inspection frequency and adjust as needed per MS4 Permit Part III.D.6.e(1.). Evaluate and update inspection records annually through the end of the MS4 permit cycle (July 31, 2018)	✓	✓	✓		\$3,000	City of Circle Pines	\$300	\$300	\$300	\$300	\$300	\$300	\$300	\$300	\$300	See SWPPP Application for Reauthorization (Appendix B)
32	Employee Training - Continue to host a minimum of one staff training event per year to discuss stormwater related topics. City staff will develop an annual training schedule, record the employee names, topics covered, and date of each event, annually through the end of the MS4 permit cycle (July 31, 2018).	✓	✓	✓		\$5,000	City of Circle Pines	\$500	\$500	\$500	\$500	\$500	\$500	\$500	\$500	\$500	See SWPPP Application for Reauthorization (Appendix B)
33	Park and Open Space Training Program - Training focused on fertilizer application, pesticide/herbicide application, and mowing discharge.	✓	✓	✓		\$3,000	City of Circle Pines	\$300	\$300	\$300	\$300	\$300	\$300	\$300	\$300	\$300	See SWPPP Application for Reauthorization (Appendix B)
34	Fleet and Building Maintenance Training Program - Training focused on automotive maintenance program (automotive inspections and washing), spill cleanup training, hazardous materials training, building leak prevention and inspection training.	✓	✓	✓		\$3,000	City of Circle Pines	\$300	\$300	\$300	\$300	\$300	\$300	\$300	\$300	\$300	See SWPPP Application for Reauthorization (Appendix B)
35	Stormwater Systems Maintenance Training Program - Training focused on parking lot and street cleaning, storm drain systems cleaning, road salt materials management.	✓	✓	✓		\$3,000	City of Circle Pines	\$300	\$300	\$300	\$300	\$300	\$300	\$300	\$300	\$300	See SWPPP Application for Reauthorization (Appendix B)

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No.	Project Description	MS4 Permit Requirement	Initial 12 Month Requirement	Annual Requirement	Projects, Programs, & Studies	10 Year Cost Estimate ¹	Possible Funding Sources ²	Proposed Cost By Year ^{1,2}							Comments			
								2018	2019	2020	2021	2022	2023	2024		2025	2026	2027
36	<u>Spill Prevention & Control Plans for Municipal Facilities</u> - Ensure that plans describing spill prevention and control procedures are consistent among all departments. Conduct annual spill prevention and response training sessions to all municipal employees. Distribute education materials to each municipal facility by the end of year 2.	✓	✓	✓		\$1,400	City of Circle Pines	\$500	\$100	\$100	\$100	\$100	\$100	\$100	\$100	\$100	\$100	See SWPPP Application for Reauthorization (Appendix B)
37	<u>Facility Inventory</u> - Develop facilities inventory to include potential pollutants at each site. Create a map of all identified facilities.	✓	✓			\$500	City of Circle Pines	\$250					\$250					See SWPPP Application for Reauthorization (Appendix B)
38	<u>Pond Assessment Procedures & Schedule</u> - In year 1, develop procedures for determining TSS and TP treatment effectiveness of city owned ponds use for treatment of stormwater. Implement schedule in year 2-5.	✓	✓			\$2,000	City of Circle Pines	\$2,000										See SWPPP Application for Reauthorization (Appendix B)
39	<u>Recording, Reporting, and Retention of All Inspections and Responses to the Inspections</u> - The City will retain all records of inspection, maintenance, and corrective actions of the City's stormwater system.	✓	✓	✓		\$1,000	City of Circle Pines	\$100	\$100	\$100	\$100	\$100	\$100	\$100	\$100	\$100	\$100	See SWPPP Application for Reauthorization (Appendix B)
40	<u>Evaluation of Inspection Frequency</u> - Evaluate inspection records and determine if inspection frequency needs to increase or decrease	✓	✓	✓		\$1,000	City of Circle Pines	\$100	\$100	\$100	\$100	\$100	\$100	\$100	\$100	\$100	\$100	See SWPPP Application for Reauthorization (Appendix B)
41	<u>Landscaping and Lawn Care Practices Review</u> - The City will continue to annually review its landscaping and lawn care practices and adjust its current methods if necessary.	✓	✓	✓		\$1,000	City of Circle Pines	\$100	\$100	\$100	\$100	\$100	\$100	\$100	\$100	\$100	\$100	See SWPPP Application for Reauthorization (Appendix B)
42	<u>Road Salt Application Review</u> - The City will record the annual activities of the salt distribution program and adjust current practices as necessary.	✓	✓	✓		\$1,000	City of Circle Pines	\$100	\$100	\$100	\$100	\$100	\$100	\$100	\$100	\$100	\$100	See SWPPP Application for Reauthorization (Appendix B)
43	<u>Evaluation of Proposed Stormwater Infiltration Projects for Impacts within Source Water Protection Areas</u> - 1. The City will use the MDH document "Evaluating Proposed Storm Water Infiltration Projects in Vulnerable Wellhead Protection Areas" (Draft-July 19, 2006) and other pertinent information as guidance in evaluating all infiltration projects within or adjacent to vulnerable DWWSMA's. 2. The City will prohibit the construction of the infiltration area or incorporate specific BMPs to reduce pollutants from infiltration within vulnerable DWWSMA's. 3. The City will annually record the evaluation, denial, and implemented BMP's, of all proposed infiltration projects within and/or adjacent to vulnerable DWWSMA's.	✓	✓	✓		\$3,500	City of Circle Pines	\$350	\$350	\$350	\$350	\$350	\$350	\$350	\$350	\$350	\$350	See SWPPP Application for Reauthorization (Appendix B)

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No.	Project Description	MS4 Permit Requirement	Initial 12 Month Requirement	Annual Requirement	Projects, Programs, & Studies	10 Year Cost Estimate ¹	Possible Funding Sources ²	Proposed Cost By Year ^{1,2}							Comments		
								2018	2019	2020	2021	2022	2023	2024		2025	2026
44	Structural Stormwater BMP Maintenance Program - Based on storm sewer inspection findings determine if repair, replacement, or maintenance measures are necessary to ensure structures function properly and treatment is effective. Document annually number of structures repaired or scheduled for maintenance.	✓	✓	✓		\$5,000	City of Circle Pines	\$500	\$500	\$500	\$500	\$500	\$500	\$500	\$500	\$500	See SWPPP Application for Reauthorization (Appendix B)
45	Stockpiles, Storage and Material Handling Area Inspections - Conduct quarterly written inspections of all stockpile, storage and material handling areas (per the 2014 facility inventory), through the end of the MS4 permit cycle (July 31, 2018).	✓	✓	✓		\$5,000	City of Circle Pines	\$500	\$500	\$500	\$500	\$500	\$500	\$500	\$500	\$500	See SWPPP Application for Reauthorization (Appendix B)
46	In-lake Alum Treatment - Conduct Alum Treatment to remove phosphorus from the lake system so that is binds with the phosphorus creating floc. This eliminates the phosphorus from being available for algae growth. Due to the fact that Golden Lake is a shallow lake, it is unclear how long the floc would remain effective before being covered by resuspended lake bottom sediments.				✓	\$75,000	City of Circle Pines, RCWD	\$75,000									See Golden Lake TMDL (Appendix E) Highest Priority
47	Lake Level Drawdown in Winter - Lake draw down to four to six feet in the winter to reduce the growth of rooted aquatic plants, enhance the consolidation of lake bottom sediments, and expanding the oxidation of organic bottom sediments in shallow areas.				✓	\$75,000	RCWD, Metropolitan Council	\$75,000									See Golden Lake TMDL (Appendix E) Highest Priority
48	Iron Sand Filter - Installation of an iron sand filter will be completed to remove phosphorus from Golden Lake.				✓	\$200,000	City of Circle Pines, RCWD	\$200,000									See Golden Lake TMDL (Appendix E) Highest Priority
49	Upstream Alum Treatment - Conduct Alum Treatment to remove phosphorus from the upstream water system so that it binds with the phosphorus creating floc. This eliminates the phosphorus from being available for algae growth.				✓	\$2,000,000	City of Circle Pines, RCWD					\$400,000	\$400,000	\$400,000	\$400,000	\$400,000	See Golden Lake TMDL (Appendix E)
50	Scraping Littoral Sediments during Lake Drawdown - During lake draw down this activity would reduce the presence of aquatic seed beds, remove organic sediments, and slightly deepen the littoral areas of the lake.				✓	\$900,000	City of Circle Pines, RCWD				\$900,000						See Golden Lake TMDL (Appendix E)

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No.	Project Description	MS4 Permit Requirement	Initial 12 Month Requirement	Annual Requirement	Projects, Programs, & Studies	10 Year Cost Estimate ¹	Possible Funding Sources ²	Proposed Cost By Year ^{1,2}							Comments		
								2018	2019	2020	2021	2022	2023	2024		2025	2026
51	<u>Diversion/Retention of Flows</u> - alteration of water quantity flow and direction in an effort to improve overall water quality within Golden Lake.				✓	\$350,000	City of Circle Pines, RCWD						\$350,000				See Golden Lake TMDL (Appendix E)
52	<u>Expand and Enhance Aeration System</u> - improvements made to aeration system to enhance the aeration systems capabilities for having a positive effect on Golden Lakes water quality.				✓	\$200,000	City of Circle Pines, RCWD			\$200,000							See Golden Lake TMDL (Appendix E)
53	<u>LGU WCA Implementation</u> - The City will enforce the requirement that new development use water resource BMPs to improve water quality and control runoff volume.				✓	\$25,000	City of Circle Pines, RCWD	\$2,500	\$2,500	\$2,500	\$2,500	\$2,500	\$2,500	\$2,500	\$2,500	\$2,500	See Golden Lake TMDL (Appendix E)
54	<u>Shoreline Buffers</u> - Vegetative buffers of native vegetation around the perimeter of Golden Lake would help remove pollutants in runoff from the drainage area before they reach the lake. Native vegetation also discourages geese.				✓	\$100,000	City of Circle Pines, RCWD			\$100,000							See Golden Lake TMDL (Appendix E)
55	<u>Weed Harvesting and Herbicide treatment of Curly-leaf Pondweed</u> - Utilization of an aquatic weed harvesting program to manage the rooted aquatic macrophyte infestation problem present in Golden Lake.				✓	\$50,000	City of Circle Pines, RCWD	\$5,000	\$5,000	\$5,000	\$5,000	\$5,000	\$5,000	\$5,000	\$5,000	\$5,000	See Golden Lake TMDL (Appendix E)
56	<u>Upstream Ferric Chloride Treatment</u> - Utilization of a ferric chloride treatment program to enhance sedimentation and reduce the amount of phosphorus within Golden Lake.				✓	\$1,200,000	RCWD, Metropolitan Council					\$400,000		\$400,000		\$400,000	See Golden Lake TMDL (Appendix E)
57	<u>Sediment Delta Removal</u> - Dredging the sediment delta that has been accumulating over the years at the inlet of Golden Lake.				✓	\$300,000	City of Circle Pines, RCWD				\$300,000						See Golden Lake TMDL (Appendix E)
58	<u>Water Level Fluctuation</u> - alteration in water level as a means of reducing the growth of rooted aquatic plants and consolidation of lake bottom sediments.				✓	\$300,000	City of Circle Pines, RCWD					\$100,000		\$100,000		\$100,000	See Golden Lake TMDL (Appendix E)
59	<u>Fish Stocking</u> - method to alter the status of the golden lake fishery in an effort to improve overall water quality.				✓	\$50,000	MNDNR, RCWD				\$25,000					\$25,000	See Golden Lake TMDL (Appendix E)
60	<u>Rotenone</u> - Treatment applied to the lake in an attempt to alter the status of the water quality within golden lake that will manipulate the status of the lakes fishery in an effort to improve overall water quality.				✓	\$50,000	MNDNR, RCWD			\$50,000							See Golden Lake TMDL (Appendix E)
61	<u>Reverse Aeration</u> - Reduction in dissolved oxygen levels within the lake in an attempt to induce winterkill of undesirable fish.				✓	\$50,000	MNDNR, RCWD				\$50,000						See Golden Lake TMDL (Appendix E)
62	<u>Rough Fish Exclusion</u> - Removal of fish species designated by the MnDNR as undesirable or "rough fish".				✓	\$100,000	City of Circle Pines, MNDNR, RCWD				\$50,000					\$50,000	See Golden Lake TMDL (Appendix E)

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No.	Project Description	MS4 Permit Requirement	Initial 12 Month Requirement	Annual Requirement	Projects, Programs, & Studies	10 Year Cost Estimate ¹	Possible Funding Sources ²	Proposed Cost By Year ^{1,2}							Comments		
								2018	2019	2020	2021	2022	2023	2024		2025	2026
63	P-free Fertilizer - Minnesota Statute (Chapter 18c) has been updated to include the Phosphorus Lawn Fertilizer Law (SF 1555). The enforcement of this law is projected to produce a 20% reduction in phosphorus concentrations in residential runoff.				✓	\$25,000	City of Circle Pines, RCWD, MPCA	\$2,500	\$2,500	\$2,500	\$2,500	\$2,500	\$2,500	\$2,500	\$2,500	\$2,500	See Golden Lake TMDL (Appendix E)
64	Support Enhancement of Existing Regulations - The City will enforce existing regulations that improve water quality.				✓	\$25,000	City of Circle Pines, RCWD, MPCA	\$2,500	\$2,500	\$2,500	\$2,500	\$2,500	\$2,500	\$2,500	\$2,500	\$2,500	See Golden Lake TMDL (Appendix E)
65	Upstream Wetland Enhancement - Improvement of Wetland vegetation is an integral part of a waterbodies ecosystem and benefits water quality by filtering out incoming nutrients and stabilizing the shoreline and bottom sediments. This habitat should be protected and enhanced in order to keep its function intact and/or improve it.				✓	\$400,000	City of Circle Pines, City of Blaine, RCWD			\$400,000							See Golden Lake TMDL (Appendix E)
66	Protect and Enhance Fringe Wetland Vegetation - Fringe wetland vegetation is an integral part of a shallow lake's ecosystem and benefits water quality by filtering out incoming nutrients and stabilizing the shoreline and bottom sediments. This habitat should be protected and enhanced in order to keep its function intact and/or improve it.				✓	\$100,000	City of Circle Pines, RCWD			\$100,000							See Golden Lake TMDL (Appendix E)
67	Solarbee - an experimental alternative that may be pursued in an effort to remove phosphorus from Golden Lake.				✓	\$100,000	Unknown					\$100,000					See Golden Lake TMDL (Appendix E)
68	Barley Straw - an experimental alternative that may be pursued in an effort to remove phosphorus from Golden Lake.				✓	\$75,000	Unknown					\$15,000	\$15,000	\$15,000	\$15,000	\$15,000	See Golden Lake TMDL (Appendix E)
69	Curb-Cut Rain Garden Network; Project ID # 4/5 within the Golden Lake Stormwater Retrofit Assessment.				✓	\$50,040	City of Circle Pines, RCWD, Anoka County SWCD				\$50,040						See Golden Lake Stormwater Retrofit Assessment (Appendix F)
70	New Pond with Expanded Drainage Area and Iron Enhanced Sand Filter; Project ID # 7 within the Golden Lake Stormwater Retrofit Assessment.				✓	\$228,215	City of Circle Pines, RCWD, Anoka County SWCD						\$228,215				See Golden Lake Stormwater Retrofit Assessment (Appendix F), Upper Mississippi River TMDL Section 9.1.3
71	New Pond with Expanded Drainage Area; Project ID # 8 within the Golden Lake Stormwater Retrofit Assessment.				✓	\$176,340	City of Circle Pines, RCWD, Anoka County SWCD							\$176,340			See Golden Lake Stormwater Retrofit Assessment (Appendix F), Upper Mississippi River TMDL Section 9.1.3

SECTION VI

No.	Project Description	MS4 Permit Requirement	Initial 12 Month Requirement	Annual Requirement	Projects, Programs, & Studies	10 Year Cost Estimate ¹	Possible Funding Sources ²	Proposed Cost By Year ^{1,2}					Comments					
								2018	2019	2020	2021	2022		2023	2024	2025	2026	2027
72	New Pond, Project ID # 9 within the Golden Lake Stormwater Retrofit Assessment.				✓	\$151,190	City of Circle Pines, RCWD, Anoka County SWCD							\$151,190		See Golden Lake Stormwater Retrofit Assessment (Appendix F), Upper Mississippi River TMDL Section 9.1.3		
73	Golden Lake Permeable Asphalt and Golden Lark Park Rain Garden, Project ID # 10/11 within the Golden Lake Stormwater Retrofit Assessment.				✓	\$152,974	City of Circle Pines, RCWD, Anoka County SWCD								\$152,974	See Golden Lake Stormwater Retrofit Assessment (Appendix F)		
	MS4 SWPPP TOTALS					\$359,000	City of Circle Pines, Developers	\$51,450	\$32,950	\$33,250	\$32,950	\$33,250	\$42,750	\$33,250	\$32,950	\$33,250	See SWPPP Application for Reauthorization (Appendix B)	
	TMDL TOTAL (Predominantly funded through grant programs)					\$6,750,000	City of Circle Pines, Anoka County SWCD, City of Blaine, RCWD	\$362,500	\$12,500	\$712,500	\$1,062,500	\$487,540	\$927,500	\$1,105,715	\$1,103,840	\$578,690	\$1,155,474	See Golden Lake TMDL (Appendix E) and See Golden Lake Stormwater Retrofit Assessment (Appendix F)
	Grand Total					\$7,867,759		\$413,950	\$45,450	\$745,750	\$1,095,450	\$520,790	\$970,250	\$1,138,965	\$1,136,790	\$611,940	\$1,188,424	

¹ Cost estimates are preliminary and subject to review and revision as engineer's reports are completed and more information becomes available. Table reflects 2014 costs and do not account for inflation. Costs generally include labor, equipment, materials, and all other costs necessary to complete each activity. For City completed activities, staff time is included in the cost. Some of the costs outlined above may be included in other operational costs budgeted by the City.

² 10 Year cost projections are based upon 2 MS4 Permit Cycles with year 1 program updates occurring again in 2019

³ Funding for stormwater program activities projected to come from following sources - Surface Water Management Fund, Developers Agreements, Grant Funds, General Operating Fund, or Special Assessments

APPENDIX A

Figures

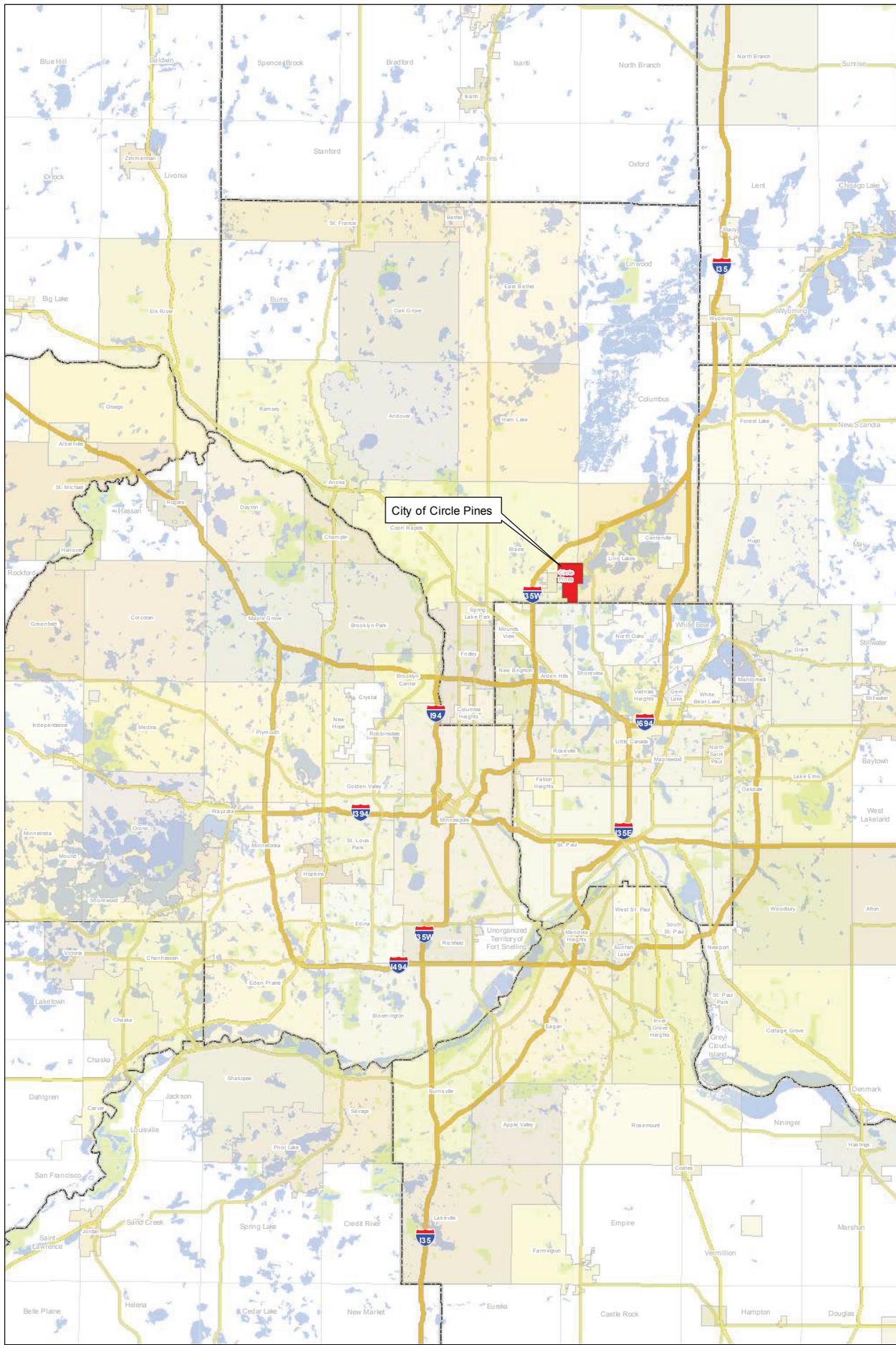
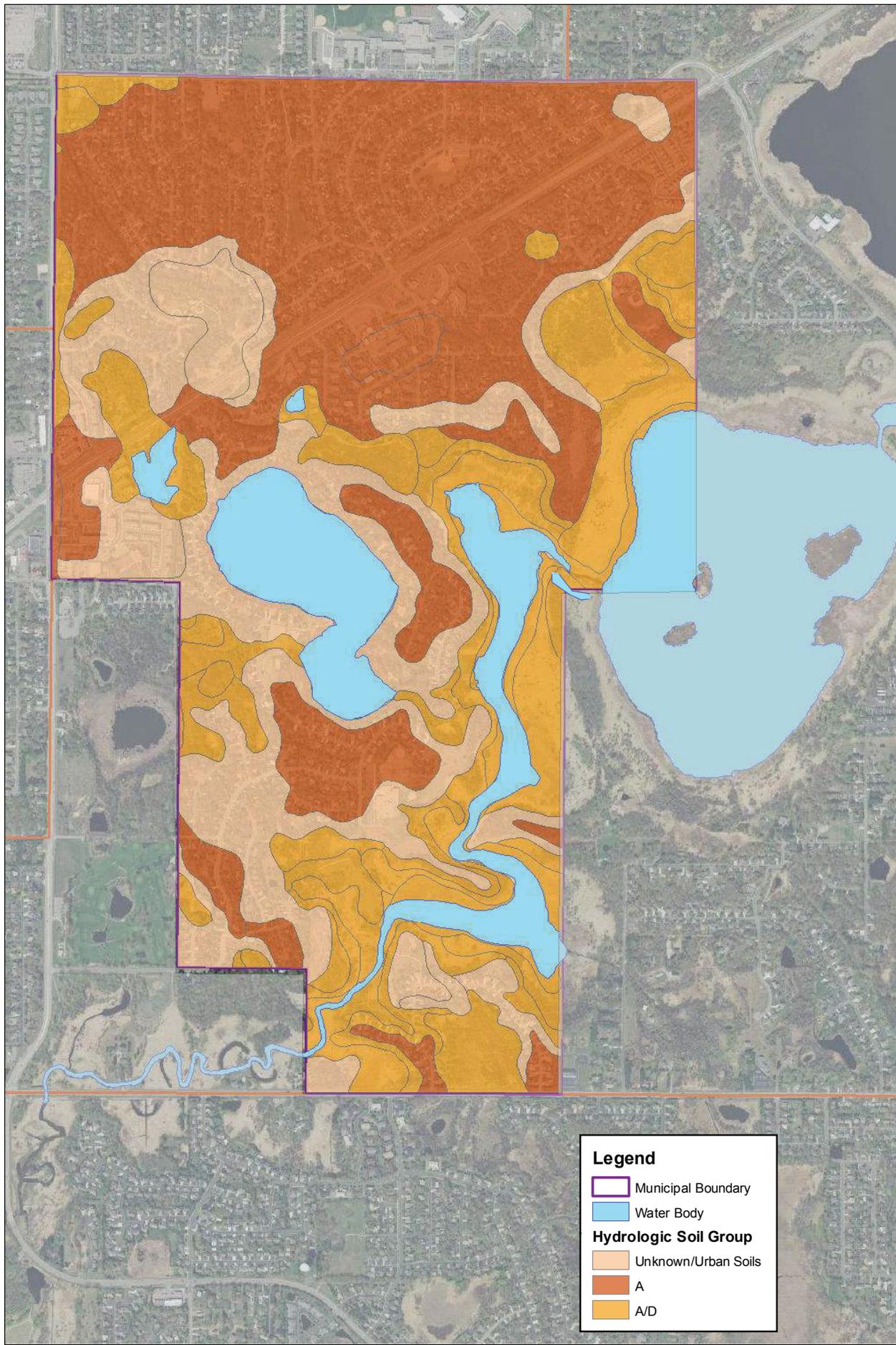


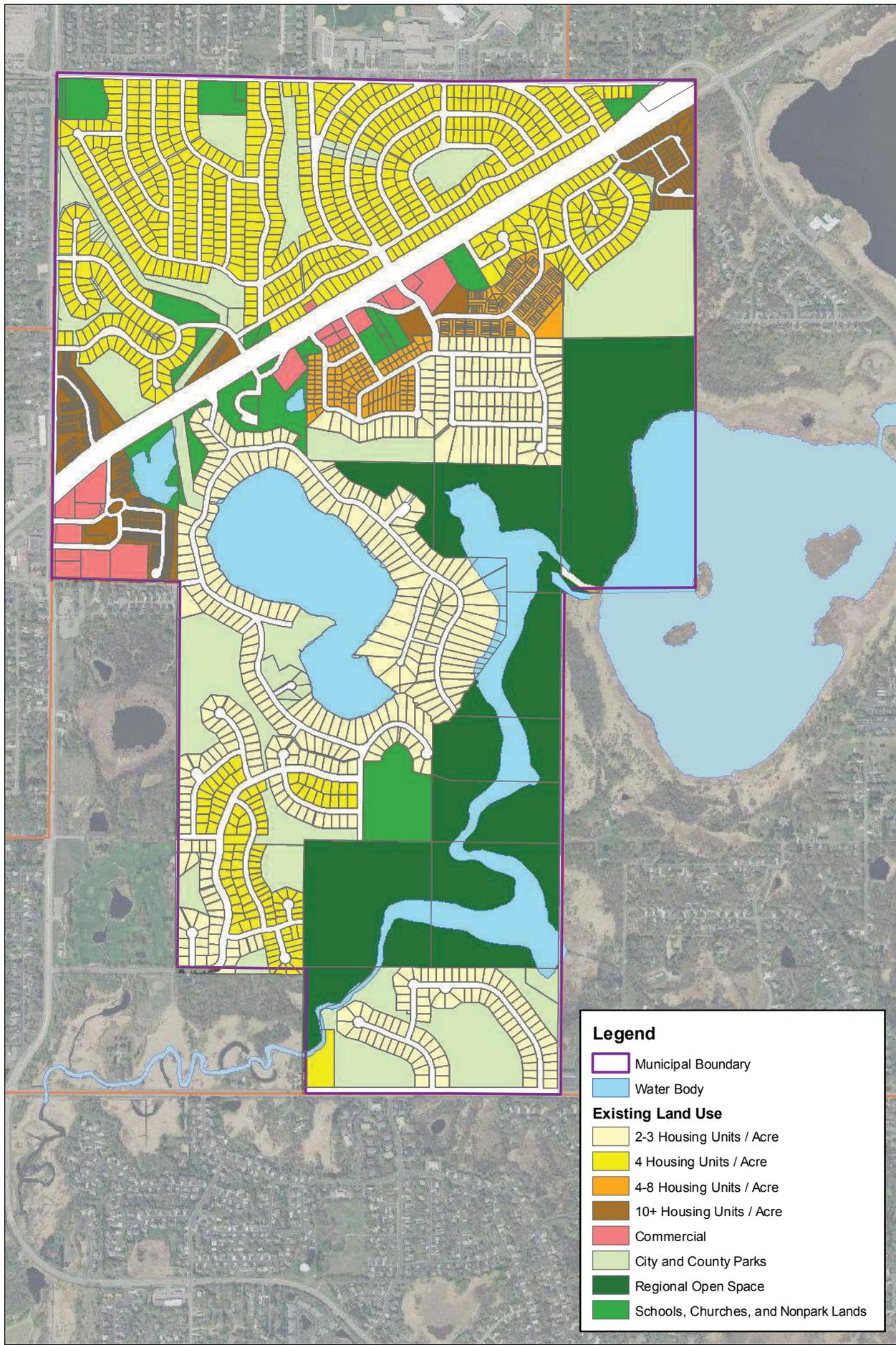
FIGURE 1: Location Map

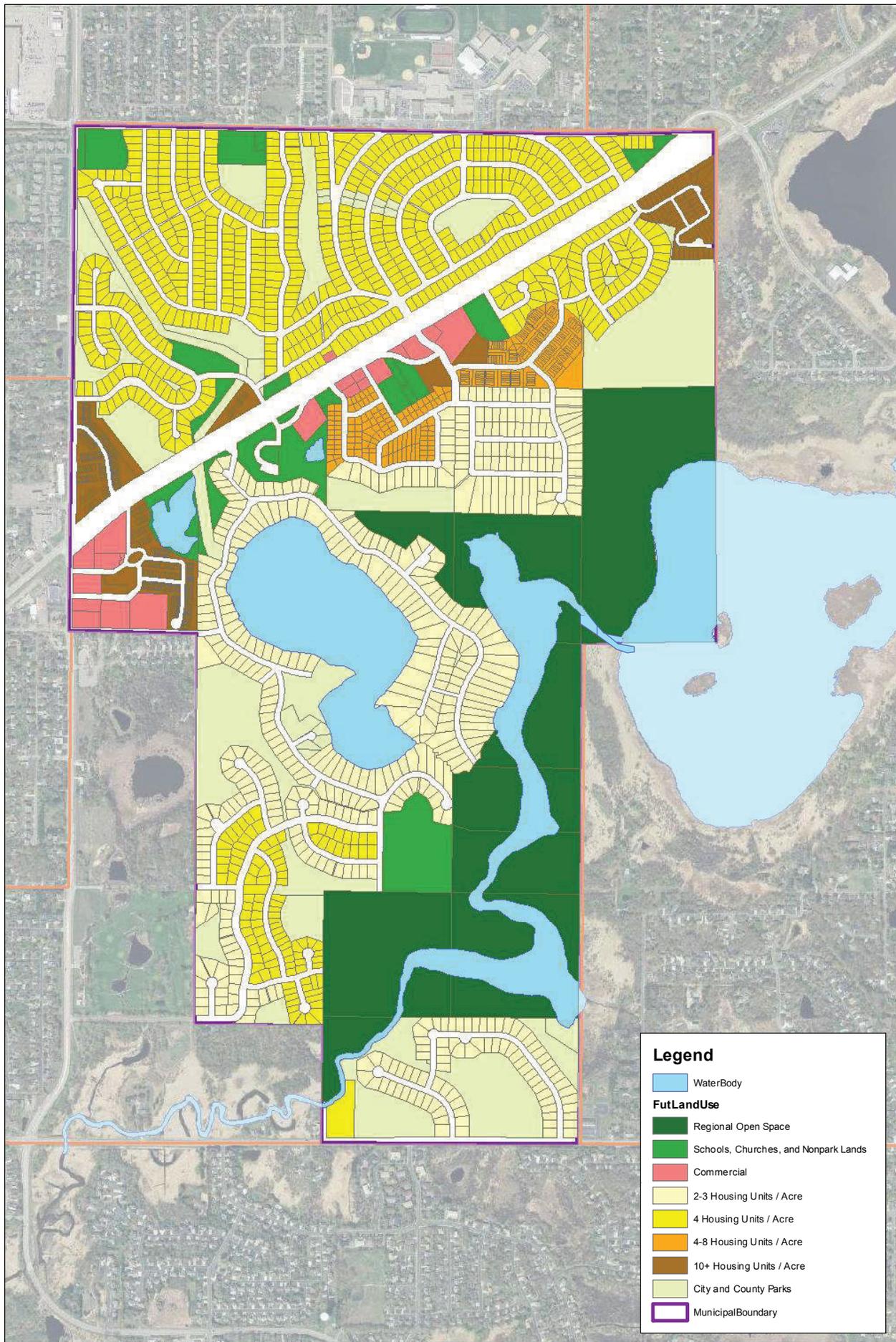
Local Surface Water Management Plan

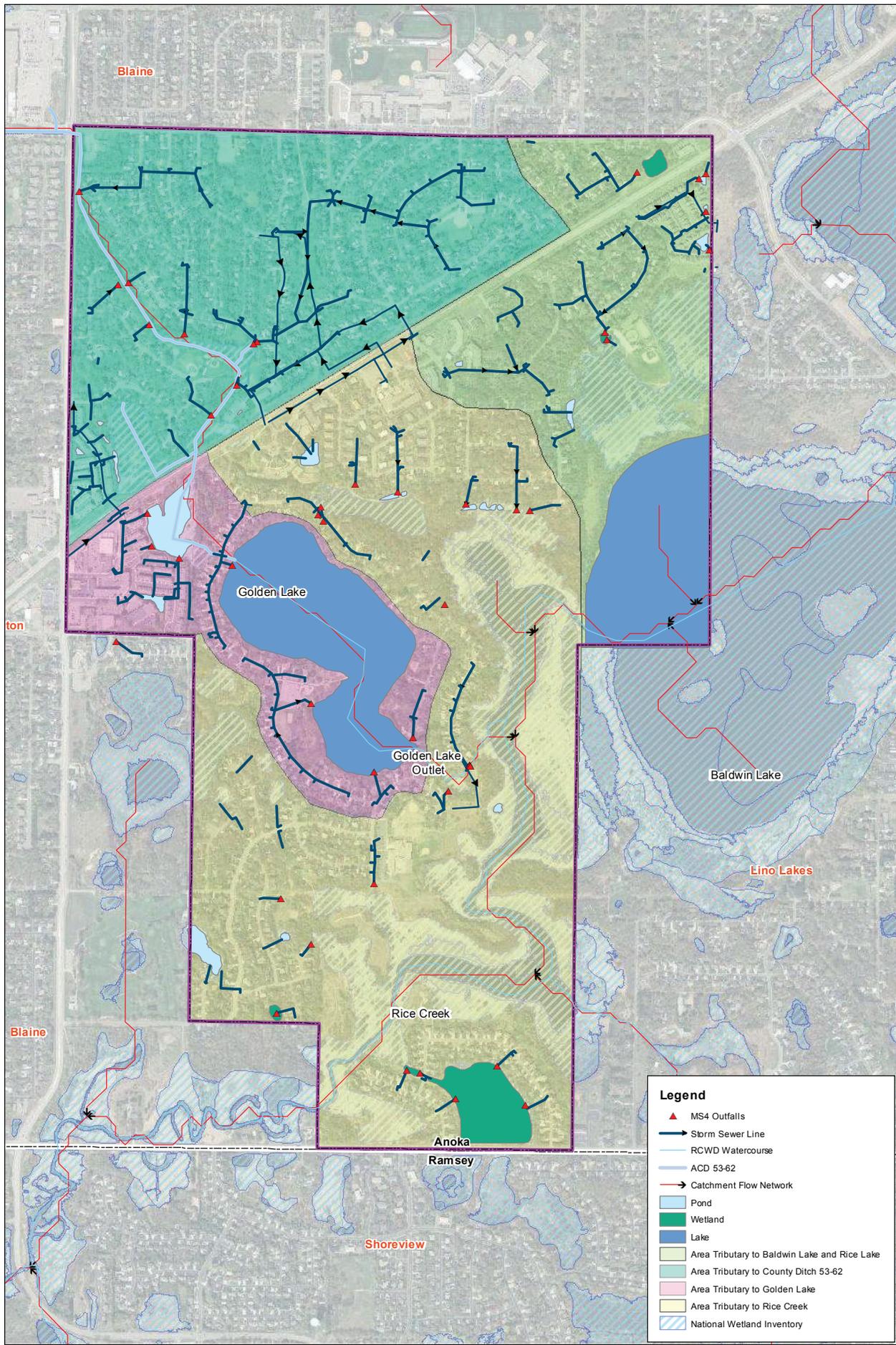


October 2017









Legend

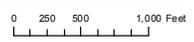
- ▲ MS4 Outfalls
- Storm Sewer Line
- RCWD Watercourse
- ACD 53-62
- Catchment Flow Network
- Pond
- Wetland
- Lake
- Area Tributary to Baldwin Lake and Rice Lake
- Area Tributary to County Ditch 53-62
- Area Tributary to Golden Lake
- Area Tributary to Rice Creek
- ▨ National Wetland Inventory

FIGURE 5: Stormwater System

Local Surface Water Management Plan

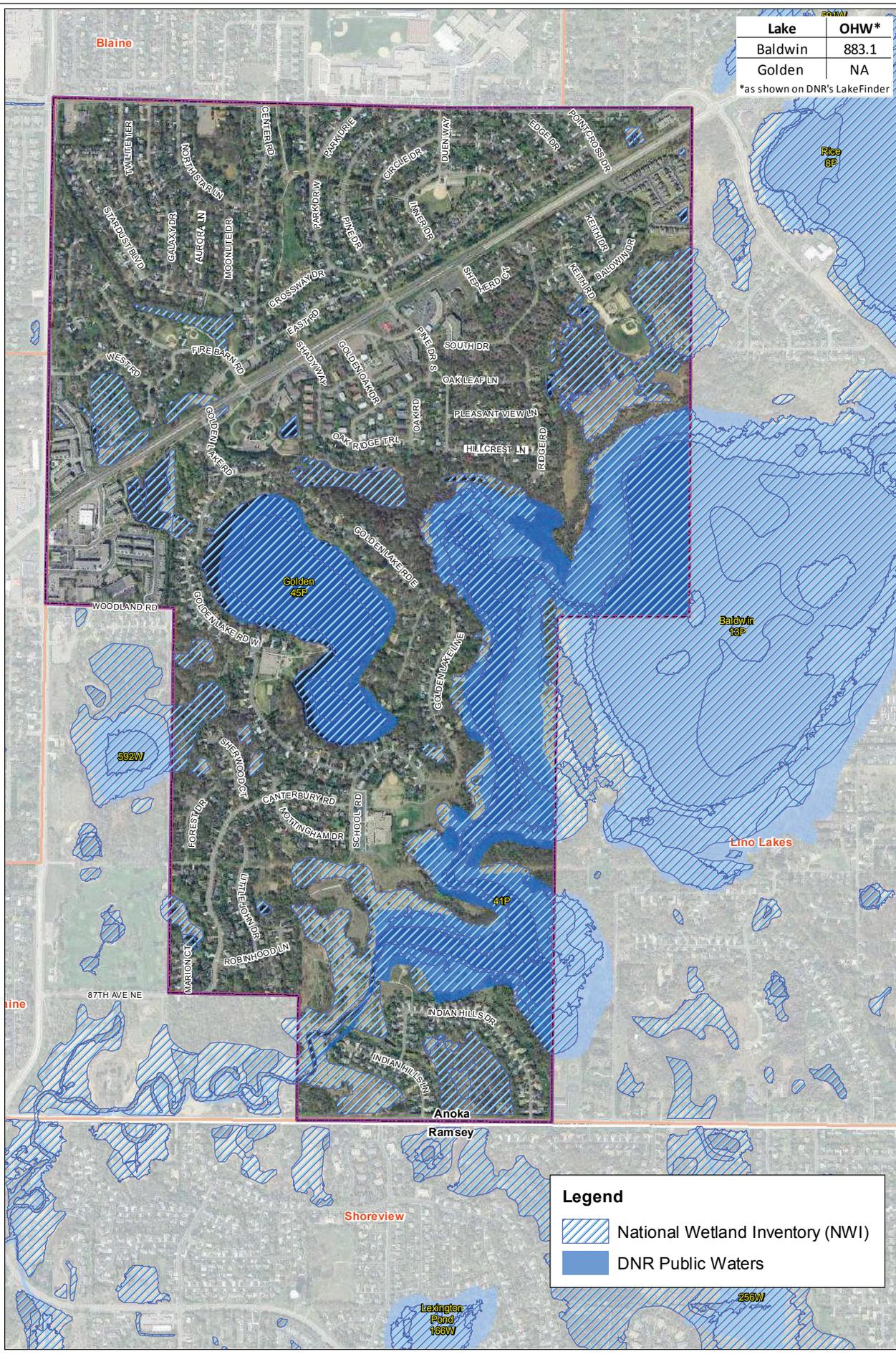
Source: City of Circle Pines Stormsewer Database

October 2017



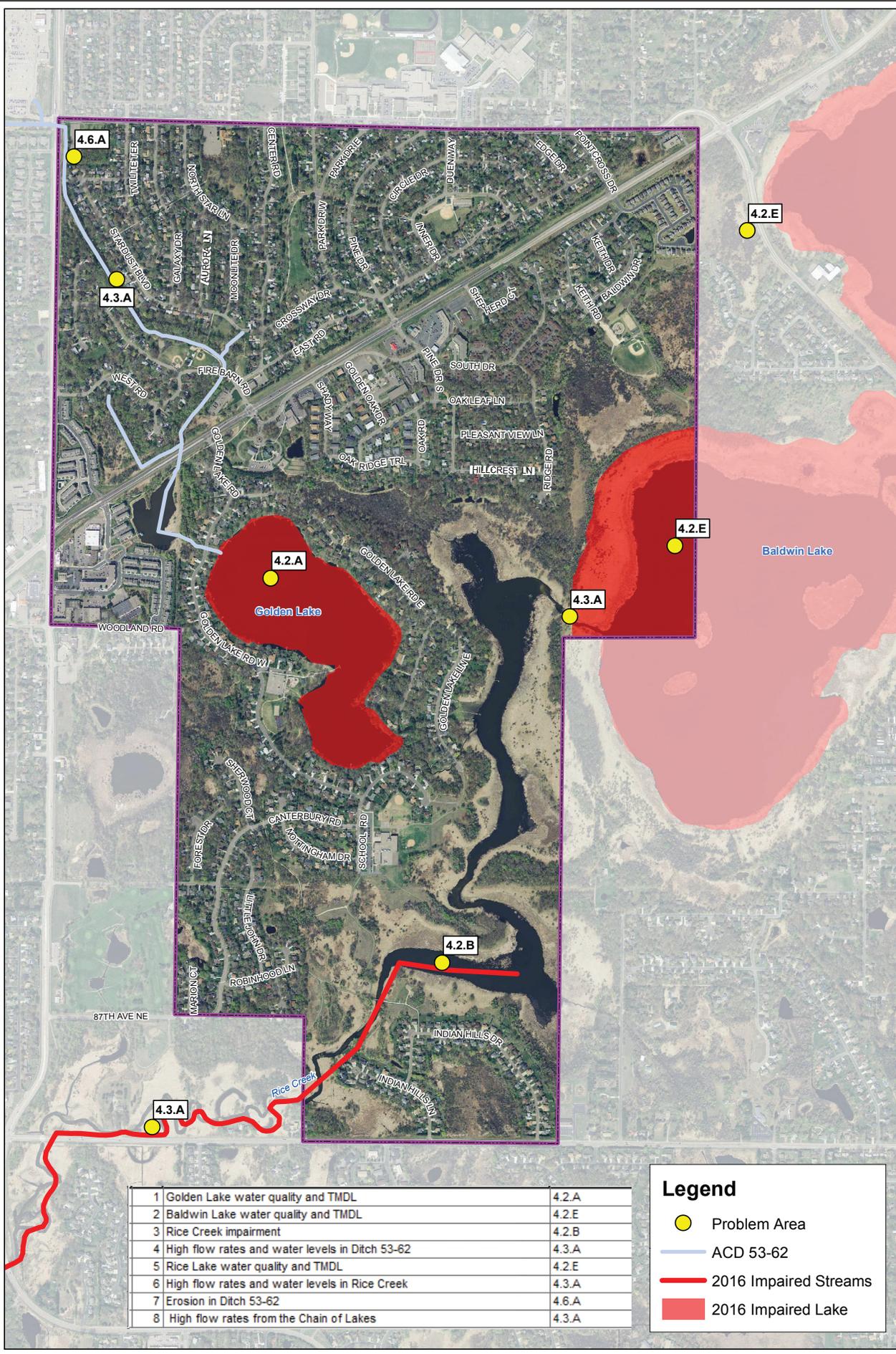
Lake	OHW*
Baldwin	883.1
Golden	NA

*as shown on DNR's LakeFinder



Legend

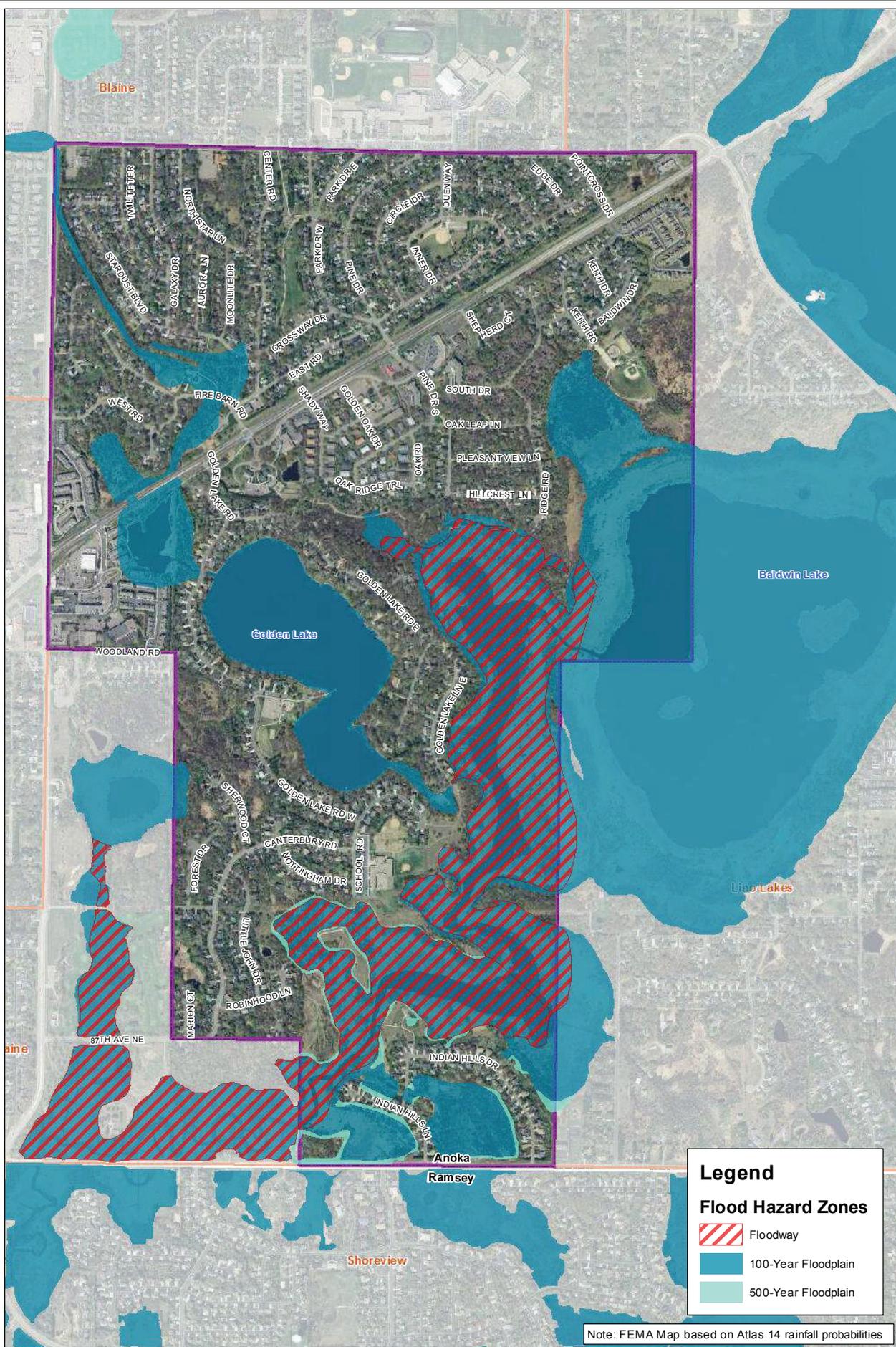
- National Wetland Inventory (NWI)
- DNR Public Waters

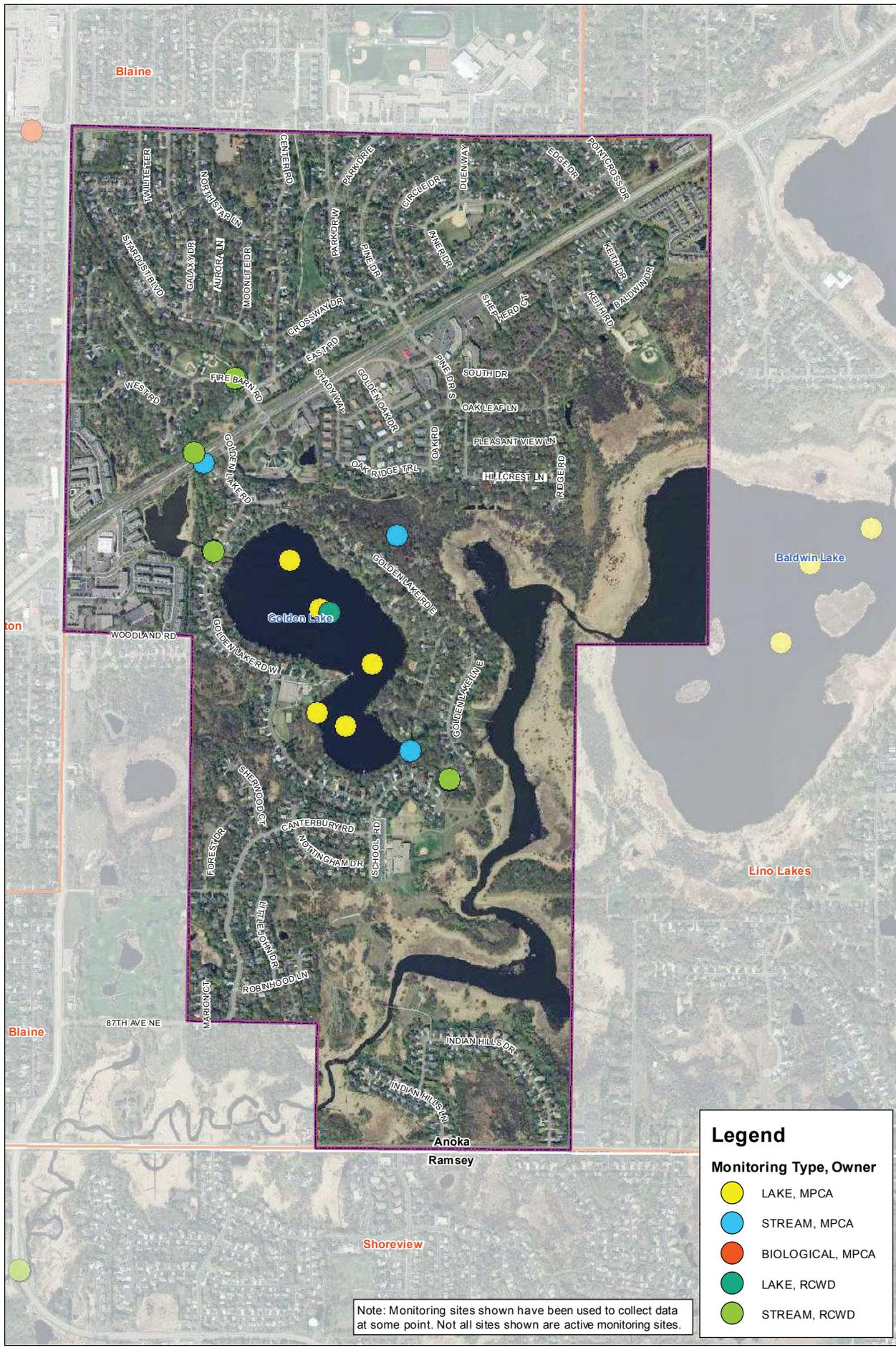


1	Golden Lake water quality and TMDL	4.2.A
2	Baldwin Lake water quality and TMDL	4.2.E
3	Rice Creek impairment	4.2.B
4	High flow rates and water levels in Ditch 53-62	4.3.A
5	Rice Lake water quality and TMDL	4.2.E
6	High flow rates and water levels in Rice Creek	4.3.A
7	Erosion in Ditch 53-62	4.6.A
8	High flow rates from the Chain of Lakes	4.3.A

Legend

- Problem Area
- ACD 53-62
- 2016 Impaired Streams
- 2016 Impaired Lake





Note: Monitoring sites shown have been used to collect data at some point. Not all sites shown are active monitoring sites.

Legend

Monitoring Type, Owner

- LAKE, MPCA
- STREAM, MPCA
- BIOLOGICAL, MPCA
- LAKE, RCWD
- STREAM, RCWD

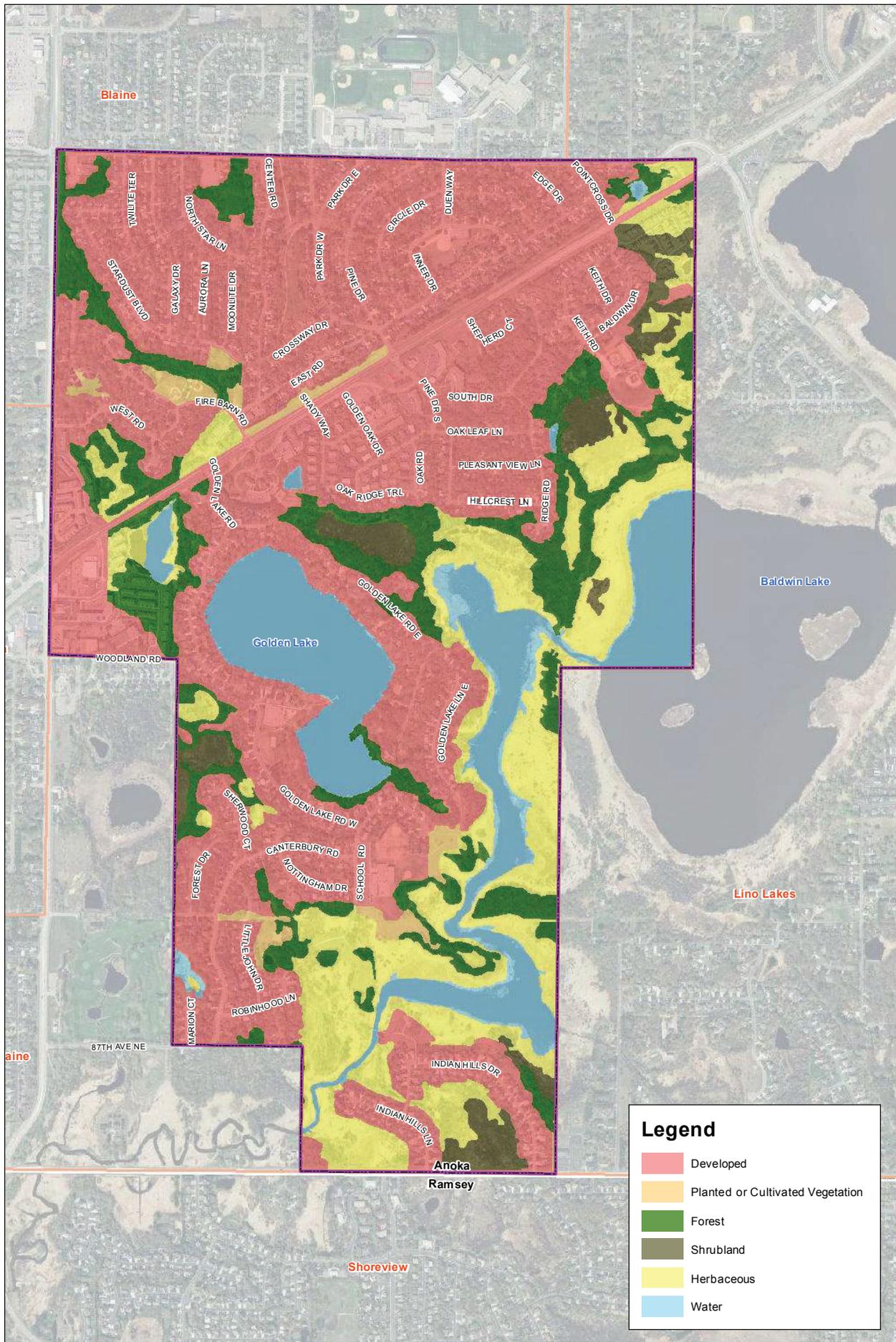
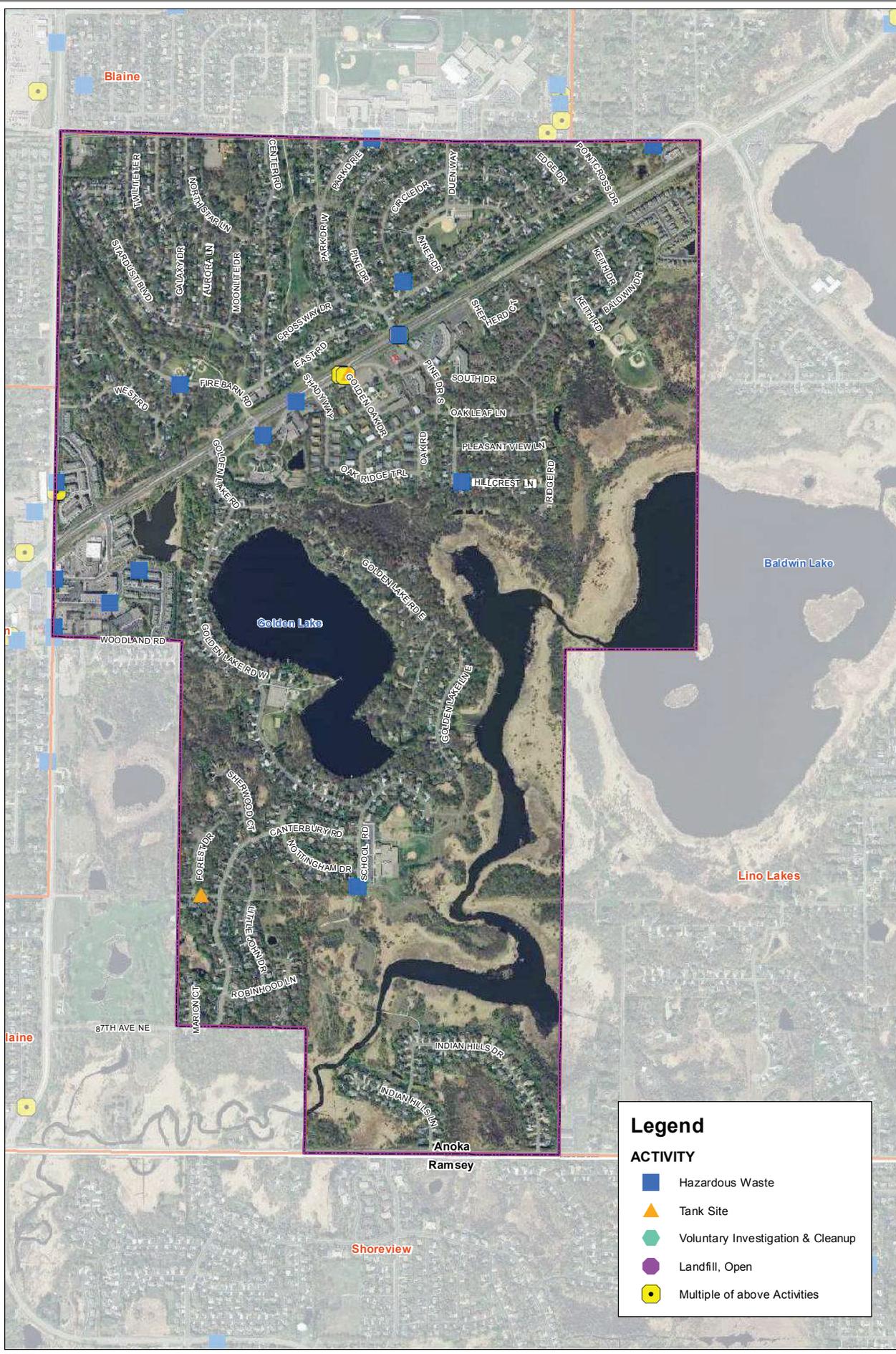


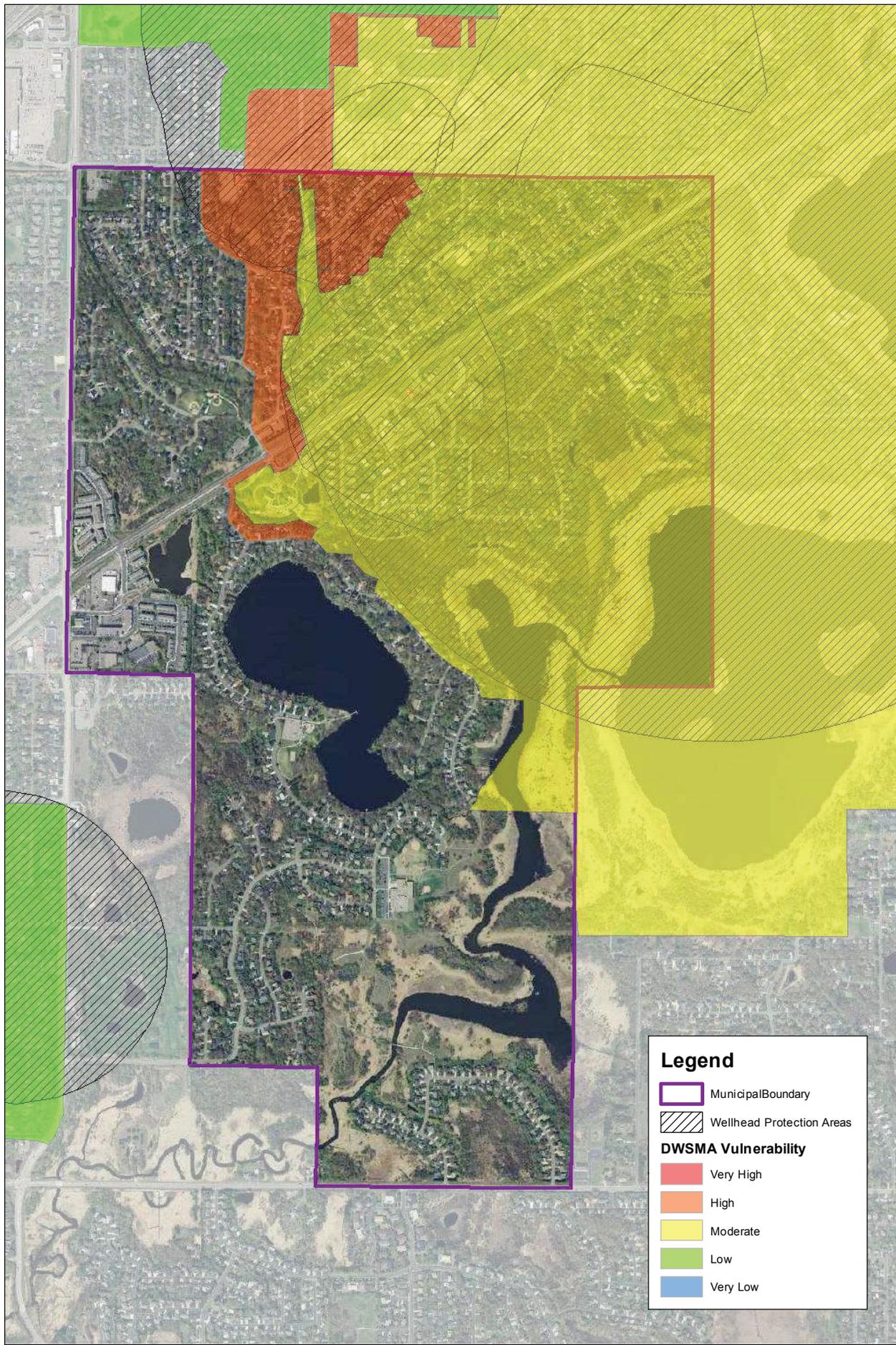
FIGURE 10: Minnesota Land Cover Classification System (MLCCS)



Legend

ACTIVITY

- Hazardous Waste
- ▲ Tank Site
- ⬡ Voluntary Investigation & Cleanup
- Landfill, Open
- Multiple of above Activities



Legend

- Municipal Boundary
- Wellhead Protection Areas
- DWSMA Vulnerability**
- Very High
- High
- Moderate
- Low
- Very Low

APPENDIX B

MS4 SWPPP Application for Reauthorization



Minnesota Pollution Control Agency

520 Lafayette Road North
St. Paul, MN 55155-4194

MS4 SWPPP Application for Reauthorization

for the NPDES/SDS General Small Municipal Separate Storm Sewer System (MS4) Permit MNR040000 reissued with an effective date of August 1, 2013
Stormwater Pollution Prevention Program (SWPPP) Document

Doc Type: Permit Application

Instructions: This application is for authorization to discharge stormwater associated with Municipal Separate Storm Sewer Systems (MS4s) under the National Pollutant Discharge Elimination System/State Disposal System (NPDES/SDS) Permit Program. **No fee** is required with the submittal of this application. Please refer to "Example" for detailed instructions found on the Minnesota Pollution Control Agency (MPCA) MS4 website at <http://www.pca.state.mn.us/ms4>.

Submittal: This MS4 SWPPP Application for Reauthorization form must be submitted electronically via e-mail to the MPCA at ms4permitprogram.pca@state.mn.us from the person that is duly authorized to certify this form. All questions with an asterisk (*) are required fields. All applications will be returned if required fields are not completed.

Questions: Contact Claudia Hochstein at 651-757-2881 or claudia.hochstein@state.mn.us, Dan Miller at 651-757-2246 or daniel.miller@state.mn.us, or call toll-free at 800-657-3864.

General Contact Information (*Required fields)

MS4 Owner (with ownership or operational responsibility, or control of the MS4)

*MS4 permittee name: City of Circle Pines *County: Anoka
(city, county, municipality, government agency or other entity)
*Mailing address: 200 Civic Heights Circle
*City: Circle Pines *State: MN *Zip code: 55014
*Phone (including area code): 763-784-5898 *E-mail: cpeterson@ci.circle-pines.mn.us

MS4 General contact (with Stormwater Pollution Prevention Program [SWPPP] implementation responsibility)

*Last name: Peterson *First name: Chandra
(department head, MS4 coordinator, consultant, etc.)
*Title: Asst. City Administrator
*Mailing address: 200 Civic Heights Circle
*City: Circle Pines *State: MN *Zip code: 55014
*Phone (including area code): 763-784-5898 *E-mail: cpeterson@ci.circle-pines.mn.us

Preparer information (complete if SWPPP application is prepared by a party other than MS4 General contact)

Last name: Peters First name: Jeff
(department head, MS4 coordinator, consultant, etc.)
Title: WSB & Associates
Mailing address: 701 Xenia Ave South Suite 300
City: Minneapolis State: MN Zip code: 55416
Phone (including area code): (763) 287-7150 E-mail: jpeters@wsbeng.com

Verification

- I seek to continue discharging stormwater associated with a small MS4 after the effective date of this Permit, and shall submit this MS4 SWPPP Application for Reauthorization form, in accordance with the schedule in Appendix A, Table 1, with the SWPPP document completed in accordance with the Permit (Part II.D.). Yes
- I have read and understand the NPDES/SDS MS4 General Permit and certify that we intend to comply with all requirements of the Permit. Yes

Certification (All fields are required)

- Yes - I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted.

I certify that based on my inquiry of the person, or persons, who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete.

I am aware that there are significant penalties for submitting false information, including the possibility of civil and criminal penalties.

This certification is required by Minn. Stat. §§ 7001.0070 and 7001.0540. The authorized person with overall, MS4 legal responsibility must certify the application (principal executive officer or a ranking elected official).

By typing my name in the following box, I certify the above statements to be true and correct, to the best of my knowledge, and that this information can be used for the purpose of processing my application.

Name: Chandra Peterson

(This document has been electronically signed)

Title: Asst. City Administrator Date (mm/dd/yyyy): 12/31/2013

Mailing address: 200 Civic Heights Circle

City: Circle Pines State: MN Zip code: 55014

Phone (including area code): 763-784-5898 E-mail: cpeterson@ci.circle-pines.mn.us

Note: The application will not be processed without certification.

Stormwater Pollution Prevention Program Document

I. Partnerships: (Part II.D.1)

- A. List the **regulated small MS4(s)** with which you have established a partnership in order to satisfy one or more requirements of this Permit. Indicate which Minimum Control Measure (MCM) requirements or other program components that each partnership helps to accomplish (List all that apply). Check the box below if you currently have no established partnerships with other regulated MS4s. If you have more than five partnerships, hit the tab key after the last line to generate a new row.

No partnerships with regulated small MS4s

Name and description of partnership	MCM/Other permit requirements involved
.	

- B. If you have additional information that you would like to communicate about your partnerships with other regulated small MS4(s), provide it in the space below, or include an attachment to the SWPPP Document, with the following file naming convention: *MS4NameHere_Partnerships*.

The City doesn't currently have any written agreements with other MS4s for Partnerships. The City will continue to pursue other ways to incorporate program components with partners.

II. Description of Regulatory Mechanisms: (Part II.D.2)

Illicit discharges

- A. Do you have a regulatory mechanism(s) that effectively prohibits non-stormwater discharges into your small MS4, except those non-stormwater discharges authorized under the Permit (Part III.D.3.b.)? Yes No

1. If **yes**:

- a. Check which *type* of regulatory mechanism(s) your organization has (check all that apply):

- Ordinance Contract language
 Policy/Standards Permits
 Rules
 Other, explain: _____

- b. Provide either a direct link to the mechanism selected above or attach it as an electronic document to this form; or if your regulatory mechanism is either an Ordinance or a Rule, you may provide a citation:

Citation:

City Code: Chapter 13 zoning, Section 1360 - Regulation of Discharge into StormSewer System.

Direct link:

http://www.ci.circle-pines.mn.us/vertical/sites/%7BEF567A3D-21B2-43D8-AD9B-EC198D426DD6%7D/uploads/CHP_13_ZONING.pdf

- Check here if attaching an electronic copy of your regulatory mechanism, with the following file naming convention: *MS4NameHere_IDDEreg*.

2. If **no**:

Describe the tasks and corresponding schedules that will be taken to assure that, within 12 months of the date permit coverage is extended, this permit requirement is met:

City Ordinance needs to be reviewed and evaluated. If changes are necessary they will be completed within 12 months of the date permit coverage is extended.

Construction site stormwater runoff control

- A. Do you have a regulatory mechanism(s) that establishes requirements for erosion and sediment controls and waste controls? Yes No

1. If **yes**:

- a. Check which *type* of regulatory mechanism(s) your organization has (check all that apply):

- Ordinance Contract language
 Policy/Standards Permits
 Rules
 Other, explain: _____

- b. Provide either a direct link to the mechanism selected above or attach it as an electronic document to this form; or if your regulatory mechanism is either an Ordinance or a Rule, you may provide a citation:

Citation:

City Code: Chapter 13 zoning, Section 1350 - Stormwater Management Ordinance

Direct link:

http://www.ci.circle-pines.mn.us/vertical/sites/%7BEF567A3D-21B2-43D8-AD9B-EC198D426DD6%7D/uploads/CHP_13_ZONING.pdf

- Check here if attaching an electronic copy of your regulatory mechanism, with the following file naming convention: *MS4NameHere_CSWreg.*

- B. Is your regulatory mechanism at least as stringent as the MPCA general permit to Discharge Stormwater Associated with Construction Activity (as of the effective date of the MS4 Permit)? Yes No

If you answered **yes** to the above question, proceed to C.

If you answered **no** to either of the above permit requirements listed in A. or B., describe the tasks and corresponding schedules that will be taken to assure that, within 12 months of the date permit coverage is extended, these permit requirements are met:

The City's construction site stormwater runoff control regulatory mechanism will be updated to be at least as stringent as the MPCA CSW permit. This effort will be completed within 12 months of the date permit coverage is extended.

- C. Answer **yes** or **no** to indicate whether your regulatory mechanism(s) requires owners and operators of construction activity to develop site plans that incorporate the following erosion and sediment controls and waste controls as described in the Permit (Part III.D.4.a.(1)-(8)), and as listed below:

- | | | |
|--|---|-----------------------------|
| 1. Best Management Practices (BMPs) to minimize erosion. | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No |
| 2. BMPs to minimize the discharge of sediment and other pollutants. | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No |
| 3. BMPs for dewatering activities. | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No |
| 4. Site inspections and records of rainfall events | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No |
| 5. BMP maintenance | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No |
| 6. Management of solid and hazardous wastes on each project site. | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No |
| 7. Final stabilization upon the completion of construction activity, including the use of perennial vegetative cover on all exposed soils or other equivalent means. | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No |
| 8. Criteria for the use of temporary sediment basins. | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No |

If you answered **no** to any of the above permit requirements, describe the tasks and corresponding schedules that will be taken to assure that, within 12 months of the date permit coverage is extended, these permit requirements are met:

C.1-8 The City's construction site stormwater runoff control regulatory mechanism will be updated to be at least as stringent as the MPCA CSW permit. This effort will be completed within 12 months of the date permit coverage is extended.

Post-construction stormwater management

- A. Do you have a regulatory mechanism(s) to address post-construction stormwater management activities? Yes No

1. If **yes**:

- a. Check which *type* of regulatory mechanism(s) your organization has (check all that apply):

- Ordinance Contract language
 Policy/Standards Permits
 Rules

Other, explain: _____

- b. Provide either a direct link to the mechanism selected above or attach it as an electronic document to this form; or if your regulatory mechanism is either an Ordinance or a Rule, you may provide a citation:

Citation:

City Code: Chapter 13 zoning, Section 1350 - Stormwater Management Ordinance, Subd. 6 Stormwater Management Criteria for Permanent Facilities.

Direct link:

http://www.ci.circle-pines.mn.us/vertical/sites/%7BEF567A3D-21B2-43D8-AD9B-EC198D426DD6%7D/uploads/CHP_13_ZONING.pdf

- Check here if attaching an electronic copy of your regulatory mechanism, with the following file naming convention: *MS4NameHere_PostCSWreg*.

- B. Answer **yes** or **no** below to indicate whether you have a regulatory mechanism(s) in place that meets the following requirements as described in the Permit (Part III.D.5.a.):

1. **Site plan review:** Requirements those owners and/or operators of construction activity submit site plans with post-construction stormwater management BMPs to the permittee for review and approval, prior to start of construction activity. Yes No

2. **Conditions for post construction stormwater management:** Requires the use of any combination of BMPs, with highest preference given to Green Infrastructure techniques and practices (e.g., infiltration, evapotranspiration, reuse/harvesting, conservation design, urban forestry, green roofs, etc.), necessary to meet the following conditions on the site of a construction activity to the Maximum Extent Practicable (MEP):

- a. For new development projects – no net increase from pre-project conditions (on an annual average basis) of: Yes No

- 1) Stormwater discharge volume, unless precluded by the stormwater management limitations in the Permit (Part III.D.5.a(3)(a)).
2) Stormwater discharges of Total Suspended Solids (TSS).
3) Stormwater discharges of Total Phosphorus (TP).

- b. For redevelopment projects – a net reduction from pre-project conditions (on an annual average basis) of: Yes No

- 1) Stormwater discharge volume, unless precluded by the stormwater management limitations in the Permit (Part III.D.5.a(3)(a)).
2) Stormwater discharges of TSS.
3) Stormwater discharges of TP.

3. **Stormwater management limitations and exceptions:**

- a. Limitations

- 1) Prohibit the use of infiltration techniques to achieve the conditions for post-construction stormwater management in the Permit (Part III.D.5.a(2)) when the infiltration structural stormwater BMP will receive discharges from, or be constructed in areas: Yes No

- a) Where industrial facilities are not authorized to infiltrate industrial stormwater under an NPDES/SDS Industrial Stormwater Permit issued by the MPCA.
b) Where vehicle fueling and maintenance occur.
c) With less than three (3) feet of separation distance from the bottom of the infiltration system to the elevation of the seasonally saturated soils or the top of bedrock.
d) Where high levels of contaminants in soil or groundwater will be mobilized by the infiltrating stormwater.

- 2) Restrict the use of infiltration techniques to achieve the conditions for post-construction stormwater management in the Permit (Part III.D.5.a(2)), without higher engineering review, sufficient to provide a functioning treatment system and prevent adverse impacts to groundwater, when the infiltration device will be constructed in areas: Yes No

- a) With predominately Hydrologic Soil Group D (clay) soils.
b) Within 1,000 feet up-gradient, or 100 feet down-gradient of active karst features.
c) Within a Drinking Water Supply Management Area (DWSMA) as defined in Minn. R. 4720.5100, subp. 13.
d) Where soil infiltration rates are more than 8.3 inches per hour.

- 3) For linear projects where the lack of right-of-way precludes the installation of volume control practices that meet the conditions for post-construction stormwater management in the Permit (Part III.D.5.a(2)), the permittee's regulatory mechanism(s) may allow Yes No

exceptions as described in the Permit (Part III.D.5.a(3)(b)). The permittee's regulatory mechanism(s) shall ensure that a reasonable attempt be made to obtain right-of-way during the project planning process.

4. **Mitigation provisions:** The permittee's regulatory mechanism(s) shall ensure that any stormwater discharges of TSS and/or TP not addressed on the site of the original construction activity are addressed through mitigation and, at a minimum, shall ensure the following requirements are met:
- a. Mitigation project areas are selected in the following order of preference: Yes No
 - 1) Locations that yield benefits to the same receiving water that receives runoff from the original construction activity.
 - 2) Locations within the same Minnesota Department of Natural Resource (DNR) catchment area as the original construction activity.
 - 3) Locations in the next adjacent DNR catchment area up-stream
 - 4) Locations anywhere within the permittee's jurisdiction.
 - b. Mitigation projects must involve the creation of new structural stormwater BMPs or the retrofit of existing structural stormwater BMPs, or the use of a properly designed regional structural stormwater BMP. Yes No
 - c. Routine maintenance of structural stormwater BMPs already required by this permit cannot be used to meet mitigation requirements of this part. Yes No
 - d. Mitigation projects shall be completed within 24 months after the start of the original construction activity. Yes No
 - e. The permittee shall determine, and document, who will be responsible for long-term maintenance on all mitigation projects of this part. Yes No
 - f. If the permittee receives payment from the owner and/or operator of a construction activity for mitigation purposes in lieu of the owner or operator of that construction activity meeting the conditions for post-construction stormwater management in Part III.D.5.a(2), the permittee shall apply any such payment received to a public stormwater project, and all projects must be in compliance with Part III.D.5.a(4)(a)-(e). Yes No
5. **Long-term maintenance of structural stormwater BMPs:** The permittee's regulatory mechanism(s) shall provide for the establishment of legal mechanisms between the permittee and owners or operators responsible for the long-term maintenance of structural stormwater BMPs not owned or operated by the permittee, that have been implemented to meet the conditions for post-construction stormwater management in the Permit (Part III.D.5.a(2)). This only includes structural stormwater BMPs constructed after the effective date of this permit and that are directly connected to the permittee's MS4, and that are in the permittee's jurisdiction. The legal mechanism shall include provisions that, at a minimum:
- a. Allow the permittee to conduct inspections of structural stormwater BMPs not owned or operated by the permittee, perform necessary maintenance, and assess costs for those structural stormwater BMPs when the permittee determines that the owner and/or operator of that structural stormwater BMP has not conducted maintenance. Yes No
 - b. Include conditions that are designed to preserve the permittee's right to ensure maintenance responsibility, for structural stormwater BMPs not owned or operated by the permittee, when those responsibilities are legally transferred to another party. Yes No
 - c. Include conditions that are designed to protect/preserve structural stormwater BMPs and site features that are implemented to comply with the Permit (Part III.D.5.a(2)). If site configurations or structural stormwater BMPs change, causing decreased structural stormwater BMP effectiveness, new or improved structural stormwater BMPs must be implemented to ensure the conditions for post-construction stormwater management in the Permit (Part III.D.5.a(2)) continue to be met. Yes No

If you answered **no** to any of the above permit requirements, describe the tasks and corresponding schedules that will be taken to assure that, within twelve (12) months of the date permit coverage is extended, these permit requirements are met:

B.2. The City requires that all of Rice Creek Watershed Districts standards be met. A review of those standards and the cities standards will be completed and changes if changes are needed they will be made to city ordinances within 12 months of permit coverage being granted.

B.3.a.1: The City will amend the ordinance and/or City Design Standards to include prohibiting the use of infiltration techniques for post-construction stormwater management as described in the Permit (Part III.D.5.a(3)(a).1). The ordinance will be amended on the same schedule as the items in B.2.a and B.2.b.

B.3.a.2: The City will amend the ordinance and/or City Design Standards to include restricting the use of infiltration techniques for post-construction stormwater management as described in the Permit (Part III.D.5.a(3)(a).2). This will occur on the same schedule as the items above.

B.3.a.3: The City will amend the ordinance and/or City Design Standards to include the exceptions for linear projects as described in the Permit (Part III.D.5.a(3)(b)). This will occur on the same schedule as the items above.

B.4.a.: The City will amend the ordinance and/or City Design Standards to include order of preference for selecting mitigation project areas as described in the Permit (Part III.D.5.a(4)(a)). This will occur on the same schedule as the items above.

B.4.b.: The City will amend the ordinance and/or City Design Standards to include requirements for the creation of mitigation projects as described in the Permit (Part III.D.5.a(4)(b)). This will occur on the same schedule as the items above.

B.4.c.: The City will amend the ordinance and/or City Design Standards to include the restriction from using routine maintenance of structural BMPs to meet the requirements for mitigation projects as described in the Permit (Part III.D.5.a(4)(c)). This will occur on the same schedule as the items above.

B.4.d.: The City will amend the ordinance and/or City Design Standards to include the requirement to complete mitigation projects within 24 months after the start of the original construction activity as described in the Permit (Part III.D.5.a(4)(d)). This will occur on the same schedule as the items above.

B.4.e.: The City will amend the ordinance and/or City Design Standards to include the requirement to determine, and document, who will be responsible for long-term maintenance on all mitigation projects as described in the Permit (Part III.D.5.a(4)(e)). This will occur on the same schedule as the items above.

B.4.f.: The City will amend the ordinance and/or City Design Standards to mandate that money received from an owner/operator of construction activity, in lieu of meeting the conditions for post-construction stormwater management, shall be used for a public stormwater project as described in the Permit (Part III.D.5.a(4)(f)). This will occur on the same schedule as the items above.

B.5.a.: The City will amend the ordinance and/or City Design Standards to include the requirement to allow the permittee to conduct inspections, perform maintenance, and assess maintenance cost of structural stormwater BMPs not owned or operated by the permittee as described in the Permit (Part III.D.5.a(5)(a)). This will occur on the same schedule as the items above.

B.5.b.: The City will amend the ordinance and/or City Design Standards to include conditions that require maintenance responsibility for structural stormwater BMPs through transfer of ownership as described in the Permit (Part III.D.5.a(5)(b)). This will occur on the same schedule as the items above.

B.5.c.: The City will amend the ordinance and/or City Design Standards to include conditions to address BMP modification in the future as described in the Permit (Part III.D.5.a(5)(c)). This will occur on the same schedule as the items above.

III. Enforcement Response Procedures (ERPs): (Part II.D.3)

A. Do you have existing ERPs that satisfy the requirements of the Permit (Part III.B.)? Yes No

1. If **yes**, attach them to this form as an electronic document, with the following file naming convention: *MS4NameHere_ERPs*.

2. If **no**, describe the tasks and corresponding schedules that will be taken to assure that, with twelve (12) months of the date permit coverage is extended, these permit requirements are met:

Enforcement Response Procedures will be updated to meet the requirements of the MS4 permit within 12 months of permit coverage being granted.

B. Describe your ERPs:

http://www.ci.circle-pines.mn.us/vertical/sites/%7BEF567A3D-21B2-43D8-AD9B-EC198D426DD6%7D/uploads/CHP_13_ZONING.pdf

1350.07 Penalty. Any person, firm or corporation violating any provision of this ordinance shall be fined not less than five dollars nor more than five hundred dollars for each offense, and a separate offense shall be deemed committed on each day during or on which a violation occurs or continues.

IV. Storm Sewer System Map and Inventory: (Part II.D.4.)

A. Describe how you manage your storm sewer system map and inventory:

New developments are required to provide electronic as-build data in accordance with the GIS Information Requirements located in the City Design Standard. The City GIS specialist updates and maintains all of the City's GIS

Information.

B. Answer **yes** or **no** to indicate whether your storm sewer system map addresses the following requirements from the Permit (Part III.C.1.a-d), as listed below:

1. The permittee's entire small MS4 as a goal, but at a minimum, all pipes 12 inches or greater in diameter, including stormwater flow direction in those pipes. Yes No
2. Outfalls, including a unique identification (ID) number assigned by the permittee, and an associated geographic coordinate. Yes No
3. Structural stormwater BMPs that are part of the permittee's small MS4. Yes No
4. All receiving waters. Yes No

If you answered **no** to any of the above permit requirements, describe the tasks and corresponding schedules that will be taken to assure that, within 12 months of the date permit coverage is extended, these permit requirements are met:

C. Answer **yes** or **no** to indicate whether you have completed the requirements of 2009 Minnesota Session Law, Ch. 172. Sec. 28: with the following inventories, according to the specifications of the Permit (Part III.C.2.a.-b.), including:

1. All ponds within the permittee's jurisdiction that are constructed and operated for purposes of water quality treatment, stormwater detention, and flood control, and that are used for the collection of stormwater via constructed conveyances. Yes No
2. All wetlands and lakes, within the permittee's jurisdiction, that collect stormwater via constructed conveyances. Yes No

D. Answer **yes** or **no** to indicate whether you have completed the following information for each feature inventoried.

1. A unique identification (ID) number assigned by the permittee. Yes No
2. A geographic coordinate. Yes No
3. Type of feature (e.g., pond, wetland, or lake). This may be determined by using best professional judgment. Yes No

If you have answered **yes** to all above requirements, and you have already submitted the Pond Inventory Form to the MPCA, then you do not need to resubmit the inventory form below.

If you answered **no** to any of the above permit requirements, describe the tasks and corresponding schedules that will be taken to assure that, within 12 months of the date permit coverage is extended, these permit requirements are met:

E. Answer **yes** or **no** to indicate if you are attaching your pond, wetland and lake inventory to the MPCA on the form provided on the MPCA website at: <http://www.pca.state.mn.us/ms4>, according to the specifications of Permit (Part III.C.2.b.(1)-(3)). Attach with the following file naming convention: *MS4NameHere_inventory*. Yes No

If you answered **no**, the inventory form must be submitted to the MPCA MS4 Permit Program within 12 months of the date permit coverage is extended.

V. Minimum Control Measures (MCMs) (Part II.D.5)

A. MCM1: Public education and outreach

1. The Permit requires that, within 12 months of the date permit coverage is extended, existing permittees revise their education and outreach program that focuses on illicit discharge recognition and reporting, as well as other specifically selected stormwater-related issue(s) of high priority to the permittee during this permit term. Describe your **current** educational program, including **any high-priority topics included**:

The public education program has been developed to distribute educational materials to the community or conduct equivalent outreach activities. The BMPs identified will focus on the impact of storm water discharges on streams, rivers, and wetlands, and the steps that the public can take to reduce pollutants in storm water runoff.

2. List the categories of BMPs that address your public education and outreach program, including the distribution of educational materials and a program implementation plan. Use the first table for categories of BMPs that you have established and the second table for categories of BMPs that you plan to implement over the course of the permit term.

Include the measurable goals with appropriate timeframes that each BMP category will be implemented and completed. In

addition, provide interim milestones and the frequency of action in which the permittee will implement and/or maintain the BMPs. Refer to the U.S. Environmental Protection Agency's (EPA) *Measurable Goals Guidance for Phase II Small MS4s* (<http://www.epa.gov/npdes/pubs/measurablegoals.pdf>).

If you have more than five categories, hit the tab key after the last line to generate a new row.

Established BMP categories	Measurable goals and timeframes
<i>Education Activity Implementation Plan</i>	<i>The City will provide stormwater education and outreach programs for residents within the City. The City will complete and outline of the education program and implementation schedule for the upcoming permit.</i>
<i>City Web Page</i>	<i>The City updates their web page by providing information on high priority storm water pollution prevention topics and effects of illicit discharge to City residents and business owners. The goal will be to add new material as it becomes available and record the number of website hits annually.</i>
<i>City Newsletter</i>	<i>City staff will develop then distribute stormwater related articles in the City newsletter. This goal will be met by distributing a minimum of two storm water related articles in the City newsletter each year.</i>
<i>Coordination of Education Program</i>	<i>The City will collaborate and coordinate the development and implementation of the City's educational activities schedule with the Rice Creek Watershed District.</i>
BMP categories to be implemented	Measurable goals and timeframes

- Provide the name or the position title of the individual(s) who is responsible for implementing and/or coordinating this MCM:

Asst. City Administrator/ Public Works Coordinator

B. MCM2: Public participation and involvement

- The Permit (Part III.D.2.a.) requires that, within 12 months of the date permit coverage is extended, existing permittees shall revise their current program, as necessary, and continue to implement a public participation/involvement program to solicit public input on the SWPPP. Describe your current program:

Under this minimum control measure, the City provides measures to receive public input and opinion on the adequacy of the SWPPP. This input can be received from public meetings, oral testimony, and written correspondence.

- List the categories of BMPs that address your public participation/involvement program, including solicitation and documentation of public input on the SWPPP. Use the first table for categories of BMPs that you have established and the second table for categories of BMPs that you plan to implement over the course of the permit term.

Include the measurable goals with appropriate timeframes that each BMP category will be implemented and completed. In addition, provide interim milestones and the frequency of action in which the permittee will implement and/or maintain the BMPs. Refer to the EPA's *Measurable Goals Guidance for Phase II Small MS4s* (<http://www.epa.gov/npdes/pubs/measurablegoals.pdf>). If you have more than five categories, hit the tab key after the last line to generate a new row.

Established BMP categories	Measurable goals and timeframes
<i>Comply with Public Notice Requirements</i>	<i>Provide public notice of meeting to provide input on the SWPPP in accordance with City public hearing notification requirements.</i>
<i>Annual Meeting</i>	<i>Hold annual public meeting combined with City Council Meeting or other public participation/involvement event to solicit public input on the SWPPP.</i>
<i>Consider Public Input</i>	<i>The City will conduct a public meeting and host a web page on the City's Storm Water Pollution Prevention Program. City staff will respond to all public comments and statements received from the public meeting, and document any proposed changes to the SWPPP for final approval by City Engineer (if applicable). The goal of this BMP will be met by documenting all written and oral input into the record of decision and submitted in conjunction with the annual report to the MPCA.</i>

BMP categories to be implemented	Measurable goals and timeframes
Online Availability of Stormwater Pollution Prevention Program Document	Provide an electronic document of Stormwater Pollution Prevention Program document online, to allow anytime, easier access to these documents.

3. Do you have a process for receiving and documenting citizen input? Yes No

If you answered **no** to the above permit requirement, describe the tasks and corresponding schedules that will be taken to assure that, within 12 months of the date permit coverage is extended, this permit requirement is met:

4. Provide the name or the position title of the individual(s) who is responsible for implementing and/or coordinating this MCM:

Asst. City Administrator / Public Works Coordinator

C. MCM 3: Illicit discharge detection and elimination

1. The Permit (Part III.D.3.) requires that, within 12 months of the date permit coverage is extended, existing permittees revise their current program as necessary, and continue to implement and enforce a program to detect and eliminate illicit discharges into the small MS4. Describe your current program:

The City has an ordinance that prohibits illicit discharges and connections. City Staff and public works employees are trained to look for any signs of an illicit discharge while on the job. ERPs guide what actions the City can take after an illicit discharge has been identified.

2. Does your Illicit Discharge Detection and Elimination Program meet the following requirements, as found in the Permit (Part III.D.3.c.-g.)?

- a. Incorporation of illicit discharge detection into all inspection and maintenance activities conducted under the Permit (Part III.D.6.e.-f.) Where feasible, illicit discharge inspections shall be conducted during dry-weather conditions (e.g., periods of 72 or more hours of no precipitation). Yes No
- b. Detecting and tracking the source of illicit discharges using visual inspections. The permittee may also include use of mobile cameras, collecting and analyzing water samples, and/or other detailed procedures that may be effective investigative tools. Yes No
- c. Training of all field staff, in accordance with the requirements of the Permit (Part III.D.6.g.(2)), in illicit discharge recognition (including conditions which could cause illicit discharges), and reporting illicit discharges for further investigation. Yes No
- d. Identification of priority areas likely to have illicit discharges, including at a minimum, evaluating land use associated with business/industrial activities, areas where illicit discharges have been identified in the past, and areas with storage of large quantities of significant materials that could result in an illicit discharge. Yes No
- e. Procedures for the timely response to known, suspected, and reported illicit discharges. Yes No
- f. Procedures for investigating, locating, and eliminating the source of illicit discharges. Yes No
- g. Procedures for responding to spills, including emergency response procedures to prevent spills from entering the small MS4. The procedures shall also include the immediate notification of the Minnesota Department of Public Safety Duty Officer, if the source of the illicit discharge is a spill or leak as defined in Minn. Stat. § 115.061. Yes No
- h. When the source of the illicit discharge is found, the permittee shall use the ERPs required by the Permit (Part III.B.) to eliminate the illicit discharge and require any needed corrective action(s). Yes No

If you answered **no** to any of the above permit requirements, describe the tasks and corresponding schedules that will be taken to assure that, within 12 months of the date permit coverage is extended, these permit requirements are met:

C.2.b. The City will incorporate procedures into the IDDE program for detecting and tracking the source of illicit discharges using visual inspections as described in the permit (Part III.D.3.d). Procedures will be in place within 12 months following the date permit coverage is extended..

C.2.d. The City will incorporate procedures into the IDDE program for prioritization of areas likely to have illicit discharges as described in the permit (Part III.D.3.f). Procedures will be in place within 12 months following the date permit coverage is extended.

3. List the categories of BMPs that address your illicit discharge, detection and elimination program. Use the first table for categories of BMPs that you have established and the second table for categories of BMPs that you plan to implement over the course of the permit term.

Include the measurable goals with appropriate timeframes that each BMP category will be implemented and completed. In addition, provide interim milestones and the frequency of action in which the permittee will implement and/or maintain the BMPs. Refer to the EPA's *Measurable Goals Guidance for Phase II Small MS4s* (<http://www.epa.gov/npdes/pubs/measurablegoals.pdf>).

If you have more than five categories, hit the tab key after the last line to generate a new row.

Established BMP categories	Measurable goals and timeframes
<i>Storm Sewer System Mapping</i>	<i>The goal of this BMP will be met by annually updating changes to the City's storm sewer system map.</i>
<i>Illicit Discharge Detection and Elimination (IDDE) and Enforcement Ordinance</i>	<i>The City will review and update (as necessary) the City's ordinance to prohibit illicit and non-stormwater discharges into the City's storm sewer and surface/ground waters. The goal of this BMP will be met by reviewing existing city ordinances and implementing updates related to illicit/non-stormwater discharges (if necessary).</i>
<i>Illicit Discharge Detection and Elimination (IDDE) Program</i>	<i>The City will develop and implement a program to detect and reduce non-stormwater discharges, including illegal dumping. Procedures for detection may consist of visual inspections for non-stormwater discharges on City owned land and private property (as requested). Inspection frequency may be conducted concurrent with the outfall inspections and implementation schedule of the public works activities. <i>The City will notify the MPCA state duty officer of any hazardous material spills or discharges (within 24 hours of receipt, if applicable, per NPDES Phase II requirements).</i></i>
BMP categories to be implemented	Measurable goals and timeframes
<i>IDDE Program Updates</i>	<i>Develop written procedures for illicit discharge inspections, investigations, and response actions. Develop a process to document information as described in the Permit (Part III.3.h) within 12 months following the date permit coverage is extended.</i>
<i>Illicit Discharge Inspections</i>	<i>In Year 1, the City will map out areas that are identified as high-priority outfalls and around high-risk establishments (fast food restaurants, dumpster, car washes, mechanics, and oil changes.) in years 2-5, the City will those integrate those sites into its annual inspection MS4 activities.</i>
<i>Illicit Discharge Investigation</i>	<i>As needed, City staff or a consultant will be used to televise a section of the sewer system, collect grab samples or perform other effective testing procedures to find illicit connection identified in the system.</i>

4. Do you have procedures for record-keeping within your Illicit Discharge Detection and Elimination (IDDE) program as specified within the Permit (Part III.D.3.h.)? Yes No

If you answered **no**, indicate how you will develop procedures for record-keeping of your Illicit Discharge, Detection and Elimination Program, within 12 months of the date permit coverage is extended:

5. Provide the name or the position title of the individual(s) who is responsible for implementing and/or coordinating this MCM:

Public Works Supervisor

D. MCM 4: Construction site stormwater runoff control

1. The Permit (Part III.D.4) requires that, within 12 months of the date permit coverage is extended, existing permittees shall revise their current program, as necessary, and continue to implement and enforce a construction site stormwater runoff control program. Describe your current program:

The City requires review of construction site erosion and sediment control (ESC) plans before projects begin, and work with contractors to ensure appropriate and correct use of erosion and sediment control BMPs on sites. The building inspectionis department are primarily responsible for checking compliance with construction site ESC plans.

2. Does your program address the following BMPs for construction stormwater erosion and sediment control as required in the Permit (Part III.D.4.b.):
- Have you established written procedures for site plan reviews that you conduct prior to the start of construction activity? Yes No
 - Does the site plan review procedure include notification to owners and operators proposing construction activity that they need to apply for and obtain coverage under the MPCA's general permit to *Discharge Stormwater Associated with Construction Activity No. MN R100001*? Yes No

- c. Does your program include written procedures for receipt and consideration of reports of noncompliance or other stormwater related information on construction activity submitted by the public to the permittee? Yes No
- d. Have you included written procedures for the following aspects of site inspections to determine compliance with your regulatory mechanism(s):
- 1) Does your program include procedures for identifying priority sites for inspection? Yes No
 - 2) Does your program identify a frequency at which you will conduct construction site inspections? Yes No
 - 3) Does your program identify the names of individual(s) or position titles of those responsible for conducting construction site inspections? Yes No
 - 4) Does your program include a checklist or other written means to document construction site inspections when determining compliance? Yes No
- e. Does your program document and retain construction project name, location, total acreage to be disturbed, and owner/operator information? Yes No
- f. Does your program document stormwater-related comments and/or supporting information used to determine project approval or denial? Yes No
- g. Does your program retain construction site inspection checklists or other written materials used to document site inspections? Yes No

If you answered **no** to any of the above permit requirements, describe the tasks and corresponding schedules that will be taken to assure that, within 12 months of the date permit coverage is extended, these permit requirements are met.

D.2.d., City will develop written procedures for conducting site ESC inspections as described in the Permit (Part III.D.4.d). Procedures will be in place within 12 months following the date permit coverage is extended.

3. List the categories of BMPs that address your construction site stormwater runoff control program. Use the first table for categories of BMPs that you have established and the second table for categories of BMPs that you plan to implement over the course of the permit term.

Include the measurable goals with appropriate timeframes that each BMP category will be implemented and completed. In addition, provide interim milestones and the frequency of action in which the permittee will implement and/or maintain the BMPs. Refer to the EPA's *Measurable Goals Guidance for Phase II Small MS4s* (<http://www.epa.gov/npdes/pubs/measurablegoals.pdf>). **If you have more than five categories**, hit the tab key after the last line to generate a new row.

Established BMP categories	Measurable goals and timeframes
<i>Construction Site Stormwater Runoff Ordinance</i>	<i>The City will annually review and update (as necessary) the City's erosion control ordinance.</i>
<i>Construction Site Erosion and Sediment Control Inspections</i>	<i>City staff will continue to implement and enforce the construction site inspection program for erosion control on construction sites one acre or larger.</i>
<i>Waste Controls for Construction Site Operators</i>	<i>The goal of this BMP is to document the number of site inspections conducted annually.</i>
<i>Construction Site Plan Review</i>	<i>The goal will be met by enforcing the NPDES Phase II permit requirements through the City's construction site inspection program.</i>
<i>Establishment of Procedures for the Receipt and Consideration of Reports of Stormwater Noncompliance</i>	<i>The City will require every applicant for a building permit, subdivision approval, or grading permit that disturbs one acre or more to submit a project specific stormwater management plan (if applicable). This goal will be met by only issuing City permits to applicants that have submitted project specific stormwater management plans (if applicable).</i>
<i>Establishment of Procedures for Site Inspections and Enforcement</i>	<i>The City will establish a phone line and web page links for the public to report potential construction site erosion control and waste disposal infractions. The goal of this BMP will achieved by completing the timeline/implementation.</i>
<i>BMP categories to be implemented</i>	<i>The City will inspect construction sites for conformance to NPDES construction permit standards and applicable City standards. This goal will be met by enforcing the City's erosion control and waste disposal standards.</i>
<i>Permit Update</i>	<i>Update the City Grading, Building, and ROW permits and Construction Site Stormwater Runoff ordinance to meet the new permit requirements within 12 months following the date permit</i>

	<i>coverage is extended.</i>
<i>Prioritize Inspections</i>	<i>The City will develop a process to determine the frequency for inspecting high priority inspection sites (e.g., near sensitive receiving waters, projects larger than 5 acres).</i>
<i>Permit Application System</i>	<i>Develop written procedures to improve tracking and archiving all plan review and inspection documents within 12 months following the date permit coverage is extended.</i>

4. Provide the name or the position title of the individual(s) who is responsible for implementing and/or coordinating this MCM:

Public Works Director, Building inspection staff

E. MCM 5: Post-construction stormwater management

1. The Permit (Part III.D.5.) requires that, within 12 months of the date permit coverage is extended, existing permittees shall revise their current program, as necessary, and continue to implement and enforce a post-construction stormwater management program. Describe your current program:

The City has a surface water management ordinance to address storm water runoff from new development and redevelopment projects that disturb equal to or greater than one acre. This program insures that controls are in place that would prevent or minimize water quality impacts from development activities.

2. Have you established written procedures for site plan reviews that you will conduct prior to the start of construction activity? Yes No
3. Answer **yes** or **no** to indicate whether you have the following listed procedures for documentation of post-construction stormwater management according to the specifications of Permit (Part III.D.5.c.):
- a. Any supporting documentation that you use to determine compliance with the Permit (Part III.D.5.a), including the project name, location, owner and operator of the construction activity, any checklists used for conducting site plan reviews, and any calculations used to determine compliance? Yes No
 - b. All supporting documentation associated with mitigation projects that you authorize? Yes No
 - c. Payments received and used in accordance with Permit (Part III.D.5.a.(4)(f))? Yes No
 - d. All legal mechanisms drafted in accordance with the Permit (Part III.D.5.a.(5)), including date(s) of the agreement(s) and names of all responsible parties involved? Yes No

If you answered **no** to any of the above permit requirements, describe the steps that will be taken to assure that, within 12 months of the date permit coverage is extended, these permit requirements are met.

E.3. The City will develop written procedures for documentation of post-construction stormwater management mitigation as described in the Permit (Part III.D.5.c.). Procedures will be in place within 12 months following the date permit coverage is extended.

4. List the categories of BMPs that address your post-construction stormwater management program. Use the first table for categories of BMPs that you have established and the second table for categories of BMPs that you plan to implement over the course of the permit term.

Include the measurable goals with appropriate timeframes that each BMP category will be implemented and completed. In addition, provide interim milestones and the frequency of action in which the permittee will implement and/or maintain the BMPs. Refer to the EPA's *Measurable Goals Guidance for Phase II Small MS4s* (<http://www.epa.gov/npdes/pubs/measurablegoals.pdf>). **If you have more than five categories**, hit the tab key after the last line to generate a new row.

Established BMP categories	Measurable goals and timeframes
<i>Site Plan Review Program</i>	<i>The City will review and revise (if necessary, during the plan review process) permanent BMP designs and criteria for post-construction stormwater management associated with new development and redevelopment projects of one acre or more. The City will also actively look for non-structural opportunities where prudent and feasible. The goal of this BMP will be met if the City conducts plan reviews on new development and redevelopment projects of one acre or more.</i>
<i>Surface Water Management Ordinance</i>	<i>Completed ordinance defining standards, review procedures and enforcement response procedures for erosion and sediment control at construction sites, and post construction runoff from new development and redevelopment in 2007.</i>
<i>Stormwater Management Plan</i>	<i>Completed SWMP and ensured goals and policies were</i>

	<i>consistent with the NPDES General and Construction Permits.</i>
BMP categories to be implemented	Measurable goals and timeframes
<i>Update ordinance to meet new permit requirements</i>	<i>Complete Ordinance updates for post construction runoff from new development and redevelopment Within 12 months of extension of permit coverage.</i>
<i>Document Pertinent Project Information</i>	<i>Maintain all related documents pertaining to each new or redevelopment project in more user-friendly filing system for better records management. Implement within 12 months.</i>

5. Provide the name or the position title of the individual(s) who is responsible for implementing and/or coordinating this MCM:

Asst. City Administrator / Public Works Director

F. MCM 6: Pollution prevention/good housekeeping for municipal operations

1. The Permit (Part III.D.6.) requires that, within 12 months of the date permit coverage is extended, existing permittees shall revise their current program, as necessary, and continue to implement an operations and maintenance program that prevents or reduces the discharge of pollutants from the permittee owned/operated facilities and operations to the small MS4. Describe your current program:

The City currently inspects its structural pollution control devices on an annual basis and inspects all of its outfalls, sediment basins and ponds every 5 years. The City inspects stockpiles, storage and material handling areas at the maintenance yard for potential discharges and maintenance of BMPs. The City is evaluating the use of road salt for winter road maintenance activities to reduce chlorides entering surface waters. The City sweeps streets once in the fall after leaf drop. Maintenance staff is trained annually on various topics related to pollution prevention during maintenance activities.

2. Do you have a facilities inventory as outlined in the Permit (Part III.D.6.a.)? Yes No

3. If you answered **no** to the above permit requirement in question 2, describe the tasks and corresponding schedules that will be taken to assure that, within 12 months of the date permit coverage is extended, this permit requirement is met:

F.3., The City will complete a facilities inventory as described in the Permit (Part III.D.6.a.). Inventory will be completed within 12 months following the date permit coverage is extended.

4. List the categories of BMPs that address your pollution prevention/good housekeeping for municipal operations program. Use the first table for categories of BMPs that you have established and the second table for categories of BMPs that you plan to implement over the course of the permit term.

Include the measurable goals with appropriate timeframes that each BMP category will be implemented and completed. In addition, provide interim milestones and the frequency of action in which the permittee will implement and/or maintain the BMPs. For an explanation of measurable goals, refer to the EPA's *Measurable Goals Guidance for Phase II Small MS4s* (<http://www.epa.gov/npdes/pubs/measurablegoals.pdf>).

If you have more than five categories, hit the tab key after the last line to generate a new row.

Established BMP categories	Measurable goals and timeframes
<i>Street Sweeping</i>	<i>The City will continue recording the frequency and miles of streets that are swept, per sweeping occurrence. The goal of this BMP will be met if the City conducts two street sweeping occurrences per year.</i>
<i>Strom Sewer Inspection Program</i>	<i>Conduct one inspection of all City-owned ponds and outfalls prior to expiration date of this permit. Annual inspection of 100% of structural pollution control devices (Sumps, Water Quality Manholes, etc.).</i>
<i>Inspection of All Exposed Stockpile, Storage and Material Handling Areas</i>	<i>City staff will quarterly locate and inspect all exposed stockpiles and storage/material handling areas on City owned properties. All existing onsite BMP's will be inspected for conformance to NPDES Phase II permit requirements. Any identified erosion control issues will be corrected and documented per NPDES Phase II standards.</i>
<i>Structural Stormwater BMP Maintenance Program</i>	<i>Based on storm sewer inspection findings determine if repair, replacement, or maintenance measures are necessary to ensure structures proper function and treatment effectiveness. Document annually number or structures repaired or scheduled</i>

	<i>for maintenance.</i>
<i>Recording, Reporting, and Retention of All Inspections and Responses to the Inspections</i>	<i>The City will retain all records of inspection, maintenance, and corrective actions of the City's stormwater system. The goal of this BMP will be met if the City retains these records for a period of three years past the expiration of this permit.</i>
<i>Evaluation of Inspection Frequency</i>	<i>Evaluate inspection records and determine if inspection frequency needs to increase or decrease.</i>
<i>Landscaping and Lawn Care Practices Review</i>	<i>The City will continue to annually review its landscaping and lawn care practices and adjust its current methods if necessary.</i>
<i>Road Salt Application Review</i>	<i>The City will record the annual activities of the salt distribution program and adjust current practices as necessary.</i>
<i>Evaluation of Proposed Storm Water Infiltration Projects for Impacts within Source Water Protection Areas</i>	<p>1. <i>The City will use the Minnesota Department of Health's document "Evaluating Proposed Storm Water Infiltration Projects in Vulnerable Wellhead Protection Areas" (Draft-July 19, 2006) and other pertinent information as guidance in evaluating all infiltration projects within or adjacent to vulnerable DWSMA's.</i></p> <p>2. <i>The City will prohibit the construction of the infiltration area or incorporate specific BMPs to reduce pollutants from infiltrating within vulnerable DWSMA's.</i></p> <p>3. <i>The City will annually record the evaluation, denial, and implemented BMP's, of all proposed infiltration projects within and/or adjacent to vulnerable DWSMA's.</i></p>
BMP categories to be implemented	Measurable goals and timeframes
<i>Park and Open Space Training Program</i>	<i>Training focused on fertilizer application, pesticide/herbicide application, and mowing discharge.</i>
<i>Fleet and Building Maintenance Training Program</i>	<i>Training focused on automotive maintenance program (automotive inspections and washing), spill cleanup training, hazardous materials training, building leak prevention and inspection training.</i>
<i>Stormwater Systems Maintenance Training Program</i>	<i>Training focused on parking lot and street cleaning, storm drain systems cleaning, road salt materials management.</i>
<i>Spill Prevention & Control Plans for Municipal Facilities</i>	<i>Ensure that plans describing spill prevention and control procedures are consistent among all departments. Conduct annual spill prevention and response training sessions to all municipal employees. Distribute education materials to each municipal facility by the end of year 2.</i>
<i>Facility Inventory</i>	<i>Develop facilities inventory to include potential pollutants as each site. Create a map of all identified facilities.</i>
<i>Pond Assessment Procedures & Schedule</i>	<i>In year 1, develop procedures for determining TSS and TP treatment effectiveness of city owned ponds use for treatment of stormwater. Implement schedule in year 2-5.</i>

5. Does discharge from your MS4 affect a Source Water Protection Area (Permit Part III.D.6.c.)? Yes No
- a. If **no**, continue to 6.
- b. If **yes**, the Minnesota Department of Health (MDH) is in the process of mapping the following items. Maps are available at <http://www.health.state.mn.us/divs/eh/water/swp/maps/index.htm>. Is a map including the following items available for your MS4:
- 1) Wells and source waters for drinking water supply management areas identified as vulnerable under Minn. R. 4720.5205, 4720.5210, and 4720.5330? Yes No
- 2) Source water protection areas for surface intakes identified in the source water assessments conducted by or for the Minnesota Department of Health under the federal Safe Drinking Water Act, U.S.C. §§ 300j – 13? Yes No
- c. Have you developed and implemented BMPs to protect any of the above drinking water sources? Yes No

6. Have you developed procedures and a schedule for the purpose of determining the TSS and TP treatment effectiveness of all permittee owned/operated ponds constructed and used for the collection and treatment of stormwater, according to the Permit (Part III.D.6.d.)? Yes No
7. Do you have inspection procedures that meet the requirements of the Permit (Part III.D.6.e.(1)-(3)) for structural stormwater BMPs, ponds and outfalls, and stockpile, storage and material handling areas? Yes No
8. Have you developed and implemented a stormwater management training program commensurate with each employee's job duties that:
- a. Addresses the importance of protecting water quality? Yes No
- b. Covers the requirements of the permit relevant to the duties of the employee? Yes No
- c. Includes a schedule that establishes initial training for new and/or seasonal employees and recurring training intervals for existing employees to address changes in procedures, practices, techniques, or requirements? Yes No
9. Do you keep documentation of inspections, maintenance, and training as required by the Permit (Part III.D.6.h.(1)-(5))? Yes No

If you answered **no** to any of the above permit requirements listed in **Questions 5 – 9**, then describe the tasks and corresponding schedules that will be taken to assure that, within 12 months of the date permit coverage is extended, these permit requirements are met:

F.6. The City will develop a procedure for assessing ponds to determine TSS and TP effectiveness as described in the Permit (Part III.D.6.d) This study will develop procedures for determining TSS and TP treatment effectiveness of city-owned ponds used for treatment of stormwater. A schedule will be developed within 12 months of permit coverage being granted.

F.7., The City will develop written procedures for inspection of structural stormwater BMPs, ponds and outfalls, and stockpile, storage and material handling areas as described in the Permit (Part III.D.6.f.). Procedures will be in place within 12 months following the date permit coverage is extended.

F.8., The City will develop and implement a stormwater management training program commensurate with each employees job duties as described in the Permit (Part III.D.6.g.). Procedures will be in place within 12 months following the date permit coverage is extended.

F.9., The City will develop written procedures to document inspections, maintenance, and training as described in the Permit (Part III.D.6.h.). Procedures will be in place within 12 months following the date permit coverage is extended.

10. Provide the name or the position title of the individual(s) who is responsible for implementing and/or coordinating this MCM:

Asst. City Administrator / Public Works Supervisor

VI. Compliance Schedule for an Approved Total Maximum Daily Load (TMDL) with an Applicable Waste Load Allocation (WLA) (Part II.D.6.)

- A. Do you have an approved TMDL with a Waste Load Allocation (WLA) prior to the effective date of the Permit? Yes No
1. If **no**, continue to section VII.
2. If **yes**, fill out and attach the MS4 Permit TMDL Attachment Spreadsheet with the following naming convention: *MS4NameHere_TMDL*.

This form is found on the MPCA MS4 website: <http://www.pca.state.mn.us/ms4>.

VII. Alum or Ferric Chloride Phosphorus Treatment Systems (Part II.D.7.)

- A. Do you own and/or operate any Alum or Ferric Chloride Phosphorus Treatment Systems which are regulated by this Permit (Part III.F.)? Yes No
1. If **no**, this section requires no further information.
2. If **yes**, you own and/or operate an Alum or Ferric Chloride Phosphorus Treatment System within your small MS4, then you must submit the Alum or Ferric Chloride Phosphorus Treatment Systems Form supplement to this document, with the following naming convention: *MS4NameHere_TreatmentSystem*.

This form is found on the MPCA MS4 website: <http://www.pca.state.mn.us/ms4>.

VIII. Add any Additional Comments to Describe Your Program

BMP Summary Sheet

MS4 Name: City of Circle Pines

Minimum Control Measure: 1-PUBLIC EDUCATION AND OUTREACH

Unique BMP Identification Number: 1a-1

<p>*BMP Title: Distribute Educational Materials</p>
<p>*BMP Description:</p> <p>The City or its designee will produce and distribute articles and information on the City's Storm Water Pollution Prevention Plan including information on the annual public meeting, illicit discharges, erosion control, shoreline management, composting and pollution prevention and other applicable best management practices. This publication will be distributed through City mailings, workshops, presentations, website postings, and newsletters.</p> <p>The City will begin working collaboratively with the Rice Creek Watershed District and Anoka Conservation District in distributing educational materials and outreach programs. Programs will consist of website development, public presentations, storm water educational materials, etc.</p> <p>Education Goal: This program is designed to develop an understanding of storm water impacts and the City's SWPPP, and preventative measures the public can implement to reduce and prevent storm water pollution.</p> <p>Audience: This activity will be directed to all City residents, property owners, and business owners within the urbanized area.</p> <p>Location(s) in SWPPP of detailed information relating to this BMP: Index Page 1: BMP ID No. 1a-1 Distribute Educational Materials – Record of Activities Completed.</p>
<p>*Measurable Goals:</p> <p>The City will document the number of publications and households served by publication. The effectiveness of this BMP will be measured by the number of articles and brochures published in newsletters, distributed via City mailings/website and RCWD workshops, and visits to the City's website. Success of this BMP is defined as developing then implementing the educational activities schedule and distributing/hosting a minimum of four educational materials, workshops, or presentations per year.</p>
<p>*Timeline/Implementation Schedule:</p> <p>Implementation of this BMP will coincide with BMP summary sheet 1b-1.</p>
<p>Specific Components and Notes:</p> <p>Please note that educational samples may be included in each annual report. Information may be added or modified to the website as necessary.</p>
<p>*Responsible Party for this BMP:</p> <p>Name: James Keinath Department: City Administrator Phone: 763-784-5895 E-mail: jkeinath@ci.circle-pines.mn.us</p>

**Indicates a REQUIRED field. Failure to complete any required field will result in rejection of the application due to incompleteness*

BMP Summary Sheet Page 2

Responsible Person:

Name: James Keinath
Title: City Administrator
Phone: 763-784-5895
E-mail: jkeinath@ci.circle-pines.mn.us

BMP ID No. 1a-1 Distribute Educational Materials
Record of Activities Completed:

Outlined below is a description of the specific activities that were undertaken by the City over the past year that document the City has met the measurable goals associated with this BMP.

Date	Description	Contact Person (if different than responsible person)

I hereby certify that the above activities were completed.

Signature of Responsible Official

Title

Date

BMP Summary Sheet

MS4 Name: City of Circle Pines

Minimum Control Measure: PUBLIC EDUCATION AND OUTREACH

Unique BMP Identification Number: 1b-1

*BMP Title: Implement an Education Program
*BMP Description: <p>The City or its designee will develop then distribute educational material and present an overview of the MS4 program and six minimum control measures used within the City's SWPPP. Educational material will include storm water issues, potentially consisting of (but not limited to) non-point source pollution, erosion and sediment control, NPDES regulation and guidance, illicit discharge, storm water pollution prevention goals of the City, local agency contact information, and additional storm water website links.</p> <p>The City Administrator will also designate a City staff person responsible for all storm water education and outreach within the City. Responsibilities will consist of:</p> <ol style="list-style-type: none">1. Develop educational activities schedule and materials (webpage development, brochures, articles, presentations, workshops, etc.)2. Collaborate the implementation of educational activities and outreach programs with Rice Creek Watershed District and Anoka Conservation District.3. Determine annual funding for educational activities schedule.4. Annually implement the educational activities schedule. <p>Location(s) in SWPPP of detailed information relating to this BMP: Index Page 1: BMP ID No. 1b-1 Implement an Education Program – Record of Activities Completed.</p>
*Measurable Goals: <p>The City will document the number of attendees at each scheduled activity (public meeting, workshop, presentation, website visits, etc.) as a way to measure the effectiveness of each activity. The City will then review the effectiveness of each activity in determining the following year's educational activities. Success of this BMP will be defined as completing the implementation schedule and annually reviewing and revising (if applicable) the educational activities schedule.</p>
*Timeline/Implementation Schedule: <p>Designate a City staff person responsible for all storm water education and outreach. January 1, 2007</p> <p>Coordinate educational efforts with RCWD/ACD and prepare an educational activities schedule and determine the amount of funding needed annually for educational outreach/training. February 1, 2007</p> <p>After allocation of funds, secure City Council/City Administrator approval for appropriate allocation of storm water utility fees. Begin implementing educational activities schedule. March 1, 2007</p> <p>Review and revise educational activities schedule and funding. Annually- January 1, 2008 through 2011 Distribute/host a minimum of four educational materials or workshops per year.</p>
Specific Components and Notes:
*Responsible Party for this BMP: <p>Name: James Keinath Department: City Administrator Phone: 763-784-5895 E-mail: jkeinath@ci.circle-pines.mn.us</p>

**Indicates a REQUIRED field. Failure to complete any required field will result in rejection of the application due to incompleteness.*

BMP Summary Sheet Page 2

Responsible Person:

Name: James Keinath
Title: City Administrator
Phone: 763-784-5895
E-mail: jkeinath@ci.circle-pines.mn.us

BMP ID No. 1b-1 Implement an Education Program
Record of Activities Completed:

Outlined below is a description of the specific activities that were undertaken by the City over the past year that document the City has met the measurable goals associated with this BMP.

Date	Description	Contact Person (if different than responsible person)

I hereby certify that the above activities were completed.

Signature of Responsible Official

Title

Date

BMP Summary Sheet

MS4 Name: City of Circle Pines

Minimum Control Measure: PUBLIC EDUCATION AND OUTREACH

Unique BMP Identification Number: 1c-1

<p>*BMP Title: Education Program: Public Education and Outreach Program</p>
<p>*Audience(s) Involved: All City residents, property owners, and business owners.</p>
<p>*Educational Goals for Each Audience: The City or its designee will raise awareness to the audiences involved by providing information on stormwater pollution prevention, effects of illicit discharge, best management practices, components of the City SWPPP, and outside entity resources available to City residents and business owners.</p>
<p>*Activities Used to Reach Educational Goals:</p> <ol style="list-style-type: none">1. <u>Printed Brochures</u>: Educational brochures will encourage best management practices, increase awareness of non-point source pollution, and provide local contact information for residents to request further information on specific stormwater topics.2. <u>Collaborate with Rice Creek Watershed District</u>: The designated city staff person will coordinate with the Rice Creek Watershed District in distributing educational materials and outreach programs. Programs will consist of website development, public presentations, storm water educational materials, etc.
<p>*Activity Implementation Plan:</p> <ol style="list-style-type: none">1. <u>Printed Brochures</u>: Will be available at City Hall and on the City's webpage beginning March 1, 2007. The effectiveness of this activity will be measured by the number of website hits annually.2. <u>Collaborate With Rice Creek Watershed District</u>: Implementation of educational activities will begin on March 1, 2007. Specific activities will follow the educational activities schedule as determined by the City. The effectiveness of this activity will be measured by distributing two printed educational materials to residents and business owners annually.3. <u>Educational Activities Schedule</u>: Refer to BMP sheet 1b-1. <p>Refer to BMP summary sheet 1b-1 timeline/implementation schedule.</p>
<p>*Performance Measures: The City will document the number of attendees at each scheduled activity (public meeting, workshop, presentation, etc.) and requests for printed brochures, as a way to measure the effectiveness of each activity used. The City will then review the effectiveness of each activity used in determining the following year's educational activities. Success of this BMP will be defined as annually reviewing and revising (if applicable) the educational activities schedule.</p>
<p>*Responsible Party for this BMP:</p> <p>Name: James Keinath Department: City Administrator Phone: 763-784-5895 E-mail: jkeinath@ci.circle-pines.mn.us</p>

**Indicates a REQUIRED field. Failure to complete any required field will result in rejection of the application due to incompleteness.*

BMP Summary Sheet Page 2

Responsible Person:

Name: James Keinath
Title: City Administrator
Phone: 763-784-5895
E-mail: jkeinath@ci.circle-pines.mn.us

BMP ID No. 1c-1 Education Program: Public Education and Outreach Program
Record of Activities Completed:

Outlined below is a description of the specific activities that were undertaken by the City over the past year that document the City has met the measurable goals associated with this BMP.

Date	Description	Contact Person (if different than responsible person)

I hereby certify that the above activities were completed.

Signature of Responsible Official

Title

Date

BMP Summary Sheet

MS4 Name: City of Circle Pines

Minimum Control Measure: PUBLIC EDUCATION AND OUTREACH

Unique BMP Identification Number: 1c-2

*BMP Title: Education Program: Public Participation
*Audience(s) Involved: City of Circle Pines residents.
*Educational Goals for Each Audience: The educational goal of this program is to increase awareness and understanding of water quality issues and the Storm Water Pollution Prevention Program to local residents and business owners.
*Activities Used to Reach Educational Goals: Public presentations on storm water quality issues, workshops and/or hands-on demonstrations of non-point pollution sources, BMPs, and behavior changes residents can implement to reduce or prevent stormwater pollution. Specific activities will be scheduled by City staff with collaboration from the Rice Creek Watershed District and Anoka Conservation District. Program information and objectives will vary year to year.
*Activity Implementation Plan: Implementation of this BMP will coincide with BMP summary sheet 1b-1.
*Performance Measures: This BMP will be measured by the City recording the number of participants at each scheduled educational activity. The level of participation at each educational activity will determine future activity schedules. Success of this BMP will be defined by increasing awareness of the SWPPP program, benefits to local residents, and documenting the number of participants for each scheduled activity.
*Responsible Party for this BMP: Name: James Keinath Department: City Administrator Phone: 763-784-5895 E-mail: jkeinath@ci.circle-pines.mn.us

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BMP Summary Sheet

MS4 Name: City of Circle Pines

Minimum Control Measure: PUBLIC EDUCATION AND OUTREACH

Unique BMP Identification Number: 1c-3

*BMP Title: Education Program: Illicit Discharge Detection and Elimination	
*Audience(s) Involved: City of Circle Pines residents, City staff, and the general public.	
*Educational Goals for Each Audience: The City or its designee will increase the public's awareness of the potential sources and negative effects of illicit non-storm water discharges, as well as alternative uses for unwanted materials by providing information on recycling options, services, and programs within the City, such as drop-off sites for household hazardous waste. The City will also review the current educational activities undertaken by its staff to identify, prevent and correct illicit discharges from daily public works activities and other general City operations. These activities may include, but are not limited to, distributing educational brochures, newsletters, videos, and workshops. The City will train staff, implement procedures, and incorporate best management practices in the handling of hazardous materials used by City staff.	
*Activities Used to Reach Educational Goals: <u>Distribute Educational Material:</u> The City will distribute illicit discharge, household hazardous waste, and recycling program literature to residents a minimum of one time annually through City newsletters, utility bill inserts, and continuously on the City's Storm Water website. <u>Staff Education:</u> The City will also review the current educational activities undertaken by its staff to identify, prevent and correct illicit discharges from daily public works activities and other general City operations. These educational activities may include, but are not limited to, videos, training, and workshops. The City will train staff, implement procedures, and incorporate best management practices in the handling of hazardous materials used by all City staff.	
*Activity Implementation Plan:	
Provide educational activities to City staff a minimum of one time annually.	January 1, 2007 through May 31, 2011
Distribute illicit discharge educational material to the public a minimum of one time annually.	January 1, 2007 through May 31, 2011
*Performance Measures: The City will record all comments received, requests for information, and complaints regarding potential illicit discharge (refer to MCM #3). The City will continue to annually review the educational content of printed literature for adequacy and update as necessary. Educational material, presentations, and requests for additional information will be distributed and recorded through the life of this permit, May 31, 2011.	
*Responsible Party for this BMP:	
Name: James Keinath	
Department: City Administrator	
Phone: 763-784-5895	
E-mail: jkeinath@ci.circle-pines.mn.us	

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BMP Summary Sheet Page 2

Responsible Person:

Name: James Keinath
Title: City Administrator
Phone: 763-784-5895
E-mail: jkeinath@ci.circle-pines.mn.us

BMP ID No. 1c-3 Education Program: Illicit Discharge Detection and Elimination
Record of Activities Completed:

Outlined below is a description of the specific activities that were undertaken by the City over the past year that document the City has met the measurable goals associated with this BMP.

Date	Description	Contact Person (if different than responsible person)

I hereby certify that the above activities were completed.

Signature of Responsible Official

Title

Date

BMP Summary Sheet

MS4 Name: City of Circle Pines

Minimum Control Measure: PUBLIC EDUCATION AND OUTREACH

Unique BMP Identification Number: 1c-4

*BMP Title: Education Program: Construction Site Run-off Control
*Audience(s) Involved: City staff and contractors performing work within the City.
*Educational Goals for Each Audience: <ol style="list-style-type: none">1. <u>Contractors:</u> Increased awareness of construction site runoff and review of project specific erosion control BMPs.2. <u>City Staff:</u> Introduce new ideas relating to construction site pollution prevention, develop an understanding of the SWPPP, and increase the knowledge of specific NPDES construction permit and city ordinance requirements.3. Review of erosion control plans and project specific SWPPP for construction projects requiring a City grading permit.
*Activities Used to Reach Educational Goals: <ol style="list-style-type: none">1. <u>Staff Training:</u> Provide training on how to prevent soil erosion on a construction site, proper erosion control and inspection, and review the components of the storm water pollution prevention plan (SWPPP).2. <u>Plan Review/On-site Pre-Construction Meetings with Contractors:</u> City staff will meet with contractors prior to the start of construction projects to discuss implementing project specific BMP's, requirements of the NPDES construction permit/project SWPPP, City and NPDES standards for erosion control monitoring, site inspections, and violations.
*Activity Implementation Plan: <ol style="list-style-type: none">1. <u>Staff Training:</u> Provide training on how to prevent soil erosion on a construction site, proper erosion control and inspection, and review the components of the storm water pollution prevention plan (SWPPP).2. The City will begin documenting all staff training on January 1, 2007 through May 31, 2011.
*Performance Measures: <p>Document the number of educational materials distributed/requested, preconstruction meetings, and presentations/workshops/field training attended by City staff. Pre-construction meetings may be required by City staff as a pre-requisite to the issuance of City grading permits. Success of this BMP will be measured by training applicable new City staff within three years of the individual's hire date and conducting a pre-construction meeting with applicants for a City grading permit (as determined by City staff).</p>
*Responsible Party for this BMP: <p>Name: James Keinath Department: City Administrator Phone: 763-784-5895 E-mail: jkeinath@ci.circle-pines.mn.us</p>

**Indicates a REQUIRED field. Failure to complete any required field will result in rejection of the application due to incompleteness.*

BMP Summary Sheet Page 2

Responsible Person:

Name: James Keinath
Title: City Administrator
Phone: 763-784-5895
E-mail: jkeinath@ci.circle-pines.mn.us

BMP ID No. 1c-4 Education Program: Construction Site Runoff Control
Record of Activities Completed:

Outlined below is a description of the specific activities that were undertaken by the City over the past year that document the City has met the measurable goals associated with this BMP.

Date	Description	Contact Person (if different than responsible person)

I hereby certify that the above activities were completed.

Signature of Responsible Official

Title

Date

BMP Summary Sheet

MS4 Name: City of Circle Pines

Minimum Control Measure: PUBLIC EDUCATION AND OUTREACH

Unique BMP Identification Number: 1c-5

*BMP Title: Education Program: Post-Construction Stormwater Management in New Development and Redevelopment
*Audience(s) Involved: City of Circle Pines residents and business owners.
*Educational Goals for Each Audience: The City's goal for this BMP includes educating residents and business owners on the importance of storm water management within their neighborhood and increasing their understanding of maintenance procedures for existing storm water management systems within the City.
*Activities Used to Reach Educational Goals: Printed educational materials Presentations at the annual public meeting Stormwater web page Comprehensive Storm Water Management Plan
*Activity Implementation Plan: The City will distribute a minimum of one Post-Construction Stormwater Management related educational material to residents annually and continuously on the City's Stormwater website. The City will also present an overview of the post construction management ordinances to the public during the annual public meeting.
*Performance Measures: The City will document the number of attendees at the annual public meeting, distributed educational materials annually, and requests for additional information. The success of this BMP will be achieved as distributing a minimum of one Post-Construction Stormwater Management related educational material to residents annually.
*Responsible Party for this BMP: Name: James Keinath Department: City Administrator Phone: 763-784-5895 E-mail: jkeinath@ci.circle-pines.mn.us

**Indicates a REQUIRED field. Failure to complete any required field will result in rejection of the application due to incompleteness.*

BMP Summary Sheet

MS4 Name: City of Circle Pines

Minimum Control Measure: PUBLIC EDUCATION AND OUTREACH

Unique BMP Identification Number: 1c-6

*BMP Title: Education Program: Pollution Prevention/Good Housekeeping for Municipal Operations
*Audience(s) Involved: City staff involved in public works projects and construction projects.
*Educational Goals for Each Audience: The goal of this program is to: <ol style="list-style-type: none">1. Introduce and demonstrate the implementation of specific BMPs for use in public works projects and activities.2. Develop an understanding of the City's SWPPP.3. Promote a greater understanding of MCM's #3-6.
*Activities Used to Reach Educational Goals: The City will provide training opportunities for City staff in erosion control, best management practices, good housekeeping, and pollution prevention. These may include but are not limited to: Mn/DOT erosion control certification, SWPPP workshops, and BMP workshops. Refer to MCM 6 for further information.
*Activity Implementation Plan: The City will provide a minimum of one training opportunity per year and document the number of training sessions and the number of staff participants in attendance. Training topics and schedules will vary annually. This activity will begin on January 1, 2007 and continue annually through the expiration of this permit, May 31, 2011.
*Performance Measures: The City will document the number of training sessions and the number of participants attending. The success of this BMP will be achieved through training and/or certifying all applicable City staff within three years of the individual's hire date.
*Responsible Party for this BMP: Name: James Keinath Department: City Administrator Phone: 763-784-5895 E-mail: jkeinath@ci.circle-pines.mn.us

**Indicates a REQUIRED field. Failure to complete any required field will result in rejection of the application due to incompleteness.*

BMP Summary Sheet Page 2

Responsible Person:

Name: James Keinath
Title: City Administrator
Phone: 763-784-5895
E-mail: jkeinath@ci.circle-pines.mn.us

**BMP ID No. 1c-6 Education Program: Pollution Prevention/Good Housekeeping
for City Operations**
Record of Activities Completed:

Outlined below is a description of the specific activities that were undertaken by the City over the past year that document the City has met the measurable goals associated with this BMP.

Date	Description	Contact Person (if different than responsible person)

I hereby certify that the above activities were completed.

Signature of Responsible Official

Title

Date

BMP Summary Sheet

MS4 Name: City of Circle Pines

Minimum Control Measure: PUBLIC EDUCATION AND OUTREACH

Unique BMP Identification Number: 1d-1

<p>*BMP Title: Coordination of Education Program</p>
<p>*BMP Description:</p> <p>The City will collaborate and coordinate the development and implementation of the City's educational activities schedule with the Rice Creek Watershed District, Anoka Conservation District, and the City's engineering consultant. Final modifications to the City's educational programs will be decided by the City Administrator.</p> <p>Location(s) in SWPPP of detailed information relating to this BMP: Index Page 1: BMP ID No. 1a-1, 1b-1, 1c-1, 1c-2, 1c-3, 1c-4, 1c-5, 1c-6. Public Education & Outreach</p>
<p>*Measurable Goals:</p> <p>The effectiveness of this BMP will be evaluated a minimum of once annually. Success of this BMP will be in achieving and/or identifying modifications to the educational program, as defined in 1a-1, 1b-1, 1c-1, 1c-2, 1c-3, 1c-4, 1c-5, and 1c-6.</p>
<p>*Timeline/Implementation Schedule:</p> <p>This activity will begin on January 1, 2007 and continue annually through the expiration of this permit, May 31, 2011, or as specified in 1a-1, 1b-1, 1c-1, 1c-2, 1c-3, 1c-4, 1c-5, and 1c-6.</p>
<p>Specific Components and Notes:</p>
<p>*Responsible Party for this BMP:</p> <p>Name: James Keinath Department: City Administrator Phone: 763-784-5895 E-mail: jkeinath@ci.circle-pines.mn.us</p>

**Indicates a REQUIRED field. Failure to complete any required field will result in rejection of the application due to incompleteness.*

BMP Summary Sheet Page 2

Responsible Person:

Name: James Keinath
Title: City Administrator
Phone: 763-784-5895
E-mail: jkeinath@ci.circle-pines.mn.us

BMP ID No. 1d-1 Coordination of Education Program
Record of Activities Completed:

Outlined below is a description of the specific activities that were undertaken by the City over the past year that document the City has met the measurable goals associated with this BMP.

Date	Description	Contact Person (if different than responsible person)

I hereby certify that the above activities were completed.

Signature of Responsible Official

Title

Date

BMP Summary Sheet

MS4 Name: City of Circle Pines

Minimum Control Measure: PUBLIC EDUCATION AND OUTREACH

Unique BMP Identification Number: 1e-1

<p>*BMP Title: Annual Public Meeting</p>
<p>*BMP Description:</p> <p>The City will hold an annual public meeting to distribute educational materials and present an overview of the MS4 program and the City's SWPPP. Oral and written statements will be received and considered for inclusion into the SWPPP by City staff.</p> <p>Location(s) in SWPPP of detailed information relating to this BMP: Index Page 1: BMP ID No. 1e-1 Annual Public Meeting – Record of Activities Completed</p>
<p>*Measurable Goals:</p> <p>The City will document the number of attendees at the public meeting, all comments received, and responses to each comment in the record of decision. The effectiveness of this BMP will be measured by the number of residents who attend the annual public meeting. The success of this BMP is defined by the public's increased awareness about stormwater pollution and the MS4 program.</p>
<p>*Timeline/Implementation Schedule:</p> <p>This activity will be conducted annually through the expiration of this permit, May 31, 2011.</p>
<p>Specific Components and Notes:</p> <p>Specific topics most requested and/or discussed will be expanded for discussion on the City's stormwater website and/or at the next scheduled annual public meeting.</p>
<p>*Responsible Party for this BMP:</p> <p>Name: James Keinath Department: City Administrator Phone: 763-784-5895 E-mail: jkeinath@ci.circle-pines.mn.us</p>

**Indicates a REQUIRED field. Failure to complete any required field will result in rejection of the application due to incompleteness.*

BMP Summary Sheet

MS4 Name: City of Circle Pines

Minimum Control Measure: 2-PUBLIC PARTICIPATION/INVOLVEMENT

Unique BMP Identification Number: 2a-1

<p>*BMP Title: Comply with Public Notice Requirements</p>
<p>*BMP Description:</p> <p>The City will submit a public meeting notice to the local newspaper for print a minimum of 30 days prior to annual public meeting date. The public notice will include the dates, times, and locations of the meeting, contact person name and phone number, and a brief narrative highlighting the SWPPP. The City may also post additional public notice on the City's website and at government offices within the City.</p> <p>Location(s) in SWPPP of detailed information relating to this BMP: Index Page 2: BMP ID No. 2a-1 Comply with Public Notice Requirements – Record of Activities Completed.</p>
<p>*Measurable Goals:</p> <p>A copy of the printed public notice may be retained by the City and submitted with the annual report to the MPCA annually. The effectiveness of this BMP will be measured by the number of public notices posted. Success will be defined as submitting the public meeting notice to the local newspaper for print at least 30 days in advance of the meeting.</p>
<p>*Timeline/Implementation Schedule:</p> <p>This activity will be completed annually through the expiration of this permit, May 31, 2011.</p>
<p>Specific Components and Notes:</p>
<p>*Responsible Party for this BMP:</p> <p>Name: James Keinath Department: City Administrator Phone: 763-784-5895 E-mail: jkeinath@ci.circle-pines.mn.us</p>

**Indicates a REQUIRED field. Failure to complete any required field will result in rejection of the application due to incompleteness.*

BMP Summary Sheet

MS4 Name: City of Circle Pines

Minimum Control Measure: 2-PUBLIC PARTICIPATION/INVOLVEMENT

Unique BMP Identification Number: 2b-1

<p>*BMP Title: Solicit Public Input and Opinion on the Adequacy of the SWPPP</p>
<p>*BMP Description:</p> <p>The City will conduct a public meeting and host a website on the City's Stormwater Pollution Prevention Program; solicit public opinion on the plan, and consider written and oral input into the SWPPP.</p> <p>Location(s) in SWPPP of detailed information relating to this BMP: Index Page 2: BMP ID No. 2b-1 Solicit Public Input and opinion on the Adequacy of the SWPPP – Record of Activities Completed</p>
<p>*Measurable Goals:</p> <p>Document attendance and record minutes at the public meeting, record statements and written comments and document changes made to the SWPPP. The effectiveness of this BMP will be measured by the number of residents who attend the public meeting. Success will be defined as hosting the public meeting and website.</p>
<p>*Timeline/Implementation Schedule:</p> <p>This activity will be completed annually beginning in 2007 and continue through the expiration of this permit, May 31, 2011.</p>
<p>Specific Components and Notes:</p>
<p>*Responsible Party for this BMP:</p> <p>Name: James Keinath Department: City Administrator Phone: 763-784-5895 E-mail: jkeinath@ci.circle-pines.mn.us</p>

**Indicates a REQUIRED field. Failure to complete any required field will result in rejection of the application due to incompleteness.*

BMP Summary Sheet Page 2

Responsible Person:

Name: James Keinath
Title: City Administrator
Phone: 763-784-5895
E-mail: jkeinath@ci.circle-pines.mn.us

BMP ID No. 2b-1 Solicit Public Input and Opinion on the Adequacy of the SWPPP
Record of Activities Completed:

Outlined below is a description of the specific activities that were undertaken by the City over the past year that document the City has met the measurable goals associated with this BMP.

Date	Description	Contact Person (if different than responsible person)

I hereby certify that the above activities were completed.

Signature of Responsible Official

Title

Date

BMP Summary Sheet

MS4 Name: City of Circle Pines

Minimum Control Measure: 2-PUBLIC PARTICIPATION/INVOLVEMENT

Unique BMP Identification Number: 2c-1

<p>*BMP Title: Consider Public Input</p>
<p>*BMP Description:</p> <p>The City will conduct a public meeting and host a stormwater website on the City's Stormwater Pollution Prevention Program; solicit public opinion on the plan, and consider written and oral input into the SWPPP. Responses will be documented within the record of decision and submitted in conjunction with the annual report to the MPCA.</p> <p>Location(s) in SWPPP of detailed information relating to this BMP: Index Page: BMP ID No. 2c-1 Consider Public Input – Record of Activities Completed</p>
<p>*Measurable Goals:</p> <p>Hold the public meeting and host a website, record attendance, keep minutes, record statements and written comments and document changes made to the SWPPP.</p>
<p>*Timeline/Implementation Schedule:</p> <p>This activity will be completed annually beginning in 2007 and continue through the expiration of this permit, May 31, 2011.</p>
<p>Specific Components and Notes:</p>
<p>*Responsible Party for this BMP:</p> <p>Name: James Keinath Department: City Administrator Phone: 763-784-5895 E-mail: jkeinath@ci.circle-pines.mn.us</p>

**Indicates a REQUIRED field. Failure to complete any required field will result in rejection of the application due to incompleteness.*

BMP Summary Sheet

MS4 Name: City of Circle Pines

Minimum Control Measure: 3-ILLCIT DISCHARGE DETECTION AND ELIMINATION

Unique BMP Identification Number: 3a-1

<p>*BMP Title: Storm Sewer System Map</p>
<p>*BMP Description:</p> <p>The City currently has a map identifying all ponds, lakes, streams, storm sewer pipes and conveyances (equal to or greater than 24") as well as outfalls and discharge points leaving the City. As part of the SWPPP, the City will annually update this map to include changes to the storm sewer system throughout the City, including but not limited to, new development, street improvements, water quality projects, wetland mitigation projects, and any changes to the storage or conveyance of stormwater within the City.</p> <p>Location(s) in SWPPP of detailed information relating to this BMP: Index Page 3: BMP ID No. 3a-1 Storm Sewer System Map – Record of Activities Completed</p>
<p>*Measurable Goals:</p> <p>The effectiveness of this BMP will be defined as mapping all storm sewer conveyances 24" or greater that are owned by the City. The success of this BMP will be measured by annually updating all City owned storm sewer conveyances equal to or greater than 24".</p>
<p>*Timeline/Implementation Schedule:</p> <p>This activity will be completed annually beginning in 2007 and continue through the life of this permit, May 31, 2011.</p>
<p>Specific Components and Notes:</p>
<p>*Responsible Party for this BMP:</p> <p>Name: James Keinath Department: City Administrator Phone: 763-784-5895 E-mail: jkeinath@ci.circle-pines.mn.us</p>

**Indicates a REQUIRED field. Failure to complete any required field will result in rejection of the application due to incompleteness.*

BMP Summary Sheet

MS4 Name: City of Circle Pines

Minimum Control Measure: 3-ILLCIT DISCHARGE DETECTION AND ELIMINATION

Unique BMP Identification Number: 3c-1

<p>*BMP Title: Illicit Discharge Detection and Elimination Plan</p>						
<p>*BMP Description:</p> <p>The City will continue to utilize volunteer organizations to collect trash and debris from roadsides. Litter will be picked up once per year and collected in plastic bags. An authorized contractor will properly dispose of the collected litter. The program will also identify hazardous materials illegally discarded and arrange for proper cleanup and disposal.</p> <p>The City will also develop and implement a program to detect and reduce non-storm water discharges, including illegal dumping. Procedures for detection may consist of visual inspections for non-storm water discharges on City owned land, private property (as requested), and right-of-ways within 24 hours of receipt by the City or on the next scheduled City work day. Inspection frequency will be conducted concurrent with the implementation schedule of the public works activities described in BMP summary sheets 6a-2, 6b-2, 6b-3, and 6b-4. The City will notify the MPCA state duty officer of any hazardous material spills or discharges (within 24 hours of receipt, if applicable, per NPDES Phase II requirements).</p> <p>Location(s) in SWPPP of detailed information relating to this BMP:</p> <ul style="list-style-type: none">• BMP Id No. 3c-1 Illicit Discharge Detection and Elimination Plan – Record of Activities Completed						
<p>*Measurable Goals:</p> <p>The effectiveness of this BMP will be measured by:</p> <ol style="list-style-type: none">1. Annually documenting the number of miles covered by trash and debris collection,2. Annually documenting all reported non-storm water discharges occurring on City owned land, private property, and right-of-ways, as well as any remedial actions taken (if applicable). <p>Success of this BMP is defined as:</p> <ol style="list-style-type: none">1. Amount of volunteer trash and debris collection hours recorded annually.2. Developing and implementing an illicit non-storm water discharge detection and elimination program.						
<p>*Timeline/Implementation Schedule:</p> <table><tr><td>Develop illicit discharge detection procedures</td><td>February 1, 2007</td></tr><tr><td>Begin implementing illicit discharge detection procedures</td><td>March 1, 2007</td></tr><tr><td>Inspections will be documented annually</td><td>2007 to May 31, 2011.</td></tr></table> <p>Documentation of trash and debris collection will begin in 2007, and continue annually until the expiration of this permit, May 31, 2011.</p>	Develop illicit discharge detection procedures	February 1, 2007	Begin implementing illicit discharge detection procedures	March 1, 2007	Inspections will be documented annually	2007 to May 31, 2011.
Develop illicit discharge detection procedures	February 1, 2007					
Begin implementing illicit discharge detection procedures	March 1, 2007					
Inspections will be documented annually	2007 to May 31, 2011.					
<p>Specific Components and Notes:</p>						
<p>*Responsible Party for this BMP:</p> <p>Name: James Keinath Department: City Administrator Phone: 763-784-5895 E-mail: jkeinath@ci.circle-pines.mn.us</p>						

**Indicates a REQUIRED field. Failure to complete any required field will result in rejection of the application due to incompleteness.*

BMP Summary Sheet

MS4 Name: City of Circle Pines

Minimum Control Measure: 3-ILLCIT DISCHARGE DETECTION AND ELIMINATION

Unique BMP Identification Number: 3d-1

<p>*BMP Title: Public and Employee Illicit Discharge Information Program</p>
<p>*BMP Description:</p> <p>The City or its designee will discourage illicit non-storm water discharges by educating the public (City residents, businesses, and staff) on its potential sources and effects as well as alternative uses for unwanted materials. This BMP includes providing information on recycling options, services, and programs within the City, such as drop-off sites for household hazardous waste. The City will also review the current educational activities undertaken by its staff to identify, prevent, and eliminate illicit discharges from daily public works activities and other general City operations. These activities may include, but are not limited to, educational brochures, newsletters, videos, and workshops. Specific materials regarded as illicit non-storm water discharges are defined within chapters 5 and 7 of the City code.</p> <p>Location(s) in SWPPP of detailed information relating to this BMP:</p> <ul style="list-style-type: none">• BMP ID No. 3d-1 Public and Employee Illicit Discharge Information Program – Record of Activities Completed• Section III: Chapters 5 and 7
<p>*Measurable Goals:</p> <ul style="list-style-type: none">• Number of calls to the City regarding illegal dumping or illicit discharges.• Annual review of educational materials.• Success of this BMP will be defined as distributing illicit discharge, household hazardous waste, and recycling program literature to residents and providing educational activities to City staff a minimum of one time annually.
<p>*Timeline/Implementation Schedule:</p> <p>The City will continue to annually review the educational content of printed literature for adequacy and update as necessary. Educational material, presentations, and requests for additional information will be distributed and documented annually, through the life of this permit, May 31, 2011.</p>
<p>Specific Components and Notes:</p>
<p>*Responsible Party for this BMP:</p> <p>Name: James Keinath Department: City Administrator Phone: 763-784-5895 E-mail: jkeinath@ci.circle-pines.mn.us</p>

**Indicates a REQUIRED field. Failure to complete any required field will result in rejection of the application due to incompleteness.*

BMP Summary Sheet Page 2

Responsible Person:

Name: James Keinath
Title: City Administrator
Phone: 763-784-5895
E-mail: jkeinath@ci.circle-pines.mn.us

BMP ID No. 3d-1 Public and Employee Illicit Discharge Information Program
Record of Activities Completed:

Outlined below is a description of the specific activities that were undertaken by the City over the past year that document the City has met the measurable goals associated with this BMP.

Date	Description	Contact Person (if different than responsible person)

I hereby certify that the above activities were completed.

Signature of Responsible Official

Title

Date

BMP Summary Sheet

MS4 Name: City of Circle Pines

Minimum Control Measure: 3-ILLCIT DISCHARGE DETECTION AND ELIMINATION

Unique BMP Identification Number: 3e-1

<p>*BMP Title: Identification of Non Stormwater Discharges and Flows</p>
<p>*BMP Description:</p> <p>The City has identified and evaluated the following categories of non-storm water discharges (as defined in Part V.G.3.e): Water line flushing, landscape irrigation, diverted stream flows, rising ground waters, uncontaminated ground water infiltration, uncontaminated pumped ground water, discharges from potable water sources, foundation drains, air conditioning condensation, irrigation water, springs, water from crawl space pumps, footing drains, lawn watering, individual residential car washing, flows from riparian habitats and wetland, de-chlorinated swimming pool discharges, and street wash water, discharges or flows from fire fighting activities.</p> <p>The City has determined the above referenced sources of non-storm water discharge to be insignificant pollutant contributors to the MS4 system.</p> <p>Location(s) in SWPPP of detailed information relating to this BMP: Index Page 3: BMP ID No. 3e-1 Identification of Non Stormwater Discharges and Flows – Record of Activities Completed</p>
<p>*Measurable Goals:</p> <p>All non-storm water discharges (as defined in Part V.G.3.e) were evaluated and determined to be insignificant sources of pollutants to the MS4.</p>
<p>*Timeline/Implementation Schedule:</p> <p>No program or implementation plan is currently scheduled due to the insignificance of the above mentioned non-storm water discharges.</p>
<p>Specific Components and Notes:</p>
<p>*Responsible Party for this BMP:</p> <p>Name: James Keinath Department: City Administrator Phone: 763-784-5895 E-mail: jkeinath@ci.circle-pines.mn.us</p>

BMP Summary Sheet

MS4 Name: City of Circle Pines

Minimum Control Measure: 4-CONSTRUCTION SITE STORMWATER RUNOFF CONTROL

Unique BMP Identification Number: 4a-1

<p>*BMP Title: Ordinance or other Regulatory Mechanism</p>
<p>*BMP Description:</p> <p>City staff will review and revise (if applicable) current City ordinances and codes annually for conformance to new or amended NPDES construction permit and/or watershed district erosion control standards. Existing applicable City ordinances regarding erosion and sediment control that currently meet or exceed the minimum NPDES requirements include 1350.06 of the City Code.</p> <p><u>Target Audience:</u> Construction site operators and City staff.</p> <p>Location(s) in SWPPP of detailed information relating to this BMP:</p> <ul style="list-style-type: none">• BMP ID No. 4a-1 Ordinance or other Regulatory Mechanism – Record of Activities Completed.• Section III: 1350.06
<p>*Measurable Goals:</p> <p>The City will annually review and update as necessary the City's erosion control ordinances.</p>
<p>*Timeline/Implementation Schedule:</p> <p>The City will review the current ordinances for conformance to NPDES minimum standards, and add additional requirements if necessary by January 1st, 2007. The enforcement of new permit requirements (if necessary) will begin on February 1st, 2007 through May 31, 2011.</p>
<p>Specific Components and Notes:</p> <ul style="list-style-type: none">• Chapter 1350.06
<p>*Responsible Party for this BMP:</p> <p>Name: James Keinath Department: City Administrator Phone: 763-784-5895 E-mail: jkeinath@ci.circle-pines.mn.us</p>

**Indicates a REQUIRED field. Failure to complete any required field will result in rejection of the application due to incompleteness.*

BMP Summary Sheet

MS4 Name: City of Circle Pines

Minimum Control Measure: 4-CONSTRUCTION SITE STORMWATER RUNOFF CONTROL

Unique BMP Identification Number: 4b-1

<p>*BMP Title: Construction Site Implementation of Erosion and Sediment Control BMPs</p>
<p>*BMP Description:</p> <p>Construction site operators must conform to NPDES Phase II permit requirements, local watershed permits (if applicable), and local city ordinances for construction site erosion control. As part of the City's permit approval standards, erosion control BMPs must be implemented in accordance with the NPDES permit requirements. Existing applicable City ordinances regarding construction site implementation erosion and sediment control that currently meet or exceed the minimum NPDES requirements include 1350.06 of the City Code. The City has adopted the design criteria, standards, and specifications contained in the MPCA publication "Protecting Water Quality in Urban Areas."</p> <p>Location(s) in SWPPP of detailed information relating to this BMP:</p> <ul style="list-style-type: none">• BMP ID No. 4b-1 Construction Site Implementation of Erosion and Sediment Control BMPs – Record of Activities Completed.• Section III: 1350.06
<p>*Measurable Goals:</p> <p>Success of this BMP will be determined by site inspections per NPDES Phase II requirements and City permit approvals.</p>
<p>*Timeline/Implementation Schedule:</p> <p>The City will review the current City ordinances for conformance to NPDES minimum standards in 2006 and add additional or updated erosion control BMP requirements (if necessary) by February 1, 2007. The effectiveness of this BMP will be monitored then annually evaluated through the expiration of this permit, May 31, 2011.</p>
<p>Specific Components and Notes:</p> <ul style="list-style-type: none">• Chapter 1350.06
<p>*Responsible Party for this BMP:</p> <p>Name: James Keinath Department: City Administrator Phone: 763-784-5895 E-mail: jkeinath@ci.circle-pines.mn.us</p>

**Indicates a REQUIRED field. Failure to complete any required field will result in rejection of the application due to incompleteness.*

BMP Summary Sheet

MS4 Name: City of Circle Pines

Minimum Control Measure: 4-CONSTRUCTION SITE STORMWATER RUNOFF CONTROL

Unique BMP Identification Number: 4c-1

<p>*BMP Title: Waste Controls for Construction Site Operators</p>
<p>*BMP Description:</p> <p>Construction site operators must conform to NPDES Phase II permit requirements and the City's ordinances on waste and material disposal as defined in City Code 1350.06 Sub. 2. All waste and unused building materials must be properly disposed of off-site and prevented from being carried by runoff into a receiving channel or storm sewer system.</p> <p>Location(s) in SWPPP of detailed information relating to this BMP:</p> <ul style="list-style-type: none">• BMP ID No. 4c-1 Waste Controls for Construction Site Operators – Record of Activities Completed• Section III: 1350.06 Sub. 2
<p>*Measurable Goals:</p> <p>Success of this BMP will be determined by site inspections per NPDES Phase II requirements and City Code 1350.06 sub. 2. The effectiveness of this BMP will be measured by the annual recorded number of remedial actions against construction site operations. Success of BMP will be defined as operator compliance to the City's Waste and Material Disposal, 1350.06 ordinance and NPDES Phase II permit regulations.</p>
<p>*Timeline/Implementation Schedule:</p> <p>The City will review the current City permits in 2006 for conformance to NPDES minimum standards, and add additional or updated waste and material disposal requirements (if necessary) by February 1, 2007. The effectiveness of this BMP will be monitored and annually evaluated through the expiration of this permit, May 31, 2011.</p>
<p>Specific Components and Notes:</p>
<p>*Responsible Party for this BMP:</p> <p>Name: James Keinath Department: City Administrator Phone: 763-784-5895 E-mail: jkeinath@ci.circle-pines.mn.us</p>

**Indicates a REQUIRED field. Failure to complete any required field will result in rejection of the application due to incompleteness.*

BMP Summary Sheet Page 2

Responsible Person:

Name: James Keinath
Title: City Administrator
Phone: 763-784-5895
E-mail: jkeinath@ci.circle-pines.mn.us

BMP ID No. 4c-1 Waste Controls for Construction Site Operators
Record of Activities Completed:

Outlined below is a description of the specific activities that were undertaken by the City over the past year that document the City has met the measurable goals associated with this BMP.

Date	Description	Contact Person (if different than responsible person)

I hereby certify that the above activities were completed.

Signature of Responsible Official

Title

Date

BMP Summary Sheet

MS4 Name: City of Circle Pines

Minimum Control Measure: 4-CONSTRUCTION SITE STORMWATER RUNOFF CONTROL

Unique BMP Identification Number: 4d-1

<p>*BMP Title: Procedure for Site Plan Review</p>
<p>*BMP Description:</p> <p>Every applicant for a city permit to allow land disturbing activities is required to submit a project specific storm water management plan (if applicable) and/or erosion control plan to the City for review and approval. Construction permits will be required to meet MPCA NPDES Phase II guidelines for erosion and sediment control and all applicable City ordinances and codes.</p> <p>Location(s) in SWPPP of detailed information relating to this BMP: Index Page 4: BMP ID No. 4d-1 Procedure for Site Plan Review – Record of Activities Completed</p>
<p>*Measurable Goals:</p> <p>No City permit to allow land disturbing activities shall be issued until approval of a storm water management plan (if applicable) and/or erosion control plan, or waiver of the approval requirement has been obtained. Success will be defined as enforcing the permit's submittal requirement (as defined in City code 1350).</p>
<p>*Timeline/Implementation Schedule:</p> <p>The City will continue to implement this BMP in 2006, and monitor then evaluate the effectiveness through the expiration of this permit, May 31, 2011.</p>
<p>Specific Components and Notes:</p> <ul style="list-style-type: none">• City Code 1350
<p>*Responsible Party for this BMP:</p> <p>Name: James Keinath Department: City Administrator Phone: 763-784-5895 E-mail: jkeinath@ci.circle-pines.mn.us</p>

**Indicates a REQUIRED field. Failure to complete any required field will result in rejection of the application due to incompleteness.*

BMP Summary Sheet

MS4 Name: City of Circle Pines

Minimum Control Measure: 4-CONSTRUCTION SITE STORMWATER RUNOFF CONTROL

Unique BMP Identification Number: 4e-1

<p>*BMP Title: Establishment of Procedures for the Receipt and Consideration of Reports of Stormwater Noncompliance</p>
<p>*BMP Description:</p> <p>The City will establish a phone line and website contact information through which the public may report potential construction site erosion control and waste disposal infractions. Reported incidents will be inspected within 24 hours of receipt or on the next scheduled work day by the City. Hazardous material spills or discharges will be reported to the MPCA State Duty Officer within 24 hours of receipt by the City or identified by the construction site operator. Remedial actions against the violator may be taken at the discretion of the City Administrator, City Council, and/or City administrator.</p> <p>Location(s) in SWPPP of detailed information relating to this BMP: Index Page 4: BMP ID No. 4e-1 Establishment of Procedures for the Receipt and Consideration of Reports of Stormwater Noncompliance – Record of Activities Completed</p>
<p>*Measurable Goals:</p> <p>The City will establish contact information for receipt of construction site violations. The City will record:</p> <ul style="list-style-type: none">• The number of calls and emails related to SWPPP issues.• The number of illicit discharge and construction site complaints.• The number of clean-up activities or SWPPP changes resulting from calls or emails. <p>Success of this BMP will be defined by the implementation schedule.</p>
<p>*Timeline/Implementation Schedule:</p> <p>Establish phone hotline/post website contact information. Implement by January 1, 2007</p> <p>Annually record all phone calls and emails received and remedial actions and/or SWPPP changes. January 1, 2008 through May 31, 2011</p>
<p>Specific Components and Notes:</p>
<p>*Responsible Party for this BMP:</p> <p>Name: James Keinath Department: City Administrator Phone: 763-784-5895 E-mail: jkeinath@ci.circle-pines.mn.us</p>

**Indicates a REQUIRED field. Failure to complete any required field will result in rejection of the application due to incompleteness.*

BMP Summary Sheet

MS4 Name: City of Circle Pines

Minimum Control Measure: 4-CONSTRUCTION SITE STORMWATER RUNOFF CONTROL

Unique BMP Identification Number: 4f-1

<p>*BMP Title: Establishment of Procedures for Site Inspections and Enforcement</p>						
<p>*BMP Description:</p> <p>Construction site operators must conform to all NPDES construction permit standards and City ordinances pertaining to construction site erosion control and waste disposal. Inspection procedures consist of NPDES Phase II inspection requirements and violations reported by the public as defined in BMP Summary Sheets 3c-1 and 4e-1. Compliance to these ordinances will be enforced through ordinances 1350.07, through 1350-08. Enforcement procedures include:</p> <ol style="list-style-type: none">1. Written notice of the alleged violation to the responsible parties.2. Remedial actions within 2 weeks of the written notice or proof of this action being unwarranted.3. Failure to respond forwarded to the City attorney for further action, including monetary reimbursement of damages. <p>Location(s) in SWPPP of detailed information relating to this BMP:</p> <ul style="list-style-type: none">• BMP ID No. 4f-1 Establishment of Procedures for Site Inspections and Enforcement – Record of Activities Completed.• Section III: 1350.07 through 1350.08.						
<p>*Measurable Goals:</p> <p>The City will begin to annually evaluate the effectiveness of site inspections and enforcement procedures via enforcement actions taken annually. Additional and/or revised procedures will be added (if applicable) when deemed necessary or found non-conforming to NPDES Phase II requirements.</p>						
<p>*Timeline/Implementation Schedule:</p> <table><tr><td>Evaluate all recorded violations, determine if additional and/or revised inspection and enforcement procedures are needed.</td><td>prior to January 1, 2007</td></tr><tr><td>Draft/finalize revised inspection and enforcement procedures (if applicable)</td><td>January 1, 2007</td></tr><tr><td>Implement new/revised inspection and enforcement procedures (if applicable)</td><td>February 1, 2007</td></tr></table> <p>The implementation schedule will continue annually through the expiration of this permit, May 31, 2011.</p>	Evaluate all recorded violations, determine if additional and/or revised inspection and enforcement procedures are needed.	prior to January 1, 2007	Draft/finalize revised inspection and enforcement procedures (if applicable)	January 1, 2007	Implement new/revised inspection and enforcement procedures (if applicable)	February 1, 2007
Evaluate all recorded violations, determine if additional and/or revised inspection and enforcement procedures are needed.	prior to January 1, 2007					
Draft/finalize revised inspection and enforcement procedures (if applicable)	January 1, 2007					
Implement new/revised inspection and enforcement procedures (if applicable)	February 1, 2007					
<p>Specific Components and Notes:</p>						
<p>*Responsible Party for this BMP:</p> <p>Name: James Keinath Department: City Administrator Phone: 763-784-5895 E-mail: jkeinath@ci.circle-pines.mn.us</p>						

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BMP Summary Sheet Page 2

Responsible Person:

Name: James Keinath
Title: City Administrator
Phone: 763-784-5895
E-mail: jkeinath@ci.circle-pines.mn.us

BMP ID No. 4f-1 Establishment of Procedures for Site Inspections and Enforcement
Record of Activities Completed:

Outlined below is a description of the specific activities that were undertaken by the City over the past year that document the City has met the measurable goals associated with this BMP.

Date	Description	Contact Person (if different than responsible person)

I hereby certify that the above activities were completed.

Signature of Responsible Official

Title

Date

BMP Summary Sheet

MS4 Name: City of Circle Pines

Minimum Control Measure: 5-POST-CONSTRUCTION STORMWATER MANAGEMENT
IN NEW DEVELOPMENT AND REDEVELOPMENT

Unique BMP Identification Number: 5a-1

<p>*BMP Title: Development and Implementation of Structural and/or Non-structural BMPs</p>
<p>*BMP Description:</p> <p><u>Structural</u> The City will review and revise (if necessary, during the plan review process) permanent BMP designs and criteria for post-construction storm water management associated with new development and redevelopment projects. The City will also consider the implementation of low impact development practices if prudent and feasible. The City will annually review and revise (if necessary) the current policies, requirements, and Best Management Practices specific to structural BMP's.</p> <p><u>Non-Structural</u> The City may also improve the condition of parks, wetlands, and watersheds when the opportunity arises. Potential wetland restorations, native plantings, bank stabilization, detention ponds, and other best management construction projects will continue to be actively pursued by the City when the opportunity arises.</p> <p>Location(s) in SWPPP of detailed information relating to this BMP:</p> <ul style="list-style-type: none"> • BMP No. 5a-1 Development and Implementation of Structural and/or Non-structural BMPs – Record of Activities Completed
<p>*Measurable Goals:</p> <p>The City will evaluate all structural and non-structural BMP's during the plan review process for the potential of new and/or revised BMP's. The City will also actively look for non-structural opportunities where prudent and feasible. Success of this BMP is defined as annually recording all revised BMP designs and implemented structural and non-structural BMPs on City properties.</p>
<p>*Timeline/Implementation Schedule:</p> <p>Begin evaluation of all permanent BMP's (during plan review process), implement potential new/or revised BMP's. January 1, 2007</p> <p>Annually record all revised BMP designs and implemented structural and non-structural BMP's. 2007 through May 31, 2011</p>
<p>Specific Components and Notes:</p> <p>Comprehensive Storm Water Management Plan</p>
<p>*Responsible Party for this BMP:</p> <p style="margin-left: 20px;">Name: James Keinath Department: City Administrator Phone: 763-784-5895 E-mail: jkeinath@ci.circle-pines.mn.us</p>

**Indicates a REQUIRED field. Failure to complete any required field will result in rejection of the application due to incompleteness.*

BMP Summary Sheet

MS4 Name: City of Circle Pines

Minimum Control Measure: 5-POST-CONSTRUCTION STORMWATER MANAGEMENT
IN NEW DEVELOPMENT AND REDEVELOPMENT

Unique BMP Identification Number: 5b-1

<p>*BMP Title: Regulatory Mechanism to Address Post Construction Runoff from New Development and Redevelopment</p>
<p>*BMP Description:</p> <p>The City will implement the requirements of the Comprehensive Storm Water Management Plan, along with City codes (1350.06 subd. 6 through 15) to minimize the negative impacts storm water runoff may have on water quality within the City. Post-construction inspection and maintenance (as defined in the CSMP) will continue to be undertaken by the City of Circle Pines. Corrective actions and routine maintenance of all storm water management facilities will continue to be funded by collected storm water utility fees.</p> <p>Location(s) in SWPPP of detailed information relating to this BMP:</p> <ul style="list-style-type: none">• BMP No. 5b-1 Regulatory Mechanism to Address Post Construction Runoff from New Development and Redevelopment – Record of Activities Completed• Section III: Chapters 1350.06 Subd. 6 through 15.
<p>*Measurable Goals:</p> <p>The City will continue to inspect and maintain all storm water management facilities as described within the Comprehensive Storm Water Management Plan and applicable City codes.</p>
<p>*Timeline/Implementation Schedule:</p> <p>The City will continue this BMP in 2006 and update (if necessary) from 2007 through May 31, 2011.</p>
<p>Specific Components and Notes:</p> <p>Comprehensive Storm Water Management Plan</p>
<p>*Responsible Party for this BMP:</p> <p>Name: James Keinath Department: City Administrator Phone: 763-784-5895 E-mail: jkeinath@ci.circle-pines.mn.us</p>

**Indicates a REQUIRED field. Failure to complete any required field will result in rejection of the application due to incompleteness.*

BMP Summary Sheet

MS4 Name: City of Circle Pines

Minimum Control Measure: 5-POST-CONSTRUCTION STORMWATER MANAGEMENT
IN NEW DEVELOPMENT AND REDEVELOPMENT

Unique BMP Identification Number: 5c-1

<p>*BMP Title: Long-term Operation and Maintenance of BMPs</p>
<p>*BMP Description:</p> <p>City staff will inspect post-construction BMP's then evaluate inspection records for determining the corrective maintenance actions (if necessary) for the long-term operation of all storm water management facilities owned by the City of Circle Pines. Corrective actions and routine maintenance of all storm water management facilities will continue to be funded by collected storm water utility fees, and guided by the Comprehensive Storm Water Management Plan.</p> <p>Location(s) in SWPPP of detailed information relating to this BMP: Index Page 5: BMP ID No. 5c-1 Long-term Operation and Maintenance of BMPs – Record of Activities Completed</p>
<p>*Measurable Goals:</p> <p>The City will continue to annually inspect a minimum of 20% of all its MS4 outfalls, sediment basins, and ponds, then evaluate and record the number of proposed maintenance projects and successful funding of each project (if applicable). Success of this BMP is defined as achieving the measurable goals of minimum control measure six.</p>
<p>*Timeline/Implementation Schedule:</p> <p>The City will continue to inspect, evaluate then annually record the number of proposed maintenance projects and successful funding of each project (if applicable) through the expiration of this permit, May 31, 2011.</p>
<p>Specific Components and Notes:</p> <p>Comprehensive Storm Water Management Plan City Codes 1350-06 Subd. 6-15</p>
<p>*Responsible Party for this BMP:</p> <p>Name: James Keinath Department: City Administrator Phone: 763-784-5895 E-mail: jkeinath@ci.circle-pines.mn.us</p>

**Indicates a REQUIRED field. Failure to complete any required field will result in rejection of the application due to incompleteness.*

BMP Summary Sheet

MS4 Name: City of Circle Pines

Minimum Control Measure: 6-POLLUTION PREVENTION/GOOD HOUSEKEEPING

Unique BMP Identification Number: 6a-1

<p>*BMP Title: Municipal Operations and Maintenance Program</p>						
<p>*BMP Description:</p> <p>The City's Public Works Department will develop and implement a municipal operations pollution prevention plan consistent with the BMPs described within this MS4 permit and specified in BMPs 1c-6, 3c-1, 6a-2, 6b-2 through 6b-9 for City employees. This plan will consist of (at a minimum) training materials and workshops for City staff to help reduce storm water pollution caused from park maintenance, fleet and building maintenance, new construction and land disturbances, and storm water system maintenance.</p> <p>The City may also evaluate its maintenance facility and update the NPDES general stormwater permit for industrial activities in accordance to the NPDES requirements (if necessary).</p> <p><u>Target Audience:</u> City staff</p> <p>Location(s) in SWPPP of detailed information relating to this BMP:</p> <ul style="list-style-type: none">• BMP ID No. 6a-1 Municipal Operations and Maintenance Program– Record of Activities Completed.						
<p>*Measurable Goals:</p> <p>The effectiveness of this BMP will be measured by City staff annually evaluating conformance to the municipal operations pollution prevention plan, and revising (if necessary) the plan components. Success is defined as developing, implementing, and achieving the goals detailed within the plan by the implantation dates described below. The City will adhere to the NPDES Industrial Stormwater Permit Inspection Reports on no-exposure exemption (if necessary).</p>						
<p>*Timeline/Implementation Schedule:</p> <table><tr><td>Develop a municipal operations pollution prevention plan</td><td>prior to February 1, 2007</td></tr><tr><td>Implement municipal operations pollution prevention plan</td><td>April 1, 2007</td></tr><tr><td>Review and revise (if necessary) plan components annually</td><td>2007 through May 31, 2011</td></tr></table>	Develop a municipal operations pollution prevention plan	prior to February 1, 2007	Implement municipal operations pollution prevention plan	April 1, 2007	Review and revise (if necessary) plan components annually	2007 through May 31, 2011
Develop a municipal operations pollution prevention plan	prior to February 1, 2007					
Implement municipal operations pollution prevention plan	April 1, 2007					
Review and revise (if necessary) plan components annually	2007 through May 31, 2011					
<p>Specific Components and Notes:</p>						
<p>*Responsible Party for this BMP:</p> <p>Name: James Keinath Department: City Administrator Phone: 763-784-5895 E-mail: jkeinath@ci.circle-pines.mn.us</p>						

**Indicates a REQUIRED field. Failure to complete any required field will result in rejection of the application due to incompleteness.*

BMP Summary Sheet

MS4 Name: City of Circle Pines

Minimum Control Measure: 6-POLLUTION PREVENTION/GOOD HOUSEKEEPING

Unique BMP Identification Number: 6a-2

*BMP Title: Street Sweeping**
*BMP Description: The City currently brush or vacuum sweeps City owned streets a minimum of twice per year in an effort to reduce the amount of sediment and trash from reaching the storm sewer system. One street sweeping activity will occur in the spring (April-June) on all streets, and the second activity will occur in the fall (September – November) on selected areas (as determined by the City Administrator). Location(s) in SWPPP of detailed information relating to this BMP: <ul style="list-style-type: none">• BMP ID No. 6a-2 Street Sweeping – Record of Activities Completed
*Measurable Goals: The City will continue recording the frequency and miles of streets that are annually swept, and quantify the amount of trash/debris removed per sweeping occurrence. Success of this BMP is defined as recording two street sweeping occurrences per year.
*Timeline/Implementation Schedule: <u>This BMP is currently implemented.</u> Spring street sweeping on all City streets, once annually (April-June). 2007 through May 31, 2011 Fall street sweeping on selected City streets, once annually (September-November). 2007 through May 31, 2011 Record the frequency, miles of streets swept and amount of trash/debris removed. Annually, 2007 through May 31, 2011
Specific Components and Notes:
*Responsible Party for this BMP: Name: James Keinath Department: City Administrator Phone: 763-784-5895 E-mail: jkeinath@ci.circle-pines.mn.us

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BMP Summary Sheet Page 2

Responsible Person:

Name: James Keinath
Title: City Administrator
Phone: 763-784-5895
E-mail: jkeinath@ci.circle-pines.mn.us

BMP ID No. 6a-2 Street Sweeping
Record of Activities Completed:

Outlined below is a description of the specific activities that were undertaken by the City over the past year that document the City has met the measurable goals associated with this BMP.

Date	Description	Contact Person (if different than responsible person)

I hereby certify that the above activities were completed.

Signature of Responsible Official

Title

Date

BMP Summary Sheet

MS4 Name: City of Circle Pines

Minimum Control Measure: 6-POLLUTION PREVENTION/GOOD HOUSEKEEPING

Unique BMP Identification Number: 6b-2

***BMP Title:** Annual Inspection of All Structural Pollution Control Devices

***BMP Description:**

The City Public Works Department will continue to inspect all identified structural pollution control devices on City property and right-of-ways, and prescribe a maintenance schedule as necessary. Newly constructed and rebuild structural pollution control devices will be added to the storm sewer map (BMP summary sheet 3a-1) and inspected within one year of post construction.

Location(s) in SWPPP of detailed information relating to this BMP:

- BMP ID No. 6b-2 Annual Inspection of All Structural Pollution Control Devices – Record of Activities Completed

***Measurable Goals:**

The City will continue to inspect and document all structural pollution control devices a minimum of once per year. Maintenance and repair specifications and schedules will be developed and implemented as necessary. Success of this BMP will be defined as annually conducting and documenting inspections, repairs, and maintenance projects of all structural pollution control devices.

***Timeline/Implementation Schedule:**

This BMP is currently implemented. This activity will continue to be conducted in 2006 and annually through the expiration of this permit, May 31, 2011.

Specific Components and Notes:

***Responsible Party for this BMP:**

Name: James Keinath

Department: City Administrator

Phone: 763-784-5895

E-mail: jkeinath@ci.circle-pines.mn.us

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BMP Summary Sheet

MS4 Name: City of Circle Pines

Minimum Control Measure: 6-POLLUTION PREVENTION/GOOD HOUSEKEEPING

Unique BMP Identification Number: 6b-3

***BMP Title:** Inspection of a Minimum of 20 percent of the MS4 Outfalls, Sediment Basins and Ponds Each Year on a Rotating Basis

***BMP Description:**

The City currently inspects all mapped outfalls, sediment basins, and ponds within the City's storm sewer system. The results of these inspections will be compiled in a report which will include sediment levels, watershed information and recommended maintenance schedules.

Location(s) in SWPPP of detailed information relating to this BMP:

- BMP ID No. 6b-3 Inspection of a Minimum of 20 percent of the MS4 Outfalls, Sediment Basins and Ponds Each Year on a Rotating Basis – Record of Activities Completed

***Measurable Goals:**

The City will inspect all mapped outfalls, sediment basins, and ponds a minimum of 20% each year (on a rotating schedule during the permit coverage) and record the physical condition of each inspected outfall or pond. Success of this BMP will be defined as recording a minimum inspection rate of 20% each year of all MS4 outfalls, sediment basins, and ponds.

***Timeline/Implementation Schedule:**

This BMP is currently implemented. This activity will continue to be conducted in 2006 and annually through the expiration of this permit, May 31, 2011.

Specific Components and Notes:

***Responsible Party for this BMP:**

Name: James Keinath

Department: City Administrator

Phone: 763-784-5895

E-mail: jkeinath@ci.circle-pines.mn.us

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BMP Summary Sheet

MS4 Name: City of Circle Pines

Minimum Control Measure: 6-POLLUTION PREVENTION/GOOD HOUSEKEEPING

Unique BMP Identification Number: 6b-4

<p>*BMP Title: Annual Inspection of All Exposed Stockpile, Storage and Material Handling Areas</p>
<p>*BMP Description:</p> <p>City staff will annually locate and inspect all exposed stockpiles and storage/material handling areas on City owned properties. All existing onsite BMP's will be inspected for conformance to NPDES Phase II permit requirements. Any identified erosion control issues will be corrected and documented.</p> <p>Location(s) in SWPPP of detailed information relating to this BMP:</p> <ul style="list-style-type: none">• BMP ID No. 6b-4 Annual Inspection of All Exposed Stockpile, Storage and Material Handling Areas – Record of Activities Completed
<p>*Measurable Goals:</p> <p>The effectiveness of this BMP will be measured by the frequency of inspections and corrective actions. Success will be defined as locating and inspecting all exposed stockpiles and storage/material handling on City property a minimum of once each year.</p>
<p>*Timeline/Implementation Schedule:</p> <p>Locate and inspect all exposed stockpile, storage and material handling areas located on City-owned properties, record inspections, correct and document all remedial actions a minimum of once per year. Beginning in 2007; continue annually through May 31, 2011.</p>
<p>Specific Components and Notes:</p>
<p>*Responsible Party for this BMP:</p> <p>Name: James Keinath Department: City Administrator Phone: 763-784-5895 E-mail: jkeinath@ci.circle-pines.mn.us</p>

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BMP Summary Sheet

MS4 Name: City of Circle Pines

Minimum Control Measure: 6-POLLUTION PREVENTION/GOOD HOUSEKEEPING

Unique BMP Identification Number: 6b-5

<p>*BMP Title: Inspection Follow-up Including the Determination of Whether Repair, Replacement, or Maintenance Measures are Necessary and the Implementation of the Corrective Measures</p>
<p>*BMP Description:</p> <p>Determinations of repair, replacement, or maintenance measures shall be directed by the City Administrator and City's engineering consultant. All corrective maintenance, repair, and/or replacement measures shall be documented and recorded in the City's SWPPP.</p> <p>Location(s) in SWPPP of detailed information relating to this BMP:</p> <ul style="list-style-type: none">• BMP ID No. 6b-5 Inspection Follow-up Including the Determination of Whether Repair, Replacement, or Maintenance Measures are Necessary and the Implementation of the Corrective Measures – Record of Activities Completed
<p>*Measurable Goals:</p> <p>Repair, replacement, and/or maintenance completed will be documented and recorded within the City's SWPPP annually and may be submitted with the annual report to the MPCA. The effectiveness of this BMP will be measured by the number of determinations made annually. Success will be defined as completing all applicable corrective actions as determined from the inspection reports.</p>
<p>*Timeline/Implementation Schedule:</p> <p>The activity was established in 2004 and will continually be updated annually through the life of this permit, May 31, 2011.</p>
<p>Specific Components and Notes:</p>
<p>*Responsible Party for this BMP:</p> <p>Name: James Keinath Department: City Administrator Phone: 763-784-5895 E-mail: jkeinath@ci.circle-pines.mn.us</p>

**Indicates a REQUIRED field. Failure to complete any required field will result in rejection of the application due to incompleteness.*

BMP Summary Sheet

MS4 Name: City of Circle Pines

Minimum Control Measure: 6-POLLUTION PREVENTION/GOOD HOUSEKEEPING

Unique BMP Identification Number: 6b-6

<p>*BMP Title: Record Reporting and Retention of All Inspections and Responses to the Inspections</p>
<p>*BMP Description:</p> <p>The City Administrator will retain all records of inspection, maintenance, and corrective actions of the City's storm water system. Records will be available, by request, to the public upon approval by the City Administrator.</p> <p>Location(s) in SWPPP of detailed information relating to this BMP:</p> <ul style="list-style-type: none">• Index Page 6: BMP ID No. 6b-6 Record Reporting and Retention of All Inspections and Responses to the Inspections – Record of Activities Completed
<p>*Measurable Goals:</p> <p>The City will record the number of record requests and distributed materials annually. Success will be defined by the City providing the records or materials as requested.</p>
<p>*Timeline/Implementation Schedule:</p> <p>The activity was established in 2004 and will be updated annually throughout the life of this permit, May 31, 2011.</p>
<p>Specific Components and Notes:</p>
<p>*Responsible Party for this BMP:</p> <p>Name: James Keinath Department: City Administrator Phone: 763-784-5895 E-mail: jkeinath@ci.circle-pines.mn.us</p>

**Indicates a REQUIRED field. Failure to complete any required field will result in rejection of the application due to incompleteness.*

BMP Summary Sheet

MS4 Name: City of Circle Pines

Minimum Control Measure: 6-POLLUTION PREVENTION/GOOD HOUSEKEEPING

Unique BMP Identification Number: 6b-7

<p>*BMP Title: Evaluation of Inspection Frequency</p>
<p>*BMP Description:</p> <p>The City will retain the records of inspection results and any maintenance performed or recommended. After two years of inspections, if patterns of maintenance become apparent, the frequency of inspections may be adjusted at the discretion of the City's engineering consultant, given the following conditions are fulfilled:</p> <ol style="list-style-type: none">1. If maintenance or sediment removal is required as a result of each of the first two annual inspections, the frequency of inspection shall be increased to at least two (2) time annually, or more frequently as needed to prevent carry-over or washout of pollutants from structures and maximize pollutant removal. <p>If maintenance or sediment removal is not required as a result of both of the first two (2) annual inspections, the frequency may be reduced to once every two (2) years.</p> <p>Location(s) in SWPPP of detailed information relating to this BMP:</p> <ul style="list-style-type: none">• Index Page 6: BMP ID No. 6b-7 Evaluation of Inspection Frequency – Record of Activities Completed
<p>*Measurable Goals:</p> <p>The effectiveness of this BMP will be measured by the annual recording of all inspections completed the previous year. Success of this BMP will be defined as annually reviewing the frequency of inspections to the maintenance completed by the City.</p>
<p>*Timeline/Implementation Schedule:</p> <p>The activity was established in 2002 and will continue to be annually evaluated through the expiration of this permit, May 31, 2011.</p>
<p>Specific Components and Notes:</p>
<p>*Responsible Party for this BMP:</p> <p>Name: James Keinath Department: City Administrator Phone: 763-784-5895 E-mail: jkeinath@ci.circle-pines.mn.us</p>

**Indicates a REQUIRED field. Failure to complete any required field will result in rejection of the application due to incompleteness.*

Additional BMP Summary Sheet

MS4 Name: City of Circle Pines

Minimum Control Measure: 6-POLLUTION PREVENTION/GOOD HOUSEKEEPING

Unique BMP Identification Number: 6b-8

*BMP Title: Landscaping and Lawn Care Practices Review
*BMP Description: <p>The City will continue to annually review and, if necessary, adjust its current practices in the use of fertilizer, pesticide and herbicide application, mowing and discharge operations, grass clipping collection, mulching and composting.</p> <p>Location(s) in SWPPP of detailed information relating to this BMP:</p> <ul style="list-style-type: none">• BMP ID No. 6b-8 Landscaping and Lawn Care Practices Review – Record of Activities Completed
*Measurable Goals: <p>The City will continue to annually review and adjust (if necessary) its current methods (as previously specified) of landscaping and lawn care maintenance. The City will annually document the results of the review. Success will be defined as annually reviewing and adjusting current practices (if necessary).</p>
*Timeline/Implementation Schedule: <p>This BMP was implemented in 2004 and will continue through May 31, 2011.</p>
Specific Components and Notes:
*Responsible Party for this BMP: Name: James Keinath Department: City Administrator Phone: 763-784-5895 E-mail: jkeinath@ci.circle-pines.mn.us

**Indicates a REQUIRED field. Failure to complete any required field will result in rejection of the application due to incompleteness*

BMP Summary Sheet Page 2

Responsible Person:

Name: James Keinath
Title: City Administrator
Phone: 763-784-5895
E-mail: jkeinath@ci.circle-pines.mn.us

BMP ID No. 6b-8 Landscaping and Lawn Care Practices Review
Record of Activities Completed:

Outlined below is a description of the specific activities that were undertaken by the City over the past year that document the City has met the measurable goals associated with this BMP.

Date	Description	Contact Person (if different than responsible person)

I hereby certify that the above activities were completed.

Signature of Responsible Official

Title

Date

Additional BMP Summary Sheet

MS4 Name: City of Circle Pines

Minimum Control Measure: N/A

Unique BMP Identification Number: 7

*BMP Title: Evaluation of Potential Storm Water Infiltration Projects for Impacts within Source Water Protection Areas
*BMP Description: <p>The City will adopt and implement the Minnesota Department of Health’s <i>“Evaluating Proposed Storm Water Infiltration Projects in Vulnerable Wellhead Protection Areas”</i> (Draft-July 19, 2006) as a guidance manual in evaluating all proposed infiltration projects within or adjacent to vulnerable drinking water supply management areas (DWSMA). This document can be found in section I of the SWPPP.</p> <p>If the proposed infiltration/discharge is determined by the City to potentially affect the local drinking water supply, the City will prohibit the construction of the infiltration area or incorporate the necessary BMPs to minimize the identified pollutant(s) prior to infiltrating the vulnerable portions of the DWSMA.</p> <p>Location(s) in SWPPP of detailed information relating to this BMP:</p>
*Measurable Goals: <ol style="list-style-type: none">1. The City will implement the Minnesota Department of Health’s <i>“Evaluating Proposed Storm Water Infiltration Projects in Vulnerable Wellhead Protection Areas”</i> (Draft-July 19, 2006) as a guide in evaluating all infiltration projects within or adjacent to vulnerable DWSMA’s.2. The City will prohibit the construction of the infiltration area or incorporate specific BMPs to reduce pollutants from infiltrating within vulnerable DWSMA’s.3. The City will annually record the evaluation, denial, and implemented BMP’s, of all proposed infiltration projects within and/or adjacent to vulnerable DWSMA’s.
*Timeline/Implementation Schedule: The City will begin implementation of the three above mentioned measurable goals by January 1, 2007.
Specific Components and Notes: The following information is located within section I of the SWPPP: <ul style="list-style-type: none">• <i>“Evaluating Proposed Storm Water Infiltration Projects in Vulnerable Wellhead Protection Areas”</i> (Draft-July 19, 2006)• Maps of Vulnerable Drinking Water Supply Management Areas within the City of Circle Pines• Source Water Assessment for the City of Circle Pines
*Responsible Party for this BMP: Name: James Keinath Department: City Administrator Phone: 763-784-5895 E-mail: jkeinath@ci.circle-pines.mn.us

APPENDIX C

Floodplain Management Ordinance

CHAPTER 14 - FLOOD PLAIN MANAGEMENT

SECTION 1401.00 STATUTORY AUTHORIZATION, FINDINGS OF FACT AND PURPOSE

1401.01 Statutory Authorization: The legislature of the State of Minnesota has, in Minnesota Statutes Chapter 103F and Chapter 462 delegated the responsibility to local government units to adopt regulations designed to minimize flood losses. Therefore, the City Council of Circle Pines, Minnesota, does ordain as follows:

1401.02 Purpose:

- a. This ordinance regulates development in the flood hazard areas of Circle Pines, Minnesota. These flood hazard areas are subject to periodic inundation, which may result in loss of life and property, health and safety hazards, disruption of commerce and governmental services, extraordinary public expenditures for flood protection and relief, and impairment of the tax base. It is the purpose of this ordinance to promote the public health, safety, and general welfare by minimizing these losses and disruptions.
- b. National Flood Insurance Program Compliance. This ordinance is adopted to comply with the rules and regulations of the National Flood Insurance Program codified as 44 Code of Federal Regulations Parts 59 -78, as amended, so as to maintain the community's eligibility in the National Flood Insurance Program.
- c. This ordinance is also intended to preserve the natural characteristics and functions of watercourses and floodplains in order to moderate flood and stormwater impacts, improve water quality, reduce soil erosion, protect aquatic and riparian habitat, provide recreational opportunities, provide aesthetic benefits and enhance community and economic development.

SECTION 1402.00 GENERAL PROVISIONS

1402.01 How to Use This Ordinance: This ordinance adopts the floodplain maps applicable to Circle Pines and includes three floodplain districts: Floodway, Flood Fringe, and General Floodplain.

- a. Where Floodway and Flood Fringe districts are delineated on the floodplain maps, the standards in Sections 1404.00 or 1405.00 will apply, depending on the location of a property.
- b. Locations where Floodway and Flood Fringe districts are not delineated on the floodplain maps are considered to fall within the General Floodplain district. Within the General Floodplain district, the Floodway District

standards in Section 1404.00 apply unless the floodway boundary is determined, according to the process outlined in Section 1406.00. Once the floodway boundary is determined, the Flood Fringe District standards in Section 1405.00 may apply outside the floodway.

1402.02 Lands to Which Ordinance Applies: This ordinance applies to all lands within the jurisdiction of the City of Circle Pines shown on the Official Zoning Map and/or the attachments to the map as being located within the boundaries of the Floodway, Flood Fringe, or General Floodplain Districts.

- a. The Floodway, Flood Fringe and General Floodplain Districts are overlay districts that are superimposed on all existing zoning districts. The standards imposed in the overlay districts are in addition to any other requirements in this ordinance. In case of a conflict, the more restrictive standards will apply.

1402.03 Incorporation of Maps by Reference: The following maps together with all attached material are hereby adopted by reference and declared to be a part of the Official Zoning Map and this ordinance. The attached material includes the Flood Insurance Study for Anoka County, Minnesota, and Incorporated Areas and the Flood Insurance Rate Map panels 27003C0343E and 27003C0344E, all dated December 16, 2015 and all prepared by the Federal Emergency Management Agency. These materials are on file at Circle Pines City Hall.

1402.04 Regulatory Flood Protection Elevation: The regulatory flood protection elevation (RFPE) is an elevation no lower than one foot above the elevation of the regional flood plus any increases in flood elevation caused by encroachments on the floodplain that result from designation of a floodway.

1402.05 Interpretation: The boundaries of the zoning districts are determined by scaling distances on the Flood Insurance Rate Map.

- a. Where a conflict exists between the floodplain limits illustrated on the official zoning map and actual field conditions, the flood elevations shall be the governing factor. The Zoning Administrator must interpret the boundary location based on the ground elevations that existed on the site on the date of the first National Flood Insurance Program map showing the area within the regulatory floodplain, and other available technical data.
- b. Persons contesting the location of the district boundaries will be given a reasonable opportunity to present their case to the City Council and to submit technical evidence.

1402.06 Abrogation and Greater Restrictions: It is not intended by this ordinance to repeal, abrogate, or impair any existing easements, covenants, or other private agreements. However, where this ordinance imposes greater restrictions, the

provisions of this ordinance prevail. All other ordinances inconsistent with this ordinance are hereby repealed to the extent of the inconsistency only.

1402.07 Warning and Disclaimer of Liability: This ordinance does not imply that areas outside the floodplain districts or land uses permitted within such districts will be free from flooding or flood damages. This ordinance does not create liability on the part of the City of Circle Pines or its officers or employees for any flood damages that result from reliance on this ordinance or any administrative decision lawfully made hereunder.

1402.08 Severability: If any section, clause, provision, or portion of this ordinance is adjudged unconstitutional or invalid by a court of law, the remainder of this ordinance shall not be affected and shall remain in full force.

1402.09 Definitions: Unless specifically defined below, words or phrases used in this ordinance must be interpreted according to common usage and so as to give this ordinance its most reasonable application.

- a. Accessory Use or Structure - a use or structure on the same lot with, and of a nature customarily incidental and subordinate to, the principal use or structure.
- b. Base Flood Elevation - The elevation of the "regional flood." The term "base flood elevation" is used in the flood insurance survey.
- c. Basement - any area of a structure, including crawl spaces, having its floor or base subgrade (below ground level) on all four sides, regardless of the depth of excavation below ground level.
- d. Conditional Use - a specific type of structure or land use listed in the official control that may be allowed but only after an in-depth review procedure and with appropriate conditions or restrictions as provided in the official zoning controls or building codes and upon a finding that:
 - (1) Certain conditions as detailed in the zoning ordinance exist.
 - (2) The structure and/or land use conform to the comprehensive land use plan if one exists and are compatible with the existing neighborhood.
- e. Critical Facilities - facilities necessary to a community's public health and safety, those that store or produce highly volatile, toxic or water-reactive materials, and those that house occupants that may be insufficiently mobile to avoid loss of life or injury. Examples of critical facilities include hospitals, correctional facilities, schools, daycare facilities, nursing homes, fire and police stations, wastewater

treatment facilities, public electric utilities, water plants, fuel storage facilities, and waste handling and storage facilities.

- f. Development - any manmade change to improved or unimproved real estate, including buildings or other structures, mining, dredging, filling, grading, paving, excavation or drilling operations, or storage of equipment or materials.
- g. Equal Degree of Encroachment - a method of determining the location of floodway boundaries so that floodplain lands on both sides of a stream are capable of conveying a proportionate share of flood flows.
- h. Farm Fence - A fence as defined by Minn. Statutes Section 344.02, Subd. 1(a)-(d). An open type fence of posts and wire is not considered to be a structure under this ordinance. Fences that have the potential to obstruct flood flows, such as chain link fences and rigid walls, are regulated as structures under this ordinance.
- i. Flood - a temporary increase in the flow or stage of a stream or in the stage of a wetland or lake that results in the inundation of normally dry areas.
- j. Flood Frequency - the frequency for which it is expected that a specific flood stage or discharge may be equaled or exceeded.
- k. Flood Fringe - that portion of the floodplain outside of the floodway. Flood fringe is synonymous with the term "floodway fringe" used in the Flood Insurance Study for Anoka County, Minnesota.
- l. Flood Prone Area - any land susceptible to being inundated by water from any source (see "Flood").
- m. Floodplain - the beds proper and the areas adjoining a wetland, lake or watercourse which have been or hereafter may be covered by the regional flood.
- n. Floodproofing - a combination of structural provisions, changes, or adjustments to properties and structures subject to flooding, primarily for the reduction or elimination of flood damages.
- o. Floodway - the bed of a wetland or lake and the channel of a watercourse and those portions of the adjoining floodplain which are reasonably required to carry or store the regional flood discharge.
- p. Lowest Floor - the lowest floor of the lowest enclosed area (including basement). An unfinished or flood resistant enclosure, used solely for parking of vehicles, building access, or storage in an area other than a

basement area, is not considered a building's lowest floor.

- q. Manufactured Home - a structure, transportable in one or more sections, which is built on a permanent chassis and is designed for use with or without a permanent foundation when attached to the required utilities. The term "manufactured home" does not include the term "recreational vehicle."
- r. Obstruction - any dam, wall, wharf, embankment, levee, dike, pile, abutment, projection, excavation, channel modification, culvert, building, wire, fence, stockpile, refuse, fill, structure, or matter in, along, across, or projecting into any channel, watercourse, or regulatory floodplain which may impede, retard, or change the direction of the flow of water, either in itself or by catching or collecting debris carried by such water.
- s. One Hundred Year Floodplain - lands inundated by the "Regional Flood" (see definition).
- t. Principal Use or Structure - all uses or structures that are not accessory uses or structures.
- u. Reach - a hydraulic engineering term to describe a longitudinal segment of a stream or river influenced by a natural or man-made obstruction. In an urban area, the segment of a stream or river between two consecutive bridge crossings would most typically constitute a reach.
- v. Recreational Vehicle - a vehicle that is built on a single chassis, is 400 square feet or less when measured at the largest horizontal projection, is designed to be self-propelled or permanently towable by a light duty truck, and is designed primarily not for use as a permanent dwelling but as temporary living quarters for recreational, camping, travel, or seasonal use. For the purposes of this ordinance, the term recreational vehicle is synonymous with the term "travel trailer/travel vehicle."
- w. Regional Flood - a flood which is representative of large floods known to have occurred generally in Minnesota and reasonably characteristic of what can be expected to occur on an average frequency in the magnitude of the 1% chance or 100-year recurrence interval. Regional flood is synonymous with the term "base flood" used in a flood insurance study.
- x. Regulatory Flood Protection Elevation (RFPE) - an elevation not less than one foot above the elevation of the regional flood plus any increases in flood elevation caused by encroachments on the floodplain that result from designation of a floodway.

- y. Repetitive Loss: Flood related damages sustained by a structure on two separate occasions during a ten year period for which the cost of repairs at the time of each such flood event on the average equals or exceeds 25% of the market value of the structure before the damage occurred.
- z. Special Flood Hazard Area - a term used for flood insurance purposes synonymous with "One Hundred Year Floodplain."
- aa. Structure - anything constructed or erected on the ground or attached to the ground or on-site utilities, including, but not limited to, buildings, factories, sheds, detached garages, cabins, manufactured homes, recreational vehicles not meeting the exemption criteria specified in Section 1409.02 (b) of this ordinance and other similar items.
- bb. Substantial Damage - means damage of any origin sustained by a structure where the cost of restoring the structure to its before damaged condition would equal or exceed 50 percent of the market value of the structure before the damage occurred.
- cc. Substantial Improvement - within any consecutive 365-day period, any reconstruction, rehabilitation (including normal maintenance and repair), repair after damage, addition, or other improvement of a structure, the cost of which equals or exceeds 50 percent of the market value of the structure before the "start of construction" of the improvement. This term includes structures that have incurred "substantial damage," regardless of the actual repair work performed. The term does not, however, include either:
 - (1) Any project for improvement of a structure to correct existing violations of state or local health, sanitary, or safety code specifications which have been identified by the local code enforcement official and which are the minimum necessary to assure safe living conditions.
 - (2) Any alteration of a "historic structure," provided that the alteration will not preclude the structure's continued designation as a "historic structure." For the purpose of this ordinance, "historic structure" is as defined in 44 Code of Federal Regulations, Part 59.1.

1402.10 Annexations: The Flood Insurance Rate Map panels adopted by reference into Section 2.3 above may include floodplain areas that lie outside of the corporate boundaries of the City of Circle Pines at the time of adoption of this ordinance. If any of these floodplain land areas are annexed into the City after the date of adoption of this ordinance, the newly

annexed floodplain lands will be subject to the provisions of this ordinance immediately upon the date of annexation.

SECTION 1403.00 ESTABLISHMENT OF ZONING DISTRICTS

1403.01 Districts:

- a. Floodway District. The Floodway District includes those areas designated as floodway on the Flood Insurance Rate Map adopted in Section 1402.03. For lakes, wetlands and other basins, the Floodway District includes those areas designated as Zone A and Zone AE without a floodway on the Flood Insurance Rate Map that are at or below the ordinary high water level as defined in Minnesota Statutes, Section 103G.005, subdivision 14.
- b. Flood Fringe District. The Flood Fringe District includes those areas designated as floodway fringe on the Flood Insurance Rate Map adopted in Section 1402.03, as being within Zone AE but being located outside of the floodway. For lakes, wetlands and other basins (that do not have a floodway designated), the Flood Fringe District includes those areas designated as Zone AE on the Flood Insurance Rate Map panels adopted in Section 1402.03 that are below the 1% annual chance (100-year) flood elevation but above the ordinary high water level as defined in Minnesota Statutes, Section 103G.005, subdivision 14.
- c. General Floodplain District. The General Floodplain District includes those areas designated as Zone A or Zone AE without a floodway on the Flood Insurance Rate Map adopted in Section 1402.03, but not subject to the criteria in sections 1403.01, a. and 1403.02, b. above.

1403.02 Compliance: Within the floodplain districts established in this ordinance, the use of any land, the use, size, type and location of structures on lots, the installation and maintenance of transportation, utility, water supply and waste treatment facilities, and the subdivision of land must comply with the terms of this ordinance and other applicable regulations. All uses not listed as permitted uses or conditional uses in Sections 1404.00, 1405.00 and 1406.00, respectively, are prohibited.

In addition, a caution is provided here that:

- a. New and replacement manufactured homes and certain recreational vehicles are subject to the general provisions of this ordinance and specifically Section 1409.00.
- b. Modifications, additions, structural alterations, normal maintenance and repair, or repair after damage to existing nonconforming structures and nonconforming uses of structures or land are regulated by the general

provisions of this ordinance and specifically Section 1411.00.

- c. All structures must be constructed with electrical, heating, ventilation, plumbing, and air conditioning equipment and other service facilities that are designed and/or located so as to prevent water from entering or accumulating within the components during conditions of flooding.
- d. As-built elevations for elevated or floodproofed structures must be certified by ground surveys and flood-proofing techniques must be designed and certified by a registered professional engineer or architect as specified in the general provisions of this ordinance and specifically as stated in Section 1410.00 of this ordinance.
- e. Critical facilities, as defined in Section 1402.09, e., are prohibited in all floodplain districts.

SECTION 1404.00 FLOODWAY DISTRICT (FW)

1404.01 Permitted Uses: The following uses, subject to the standards set forth in Section 1404.02, are permitted uses if otherwise allowed in the underlying zoning district or any applicable overlay district:

- a. General farming, pasture, grazing, outdoor plant nurseries, horticulture, truck farming, forestry, sod farming, and wild crop harvesting.
- c. Industrial-commercial loading areas, parking areas, and airport landing strips.
- c. Open space uses, including but not limited to private and public golf courses, tennis courts, driving ranges, archery ranges, picnic grounds, boat launching ramps, swimming areas, parks, wildlife and nature preserves, game farms, fish hatcheries, shooting preserves, hunting and fishing areas, and single or multiple purpose recreational trails.
- d. Residential lawns, gardens, parking areas, and play areas.
- e. Railroads, streets, bridges, utility transmission lines and pipelines, provided that the Department of Natural Resources' Area Hydrologist is notified at least ten days prior to issuance of any permit, and that the standards in Sections 1404.04 a., 1404.04 c.(1) and 1404.04 f. of this ordinance are met.

1404.02 Standards for Floodway Permitted Uses:

- a. The use must have a low flood damage potential.
- b. With the exception of the uses listed in Section 1404.01 e., the use must not obstruct flood flows or increase

flood elevations and must not involve structures, fill, obstructions, excavations or storage of materials or equipment.

- c. Any facility that will be used by employees or the general public must be designed with a flood warning system that provides adequate time for evacuation if the area is inundated to a depth and velocity such that the depth (in feet) multiplied by the velocity (in feet per second) would exceed a product of four upon occurrence of the regional (1% chance) flood.

1404.03 Conditional Uses: The following uses may be allowed as conditional uses following the standards and procedures set forth in Section 1410.04 of this ordinance and further subject to the standards set forth in Section 1404.04, if otherwise allowed in the underlying zoning district or any applicable overlay district.

- a. Structures accessory to the uses listed in 1404.01 above and the uses listed in 1404.03 b-1404.03 g. below.
- b. Extraction and storage of sand, gravel, and other materials.
- c. Marinas, boat rentals, docks, piers, wharves, and water control structures.
- d. Storage yards for equipment, machinery, or materials.
- e. Placement of fill or construction of fences that obstruct flood flows. Farm fences, as defined in section 1402.09 h., are permitted uses.
- f. Travel-ready recreational vehicles meeting the exception standards in Section 1409.02 c.
- g. Levees or dikes intended to protect agricultural crops for a frequency flood event equal to or less than the 10-year frequency flood event.

1404.04 Standards for Floodway Conditional Uses:

- a. All Uses. A conditional use must not cause any increase in the stage of the 1% chance or regional flood or cause an increase in flood damages in the reach or reaches affected.
- b. Fill; Storage of Materials and Equipment:
 - (1) The storage or processing of materials that are, in time of flooding, flammable, explosive, or potentially injurious to human, animal, or plant life is prohibited.
 - (2) Fill, dredge spoil, and other similar materials deposited or stored in the floodplain must be protected from erosion by vegetative cover, mulching, riprap or other acceptable method. Permanent sand and gravel

operations and similar uses must be covered by a long-term site development plan.

- (3) Temporary placement of fill, other materials, or equipment which would cause an increase to the stage of the 1% percent chance or regional flood may only be allowed if the City Council has approved a plan that assures removal of the materials from the floodway based upon the flood warning time available.

c. Accessory Structures:

- (1) Accessory structures must not be designed for human habitation.
- (2) Accessory structures, if permitted, must be constructed and placed on the building site so as to offer the minimum obstruction to the flow of flood waters:
 - (a) Whenever possible, structures must be constructed with the longitudinal axis parallel to the direction of flood flow; and
 - (b) So far as practicable, structures must be placed approximately on the same flood flow lines as those of adjoining structures.
- (3) Accessory structures must be elevated on fill or structurally dry floodproofed in accordance with the FP-1 or FP-2 floodproofing classifications in the State Building Code. All floodproofed accessory structures must meet the following additional standards:
 - (a) The structure must be adequately anchored to prevent flotation, collapse or lateral movement and designed to equalize hydrostatic flood forces on exterior walls; and
 - (b) Any mechanical and utility equipment in the structure must be elevated to or above the regulatory flood protection elevation or properly floodproofed.
- (4) As an alternative, an accessory structure may be internally/wet floodproofed to the FP-3 or FP-4 floodproofing classifications in the State Building Code, provided the accessory structure constitutes a minimal investment and does not exceed 576 square feet in size. A detached garage may only be used for parking of vehicles and limited storage. All structures must meet the following standards:
 - (a) To allow for the equalization of hydrostatic pressure, there must be a minimum of two "automatic" openings in the outside walls of the structure, with a total net area of not less than one square inch

for every square foot of enclosed area subject to flooding; and

- (b) There must be openings on at least two sides of the structure and the bottom of all openings must be no higher than one foot above the lowest adjacent grade to the structure. Using human intervention to open a garage door prior to flooding will not satisfy this requirement for automatic openings.
- d. Structural works for flood control that will change the course, current or cross section of protected wetlands or public waters are subject to the provisions of Minnesota Statutes, Section 103G.245.
- e. A levee, dike or floodwall constructed in the floodway must not cause an increase to the 1% chance or regional flood. The technical analysis must assume equal conveyance or storage loss on both sides of a stream.
- f. Floodway developments must not adversely affect the hydraulic capacity of the channel and adjoining floodplain of any tributary watercourse or drainage system.

SECTION 1405.00 FLOOD FRINGE DISTRICT (FF)

1405.01 Permitted Uses: Permitted uses are those uses of land or structures allowed in the underlying zoning district(s) that comply with the standards in Sections 1405.02. If no pre-existing, underlying zoning districts exist, then any residential or nonresidential structure or use of a structure or land is a permitted use provided it does not constitute a public nuisance.

1405.02 Standards for Flood Fringe Permitted Uses:

- a. All structures, including accessory structures, must be elevated on fill so that the lowest floor, as defined, is at or above the regulatory flood protection elevation. The finished fill elevation for structures must be no lower than one foot below the regulatory flood protection elevation and the fill must extend at the same elevation at least 15 feet beyond the outside limits of the structure.
 - (1) All service utilities, including ductwork, must be elevated or water-tight to prevent infiltration of floodwaters.
 - (2) As an alternative to elevation on fill, an accessory structure that constitutes a minimal investment and that does not exceed 576 square feet in size may be internally floodproofed in accordance with Section 1404.04 c.
- b. The cumulative placement of fill or similar material on a parcel must not exceed 1,000 cubic yards, unless the fill is specifically intended to elevate a structure in

accordance with Section 1405.02 a. of this ordinance, or if allowed as a conditional use under Section 1405.03 c. below.

- c. The storage of any materials or equipment must be elevated on fill to the regulatory flood protection elevation.
- e. The storage or processing of materials that are, in time of flooding, flammable, explosive, or potentially injurious to human, animal, or plant life is prohibited.
- f. Fill must be properly compacted and the slopes must be properly protected by the use of riprap, vegetative cover or other acceptable method.
- g. All new principal structures must have vehicular access at or above an elevation not more than two feet below the regulatory flood protection elevation, or must have a flood warning /emergency evacuation plan acceptable to the City Council.
- h. Accessory uses such as yards, railroad tracks, and parking lots may be at an elevation lower than the regulatory flood protection elevation. However, any facilities used by employees or the general public must be designed with a flood warning system that provides adequate time for evacuation if the area is inundated to a depth and velocity such that the depth (in feet) multiplied by the velocity (in feet per second) would exceed a product of four upon occurrence of the regional (1% chance) flood.
- i. Interference with normal manufacturing/industrial plant operations must be minimized, especially along streams having protracted flood durations. In considering permit applications, due consideration must be given to the needs of industries with operations that require a floodplain location.
- j. Flood fringe developments must not adversely affect the hydraulic capacity of the channel and adjoining floodplain of any tributary watercourse or drainage system.
- k. Manufactured homes and recreational vehicles must meet the standards of Section 1409.00 of this ordinance.

1405.03 Conditional Uses: The following uses and activities may be allowed as conditional uses, if allowed in the underlying zoning district(s) or any applicable overlay district, following the procedures in Section 1410.04 of this ordinance. Conditional uses must meet the standards in Sections 1405.02 d. through 1405.02 j. and Section 1405.04.

- a. Any structure that is not elevated on fill or floodproofed in accordance with Section 1405.02a. of this ordinance.
- b. Storage of any material or equipment below the regulatory flood protection elevation.
- c. The cumulative placement of more than 1,000 cubic yards of fill when the fill is not being used to elevate a

structure in accordance with Section 1405.02a. of this ordinance.

1405.04 Standards for Flood Fringe Conditional Uses:

- a. The standards listed in Sections 1405.02 d. through 1405.02 j. apply to all conditional uses.
- b. Basements, as defined by Section 1402.09 c. of this ordinance, are subject to the following:
 - (1) Residential basement construction is not allowed below the regulatory flood protection elevation.
 - (2) Non-residential basements may be allowed below the regulatory flood protection elevation provided the basement is structurally dry floodproofed in accordance with Section 1405.04 d. of this ordinance.
- c. All areas of nonresidential structures, including basements, to be placed below the regulatory flood protection elevation must be floodproofed in accordance with the structurally dry floodproofing classifications in the State Building Code. Structurally dry floodproofing must meet the FP-1 or FP-2 floodproofing classification in the State Building Code, which requires making the structure watertight with the walls substantially impermeable to the passage of water and with structural components capable of resisting hydrostatic and hydrodynamic loads and the effects of buoyancy. Structures wet floodproofed to the FP-3 or FP-4 classification are not permitted.
- d. The placement of more than 1,000 cubic yards of fill or other similar material on a parcel (other than for the purpose of elevating a structure to the regulatory flood protection elevation) must comply with an approved erosion/sedimentation control plan.
 - (1) The plan must clearly specify methods to be used to stabilize the fill on site for a flood event at a minimum of the regional (1% chance) flood event.
 - (2) The plan must be prepared and certified by a registered professional engineer or other qualified individual acceptable to the City Council.
 - (3) The plan may incorporate alternative procedures for removal of the material from the floodplain if adequate flood warning time exists.
- e. Storage of materials and equipment below the regulatory flood protection elevation must comply with an approved emergency plan providing for removal of such materials within the time available after a flood warning.
- f. Alternative elevation methods other than the use of fill may be utilized to elevate a structure's lowest floor

above the regulatory flood protection elevation. These alternative methods may include the use of stilts, pilings, parallel walls, etc., or above-grade, enclosed areas such as crawl spaces or tuck under garages. The base or floor of an enclosed area shall be considered above-grade and not a structure's basement or lowest floor if: 1) the enclosed area is above-grade on at least one side of the structure; 2) it is designed to internally flood and is constructed with flood resistant materials; and 3) it is used solely for parking of vehicles, building access or storage. The above-noted alternative elevation methods are subject to the following additional standards:

- (1) Design and Certification - The structure's design and as-built condition must be certified by a registered professional engineer or architect as being in compliance with the general design standards of the State Building Code and, specifically, that all electrical, heating, ventilation, plumbing and air conditioning equipment and other service facilities must be at or above the regulatory flood protection elevation or be designed to prevent flood water from entering or accumulating within these components during times of flooding.
- (2) Specific Standards for Above-grade, Enclosed Areas - Above-grade, fully enclosed areas such as crawl spaces or tuck under garages must be designed to internally flood and the design plans must stipulate:
 - (a) The minimum area of openings in the walls where internal flooding is to be used as a floodproofing technique. There shall be a minimum of two openings on at least two sides of the structure and the bottom of all openings shall be no higher than one foot above grade. The automatic openings shall have a minimum net area of not less than one square inch for every square foot of enclosed area subject to flooding unless a registered professional engineer or architect certifies that a smaller net area would suffice. The automatic openings may be equipped with screens, louvers, valves, or other coverings or devices provided that they permit the automatic entry and exit of flood waters without any form of human intervention; and
 - (b) That the enclosed area will be designed of flood resistant materials in accordance with the FP-3 or FP-4 classifications in the State Building Code and shall be used solely for building access, parking of vehicles or storage.

SECTION 1406.00 GENERAL FLOODPLAIN DISTRICT (GF)

1406.01 Permitted Uses:

- a. The uses listed in Section 1404.01 of this ordinance, Floodway District Permitted Uses, are permitted uses.
- b. All other uses are subject to the floodway/flood fringe evaluation criteria specified in Section 1406.02 below. Section 1404.00 applies if the proposed use is determined to be in the Floodway District. Section 1405.00 applies if the proposed use is determined to be in the Flood Fringe District.

1406.02 Procedures for Floodway and Flood Fringe Determinations:

- a. Upon receipt of an application for a permit or other approval within the General Floodplain District, the Zoning Administrator must obtain, review and reasonably utilize any regional flood elevation and floodway data available from a federal, state, or other source.
- b. If regional flood elevation and floodway data are not readily available, the applicant must furnish additional information, as needed, to determine the regulatory flood protection elevation and whether the proposed use would fall within the Floodway or Flood Fringe District. Information must be consistent with accepted hydrological and hydraulic engineering standards and the standards in 1406.02 c., below.
- c. The determination of floodway and flood fringe must include the following components, as applicable:
 - (1) Estimate the peak discharge of the regional (1% chance) flood.
 - (2) Calculate the water surface profile of the regional flood based upon a hydraulic analysis of the stream channel and overbank areas.
 - (3) Compute the floodway necessary to convey or store the regional flood without increasing flood stages more than one-half (0.5) foot. A lesser stage increase than 0.5 foot is required if, as a result of the stage increase, increased flood damages would result. An equal degree of encroachment on both sides of the stream within the reach must be assumed in computing floodway boundaries.
- d. The Zoning Administrator will review the submitted information and assess the technical evaluation and the recommended Floodway and/or Flood Fringe District boundary. The assessment must include the cumulative effects of previous floodway encroachments. The Zoning Administrator may seek technical assistance from a designated engineer or other expert person or agency, including the Department of Natural Resources. Based on

this assessment, the Zoning Administrator may approve or deny the application.

- e. Once the Floodway and Flood Fringe District boundaries have been determined, the Zoning Administrator must process the permit application consistent with the applicable provisions of Section 1404.00 and 1405.00 of this ordinance.

SECTION 1407.00 LAND DEVELOPMENT STANDARDS

1407.01 In General: Recognizing that flood prone areas may exist outside of the designated floodplain districts, the requirements of this section apply to all land within the City of Circle Pines.

1407.02 Subdivisions: No land may be subdivided which is unsuitable for reasons of flooding or inadequate drainage, water supply or sewage treatment facilities. Manufactured home parks and recreational vehicle parks or campgrounds are considered subdivisions under this ordinance.

- a. All lots within the floodplain districts must be able to contain a building site outside of the Floodway District at or above the regulatory flood protection elevation.
- b. All subdivisions must have road access both to the subdivision and to the individual building sites no lower than two feet below the regulatory flood protection elevation, unless a flood warning emergency plan for the safe evacuation of all vehicles and people during the regional (1% chance) flood has been approved by the City Council. The plan must be prepared by a registered engineer or other qualified individual, and must demonstrate that adequate time and personnel exist to carry out the evacuation.
- c. For all subdivisions in the floodplain, the Floodway and Flood Fringe District boundaries, the regulatory flood protection elevation and the required elevation of all access roads must be clearly labeled on all required subdivision drawings and platting documents.
- d. In the General Floodplain District, applicants must provide the information required in Section 1406.02 of this ordinance to determine the regional flood elevation, the Floodway and Flood Fringe District boundaries and the regulatory flood protection elevation for the subdivision site.
- e. If a subdivision proposal or other proposed new development is in a flood prone area, any such proposal must be reviewed to assure that:
 - (1) All such proposals are consistent with the need to minimize flood damage within the flood prone area,

- (2) All public utilities and facilities, such as sewer, gas, electrical, and water systems are located and constructed to minimize or eliminate flood damage, and
- (3) Adequate drainage is provided to reduce exposure of flood hazard.

1407.03 Building Sites: If a proposed building site is in a flood prone area, all new construction and substantial improvements (including the placement of manufactured homes) must be:

- (1) Designed (or modified) and adequately anchored to prevent floatation, collapse, or lateral movement of the structure resulting from hydrodynamic and hydrostatic loads, including the effects of buoyancy;
- (2) Constructed with materials and utility equipment resistant to flood damage;
- (3) Constructed by methods and practices that minimize flood damage; and
- (4) Constructed with electrical, heating, ventilation, plumbing, and air conditioning equipment and other service facilities that are designed and/or located so as to prevent water from entering or accumulating within the components during conditions of flooding.

SECTION 1408.00 PUBLIC UTILITIES, RAILROADS, ROADS, AND BRIDGES

1408.01 Public Utilities: All public utilities and facilities such as gas, electrical, sewer, and water supply systems to be located in the floodplain must be floodproofed in accordance with the State Building Code or elevated to the regulatory flood protection elevation.

1408.02 Public Transportation Facilities: Railroad tracks, roads, and bridges to be located within the floodplain must comply with Sections 1404.00 and 1405.00 of this ordinance. These transportation facilities must be elevated to the regulatory flood protection elevation where failure or interruption of these facilities would result in danger to the public health or safety or where such facilities are essential to the orderly functioning of the area. Minor or auxiliary roads or railroads may be constructed at a lower elevation where failure or interruption of transportation services would not endanger the public health or safety.

1408.03 On-site Water Supply and Sewage Treatment Systems: Where public utilities are not provided: 1) On-site water supply systems must be designed to minimize or eliminate infiltration of flood waters into the systems; and 2) New or replacement on-site sewage treatment systems must be designed to minimize or eliminate infiltration of flood waters into the systems and discharges from the systems into flood waters and they must

not be subject to impairment or contamination during times of flooding. Any sewage treatment system designed in accordance with the state's current statewide standards for on-site sewage treatment systems is considered to be in compliance with this Section.

SECTION 1409.00 MANUFACTURED HOMES, MANUFACTURED HOME PARKS, AND RECREATIONAL VEHICLES.

1409.01 Manufactured Homes: New manufactured home parks and expansions to existing manufactured home parks are prohibited in any floodplain district. For existing manufactured home parks or lots of record, the following requirements apply:

- a. Placement or replacement of manufactured home units is prohibited in the Floodway District.
- b. If allowed in the Flood Fringe District, placement or replacement of manufactured home units is subject to the requirements of Section 1405.00 of this ordinance and the following standards.
 - (1) New and replacement manufactured homes must be elevated in compliance with Section 1405.00 of this ordinance and must be securely anchored to an adequately anchored foundation system that resists flotation, collapse and lateral movement. Methods of anchoring may include, but are not limited to, use of over-the-top or frame ties to ground anchors. This requirement is in addition to applicable state or local anchoring requirements for resisting wind forces.
 - (2) New or replacement manufactured homes in existing manufactured home parks must meet the vehicular access requirements for subdivisions in Section 1407.02b.

1409.02 Recreational Vehicles: New recreational vehicle parks or campgrounds and expansions to existing recreational vehicle parks or campgrounds are prohibited in any floodplain district. Placement of recreational vehicles in existing recreational vehicle parks or campgrounds in the floodplain must meet the exemption criteria below or be treated as new structures meeting the requirements of this ordinance.

- a. Recreational vehicles are exempt from the provisions of this ordinance if they are placed in any of the following areas and meet the criteria listed in Section 1409.02b.:
 - (1) Individual lots or parcels of record.
 - (2) Existing commercial recreational vehicle parks or campgrounds.
 - (3) Existing condominium-type associations.
- b. Criteria for Exempt Recreational Vehicles:
 - (1) The vehicle must have a current license required for highway use.

- (2) The vehicle must be highway ready, meaning on wheels or the internal jacking system, attached to the site only by quick disconnect type utilities commonly used in campgrounds and recreational vehicle parks.
 - (3) No permanent structural type additions may be attached to the vehicle.
 - (4) The vehicle and associated use must be permissible in any pre-existing, underlying zoning district.
 - (5) Accessory structures are not permitted within the Floodway District. Any accessory structure in the Flood Fringe District must be constructed of flood-resistant materials and be securely anchored, meeting the requirements applicable to manufactured homes in Section 1409.02b.
 - (6) An accessory structure must constitute a minimal investment
- c. Recreational vehicles that are exempt in Section 1409.02b. lose this exemption when development occurs on the site that exceeds a minimal investment for an accessory structure such as a garage or storage building. The recreational vehicle and all accessory structures will then be treated as new structures subject to the elevation and floodproofing requirements of Section 1405.00 of this ordinance. No development or improvement on the parcel or attachment to the recreational vehicle is allowed that would hinder the removal of the vehicle should flooding occur.

SECTION 1410.00 ADMINISTRATION

1410.01 Zoning Administrator: A Zoning Administrator or other official designated by the City Council must administer and enforce this ordinance.

1410.02 Permit Requirements:

- a. Permit Required. A permit must be obtained from the Zoning Administrator prior to conducting the following activities:
 - (1) The erection, addition, modification, rehabilitation, or alteration of any building, structure, or portion thereof. Normal maintenance and repair also requires a permit if such work, separately or in conjunction with other planned work, constitutes a substantial improvement as defined in this ordinance.
 - (2) The use or change of use of a building, structure, or land.

- (3) The construction of a dam, fence, or on-site septic system, although a permit is not required for a farm fence as defined in this ordinance.
 - (4) The change or extension of a nonconforming use.
 - (5) The repair of a structure that has been damaged by flood, fire, tornado, or any other source.
 - (6) The placement of fill, excavation of materials, or the storage of materials or equipment within the floodplain.
 - (7) Relocation or alteration of a watercourse - including new or replacement culverts and bridges), unless a public waters work permit has been applied for.
 - (8) Any other type of "development" as defined in this ordinance.
- b. Application for Permit. Permit applications must be submitted to the Zoning Administrator on forms provided by the Zoning Administrator. The permit application must include the following as applicable:
- (1) A site plan showing all pertinent dimensions, existing or proposed buildings, structures, and significant natural features having an influence on the permit.
 - (2) Location of fill or storage of materials in relation to the stream channel.
 - (3) Copies of any required municipal, county, state or federal permits or approvals.
 - (4) Other relevant information requested by the Zoning Administrator as necessary to properly evaluate the permit application.
- c. Certificate of Zoning Compliance for a New, Altered, or Nonconforming Use. No building, land or structure may be occupied or used in any manner until a certificate of zoning compliance has been issued by the Zoning Administrator stating that the use of the building or land conforms to the requirements of this ordinance.
- d. Certification. The applicant is required to submit certification by a registered professional engineer, registered architect, or registered land surveyor that the finished fill and building elevations were accomplished in compliance with the provisions of this ordinance. Floodproofing measures must be certified by a registered professional engineer or registered architect.

- e. Record of First Floor Elevation. The Zoning Administrator must maintain a record of the elevation of the lowest floor (including basement) of all new structures and alterations or additions to existing structures in the floodplain. The Zoning Administrator must also maintain a record of the elevation to which structures and alterations or additions to structures are floodproofed.
- f. Notifications for Watercourse Alterations. Before authorizing any alteration or relocation of a river or stream, the Zoning Administrator must notify adjacent communities. If the applicant has applied for a permit to work in public waters pursuant to Minnesota Statutes, Section 103G.245, this will suffice as adequate notice. A copy of the notification must also be submitted to the Chicago Regional Office of the Federal Emergency Management Agency (FEMA).
- g. Notification to FEMA When Physical Changes Increase or Decrease Base Flood Elevations. As soon as is practicable, but not later than six months after the date such supporting information becomes available, the Zoning Administrator must notify the Chicago Regional Office of FEMA of the changes by submitting a copy of the relevant technical or scientific data.

1410.03 Variances:

- a. Variance Applications. An application for a variance to the provisions of this ordinance will be processed and reviewed in accordance with applicable state statutes and Section 1310.03 of the Zoning Ordinance.
- b. Adherence to State Floodplain Management Standards. A variance must not allow a use that is not allowed in that district, permit a lower degree of flood protection than the regulatory flood protection elevation for the particular area, or permit standards lower than those required by state law.
- c. Additional Variance Criteria. The following additional variance criteria of the Federal Emergency Management Agency must be satisfied:
 - (1) Variances must not be issued by a community within any designated regulatory floodway if any increase in flood levels during the base flood discharge would result.
 - (2) Variances may only be issued by a community upon (i) a showing of good and sufficient cause, (ii) a determination that failure to grant the variance would result in exceptional hardship to the applicant, and (iii) a determination that the granting of a variance will not result in increased flood heights, additional threats to public safety, extraordinary public expense,

create nuisances, cause fraud on or victimization of the public, or conflict with existing local laws or ordinances.

- (3) Variances may only be issued upon a determination that the variance is the minimum necessary, considering the flood hazard, to afford relief.
- d. Flood Insurance Notice. The Zoning Administrator must notify the applicant for a variance that: 1) The issuance of a variance to construct a structure below the base flood level will result in increased premium rates for flood insurance up to amounts as high as \$25 for \$100 of insurance coverage; and 2) Such construction below the base or regional flood level increases risks to life and property. Such notification must be maintained with a record of all variance actions.
- e. General Considerations. The community may consider the following factors in granting variances and imposing conditions on variances and conditional uses in floodplains:
- (1) The potential danger to life and property due to increased flood heights or velocities caused by encroachments;
 - (2) The danger that materials may be swept onto other lands or downstream to the injury of others;
 - (3) The proposed water supply and sanitation systems, if any, and the ability of these systems to minimize the potential for disease, contamination and unsanitary conditions;
 - (4) The susceptibility of any proposed use and its contents to flood damage and the effect of such damage on the individual owner;
 - (5) The importance of the services to be provided by the proposed use to the community;
 - (6) The requirements of the facility for a waterfront location;
 - (7) The availability of viable alternative locations for the proposed use that are not subject to flooding;
 - (8) The compatibility of the proposed use with existing development and development anticipated in the foreseeable future;
 - (9) The relationship of the proposed use to the Comprehensive Land Use Plan and flood plain management program for the area;
 - (10) The safety of access to the property in times of flood for ordinary and emergency vehicles;

- (11) The expected heights, velocity, duration, rate of rise and sediment transport of the flood waters expected at the site.
- f. Submittal of Hearing Notices to the Department of Natural Resources (DNR). The Zoning Administrator must submit hearing notices for proposed variances to the DNR sufficiently in advance to provide at least ten days' notice of the hearing. The notice may be sent by electronic mail or U.S. Mail to the respective DNR area hydrologist.
- g. Submittal of Final Decisions to the DNR. A copy of all decisions granting variances must be forwarded to the DNR within ten days of such action. The notice may be sent by electronic mail or U.S. Mail to the respective DNR area hydrologist.
- h. Record-Keeping. The Zoning Administrator must maintain a record of all variance actions, including justification for their issuance, and must report such variances in an annual or biennial report to the Administrator of the National Flood Insurance Program, when requested by the Federal Emergency Management Agency.

1410.04 Conditional Uses:

- a. Administrative Review. An application for a conditional use permit under the provisions of this ordinance will be processed and reviewed in accordance with Section 1310.04 of the Zoning Ordinance.
- b. Factors Used in Decision-Making. In passing upon conditional use applications, the City Council must consider all relevant factors specified in other sections of this ordinance, and those factors identified in Section 1410.03e. of this ordinance.
- c. Conditions Attached to Conditional Use Permits. The City Council may attach such conditions to the granting of conditional use permits as it deems necessary to fulfill the purposes of this ordinance. Such conditions may include, but are not limited to, the following:
 - (1) Modification of waste treatment and water supply facilities.
 - (2) Limitations on period of use, occupancy, and operation.
 - (3) Imposition of operational controls, sureties, and deed restrictions.
 - (4) Requirements for construction of channel modifications, compensatory storage, dikes, levees, and other protective measures.

- (5) Floodproofing measures, in accordance with the State Building Code and this ordinance. The applicant must submit a plan or document certified by a registered professional engineer or architect that the floodproofing measures are consistent with the regulatory flood protection elevation and associated flood factors for the particular area.
- d. Submittal of Hearing Notices to the Department of Natural Resources (DNR). The Zoning Administrator must submit hearing notices for proposed conditional uses to the DNR sufficiently in advance to provide at least ten days' notice of the hearing. The notice may be sent by electronic mail or U.S. Mail to the respective DNR area hydrologist.
- e. Submittal of Final Decisions to the DNR. A copy of all decisions granting conditional uses must be forwarded to the DNR within ten days of such action. The notice may be sent by electronic mail or U.S. Mail to the respective DNR area hydrologist.

SECTION 1411.00 NONCONFORMITIES

1411.01 Continuance of Nonconformities: A use, structure, or occupancy of land which was lawful before the passage or amendment of this ordinance but which is not in conformity with the provisions of this ordinance may be continued subject to the following conditions. Historic structures, as defined in Section 2.939(b) of this ordinance, are subject to the provisions of Sections 1411.01 a. - f. of this ordinance.

- a. A nonconforming use, structure, or occupancy must not be expanded, changed, enlarged, or altered in a way that increases its flood damage potential or degree of obstruction to flood flows except as provided in 1411.01 b. below. Expansion or enlargement of uses, structures or occupancies within the Floodway District is prohibited.
- b. Any addition or structural alteration to a nonconforming structure or nonconforming use that would result in increasing its flood damage potential must be protected to the regulatory flood protection elevation in accordance with any of the elevation on fill or floodproofing techniques (i.e., FP-1 thru FP-4 floodproofing classifications) allowable in the State Building Code, except as further restricted in 1411.01 c. and 1411.01 g. below.
- c. If the cost of all previous and proposed alterations and additions exceeds 50 percent of the market value of any nonconforming structure, then the entire structure must meet the standards of Section 1404.00 or 1405.00 of this ordinance for new structures depending upon whether the structure is in the Floodway or Flood Fringe District,

respectively. The cost of all structural alterations and additions must include all costs such as construction materials and a reasonable cost placed on all manpower or labor.

- d. If any nonconforming use, or any use of a nonconforming structure, is discontinued for more than one year, any future use of the premises must conform to this ordinance. The Assessor must notify the Zoning Administrator in writing of instances of nonconformities that have been discontinued for a period of more than one year.
- e. If any nonconformity is substantially damaged, as defined in Section 1402.09 bb. of this ordinance, it may not be reconstructed except in conformity with the provisions of this ordinance. The applicable provisions for establishing new uses or new structures in Sections 1404.00 or 1405.00 will apply depending upon whether the use or structure is in the Floodway or Flood Fringe, respectively.
- f. If any nonconforming use or structure experiences a repetitive loss, as defined in Section 1402.09 y. of this ordinance, it must not be reconstructed except in conformity with the provisions of this ordinance.
- g. Any substantial improvement, as defined in Section 1402.09 cc. of this ordinance, to a nonconforming structure requires that the existing structure and any additions must meet the requirements of Section 1404.00 or 1405.00 of this ordinance for new structures, depending upon whether the structure is in the Floodway or Flood Fringe District.

SECTION 1412.00 PENALTIES AND ENFORCEMENT

1412.01 Violation Constitutes a Misdemeanor: Violation of the provisions of this ordinance or failure to comply with any of its requirements (including violations of conditions and safeguards established in connection with grants of variances or conditional uses) constitute a misdemeanor and will be punishable as defined by law.

1412.02 Other Lawful Action: Nothing in this ordinance restricts the City from taking such other lawful action as is necessary to prevent or remedy any violation. If the responsible party does not appropriately respond to the Zoning Administrator within the specified period of time, each additional day that lapses will constitute an additional violation of this ordinance and will be prosecuted accordingly.

1412.03 Enforcement: In responding to a suspected ordinance violation, the Zoning Administrator and City Council may utilize the full array of enforcement actions available to it including but not limited to prosecution and fines, injunctions, after-the-fact permits, orders for corrective

measures or a request to the National Flood Insurance Program for denial of flood insurance availability to the guilty party. The City must act in good faith to enforce these official controls and to correct ordinance violations to the extent possible so as not to jeopardize its eligibility in the National Flood Insurance Program.

- a. When a violation is either discovered by or brought to the attention of the Zoning Administrator, the Zoning Administrator shall immediately investigate the situation and document the nature and extent of the violation of the official control. As soon as it is reasonably possible, this information will be submitted to the appropriate State Department of Natural Resources and Federal Emergency Management Agency regional office along with the city's plan of action to correct the violation to the degree possible.
- b. The Zoning Administrator shall notify the suspected party of the requirements of this chapter and all other official controls and the nature and extent of the suspected violation of these controls. If the structure and/or use is under construction or development, the Zoning Administrator may order the construction or development immediately halted until a proper permit or approval is granted by the city. If the construction or development is already completed, the Zoning Administrator may either: 1) issue an order identifying the corrective actions that must be made within a specified time period to bring the use or structure into compliance with the official controls; or 2) notify the responsible party to apply for an after the fact permit/development approval within a specified period of time not to exceed 30 days.

SECTION 1413.00 AMENDMENTS

1413.01 Floodplain Designation - Restrictions on Removal: The floodplain designation on the Official Zoning Map must not be removed from floodplain areas unless it can be shown that the designation is in error or that the area has been filled to or above the elevation of the regulatory flood protection elevation and is contiguous to lands outside the floodplain. Special exceptions to this rule may be permitted by the Commissioner of the Department of Natural Resources (DNR) if the Commissioner determines that, through other measures, lands are adequately protected for the intended use.

1413.02 Amendments Require DNR Approval: All amendments to this ordinance must be submitted to and approved by the Commissioner of the Department of Natural Resources (DNR) prior to adoption. The Commissioner must approve the amendment prior to community approval.

1413.03 Map Revisions Require Ordinance Amendments. The floodplain district regulations must be amended to incorporate

any revisions by the Federal Emergency Management Agency to the floodplain maps adopted in Section 1402.03 of this ordinance.

expense; and/or a civil action to abate, enjoin, or otherwise compel the cessation of such nuisance may be taken.

1360.15 Remedies Not Exclusive. The remedies listed in this section are not exclusive of any other remedies available under any applicable federal, state or local law and it is within the discretion of the City of Circle Pines to seek cumulative remedies. The City of Circle Pines may recover all attorney's fees, court costs and other expenses associated with enforcement of this section, including sampling and monitoring expenses.

1370.00 Floodplain Management.

1370.01 Regulation

Subd. 1 The City of Circle Pines adopts by reference Rice Creek Watershed District Rule E regarding Floodplain Management.

Subd. 2 The application for the modification or alteration of Floodplain will be reviewed by the Local Governing Unit (LGU) in accordance with Rice Creek Watershed District Rule E.

1370.02 Penalty.

Subd. 1 Any person, firm or corporation violating any provision of this ordinance shall be fined not less than five dollars nor more than five hundred dollars for each offense, and a separate offense shall be deemed committed on each day during or on which a violation occurs or continues.

1370.03 Other Controls.

Subd. 1 In the event of any conflict between the provisions of this ordinance and the provisions of an erosion control, stormwater management, wetland, or shoreland protection ordinance adopted by the City Council the more restrictive standard prevails.

1370.04 Severability.

Subd. 1 The provisions of this ordinance are severable. If any provision of this ordinance or the application thereof to any person or circumstance is held invalid, such invalidity shall not affect other provisions or applications of this ordinance which can be given effect without the invalid provision or application.

1380.00 Erosion and Sediment Control.

1380.01 Regulation

APPENDIX D

Stormwater Management Ordinance

d. Any commercial, recreational, community or religious facility allowed as part of the community unit development shall conform to all applicable federal and state regulations including, but not limited to the following:

- 1) licensing provisions or procedures;
- 2) waste disposal regulations;
- 2) water supply regulations;
- 4) building codes;
- 5) safety regulations;
- 6) regulations concerning the appropriation and use of Protected Waters as defined in Minn. Stat. Chap. 105; and
- 7) Applicable regulations of the Minnesota Environmental Quality Board.

Subd. 4 Final Plan. The final plan for a community unit plan shall not be modified, amended, repealed or otherwise altered unless approved in writing by the developer, the municipality and the Commissioner of Natural Resources.

Subd. 5 Centralized Shoreline Recreation Facilities. There are centralized shoreline recreation facilities such as beaches, docks and boat launching facilities.

1340.06 Variances and Conditional Uses.

Subd. 1 Notice to Commissioner, Variances. A copy of all notices of a public hearing to consider a variance to the provisions of the Shoreland Overlay District or a conditional use in the Shoreland Overlay District shall be sent to the Commissioner of Natural Resources such that the notice is received by the Commissioner at least ten (10) days prior to such hearings.

Subd. 2 Notice to Commissioner, Amendments. A copy of all amendments to this Chapter and final decisions granting variances or conditional uses within the Shoreland Overlay District shall be sent to the Commissioner of Natural Resources within ten (10) days of the amendment or final action.

Section 1350-Stormwater Management Ordinance

1350.01 Findings. The City of Circle Pines hereby also adopts by reference, and as amended, Rice Creek Watershed District Rule C related to Stormwater Management Plans. The rules and regulations related to the review of Stormwater Management Plans will be reviewed by the Local Governing Unit (LGU) in

accordance with Rice Creek Watershed District Rules.

1350.02 Purpose. The purpose of this ordinance is to promote, preserve and enhance the natural resources within the City of Circle Pines and protect them from adverse effects occasioned by poorly sited development or incompatible activities by regulating land disturbing or development activities that would have an adverse and potentially irreversible impact on water quality and unique and fragile environmentally sensitive land; by minimizing conflicts and encouraging compatibility between land disturbing and development activities and water quality and environmentally sensitive lands; and by requiring detailed review standards and procedures for land disturbing or development activities proposed for such areas, thereby achieving a balance between urban growth and development and protection of water quality and natural areas.

1350.03 Scope and Effect. Variances. Minnesota Statutes 103B.211, subdivision 1(a)(3), any variance must be approved by the RCWD Board.

1350.04 Penalty. Any person, firm or corporation violating any provision of this ordinance shall be fined not less than five dollars nor more than five hundred dollars for each offense, and a separate offense shall be deemed committed on each day during or on which a violation occurs or continues.

1350.05 Other Controls. In the event of any conflict between the provisions of this ordinance and the provisions of an erosion control or shoreland protection ordinance adopted by the City Council the more restrictive standard prevails.

1350.06 Severability. The provisions of this ordinance are severable. If any provision of this ordinance or the application thereof to any person or circumstance is held invalid, such invalidity shall not affect other provisions or applications of this ordinance which can be given effect without the invalid provision or application.

Section 1360 - Regulation of Discharge into Storm Sewer System

1360.01 Statutory Authorization and Purpose. The purpose of this section is to provide for the health, safety, and general welfare of the citizens of the City of Circle Pines through the regulation of non-stormwater discharges to the storm drainage system to the maximum extent practicable as required by federal and state law. This section establishes methods for controlling the introduction of pollutants into the municipal separate storm sewer system (MS4) in order to comply with requirements of the MS4 permit issued to the City of Circle Pines by the Minnesota Pollution Control Agency (MPCA) under the National Pollutant Discharge Elimination System (NPDES) permit process. The objectives of this section are:

- a) To regulate the contribution of pollutants to the MS4 by stormwater discharges by any user.
- b) To prohibit illicit connections and discharges to the MS4.
- c) To establish legal authority to carry out all inspection, surveillance, monitoring, and enforcement procedures necessary to ensure compliance with this section.
- d) This Section is adopted pursuant to the authorization and policies contained in Minnesota Statutes Chapters 103B and 462; Minnesota Rules, Parts 6120.2500-6120.3900, Minnesota Rules Chapters 8410, 8420 and 7050.0210.

1360.02 Definitions. The following words, terms and phrases, when used in this section, shall have the meanings ascribed to them in this section, except where the context clearly indicates a different meaning:

Best Management Practices (BMPs) are schedules of activities, prohibitions of practices, general good housekeeping practices, pollution prevention and educational practices, maintenance procedures, and other management practices to prevent or reduce the discharge of pollutants directly or indirectly to storm water, receiving waters, or storm water conveyance systems. BMPs also include treatment practices, operating procedures, and practices to control site runoff, spillage or leaks, sludge or water disposal, or drainage from raw materials storage.

Construction Activity is activity subject to NPDES Construction Permits. These include construction projects resulting in land disturbance of one acre or more. Such activities include but are not limited to clearing and grubbing, grading, excavating, and demolition.

Hazardous Materials means any material, including any substance, waste, or combination thereof, which because of its quantity, concentration, or physical, chemical, or infectious characteristics may cause, or significantly contribute to, a substantial present or potential hazard to human health, safety, property, or the environment when improperly treated, stored, transported, disposed of, or otherwise managed.

Illegal Discharge means any direct or indirect non-stormwater discharge to the storm drain system.

Illicit Connections are defined as either of the following:

- a) Any drain or conveyance, whether on the surface or subsurface that allows an illegal discharge to enter the storm drain system including but not limited to sewage, process wastewater, wash water and any connections to the storm drain system from indoor drains and sinks, regardless of whether said drain or connection had been previously

allowed, permitted, or approved by an authorized enforcement agency; or

- b) Any drain or conveyance connected from a commercial or industrial land use to the storm drain system that has not been documented in plans, maps, or equivalent records and approved by an authorized enforcement agency.

Industrial Activity means activities subject to NPDES Industrial Stormwater Permits as defined in 40 CFR, Section 122.26 (b) (14).

Municipal Separate Storm Sewer System (MS4) means the system of conveyances (including sidewalks, roads with drainage systems, municipal streets, catch basins, curbs, gutters, ditches, manmade channels, or storm drains) owned and operated by the City of Circle Pines and designed or used for collecting or conveying stormwater, and that is not used for collecting or conveying sewage.

National Pollutant Discharge Elimination System (NPDES) Stormwater Discharge Permit means a permit issued by Minnesota Pollution Control Agency that authorizes the discharge of pollutants to waters of the United States, whether the permit is applicable on an individual, group, or general area-wide basis.

Non-Stormwater Discharge means any discharge to the storm drain system that is not composed entirely of stormwater.

Person means any individual, association, organization, partnership, firm, corporation or other entity recognized by law and acting as either the owner or as the owner's agent.

Pollutant means anything which causes or contributes to pollution. Pollutants may include, but are not limited to: paints, varnishes, and solvents; oil and other automotive fluids; non-hazardous liquid and solid wastes and yard wastes; refuse, rubbish, garbage, litter, or other discarded or abandoned objects, ordinances, and accumulations, so that same may cause or contribute to pollution; floatables; pesticides, herbicides, and fertilizers; hazardous substances and wastes; sewage, fecal coliform and pathogens; dissolved and particulate metals; animal wastes; wastes and residues that result from constructing a building or structure; and noxious or offensive matter of any kind.

Premises means any building, lot, parcel of land, or portion of land whether improved or unimproved including adjacent sidewalks and parking strips.

Storm Drainage System means publicly-owned facilities by which stormwater is collected and/or conveyed, including but not limited to any roads with drainage systems, municipal streets, gutters, curbs, inlets, piped storm drains, pumping facilities, retention and detention basins, natural and human-made or altered drainage channels, reservoirs, and other drainage structures.

Stormwater means any surface flow, runoff, and drainage consisting entirely of water from any form of natural precipitation, and resulting from such precipitation.

Stormwater Management Plan means a document which describes the best management practices and activities to be implemented by a person or business to identify sources of pollution or contamination at a site and the actions to eliminate or reduce pollutant discharges to stormwater, stormwater conveyance systems, and/or receiving waters to the maximum extent practicable.

Wastewater means any water or other liquid, other than uncontaminated stormwater, discharged from a facility.

Watercourse means a ditch, stream, creek, or other defined channel intended for the conveyance of water, runoff, groundwater discharge or similar hydraulic or hydrologic purpose.

1360.03 Applicability. This section shall apply to all water entering the storm drainage system generated on any developed and undeveloped lands unless explicitly exempted by the City of Circle Pines.

1360.04 Responsibility for Administration. The City of Circle Pines shall administer, implement, and enforce the provisions of this section. Any powers granted or duties imposed upon the City of Circle Pines may be delegated in writing by the city administrator to persons or entities acting in the beneficial interest of or in the employ of the city.

1360.05 Compatibility with Other Regulations. This section is not intended to modify or repeal any other ordinance, rule, regulation, or other provision of law. The requirements of this section are in addition to the requirements of any other ordinance, rule, regulation, or other provision of law, and where any provision of this section imposes restrictions different from those imposed by any other ordinance, rule, regulation, or other provision of law, whichever provision is more restrictive or imposes higher protective standards for human health or the environment shall control.

1360.06 Severability. The provisions of this section are hereby declared to be severable. If any provision, clause, sentence, or paragraph of this section or the application thereof to any person, establishment, or circumstances shall be held invalid, such invalidity shall not affect the other provisions or application of this section.

1360.07 Ultimate Responsibility. The standards set forth herein and promulgated pursuant to this section are minimum standards; therefore this section does not intend or imply that compliance by

any person will ensure that there will be no contamination, pollution, or unauthorized discharge of pollutants.

1360.08 Discharge Prohibitions.

Subd 1. Prohibition of Illegal Discharges. No person shall throw, drain, or otherwise discharge, cause, or allow others under its control to throw, drain, or otherwise discharge into the MS4 any pollutants or waters containing any pollutants, other than stormwater. The commencement, conduct or continuance of any illegal discharge to the storm drain system is prohibited except as described as follows:

- a) The following discharges are exempt from discharge prohibitions established by this section: water line flushing, landscape irrigation, diverted stream flows, rising groundwater, uncontaminated groundwater infiltration, uncontaminated pumped groundwater, discharges from potable water sources, foundation drains, air conditioning condensation, irrigation water, springs, water from crawl space pumps, footing drains, lawn watering, individual residential car washing, flows from riparian habitats and wetlands, and street wash water.
 - 1) Discharge of swimming pools, crawl spaces, sump pumps, footing drains, and other sources that may be determined to contain sediment or other forms of pollutants may NOT be discharged directly to a gutter or storm sewer. This discharge must be allowed to flow over a vegetated area to allow filtering of pollutants, evaporation of chemicals, and infiltration of water consistent with the stormwater requirements of the City of Circle Pines.
- b) Discharges or flow from firefighting, and other discharges specified in writing by the City of Circle Pines as being necessary to protect public health and safety.
- c) Discharges associated with dye testing; however, this activity requires a verbal notification to the City of Circle Pines prior to the time of the test.
- d) The prohibition shall not apply to any non-stormwater discharge permitted under an NPDES permit, waiver, or waste discharge order issued to the discharger and administered under the authority of the Minnesota Pollution Control Agency (MPCA), provided that the discharger is in full compliance with all requirements of the permit, waiver, or order and other applicable laws and regulations, and provided that written approval has been granted for any discharge to the storm drain system.

Subd. 2 Prohibition of Illicit Connections.

- a) The construction, use, maintenance or continued existence of illicit connections to the storm drain system is prohibited.
- b) This prohibition expressly includes, without limitation, illicit connections made in the past, regardless of whether

- the connection was permissible under law or practices applicable or prevailing at the time of connection.
- c) A person is considered to be in violation of this section if the person connects a line conveying sewage to the MS4, or allows such a connection to continue.
 - d) Improper connections in violation of this section must be disconnected and redirected, if necessary, to an approved onsite wastewater management system or the sanitary sewer system upon approval of the City of Circle Pines.
 - e) Any drain or conveyance that has not been documented in plans, maps or equivalent, and which may be connected to the storm sewer system, shall be located by the owner or occupant of that property upon receipt of written notice of violation from the City of Circle Pines requiring that such locating be completed. Such notice will specify a reasonable time period within which the location of the drain or conveyance is to be determined, that the drain or conveyance be identified as storm sewer, sanitary sewer or other, and that the outfall location or point of connection to the storm sewer system, sanitary sewer system or other discharge point be identified. Results of these investigations are to be documented and provided to the City of Circle Pines.

1360.09 Watercourse Protection. Every person owning property through which a watercourse passes, or such person's lessee, shall keep and maintain that part of the watercourse within their property free of trash, debris, yard waste generated by the owner and/or lessee, excessive planted vegetation, and other manmade obstacles that would pollute, contaminate, or significantly retard the flow of water through the watercourse. In addition, the owner or lessee shall maintain existing privately owned structures within or adjacent to a watercourse, so that such structures will not become a hazard to the use, function, or physical integrity of the watercourse with the exception of natural vegetation and trees.

1360.10 Industrial or Construction Discharges.

Subd. 1 Submission of NOI to the City

- a) Any person subject to an industrial or construction activity NPDES storm water discharge permit shall comply with all provisions of such permit. Proof of compliance with said permit may be required in a form acceptable to the City of Circle Pines prior to the allowing of discharges to the MS4.
- b) The operator of a facility, including construction sites, required to have an NPDES permit to discharge storm water associated with industrial activity shall submit a copy of the Notice of Intent (NOI) to the City of Circle Pines at the same time the operator submits the original Notice of Intent to the EPA as applicable.

- c) The copy of the Notice of Intent may be delivered to the City of Circle Pines either in person or by mailing it to:

Notice of Intent to Discharge Stormwater
City of Circle Pines
200 Civic Heights Circle
Circle Pines, MN 55014

- d) The Failure to provide a copy of the Notice of Intent to the City of Circle Pines as required herein shall be a violation of this Ordinance.

1360.11 Compliance Monitoring.

Subd. 1 Right of Entry. On behalf of the City of Circle Pines, the City Administrator, or his or her designee shall be permitted to enter and inspect facilities subject to regulation under this section as often as may be necessary to determine compliance with this section.

Subd. 2 Search Warrants. If the City of Circle Pines, the City Administrator, or the designee has been refused access to any part of the premises from which stormwater is discharged, and he/she is able to demonstrate probable cause to believe that there may be a violation of this section, or that there is a need to inspect and/or sample as part of a routine inspection and sampling program designed to verify compliance with this ordinance or any order issued hereunder, or to protect the overall public health, safety, and welfare of the community, then the City of Circle Pines may seek issuance of a search warrant from any court of competent jurisdiction.

1360.12 Requirement to Prevent, Control, and Reduce Stormwater Pollutants by the Use of Best Management Practices.

On behalf of the City of Circle Pines, the City Administrator, or his or her designee will adopt requirements identifying best management practices for any activity, operation, or facility which may cause or contribute to pollution or contamination of stormwater, the storm drain system, or waters of the United States. The owner or operator of such activity, operation, or facility shall provide, at their own expense, reasonable protection from accidental discharge of prohibited materials or other wastes into the municipal storm drain system or watercourses through the use of these structural and non-structural BMPs.

Further, any person responsible for a property or premise that is, or may be, the source of an illicit discharge, may be required to implement, at said person's expense, additional structural and non-structural BMPs to prevent the further discharge of pollutants to the MS4. Compliance with all terms and conditions of a valid NPDES permit authorizing the discharge of stormwater associated with industrial activity, to the extent practicable, shall be deemed compliance with the provisions of this section. These BMPs shall be part of a stormwater management plan (SWMP) as necessary for compliance with requirements of the NPDES permit.

1360.13 Notification of Spills. Notwithstanding other requirements of law, as soon as any person responsible for a facility or operation, or responsible for emergency response for a facility or operation has information of any known or suspected release of materials which are resulting or may result in illegal discharges or pollutants discharging into storm water, the storm drain system, or waters of the United States, said person shall take all necessary steps to ensure the discovery, containment, and cleanup of such release. In the event of such a release of hazardous materials said person shall immediately notify emergency response agencies of the occurrence via emergency dispatch services. In the event of a release of non-hazardous materials, said person shall notify the City of Circle Pines in person or by phone or facsimile no later than the next business day. Notifications in person or by phone shall be confirmed by written notice addressed and mailed to the City within three (3) business days of the phone notice. If the discharge of prohibited materials emanates from a commercial or industrial establishment, the owner or operator of such establishment shall also retain an on-site written record of the discharge and the actions taken to prevent its recurrence. Such records shall be retained for at least three (3) years. Failure to provide notification of a release as provided above is a violation of this ordinance.

1360.14 Violations and Penalties. Any person violating any provision of this article is guilty of a misdemeanor.

a) Emergency cease and desist orders. When the City Administrator or his or her designee finds that any person has violated, or continues to violate, any provision of this section, or any order issued hereunder, or that the person's past violations are likely to recur, and that the person's violation(s) has (have) caused or contributed to an actual or threatened discharge to the MS4 or waters of the state which reasonably appears to present an imminent or substantial endangerment to the health or welfare of persons or to the environment, the City Administrator or his or her designee may issue an order to the violator directing it immediately to cease and desist all such violations.

b) Suspension due to the detection of illicit discharge. Any person discharging to the MS4 in violation of this section may have their MS4 access terminated if such termination would abate or reduce an illicit discharge. Such suspension may also be imposed if it is necessary to stop an actual or threatened discharge which presents or may present imminent and substantial danger.

c) Violations deemed a public nuisance. In addition to the enforcement processes and penalties provided, any condition caused or permitted to exist in violation of any of the provisions of this section is a threat to public health, safety, and welfare, and is declared and deemed a nuisance, and may be summarily abated or restored at the violator's

expense; and/or a civil action to abate, enjoin, or otherwise compel the cessation of such nuisance may be taken.

1360.15 Remedies Not Exclusive. The remedies listed in this section are not exclusive of any other remedies available under any applicable federal, state or local law and it is within the discretion of the City of Circle Pines to seek cumulative remedies. The City of Circle Pines may recover all attorney's fees, court costs and other expenses associated with enforcement of this section, including sampling and monitoring expenses.

1370.00 Floodplain Management.

1370.01 Regulation

Subd. 1 The City of Circle Pines adopts by reference Rice Creek Watershed District Rule E regarding Floodplain Management.

Subd. 2 The application for the modification or alteration of Floodplain will be reviewed by the Local Governing Unit (LGU) in accordance with Rice Creek Watershed District Rule E.

1370.02 Penalty.

Subd. 1 Any person, firm or corporation violating any provision of this ordinance shall be fined not less than five dollars nor more than five hundred dollars for each offense, and a separate offense shall be deemed committed on each day during or on which a violation occurs or continues.

1370.03 Other Controls.

Subd. 1 In the event of any conflict between the provisions of this ordinance and the provisions of an erosion control, stormwater management, wetland, or shoreland protection ordinance adopted by the City Council the more restrictive standard prevails.

1370.04 Severability.

Subd. 1 The provisions of this ordinance are severable. If any provision of this ordinance or the application thereof to any person or circumstance is held invalid, such invalidity shall not affect other provisions or applications of this ordinance which can be given effect without the invalid provision or application.

1380.00 Erosion and Sediment Control.

1380.01 Regulation

APPENDIX E

Wetland Management Ordinance

Subd. 1 The City of Circle Pines adopts by reference Rice Creek Watershed District Rule D regarding Erosion and Sediment Control.

Subd 2. The application for the modification or alteration of Erosion and Sediment Control will be reviewed by the Local Governing Unit (LGU) in accordance with Rice Creek Watershed District Rule D.

1380.02 Penalty

Subd. 1 Any person, firm or corporation violating any provision of this ordinance shall be fined not less than five dollars nor more than five hundred dollars for each offense, and a separate offense shall be deemed committed on each day during or on which a violation occurs or continues.

1380.03 Other Controls.

Subd. 1 In the event of any conflict between the provisions of this ordinance and the provisions of a floodplain, wetland, stormwater management, or shoreland protection ordinance adopted by the City Council the more restrictive standard prevails.

1380.04 Severability.

Subd. 1 The provisions of this ordinance are severable. If any provision of this ordinance or the application thereof to any person or circumstance is held invalid, such invalidity shall not affect other provisions or applications of this ordinance which can be given effect without the invalid provision or application.

1390.00 Wetland Management.

1390.01 Regulation

Subd. 1 The City of Circle Pines adopts by reference Rice Creek Watershed District Rule F regarding Wetland Alteration.

Subd. 2 The application for the modification or alteration of Wetland Management will be reviewed by the Local Governing Unit (LGU) in accordance with Rice Creek Watershed District Rule F, and the Wetland Conservation Act. (WCA)

1390.02 Penalty.

Subd. 1 Any person, firm or corporation violating any provision of this ordinance shall be fined not less than five dollars nor more than five hundred dollars for each offense, and a separate offense shall be deemed committed on each day during or on which a violation occurs or continues.

1390.03 Other Controls.

Subd. 1 In the event of any conflict between the provisions of this ordinance and the provisions of an erosion control, stormwater management, floodplain, or shoreland protection ordinance adopted by the City Council the more restrictive standard prevails.

1390.04 Severability.

Subd. 1 The provisions of this ordinance are severable. If any provision of this ordinance or the application thereof to any person or circumstance is held invalid, such invalidity shall not affect other provisions or applications of this ordinance which can be given effect without the invalid provision or application.

APPENDIX F

Erosion and Sediment Control Ordinance

expense; and/or a civil action to abate, enjoin, or otherwise compel the cessation of such nuisance may be taken.

1360.15 Remedies Not Exclusive. The remedies listed in this section are not exclusive of any other remedies available under any applicable federal, state or local law and it is within the discretion of the City of Circle Pines to seek cumulative remedies. The City of Circle Pines may recover all attorney's fees, court costs and other expenses associated with enforcement of this section, including sampling and monitoring expenses.

1370.00 Floodplain Management.

1370.01 Regulation

Subd. 1 The City of Circle Pines adopts by reference Rice Creek Watershed District Rule E regarding Floodplain Management.

Subd. 2 The application for the modification or alteration of Floodplain will be reviewed by the Local Governing Unit (LGU) in accordance with Rice Creek Watershed District Rule E.

1370.02 Penalty.

Subd. 1 Any person, firm or corporation violating any provision of this ordinance shall be fined not less than five dollars nor more than five hundred dollars for each offense, and a separate offense shall be deemed committed on each day during or on which a violation occurs or continues.

1370.03 Other Controls.

Subd. 1 In the event of any conflict between the provisions of this ordinance and the provisions of an erosion control, stormwater management, wetland, or shoreland protection ordinance adopted by the City Council the more restrictive standard prevails.

1370.04 Severability.

Subd. 1 The provisions of this ordinance are severable. If any provision of this ordinance or the application thereof to any person or circumstance is held invalid, such invalidity shall not affect other provisions or applications of this ordinance which can be given effect without the invalid provision or application.

1380.00 Erosion and Sediment Control.

1380.01 Regulation

Subd. 1 The City of Circle Pines adopts by reference Rice Creek Watershed District Rule D regarding Erosion and Sediment Control.

Subd 2. The application for the modification or alteration of Erosion and Sediment Control will be reviewed by the Local Governing Unit (LGU) in accordance with Rice Creek Watershed District Rule D.

1380.02 Penalty

Subd. 1 Any person, firm or corporation violating any provision of this ordinance shall be fined not less than five dollars nor more than five hundred dollars for each offense, and a separate offense shall be deemed committed on each day during or on which a violation occurs or continues.

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1390.00 Wetland Management.

1390.01 Regulation

Subd. 1 The City of Circle Pines adopts by reference Rice Creek Watershed District Rule F regarding Wetland Alteration.

Subd. 2 The application for the modification or alteration of Wetland Management will be reviewed by the Local Governing Unit (LGU) in accordance with Rice Creek Watershed District Rule F, and the Wetland Conservation Act. (WCA)

1390.02 Penalty.

Subd. 1 Any person, firm or corporation violating any provision of this ordinance shall be fined not less than five dollars nor more than five hundred dollars for each offense, and a separate offense shall be deemed committed on each day during or on which a violation occurs or continues.

APPENDIX G

Golden Lake Stormwater Retrofit Assessment



Golden Lake Stormwater Retrofit Assessment

Prepared by:



for the

RICE CREEK WATERSHED DISTRICT

Partial funding provided by the Clean Water Fund (from the Clean Water, Land, and Legacy Amendment).

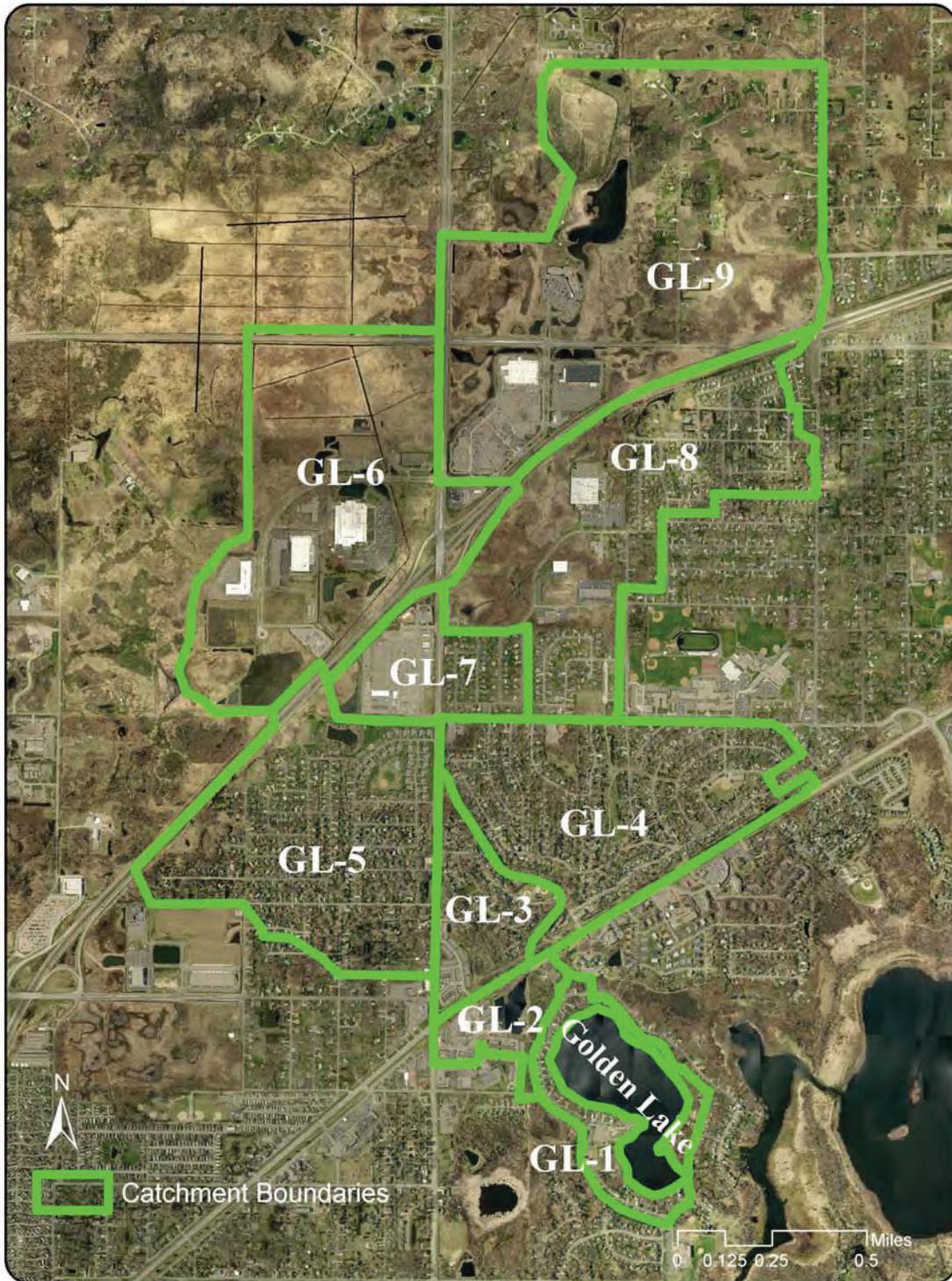
December 2011

Cover photo: The southern basin of Golden Lake, as seen from Golden Lake Park.

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Map of stormwater catchment areas referred to in this report.



Executive Summary

This study provides recommendations for cost effectively improving treatment of stormwater from neighborhoods surrounding Golden Lake before it is discharged into the lake. Golden Lake is an important recreational lake in Circle Pines, Minnesota, but suffers from high nutrient levels, algae blooms, and poor water clarity. The lake is listed by the State of Minnesota as impaired for excess nutrients. These problems have serious negative effects on recreational use of the lake, the fishery, and property values. An in-depth TMDL study of phosphorus sources has been completed. One of the phosphorus sources identified was stormwater runoff. This stormwater assessment systematically examines these sources, investigates ways to improve stormwater treatment, and prioritizes opportunities by cost-effectiveness.

Golden Lake has a long history of water quality improvement efforts, and this project builds upon the successes of those past projects. No one effort will rehabilitate this lake (or most others), and therefore a suite of efforts is needed. Past efforts have included fish community manipulation, lake aeration, restricting motorized boat traffic, excavation of sediment at the primary stormwater discharge point into the lake, stormwater retrofits, new stormwater treatment basins, and others. This study takes these past efforts into account, especially by incorporating existing stormwater practices into modeling efforts.

This stormwater assessment focuses on “stormwater retrofitting” and cost effectiveness ranking. Stormwater retrofitting refers to adding stormwater treatment to an already built-up area, where little open land exists. This process is investigative and creative. Stormwater retrofitting success is sometimes improperly judged by the number of projects installed or by comparing costs alone. Those approaches neglect to consider how much pollution is removed per dollar spent. In this stormwater assessment we estimated both costs and pollutant reductions, and used them to calculate cost effectiveness of each possible project.

We delineated the areas that drain to Golden Lake through stormwater conveyances. Then, we divided those areas into nine smaller stormwater drainage areas, or “catchments.” For each catchment, we modeled stormwater volume and pollutants using the software WinSLAMM. First, we modeled existing conditions, including existing stormwater treatment practices. Currently, the 1,070 acre area contributes an estimated 512 acre feet of runoff, 330 pounds of phosphorus and 97,243 pounds of total suspended solids to the lake each year. Then we modeled possible stormwater retrofits to estimate reductions in volume, total phosphorus (TP), and total suspended solids (TSS). Finally, we estimated the cost of each retrofit project, including 30-year lifespan operations and maintenance. Projects were ranked by cost effectiveness with respect to total phosphorus reduction.

A variety of stormwater retrofit approaches were identified. They included:

- Maintenance of, or alterations to, existing stormwater treatment practices.
- Residential curb-cut rain gardens,
- Permeable asphalt, and

- Iron enhanced sand filters.

If all of these practices were installed, significant pollution reduction could be accomplished. Admittedly, not all projects will be installed. Rather, they could be installed in order of cost effectiveness (pounds of pollution reduced per dollar spent). Other, larger sources of these pollutants to the lake exist too, and the community will need to balance the effectiveness of all project types.

This report provides conceptual sketches or photos of recommended stormwater retrofitting projects. The intent is to provide an understanding of the approach. If a project is selected, site-specific designs must be prepared. This typically occurs after committed partnerships are formed to install the project. Committed partnerships must include willing landowners when installed on private property.

It's noteworthy that any projects that benefit Golden Lake will also benefit important downstream waterbodies. Golden Lake discharges into Rice Creek, which has an impaired macroinvertebrate and fish community. Rice Creek discharges to the Mississippi River. Various reaches of the Mississippi River are impaired for E. coli bacteria, suspended solids, and phosphorus. Stormwater retrofitting in the Golden Lake watershed will include practices that help alleviate all of these problems.

The table on the next page summarizes potential projects. Potential projects are organized from most cost effective to least, based on cost per pound of total phosphorus removed. The benefits of each project were estimated as if that project was installed alone with no other projects upstream of it in the same catchment. Installation of projects in series will result in lower total treatment than the simple sum of treatment across the individual projects due to treatment train effects. Reported treatment levels are dependent upon optimal siting and sizing. More detail about each project can be found in the catchment profile pages of this report. Projects that were deemed unfeasible due to prohibitive size, number, or were too expensive to justify installation are not included in the table on the next page.

Catchments GL-1 through GL-7: Summary of preferred stormwater retrofit opportunities ranked by cost-effectiveness with respect to total phosphorus (TP) reduction. Total suspended solids (TSS) reduction is also shown. For more information on each project refer to the catchment profile pages earlier in this report.

Project ID	Catchment ID	Retrofit Type (refer to catchment profile pages for additional detail)	Projects Identified	TP Reduction (lb/yr)	TSS Reduction (lb/yr)	Volume Reduction (ac-ft/yr)	Estimated Installation Cost	Estimated cost/ 1,000lb-TSS/year (30-year)	Estimated cost/ lb-TP/year (30-year)
1	GL-5*	Pond Modification - Iron Enhanced Sand Filter	1	17.6 - 23.9	0	0.0	\$39,180 - \$64,180	N/A	\$145 - \$177
2	GL-2	Pond Modification - Iron Enhanced Sand Filter	1	35.2	0	0.0	\$89,180	N/A	\$167
3	GL-4*	Residential Rain Gardens	5 - 15	5.4 - 13.5	865 - 2,281	4.1 - 10.8	\$25,020 - \$71,420	\$1,398 - \$1,537	\$224 - \$260
4	GL-3	Residential Rain Gardens	5	4.1	674	3.2	\$25,020	\$1,794	\$295
5	GL-7	Residential Rain Gardens	5	3.9	676	3.2	\$25,020	\$1,788	\$310
6	GL-5*	Residential Rain Gardens	5 - 10	3 - 5.6	687 - 1,354	4.1 - 7.6	\$25,020 - \$48,220	\$1,741 - \$1,760	\$403 - \$421
7	GL-4*	New Pond with Expanded Drainage Area and Iron Enhanced Sand Filter	1	27.1	3,679	0.0	\$172,655 - \$228,215	\$3,129 - \$4,135	\$425 - \$629
8	GL-4*	New Pond with Expanded Drainage Area	1	13.9	3,679	0.0	\$120,780 - \$176,340	\$2,189 - \$3,195	\$579 - \$845
9	GL-4*	New Pond	1	9.7	2,249	0.0	\$95,630 - \$151,190	\$2,835 - \$4,482	\$657 - \$1,039
10	GL-1*	Golden Lake Park Rain Garden	1	0.7	371	1.1	\$19,960	\$1,996	\$1,139
11	GL-1*	Golden Lake Park Permeable Asphalt	1	0.7	432	1.2	\$133,014	\$10,752	\$6,531

* Pollution reduction benefits and costs can not be summed with other projects in the same catchment because they are alternative options for treating the same source area.

About this Document

This Stormwater Retrofit Assessment is a watershed management tool to help prioritize stormwater retrofit projects by performance and cost effectiveness. This process helps maximize the value of each dollar spent.

Document Organization

This document is organized into three major sections, plus references and appendices. Each section is briefly described below.

Methods

The methods section outlines general procedures used when assessing the subwatershed. It overviews the processes of retrofit scoping, desktop analysis, retrofit reconnaissance investigation, cost/treatment analysis, and project ranking.

Catchment Profiles

The Golden Lake subwatershed was divided into stormwater catchments for the purpose of this assessment. Each catchment was given a unique ID number. For each catchment, the following information is detailed:

Catchment Description

Within each catchment profile is a table that summarizes basic catchment information including acres, land cover, parcels, and estimated annual pollutant and volume loads. A brief description of the land cover, stormwater infrastructure, and any other important general information is also described here. Existing stormwater practices are noted, and their estimated effectiveness presented.

Retrofit Recommendations

The recommendation section describes the conceptual retrofit(s) that were scrutinized. It includes tables outlining the estimated pollutant removals by each, as well as costs. A map provides promising locations for each retrofit approach.

Retrofit Ranking

This section ranks stormwater retrofit projects across all catchments to create a prioritized project list. The list is sorted by cost per pound of phosphorus removed for each project over a duration of 30 years. The final cost per pound treatment value includes installation and maintenance costs.

There are many possible ways to prioritize projects, and the list provided in this report is merely a starting point. Other considerations for prioritizing installation may include:

- Non-target pollutant reductions
- Timing projects to occur with other road or utility work
- Project visibility
- Availability of funding
- Total project costs
- Educational value

References

This section identifies various sources of information synthesized to produce the assessment protocol utilized in this analysis.

Appendices

This section provides supplemental information and/or data used during the assessment.

Methods

Selection of Subwatershed

Many factors are considered when choosing which subwatershed to assess for stormwater retrofits. Water quality monitoring data, non-degradation report modeling, and TMDL studies are just a few of the resources available to help determine which water bodies are a priority. Assessments supported by a Local Government Unit with sufficient capacity (staff, funding, available GIS data, etc.) to greater facilitate the assessment also rank highly. For some communities a stormwater assessment complements their MS4 stormwater permit. The focus is always on a high priority waterbody.

For this assessment, neighborhoods which drain to Golden Lake were chosen for study. Golden Lake is a high priority because of its potential recreational and fisheries value, known water quality impairments, and because improvements at Golden Lake will also benefit downstream waterbodies including Rice Creek and the Mississippi River, which are also impaired. In the Golden Lake TMDL study, stormwater was identified as a source of phosphorus that needs to be reduced to reach lake goals. The communities in the watershed, the Rice Creek Watershed District, and the Anoka Conservation District are committed and equipped to improve stormwater management.

Stormwater runoff from impervious surfaces like pavement and roofs can carry a variety of pollutants. While stormwater treatment to remove these pollutants is adequate in some areas, other areas were built before modern-day stormwater treatment technologies and requirements or have undersized treatment devices.



Subwatershed Assessment Methods

The process used for this assessment is outlined below and was modified from the Center for Watershed Protection's *Urban Stormwater Retrofit Practices*, Manuals 2 and 3 (Schueler, 2005, 2007). Locally relevant design considerations were also incorporated into the process (*Minnesota Stormwater Manual*).

Step 1: Retrofit Scoping

Retrofit scoping includes determining the objectives of the retrofits (volume reduction, target pollutant, etc.) and the level of treatment desired. It involves meeting with local stormwater managers, city staff and watershed management organization members to determine the issues in the subwatershed. This step also helps to define preferred retrofit treatment options and retrofit performance criteria. In order to create a manageable area to assess in large subwatersheds, a focus area may be determined.

In this assessment, the focus area was all areas that drain to Golden Lake through stormwater conveyances. This restricts the study area to neighborhoods immediately surrounding the lake, and encompasses the areas of highest density development in the lake's watershed. We divided this area into 9 catchments using a combination of stormwater infrastructure maps and observed topography. In areas where topography seemed flat, catchments were delineated by observing the direction of water flow during rainfall. Later in the study, some of these catchments were combined because they were adjacent and did not drain to the lake through stormwater conveyances and therefore few, if any, stormwater retrofits would be recommended.

Targeted pollutants for this study were total phosphorus and total suspended solids. Total phosphorus was chosen because the lake exceeds state water quality standards for phosphorus and this nutrient fuels algae blooms. Total suspended solids was also chosen as a target pollutant because it contributes to lake turbidity and many other pollutants, such as heavy metals, are transported by these particles. Volume of stormwater was tracked throughout this study because it is necessary for pollutant loading calculations and potential retrofit project considerations.

Step 2: Desktop Retrofit Analysis

The desktop analysis involves computer-based scanning of the subwatershed for potential retrofit catchments and/or specific sites. This step also identifies areas that don't need to be assessed because of existing stormwater infrastructure. Accurate GIS data are extremely valuable in conducting the desktop retrofit analysis. Some of the most important GIS layers include: 2-foot or finer topography, hydrology, soils, watershed/subwatershed boundaries, parcel boundaries, high-resolution aerial photography and the stormwater drainage infrastructure (with invert elevations).

Desktop retrofit analysis features to look for and potential stormwater retrofit projects.

Feature	Potential Retrofit Project
Existing Ponds	Add storage and/or improve water quality by excavating pond bottom, modifying riser, raising embankment, and/or modifying flow routing.
Open Space	New regional treatment (pond, bioretention).
Roadway Culverts	Add wetland or extended detention water quality treatment upstream.
Outfalls	Split flows or add storage below outfalls if open space is available.
Conveyance system	Add or improve performance of existing swales, ditches and non-perennial streams.
Large Impervious Areas (campuses, commercial, parking)	Stormwater treatment on site or in nearby open spaces.
Neighborhoods	Utilize right of way, roadside ditches, curb-cut rain gardens, or filter systems before water enters storm drain network.

Step 3: Retrofit Reconnaissance Investigation

After identifying potential retrofit sites through this desktop search, a field investigation was conducted to evaluate each site and identify additional opportunities. During the investigation, the drainage area and stormwater infrastructure mapping data were verified. Site constraints were assessed to determine the most feasible retrofit options as well as eliminate sites from consideration. The field investigation may have also revealed additional retrofit opportunities that could have gone unnoticed during the desktop search.

General list of stormwater BMPs considered for each catchment/site.

Stormwater Treatment Options for Retrofitting		
Area Treated	Best Management Practice	Potential Retrofit Project
5-500 acres	Extended Detention	12-24 hr detention of stormwater with portions drying out between events (preferred over wet ponds). May include multiple cell design, infiltration benches, sand/peat/iron filter outlets and modified choker outlet features.
	Wet Ponds	Permanent pool of standing water with new water displacing pooled water from previous event.
	Wetlands	Depression less than 1-meter deep and designed to emulate wetland ecological functions. Residence times of several days to weeks. Best constructed off-line with low-flow bypass.
0.1-5 acres	Bioretention	Use of native soil, soil microbe and plant processes to treat, evapotranspire, and/or infiltrate stormwater runoff. Facilities can either be fully infiltrating, fully filtering or a combination thereof.
	Filtering	Filter runoff through engineered media and pass it through an under-drain. May consist of a combination of sand, soil, compost, peat, and iron.
	Infiltration	A trench or sump that is rock-filled with no outlet that receives runoff. Stormwater is passed through a conveyance and pretreatment system before entering infiltration area.
	Swales	A series of vegetated, open channel practices that can be designed to filter and/or infiltrate runoff.
	Other	On-site, source-disconnect practices such as rain-leader disconnect rain gardens, rain barrels, green roofs, cisterns, stormwater planters, dry wells, or permeable pavements.

Step 4: Treatment Analysis/Cost Estimates

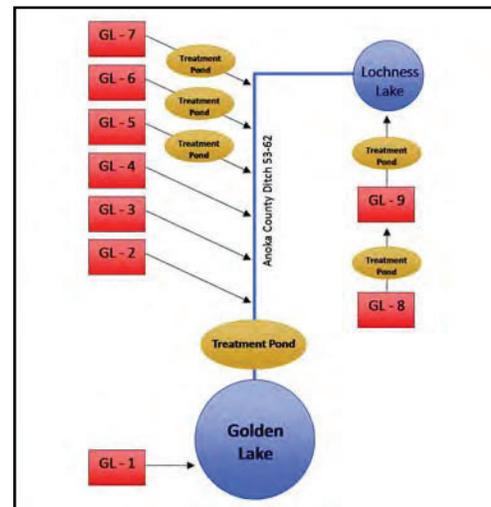
Sites most likely to be conducive to addressing the cities' and watershed district's goals and appear to have simple-to-moderate design, installation, and maintenance were chosen for a cost/benefit analysis. Estimated costs included design, installation, and maintenance annualized across a 30-year period. Estimated benefits included are pounds of phosphorus and total suspended solids removed, though projects were ranked only by cost per pound of phosphorus removed annually.

Treatment analysis

Each proposed project's pollutant removal estimates were estimated using the stormwater model WinSLAMM. WinSLAMM uses an abundance of stormwater data from the upper Midwest and elsewhere to quantify runoff volumes and pollutant loads from urban areas. It is useful for determining

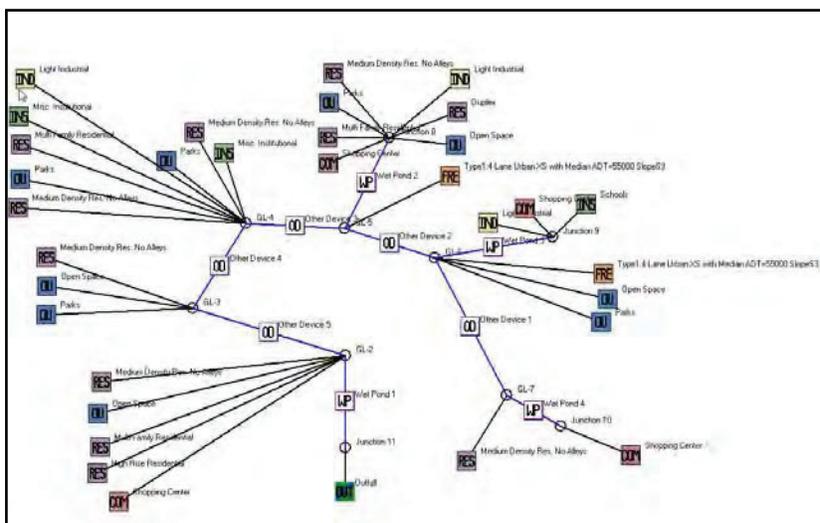
the effectiveness of proposed stormwater control practices. It has detailed accounting of pollutant loading from various land uses, and allows the user to build a model “landscape” that reflects the actual landscape being considered. The user is allowed to place a variety of stormwater treatment practices that treat water from various parts of this landscape. It uses rainfall and temperature data from a typical year, routing stormwater through the user’s model for each storm.

The image to the right displays a simplified flow network for all catchments analyzed in this assessment. Anoka County Ditch 53-62 flows throughout the Golden Lake subwatershed, and as a result the connectivity of the catchments to Golden Lake is greatly increased. With the exceptions of GL-8 and GL-9, which first pass through Lochness Lake prior to entering Anoka County Ditch 53-62, the catchments are highly connected to Golden Lake. Several stormwater treatment ponds exist throughout the subwatershed, and the effectiveness of each is further detailed within the catchment profiles section.



The newest version of WinSLAMM (version 10), which allows routing of multiple catchments and stormwater treatment practices, was used for this assessment because of the unique

connectivity amongst the catchments identified in the focus area under investigation. Anoka County Ditch 53-62 connects many of the catchments in this assessment and routes them directly to a large stormwater treatment pond prior to entering Golden Lake. Therefore, volume and pollutant loads to Golden Lake from any given catchment must take into consideration the large stormwater treatment pond’s effectiveness. The screen shot to the right displays a network of catchments used in this assessment to accurately model the effectiveness of the large stormwater treatment pond directly upstream of Golden Lake (represented by “Wet Pond 1”).



WinSLAMM modeling network of the Golden Lake subwatershed that represents existing conditions. Each colored square connected to a junction circle via a line represents a land cover type within a catchment (e.g. RES = residential, OU = other urban, COM = commercial, INS = institutional, IND = industrial, and FRE = freeway). All land cover types that collectively meet at a junction represent all land covers within a particular catchment. Catchments are labeled at the junction circle (e.g. GL-2). All water from catchments GL-2 through GL-7 was routed through “Wet Pond 1” prior to discharge into Golden Lake at the “Outfall.” This pond is located southeast of Lake Drive between Golden Lake Road and Village Parkway.

The initial step was to create a “base” model which estimated pollutant loading from each catchment in its present-day state without taking into consideration any existing stormwater treatment. To accurately model the land uses in each catchment, we delineated each land use in each catchment using geographic information systems

(specifically, ArcMap), and assigned each a WinSLAMM standard land use file. A site specific land use file was created by adjusting total acreage and accounting for local soil types. This process resulted in a model that included estimates of the acreage of each type of source area (roof, road, lawn, etc.) in each catchment. For certain source areas critical to our models we verified that model estimates were accurate by calculating actual acreages in ArcMap, and adjusting the model acreages if needed.

Once the “base” model was established, an “existing conditions” model was created by incorporating any existing stormwater treatment practices in the catchment. For example, street cleaning with mechanical or vacuum street sweepers, rain gardens, underground sumps, stormwater treatment ponds, and others were included in the “existing conditions” model if they were present in the catchment.

Finally, each proposed stormwater treatment practice was added to the “existing conditions” model and pollutant reductions were generated. Because neither a detailed design of each practice nor in-depth site investigation was completed, a generalized design for each practice was used. Whenever possible, site-specific parameters were included. Design parameters were modified to obtain various levels of treatment. It is worth noting that we modeled each practice individually, and the benefits of projects may not be additive, especially if serving the same area. Reported treatment levels are dependent upon optimal site selection and sizing.

WinSLAMM stormwater computer model inputs

General WinSLAMM Model Inputs	
Parameter	File/Method
Land use acreage	ArcMap
Precipitation/Temperature Data	Minneapolis 1959 – the rainfall year that best approximates a typical year.
Winter season	Included in model. Winter dates are 11-4 to 3-13.
Pollutant probability distribution	WI_GEO01.ppd
Runoff coefficient file	WI_SL06 Dec06.rsv
Particulate solids concentration file	WI_AVG01.psc
Particle residue delivery file	WI_DLV01.prr
Street delivery files	WI files for each land use.

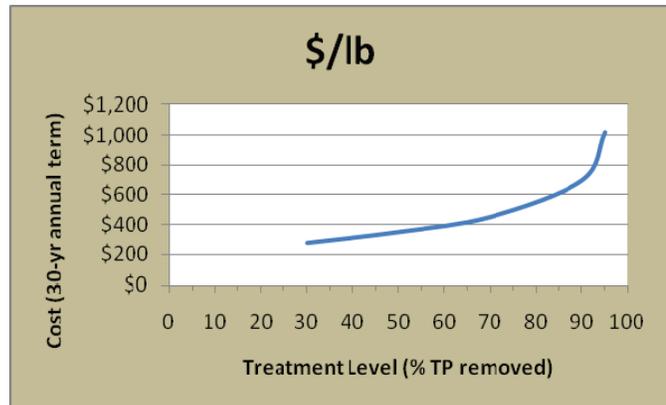
Cost Estimates

Cost estimates were annualized costs that incorporated design, installation, installation oversight, and maintenance over a 30-year period. In cases where promotion to landowners is important, such as rain gardens, those costs were included as well. In cases where multiple, similar projects are proposed in the same locality, promotion and administration costs were estimated using a non-linear relationship that accounted for savings with scale. Design assistance from an engineer is assumed for practices in-line with the stormwater conveyance system, involving complex stormwater treatment interactions, or posing a risk for upstream flooding. It should be understood that no site-specific construction investigations were done as part of this stormwater assessment, and therefore cost estimates account for only general site considerations.

The costs associated with several different pollution reduction levels were calculated. Generally, more or larger practices result in greater pollution removal. However the costs of obtaining the highest levels of treatment are often prohibitively expensive (see figure). By comparing costs of different treatment levels, the cities and watershed organization can best choose the project sizing that meets their goals.

Step 5: Evaluation and Ranking

The cost per pound of phosphorus treated was calculated for each potential retrofit project. Only projects that seemed realistic and feasible were considered. The recommended level was the level of treatment that would yield the greatest benefit per dollar spent while being considered feasible and not falling below a minimal amount needed to justify crew mobilization and outreach efforts. Local officials may wish to revise the recommended level based on water quality goals, finances, or public opinion.



Catchment Profiles and How to Read Them

The following pages are the “Catchment Profiles.” These profiles provide the most important details of this report, including:

- Summary of existing conditions, including existing stormwater infrastructure, and estimated pollutant export to Golden Lake
- Map of the catchment
- Recommended stormwater retrofits, pollutant reductions, and costs.

Following all of the catchment profiles is a summary table that ranks all projects in all catchments by cost effectiveness.

To save space and avoid being repetitive, explanations of the catchment profiles are provided below. We strongly recommend reviewing this section before moving forward in the report.

The analyses of each catchment are broken into “base, existing, and proposed” conditions. They are defined as follows:

- | | |
|------------------------------|---|
| <u>Base conditions</u> - | Volume and pollutant loadings from the catchment landscape without any stormwater practices. |
| <u>Existing conditions</u> - | Volume and pollutant loadings after already-existing stormwater practices are taken into account. |
| <u>Proposed conditions</u> - | Volume and pollutant loadings after proposed stormwater retrofits. |

Many analyses for this assessment were performed at two geographic scales, “catchment and network.” They are defined as follows:

- | | |
|-----------------------------------|---|
| <u>Catchment level analyses</u> - | Volume and pollutant loads exiting the catchment at the catchment boundary. There may be other stormwater practices existing or proposed farther downstream, but this analysis ignores them. |
| <u>Network level analyses</u> - | Volume and pollutant loads that reach Golden Lake through the entire network. These will be much larger numbers than loadings from any one catchment because it is the sum of multiple catchments that discharge at the same point into the lake, and might receive treatment from the same practice. This analysis takes into account stormwater treatment ponds that are in-line with the ditch and upstream of Golden Lake. Most notably, there is a large network outfall pond that treats all water from most catchments just before it enters Golden Lake. The network level analysis includes catchments GL-2 through GL7. Catchment GL-1 is not included in the network level analyses because it is the area immediately around the lake, and does not drain through any network-level outfall ponds. Catchments GL-8 & GL-9 are excluded from network level analyses because they drain to Lochness Lake, where substantial water chemistry changes likely occur. |

The pollutant load reduction for a proposed stormwater retrofit will often be greater at the catchment level than at the network level. This is because there is a large stormwater pond that treats water from most catchments just before it enters Golden Lake (network outfall pond). For example, a proposed project may capture 10 pounds of phosphorus at the catchment level, but that doesn't necessarily mean 10 fewer pounds of phosphorus will reach the lake because some of that phosphorus was already being removed by the network outfall pond. Benefits of a proposed project must be judged by their pollutant reductions and cost effectiveness at the network level.

The example catchment profile on the following pages explains important features of each profile.

HOW TO READ THE CATCHMENT PROFILES

EXAMPLE Catchment A

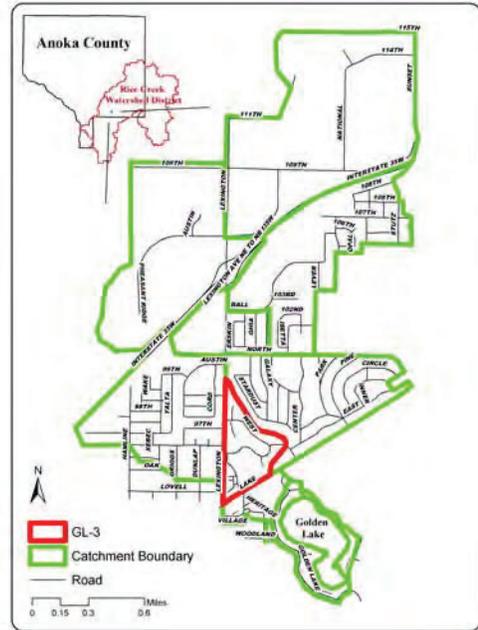
Existing Catchment Summary	
Acres	58.90
Dominant Land Cover	Residential
Parcels	237
Volume (acre-feet/yr)	18.37
TP (lb/yr)	25.00
TSS (lb/yr)	6461.00

DESCRIPTION

Example Catchment is primarily comprised of medium-density, single-family residential development...

EXISTING STORMWATER TREATMENT

Existing stormwater treatment practices within Example Catchment consist of street cleaning with a mechanical sweeper in the spring and fall and a network of stormwater treatment ponds...



Catchment ID banner.

Volume and pollutants generated from this catchment under existing conditions.

Catchment locator map.

HOW TO READ THE CATCHMENT PROFILES

Catchment Specific Existing Conditions

Catchment-level analysis of existing conditions.

	Existing Conditions	Base Loading	Treatment	Net Treatment %	Existing Loading
Treatment	TP (lb/yr)	25.2	0.2	1%	25.0
	TSS (lb/yr)	7,186	725.0	10%	6,461
	Volume (acre-feet/yr)	18.4	0.0	0%	18.4
	Number of BMP's	1			
	BMP Size/Description	Street cleaning, stormwater pond			

Volume of water and pounds of pollutants generated from the catchment without any stormwater management practices (base conditions).

Pollutants and volume removed by existing stormwater management practices (existing conditions).

Pollutants and volume exiting the catchment after existing practices.

Percent reductions by existing practices.

Network-level analysis of existing conditions.

Network-Wide Existing Conditions (GL-2 through GL-7)

	Existing Conditions	Base Loading	Treatment	Net Treatment %	Existing Loading
Treatment	TP (lb/yr)	623.7	313.0	50%	310.7
	TSS (lb/yr)	216,101	124,172.0	57%	91,929
	Volume (acre-feet/yr)	494.5	0.0	0%	494.5
	Number of BMP's	All BMPs in catchments GL-2 through GL-7			
	BMP Size/Description	Street cleaning and extended wet detention ponds just before outfall into Golden Lake			

Same definitions as above, except here the numbers refer to pollutants and volumes exiting catchments GL-2 through GL-7 in the network collectively. The existing practices include stormwater ponds that treat water from multiple catchments, including the network outfall pond just before water is discharged into Golden Lake.

HOW TO READ THE CATCHMENT PROFILES



Map shows catchment boundaries, stormwater infrastructure, and the locations of proposed stormwater retrofits.

Proposed stormwater retrofits. The project ID number (3 in this case) corresponds to this project's ranking study-wide. This project was the third most cost effective project at phosphorus removal identified in this study.

RETROFIT RECOMMENDATIONS

Project ID #3 – Curb-Cut Rain Garden Network

Drainage Area – 33.7 acres

Location – 5 locations throughout residential area

Property Ownership – Private

Description – The residential land cover within this catchment is best suited to residential, curb-cut rain gardens (see Appendix B for design options). Seven optimal rain garden locations were identified (see map below). Generally, ideal curb-cut rain garden locations are immediately up-gradient of a catch basin serving a large drainage area. Considering typical land owner participation rates we analyzed a scenario where 5 rain gardens were installed in catchment GL-3. Volume and pollutant reductions resulting from the rain garden installations are highlighted in the tables below.

EXAMPLE Conceptual and example images –



Before rain



During rain

HOW TO READ THE CATCHMENT PROFILES

EXAMPLE Catchment Specific Cost/Benefit Analysis

Volume or pollutant removal this project will achieve.

The project's rank (3) is shown again and three "levels" of this project are compared: 6, 9, or 12 rain gardens, for example.

Cumulative pollutant removal achieved by this project and already-existing practices.

Cost/Benefit Analysis		Project ID					
		3 6 Rain Gardens		3 9 Rain Gardens		3 12 Rain Gardens	
		New trtmt	Net trtmt %	New trtmt	Net trtmt %	New trtmt	Net trtmt %
Treatment	TP (lb/yr)	5.4	39%	6.8	43%	7.7	46%
	TSS (lb/yr)	1,684	41%	2,127	45%	2,408	48%
	Volume (acre-feet/yr)	4.2	33%	5.4	38%	6.1	41%
	Number of BMP's	6		9		12	
	BMP Size/Description	1,500 sq ft		2,250 sq ft		3,000 sq ft	
	BMP Type	Complex Bioretention		Complex Bioretention		Complex Bioretention	
Cost	Materials/Labor/Design	\$27,210		\$40,710		\$54,210	
	Promotion & Admin Costs	\$2,450		\$2,870		\$3,290	
	Total Project Cost	\$29,660		\$43,580		\$57,500	
	Annual O&M	\$450		\$675		\$900	
	Term Cost/1,000lb-TSS/yr	\$855		\$1,000		\$1,170	
	Term Cost/lb-TP/yr	\$266		\$313		\$364	

Project installation cost estimation.

Cost effectiveness at suspended solids removal. The project cost is divided by suspended solids removal in pounds (30 yrs). Includes operations and maintenance over the project life (30 years unless otherwise noted).

Cost effectiveness at phosphorus removal. The project cost is divided by phosphorus removal in pounds (30 yrs). Includes operations and maintenance over the project life (30 years unless otherwise noted).

Compare cost effectiveness of various project "levels" in these rows for TSS (2nd row from bottom) or TP (bottom row) removal. Compare cost effectiveness numbers between projects to determine the best value.

HOW TO READ THE CATCHMENT PROFILES

EXAMPLE Network-Wide Cost/Benefit Analysis (GL-2 through GL-7)

Cost/Benefit Analysis		Project ID					
		3 6 Rain Gardens		3 9 Rain Gardens		3 12 Rain Gardens	
		New trtmt	Net trtmt %	New trtmt	Net trtmt %	New trtmt	Net trtmt %
Treatment	TP (lb/yr)	5.4	39%	6.8	43%	7.7	46%
	TSS (lb/yr)	1,684	41%	2,127	45%	2,408	48%
	Volume (acre-feet/yr)	4.2	33%	5.4	38%	6.1	41%
	Number of BMP's	6		9		12	
	BMP Size/Description	1,500 sq ft		2,250 sq ft		3,000 sq ft	
	BMP Type	Complex Bioretention		Complex Bioretention		Complex Bioretention	
Cost	Materials/Labor/Design	\$27,210		\$40,710		\$54,210	
	Promotion & Admin Costs	\$2,450		\$2,870		\$3,290	
	Total Project Cost	\$29,660		\$43,580		\$57,500	
	Annual O&M	\$450		\$675		\$900	
	Term Cost/1,000lb-TSS/yr	\$855		\$1,000		\$1,170	
	Term Cost/lb-TP/yr	\$266		\$363		\$414	

This table is the same as the previous catchment-level table, except it examines the costs and benefits of proposed stormwater retrofits at the network level. **This table should be used to compare projects in catchments GL-2 through GL-7 because it represents volume and pollutant removals at the point where the water enters Golden Lake.**

Map of stormwater catchment areas (GL-1 thru GL-9) and potential retrofit projects referred to in this report. The numbers next to each potential project represent ranking with respect to the cost per pound of total phosphorus removed per year. Catchment profiles on the following pages provide additional detail.



Catchment GL-1

Existing Catchment Summary

Acres	56.20
Dominant Land Cover	Residential
Parcels	137
Volume (acre-feet/yr)	17.32
TP (lb/yr)	18.96
TSS (lb/yr)	5,314

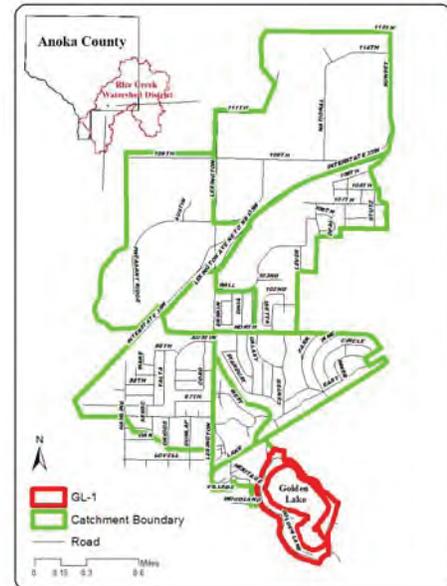
CATCHMENT DESCRIPTION

Catchment GL-1 consists of the area surrounding Golden Lake that drains directly to the lake. Medium-density, single-family residential development is the primary land cover type within GL-1. Golden Lake Park is also included in this area.

EXISTING STORMWATER TREATMENT

Catchment GL-1 has some of the most elaborate existing stormwater treatment of all the catchments identified in this study. A 2008 street and utility improvement project along West Golden Lake Road resulted in the installation of several stormwater treatment practices. In addition to the spring and fall street cleaning schedule, three curb-cut residential rain gardens, three sumps, and a 5,600 square foot underground infiltrating drain tile field were constructed.

The high density of catch basins that were installed as part of the 2008 street reconstruction project make GL-1 a poor candidate for curb-cut rain gardens because of the many small drainage areas (i.e. an optimally placed curb-cut rain garden would have a small drainage area). Yet, the three curb-cut rain gardens that were installed were placed in locations that have the largest drainage areas. However, the inlets and sediment accumulation (see images to right) within the basins likely require additional maintenance to ensure stormwater runoff is able to enter the gardens. Existing pollutant loads from this catchment to Golden Lake are shown in the table below.



	Existing Conditions	Base Loading	Treatment	Net Treatment %	Existing Loading
Treatment	TP (lb/yr)	27.5	8.6	31%	19.0
	TSS (lb/yr)	8,647	3,333	39%	5,314
	Volume (acre-feet/yr)	21.1	3.8	18%	17.3
	Number of BMP's	8			
	BMP Size/Description	3 Rain Gardens, 3 Sumps, Street Cleaning, and Infiltrating Drain Tile Field			

RETROFIT RECOMMENDATIONS



Project ID #10 – Golden Lake Park - Parking Lot Rain Garden

Drainage Area - 0.86 acres

Location – Golden Lake Park on West side of Golden Lake

Property Ownership – City of Circle Pines

Description – Space is available within Golden Lake Park to treat runoff generated by the 0.86 acre parking lot that drains directly to Golden Lake. A rain garden placed to the side of the lake access ramp (BR in the map below) would collect run-off from the parking lot and provide stormwater treatment via infiltration. The rain garden was modeled as a single 1,000 square foot garden. See Appendix B for rain garden design options. Volume and pollutant reductions resulting from the rain garden installation are highlighted in the table below.

Proposed Site Images -



Cost/Benefit Analysis		Project ID					
		10 Rain Garden					
		New trtmt	Net %			New trtmt	Net %
Treatment	TP (lb/yr)	0.7	33%				
	TSS (lb/yr)	371	43%				
	Volume (acre-feet/yr)	1.1	23%				
	Number of BMP's	1					
	BMP Size/Description	1,000 sq ft					
	BMP Type	Complex Bioretention					
Cost	Materials/Labor/Design	\$18,210					
	Promotion & Admin Costs	\$1,750					
	Total Project Cost	\$19,960					
	Annual O&M	\$75					
	Term Cost/1,000lb-TSS/yr	\$1,996					
	Term Cost/lb-TP/yr	\$1,139					

Project ID #11 – Golden Lake Park Parking Lot Permeable Asphalt

Drainage Area - 0.86 acres

Location – Golden Lake Park on West side of Golden Lake

Property Ownership – City of Circle Pines

Description – An alternative option to the rain garden described above would be permeable asphalt within the 0.86 acre parking lot (PA in the map below). Generally, permeable pavements can treat water from an area of impervious surface three times the size of the permeable pavement. Therefore, 0.22 acres (9,366 square feet) of permeable asphalt would be sufficient to treat the 0.86 acre parking lot. The model included maintenance, such as restorative vacuuming on an annual basis. See appendix A for more details on the design of permeable pavements. Catchment-wide volume and pollutant removal are shown in the table below.

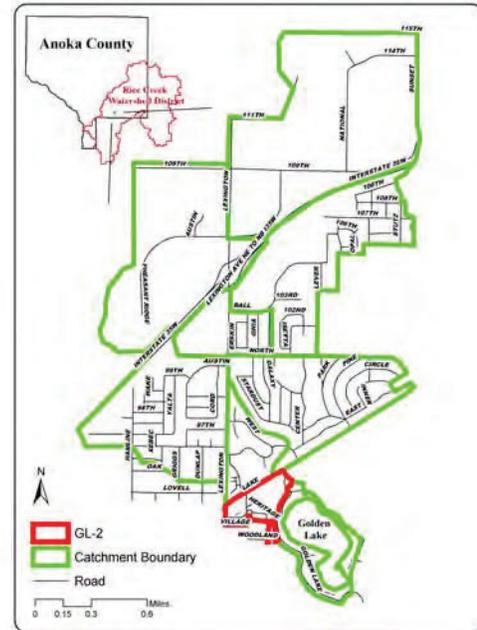
Proposed Site Images –



Cost/Benefit Analysis		Project ID					
		11 Permeable Asphalt					
		New trtmt	Net %	New trtmt	Net %	New trtmt	Net %
Treatment	TP (lb/yr)	0.7	34%				
	TSS (lb/yr)	432	44%				
	Volume (acre-feet/yr)	1.2	24%				
	Number of BMP's	1					
	BMP Size/Description	9,366 sq ft					
	BMP Type	Permeable Asphalt					
Cost	Materials/Labor/Design	\$131,334					
	Promotion & Admin Costs	\$1,680					
	Total Project Cost	\$133,014					
	Annual O&M	\$215					
	Term Cost/1,000lb-TSS/yr	\$10,752					
	Term Cost/lb-TP/yr	\$6,531					

Catchment GL-2

Existing Catchment Summary	
Acres	40.80
Dominant Land Cover	Open Space
Parcels	132
Volume (acre-feet/yr)	26.40
TP (lb/yr)	23.90
TSS (lb/yr)	7,743



DESCRIPTION

Catchment GL-2 is located upstream of Golden Lake and consists primarily of open space with substantial areas of commercial and multi-family residential land cover. The large open space present in catchment GL-2 is dominated by the City of Circle Pines Wetland Mitigation Project (RCWD No. 97-149).

EXISTING STORMWATER TREATMENT

Street cleaning in the spring and fall is conducted by the City of Circle Pines. In addition, Anoka County Ditch 53-62 flows into the five acre wet pond located in catchment GL-2. The pond provides water quality treatment for the all drainage areas studied in this report, other than GL-1, which drains directly to Golden Lake.

Existing volume and pollutant loading from this catchment are displayed in the two tables below. The network-wide existing conditions table highlights the effects of the five acre wet pond located within GL-2 that treats all water from Ditch 53-62 prior to entering Golden Lake.

Catchment Specific Existing Conditions

Existing Conditions		Base Loading	Treatment	Net Treatment %	Existing Loading
Treatment	TP (lb/yr)	24.0	0.1	0%	23.9
	TSS (lb/yr)	8,281	538	6%	7,743
	Volume (acre-feet/yr)	26.4	0.0	0%	26.4
	Number of BMP's	1			
	BMP Size/Description	Street cleaning			

Network-Wide Existing Conditions (GL-2 through GL-7)

	Existing Conditions	Base Loading	Treatment	Net Treatment %	Existing Loading
Treatment	TP (lb/yr)	623.7	313.0	50%	310.7
	TSS (lb/yr)	216,101	124,172	57%	91,929
	Volume (acre-feet/yr)	494.5	0.0	0%	494.5
	Number of BMP's	All BMPs in catchments GL-2 through GL-7			
	BMP Size/Description	Street cleaning and extended wet detention ponds			

RETROFIT RECOMMENDATIONS

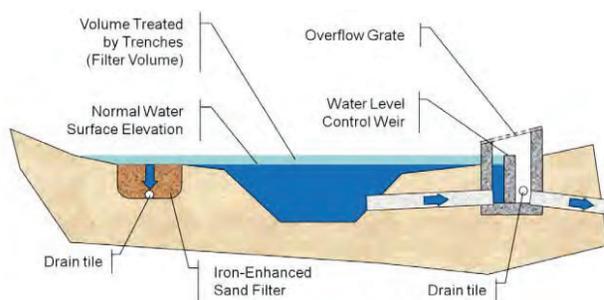


Project ID #2 – Iron enhanced sand filter for existing pond**Drainage Area** – 1,013.3 acres**Location** – East side of wet detention pond located Northeast of Golden Lake in catchment GL-2**Property Ownership** – City of Circle Pines

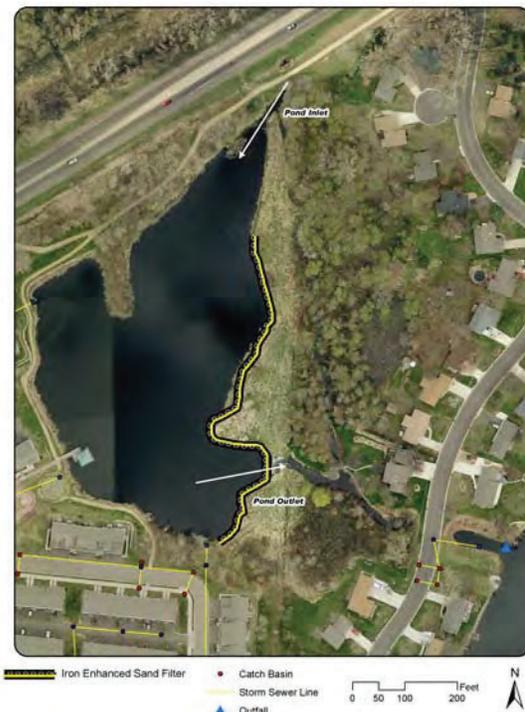
Description – Retrofitting the existing wet pond with an iron enhanced sand filter along the eastern edge of the pond would significantly increase the pond’s efficiency at removing dissolved phosphorus (Erickson & Gulliver 2010). A significant percentage of phosphorus in stormwater is dissolved (30%-45%).

The iron enhanced sand filter would be installed at an elevation slightly above the normal water level of the pond so that following a storm event the increase in depth of the pond would be first diverted to the iron enhanced sand filter. The filter would have drain tile installed along the base of the trench and would outlet downstream of the current pond outlet. Large storm events that overwhelm the iron enhanced sand filter’s capacity would exit the pond via the existing outlet.

Based on available space and the large contributing drainage area, a 700 foot long by 10 foot wide by 2 foot deep filter with one foot of live storage above the iron enhanced sand filter was modeled. Network-wide volume and pollutant removal are shown in the table below. Please note that no estimates are included for modifications to the outlet structure of the existing pond, and the cost estimates assume the city would complete the installation. The iron enhanced sand filter would need to be an engineered project, and the existing pond outlet may be deemed unsuitable for this type of practice which would result in the additional expense of a new outlet. Nevertheless, the large drainage area treated by this pond (1,013.3 acres) combined with the effectiveness of the iron enhanced sand filter will likely make this one of the most cost effective options regardless of the need to replace the pond’s outlet structure.

Conceptual and Proposed Site Images -

(Erickson & Gulliver 2010)



Network-Wide Cost/Benefit Analysis (GL-2 through GL-7)

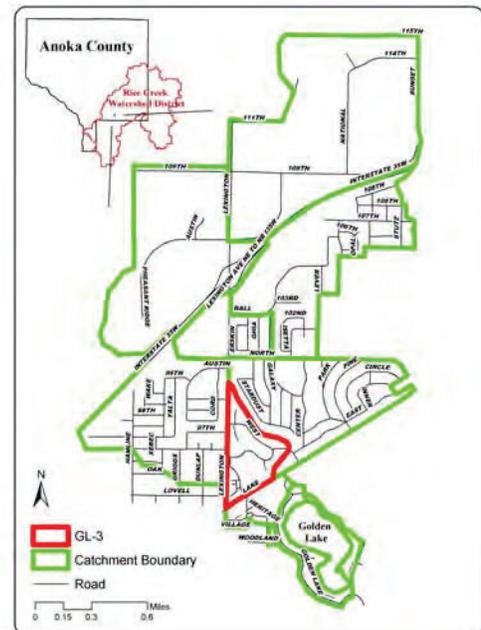
Cost/Benefit Analysis		Project ID					
		2 Iron Enhanced Sand Filter					
		New trtmt	Net %				
Treatment	TP (lb/yr)	35.2	56%				
	TSS (lb/yr)	0	57%				
	Volume (acre-feet/yr)	0.0	0%				
	Number of BMP's	1					
	BMP Size/Description	700	linear feet				
	BMP Type	Iron Enhanced Sand Filter					
Cost	Materials/Labor/Design	\$87,500					
	Promotion & Admin Costs	\$1,680					
	Total Project Cost	\$89,180					
	Annual O&M	\$2,917					
	Term Cost/1,000lb-TSS/yr	N/A					
	Term Cost/lb-TP/yr	\$167					

Catchment GL-3

Existing Catchment Summary	
Acres	58.90
Dominant Land Cover	Residential
Parcels	237
Volume (acre-feet/yr)	18.37
TP (lb/yr)	25.00
TSS (lb/yr)	6,461

DESCRIPTION

Catchment GL-3 is primarily comprised of medium-density, single-family residential development with Carl Eck Park positioned on the east side. Ditch 53-62 forms the eastern boundary of catchment GL-3 and Lexington Avenue forms the western boundary. There is a 12.3 acre section of multi-family residential land cover in the southwest corner of the catchment, but this land cover was removed from the analysis because of the existing stormwater treatment described below.



EXISTING STORMWATER TREATMENT

Existing stormwater treatment practices within GL-3 consist of street cleaning with a mechanical sweeper in the spring and fall and a network of stormwater treatment ponds that treat the multi-family residential land cover in the southwest corner of the catchment. The stormwater ponds were determined to be isolated from Ditch 53-62, except under extreme conditions when overflow may cause them to reach the ditch. However, there is a large area of open space through which the overflow water would need to travel prior to entering the ditch. For these reasons, the 12.3 acre multi-family residential land cover was removed from this analysis. The tables below highlight existing volume and pollutant loads from catchment GL-3.

Catchment Specific Existing Conditions

	Existing Conditions	Base Loading	Treatment	Net Treatment %	Existing Loading
Treatment	TP (lb/yr)	25.2	0.2	1%	25.0
	TSS (lb/yr)	7,186	725	10%	6,461
	Volume (acre-feet/yr)	18.4	0.0	0%	18.4
	Number of BMP's	1			
	BMP Size/Description	Street Cleaning			

Network-Wide Existing Conditions (GL-2 through GL-7)

	Existing Conditions	Base Loading	Treatment	Net Treatment %	Existing Loading
Treatment	TP (lb/yr)	623.7	313.0	50%	310.7
	TSS (lb/yr)	216,101	124,172	57%	91,929
	Volume (acre-feet/yr)	494.5	0.0	0%	494.5
	Number of BMP's	All BMPs in catchments GL-2 through GL-7			
	BMP Size/Description	Street cleaning and extended wet detention ponds			

RETROFIT RECOMMENDATIONS



Project ID #4 – Curb-Cut Rain Garden Network

Drainage Area – 33.7 acres

Location – 5 locations throughout medium-density residential land cover in catchment GL-3

Property Ownership – Private

Description – The residential land cover within this catchment is best suited for residential, curb-cut rain gardens (see Appendix B for design options). Seven optimal rain garden locations were identified (see map above). Generally, ideal curb-cut rain garden locations are immediately up-gradient of a catch basin serving a large drainage area. Considering typical land owner participation rates we analyzed a scenario where 5 rain gardens were installed in catchment GL-3. Volume and pollutant reductions resulting from the rain garden installations are highlighted in the tables below.

Conceptual images -



Before rain



During rain

Catchment Specific Cost/Benefit Analysis

Cost/Benefit Analysis		Project ID					
		4 5 Rain Gardens					
		New trtmt	Net %			New trtmt	Net %
Treatment	TP (lb/yr)	6.8	28%				
	TSS (lb/yr)	1,273	28%				
	Volume (acre-feet/yr)	3.2	18%				
	Number of BMP's	5					
	BMP Size/Description	1,250 sq ft					
	BMP Type	Complex Bioretention					
Cost	Materials/Labor/Design	\$22,710					
	Promotion & Admin Costs	\$2,310					
	Total Project Cost	\$25,020					
	Annual O&M	\$375					
	Term Cost/1,000lb-TSS/yr	\$950					
	Term Cost/lb-TP/yr	\$178					

Network-Wide Cost/Benefit Analysis (GL-2 through GL-7)

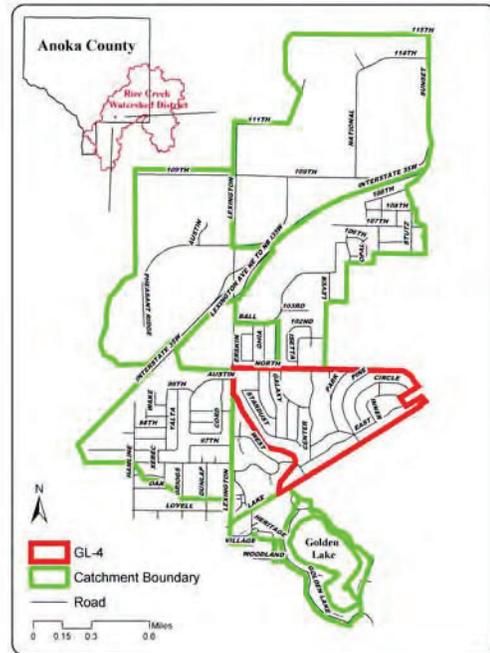
Cost/Benefit Analysis		Project ID					
		4 5 Rain Gardens					
		New trtmt	Net %				
Treatment	TP (lb/yr)	4.1	51%				
	TSS (lb/yr)	674	58%				
	Volume (acre-feet/yr)	3.2	1%				
	Number of BMP's	5					
	BMP Size/Description	1,250 sq ft					
	BMP Type	Complex Bioretention					
Cost	Materials/Labor/Design	\$22,710					
	Promotion & Admin Costs	\$2,310					
	Total Project Cost	\$25,020					
	Annual O&M	\$375					
	Term Cost/1,000lb-TSS/yr	\$1,794					
	Term Cost/lb-TP/yr	\$295					

Catchment GL-4

Existing Catchment Summary	
Acres	233.30
Dominant Land Cover	Residential
Parcels	589
Volume (acre-feet/yr)	99.40
TP (lb/yr)	124.20
TSS (lb/yr)	36,595

DESCRIPTION

Catchment GL-4 is located directly north of Golden Lake and is part of the eastern boundary of the focus area for this assessment. Ditch 53-62 creates the western boundary of this catchment and all stormwater runoff flows into the ditch. Land cover within catchment GL-4 consists primarily of medium-density, single-family residential and three sizeable parks (North Star, Center, and Inner).



EXISTING STORMWATER TREATMENT

Existing stormwater treatment within catchment GL-4 consists of street cleaning with a mechanical street sweeper. However, the large areas of medium-density, single-family residential land cover drain untreated into Anoka County Ditch 53-62, which eventually enters Golden Lake. Several storm sewer outfalls outlet to an open area just north of Anoka County Ditch 53-62. The outfalls carry large sediment loads (see images to right) and have created channels directly to Anoka County Ditch 53-62 with significant erosion.



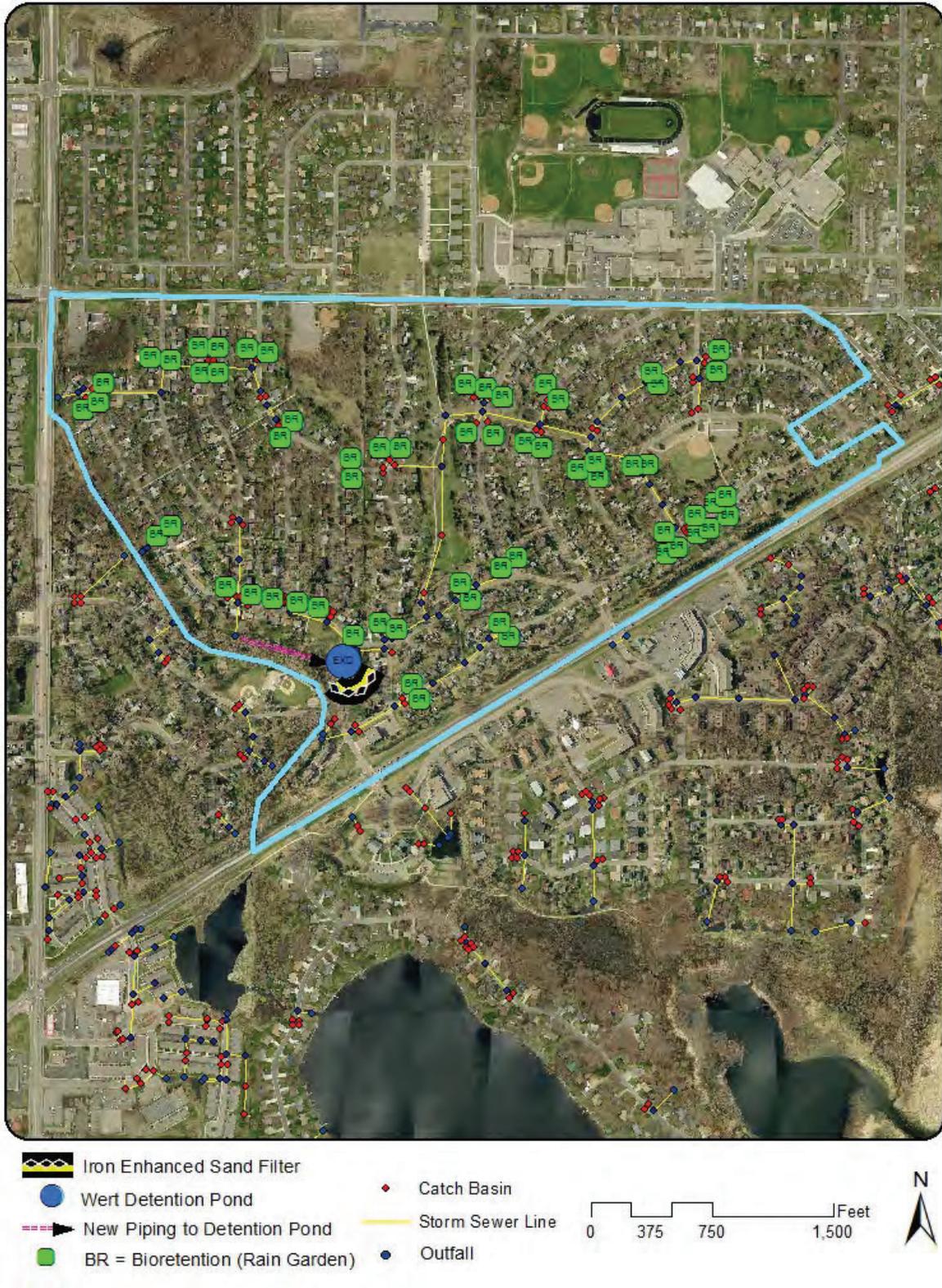
Catchment Specific Existing Conditions

	Existing Conditions	Base Loading	Treatment	Net Treatment %	Existing Loading
Treatment	TP (lb/yr)	125.1	0.9	1%	124.2
	TSS (lb/yr)	40,441	3,846	10%	36,595
	Volume (acre-feet/yr)	99.4	0.0	0%	99.4
	Number of BMP's	1			
	BMP Size/Description	Street Cleaning			

Network-Wide Existing Conditions (GL-2 through GL-7)

	Existing Conditions	Base Loading	Treatment	Net Treatment %	Existing Loading
Treatment	TP (lb/yr)	623.7	313.0	50%	310.7
	TSS (lb/yr)	216,101	124,172	57%	91,929
	Volume (acre-feet/yr)	494.5	0.0	0%	494.5
	Number of BMP's	All BMPs in catchments GL-2 through GL-7			
	BMP Size/Description	Street cleaning and extended wet detention ponds			

RETROFIT RECOMMENDATIONS



Project ID #3 – Curb-Cut Rain Garden Network

Drainage Area – 187.3 acres

Location – 15 locations throughout medium-density residential land cover in catchment GL-4

Property Ownership – Private

Description – The residential land cover within this catchment is best suited for residential, curb-cut rain gardens (see Appendix B for design options). Sixty two optimal rain garden locations were identified (see map above). Generally, ideal curb-cut rain garden locations are immediately up-gradient of a catch basin serving a large drainage area. Considering typical land owner participation rates we analyzed scenarios where 5, 10, and 15 rain gardens were installed in catchment GL-4. Volume and pollutant reductions resulting from the rain garden installations are highlighted in the tables below.

Example Images -



Before



After

Catchment Specific Cost/Benefit Analysis

Cost/Benefit Analysis		Project ID					
		3 5 Rain Gardens		3 10 Rain Gardens		3 15 Rain Gardens	
		New trtmt	Net %	New trtmt	Net %	New trtmt	Net %
Treatment	TP (lb/yr)	9.1	8%	16.3	14%	22.5	19%
	TSS (lb/yr)	1,633	14%	3,025	17%	4,291	20%
	Volume (acre-feet/yr)	4.1	4%	7.6	8%	10.8	11%
	Number of BMP's	5		10		15	
	BMP Size/Description	1,250 sq ft		2,500 sq ft		3,750 sq ft	
	BMP Type	Complex Bioretention		Complex Bioretention		Complex Bioretention	
Cost	Materials/Labor/Design	\$22,710		\$45,210		\$67,710	
	Promotion & Admin Costs	\$2,310		\$3,010		\$3,710	
	Total Project Cost	\$25,020		\$48,220		\$71,420	
	Annual O&M	\$375		\$750		\$1,125	
	Term Cost/1,000lb-TSS/yr	\$740		\$779		\$817	
	Term Cost/lb-TP/yr	\$133		\$145		\$156	

Network-Wide Cost/Benefit Analysis (GL-2 through GL-7)

Cost/Benefit Analysis		Project ID					
		3 5 Rain Gardens		3 10 Rain Gardens		3 15 Rain Gardens	
		New trtmt	Net %	New trtmt	Net %	New trtmt	Net %
Treatment	TP (lb/yr)	5.4	51%	9.7	52%	13.5	52%
	TSS (lb/yr)	865	58%	1,593	58%	2,281	59%
	Volume (acre-feet/yr)	4.1	1%	7.6	2%	10.8	2%
	Number of BMP's	5		10		15	
	BMP Size/Description	1,250 sq ft		2,500 sq ft		3,750 sq ft	
	BMP Type	Complex Bioretention		Complex Bioretention		Complex Bioretention	
Cost	Materials/Labor/Design	\$22,710		\$45,210		\$67,710	
	Promotion & Admin Costs	\$2,310		\$3,010		\$3,710	
	Total Project Cost	\$25,020		\$48,220		\$71,420	
	Annual O&M	\$375		\$750		\$1,125	
	Term Cost/1,000lb-TSS/yr	\$1,398		\$1,480		\$1,537	
	Term Cost/lb-TP/yr	\$224		\$243		\$260	

Project ID #'s 7, 8, and 9 – New Wet Pond (and additional options)

Drainage Area – 233.3 acres

Location – Carl Eck Park north of Anoka County Ditch 53-62

Property Ownership – City of Circle Pines

Description – A large unused space north of Anoka County Ditch 53-62 within Carl Eck Park presents an opportunity for a new stormwater pond. The site is favorable because it is owned by the city (simpler project administration) and would treat a large area of residential land cover prior to draining into the ditch.

Several options were evaluated and represent Proposed Projects 7, 8, and 9. Proposed Project 7 is the most cost effective (with respect to phosphorus removal) and represents a new pond with additional piping to expand the drainage area treated as well as an iron enhanced sand filter around the perimeter of the pond. Proposed Project 8 is the pond with the additional piping to expand the drainage area but no iron enhanced sand filter. Proposed Project 9 is simply installing the pond without the additional piping or iron enhanced sand filter.

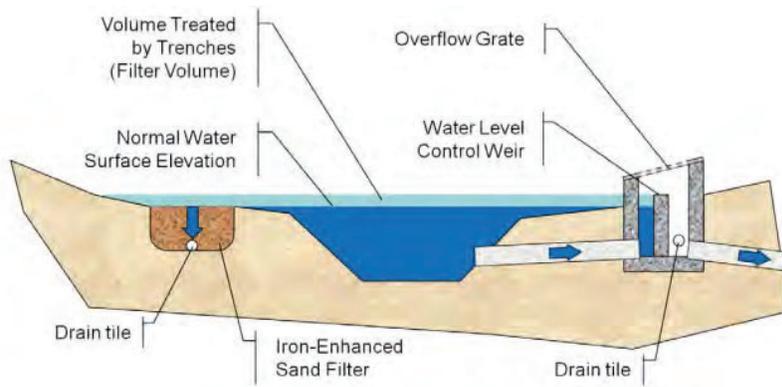
Installation of an iron enhanced sand filter along the eastern edge of the pond would significantly increase the pond's efficiency at removing dissolved phosphorus (Erickson & Gulliver 2010). A significant percentage of phosphorus in stormwater is dissolved (30%-45%).

The iron enhanced sand filter would be installed at an elevation slightly above the normal water level of the wet pond so that following a storm event the increase in depth of the pond would be first diverted to the iron enhanced sand filter. The filter would have drain tile installed along the base of the

trench and would outlet downstream of the current pond outlet. Large storm events that overwhelm the iron enhanced sand filter’s capacity would exit the pond using the existing outlet.

Based on available space, a 415 foot long by 10 foot wide by 2 foot deep filter with one foot of live storage above the iron enhanced sand filter was modeled. Network-wide volume and pollutant removal are shown in the table below. Please note that no estimates are included for modifications to the outlet structure of the existing pond, and the cost estimates assume the city would complete the installation. The iron enhanced sand filter would need to be an engineered project, and the existing pond outlet may be deemed unsuitable for this type of practice which would result in the additional expense of a new outlet. Nevertheless, the large drainage area treated by this pond (233.3 acres) combined with the effectiveness of the iron enhanced sand filter will likely make this one of the more cost effective options regardless of need to replace the pond’s outlet structure. The proposed pond is 0.86 acres (2,750 cubic yard storage capacity). Volume and pollutant reductions for the three proposed projects are highlighted in the tables below.

Conceptual and Proposed Site Images -



(Erickson & Gulliver 2010)



Catchment Specific Cost/Benefit Analysis

Cost/Benefit Analysis		Network Treatment By BMP					
		9 Pond		8 Pond + Piping		7 Pond + Piping + IESF	
		New trtmt	Net %	New trtmt	Net %	New trtmt	Net %
Treatment	TP (lb/yr)	46.2	38%	59.4	48%	72.6	59%
	TSS (lb/yr)	13,331	42%	17,625	53%	17,625	53%
	Volume (acre-feet/yr)	0.0	0%	0.0	0%	0.0	0%
	Number of BMP's	1-Pond excavated		1-Pond excavated + Additional Piping		1-Pond excavated + Additional Piping + Iron Enhanced Sand Filter	
	BMP Size/Description	2,750 cubic yards		2,750 cubic yards		2,750 cubic yards	
	BMP Type	Wet Pond		Wet Pond		Wet Pond	
Cost	Materials/Labor/Design	\$93,950		\$119,100		\$170,975	
	Promotion & Admin Costs	\$1,680		\$1,680		\$1,680	
	Total Project Cost	\$95,630		\$120,780		\$172,655	
	Annual O&M	\$3,188		\$4,026		\$5,755	
	Term Cost/1,000lb-TSS/yr	\$478		\$457		\$653	
	Term Cost/lb-TP/yr	\$138		\$136		\$158	

Network-Wide Cost/Benefit Analysis (GL-2 through GL-7)

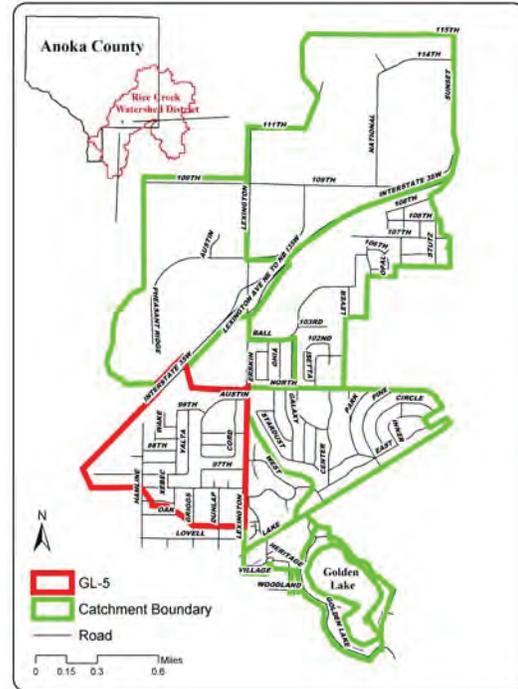
<i>Cost/Benefit Analysis</i>		<i>Network Treatment By BMP</i>					
		9 Pond		8 Pond + Piping		7 Pond + Piping + IESF	
		New trtmt	Net %	New trtmt	Net %	New trtmt	Net %
<i>Treatment</i>	TP (lb/yr)	9.7	52%	13.9	52%	27.1	55%
	TSS (lb/yr)	2,249	59%	3,679	59%	3,679	59%
	Volume (acre-feet/yr)	0.0	0%	0.0	0%	0.0	0%
	Number of BMP's	1-Pond excavated		1-Pond excavated + Additional Piping		1-Pond excavated + Additional Piping + Iron Enhanced Sand Filter	
	BMP Size/Description	2,750	cubic yards	2,750	cubic yards	2,750	cubic yards
	BMP Type	Wet Pond		Wet Pond		Wet Pond	
<i>Cost</i>	Materials/Labor/Design	\$93,950		\$119,100		\$170,975	
	Promotion & Admin Costs	\$1,680		\$1,680		\$1,680	
	Total Project Cost	\$95,630		\$120,780		\$172,655	
	Annual O&M	\$3,188		\$4,026		\$5,755	
	Term Cost/1,000lb-TSS/yr	\$2,835		\$2,189		\$3,129	
	Term Cost/lb-TP/yr	\$657		\$579		\$425	

Catchment GL-5

Existing Catchment Summary	
Acres	257.50
Dominant Land Cover	Residential
Parcels	564
Volume (acre-feet/yr)	114.55
TP (lb/yr)	82.50
TSS (lb/yr)	25,590

DESCRIPTION

Catchment GL-5 is bordered by Interstate 35 East on the eastern boundary and Lexington Avenue on the western boundary. Anoka County Ditch 53-62 forms the northern boundary and the southern boundary is approximately Lovell Road. Land cover in the catchment is comprised primarily of medium-density, single-family residential.



EXISTING STORMWATER TREATMENT

The 257.5 acres of land in catchment GL-5 drain north to an existing stormwater treatment pond that outlets to Anoka County Ditch 53-62. The pond is located in Centennial Green Park. In addition, street cleaning is conducted with a mechanical street sweeper once each in the spring and fall. The tables below highlight existing volume and pollutant loads from catchment GL-5.

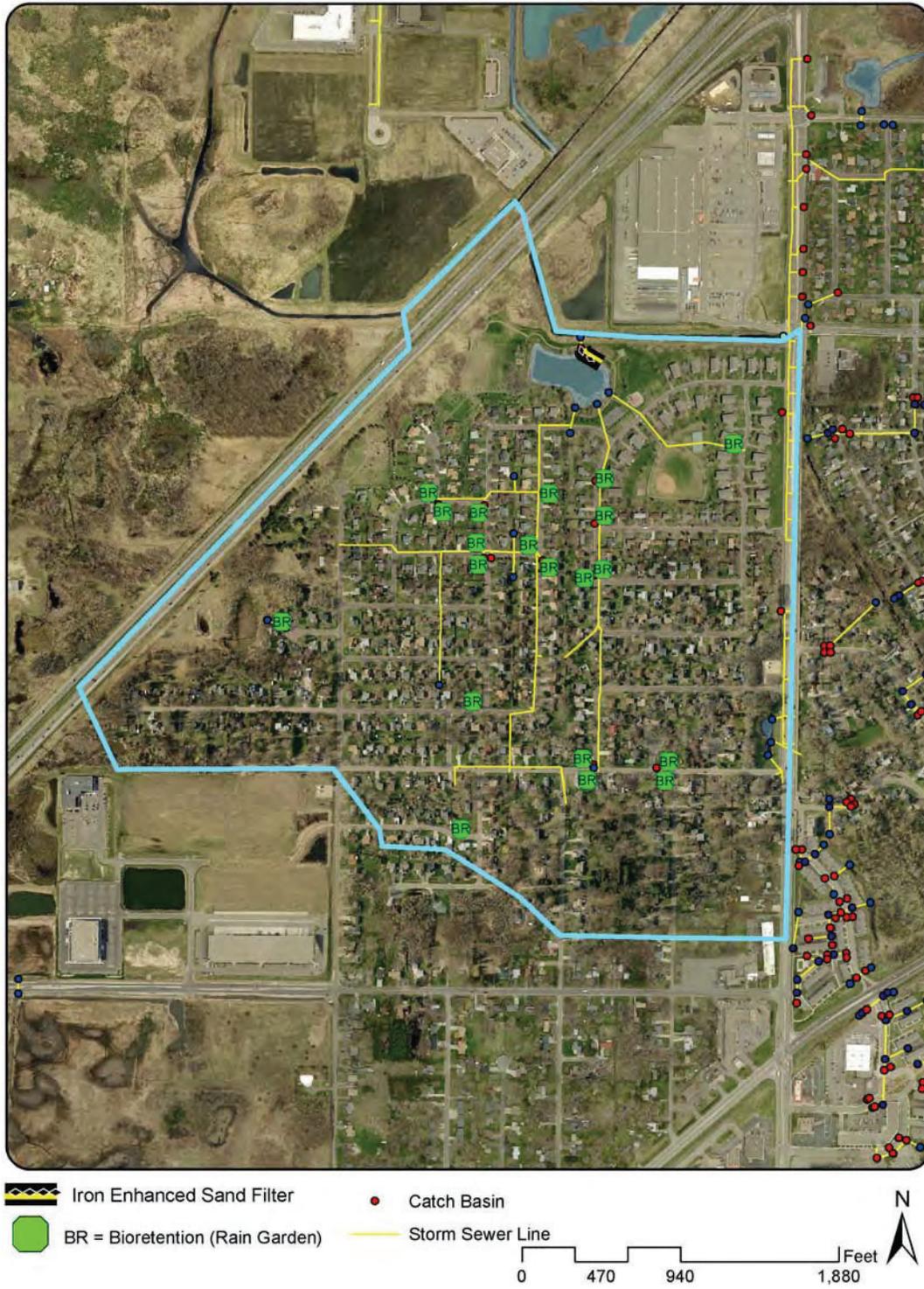
Catchment Specific Existing Conditions

	Existing Conditions	Base Loading	Treatment	Net Treatment %	Existing Loading
Treatment	TP (lb/yr)	176.7	94.2	53%	82.5
	TSS (lb/yr)	54,253	28,663	53%	25,590
	Volume (acre-feet/yr)	114.6	0.0	0%	114.6
	Number of BMP's	2			
	BMP Size/Description	Street cleaning and pond			

Network-Wide Existing Conditions (GL-2 through GL-7)

	Existing Conditions	Base Loading	Treatment	Net Treatment %	Existing Loading
Treatment	TP (lb/yr)	623.7	313.0	50%	310.7
	TSS (lb/yr)	216,101	124,172	57%	91,929
	Volume (acre-feet/yr)	494.5	0.0	0%	494.5
	Number of BMP's	All BMPs in catchments GL-2 through GL-7			
	BMP Size/Description	Street cleaning and extended wet detention ponds			

RETROFIT RECOMMENDATIONS



Project ID #1 – Iron enhanced sand filter (IESF) for existing pond

Drainage Area – 257.5 acres

Location – East side of wet detention pond located within Centennial Green Park in catchment GL-5

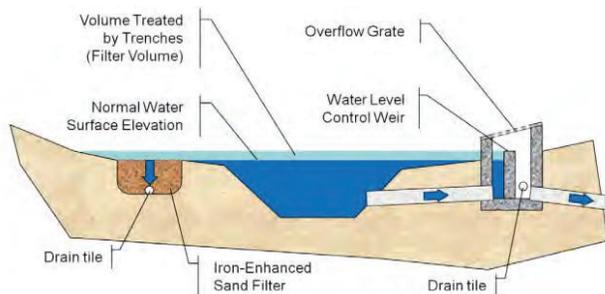
Property Ownership – City of Blaine

Description – Retrofitting the existing wet detention pond with an iron enhanced sand filter along the eastern edge of the pond would significantly increase the pond’s efficiency at removing dissolved phosphorus (Erickson & Gulliver 2010). A significant percentage of phosphorus in stormwater is dissolved (30%-45%).

The iron enhanced sand filter would be installed at an elevation slightly above the normal water level of the detention pond so that following a storm event the increase in depth of the pond would be first diverted to the iron enhanced sand filter. The filter would have drain tile installed along the base of the trench and would outlet downstream of the current pond outlet. Large storm events that overwhelm the iron enhanced sand filter’s capacity would exit the pond using the existing outlet.

Based on available space, two filter lengths, 300 and 500 feet long, by 10 feet wide by 2 feet deep with one foot of live storage above the iron enhanced sand filter were modeled. Volume and pollutant removal are shown in the tables below. Please note that no estimates are included for modifications to the outlet structure of the existing pond, and the cost estimates assume the city would complete the installation. The iron enhanced sand filter would need to be an engineered project, and the existing pond outlet may be deemed unsuitable for this type of practice which would result in the additional expense of a new outlet. Nevertheless, the large drainage area treated by this pond (257.5 acres) combined with the effectiveness of the iron enhanced sand filter will make this one of the more cost effective options.

Conceptual and Proposed Site Images -



(Erickson & Gulliver 2010)



Catchment Specific Cost/Benefit Analysis

Cost/Benefit Analysis		Project ID					
		1 IESF		1 IESF			
		New trtmt	Net %	New trtmt	Net %		
Treatment	TP (lb/yr)	17.6	58%	23.9	67%		
	TSS (lb/yr)	0	53%	0	53%		
	Volume (acre-feet/yr)	0.0	0%	0.0	0%		
	Number of BMP's	1		1			
	BMP Size/Description	300 linear feet		500 linear feet			
	BMP Type	Iron Enhanced Sand Filter		Iron Enhanced Sand Filter			
Cost	Materials/Labor/Design	\$37,500		\$62,500			
	Promotion & Admin Costs	\$1,680		\$1,680			
	Total Project Cost	\$39,180		\$64,180			
	Annual O&M	\$1,250		\$2,083			
	Term Cost/1,000lb-TSS/yr	N/A		N/A			
	Term Cost/lb-TP/yr	\$145		\$177			

Network-Wide Cost/Benefit Analysis (GL-2 through GL-7)

Cost/Benefit Analysis		Project ID					
		1 IESF		1 IESF			
		New trtmt	Net %	New trtmt	Net %		
Treatment	TP (lb/yr)	17.6	53%	23.9	54%		
	TSS (lb/yr)	0	57%	0	57%		
	Volume (acre-feet/yr)	0.0	0%	0.0	0%		
	Number of BMP's	1		1			
	BMP Size/Description	300 linear feet		500 linear feet			
	BMP Type	Underground Sand Filter		Underground Sand Filter			
Cost	Materials/Labor/Design	\$37,500		\$62,500			
	Promotion & Admin Costs	\$1,680		\$1,680			
	Total Project Cost	\$39,180		\$64,180			
	Annual O&M	\$1,250		\$2,083			
	Term Cost/1,000lb-TSS/yr	N/A		N/A			
	Term Cost/lb-TP/yr	\$145		\$177			

Project ID #6 – Curb-Cut Rain Garden Network

Drainage Area – 177.7 acres

Location – 10 locations throughout medium-density residential land cover in catchment GL-5

Property Ownership – Private

Description – The residential land cover within this catchment is best suited for residential, curb-cut rain gardens (see Appendix B for design options). Twenty optimal rain garden locations were identified (see map above). Generally, ideal curb-cut rain garden locations are immediately up-gradient of a catch basin serving a large drainage area. Considering typical land owner participation rates we analyzed scenarios where five and ten rain gardens were installed in catchment GL-5. Volume and pollutant reductions resulting from the rain garden installations are highlighted in the tables below.

Conceptual Images -



Before



After

Catchment Specific Cost/Benefit Analysis

Cost/Benefit Analysis		Project ID					
		6 5 Rain Gardens		6 10 Rain Gardens			
		New trtmt	Net %	New trtmt	Net %	New trtmt	Net %
Treatment	TP (lb/yr)	3.1	55%	5.7	57%		
	TSS (lb/yr)	615	54%	1,147	55%		
	Volume (acre-feet/yr)	4.1	4%	7.6	7%		
	Number of BMP's	5		10			
	BMP Size/Description	1,250 sq ft		2,500 sq ft			
	BMP Type	Complex Bioretention		Complex Bioretention			
Cost	Materials/Labor/Design	\$22,710		\$45,210			
	Promotion & Admin Costs	\$2,310		\$3,010			
	Total Project Cost	\$25,020		\$48,220			
	Annual O&M	\$375		\$750			
	Term Cost/1,000lb-TSS/yr	\$1,966		\$2,055			
	Term Cost/lb-TP/yr	\$390		\$414			

Network-Wide Cost/Benefit Analysis (GL-2 through GL-7)

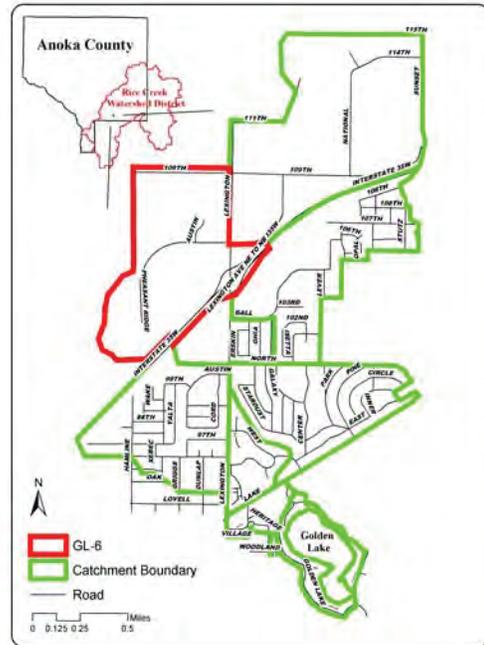
Cost/Benefit Analysis		Project ID					
		6 5 Rain Gardens		6 10 Rain Gardens			
		New trtmt	Net %	New trtmt	Net %	New trtmt	Net %
Treatment	TP (lb/yr)	3.0	51%	5.6	51%		
	TSS (lb/yr)	687	58%	1,354	58%		
	Volume (acre-feet/yr)	4.1	1%	7.6	2%		
	Number of BMP's	5		10			
	BMP Size/Description	1,250 sq ft		2,500 sq ft			
	BMP Type	Complex Bioretention		Complex Bioretention			
Cost	Materials/Labor/Design	\$22,710		\$45,210			
	Promotion & Admin Costs	\$2,310		\$3,010			
	Total Project Cost	\$25,020		\$48,220			
	Annual O&M	\$375		\$750			
	Term Cost/1,000lb-TSS/yr	\$1,760		\$1,741			
	Term Cost/lb-TP/yr	\$403		\$421			

Catchment GL-6

Existing Catchment Summary	
Acres	340.60
Dominant Land Cover	Open Space
Parcels	41
Volume (acre-feet/yr)	157.07
TP (lb/yr)	143.00
TSS (lb/yr)	40,989

DESCRIPTION

Catchment GL-6 is primarily open space with approximately 75 acres of light industrial land cover, most notably Globe University and Aveda. Anoka County Ditch 53-62 bisects this catchment. The northern boundary is 109th Avenue, the southern boundary is Interstate 35 East, the eastern boundary is Lexington Avenue, and the western boundary was determined based on a combination of topographical data and the focus area of this assessment.



EXISTING STORMWATER TREATMENT

In addition to street cleaning with a vacuum assisted street sweeper once each in the spring and fall, a number of stormwater treatment ponds exist throughout this catchment. The ponds were constructed as part of requirements from the Rice Creek Watershed District for new developments. Therefore, treatment of the stormwater runoff within this catchment is better than many of the other catchments within the assessment focus area. The tables below highlight the existing volume and pollutant loading from catchment GL-6

Catchment Specific Existing Conditions

	Existing Conditions	Base Loading	Treatment	Net Treatment %	Existing Loading
Treatment	TP (lb/yr)	212.5	69.5	33%	143.0
	TSS (lb/yr)	80,672	39,683	49%	40,989
	Volume (acre-feet/yr)	157.1	0.0	0%	157.1
	Number of BMP's	2			
	BMP Size/Description	Street cleaning and existing ponds			

Network-Wide Existing Conditions (GL-2 through GL-7)

	Existing Conditions	Base Loading	Treatment	Net Treatment %	Existing Loading
Treatment	TP (lb/yr)	623.7	313.0	50%	310.7
	TSS (lb/yr)	216,101	124,172	57%	91,929
	Volume (acre-feet/yr)	494.5	0.0	0%	494.5
	Number of BMP's	All BMPs in catchments GL-2 through GL-7			
	BMP Size/Description	Street cleaning and extended wet detention ponds			

RETROFIT RECOMMENDATIONS

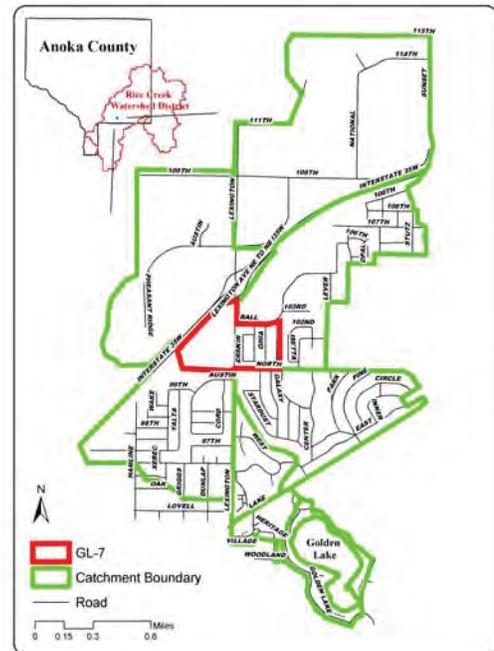
No retrofit recommendations were made for catchment GL-6. The existing stormwater treatment pond network is providing substantial treatment and appears to be functioning well based on model results and observations by maintenance staff within GL-6. More specifically, Aveda maintenance staff members have rarely observed the stormwater treatment pond network outlet to Anoka County Ditch 53-62. Therefore, the volume and pollutant loads in the above table are likely over-estimating the loads to Golden Lake. The WinSLAMM model assumes the ponds are at capacity and any additional water input results in overflow to the ditch. The existing treatment and large areas of open space within this catchment resulted in no recommended retrofits.

Catchment GL-7

Existing Catchment Summary	
Acres	82.20
Dominant Land Cover	Commercial
Parcels	117
Volume (acre-feet/yr)	78.70
TP (lb/yr)	33.80
TSS (lb/yr)	12,191

DESCRIPTION

Catchment GL-7 is a relatively small catchment that consists of similar acreages of commercial and medium-density, single-family residential land cover. Fleet Farm represents the majority of the commercial land cover, located near the west side of the catchment, and Anoka County Ditch 53-62 flows along the southwest side of the catchment.



EXISTING STORMWATER TREATMENT

Existing stormwater treatment practices within catchment GL-7 consist of street cleaning with a vacuum assisted street sweeper once each in the spring and fall and a stormwater treatment pond located to the west of the Fleet Farm building that provides treatment for that property. In addition, multiple parking lot rain gardens are located throughout the Fleet Farm parking lot. Visual inspection suggested that most of the gardens are functioning well, but the large garden between the main parking lot and the car wash may require maintenance. The medium-density, single-family residential area in the eastern portion of the catchment has no additional stormwater treatment. The volume and pollutant loads from this catchment are highlighted in the tables below.

Catchment Specific Existing Conditions

	Existing Conditions	Base Loading	Treatment	Net Treatment %	Existing Loading
Treatment	TP (lb/yr)	60.2	26.4	44%	33.8
	TSS (lb/yr)	25,268	13,077	52%	12,191
	Volume (acre-feet/yr)	78.7	0.0	0%	78.7
	Number of BMP's	2			
	BMP Size/Description	Street Cleaning and Ponds			

Network-Wide Existing Conditions (GL-2 through GL-7)

	Existing Conditions	Base Loading	Treatment	Net Treatment %	Existing Loading
Treatment	TP (lb/yr)	623.7	313.0	50%	310.7
	TSS (lb/yr)	216,101	124,172	57%	91,929
	Volume (acre-feet/yr)	494.5	0.0	0%	494.5
	Number of BMP's	All BMPs in catchments GL-2 through GL-7			
	BMP Size/Description	Street cleaning and extended wet detention ponds			

RETROFIT RECOMMENDATIONS



Project ID #5 – Curb-Cut Rain Garden Network

Drainage Area – 34.7 acres

Location – 5 locations throughout medium-density residential land cover in catchment GL-7

Property Ownership – Private

Description – The residential land cover within this catchment is best suited for residential, curb-cut rain gardens (see Appendix B for design options). Eight optimal rain garden locations were identified (see map above). Generally, ideal curb-cut rain garden locations are immediately up-gradient of a catch basin serving a large drainage area. Considering typical land owner participation rates we analyzed a scenario where five rain gardens were installed in catchment GL-7. Volume and pollutant reductions resulting from the rain garden installations are highlighted in the tables below.

Conceptual images -



Before



After

Catchment Specific Cost/Benefit Analysis

Cost/Benefit Analysis		Project ID					
		5 Rain Gardens					
		New trtmt	Net %			New trtmt	Net %
Treatment	TP (lb/yr)	6.4	54%				
	TSS (lb/yr)	1,266	57%				
	Volume (acre-feet/yr)	3.2	4%				
	Number of BMP's	5					
	BMP Size/Description	1,250 sq ft					
	BMP Type	Complex Bioretention					
Cost	Materials/Labor/Design	\$22,710					
	Promotion & Admin Costs	\$2,310					
	Total Project Cost	\$25,020					
	Annual O&M	\$375					
	Term Cost/1,000lb-TSS/yr	\$955					
	Term Cost/lb-TP/yr	\$189					

Network-Wide Cost/Benefit Analysis (GL-2 through GL-7)

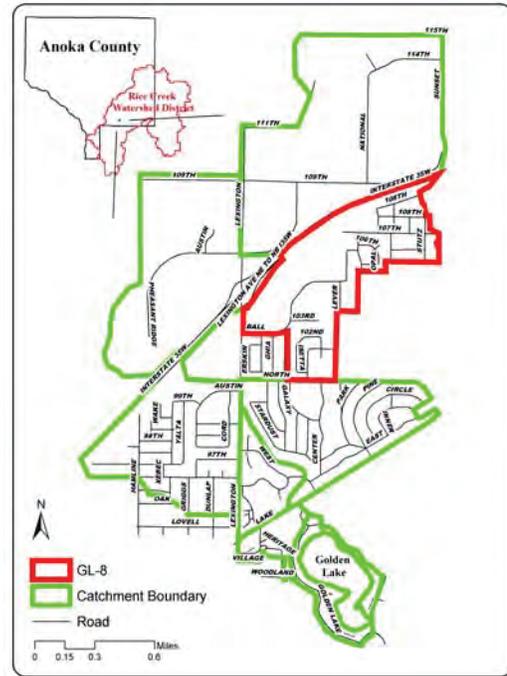
Cost/Benefit Analysis		Project ID					
		5 5 Rain Gardens					
		New trtmt	Net %			New trtmt	Net %
Treatment	TP (lb/yr)	3.9	51%				
	TSS (lb/yr)	676	58%				
	Volume (acre-feet/yr)	3.2	1%				
	Number of BMP's	5					
	BMP Size/Description	1,250 sq ft					
	BMP Type	Complex Bioretention					
Cost	Materials/Labor/Design	\$22,710					
	Promotion & Admin Costs	\$2,310					
	Total Project Cost	\$25,020					
	Annual O&M	\$375					
	Term Cost/1,000lb-TSS/yr	\$1,788					
	Term Cost/lb-TP/yr	\$310					

Catchment GL-8

Existing Catchment Summary	
Acres	283.30
Dominant Land Cover	Residential
Parcels	403
Volume (acre-feet/yr)	129.71
TP (lb/yr)	107.10
TSS (lb/yr)	34,744

DESCRIPTION

Catchment GL-8 is located in the north eastern part of the focus area for this assessment. As a result, stormwater runoff from catchment GL-8 flows to the north into GL-9, then into Lochness Lake, and finally into Ditch 53-62 before ultimately entering Golden Lake. Therefore, any proposed retrofits in either GL-8 or GL-9 should be viewed first for their benefits to Lochness Lake and secondarily for their benefits to water quality in Golden Lake.



Catchment GL-8 is primarily comprised of medium-density, single-family residential development with a large portion of open space also present.

EXISTING STORMWATER TREATMENT

Existing stormwater treatment practices within GL-8 consist of street cleaning with a vacuum assisted sweeper in the spring and fall and a network of stormwater treatment ponds that treat a large portion of the commercial, institutional, and residential land cover types. Again, catchment GL-8 is not as directly connected to Golden Lake as catchments GL-1 through GL-7 because it passes through Lochness Lake prior to entering Anoka County Ditch 53-62. Catchment GL-8 was not modeled as part of the GL-2 through GL-7 network.

Existing Conditions		Base Loading	Treatment	Net Treatment %	Existing Loading
Treatment	TP (lb/yr)	179.3	72.2	40%	107.1
	TSS (lb/yr)	62,331	27,587	44%	34,744
	Volume (acre-feet/yr)	129.7	0.0	0%	129.7
	Number of BMP's	2			
	BMP Size/Description	Street cleaning and existing ponds			

RETROFIT RECOMMENDATIONS



Project A – Curb-Cut Rain Garden Network

Drainage Area – 132.5 acres

Location – 10 locations throughout medium-density residential land cover in catchment GL-8

Property Ownership – Private

Description – The residential land cover within this catchment is best suited for residential, curb-cut rain gardens (see Appendix B for design options). Nineteen optimal rain garden locations were identified (see map above). Generally, ideal curb-cut rain garden locations are immediately up-gradient of a catch basin serving a large drainage area. Considering typical land owner participation rates we analyzed scenarios where five and ten rain gardens were installed in catchment GL-8. Volume and pollutant reductions resulting from the rain garden installations are highlighted in the table below.

Example Curb-Cut Rain Garden Images -



Before rain



During rain

Cost/Benefit Analysis		Project ID					
		A		A			
		5 Rain Gardens		10 Rain Gardens			
		New trtmt	Net %	New trtmt	Net %	New trtmt	Net %
Treatment	TP (lb/yr)	2.8	42%	4.5	43%		
	TSS (lb/yr)	581	45%	1,003	46%		
	Volume (acre-feet/yr)	3.7	3%	6.2	5%		
	Number of BMP's	5		10			
	BMP Size/Description	1,250 sq ft		2,500 sq ft			
	BMP Type	Complex Bioretention		Complex Bioretention			
Cost	Materials/Labor/Design	\$22,710		\$45,210			
	Promotion & Admin Costs	\$2,310		\$3,010			
	Total Project Cost	\$25,020		\$48,220			
	Annual O&M	\$375		\$750			
	Term Cost/1,000lb-TSS/yr	\$2,081		\$2,350			
	Term Cost/lb-TP/yr	\$432		\$524			

Project B – Permeable Asphalt at 4501 Ball Rd. NE in Blaine

Drainage Area – 4.7 acres

Location – 4501 Ball Rd. NE, Blaine

Property Ownership – Private

Description – The large parking lot located at 4501 Ball Rd. NE in Blaine generates large volumes of runoff and high pollutant loads (see map below). At the same time, the parking and loading space is a necessity for the business located on that property. Therefore, permeable pavement was considered as a replacement for some of the traditional pavement to reduce stormwater volumes and provide water quality treatment. Permeable pavements can treat water from an area of impervious surface approximately three times the size of the permeable pavement. Therefore, 1.17 acres (51,048 square feet) of permeable asphalt would be sufficient to treat the 4.7 acre parking lot. The model included maintenance, such as restorative vacuuming on an annual basis. See appendix A for more details on the design of permeable pavements. Catchment-wide volume and pollutant removal are shown in the table below.

Proposed Site Image -



Cost/Benefit Analysis		Project ID					
		B Permeable Asphalt					
		New trtmt	Net %	New trtmt	Net %	New trtmt	Net %
Treatment	TP (lb/yr)	6.9	44%				
	TSS (lb/yr)	3,409	50%				
	Volume (acre-feet/yr)	6.7	5%				
	Number of BMP's	1					
	BMP Size/Description	51,048 sq ft					
	BMP Type	Permeable Asphalt					
Cost	Materials/Labor/Design	\$714,882					
	Promotion & Admin Costs	\$1,680					
	Total Project Cost	\$716,562					
	Annual O&M	\$1,174					
	Term Cost/1,000lb-TSS/yr	\$7,351					
	Term Cost/lb-TP/yr	\$3,644					

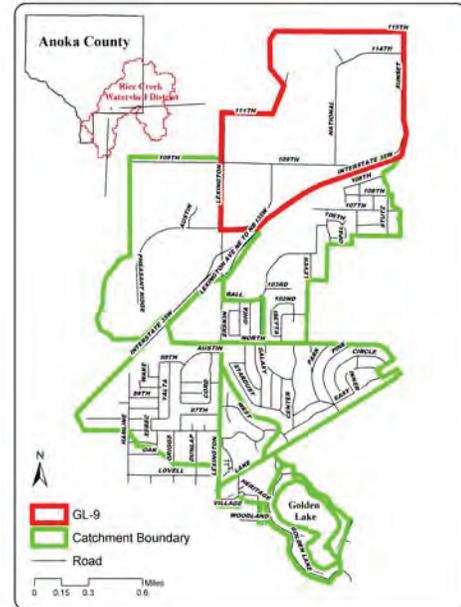
Catchment GL-9

Existing Catchment Summary	
Acres	503.40
Dominant Land Cover	Open Space
Parcels	86
Volume (acre-feet/yr)	192.61
TP (lb/yr)	192.20
TSS (lb/yr)	45,867

DESCRIPTION

Catchment GL-9 is primarily comprised of open space, but there are significant areas of commercial (55 acres) and medium-density, single-family residential (80 acres) land cover.

Catchment GL-9 is the farthest from Golden Lake within the focus area of this assessment. Stormwater runoff from catchment GL-9 flows to the north into Lochness Lake, and finally into Ditch 53-62 before ultimately entering Golden Lake. Therefore, any proposed retrofits in GL-9 should be viewed first for their benefits to Lochness Lake and secondarily for their benefits to water quality in Golden Lake.



EXISTING STORMWATER TREATMENT

Existing stormwater treatment practices within GL-9 consist of street cleaning with a vacuum assisted sweeper in the spring and fall and a network of stormwater treatment ponds that treat a large portion of the commercial and school land cover types. Again, catchment GL-9 is not as directly connected to Golden Lake as catchments GL-1 through GL-7 because it passes through Lochness Lake prior to entering Ditch 53-62. Catchment GL-9 was not modeled as part of the GL-2 through GL-7 network.

	Existing Conditions	Base Loading	Treatment	Net Treatment %	Existing Loading
Treatment	TP (lb/yr)	244.3	52.1	21%	192.2
	TSS (lb/yr)	72,311	26,444	37%	45,867
	Volume (acre-feet/yr)	192.6	0.0	0%	192.6
	Number of BMP's	2			
	BMP Size/Description	Street cleaning and existing ponds			

RETROFIT RECOMMENDATIONS

The large areas of open space, the existing treatment by the network of stormwater ponds surrounding the commercial land cover, and the treatment presumably provided by Lochness Lake resulted in no recommended retrofits within catchment GL-9.

Retrofit Ranking

The tables on the next page summarize the assessment results. The benefits of each project were estimated if that project were installed alone, with no other projects upstream of it in the same catchment. Reported treatment levels are dependent upon optimal siting and sizing. More detail about each project can be found in the catchment profile pages of this report. Projects that were deemed unfeasible due to prohibitive size, number, or were too expensive to justify installation are not included in the table on the next page.

Please note that retrofits from GL-8 (residential rain gardens and permeable asphalt) are included in a separate table. Catchments GL-8 and GL-9 are presented separately because they drain to Lochness Lake, where substantial water chemistry changes likely occur, upstream of Golden Lake. Catchments GL-8 and GL-9 were not modeled as part of the GL-2 through GL-7 network. Therefore, any benefits the proposed retrofits within GL-8 provide should be first viewed from the standpoint of Lochness Lake and secondarily from the standpoint of benefits to Golden Lake.

Catchments GL-1 through GL-7: Summary of preferred stormwater retrofit opportunities ranked by cost-effectiveness with respect to total phosphorus (TP) reduction. Total suspended solids (TSS) reduction is also shown. For more information on each project refer to the catchment profile pages earlier in this report.

Project ID	Catchment ID	Retrofit Type (refer to catchment profile pages for additional detail)	Projects Identified	TP Reduction (lb/yr)	TSS Reduction (lb/yr)	Volume Reduction (ac-ft/yr)	Estimated Installation Cost	Estimated cost/ 1,000lb-TSS/year (30-year)	Estimated cost/ lb-TP/year (30-year)
1	GL-5*	Pond Modification - Iron Enhanced Sand Filter	1	17.6 - 23.9	0	0.0	\$39,180 - \$64,180	N/A	\$145 - \$177
2	GL-2	Pond Modification - Iron Enhanced Sand Filter	1	35.2	0	0.0	\$89,180	N/A	\$167
3	GL-4*	Residential Rain Gardens	5 - 15	5.4 - 13.5	865 - 2,281	4.1 - 10.8	\$25,020 - \$71,420	\$1,398 - \$1,537	\$224 - \$260
4	GL-3	Residential Rain Gardens	5	4.1	674	3.2	\$25,020	\$1,794	\$295
5	GL-7	Residential Rain Gardens	5	3.9	676	3.2	\$25,020	\$1,788	\$310
6	GL-5*	Residential Rain Gardens	5 - 10	3 - 5.6	687 - 1,354	4.1 - 7.6	\$25,020 - \$48,220	\$1,741 - \$1,760	\$403 - \$421
7	GL-4*	New Pond with Expanded Drainage Area and Iron Enhanced Sand Filter	1	27.1	3,679	0.0	\$172,655 - \$228,215	\$3,129 - \$4,135	\$425 - \$629
8	GL-4*	New Pond with Expanded Drainage Area	1	13.9	3,679	0.0	\$120,780 - \$176,340	\$2,189 - \$3,195	\$579 - \$845
9	GL-4*	New Pond	1	9.7	2,249	0.0	\$95,630 - \$151,190	\$2,835 - \$4,482	\$657 - \$1,039
10	GL-1*	Golden Lake Park Rain Garden	1	0.7	371	1.1	\$19,960	\$1,996	\$1,139
11	GL-1*	Golden Lake Park Permeable Asphalt	1	0.7	432	1.2	\$133,014	\$10,752	\$6,531

* Pollution reduction benefits and costs can not be summed with other projects in the same catchment because they are alternative options for treating the same source area.

Catchments GL-8 and GL-9: Summary of preferred stormwater retrofit opportunities ranked by cost-effectiveness with respect to total phosphorus (TP) reduction. Total suspended solids (TSS) reduction is also shown. For more information on each project refer to the catchment profile pages earlier in this report.

Project ID	Catchment ID	Retrofit Type	Projects Identified	TP Reduction (lb/yr)	TSS Reduction (lb/yr)	Volume Reduction (ac-ft/yr)	Estimated Cost	Estimated cost/ 1,000lb-TSS/year (30-year)	Estimated cost/ lb-TP/year (30-year)
A	GL-8	Residential Rain Gardens	5 - 10	2.8 - 4.5	581 - 1,003	3.7 - 6.2	\$25,020 - \$48,220	\$2,081 - \$2,350	\$432 - \$524
B	GL-8	Parking Lot Permeable Asphalt	1	6.9	3,409	6.7	\$716,562	\$7,351	\$3,644

References

- Erickson, A.J. and J.S. Gulliver. 2010. Performance Assessment of an Iron-Enhanced Sand Filtration Trench for Capturing Dissolved Phosphorus. University of Minnesota St. Anthony Falls Laboratory Engineering, Environmental and Geophysical Fluid Dynamics Project Report No. 549. Prepared for the City of Prior Lake, Prior Lake, MN.
- Golden Lake TMDL. 2009. Prepared by Emmons & Olivier Resources, Inc. for the Minnesota Pollution Control Agency.
- Minnesota Stormwater Steering Committee. 2005. *Minnesota Stormwater Manual*. Minnesota Pollution Control Agency. St. Paul, MN.
- Schueler et. al. 2005. *Methods to Develop Restoration Plans for Small Urban Watersheds. Manual 2, Urban Subwatershed Restoration Manual Series*. Center for Watershed Protection. Ellicott City, MD.
- Schueler et. al. 2007. *Urban Stormwater Retrofit Practices. Manual 3, Urban Subwatershed Restoration Manual Series*. Center for Watershed Protection. Ellicott City, MD.

APPENDIX H

MOU for Local Water Planning and Regulation



May 6, 2016

Jim Keinath
200 Civic Heights Circle
Circle Pines, MN 55014

RE: City of Circle Pines Execution of MOU for Local Water Planning & Regulation

Dear Mr. Keinath,

On May 5, 2016 the Rice Creek Watershed District received the final executed copy of a Memorandum of Understanding (MOU) between the Rice Creek Watershed District and the City of Circle Pines for Local Water Planning and Regulation. The final execution of this MOU (enclosed) means that the District will cease to issue permits within the municipal boundary for RCWD Rules C, D, E, and F effective May 9, 2016. Please note that District will retain permitting authority for all other RCWD rules, specifically, RCWD Rules G and I as they pertain to the Crossings of Natural and Artificial Conveyance Systems and the Public Drainage system, respectively.

Final execution of this MOU means that the City will now fully enforce its own ordinances pursuant to the Rice Creek Watershed District Resolution 2016-04 dated January 27, 2016; City Ordinance No. 149 dated February 9th, 2016; and City Ordinance No. 150 dated April 26, 2016. Please understand that the District is available for any questions regarding the enforcement of the City's ordinances as it relates to the adopted RCWD Rules C, D, E, and F. Additionally, the District can make any files available to the City as it may pertain to any future project sites.

Moving onward, the District will look forward to working with the City on the following items:

- 1. The closure of any existing permits within the City that were issued by the Rice Creek Watershed District.**
 - This will include working with the District Inspector on providing any outstanding items necessary for permit closure as it pertains to the City of Circle Pines.
- 2. Meeting the volume banking deficit of 24,623 cubic feet that the City incurred from the 2012 Street and Utility Improvement Project, RCWD Permit #12-020.**
 - This will include closure of the Baldwin Park re-use facility, RCWD Permit #10-009 and any other permits that will help remove the debit. If the debit cannot be satisfied by permits issued by the District, then the City will need to make up for that deficit in future projects and provide evidence that the volume was provided and is sufficient to meet the debit.
- 3. Written memo from the District Engineer, based on the meeting on April 27, 2016 with the City engineer, where the City discussed their 2016 Street Project and planned permit.**
 - The purpose of the meeting and the memo is to ensure that the City understands District expectations and how the District Rules are to be implemented through the City's ordinances.

4325 Pheasant Ridge Drive NE #611 | Blaine, MN 55449 | T: 763-398-3070 | F: 763-398-3088 | www.ricecreek.org

BOARD OF
MANAGERS

Barbara A. Haake
Ramsey County

Michael J. Bradley
Ramsey County

Patricia L. Preiner
Anoka County

Steven P. Wagamon
Anoka County

John J. Waller
Washington County

- 4. Completion of an Audit to occur in early 2017 for city permits issued under this MOU for calendar year 2016 pursuant to the MOU.**
 - The Audit will include review of up to 2 permits issued by the City under the City ordinances which adopt RCWD Rules C, D, E, and F. As part of this Audit, the District will want a list of the relevant permits issued by the City and will need enough detail to ensure that compliance with the RCWD Rules was achieved. The information contained in the memo from the District Engineer based on the meeting on April 27, 2016 as related to the 2016 Street Project will also be evaluated as part of the calendar year 2016 audit.
- 5. Wetland Conservation Act Technical Evaluation Panel (TEP).**
 - Since the City will now be the Local Government Unit (LGU) responsible for administering the Wetland Conservation Act (WCA) within its boundary, the District will need to be a part of the noticing on any wetland applications—as will all other members on the TEP. Please follow the Board of Water and Soil Resources and WCA guidance on noticing applications and obtaining the LGU status. The District would appreciate receiving a copy of the LGU transfer from BWSR once this occurs.
- 6. Potential project partnerships between the City and the District.**
 - The Anoka Conservation District prepared a Golden Lake Stormwater Retrofit Assessment which outlines potential project locations for stormwater management, the District would be happy to partner on grant opportunities if the City would be interested. This Assessment helped leverage Clean Water Grant Funds with the City of Blaine for an Iron Enhanced Sand Filter project. The District has two competitive grant programs in which the City and landowners can participate in—the Clean Water Grant program (smaller scale, rolling application accepted) and the Urban Stormwater Remediation Cost-Share grant (larger scale, cycle application period).

The District looks forward to continued partnership with the City and is available for any questions as needed.

Sincerely,



Phil Belfiori
District Administrator

Encl. Final Executed MOU

CC: Jim Keinath, City of Circle Pines

MEMORANDUM OF UNDERSTANDING

Between the Rice Creek Watershed District and the City of Circle Pines for Local Water Planning and Regulation

This Memorandum of Understanding (MOU) is made by and between the Rice Creek Watershed District, a watershed district with purposes and powers as set forth at Minnesota Statutes Chapters 103B and 103D ("District"), and the City of Circle Pines, a statutory city of the State of Minnesota ("City").

Recitals and Statement of Purpose

WHEREAS pursuant to Minnesota Statutes §103B.231, on January 4, 2010, the District adopted, and on November 12, 2014 it amended, its watershed management plan (WMP) detailing the existing physical environment, land use and development in the watershed and providing for water resource management to protect water resources, improve water quality, prevent flooding and otherwise achieve the goals of Minnesota Statutes Chapters 103B, 103D and 103E;

WHEREAS to achieve the policies and purposes of the WMP and pursuant to Minnesota Statutes §103D.341, the District has adopted and implements rules requiring permits for and otherwise regulating land disturbance;

WHEREAS pursuant to Minnesota Statutes §103G.2242 and associated statutes and rules, the District serves as the local government unit (LGU) for implementation of the Minnesota Wetland Conservation Act (WCA) except within the boundaries of a municipality that has undertaken to fulfill the role of LGU;

WHEREAS the City has developed a local water management plan under Minnesota Statutes §103B.235, titled "Water Resource Management Plan for the City of Circle Pines, Minnesota" and dated January 2016 that describes the existing and proposed physical environment and land use within the City and sets forth an implementation plan for bringing local water management into conformance with the WMP ("Local Plan");

WHEREAS on January 27, 2016, the District Board of Managers conditionally approved the Local Plan by adoption of Resolution 2016-04, which resolution is attached and incorporated herein;

WHEREAS Minnesota Statutes §103B.211 and the WMP provide that at the City's election and on the District's approval of the Local Plan, the District shall cease to apply its rules within the City boundaries, except as the District and City have agreed, and further that the District and City shall agree as to which will act as the WCA LGU;

WHEREAS pursuant to Minnesota Statutes §103B.235 and the WMP, District approval of the Local Plan requires a finding that the official controls of the City will protect water resources to a degree equivalent to that of the District rules, and further is conditioned on District approval of inspection and administrative procedures for the City's effective implementation and enforcement of its official

controls, and on mutual establishment of a framework for the District's periodic review of the City's regulatory program; and

WHEREAS District approval of the Local Plan is conditioned on execution of this MOU setting forth the respective roles and responsibilities of the District and the City in regulating potential water resource impacts within the City;

NOW THEREFORE the parties enter into this MOU in order to document the understanding of the parties as to the roles and responsibilities of each.

Terms

1. The City may exercise all present and future authority it otherwise may possess to issue permits for and regulate activities affecting water resources within the City.
2. The City in its Local Plan commits to adopting ordinances materially identical to those attached hereto as Exhibit A. The District will cease to apply its Rules C (Stormwater Management Plans), D (Erosion and Sediment Control Plans), E (Floodplain Alteration) and F (Wetland Alteration) within municipal boundaries when:
 - a. The District has confirmed that the City's ordinances are adopted and in effect; and
 - b. The District and City have agreed on written protocols for: (i) City procedures to administer and enforce its water resource ordinances, including maintenance of those stormwater practices constructed or installed for compliance with City ordinances pursuant to this MOU and that the City owns or has assumed the obligation to maintain; (ii) City transmission of information to the District regarding changes to the City's hydrology or conveyance systems that the District finds warranted to keep its watershed models and data systems current; and (iii) procedures for District review of City regulatory program implementation.
3. The City shall serve as the WCA LGU within municipal boundaries.
4. The District shall retain its regulatory authority in the following circumstances:
 - a. With respect to all District rules other than Rules C, D, E and F;
 - b. As to work by any public body that the City does not have the legal authority to regulate;
 - c. If the work requires a variance from City water resource ordinances;
 - d. If the City, in a specific case or programmatically, requests that the District exercise its regulatory jurisdiction;
 - e. If, in accordance with Section 8 of the WMP, the District Board of Managers finds that the City is not implementing its Local Plan; or

f. As required for the District to meet its legal obligations under its NPDES municipal stormwater (MS4) permit or any other independent law.

5. The City need not issue a permit for its own work, but shall document its review demonstrating that the work conforms to its water resource ordinances.

6. The District retains approval authority with respect to a comprehensive stormwater management plan under Rule C.5(f).

7. In issuing a permit under its stormwater management or floodplain alteration ordinance, the City shall require the drainage system repair easement set forth at Rules C.10 and E.4, as amended, to be conveyed to the District, which easement shall be subject to prior District review and approval.

8. If the District revises its Rule C, D, E or F in a manner that it considers significant and so advises the City in writing, the City shall revise its own ordinance to maintain equivalent water resource protection. If the District has not approved the City's revision within six months or such other time as the parties may agree, the District may reassume regulatory jurisdiction with respect to the affected rule.

9. The District retains all authority that it may possess under Minnesota Statutes Chapters 103B, 103D and 103E and any other provision of law, except as explicitly reposed in the City under this Agreement.

10. This MOU may be amended only by a writing signed by both of the parties. Otherwise, this MOU will expire, and the District will reassume regulatory jurisdiction under its Rules C, D, E and F, two years after the District's adoption of its next decennial WMP revision or at such other time as the parties may agree.

IN WITNESS WHEREOF, the parties hereto execute this MOU.

CITY OF CIRCLE PINES

By Dave Bartholomay
Dave Bartholomay, Mayor

Date: 5/5/2016
By Jim Keinath
Jim Keinath, City Administrator

Date: 4/19/2016

RICE CREEK WATERSHED DISTRICT

By Patricia Preiner
Patricia Preiner, President
Board of Managers

Date: 4/19/2016

Approved as to Form & Execution
By [Signature]
Its Attorney

RESOLUTION NO. 2016-04

**RICE CREEK WATERSHED DISTRICT
BOARD of MANAGERS**

**APPROVING the CITY of CIRCLE PINES
LOCAL WATER MANAGEMENT PLAN**

Manager Waller offered the following resolution and moved its adoption, seconded by Manager Bradley :

WHEREAS pursuant to Minnesota Statutes §103B.231, on January 4, 2010, the Rice Creek Watershed District ("District") adopted, and on November 12, 2014 it amended, its watershed management plan (WMP) detailing the existing physical environment, land use and development in the watershed and providing for water resource management to protect water resources, improve water quality, prevent flooding and otherwise achieve the goals of Minnesota Statutes Chapters 103B, 103D and 103E;

WHEREAS to achieve the policies and purposes of the WMP and pursuant to Minnesota Statutes §103D.341, the District has adopted and implements rules requiring permits for and otherwise regulating land disturbance;

WHEREAS pursuant to Minnesota Statutes §103G.2242 and associated statutes and rules, the District serves as the local government unit (LGU) implementing the Minnesota Wetland Conservation Act (WCA) except within the boundaries of a municipality that has undertaken to fulfill the role of LGU;

WHEREAS the City of Circle Pines ("City") has developed a local water management plan under Minnesota Statutes §103B.235, titled "Water Resource Management Plan for the City of Circle Pines" (January, 2016), that describes the existing and proposed physical environment and land use within the City and sets forth an implementation plan for bringing local water management into conformance with the WMP ("Local Plan");

WHEREAS the Metropolitan Council received a copy of the local plan and provided comments on that plan to the District in accordance with Minnesota Statutes §103B.235, and the District finds that the City has adequately addressed those comments;

WHEREAS Minnesota Statutes §103B.211 and the WMP provide that if the City so elects, and on the District's approval of the Local Plan, the District shall cease to apply its rules within the City boundaries, except as the District and City have agreed;

WHEREAS the WMP further provides that through the Local Plan approval process, the City may assume the role of WCA LGU;

WHEREAS the City elects that the District not apply its rules for stormwater management, erosion and sediment control, floodplain alteration or wetland alteration (District Rules C, D, E and F, respectively) within City boundaries, and further elects to act as the WCA LGU;

WHEREAS pursuant to Minnesota Statutes §103B.235 and the WMP, to approve the Local Plan, the District must find that City ordinances will protect water resources to a degree equivalent to that of the four cited District rules, and further is conditioned on District approval of City inspection and administrative procedures to implement and enforce its official controls, and on a protocol for the District's periodic review of the City's regulatory program;

WHEREAS the WMP also states that if the City elects a sole regulatory role, the parties will sign a memorandum of understanding (MOU) to document and clarify the regulatory roles of each party;

WHEREAS draft City ordinances that would amend Section 1350 of the City zoning code and adopt Sections 1370, 1380 and 1390 to that code are attached as Exhibit A hereto; the ordinances would adopt District Rules C, D, E and F by reference; and therefore they would protect water resources to a degree equivalent to those District rules; and

WHEREAS the inspection and administration procedures, data updating protocol and regulatory program review protocol are important to establish a sound framework for ongoing District and City regulatory coordination;

THEREFORE BE IT RESOLVED that the RCWD Board of Managers hereby approves the City's Local Plan;

BE IT FURTHER RESOLVED that approval is conditioned on the parties' execution of an MOU conforming to the draft MOU attached as Exhibit B hereto;

BE IT FURTHER RESOLVED that the District will cease to apply Rules C, D, E and F within City boundaries except as stated in the MOU, when the following have occurred:

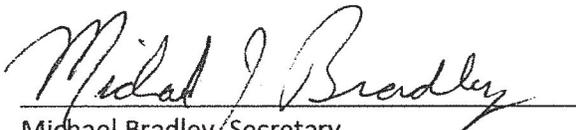
- The MOU has been fully executed;
- The City has adopted ordinances conforming to Exhibit A and protocols approved by the District administrator; and
- The City has transmitted official copies of the ordinances and protocols to the District, and the District has confirmed receipt.

BE IT FINALLY RESOLVED that the Board President is authorized to execute the MOU, on advice of counsel.

The question was on the adoption of the Resolution and there were 4 yeas and 0 nays as follows:

	<u>Yea</u>	<u>Nay</u>	<u>Absent</u>	<u>Abstain</u>
BRADLEY	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
HAAKE	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
PREINER	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
WAGAMON	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
WALLER	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Upon vote, the Chair declared the resolution passed.

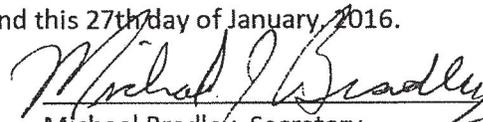

Michael Bradley, Secretary

Dated: January 27, 2016

* * * * *

I, Michael Bradley, Secretary of the Rice Creek Watershed District, do hereby certify that I have compared the above resolution with the original thereof as the same appears of record and on file with the District and find the same to be a true and correct transcript thereof.

IN TESTIMONY WHEREOF, I hereunto set my hand this 27th day of January, 2016.


Michael Bradley, Secretary

CITY OF CIRCLE PINES
COUNTY OF ANOKA
STATE OF MINNESOTA

ORDINANCE NO. 150
(Second Series)

AN ORDINANCE AMENDING SECTION 1380 EROSION AND SEDIMENT CONTROL
PLANS, AND SECTION 1390 WETLAND MANAGEMENT OF THE ZONING
ORDINANCE

The City Council of the City of Circle Pines ordains:

SECTION 1. The City Council of Circle Pines hereby replaces Section 1380.01, Subdivision 2 of the City Code, to read as follows:

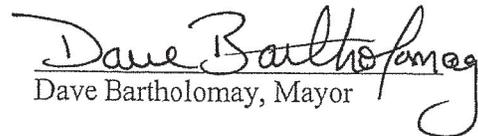
1380.01 Regulation. Subd 2. The application for the modification or alteration of Erosion and Sediment Control will be reviewed by the Local Governing Unit (LGU) in accordance with Rice Creek Watershed District Rule D.

SECTION 2. The City Council of Circle Pines hereby replaces Section 1390.01, Subdivision 2 of the City Code, to read as follows:

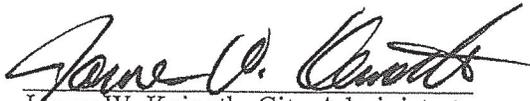
1390.01 Regulation. Subd 2. The application for the modification or alteration of Wetland Management will be reviewed by the Local Governing Unit (LGU) in accordance with Rice Creek Watershed District Rule F, and the Wetland Conservation Act. (WCA)

SECTION 3. This ordinance shall be effective upon passage and official or summary publication.

Adopted this 26th day of April 2016, by the Circle Pines City Council.


Dave Bartholomay, Mayor

ATTEST:


James W. Keinath, City Administrator

First Reading: April 26, 2016

Second Reading: Waived

Published: Quad Community Press, May 3, 2016

(SEAL)

~~CITY OF CIRCLE PINES~~
COUNTY OF ANOKA
STATE OF MINNESOTA

ORDINANCE NO. 149
(Second Series)

AN ORDINANCE AMENDING SECTION 1350 STORMWATER MANAGEMENT,
SECTION 1370 FLOODPLAIN MANAGEMENT, SECTION 1380 EROSION AND
SEDIMENT CONTROL PLANS, AND SECTION 1390 WETLAND MANAGEMENT OF
THE ZONING ORDINANCE

The City Council of the City of Circle Pines ordains:

SECTION 1. The City Council of Circle Pines hereby replaces Section 1350.01 and Section 1350.03 of the City Code, to read as follows:

1350.01 Findings. The City of Circle Pines hereby also adopts by reference, and as amended, Rice Creek Watershed District Rule C related to Stormwater Management Plans. The rules and regulations related to the review of Stormwater Management Plans will be reviewed by the Local Governing Unit (LGU) in accordance with Rice Creek Watershed District Rules.

1350.03 Scope and Effect. Variances. Minnesota Statutes 103B.211, subdivision 1(a)(3), any variance must be approved by the RCWD Board.

SECTION 2. The City Council of Circle Pines hereby replaces Section 1370.01, Subdivision 2 of the City Code, to read as follows:

1370.01 Regulation. Subd 2. The application for the modification or alteration of Floodplain will be reviewed by the Local Governing Unit (LGU) in accordance with Rice Creek Watershed District Rule E.

SECTION 3. The City Council of Circle Pines hereby replaces Section 1380.01, Subdivision 2 of the City Code, to read as follows:

1380.01 Regulation. Subd 2. The application for the modification or alteration of Floodplain will be reviewed by the Local Governing Unit (LGU) in accordance with Rice Creek Watershed District Rule E.

SECTION 4. The City Council of Circle Pines hereby replaces Section 1390.01, Subdivision 2 of the City Code, to read as follows:

1390.01 Regulation. Subd 2. The application for the modification or alteration of Floodplain will be reviewed by the Local Governing Unit (LGU) in accordance with Rice Creek Watershed District Rule E.

SECTION 5. This ordinance shall be effective upon passage and official or summary publication.

Adopted this 9th day of February 2016, by the Circle Pines City Council.


Dave Bartholomay, Mayor

ATTEST:


James W. Keinath, City Administrator

First Reading: February, 9, 2016

Second Reading: Waived

Published by Summary: Quad Community Press, February 16, 2016

(SEAL)

City of Circle Pines
County of Anoka
State of Minnesota

ORDINANCE NO. ____

AN ORDINANCE PROMOTING THE HEALTH, SAFETY AND GENERAL WELFARE OF
THE CITIZENS OF CIRCLE PINES MINNESOTA, BY AMENDING THE ZONING
ORDINANCE SECTION 1350 STORMWATER MANAGEMENT ORDINANCE

The City Council of the City of Circle Pines ordains:

SECTION 1. The City Council of Circle Pines hereby amends
Section 1350 Storm Water Management Ordinance of the City
of Circle Pines Zoning Code, to read as follows:

Section 1350-Storm Water Management Ordinance

1350.01 Findings. The City of Circle Pines hereby finds that uncontrolled and inadequately planned use of wetlands, woodlands, natural habitat areas, areas subject to soil erosion and areas containing restrictive soils adversely affects the public health, safety and general welfare by impacting water quality and contributing to other environmental problems, creating nuisances, impairing other beneficial uses of environmental resources and hindering the ability of the City of Circle Pines to provide adequate water, sewage, flood control, and other community services. In addition, extraordinary public expenditures may be required for the protection of persons and property in such areas and in areas which may be affected by unplanned land usage.

The City of Circle Pines hereby also adopts by reference, and as amended, Rice Creek Watershed District Rule C related to Stormwater Management Plans. The rules and regulations related to the review of Stormwater Management Plans will be reviewed by the Local Governing Unit (LGU) in accordance with Rice Creek Watershed District Rules.

1350.02 Purpose. The purpose of this ordinance is to promote, preserve and enhance the natural resources within the City of Circle Pines and protect them from adverse effects occasioned by poorly sited development or incompatible activities by regulating land disturbing or development activities that would have an adverse and potentially irreversible impact on water quality and unique and fragile environmentally sensitive land; by minimizing conflicts and encouraging compatibility between land disturbing

and development activities and water quality and environmentally sensitive lands; and by requiring detailed review standards and procedures for land disturbing or development activities proposed for such areas, thereby achieving a balance between urban growth and development and protection of water quality and natural areas.

1350.03 Scope and Effect.

Subd. 1 Applicability. Every applicant for a building permit, subdivision approval, or a permit to allow land disturbing activities must submit a storm water management plan to the City Administrator. No building permit, subdivision approval, or permit to allow land disturbing activities shall be issued until approval of the storm water management plan or a waiver of the approval requirement has been obtained in strict conformance with the provisions of this ordinance. The provisions of section of this ordinance apply to all land, public or private, located within the City of Circle Pines.

Subd. 2 Variances. Pursuant to Minnesota Statutes 103B.211, subdivision 1(a)(3), any variance must be approved by the RCWD Board.

1350.04 Penalty. Any person, firm or corporation violating any provision of this ordinance shall be fined not less than five dollars nor more than five hundred dollars for each offense, and a separate offense shall be deemed committed on each day during or on which a violation occurs or continues.

1350.05 Other Controls. In the event of any conflict between the provisions of this ordinance and the provisions of an erosion control or shoreland protection ordinance adopted by the City Council the more restrictive standard prevails.

1350.06 Severability. The provisions of this ordinance are severable. If any provision of this ordinance or the application thereof to any person or circumstance is held invalid, such invalidity shall not affect other provisions or applications of this ordinance which can be given effect without the invalid provision or application.

SECTION 2. This ordinance shall be effective upon passage and official publication.

Adopted this _____ day of _____ 2015, by the Circle

Pines City Council.

Dave Batholomay, Mayor

ATTEST:

James W. Keinath, City Administrator

First Reading:
Second Reading:
Published:

(SEAL)

City of Circle Pines
County of Anoka
State of Minnesota

ORDINANCE NO. ____

AN ORDINANCE PROMOTING THE HEALTH, SAFETY AND GENERAL WELFARE OF
THE CITIZENS OF CIRCLE PINES MINNESOTA, BY ADOPTING ZONING
ORDINANCE SECTION 1380 EROSION AND SEDIMENT CONTROL ORDINANCE

The City Council of the City of Circle Pines ordains:

SECTION 1. The City Council of Circle Pines hereby adopts its
Section 1380 Erosion and Sediment Control as an amendment
to the City of Circle Pines Zoning Code, to read as
follows:

1380.00 Erosion and Sediment Control.

1380.01 Regulation

Subd. 1 The City of Circle Pines adopts by reference,
and as amended, Rice Creek Watershed District Rule D
regarding Erosion and Sediment Control.

Subd. 2 The regulation, design, construction activity,
inspection, and final stabilization related to erosion
and sediment control will be reviewed by the Local
Governing Unit (LGU) in accordance with Rice Creek
Watershed District Rule D.

1380.02 Penalty

Subd. 1 Any person, firm or corporation violating any
provision of this ordinance shall be fined not less
than five dollars nor more than five hundred dollars
for each offense, and a separate offense shall be
deemed committed on each day during or on which a
violation occurs or continues.

1380.03 Other Controls.

Subd. 1 In the event of any conflict between the
provisions of this ordinance and the provisions of a
floodplain, wetland, stormwater management, or
shoreland protection ordinance adopted by the City

Council the more restrictive standard prevails.

1380.04 Severability.

Subd. 1 The provisions of this ordinance are severable. If any provision of this ordinance or the application thereof to any person or circumstance is held invalid, such invalidity shall not affect other provisions or applications of this ordinance which can be given effect without the invalid provision or application.

SECTION 2. This ordinance shall be effective upon passage and official publication.

Adopted this _____ day of _____ 2015, by the Circle Pines City Council.

Dave Batholomay, Mayor

ATTEST:

James W. Keinath, City Administrator

First Reading:
Second Reading:
Published:

(SEAL)

City of Circle Pines
County of Anoka
State of Minnesota

ORDINANCE NO. ____

AN ORDINANCE PROMOTING THE HEALTH, SAFETY AND GENERAL WELFARE OF
THE CITIZENS OF CIRCLE PINES MINNESOTA, BY ADOPTING ZONING
ORDINANCE SECTION 1370 FLOODPLAIN MANAGEMENT ORDINANCE

The City Council of the City of Circle Pines ordains:

SECTION 1. The City Council of Circle Pines hereby adopts its
Section 1370 Floodplain Management as an amendment to the
City of Circle Pines Zoning Code, to read as follows:

1370.00 Floodplain Management.

1370.01 Regulation

Subd. 1 The City of Circle Pines adopts by reference,
and as amended, Rice Creek Watershed District Rule E
regarding Floodplain Management.

Subd. 2 The application for the modification or
alteration of Floodplain will be reviewed by the Local
Governing Unit (LGU) in accordance with Rice Creek
Watershed District Rule E.

1370.02 Penalty.

Subd. 1 Any person, firm or corporation violating any
provision of this ordinance shall be fined not less
than five dollars nor more than five hundred dollars
for each offense, and a separate offense shall be
deemed committed on each day during or on which a
violation occurs or continues.

1370.03 Other Controls.

Subd. 1 In the event of any conflict between the
provisions of this ordinance and the provisions of an
erosion control, stormwater management, wetland, or
shoreland protection ordinance adopted by the City
Council the more restrictive standard prevails.

1370.04 Severability.

Subd. 1 The provisions of this ordinance are severable. If any provision of this ordinance or the application thereof to any person or circumstance is held invalid, such invalidity shall not affect other provisions or applications of this ordinance which can be given effect without the invalid provision or application.

SECTION 2. This ordinance shall be effective upon passage and official publication.

Adopted this _____ day of _____ 2015, by the Circle Pines City Council.

Dave Batholomay, Mayor

ATTEST:

James W. Keinath, City Administrator

First Reading:
Second Reading:
Published:

(SEAL)

City of Circle Pines
County of Anoka
State of Minnesota

ORDINANCE NO. ____

AN ORDINANCE PROMOTING THE HEALTH, SAFETY AND GENERAL WELFARE OF
THE CITIZENS OF CIRCLE PINES MINNESOTA, BY ADOPTING ZONING
ORDINANCE SECTION 1390 WETLAND MANAGEMENT ORDINANCE

The City Council of the City of Circle Pines ordains:

SECTION 1. The City Council of Circle Pines hereby adopts its
Section 1390 Wetland Management as an amendment to the City
of Circle Pines Zoning Code, to read as follows:

1390.00 Wetland Management.

1390.01 Regulation

Subd. 1 The City of Circle Pines adopts by reference,
and as amended, Rice Creek Watershed District Rule F
regarding Wetland Alteration.

Subd. 2 The application for the modification or
alteration of wetlands will be reviewed by the Local
Governing Unit (LGU) in accordance with Rice Creek
Watershed District Rule F and the Wetland Conservation
Act (WCA).

1390.02 Penalty.

Subd. 1 Any person, firm or corporation violating any
provision of this ordinance shall be fined not less
than five dollars nor more than five hundred dollars
for each offense, and a separate offense shall be
deemed committed on each day during or on which a
violation occurs or continues.

1390.03 Other Controls.

Subd. 1 In the event of any conflict between the
provisions of this ordinance and the provisions of an
erosion control, stormwater management, floodplain, or
shoreland protection ordinance adopted by the City
Council the more restrictive standard prevails.

1390.04 Severability.

Subd. 1 The provisions of this ordinance are severable. If any provision of this ordinance or the application thereof to any person or circumstance is held invalid, such invalidity shall not affect other provisions or applications of this ordinance which can be given effect without the invalid provision or application.

SECTION 2. This ordinance shall be effective upon passage and official publication.

Adopted this ____ day of _____ 2015, by the Circle Pines City Council.

Dave Batholomay, Mayor

ATTEST:

James W. Keinath, City Administrator

First Reading:
Second Reading:
Published:

(SEAL)



City of Circle Pines Protocol Guide for Issuing Permits

Upon completion of a Rice Creek Watershed District Board approved Local Surface Water Management Plan and satisfactory City Ordinances, the City will enter into a Memorandum of Understanding which will cease Rice Creek Watershed District's administration of permits within the City for the following Rice Creek Watershed District Rules:

- Rule C, Stormwater Management Plans
- Rule D, Erosion and Sediment Control Plans
- Rule E, Floodplain Alteration
- Rule F, Wetland Alteration

Pursuant to the Rice Creek Watershed District Watershed Management Plan Chapter 8.3.2 the City of Circle Pines must also formulate inspection and administrative procedures necessary to ensure that the full regulatory standards of the District are met. This should include the following listed below:

1. Written procedural protocol for permit application review
2. Hydrologic/hydraulic data transmittal as it relates to the District model
3. Record keeping and Audit procedure

The District will cease to administer the identified rules within the City and the City must demonstrate an equivalent administration as well as applicant compliance with the Rules. By adopting ordinances, which reference the District rules verbatim, it is important to note that the City will be enforcing its own ordinances. It should be noted that the District may periodically amend any given rule and the City will be responsible to administer the rules through their ordinance to be consistent with their adoption date. The District will communicate any potential rule change through the statutory process for rule adoption. The City will complete the items listed below as requested by the District. If the City were to ever decide that they no longer wanted to administer their ordinances which reference RCWD rules within its jurisdiction, the District would want records of any permit application to be consistent and as detailed as any permit issued by the District.

1. RCWD Permit Application Review and Closeout Procedure

a. Permit Application Review

- i. During the first year or at the time that the first permits are issued by the City, the District and the City will complete a joint permit review to ensure that the City understands the requirements and expectations of the District's rules. This review will consist of the City sitting down with the RCWD permitting engineer to review plans and permit specificities.
- ii. Permit application review must develop a record documenting the project review in comparison with District rules. Permit application review for the City will include a checklist to document the proposal, the applicable rule criterion, and facts relevant to finding the criteria are met

- and in compliance with District rules; a file containing these documents will be maintained for a period of 10 years.
- iii. All administration is to be pursuant to MN § 15.99.
- iv. As part of the development review process, the City Council shall approve the final issuance of a permit.
- v. The City will choose to not incorporate a legal review process for issuing permits.
- vi. The City will provide the District with the required documentation demonstrating the maintenance obligations for Best Management Practices (BMPs), such as stormwater basins, used to meet the permit requirements. The City will also provide documentation on how these BMPs will be maintained.
- vii. Permit applications that trigger the need for an easement in the District's favor, such as those along the public drainage system, will be recognized early in the review process by the City and directed to the District to ensure that the appropriate easement is obtained.

b. Permit Closeout Procedure

- i. As part of the final close-out procedures, the City will require as-built plans or some verification that the BMP meets the approved plans and is functioning as designed. As-builts will verify the required treatment volume, emergency overflow elevations, inlet/outlet/sump elevations, drain tile elevations, surface contours, etc.
- ii. The City will require and ensure inspection of a 48 or 72-hour drawdown of all infiltration and filtration features. This will be completed by City contracted personnel.
- iii. The City will provide documentation showing all permit stipulations have been met. Stipulations typically include an as-built survey of stormwater features, quantification of floodplain or wetlands impact and mitigation areas, etc.
- iv. The City will require establishment of 70% vegetative cover prior to permit closure. Once established, all sediment and erosion control measures must be removed.

2. Hydrologic/Hydraulic Data Transmittal

The City will provide the items listed below at the District's request.

- Submittals of GIS shape files with the location of the permits.
- Submittal of Rule F, Wetland Alteration, digital file requirements, which include:
 - A GIS shapefile of the all delineated boundaries;
 - For on-site replacement wetland and buffer areas, a GIS or CADD file documenting sign locations.

- The District regularly updates a District Wide Model, and requests the transmittal of any hydrologic and hydraulic data for permitted projects that may pertain to it. This may include things like altering drainage patterns, replacing culverts, etc. Most likely this is only relevant for RCWD Rule C as the District will retain permit authority for culvert structures under Rule G, Crossings of Natural & Artificial Conveyance Systems and Rules I, Drainage Systems.
- RCWD Rule C.2 (c) and (d) includes provisions for cumulative impacts to trigger the rule. Therefore, it is possible for some work to have occurred under the District's jurisdiction, and any additional work thereafter to trigger regulation under the City's assumption of sole rule administration. For that reason, please be advised that the District's files are available for consideration of cumulative impacts.

3. Audit Process

- The City will provide up to 2 of the permits issued by the city annually to the District for review.
- The City will require that all exhibits required as part of a selected permit to be submitted for the audit process. As part of the review process, the City will require, but is not limited to, the following:
 - A full set of project plans.
 - Soil borings at the BMP locations, reflecting compliance with approved design.
 - Drainage maps showing disturbed existing impervious surface and proposed impervious surfaces, and a summary tabulation.
 - Calculations used to determine the required runoff rates/volumes.
 - Identification of the specific location of all BMP(s), and associated formal and/or recorded maintenance agreements.
 - Any increase in impervious area requires either a hydrologic model, or additional calculations to show compliance with Peak Stormwater Runoff Control.
 - Guidance Worksheets or supporting calculations used to determine water quality volumes.
 - As-builts were obtained and show compliance with approved design and water quality treatment volumes.

APPENDIX I

Permitting Reference Documents



200 Civic Heights Circle, Circle Pines, MN 55014
 Phone: 763-784-5898 cityhall@ci.circle-pines.mn.us

For Office Use Only	
Permit App. #:	_____
Date Received:	_____
Amount/Payer:	_____
Check Number:	_____

Permit Application Form

Project Information

Project Name: _____
 Project Location: _____
 City or Township: _____ County: _____
 Quarter: _____ Section: _____ Township: _____ Range: _____
 Project Purpose: _____

Area of Land Disturbance (acres): _____ Area of New and/or Reconstructed Impervious Surface (acres): _____

Contact Information (All contacts will receive permit status updates)

Applicant/Landowner (must be landowner or easement holder of record, and must sign application on

Name: _____
 Address: _____
 City: _____
 State: _____ Zip: _____
 Phone: _____
 Email: _____

Official Representative (do not complete if same as above):

Name: _____
 Address: _____
 City: _____
 State: _____ Zip: _____
 Company: _____
 Phone: _____
 Email: _____

Permitting Contact (developer, engineer, architect, wetland consultant, etc.):

Name: _____
 Address: _____
 City: _____
 State: _____ Zip: _____
 Authorized Agent? Yes No
 Company: _____
 Phone: _____
 Email: _____

Permitting Contact (developer, engineer, architect, wetland consultant, etc.):

Name: _____
 Address: _____
 City: _____
 State: _____ Zip: _____
 Authorized Agent? Yes No
 Company: _____
 Phone: _____
 Email: _____

Submittal Requirements

Applications submitted to the City must be complete and contain all required materials for each applicable Rule. See the Rice Creek Watershed District website for additional guidance and complete rules. The City will communicate an incomplete application status to the applicant, and no further action will be taken until additional submittals are received. Applicant must submit one (1) full sized copy (a readable 11" x 17" is acceptable) and either one (1) reduced size copy or an electronic copy of all required information. Projects involving a Wetland Replacement Plan have special noticing requirements, and require the submittal of four (4) copies of all wetland-related submittal materials. Permit applications involving wetland noticing must be submitted a minimum 50 calendar days prior to a regular City Council meeting; permit applications not involving wetland noticing must be submitted a minimum 40 calendar days prior to a regular City Council meeting.

Permit Fee (check all that apply)

Rule C (Stormwater Management Plan)

Single Lot, Single Family Residential Development

Home, accessory structure, driveway \$150

All other Development

<1 acre impervious surface \$1,000

1 to 2.5 acre impervious surface \$2,000

>2.5 to 5 acres impervious surface \$3,500

>5 acres impervious surface \$5000 + \$1,000/ac*

* capped at \$10,000, round to the nearest whole acre

Rule D (Erosion Control Plans):

<2.5 acres of land disturbance \$100

2.5 to 5 acres land disturbance \$250

>10 acres land disturbance \$500

Rule E (Floodplain Alteration):

No mitigation required \$0

Mitigation required \$100

Rule F (Wetland Alteration)

Exemption \$250

< 1 acre of mitigation required \$875

1 to 5 acres of mitigation required \$1,750

> 5 to 10 acres of mitigation required \$3,500

> 10 acres of mitigation required \$5,250

Banking Plan \$1,750

Total Permit Fee: \$ _____

Note: Permit fee is the cumulative total of all individual aspects of a project checked above. Government entities are exempt from permit fees.

Applicant Signature

"I understand that, as the permittee, I am legally accountable to ensure compliance with terms and conditions of the permit. I understand that I am not authorized to begin the project until I receive the permit and the sign is posted on site. If the project is modified, I will obtain approval by the City before I continue with the project. I authorize the City, and its agents, employees, officers and contractors, to enter the worksite at all reasonable times until permit closure to inspect the work authorized hereunder, and to take any reasonable action to address existing or threatened discharge of sediments or other pollutants into waters or offsite."

"I recognize that, as the permittee, I will be responsible for site conditions and permit compliance until the permit is closed or transferred by written City approval to a subsequent property owner. I confirm that the Applicant address stated on the front of this form is the official address to which all notices and correspondence relating to this application are to be addressed, unless the address of an authorized agent appears below. I certify that I have thoroughly read and understand the above information."

Signature of landowner

Date

Print signer's name

Company (if applicable)

Title



CITY OF CIRCLE PINES/ PERMIT 18-0__

Expires on __/__/____

Pursuant to the rules and regulations of the City of Circle Pines and the Rice Creek Watershed District policies and standards, and based upon the statements and information contained in the permit application, letters, maps, and plans submitted by the applicant and other supporting data, all of which are made part hereof by reference, permission is hereby granted to the Permittee named below to conduct the activity described below. **If an extension to the permit is needed, the Permittee should submit a written request to the City at least 2 weeks prior to the expiration date.**

<i>Name of Project</i>			
<i>Project Description</i>			
<i>Project Location</i>			
<i>Permittee Name</i>			<i>Permittee Company</i>
<i>Permittee Address (No. & Street, City, State, Zip Code)</i>			
<i>Permittee Phone No.</i>	<i>Permittee Fax No.</i>	<i>Permittee Cell No.</i>	<i>Permittee E-Mail</i>
<i>In accordance with the attached plan received at the City on (date received):</i>			

Authorized Signature:

Kathleen Thompson, Water Resources Engineer
Date of Issuance: __/__/2018

STIPULATIONS

The permit will be issued with the following stipulations as conditions of the permit. By accepting the permit, the Permittee agrees to these stipulations:

GENERAL

1. An as-built survey of all stormwater BMPs (ponds, rain gardens, trenches, swales, etc) is to be submitted to the City for verification of compliance with the approved plans.

EROSION AND SEDIMENT CONTROL STIPULATIONS

2. Erosion control measures shall be in place prior to grading activities and maintained through project completion. These features can include sediment logs, erosion blankets, sod, riprap, silt fence and temporary or permanent vegetation. Hay bales are no longer recommended due to the impedance of water flow.
3. All exposed soils, including stockpiles, shall be stabilized within 14 days if not being actively worked and after the completion of grading. Slopes steeper than 3:1 shall be stabilized within 7 days.
4. The City Inspector may require additional erosion control features, dependent on site condition.
5. Refer to the MPCA "Protecting Water Quality in Urban Areas" manual at <http://www.pca.state.mn.us/qzqha87> for BMP's.
6. Please contact _____, the _____, at ___ - ___ - ___ if you have questions or to discuss site stabilization practices.

GENERAL PROVISIONS

1. The project shall be in accordance with the plans most recently submitted and approved by the City as part of the record of this project.
2. This permit is not assignable by the Permittee, except with the written consent of the City.
3. The Permittee shall grant access to the site at all reasonable times during and after construction to authorized representatives of the City for inspection of the work authorized hereunder.
4. In all cases where the Permittee, by performing the work authorized by this permit, shall involve the taking, using, or damaging of any property rights or interests of any other person or persons, or of any publicly owned lands or improvements thereon or interests therein, the Permittee, before proceeding, shall obtain the written consent of all persons, agencies, or authorities concerned, and shall acquire all property, rights and interests needed for the work.
5. This permit is permissive only. No liability shall be imposed on the City of any of its officers, agents, or employees, officially or personally, on account of the granting hereof or on account of any damage to any person or property resulting from any act or omission of the Permittee or any of its agents, employees, or contractors. This permit shall not be construed as estopping or limiting any legal claims or right of action of any person against the Permittee, its agents, employees, or contractors, for any damage or injury resulting from any such act or omission, or as estopping or limiting any legal claim or right of action of the City against the Permittee, its agents, employees, or contractors for violation of or failure to comply with the permit or applicable provisions of law.
6. Any stormwater management facilities approved as part of this permit shall be properly maintained in perpetuity to assure that they continue to function as originally designed.
7. After vegetation is in place and erosion control features have been removed, notify the City Inspector. Once the Inspector verifies that site conditions comply with all permit requirements, your cash surety will be returned to the remitter.
8. Failure to comply with the provisions of this permit is a violation of the law and may result in forfeiture of permittee's surety.



City of Circle Pines Permit Review Checklist

Project Name: _____

Project Location: _____

WSB Project No. _____

Reviewed By: _____

Date: _____

Submittals Received

Date	Document	Author

Procedural

- Signed plans
- Successful Bidder Signature
- City Doing Work: Yes No
- Additional Permits:
 - NPDES
 - Health Dept
 - Mn/DOT
 - County
 - FEMA/DNR

Stormwater Management (Rule C)

1. Plan Review
 - Datum
 - Existing and proposed contours
 - Delineation of drainage boundaries including off-site areas

- Plans and specifications for all proposed stormwater management facilities, including design details for outlet control structures
- Easements
- EOF Locations and Elevations
- Basin NWL and HWLs
- Building Elevations
- Grading Limits
- Utility plan
- Certified Retaining Wall Design

2. Water Quality Treatment

- Sequencing: _____
- Required Water Quality Volume: _____
- Provided Water Quality Volume: _____
- Required Vs. Provided Water Quality Volume: _____ Surplus Deficit
- Credit Provided For Pond Bench Toward Infiltration Requirement: Yes No

3. Rate Control

- Modeling calculations provided using NOAA Atlas 14 rainfall data
- Peak Discharge Rates < Existing for 2-year, 10-year, 100-year, and snowmelt events
- Model direct connected impervious separate

4. Infiltration/Retention BMPs

- Soil borings to confirm infiltration rate
- Pretreatment
- Drawdown within 48-hours
- 3' separation from seasonal high water table

5. Water Quality BMPs

- Meets NURP standards including:
 - Dead pool requirements
 - Water quality volume requirements
 - Skimmer
 - Maintenance access

6. Freeboard

- Groundwater Separation
- Building Opening:
 - At least 3' above 100-yr HWL; or
 - At least 2' above 100-yr HWL with following documentation:

- Provide flood storage volume within the freeboard area that is at least 50% of the flood storage volume below the 100-yr HWL; and
- 25% outlet obstruction does not increase the 100-yr HWL by more than 1'; and
- Adequate EOF from basin to provide assurance that 1' freeboard will be maintained for proposed low opening

Low Floor Elevation:

- 4' above the currently observed groundwater elevations in the area
- 2' above the elevation of any known historic high groundwater elevations
- 2' above the critical 100-yr HWL
- 1' above EOF
- For landlocked basins low floor must be 1' above the EOF or 1' above the HWL resulting of back to back 100-yr rainfalls and the 100-yr snowmelt

Erosion and Sediment Control (Rule D)

- SWPPP Provided
- Identification of all temporary and permanent erosion control measures. Includes, but is not limited to,;
 - Silt Fence
 - Storm Inlet Protection
 - Rock Entrance
 - Street Sweeping
 - Restoration
- Erosion Control Contact Person

Floodplain Alteration (Rule E)

- Floodplain elevations shown on plan
- Computation of change in flood storage capacity resulting from proposed grading
- Structure or embankments placed within the floodplain capable of passing the 100-year flood without increasing the elevation of the 100-year flood profile.
- 2-foot of freeboard between bottom of structures and 100-year flood profile.

Wetland Alteration (Rule F)

- Existing and proposed wetland areas shown on plans
- Wetland delineation report authorized for WCA use and consistent with BWSR guidance
- Wetland replacement plan application conforming to WCA requirements
- Functions and values assessment report involving at least one acre of wetland impact