CITY OF ANDOVER

Third Generation

Surface Water Management Plan

City Project #13-27

May 2015

Amended July 2018 / City Project #16-39C

CIVIL METHODS, INC.

PROFESSIONAL ENGINEERS

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CITY OF ANDOVER'S THIRD GENERATION SURFACE WATER MANAGEMENT PLAN

MAY 2015
AMENDED JULY 2018

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CERTIFICATION

I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the State of Minnesota.

CERTIFICATION for AMENDMENT		ORIGINAL CERTIFICATION	
Print Name:	David D. Berkowitz, P.E.	Print Name:	Kent E. Brander, P.E.
Signature:		Signature:	
Date:	July 26, 2018	Date:	May 11, 2015
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LIST OF ACRONYMS

BMP	Best Management Practice
BWSR	Board of Water and Soil Resources
CCWD	Coon Creek Watershed District
CIP	Capital Improvement Plan
DA	Digital Appendix
FEMA	Federal Emergency Management Agency
FIRM	Flood Insurance Rate Map
FIS	Flood Insurance Study
IDDE	Illicit Discharge Detection and Elimination
LRRWMO	Lower Rum River Watershed Management Organization
MnDNR	Minnesota Department of Natural Resources
MnDOT	Minnesota Department of Transportation
MPCA	Minnesota Pollution Control Agency
MS4	Municipal Separate Storm Sewer System
NRCS	Natural Resource Conservation Service
PFDS	Precipitation Frequency Data Server
SWMP	Surface Water Management Plan
SWPPP	Stormwater Pollution Prevention Program (or Plan)
TMDL	Total Maximum Daily Load
USACE	United States Army Corps of Engineers

USEPA	United States Environmental Protection Agency
USFWS	United States Fish and Wildlife Service
WMO	Watershed Management Organization
WRAP	Watershed Restoration and Protection

1 INTRODUCTION

1.1 PURPOSE

This document is entitled "City of Andover's Third Generation Surface Water Management Plan" (referred to as SWMP throughout the document). This SWMP is intended to serve as the primary planning and guidance document for surface water concerns in the City of Andover, Anoka County, Minnesota ("City") (Figure 1.1.1). It serves as an update to, and supersedes, the previous "City of Andover Water Resource Management Plan" (March 2005) and Amended for the May 2015 plan. A digital version of the March 2005 and May 2015 Plan is included in the Digital Appendix (DA1), described below.

1.2 DOCUMENT DETAILS

In addition to the main document, this SWMP includes a number of Appendices as well as a Digital Appendix, provided separately on a digital storage device. The Digital Appendix includes GIS files and other supporting data, as well as documents that relate directly to the SWMP but do not need to be included in hard copy format. The Digital Appendix is organized into numbered folders which are referenced throughout the document as DA1, DA2, etc. An effort has also been made to indicate where additional information can be found online. Web addresses and other references provided in this SWMP are current as of the date of publication.

1.3 CONTACT INFORMATION

Responsibility for SWMP implementation lies with the appropriate City departments and staff. A number of SWMP elements relate to watershed agencies with jurisdiction in portions of the City, specifically the Lower Rum River Watershed Management Organization (LRRWMO) and the Coon Creek Watershed District (CCWD). Boundaries for these agencies as well as adjacent cities are shown in Figure 1.3.1. Contact information for responsible personnel is as follows.

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(763) 755-5100
www.lrrwmo.org

Coon Creek Watershed District
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12301 Central Avenue NE, Suite 100
Blaine, MN 55434

(763) 755-0975
www.cooncreekwd.org

1.4 Compliance Summary

This SWMP meets the provisions and requirements of Minnesota Statute 103b.235 and Minnesota Rule 8410 (Appendix A; also available online from the Minnesota Office of the Revisor of Statutes, https://www.revisor.leg.state.mn.us/). As stipulated by statute and rule, this SWMP provides direction for surface water management within the City of Andover in conformance with applicable watershed plans, specifically the LRRWMO Third Generation Watershed Management Plan (October 2011) and the CCWD 2013-2023 Watershed Management Plan. These watershed plans can be found online at the websites of the respective organizations (http://www.lrrwmo.org/ and http://www.cooncreekwd.org/). They are also included in the Digital Appendix (DA2).

As the owner/operator of a small Municipal Separate Storm Sewer System (small MS4), the City is subject to the requirements of the Minnesota Pollution Control Agency (MPCA) general permit MNR040000, which establishes conditions for discharging stormwater and specific other related discharges to waters of the state from small MS4s (DA3). In accordance with that Permit, the City has developed, and the MPCA has approved, the City's *MS4 General Permit application and Stormwater Pollution Prevention Program (SWPPP) Document*. In order to stay in compliance, it is the responsibility of the City to fulfill the requirements of the MS4 Permit and the approved SWPPP Document. Therefore, these requirements have also been incorporated into this SWMP.

This SWMP is also intended to be consistent with any other planning and operational documents germane to the management of water resources within the City, including the Andover Wellhead Protection Plan (DA4), Andover City Code (available through http://www.andovermn.gov/), and approved departmental procedures. Any inconsistencies requiring modification of this SWMP should be addressed in accordance with Section 1.6, "Amendment Procedures." Some additional needs for written departmental procedures are identified In Section 6, "Assessment of Problems and Corrective Actions."

1.5 Compliance Detail

Table 1.5.1 lists the governing documents for development of this SWMP, along with the associated requirements for planning and management of surface water within the City. For each listed requirement, a reference is provided indicating where or how that requirement is primarily addressed within the SWMP. In addition to the primary references provided, the listed requirements are also addressed in other locations throughout the document.

Table 1.5.1. SWMP Compliance Detail

REQUIREMENTS BY SOURCE	*SWMP REFERENCE*
Minnesota Statute 103b.235	
Required Local Plan Contents	
Describe existing and proposed physical environment and land use	Sec. 4
Define drainage areas and the volumes, rates, and paths of storm	4.2
Identify adequate areas and elevations for storm water storage	4.2
Define adequate water quality and water quality protection methods	Sec. 5; SWPPP
Identify regulated areas	Sec. 1
Set forth an implementation program (incl. official controls and CIP as needed)	Sec. 7
Minnesota Rule 8410	
Required Plan Contents and Structure	
Purpose	1.1
Water resource management related agreements	Sec. 2

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Executive summary	Sec. 3
Land and water resource inventory	Sec. 4
Establishment of policies and goals	Sec. 5
Assessment of problems	Sec. 6
Corrective actions	Sec. 6
Financial considerations	Sec. 7
Implementation priorities	Sec. 7
Implementation program	Sec. 7
Amendment procedures	1.6
Submittal and review	
LRRWMO 3rd Generation Plan	
Education	SWPPP
Erosion Control	5.8, 6.3, 7.1, SWPPP
Shoreland	4.2.11, 5.9
Floodplain	4.2.8, 6.1
Scenic River	5.9
Modeling	4.2.6
Septic systems	5.2, 7.1
Wetlands	4.2.2, 5.7, 6.4,
Stormwater	5.1, 5.2, 6.5, SWPPP
Impaired waters	6.2, 7.2
Anoka Dam	NA
Operation	Sec. 5, 7.1, SWPPP
Permitting	Sec. 5, 7.1, SWPPP
CCWD 2013-2023 Plan	
Ditches and Watercourses	4.2.1, 5.1, 5.5
Floodplains	4.2.8, 6.1
Groundwater	4.3, 5.1, 5.6
Soils and Erosion Control	4.4, 5.8, 6.3, 7.1,
Stormwater	4.2, 5.1, 5.2, 6.5,
Water Quality	Sec. 5; SWPPP
Wetlands	4.2.2, 5.7, 6.4
Wildlife	5.3
MS4 Permit/SWPPP	
Part III: Enforcement Response Procedures	5.2, 7.2, SWPPP
Part IV: Storm Sewer Map and Inventory, Part B.3.	Sec. 4, SWPPP
MCM1: Public Education and Outreach	5.4, SWPPP
MCM2: Public Participation and Involvement	5.4, SWPPP
MCM3: Illicit Discharge Detection and Elimination	SWPPP
MCM4: Construction Site Stormwater Runoff Control	5.1, 5.2, SWPPP

MCM5: Post-Construction Stormwater Management	5.1, 5.2, 7.1, 7.2,
MCM6: Pollution Prevention/Good Housekeeping for Municipal	7.1, 7.2

1.6 AMENDMENT PROCEDURES

This SWMP is intended to be in place for a 10-year period (until 2025). However, it is directly related to other programs, plans, and standards both within the City and other encompassing jurisdictional bodies, and must remain flexible enough to incorporate changes as appropriate. Changes in watershed authority plans, TMDL or WRAP studies, or the City's MS4 program may require programmatic or implementation modifications to meet new requirements.

This SWMP is adopted by City Council as an official document, with regulatory policies on water resources issues set forth. The public may offer written requests for SWMP amendments, which will be addressed by City staff. Adjustments not impacting policies or programmatic activities that are required by TMDL plans, WRAP studies, or the MS4 Permit shall be considered minor amendments for this document. Minor amendments, if approved, may be completed by staff without council approval. Major amendments will be reviewed by staff and brought before Council prior to action; a public hearing may be required before adopting official SWMP revisions. To ensure conformance with all applicable rules, watershed authorities with jurisdiction in the City (the LRRWMO and CCWD) shall be provided the opportunity to review and comment on major amendments before adoption.

2 WATER RESOURCE RELATED AGREEMENTS

Management of surface water concerns within the City is also governed by water resource related agreements between the City and other parties. Such agreements may include joint powers agreements, agreements between the City and adjoining communities, or agreements between the City and other public or private entities. Copies of the water resource related agreements in effect at the date of publication of this SWMP have been assembled in a separate document, "City of Andover Water Resource Related Agreements." Additional agreements (including BMP maintenance agreements with private parties) will be added to this document as they are established and become part of the overall City surface water management program.

3 EXECUTIVE SUMMARY

3.1 OVERVIEW

This SWMP is written to be compliant with applicable regulations and standards. It provides information on City water resources and lays out the City's approach to managing those resources, including actions needed to remain in compliance following SWMP publication.

While officially a separate planning document, the City's SWPPP Document addresses essentially the same issues as those prompting development of this SWMP. Therefore, in order to simplify the overall compliance effort, the requirements and action plan identified in the SWPPP Document are fully addressed in this SWMP. However, existing SWPPP materials (BMP information sheets, etc.) may still be useful for program implementation.

This SWMP conveys the fact that the City water resource system is fundamentally in good condition, with management efforts in line with applicable requirements. It reflects the fact that surface water management has been, and will continue to be, a cooperative effort between the City, local watershed organizations, other agencies, and residents. A brief summary of each SWMP section is provided below. The main body of the SWMP is followed by a series of appendices providing background documentation and supporting material.

3.2 SECTION SUMMARIES

Section 4: Land and Water Resource Inventory. Section 4 includes discussion and figures illustrating key land and water resources within the City. Both natural and constructed resources are included. For each subsection, some key information is included in the SWMP, along with references indicating where more detailed or updated information can be found.

Section 5: Establishment of Goals and Policies. Section 5 outlines water resource related goals and policies of the City, in the categories of water quantity; water quality; recreation, fish, and wildlife; enhancement of public participation; information and education; public ditch systems; groundwater; wetlands; erosion and sedimentation; and the Rum River Scenic District.

Section 6: Assessment of Problems and Corrective Actions. Section 6 provides an assessment of existing and potential water resource related problems within the City, and an outline of ongoing or planned corrective actions. The concerns and solutions were identified through discussions with City and Watershed authority staff and other planning activities.

Section 7: Implementation Program. Section 7 identifies specific actions to be taken for managing surface water and achieving regulatory compliance. It includes both current and new activities, as well a brief discussion of financial considerations related to implementation.

4 LAND AND WATER RESOURCE INVENTORY

This section provides an inventory of data related to land and water resources in the City, as well as references indicating where additional or updated data can be found. The information provided in this section gives a clear overview of the physical setting and water resources conditions, but it should be noted that for specific applications, there is a great deal of additional data available and accessible online. In addition, the City maintains a comprehensive Geographic Information System (GIS) that can be updated and is accessible online for authorized users. The GIS contains most of the land and water resource data that is needed to support decision making for the City, and the map is regularly updated with new system information as it becomes available.

As referenced in the following sections, a number of GIS shapefiles with inventory information have been included in the Digital Appendix. If access to the City GIS or ESRI software is not available, these files may be viewed and edited using the free and open source software QGIS (www.qgis.org).

4.1 PRECIPITATION

Based on its location, the City experiences the same overall climate as the general Twin Cities area. A number of organizations provide detailed information about typical climate and weather conditions in the region. Some helpful online references are provided here:

- Minnesota DNR Climate Page: http://www.dnr.state.mn.us/climate/index.html
- Minnesota Climatology Working Group: http://climate.umn.edu/
- NOAA NWS Weather Forecast Office – Twin Cities: http://www.crh.noaa.gov/mpx/

On average, the total annual precipitation in the City is approximately 31.8 inches, and the total annual snowfall is approximately 45.5 inches. For purposes of City planning and regulatory purposes, precipitation frequency estimates for individual storms are to be taken from NOAA Atlas 14, Volume 8, developed by the National Weather Service Hydrometeorological Design Studies Center. The Atlas provides updated precipitation information for Minnesota (and other states), and supersedes other common precipitation data sources such as TP40.

Associated with Atlas 14 is the web-based Precipitation Frequency Data Server (PFDS), available at http://hdsc.nws.noaa.gov/hdsc/pfds/index.html. This site provides straightforward access to detailed precipitation frequency information for any location in Minnesota. By clicking on the State of Minnesota in the overview map, then using the on-screen navigation tools to locate and zoom in on the City of Andover, the user can select any point in the City and retrieve expected precipitation depths for recurrence intervals ranging from 1 year to 1000 years, and durations

ranging from 5 minutes to 60 days (the typical duration for analyses required by the City and other agencies is the 24-hour storm).

As an example, the rainfall depth for the 100-year 24-hour storm for the City of Andover increases from north to south (see Figure 4.1.1), with the highest depths roughly a mile to the east of Crooked Lake. Table 4.1.1 provides the rainfall depths for all durations and frequencies for that location, as taken from the NOAA PFDS. These may essentially be considered the maximum depths for the City, although there may be some minor variations in the location of maximum depth, depending on the storm.

Table 4.1.1. Precipitation Frequency Estimates (inches) (Values from NOAA PFDS)

Duration	Average Recurrence Interval (Years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	0.358	0.421	0.527	0.617	0.744	0.845	0.948	1.05	1.20	1.31
10-min	0.525	0.617	0.771	0.903	1.09	1.24	1.39	1.54	1.76	1.92
15-min	0.640	0.752	0.941	1.10	1.33	1.51	1.69	1.89	2.15	2.35
30-min	0.908	1.07	1.35	1.58	1.91	2.17	2.43	2.70	3.07	3.35
60-min	1.18	1.39	1.75	2.07	2.54	2.93	3.33	3.77	4.37	4.86
2-hr	1.45	1.70	2.15	2.56	3.17	3.69	4.24	4.83	5.68	6.36
3-hr	1.61	1.88	2.38	2.85	3.57	4.19	4.87	5.62	6.69	7.57
6-hr	1.88	2.19	2.78	3.35	4.24	5.02	5.87	6.82	8.19	9.31
12-hr	2.14	2.51	3.20	3.85	4.85	5.71	6.65	7.68	9.16	10.4
24-hr	2.47	2.86	3.58	4.26	5.31	6.21	7.19	8.26	9.80	11.1
2-day	2.90	3.25	3.93	4.59	5.64	6.56	7.57	8.70	10.3	11.7
3-day	3.18	3.53	4.22	4.88	5.94	6.86	7.89	9.03	10.7	12.1
4-day	3.40	3.78	4.50	5.18	6.26	7.20	8.22	9.36	11.0	12.4
7-day	3.91	4.41	5.29	6.07	7.24	8.21	9.24	10.3	11.9	13.1
10-day	4.39	4.98	5.97	6.83	8.07	9.07	10.1	11.2	12.7	13.9
20-day	5.97	6.69	7.87	8.86	10.2	11.3	12.4	13.5	14.9	16.0
30-day	7.37	8.21	9.58	10.7	12.2	13.3	14.5	15.6	17.0	18.1
45-day	9.20	10.3	11.9	13.3	15.0	16.2	17.5	18.6	20.0	21.0
60-day	10.8	12.1	14.1	15.6	17.6	19.0	20.3	21.5	22.9	23.8

4.2 SURFACE WATER RESOURCES DATA

This section includes summary discussions followed by a series of figures illustrating the available surface water resource data within the City. For convenient reference, the information is organized approximately in accordance with Minnesota Rule 8410.0060, Subpart 4 (see Appendix A), although some subsections have been merged for simplicity. Additional data has been included in the SWMP Appendices and Digital Appendix where appropriate.

4.2.1 Public Waters and Public Ditch Systems

A map of the Public Waters within the City is included as Figure 4.2.1a. The shapefile clipped to City boundaries is provided in DA5. The City has four main lakes which include Bunker Lake, Crooked Lake, Round Lake, and Ward Lake. Numerous other Public Waters within the City limits are designated as wetlands. Figure 4.2.1b shows the system of public and private drainage ditches present within the City, as provided by Anoka County. The shapefile clipped to City boundaries is provided in DA6.

4.2.2 National Wetlands Inventory

The National Wetland Inventory (NWI) map for the City is included as Figure 4.2.2 (shapefile in DA7). The wetlands data for the NWI maps are developed by the U.S. Fish and Wildlife Service (USFWS); the information provided on the figure is the latest, most accurate information available. Wetlands provide a multitude of benefits in terms of both water quality and habitat. The NWI data and a great deal more information about wetlands in general can be found at the USFWS-NWI web site, located at http://www.fws.gov/wetlands/NWI/.

4.2.3 Functional Values Inventory / Approach

Inventory and assessment of wetlands and functional values are performed on a case-by-case basis within the City. In general, wetland considerations and administration of the Wetland Conservation Act (WCA) are handled by the WD/WMO having jurisdiction within City limits. The City does verify that wetland requirements for any development or redevelopment activity are met prior to issuance of any City grading or building permits.

4.2.4 Hydrologic Characteristics

The key factors impacting the hydrologic characteristics of the City are the topography and the predominant sandy local soil characteristics (the latter is discussed in more detail in Section 4.4). Generally, the topography throughout the City is relatively subdued, with runoff discharging to the Rum River or Coon Creek (Anoka County Ditch 57), and ultimately to the Mississippi River. A more detailed look at the drainage patterns is provided in Figure 4.2.4, which depicts the major and minor subwatershed delineations, along with the general direction of flow within each area. (shapefile in DA8).

4.2.5 Stormwater Management System

Concerns regarding management of stormwater within the City are addressed in substantial detail in the City's SWPPP. The SWPPP contains information regarding both structural and non-structural measures taken to control both quantity and quality of stormwater runoff. In addition, the GIS database described at the beginning of Section 4 includes a storm sewer system map and inventory showing the location of public and private storm mains as well as culverts, catch basins, manholes, detention/retention basins, and other system components. Additional information about each system component can be accessed directly by clicking on the item of interest within the GIS database. The map is linked to a database that includes basic component information as well as as-built plans, reports, and other relevant computer files. It should be noted that there are no known basins with excess regional treatment capacity; this information is required to comply with the LRRWMO Plan.

4.2.6 Flood Levels and Peak Discharges

The applicable portions of the LRRWMO and CCWD plans address flood levels and peak discharges within their respective jurisdictions (and therefore within the City). Controls related flood levels and peak discharges are incorporated throughout City code as well as the SWPPP and this SWMP. Comprehensive hydrologic and hydraulic modeling is generally left to the watershed agencies with jurisdiction, although the City does regularly develop model information as development occurs. The model information developed through the development review process provides the same level of resource and property protection that would be provided by an overall hydrologic/hydraulic model of the City. Additional information regarding flood levels and peak discharges is discussed in Section 4.2.8.

4.2.7 Known Flooding Problem Areas

In general there are not significant ongoing flooding concerns within the City. This can be attributed both to the existing stormwater controls as well as the relatively high permeability of underlying soils. There are a few instances where flooding concerns along the Rum River and Coon Creek have been identified, but there are no actions proposed to be taken by the City at this time. Additional information can be found in the LRRWMO and CCWD plans, as well as Section 6 of this SWMP.

4.2.8 Existing FIS Information

An overview of the mapped 100-year floodplain within the City is shown in Figure 4.2.8. All information and data regarding floodplains, floodways, and the Flood Insurance Study (FIS) within the City can be obtained from the Federal Emergency Management Agency (FEMA) website (https://msc.fema.gov/), specifically through the FEMA Map Service Center. Numerous Letters of Map Change (LOMCs) have also been processed for locations within the City Limits, and these can also be viewed and downloaded at the FEMA site. For reference, the Flood

Insurance Rate Map (FIRM) panels covering the City are 2706890005A, 2706890010B, and 2706890015B. Current copies of these panels, as well as the current FIS for the City and associated floodway maps, are included in DA9.

4.2.9 Water Quality Data and Related Information

A substantial amount of water quality data and related information has been compiled by the LRRWMO and CCWD and is available in their plans. The Anoka Conservation District (ACD) also provides a summary of water quality and quantity information for the entire county in its 2013 Water Almanac (DA10).

Water quality data for lakes within Andover can also be accessed online through the MnDNR Lake Finder application (http://www.dnr.state.mn.us/lakefind/). This site includes information about lake levels, water quality, invasive species, and recreational information. Monitoring data is available for Round Lake (02008900), Crooked Lake (02008400), and Bunker Lake (02009000).

4.2.10 Surface Water Monitoring Sites

The MPCA surface water data website (http://www.pca.state.mn.us/index.php/data/surface-water.html) provides access to information about all surface water quality monitoring sites. Sites within the City can be located using the provided map- or text-based search tools.

4.2.11 Shoreland Ordinance

Shoreland regulation is covered extensively in City Code, which is available at the City website (http://www.andovermn.gov/). Shoreland management is addressed specifically in Title 13, Chapter 4 of the Code. The standards and requirements outlined in that Chapter are aimed at ensuring wise use of shoreland and water resources and conserving their associated environmental and economic value.

4.2.12 Surface Water Appropriations (MnDNR)

The City does not have any active MnDNR surface water appropriation permits. It does have a number of MnDNR permits for groundwater appropriation, for municipal and irrigation purposes. These are discussed in more detail in the following section.

4.3 GROUNDWATER RESOURCE DATA

Within the City, groundwater wells serve municipal, irrigation, and private water needs. Each of the active wells has a groundwater appropriation permit from the MnDNR. A listing of all active groundwater appropriation permits can be found through the MnDNR waters website, at http://www.dnr.state.mn.us/waters/watermgmt_section/appropriations/wateruse.html. The active appropriations permits within the City of Andover are shown on Figure 4.3.1 (shapefile in DA11).

Groundwater resource data for areas within the City are described in the Anoka Sand Plain Regional Hydrogeologic Assessment completed in 1993. Currently under development is Part B of the Anoka County Geologic Atlas, which will describe the County hydrogeology. Refer to http://www.dnr.state.mn.us/waters/programs/gw_section/mapping/platesum/anokcga.html for updated information and download links. Part A of the Atlas is completed and available at the same site.

The Minnesota Department of Health (MDH) has developed a guidance document for assessing stormwater infiltration in wellhead protection areas. The SWMP was developed to be in accordance with this guidance, which indicates that stormwater infiltration should not be allowed within the 1-year groundwater time of travel zone (a.k.a., the Emergency Response Zone) but can be allowed under certain circumstances outside of the 1-groundwater time of travel zones.

The Andover Drinking Water Supply Management Areas (DWSMAs) delineated in 2005 include areas with aquifer vulnerability classifications of low, moderate, and high. These aquifer vulnerability classifications are based on geology and water chemistry data. In areas of low aquifer vulnerability the travel time of water from the ground surface to the aquifer from which the municipal water supply well pumps is on the order of several decades to a century or more. In areas of moderate aquifer vulnerability the travel time for water moving from the groundwater surface to the aquifer ranges from several years to a few decades. In areas of high aquifer vulnerability the travel time for water moving from the ground surface to the aquifer may be a short as days or weeks up to a few years.

The Andover Wellhead Protection Plan is currently being updated as required by the Minnesota Wellhead Protection Rules. Evaluation of aquifer vulnerability classifications within newly delineated DWSMA areas is part of the Plan update. Preliminary review of the aquifer vulnerability classifications in the new DWSMAs indicates that the MDH agrees that aquifer vulnerability classification of high should be replaced with classifications of low and moderate based on the currently available information.

4.4 Soil Data

Soils within the City are primarily sand and sandy loams, and therefore have fairly high infiltration rates. This can be beneficial in terms of utilizing infiltration for management of surface water, but it also creates an increased susceptibility to groundwater contamination. Figure 4.4.1 shows the Hydrologic Soil Group (HSG) classification of soils throughout the City (shapefile in DA12). The HSG is a generalized rating of the infiltration rate of a soil, with HSG A indicating the highest infiltration rate and HSG D indicating the lowest infiltration rate. When a soil has a dual

classification (A/D, B/D, or C/D), the first letter represents the HSG of the soil under well-drained conditions, and the second letter represents poorly drained conditions.

A wealth of soil data is readily available online through the USDA-NRCS Web Soil Survey (http://websoilsurvey.sc.egov.usda.gov/App/HomePage.htm). This site allows the user to define an area of interest and either review or download all available soil data. Data for the City can be conveniently obtained by uploading the shapefile of the municipal boundary and using it to define the area of interest.

4.5 Land Use and Public Utility Services

Zoning designations within the City of Andover include a mix of urban and rural land use, with over half of its area zoned as rural single-family (R1). The most recent Zoning Map (March 2014) showing existing land cover for the City, as well as the Future Land Use Map from the City's Comprehensive Plan (2008), are included in Appendix B. For updated information on the City's land use and planning, see the City's Comprehensive Plan and updated maps that are accessible from the Planning Department's webpage at: http://www.andovermn.gov/

The Comprehensive Plan's Sewer Staging Plan map indicating the Metropolitan Urban Service Area (MUSA) boundary is also included in Appendix B. Approximately 21,600 persons are currently served by municipal sewer, with the approximately 11,000 remaining persons continuing to be served by Individual Sewage Treatment Systems (ISTS). As indicated in the Comprehensive Plan, the population of Andover is expected to grow by nearly 12,000 through 2030, with approximately 34,400 persons served by municipal sewer at that time. The remaining 10,100 persons will remain outside the MUSA boundary or within the boundary but served by private systems.

The City's Comprehensive Water Plan (2008) details municipal water system use throughout the City, and is available on the City's website. In addition, well locations and record information is accessible through the County Well Index Online mapping tool on the Minnesota Department of Health's website at: http://www.health.state.mn.us/divs/eh/cwi/index.html

4.6 Recreation, Wildlife, and Unique Features

The City of Andover contains multiple areas available for outdoor recreational activities and connection with the natural environment. The City's Parks and Trails Map (Appendix C) identifies the City parks, waters, and public connectivity, as well as other key features within the City. The following parks and waters offer significant recreational opportunities to City residents:

- ***Kelsey Round Lake Park:*** Kelsey Round Lake Park is a 136 acre nature area to the northwest of Round Lake, offering trails for hiking, biking, cross-country skiing, and

natural-area viewing. A boat landing access point is located along the southeastern edge of the lake, off of Round Lake Blvd NW.

- ***Crooked Lake:*** Crooked Lake is located at the southwest corner of the City and extends into the City of Coon Rapids. The Andover portion includes a public dock and small park area on the north end, while a larger park is available on the east side (in Coon Rapids).
- ***Bunker Hills Regional Park:*** Bunker Hills Regional Park is a County Park located in the southeast corner of Andover and into Coon Rapids. The park provides opportunity for a range of outdoor activities, including golfing, camping, hiking, biking, cross-country skiing, and nature observation. The park trails extend to and around Bunker Lake, with a constructed boardwalk crossing along the northern edge enabling easy viewing of water-based flora and fauna.

Additional information regarding recreational opportunities is available from the City of Andover (http://www.andovermn.gov/) or the Anoka County Parks and Recreation Department (https://www.anokacounty.us/372/Parks-Recreation). Fish species present in the lakes can be found on the MnDNR Lakefinder website (http://www.dnr.state.mn.us/lakefind/index.html).

Most of the land in Andover is developed or agricultural space, with the remaining natural wildlife areas contained primarily within and around the lakes, wetlands, parks and the Rum River. The Rum River runs along the western edge of the City, and is classified by the MnDNR as a "scenic" stretch of the river, as it remains free-flowing and is largely undeveloped.

The City falls within the Eastern Broadleaf Forest province in the MnDNR's Ecological Classification System (http://www.dnr.state.mn.us/ecs/index.html). This area is a transitional region from deciduous forests in the south to the mixed coniferous-hardwood forests to the north. The morainal subsection underlying Andover is the Anoka Sand Plain, a sandy, flat area dominated by prairie and Oak / Aspen woodlands. The predominant vegetation of the area historically consisted of Oak barrens and openings, including bur oak and pin oak (often small and misformed in droughty upland areas). Brushland and upland prairie also likely covered large areas.

In addition to the Scenic River Way along the Rum River, Andover houses a variety of rare and endangered species within its boundary. Included in Appendix D are the latest database query results from the MnDNR's Natural Heritage Information System (NHIS). As indicated, Andover does have multiple rare and endangered species within its natural areas.

Wildlife corridors are an important component in sustaining and enhancing the survivability of natural species while habitat is decreased through development activities. The Anoka County Conservation District and the MnDNR identify the areas between the Rum River, Round Lake, and along Coon Creek to Bunker Hills Regional Park as a wildlife corridor. Given that this is a focus

area for wildlife preservation, the City has recently purchased critical property through its land preservation program (refer to Appendix C for the location of open space property). These areas along the Rum River will now remain natural into the foreseeable future, providing perpetual habitat and natural area for human enjoyment.

4.7 Pollutant Sources

A wide range of activities have the potential to be sources of surface water pollution within the City. Figure 4.7.1 shows the locations of a variety of sites of potential concern that are listed on the MPCA *What's in My Neighborhood* website. These sites are generally associated with some type of permit or administrative document, and often have certain reporting requirements attached. More information about each site, as well as any updated inventory information, can be obtained from the MPCA.

In addition to permitted or known activities, illicit discharges are another potential pollutant source within the City. The SWPPP addresses in detail the City's approach to illicit discharge detection and elimination (IDDE).

4.8 ASSET MANANGEMENT

The City has begun the collection and documentation of asset management which is the process of collecting data of the existing and future infrastructure to develop, operate, maintain, upgrade and remove/dispose of the City's assets in a cost-effective manner. This process applies to all water and related resource management features within the boundaries of the City. The asset documentation will be available for other agencies such as the Coon Creek Watershed District and the Lower Rum River Watershed Management Organization to utilize.

The focus for the City will be more on the hard assets such as storm sewer and ponds but may expand in the future to include natural assets such as floodplain storage, water quality treatment provided by wetlands, etc. and the soft assets such as knowledge and skills set.

A comprehensive asset management program will benefit the City's water resource management program by providing a means to track storm water infrastructure such as storm sewer pipes and ponds to ensure the system is repaired and/or replaced when needed. Timely repairs and replacements are important so that the system functions properly. Storm sewer improvements are identified in the City's Capital Improvement Plan which can be found in the Digital Appendix.

5 ESTABLISHMENT OF GOALS AND POLICIES

The City has developed specific Goals and Policies conforming to Minnesota Statutes Section 103B.201. These Goals and Policies complement County, Regional, or State goals and policies, and are in strict conformance with the requirements of the LRRWMO and CCWD Plans.

Following MN Rule 8410.0080, Goals and Policies are listed according to the following categories: water quantity; water quality; recreation, fish and wildlife; public participation; public ditch systems; groundwater; wetlands; and erosion and sedimentation. An additional Goal and Policies pertaining to the Rum River Scenic District are also described below.

Table 5.0.1: SWMP Goals

GOAL	*SUBJECT*	*DESCRIPTION*
5.1	Water Quantity	To protect, preserve, and use natural surface and groundwater storage and retention systems, and to limit public capital expenditures that are necessary to control excessive volumes and rates of runoff.
5.2	Water Quality	To maintain, improve, and protect the quality of water in lakes, wetlands, streams or rivers within or immediately downstream of the City.
5.3	Recreation and Fish and Wildlife	To protect and/or enhance fish and wildlife habitat and water recreational facilities, with special attention given to the Rum River corridor within the City.
5.4	Enhancement of Public Participation; Information and Education	To educate and inform the public on pertinent water resource management issues, increase public participation and cooperation in water management activities, and/or enhance regulatory and operational programs in light of the public interest.
5.5	Public Ditch Systems	To provide a mechanism through which public ditch systems are managed, and to ensure proper operation and maintenance of the ditch systems in accordance with applicable policies.
5.6	Groundwater	To promote groundwater recharge, and to coordinate activities and manage surface water runoff to the degree necessary to meet requirements for groundwater protection or management as required by Anoka County, Minnesota Pollution Control Agency, the Minnesota Department of Health, and the Department of Natural Resources.
5.7	Wetlands	To protect wetlands in conformance with the requirements of the Wetland Conservation Act.

5.8	Erosion and Sedimentation	To prevent soil erosion and sedimentation.
5.9	Rum River Scenic District	To maintain, protect, and enhance a scenic river district along the bluffland and shoreland of the Rum River as required by the management plan for the Rum River.

In the sections below, specific Policies related to each of the Goals are identified. Some of the described Policies refer to plans from other agencies, or other documents utilized by the City of Andover in implementing its surface water management program.

5.1 WATER QUANTITY

GOAL: *To protect, preserve, and use natural surface and groundwater storage and retention systems, and to limit public capital expenditures that are necessary to control excessive volumes and rates of runoff.*

Table 5.1.1: Water Quantity Policies *[* denotes new or newly modified policies]*

POLICY	*DESCRIPTION*	*Water Quantity*
5.1.1*	The City adopts by reference the water quantity related standards established in the CCWD and LRRWMO plan requirements, and will update City procedures as necessary to remain consistent with those standards.	
5.1.2*	The City will continue to cooperate with the CCWD and LRRWMO in the review of development drainage plans and seeking solutions to water quantity issues.	
5.1.3	Activities such as placement of structures, fill, or other activities that will increase the flood stage of the 100-year or regional event are prohibited.	
5.1.4	Any improvements within a structure must be above the regulatory, 100-year flood elevation, consistent with the LRRWMO or CCWD requirements, whichever provides the greatest level of protection. If the improvements are more than 50% of the current value of the structure, the entire structure must be brought into compliance with the current floodplain regulatory requirements.	
5.1.5	Stormwater leaving a site must be routed to a public drainage system.	
5.1.6	The post-development runoff rates from the site must be controlled to the extent stipulated by the governing watershed agency (CCWD or LRRWMO) for the specific location.	

5.1.7 Within Drainage Sensitive Use Areas (Figure 5.1.1) (refer to CCWD Watershed Management Plan for locations and additional information), rate control calculations must show that the post-development 100-year peak flow rate does not exceed the predevelopment 25-year peak flow rate (by subwatershed). A Drainage Sensitive Use Area is defined as all those land uses that depend on subsurface drainage (i.e. local draining of the soil profile) for their continuation. For Non-Drainage Sensitive Use Areas, the post-development 100-year peak flow rate shall not exceed predevelopment 100-year peak flow rate.

5.1.8 All hydrologic studies will be based on standard hydrologic criteria and ultimate or anticipated development of the entire tributary drainage area.

5.1.9 Drainage calculations shall be submitted based on the minimum requirements of the governing watershed agency (CCWD or LRRWMO), and approved as part of any development applications prior to the issuance of any building or grading permit.

5.1.10 Design storm events shall be defined using the MSE3 storm distribution when available (until that time, the SCS Type-II distribution can be used as it provides very similar results) with the design rainfall amounts taken from the NOAA Atlas 14 website. The web address is: http://hdsc.nws.noaa.gov/hdsc/pfds/pfds_map_cont.html?bkmrk=mn. The user can zoom to the site of interest and obtain rainfall values for that location. Rainfall amounts are provided for a wide range of recurrence intervals and durations, including the 1-, 2-, 10-, 25-, and 100-year, 24-hour storms. To determine the rainfall amount for the back-to-back 100-year, 24-hour storms, the rainfall amount for the 100-year 24-hour storm shall be doubled, and a duration of 48 hours shall be used. Runoff depth for the 100-year, 10-day snowmelt shall be 7.2 inches assuming frozen soil conditions. The 100-year, 10-day runoff event shall be 8.5 inches.

5.1.11 The 100-year 24-hour event will be defined as the event requiring the greatest storm water storage volume in a storage facility (lakes, ponds, wetlands, ditches, and their outlets).

5.1.12 Major storm water facilities (i.e., ponds, pond outlet systems, and major conveyance systems) will be designed using a 100-year event.

5.1.13 All minor drainage systems and local storm water collection systems analyses and design will be based on a 10-year event unless otherwise specified.

5.1.14 For all storm water facilities (ponds, wetlands, storm water treatment ponds, ditches, etc.), design will include access for maintenance of the outlet structure and to the facility in general.

5.1.15 Culvert crossings or storm sewer systems in County or State right-of-way may have a design frequency that differs from the 10-year. Each agency shall be contacted to determine the appropriate design frequency.

5.1.16 The design of storm water facilities will consider and identify location(s) of overflow(s) that prevent property damage to adjacent properties from extreme water levels.

5.1.17 The City will utilize natural ponding areas, such as wetlands and lakes, for the impoundment and treatment of surface water runoff, as appropriate.

5.1.18 Available storage volume of landlocked areas shall be established by estimating the water surface elevation resulting from a 100-year, 10-day runoff event or back-to-back 100-year, 24-hour storm events, whichever is greater. The starting elevation for modeling purposes shall be the highest anticipated ground water level or Ordinary High Water Level for the basin as determined by the Mender.

5.1.19 Emergency overflows or outlets to drainage systems will be provided to any landlocked area if the available storm water storage capacity is inadequate to prevent flooding of residences and if the available downstream conveyance system capacity is adequate to accept additional flow.

5.1.20 The City requires developers to infiltrate storm water runoff in areas where the risk to groundwater is minimal, the land use is compatible, and soil is conducive to infiltration. For projects that use infiltration, the following policies apply:

a. Pretreatment of storm water in accordance with the Minnesota Stormwater Manual will be required prior to discharge to an infiltration basin.
b. The infiltration basin will be sized to infiltrate 1 inch of runoff from the new impervious surface area in 48 hours.
c. Infiltration rates of the soil shall be computed based on the current Minnesota Stormwater Manual guidelines.
d. Verification of infiltration rates shall be completed according to the requirements of either the CCWD or the LRRWMO, depending on location. Verification may require either post-construction testing or a double-ring infiltrometer test prior to construction.
e. A minimum 3 foot separation is required between the lowest point of a stormwater facility used for infiltration and groundwater.

5.1.21 The City will not maintain infiltration areas on private property, such as individual homeowners' rain gardens, but will provide free consultation services by request. Private infiltration areas will be maintained through the Homeowners Association or landowner agreements, which are required to be recorded at the County and tied to the property.

5.1.22 The City will require that a plan that includes procedures for maintenance and funding be submitted prior to approval of private infiltration basins.

5.1.23 The City of Andover will perform maintenance measures to assure proper function of the City-owned drainage systems.

5.1.24 The lowest floor elevation for new or redevelopment shall be 3 feet above the seasonal high groundwater elevation (identified as the highest anticipated water table), or 2 feet above the designated or designed 100-year flood elevation for the area, whichever is higher, unless evidence is submitted and certified by a geotechnical engineer that shall be reviewed and certified by an independent geotechnical engineer hired by the City at the expense of the developer and approved by the City Council that a separation of less than 3 feet can be achieved and is warranted. A separation of less than 3 feet would only be considered in cases where a structure backs up to a dry basin, or where the outlet is at the bottom of the basin.

5.1.25 Where there is a formal outlet from a stormwater basin, any new development or redevelopment within the City will maintain a minimum building opening elevation of 2 feet above the designated or designed 100-year flood elevation. Building openings shall be defined as the bottom sill of an egress window or lowest walkout elevation, whichever is lower.

5.1.26 Where construction of a formal outlet from a stormwater basin is not practical for landlocked areas, the minimum building elevation shall be the greatest of either 2 feet above the level resulting from two concurrent 100-year, 24-hour rainfall events or 2 feet above the 100-year, 10-day snowmelt.

5.1.27 A review and permit from the Coon Creek Watershed District or Lower Rum River Watershed Management Organization may be required in conformance with the Watershed District or Watershed Management Organization standards. *(City)*

5.1.28* Per the MS4 Permit, the City requires the use of any combination of BMPs, with preference given to Green Infrastructure techniques and practices, necessary to meet the following conditions on the site of a construction activity to the Maximum Extent Practicable:

- For new development projects – **no net increase from pre-project conditions (on an annual average basis) of stormwater discharge volume**, unless precluded by the stormwater management limitations identified in the MS4 Permit and listed below.
- For redevelopment projects – **a net reduction from pre-project conditions (on an annual average basis) of stormwater discharge volume**, unless precluded by the stormwater management limitations identified in the MS4 Permit and listed below.

5.1.29* Per the MS4 Permit, the City recognizes the following limitations on stormwater management:

a. The City prohibits the use of infiltration techniques to achieve the conditions for post-construction stormwater management in the Permit when the infiltration structural stormwater BMP will receive discharges from, or be constructed in areas:
   - Where industrial facilities are not authorized to infiltrate industrial stormwater under an NPDES/SDS Industrial Stormwater Permit issued by the MPCA.
   - Where vehicle fueling and maintenance occur.
   - 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.
   - Where high levels of contaminants in soil or groundwater will be mobilized by the infiltrating stormwater.
   - Within a vulnerable Wellhead Protection Area (WHPA) or Drinking Water Supply Management Area (DWMSA), which is the area surrounding a public water supply well that contains the wellhead protection area. Restriction applies to areas within the 1-year time of travel as designated by MDH. Additional explanation is provided in Section 4.3 of this SWMP.

b. The City restricts the use of infiltration techniques to achieve the conditions for post-construction stormwater management in the Permit, 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:
   - With predominately Hydrologic Soil Group D (clay) soils.
   - Within 1,000 feet up-gradient, or 100 feet down-gradient of active karst features (none known within City).
   - Where soil infiltration rates are more than 8.3 inches per hour.

*5.1.30** **Mitigation provisions:** in accordance with its SWPPP, the City 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 measures meeting the following minimum requirements:

a. Mitigation project areas are selected in the following order of preference:
   1) Locations yielding benefits to the receiving water of the original construction activity.
   2) Locations within the same MnDNR catchment area as the original construction activity.
   3) Locations in the next adjacent MnDNR catchment area up-stream
   4) Locations anywhere within the City's jurisdiction.

b. Mitigation projects must involve the creation of new structural stormwater BMPs or the retrofit of existing BMPs, or the use of a properly designed regional structural BMP.

c. Routine maintenance of structural stormwater BMPs already required by this permit cannot be used to meet mitigation requirements of this part.

d. Mitigation projects shall be completed within 24 months after the start of the original construction activity.

e. The City shall determine, and document, who will be responsible for long-term maintenance on all mitigation projects of this part.

f. If the City 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, the City shall apply any such payment received to a public stormwater project in compliance with the MS4 Permit.

5.1.31* **Long-term maintenance of structural stormwater BMPs:** per the MS4 Permit, for structural stormwater BMPs within the City and connected to the City's drainage system, the following maintenance provisions shall apply. Where necessary, City Code will be updated to reflect the policy.

a. The City shall be allowed to conduct inspections of structural stormwater BMPs not owned or operated by the City, perform necessary maintenance, and assess costs for those structural stormwater BMPs when the City determines that the owner and/or operator of that structural stormwater BMP has not conducted maintenance.
b. When ownership of a structural stormwater BMP (not owned by the City) is transferred to another party, the City shall maintain the right to ensure maintenance responsibility for the BMP.
c. The City shall ensure that 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.

5.1.32* **Storm Sewer Map.** The City will continue to update and improve its storm sewer system map as part of the web mapping program. Per the MS4 Permit, the following items will continue to be represented:

a. At a minimum, all pipes 12 inches or greater in diameter, including stormwater flow direction in those pipes.
b. Outfalls, including a unique identification (ID) number assigned by the City.
c. Structural stormwater BMPs
d. All receiving waters (ponds ditches, wetlands, etc.)
e. An inventory of municipal facilities with the potential to contribute pollutants to runoff

5.2 WATER QUALITY

GOAL: *To maintain or improve the quality of water in lakes, wetlands, streams and rivers within or immediately downstream of the City.*

Table 5.2.1: Water Quality Policies *[* denotes policies that are new/modified for this plan]*

POLICY	DESCRIPTION	Water Quality

5.2.1* Andover adopts by reference the water quality related standards established in the CCWD and LRRWMO plan requirements and will update City Code accordingly.

5.2.2* Andover will continue to cooperate with the CCWD and LRRWMO in the review of development drainage plans and seeking solutions to water quality issues. The City will enforce the permit requirements of the LRRWMO.

5.2.3 In the design and construction of new storm water conveyance systems or modification of existing systems, pretreatment of storm water runoff in accordance with Minnesota Stormwater Manual recommendations must be provided prior to discharge.

5.2.4 Construction projects must meet the permanent stormwater management requirements of the MPCA Construction Stormwater Permit. Where volume reduction is not feasible, and wet ponds are used to treat the Water Quality Volume as allowed by the MPCA, the City requires the following:

a. A permanent pool average depth (basin volume/basin area) which shall be ≥3 feet, with a maximum depth of ≤10 feet.
b. A stabilized emergency overflow (emergency outlet) adequate to control the 1% frequency/critical duration rainfall event, with a minimum 4' crest width and 0.5' rise.
c. Basin side slopes above the normal water level should be no steeper than 4:1, and preferably flatter. Slopes below the NWL shall be no steeper than 4:1.
d. A 10' wide safety bench at a slope of 10:1 is required from the NWL to 1' below.
e. The distance between inlets and outlets shall be maximized to prevent short-circuiting.
f. A 20' vehicle maintenance access no steeper than 10:1 shall be provided to the pond Normal Water Level, where necessary for access to wetlands and/or ponds as required by the City Engineer.
g. A flood pool ("live storage") volume above the principal outlet shall be adequate so that the peak discharge rates required by the CCWD or the LRRWMO are no greater than predevelopment conditions.
h. If necessary, compound weir-walls are preferred over orifices within outlet control structures for control of low-flow events. No orifice smaller than 4" is permitted within outlet control structures.
i. Pond outlet control structures shall be designed with a skimmer inlet placed a minimum of 1' below the NWL and 1' above the pond bottom.
j. Pond embankment shall be constructed of properly compacted soils to prevent failure; provide filter diaphragm or anti-seepage collar as necessary at outlet pipe.

5.2.5 Storm water treatment can be provided via BMPs, a single pond that meets the design and treatment criteria or an on-site network of interconnected ponds. If an on-site pond network is used, the overall pollutant removal efficiency for the network must meet the criteria.

5.2.6* In accordance with its SWPPP, the City requires the use of any combination of BMPs, with preference given to lower impact 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):

- For new development projects – **no net increase from pre-project conditions (on an annual average basis) of stormwater discharges of Total Suspended Solids (TSS) and Total Phosphorus (TP)**, unless precluded by the stormwater management limitations identified in the MS4 Permit.
- For redevelopment projects – **a net reduction from pre-project conditions (on an annual average basis) of stormwater discharges of Total Suspended Solids (TSS) and Total Phosphorus (TP)**, unless precluded by the stormwater management limitations identified in the MS4 Permit.
- For new and redevelopment, a minimum of 60% annual removal of TP and 90% annual removal of TSS, if that provides greater removal efficiency than the above conditions.

5.2.7 In areas of redevelopment where infiltration or ponding is not feasible, other means of treating storm water, such as inline proprietary treatment units, filtration systems, underground storage, or other measures identified in the Minnesota Stormwater Manual will be required.

5.2.8 The City has submitted the Stormwater Pollution Prevention Program (SWPPP) Document and Application for Reauthorization for the Minnesota Pollution Control Agency MS4 Permit. The SWPPP includes the following guidelines and Minimum Control Measures (MCMs) to be implemented on an on-going basis:

- Public Education and Outreach program
- Public Participation
- Illicit Discharge Detection and Elimination
- Construction Site Stormwater Runoff Control
- Post-Construction Stormwater Management
- Municipal Pollution Prevention/Good Housekeeping

5.2.9 The City will continue to work cooperatively with Anoka County to implement the household hazardous waste disposal program and educate residents on proper disposal of household hazardous waste.

5.2.10 The City will work with neighboring municipalities to require rate control and treatment prior to the discharge of storm water across municipal boundaries.

5.2.11 The City has established a 33-foot standard street width (back of curb to back of curb) for minor urban city streets, and 31-foot standard street width for minor rural city streets. This standard takes parking, safety, snow removal, and water resources issues into consideration. The City will evaluate where practical to reduce impervious street widths.

5.2.12 Future outlets to Mender Public Waters must first pass through a sediment pond/trap prior to discharging into the water body. The design criteria of the sediment pond/trap or other BMP will meet or exceed the water quality requirements identified in the SWPPP.

5.2.13 All on-site wastewater systems will be the responsibility of the owner. Biennial maintenance reporting of septic system is required by the City. If an on-site wastewater system fails, the owner will be required to upgrade, replace, or discontinue use of the system within six months from notice of noncompliance from the City.

5.2.14 The City will sweep the streets at least twice per year. The City also encourages participation in the "Adopt a Street" program to keep city streets and storm sewers litter free.

5.2.15 Permanent drainage/utility and maintenance vehicle access easements shall be provided for all drainage facilities.

5.2.16* **Enforcement Response Procedures.** Per the MS4 Permit, when non-compliance with stormwater management requirements is identified, the following information will be recorded as part of the City's enforcement procedures.

a. Name of the person responsible for violating the requirement.
b. Date(s) and location(s) of the observed violation(s)
c. Description of the violation(s), including reference(s) to relevant Regulatory Mechanism(s)
d. Corrective action(s) (including completion schedule) issued by the permittee
e. Date(s) and type(s) of enforcement used to compel compliance
f. Referrals to other regulatory organizations (if any)
g. Date(s) violation(s) resolved

POLICY	DESCRIPTION	Water Quality

5.2.17* In accordance with its SWPPP and the MS4 Permit, the City implements an Illicit Discharge Detection and Elimination Program that includes:

- Incorporation of illicit discharge detection into all inspection and maintenance activities.
- Detecting and tracking the source of illicit discharges using visual inspections.
- Training of all field staff in illicit discharge recognition and reporting illicit discharges.
- Identification of priority areas likely to have illicit discharges.
- Procedures for the timely response to known, suspected, and reported illicit discharges.
- Procedures for investigating, locating, and eliminating the source of illicit discharges.
- Procedures for responding to spills, including ERPs to prevent spills from entering the MS4.
- When the source of the illicit discharge is found, the City shall use the ERPs required by the Permit to eliminate the illicit discharge and require any needed corrective action(s).

5.2.18 For purposes of regulation, the terms stormwater, non-stormwater, illicit discharge, and illicit connection are defined according to MPCA General Permit MNR040000 Parts 1.A.1-2.

5.2.19* Per the MS4 Permit, the City will develop procedures and a schedule for the purpose of determining the TSS and TP treatment effectiveness of all City owned/operated ponds constructed and used for the collection and treatment of stormwater.

5.3 RECREATION, FISH AND WILDLIFE

GOAL: *To protect and enhance fish and wildlife habitat and water recreational facilities, with special attention given to the Rum River corridor within the City.*

Table 5.3.1: Recreation, Fish, and Wildlife Policies [* *denotes new/modified policies]*

POLICY	DESCRIPTION	Recreation, Fish, and Wildlife

5.3.1 The City will cooperate with MnDNR, US Army Corps of Engineers, US Environmental Protection Agency, the US Fish and Wildlife Service, Anoka County Parks, and other appropriate agencies in promoting public enjoyment and protecting fish, wildlife, and recreational resources in the City.

POLICY	DESCRIPTION	Recreation, Fish, and Wildlife

5.3.2 The Scenic River District along the Rum River bluffland and shoreland protects and preserves the scenic, recreational, natural, historical and scientific values of the Rum River in Andover in a manner consistent with Minnesota Statutes and the management plan for the Rum River.

5.3.3 Activities related to recreation, parks, open space, and trail systems shall be consistent with City code. The City encourages participation in the "Adopt a Park" program to keep parks litter free.

5.3.4 The City requires a 16.5 foot buffer strip during construction upon development or redevelopment for protection of wetlands and storm water ponds. For areas within the CCWD or LRRWMO, additional buffer requirements may be applicable. The developer will be required to work with the CCWD or LRRWMO to meet their buffer requirements, where applicable.

5.4 ENHANCEMENT OF PUBLIC PARTICIPATION; INFORMATION AND EDUCATION

GOAL: *To educate and inform the public on pertinent water resource management issues, increase public participation and cooperation in water management activities, and enhance regulatory and operational programs in light of the public interest.*

Table 5.4.1: Public Participation Policies *[* denotes new/modified policies]*

POLICY	DESCRIPTION	Public Participation

5.4.1 The City will continue to implement an education program which utilizes the following media:

- Storm water update newsletter articles and other educational materials
- Local cable channel announcements
- Natural resources-related consultations and correspondence
- City of Andover/4H Public Service Announcements
- City web site

5.4.2* The City will provide information directly to individuals involved with surface water, including:

- Pre-construction meetings for new developments
- Presentation to City Council
- Presentation to City Staff

5.4.3* The City will contact area schools and give brief presentations on topics related to storm water quality issues to communicate the importance of improving storm water quality.

POLICY	DESCRIPTION	Public Participation
5.4.4*	Volunteer Tree Planting Projects: The City will coordinate tree planting projects by working with groups in our parks system to improve aesthetics, wildlife habitat and storm water quality.	
5.4.5	The City encourages participation in the "Adopt-a-Street" program to keep roadways litter free.	
5.4.6	Annual reports will be provided to the LRRWMO on tasks completed in the previous year.	
5.4.7	The City will continue to participate in the Anoka County Wellhead Protection Group, which has established the Know The Flow county-wide water website that implements education and outreach programs on all the local government agencies.	

5.5 PUBLIC DITCH SYSTEMS

GOAL: *To provide a mechanism through which public ditch systems are managed, and to ensure proper operation and maintenance of the ditch systems in accordance with applicable policies.*

Table 5.5.1: Public Ditch Systems Policies *[* denotes new/modified policies]*

POLICY	DESCRIPTION	Public Ditch Systems
5.5.1	The public ditch and drainage system must be managed and maintained at design grade.	
5.5.2	County Ditch 20, 37, 57 (Coon Creek), and 58 and are managed by the Coon Creek Watershed District (CCWD). See Figure 4.2.1b.	
5.5.3	County Ditch 6 and 71 are managed by Anoka County. See Figure 4.2.1b.	
5.5.4	A Ditch Maintenance Permit from the Coon Creek Watershed District is required for work in all designated ditches within the Watershed District.	
5.5.5	The CCWD requires a 100' drainage and utility easement (50' from centerline) on designated county ditches within the watershed.	
5.5.6	Private ditches will comply with the LRRWMO Plan. Property owners are responsible for obtaining necessary permits, including WMO Permits, if the disturbance is more than 1 acre.	

5.6 GROUNDWATER

GOAL: *To promote groundwater recharge, and to coordinate activities and manage surface water runoff to the degree necessary to meet requirements for groundwater protection or management as required by Anoka County, Minnesota Pollution Control Agency, the Minnesota Department of Health, and the Department of Natural Resources.*

Table 5.6.1: Groundwater Policies *[* denotes new/modified policies]*

POLICY	DESCRIPTION	Groundwater
5.6.1	The City will cooperate with state and regional agencies on groundwater monitoring, inventorying or permitting programs.	
5.6.2	The City will work toward groundwater protection through the implementation of floodplain and shoreland ordinances in conformance with State and County regulations.	
5.6.3	The City will encourage the development of alternative storm water management methods including vegetated swales and infiltration practices provided these methods do not contaminate groundwater.	
****5.6.4***	Groundwater may not be discharged in a manner that causes erosion or flooding of the site or receiving channels or a wetland.	
5.6.5	The City will cooperate with the Department of Health to ensure that all unsealed or improperly abandoned wells within the City are properly sealed. Technical requirements for the abandonment of these wells will be in conformance with the local and state regulations.	
5.6.6	The City will implement its Wellhead Protection Plan.	

5.7 WETLANDS

GOAL: *To protect wetlands in conformance with the Wetland Conservation Act.*

Table 5.7.1: Wetlands Policies *[* denotes new/modified policies]*

POLICY	DESCRIPTION	Wetlands
5.7.1	The Lower Rum River WMO and Coon Creek Watershed District will act as the Local Government Unit (LGU) for the Wetland Conservation Act. (City)	
5.7.2	Prior to issuance of any City grading or building permits, all development and redevelopment activities must comply with the Wetland Conservation Act (WCA).	
5.7.3	The City requires a temporary 16.5 foot buffer strip during construction upon development or redevelopment for protection of wetlands and storm water ponds. The developer will be required to work with the CCWD or LRRWMO to meet any additional buffer requirements.	
5.7.4	Wetland banking opportunities and grants for restoration will be pursued by the City in accordance with WCA.	

5.8 Erosion and Sedimentation

GOAL: *To prevent soil erosion and sedimentation.*

Table 5.8.1: Erosion and Sedimentation Policies *[* denotes new/modified policies]*

Policy	Description	Erosion and Sedimentation
5.8.1	The City requires the submission and approval of a grading, drainage, and erosion control plan prior to the issuance of any grading or building permits.	
5.8.2*	All erosion and sediment controls proposed for compliance must be in place before any land-disturbing activity begins.	
5.8.3*	Adjacent properties must be protected from sediment deposition.	
5.8.4	The City will require any development or redevelopment to comply with the erosion control and steep slope standards.	
5.8.5	The City will update its erosion and sediment control standards to be in conformance with the NPDES permit as well as the requirements of the Watershed District, Watershed Management Organization, and Anoka County. The City has adopted City Code 10 Chapter 6, Construction Site Erosion and Waste Control, to meet these standards.	
5.8.6	Soil erosion shall be prevented through the installation of erosion control practices in accordance with MPCA guidance materials.	
5.8.7	It shall be the responsibility of the developer / contractor to keep streets and property adjacent to construction areas free from sediment carried by construction traffic at site entrances and access points, and from site runoff and blowing dust.	
5.8.8*	Groundwater may not be discharged in a manner that causes erosion or flooding of the site or receiving channels or a wetland.	

5.9 Rum River Scenic River District

GOAL: *To maintain, protect, and enhance a scenic river district along the bluffland and shoreland of the Rum River as required by the management plan for the Rum River.*

Table 5.9.1: Rum River Scenic District Policies

Policy	Description	Rum River Scenic District
5.9.1	Land use, area lots, and the length of bluffland and water frontage suitable for building sites will be regulated through the bluffland ordinance.	

5.9.2 Setbacks of structures and sanitary waste treatment facilities from bluff lines and shorelines to protect existing and/or natural scenic values, vegetation, soils, water quality, floodplain areas, and bedrock from disruption by manmade structures or facilities will be regulated as indicated in the shoreland and bluffland ordinances.

5.9.3 Alterations of natural vegetation and topography within the Scenic District will be regulated.

5.9.4 The natural scenic values and resources of the Rum River will be conserved and protected to maintain a high standard of environmental quality.

5.9.5 The City will comply with Minnesota statutes and the management plan for the Rum River.

5.9.6 The City will work cooperatively with Federal, State, and County agencies in the development of resource management and implementation plans affecting the Rum River.

5.9.7 The City shall apply and enforce the Rum River management plan policies.

5.9.8 New or expanded discharges to the Rum River are not allowed because it is classified as an Outstanding Resource Value Water by the MnDNR.

6 Assessment of Problems and Corrective Actions

This section provides an assessment of the City's water resource management system, identifying issues and concerns, as well as potential corrective actions. The assessment is based on the information collected for this Plan, including discussions with City and Watershed authority staff. The City does not currently have a large amount of specific water-related concerns; the majority of the following issues are related to the City's MS4 Permit, or as listed in the CCWD or LRRWMO Plans. As corrective actions are completed, or new issues arise, the tables will be adjusted through the minor amendment process, as described in Section 9.

6.1 Water Quantity

Large runoff quantities associated with extreme rainfall events have the potential to cause a range of problems for a city, including damage to structures, erosion of property, and public safety issues. Increases in runoff, whether from climate change or modifications to land cover, can further exacerbate existing issues, or create issues where none existed previously. This section identifies current water quantity issues facing the City of Andover, as well as associated corrective actions.

Table 6.1.1: Issues and Actions – Water Quantity

I.D.	*Issue*	*Corrective Action*
6.1.1	General increase in volume and flow rate associated with increased impervious area from new growth / urbanization over the next 20 years. (LRRWMO_B1)	Adopt and enforce related City Code requiring rate control and volume control, and the City's MS4 SWPPP. Require development plans to meet permit requirements of MPCA, CCWD, and LRRWMO.
6.1.2	Structural flooding along a portion of the Rum River has been noted by the City. The City approached the landowners, but did not receive cooperation to address the problem. No further action is proposed to address this issue.	If a building permit is issued for improvements within a structure that is below the 100-year flood elevation, the improvements must be above the regulatory flood elevation. If the improvements are more than 50% of the current value of the structure, the entire structure must be brought into compliance with floodplain regulations.

I.D.	Issue	Corrective Action
6.1.3	The new Atlas 14 precipitation frequency estimates indicate higher rainfall amounts for Minnesota than previously estimated. Increased estimates are based on new and more detailed data. Management of extreme rainfall events is an ongoing concern for the City. (CCWD_Issue2)	• City Code ensures that new development provide adequate emergency overflow to convey runoff from extreme rainfall events. • The City will be available to work with other agencies in determining the impact of Atlas 14 on regulatory flood elevation determination • The City will work with developers to minimize elimination of natural stormwater abstraction features and facilitate on-site retention, reuse and infiltration.
6.1.4	Flooding at some locations along Coon Creek	Coordinate with CCWD to address flooding issue.
6.1.5	Potential groundwater depletion due to increased use and decreased recharge associated with population growth and development. (LRRWMO_H2), (CCWD_Issue3)	Work with the Watershed and other interested agencies to sustainably manage groundwater, to meet water supply needs while minimizing environmental impacts and ensuring future resource availability. The City will continue to enforce lawn watering rules and comply with its MnDNR Water Appropriation permit, as well as encourage native, sustainable planting.

6.2 Water Quality

The quality of stormwater runoff directly impacts downstream surface waters. When runoff contains significant concentrations of contaminants such as nutrients or sediment, the effects on local water bodies often include algal blooms, turbidity, and an overall reduction in water quality. This section identifies current water quality issues facing the City.

Table 6.2.1: Issues and Actions – Water Quality

I.D.	Issue	Corrective Action
6.2.1	Nutrient and sediment pollution in runoff from urbanization / development impacting the Rum River, Coon Creek, and various lakes within the city. (LRRWMO_A3)	• Enforce City Code requiring rate control and volume control, and the City's MS4 SWPPP. • Follow SWPPP street sweeping protocol. • Retrofit treatment to City projects as appropriate • Require development plans to meet permit requirements of MPCA, CCWD, and LRRWMO.

I.D.	Issue	Corrective Action
6.2.2	Excessive turbidity and aquatic invasive species in Crooked Lake	• Support implementation of the goals and policies outlined by Coon Creek Watershed District. Crooked Lake has good water quality but does have an AIS problem.
6.2.3	Previous trend of declining water quality of Round Lake (LRRWMO_A4)	Based on the most recent available information, the water quality in Round Lake has improved, altering the previous downward trend. The City will continue to be available to work with the LRRWMO, ACD and other regulatory agencies as necessary.
6.2.4	Elevated chloride levels in County Ditch 6, as noted by the Anoka Conservation District (ACD)	The City is taking a gradual approach to modifying salt application procedures. Training is provided for City staff on recommended salt practices, and practical measures for reducing salt application where safe and feasible are being implemented. The City will work with the Anoka County Highway Department and the ACD to continue this effort.
6.2.5	The following water bodies are listed on the State's Impaired Waters (303d) List: • Coon Creek – Aquatic Macroinvertebrate Bioassessments (AMB) • Rum River - Mercury • Crooked Lake – Mercury	There is not an approved TMDL for AMB, while mercury is addressed by a state-wide TMDL. The City will be available to work with agencies towards implementing strategies to meet Waste Load Allocations or other reductions associated with future TMDL studies, or similar.
6.2.6	Implementing recommendations or requirements of future Total Maximum Daily Load (TMDL) studies or Watershed Restoration and Protection (WRAP) projects	A WRAP plan is currently under development by the MPCA with help from the Anoka Conservation District (ACD). The City will work with the ACD, LRRWMO, and CCWD to implement recommendations resulting from the findings of the Plan.
6.2.7	Susceptibility of groundwater to pollution from surface activity. (LRRWMO_H1), (CCWD_Issue3)	• The City will continue to implement its Wellhead Protection Plan and amend as required. • The City will review development site designs to ensure adequate separation between infiltration areas and groundwater level, as required by the MPCA • The design, installation and inspection of subsurface sewage treatment (SSTS) systems must be in conformance with Minnesota Rule Chapter 7080

6.3 Soil Erosion

The erosion of soil, whether natural or human-induced, can substantially impact a community. Erosion along river banks or lake shores can alter property boundaries and undermine structures, while upland erosion can lead to decreased soil quality and increased surface water degradation, impacting natural ecosystems and public value. This section identifies current soil erosion and sediment transport issues facing the City of Andover.

Table 6.3.1: Issues and Actions – Soil Erosion

I.D.	*Issue*	*Corrective Action*
6.3.1	Erosion and sediment transport from construction sites pollute downstream waters.	Enforce City Code related to erosion control and the City's MS4 SWPPP. Require development plans to meet permit requirements of MPCA, CCWD, and LRRWMO.
6.3.2	The stream banks along the Rum River and Coon Creek have the potential for erosion. (LRRWMO_E1)	• Coordinate with the CCWD to continue to implement the CCWD bank stabilization program. • Coordinate with the LRRWMO to undertake biannual bank inspection and assessment

6.4 Wetland Protection

Throughout the region, wetlands have been drained or filled to accommodate agriculture and development, leading to a significant reduction in existing wetland area. Consequently, there has been a resulting decrease in natural stormwater treatment and volume reduction areas around the landscape. Wetland protection and preservation is key to a healthy stormwater management system, and the City relies on the CCWD and LRRWMO to enforce the Minnesota Wetland Conservation Act (WCA). This section identifies existing or potential wetland-related issues facing the City.

Table 6.4.1: Issues and Actions – Wetland Protection

I.D.	Issue	Corrective Action
6.4.1	Wetland degradation due to development activities (LRRWMO_D1)	The LRRWMO and CCWD administer the Wetland Conservation Act (WCA) for the City, protecting existing wetlands and ensuring proper mitigation is performed. The City assists in some capacities for enforcement needs.
6.4.2	Lack of knowledge among general public regarding the benefits of wetland functions and values, and what is allowed and not allowed in wetlands (LRRWMO)	Materials developed by watershed agencies and other organizations to educate the public shall be made available at community events, City Hall, and other resident gathering places.

6.5 NPDES Phase II / MS4 SWPPP Implementation

The issues discussed in this section are directly addressed by the City's SWPPP, as required by the NPDES MS4 Permit. Specific issues requiring immediate attention for ongoing Permit compliance are summarized in Table 6.5.

Table 6.5.1: Issues and Actions – MS4 SWPPP Implementation

I.D.	Issue	Corrective Action
6.5.1	Detecting illicit discharges of polluting materials into the surface water management system.	• The City will implement and update its illicit discharge detection program.
6.5.2	The need to assess BMPs for continued effectiveness	• The city will continue its inspection and maintenance program to ensure stormwater BMPs remain effective. • As required by the MS4 Permit, the City will develop a procedure to assess the performance of existing publicly-owned stormwater ponds, and subsequently develop a maintenance schedule.
6.5.3	BMP maintenance needs, including stormwater retention ponds with PAH-contaminated sediment	The City will continue to ensure its inspection and maintenance procedures conform with the MS4 Permit requirements
6.5.4	Potentially incomplete or outdated mapping of the City's stormwater management system (Part II.D.4)	The City will continue to update its stormwater asset management (map) system on a regular basis, and as necessary per Permit revisions

I.D.	Issue	Corrective Action
6.5.5	Lack of agreement between City Code and the requirements of the MS4 Permit (Part II.D.2)	This SWMP is the Water Resources Management Plan referred to in City Code. Upon approval of this SWMP, the standards identified herein are therefore incorporated by reference into City Code.
6.5.6	Maintaining Enforcement Response Procedures (ERPs) that satisfy the Permit (Part II.D.3)	The City will continue to update its ERPs to ensure conformance with the Permit, as revised.

6.6 Aquatic Invasive Species

The spread of Aquatic Invasive Species (AIS) is an ongoing concern throughout the region, and significant effort is being dedicated to their control. Invasive species often out-compete native populations, causing reduced diversity, degradation of ecological systems, lowered water quality, and diminished property values. This section identifies AIS issues currently facing the City of Andover.

Table 6.6.1: Issues and Actions – Aquatic Invasive Species

I.D.	Issue	Corrective Action
6.6.1	Aquatic Milfoil has been identified as a concern on Crooked Lake	• Analysis of the water quality information for Crooked Lake indicates that water quality has improved over the years and is suitable for recreation. A milfoil management program could be undertaken if the swimming beach is re-opened in Coon Rapids. Generally, Crooked Lake has good water quality but does have an AIS problem. • Work with the City of Coon Rapids, the CCWD, and the Crooked Lake Area Association to review the water quality data.
6.6.2	The potential for the spread of aquatic invasive species into Andover's waters, including but not limited to: carp, zebra mussels, curly leaf pond weed, Eurasian water milfoil, etc. (CCWD_Issue1)	• Efforts to prevent the spread of invasive species will likely be handled at the Watershed / County level; for example, the CCWD has and is updating an AIS plan for the watershed. The City will be available to work with the agencies to implement measures deemed appropriate.

6.7 IMPAIRMENTS AND TMDL'S

Impairments and TMDL's are concerns that have been identified and a goal is to work with the Coon Creek Watershed District and Lower Rum River Management Watershed Management Organization to improve areas of concern by making cost effective improvements that have the most benefit to reduce the impairments to improve water quality and aquatic life.

Table 6.7.1: Issues and Actions – Impairments and TMDL's

I.D.	*Issue*	*Corrective Action*
6.7.1	Coon Creek listed as impaired for Aquatic Life (macroinvertebrates) in 206 and Aquatic Recreation (E. coli) in 2014	• City will take a collaborative approach with MS4s to meet required load reductions and support efforts to reduce pollutants and participate in funding for such reduction improvements.
6.7.2	Coon Creek failed to meet State standards for fish biotic condition, but an impaired was deferred until Coon Creek is reassessed under new Tiered Aquatic Life Uses (TALU) framework	• City will take a collaborative approach with MS4s to meet required load reductions and support efforts to reduce pollutants and participate in funding for such reduction improvements.
6.7.3	Coon Creek has been identified to have excess TSS, TP, poor habitat, altered hydrology, and low dissolved oxygen in headwaters	• City will take a collaborative approach with MS4s to meet required load reductions and support efforts to reduce pollutants and participate in funding for such reduction improvements.
6.7.4	TMDL approved for Coon Creek on September 26, 2016 established WLA's for TSS, TP, and E. coli	• City will take a collaborative approach with MS4s to meet required load reductions and support efforts to reduce pollutants and participate in funding for such reduction improvements.
6.7.5	Crooked Lake listed as impaired for Aquatic Consumption (Mercury) in 2008, subject to statewide TMDL and mercury reduction strategies	• City will take a collaborative approach with the City of Coon Rapids and the Coon Creek Watershed District to meet required load reductions and support efforts to reduce pollutants and participate in funding for such reduction improvements.

7 IMPLEMENTATION PROGRAM

The previous sections have described the surface water related resources within the City, as well as the City's general approach and requirements for protecting those resources. In this section, the specific actions being taken by the City in order to manage surface water and achieve compliance with applicable regulations have been identified and scheduled. This implementation program has been divided into two main components. The first part, outlined in Section 7.1, includes the current activities representing the City's ongoing surface water management program. Subsequently, Section 7.2 describes the new activities specified by this SWMP and other associated planning documents.

Currently, implementation items in the SWMP are part of the City's ongoing surface water management program, and specific issues that arise within the program are addressed on a routine basis. Additional priorities identified in the plan have been determined through a series of meetings with City staff as well as Watershed District and Watershed Management Organization representatives. City staff members with involvement in these areas meet on a regular basis, and specific water management priorities (outside of the normal program) are brought to discussion. Management priorities are determined based on public safety, compliance with Agency requirements and City policy, water resources protection, and resident concerns.

7.1 CURRENT IMPLEMENTATION ACTIVITIES

Table 7.1.1 identifies the key surface water management activities currently in place in the City. These activities are expected to continue in fundamentally the same manner, modified as necessary in order to fulfill any applicable new requirements and reflect current City priorities.

Table 7.1.1: Current / Ongoing Surface Water Management Program Activities

($: < $5,000 $$: $5,000 – $50,000 $$$: $50,000 - $100,000 $$$$: >$100,000)

ACTIVITY ID	*REQ BY*	*DESCRIPTION*	*TIME FRAME*	*COST ESTIMATE*
7.1.1	MS4	Public Education and Outreach		
		Storm water update newsletter articles	1/Qtr	$
		Local cable channel announcements	1/Yr	$
		Document natural resources-related consultations	Ongoing	$
		City of Andover/4H Public Service Announcements	Ongoing	$
		Document pre-construction mtgs for new developments	Ongoing	$
		Presentation to City Council	1/Yr	$
		Presentation to City Staff	1/Yr	$
		Document collaborative efforts with WD, WMO	Ongoing	$

Activity ID	Req By	Description	Time Frame	Cost Estimate
7.1.2	MS4	Public Participation and Involvement		
		Document procedure for handling public input	Ongoing	$
		Annual public meeting	1/Yr	$
		Place SWPPP online and make available at City Hall	Ongoing	$
		Document public input	Ongoing	$
		Add a street to Adopt-a-Street program	1/Yr	$$
		Volunteer Tree Planting Projects	1/Yr	$
		Annual Tree Sale	1/Yr	$
7.1.3	MS4	Illicit Discharge Detection and Elimination (IDDE)		
		Document illicit discharge reports and responses	Ongoing	$
		Post construction septic system maintenance/reports	2/Yr	$$
		Conduct/document storm sewer camera tests	Ongoing	$$
		Conduct/document sanitary sewer system maintenance	Ongoing	$$
7.1.4	MS4	Construction Site Stormwater Runoff Control		
		Enforce City Code related to erosion control		$
		Conduct construction site inspections and reporting	Ongoing	$
7.1.5	MS4	Post-Construction Stormwater Management		
		Review proposed developments for conformance	Ongoing	$
		Conduct site inspections to verify BMP implementation	Ongoing	$
		Document raingarden consultations and implementation	Ongoing	$
7.1.6	MS4	Pollution Prev./Good Housekeeping for Municipal Operations		
		Staff training in SW mgmt and SWPPP requirements.	Ongoing	$
		SW mgmt system inspections, recordkeeping, mapping	Ongoing	$
		Street sweeping	2x/Yr	$$
		Inlet and manhole cleaning, maintenance, and repair	Ongoing	$$
		Storm sewer repair, replacement, and cleaning	Ongoing	$$
		Ditch cleaning and repair	Ongoing	$$
		Stormwater retention pond cleaning and repair	Ongoing	$$
		Stormwater lift station maintenance	Ongoing	$$
		Conduct construction site inspections and reporting	Ongoing	$
		Fertilizer/Chemical Application Licensing	Ongoing	$

Activity ID	Req By	Description	Time Frame	Cost Estimate
		Municipal Operations and Maintenance	Ongoing	$$
		Storm Water System Maintenance Training	Ongoing	$
		Automobile Maintenance	Ongoing	$$
		Parking Lot and Street Cleaning	Ongoing	$$
		Storm Drain System Cleaning	Ongoing	$$
		Inspection of Structural Pollution Control Devices	Ongoing	$
7.1.7		Related City Plans		
		Implement Wellhead Protection Plan	Ongoing	$
		Nondegradation Plan	Ongoing	$

7.2 Future Implementation Activities

Table 7.2.1 outlines new activities specified by this SWMP (and the incorporated SWPPP) that will need to be implemented as part of a compliant surface water management program, as well as items listed in the City's 5-year Capital Improvement Program (CIP) (DA12). To this end, if applicable, it has been noted which program or governing body requires the activity.

Table 7.2.1: New Implementation Items

($: < $5,000 $$: $5,000 – $50,000 $$$: $50,000 - $100,000 $$$$: >$100,000)

Activity ID	Req By	Description	Time Frame	Cost Estimate
7.2.1	MS4	Verify that City documents and procedures reflect part B of the Post-Construction Stormwater Management section of the SWPPP, either independently or by reference to this SWMP.	Complete	$
7.2.2		Update Developer's Handout to reflect new rainfall depth/frequency information from NOAA Atlas 14.	Complete	$
7.2.3	CC	Coordinate with CCWD to address flooding along Coon Creek	Ongoing	$
7.2.4	MS4	Write and approve Enforcement Response Procedures (ERP) for violations related to illicit discharges, construction site runoff control, or permanent stormwater control.	Complete	$
7.2.5	MS4	Identify/write/gather together relevant emergency response procedures (including spill response)	Complete	$

Activity ID	Req By	Description	Time Frame	Cost Estimate
7.2.6	MS4	Identify inspection and maintenance field staff and document their training in illicit discharge detection; ensure that illicit discharge detection is part of inspection and maintenance procedures (construction site, permanent stormwater management, building, grading and stabilization).	Complete	$
7.2.7	MS4	Create map of areas likely to have illicit discharges; include analysis of business/industrial land use, areas where illicit discharges have been identified in the past, and areas with storage of large quantities of significant materials.	Complete	$
7.2.8	MS4	Identify current electronic and/or hard copy files used for illicit discharge recordkeeping, and update them to include all informational items listed in the MS4 Permit, Part III.D.3.h.	Complete	$
7.2.9	MS4	Identify current procedures, documents, and checklists used for construction site inspection, and update them to include all information items listed in the MS4 Permit, Part III.D.4.d.	Complete	$
7.2.10	MS4	Add additional stormwater BMPs to City web mapping application	Complete	$
7.2.11	MS4	Develop a procedure & schedule to assess City ponds/BMPs	Complete	$
7.2.12	MS4	Add map of municipal facilities with potential to contribute pollutants to runoff to the City web mapping application	Complete	$
7.2.13	MS4	Following completion of basic SWPPP compliance, include all required information as a minor amendment to this SWMP.	2023	$
7.2.14	MS4	Institute Adopt-a-Pond program within the City	Complete	$
7.2.15	CIP	Storm sewer improvements	Annual	$$
7.2.17	CIP	Replace Tymco Street Sweeper #172	Complete	$$$$

7.3 Financial Considerations

Based on recent City data, continued implementation of regulatory controls and stormwater management system operations and upkeep will likely require $300,000 to $400,000 per year into the foreseeable future. These operations will continue to be funded primarily through the

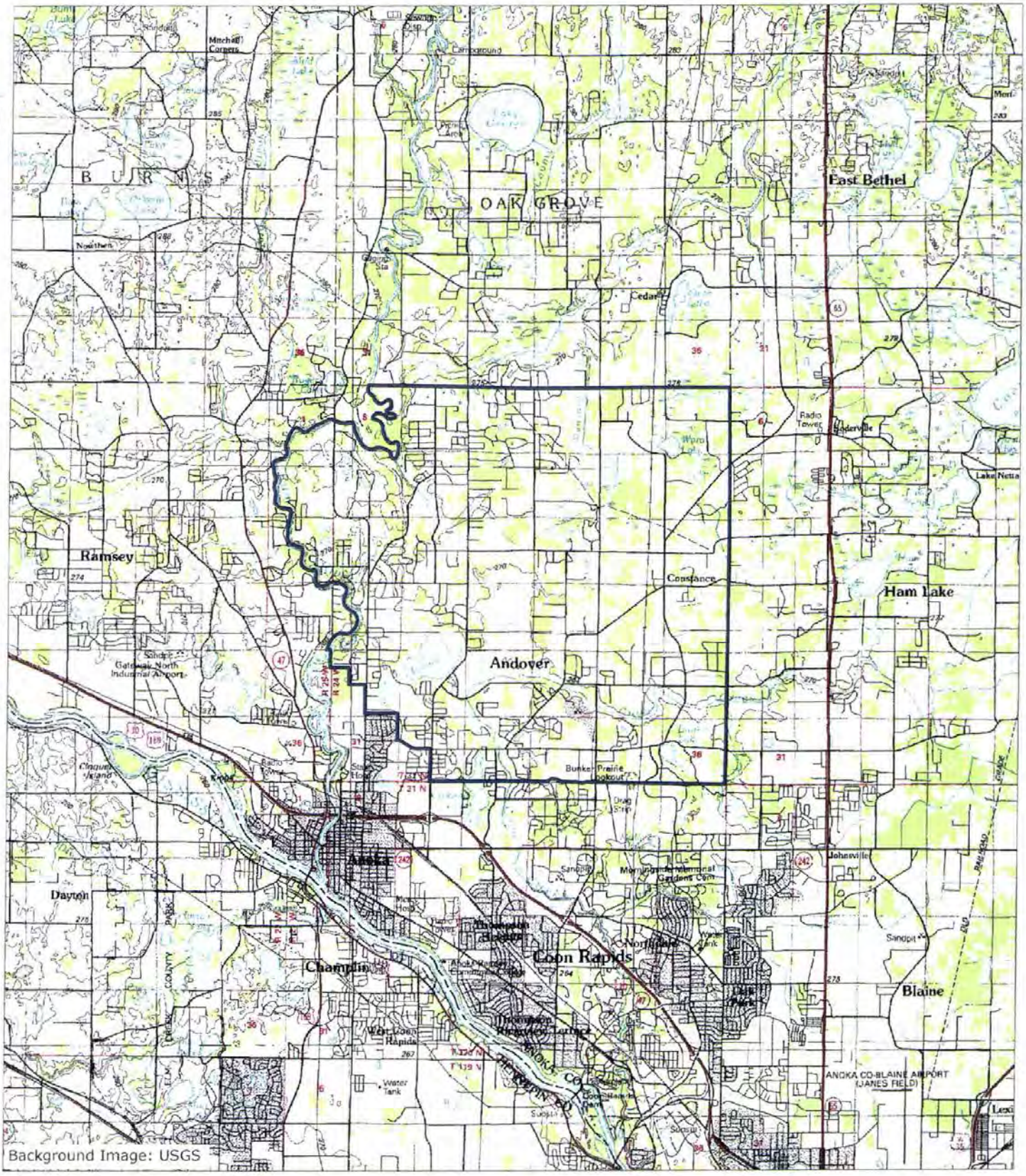
City's storm water utility fund, while occasional larger equipment purchases will require supplemental funding through bonding. Additional information related to stormwater management items is in the City's 5-year CIP in the Digital Appendix (DA12).

While the City does not currently have any specific stormwater-related capital projects planned for the next 5 years, it is possible that projects will arise periodically. Ongoing TMDL or WRAP studies, changing climate patterns, or local concerns, may require treatment or hydraulic improvements within the City. The City is committed to involving the CCWD and the LRRWMO in the development and review of its CIP as it relates to water and related resource investments. Funding these types of projects would be an additional expense not accounted for in the current operating budget, and outside funding sources would likely be necessary. Multiple agencies have funding programs aimed at aiding local government units in providing improvements to municipal systems, including the LRRWMO, CCWD, BWSR, MPCA, MnDOT, MnDNR, the Metropolitan Council, etc. Table 7.3.1 lists some of these programs.

Table 7.3.1: Potential Stormwater Funding Sources

I.D.	*Funding Source*	*Approx. App. Due Date*	*$ / Match Req'd*
7.3.1	LRRWMO	Open	Varies
7.3.2	CCWD	Open	Varies
7.3.3	BWSR – Clean Water Fund Competitive Grants	September	Varies
7.3.4	MPCA – Clean Water Partnership Grants	March	Varies
7.3.5	MPCA – Section 319 Grants	March	Varies
7.3.6	MPCA – Clean Water Legacy: Surface Water Assessment, TMDL Impl., Wastewater and Stormwater	October	Varies
7.3.7	MPCA – Clean Water Revolving Fund	March	Varies
7.3.8	MnDNR – Outdoor Recreation Program	March	$100,000 / 50%
7.3.9	MnDNR – Parks and Trails Grants	October	100%
7.3.10	MnDNR – Aquatic Invasive Species Grants	Spring/Summer	Varies
7.3.11	The Env. and Natural Resources Trust Fund (LCCMR)	June	Varies

LIST OF FIGURES



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LEGEND

ANDOVER MUNICIPAL BOUNDARY

0 2 miles

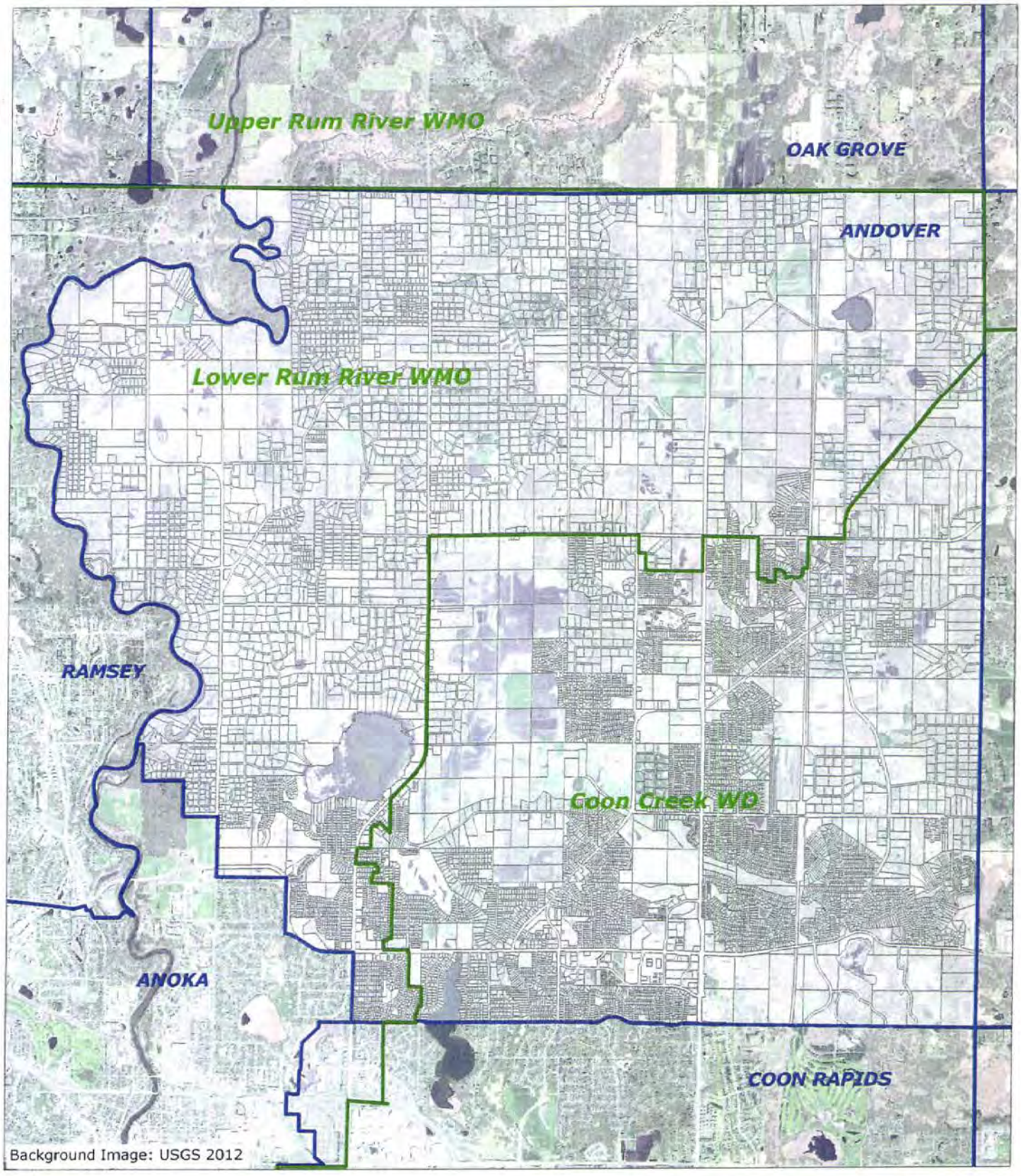
SCALE: FEET

Hydromethods, LLC
www.hydromethods.com

FIGURE 1.1.1: LOCATION MAP

Third Generation Surface Water Management Plan

Andover, MN



CITY OF ANDOVER

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SCALE: FEET

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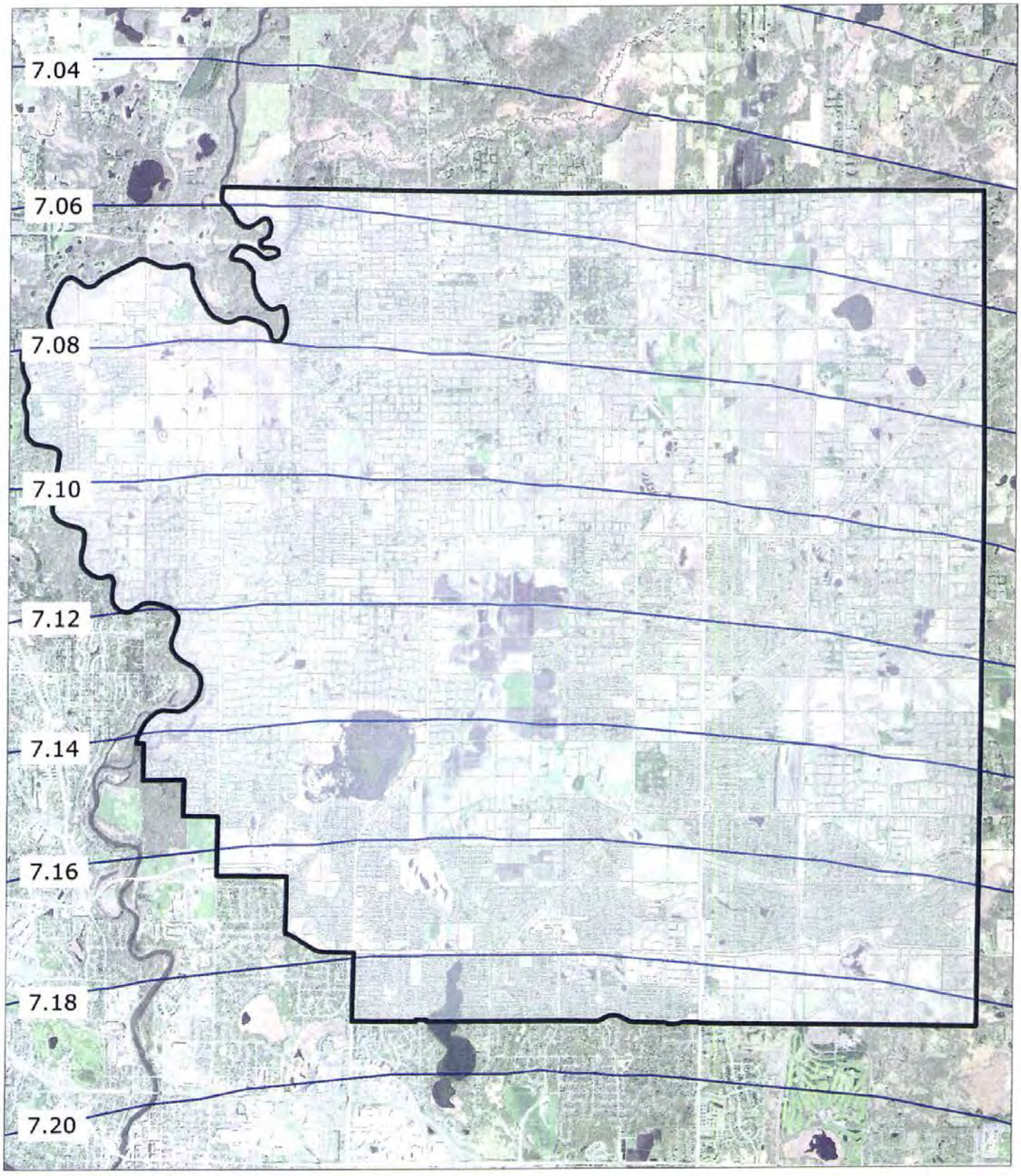
WMO BOUNDARY

MUNICIPAL BOUNDARY

FIGURE 1.3.1:
WMOS AND MUNICIPALITIES
Third Generation Surface
Water Management Plan
Andover, MN

Hydromethods, LLC
www.hydromethods.com



CITY OF ANDOVER

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LEGEND

MUNICIPAL BOUNDARY

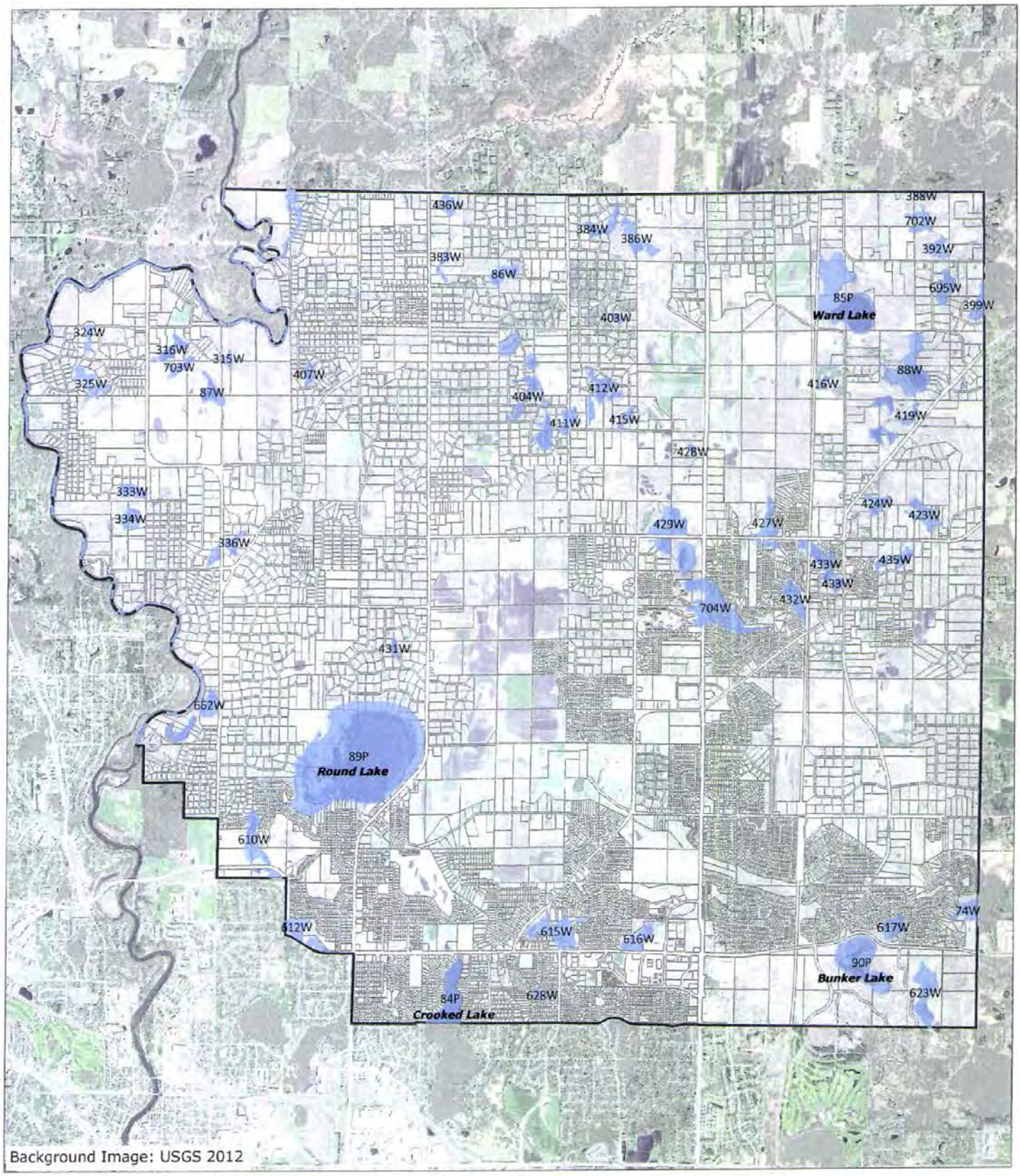
— 7.## — 100-YR 24-HR STORM ISOHYETS

0 5000

SCALE: FEET

Hydromethods, LLC
www.hydromethods.com

FIGURE 4.1.1:
100-YR 24-HR RAIN DEPTHS
Third Generation Surface
Water Management Plan
Andover, MN



CITY OF ANDOVER

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SCALE: FEET

LEGEND

MN DNR PUBLIC WATER

MUNICIPAL BOUNDARY

FIGURE 4.2.1a:
MN DNR PUBLIC WATERS

Third Generation Surface Water Management Plan

Andover, MN

Hydromethods, LLC
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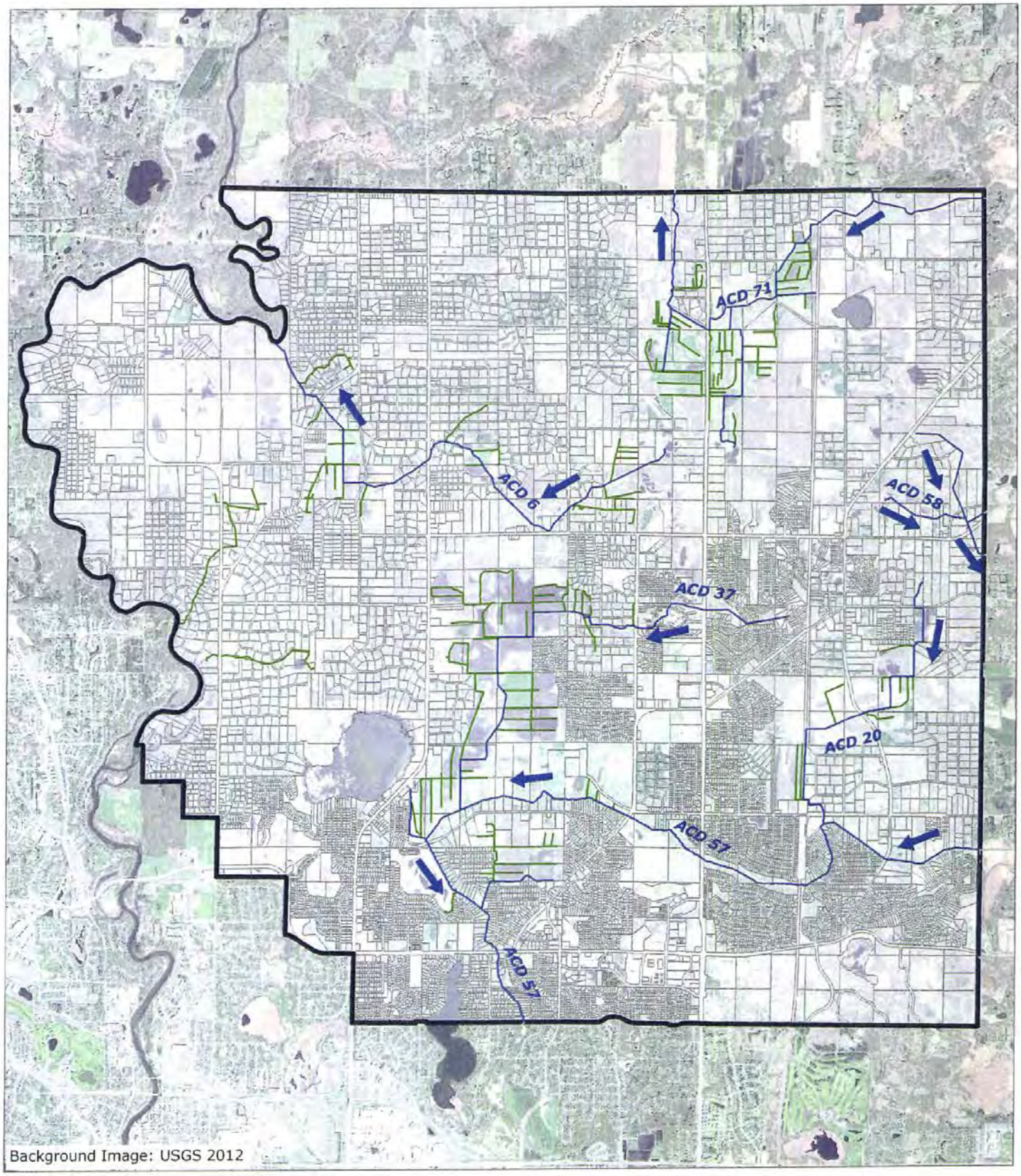

CITY OF ANDOVER

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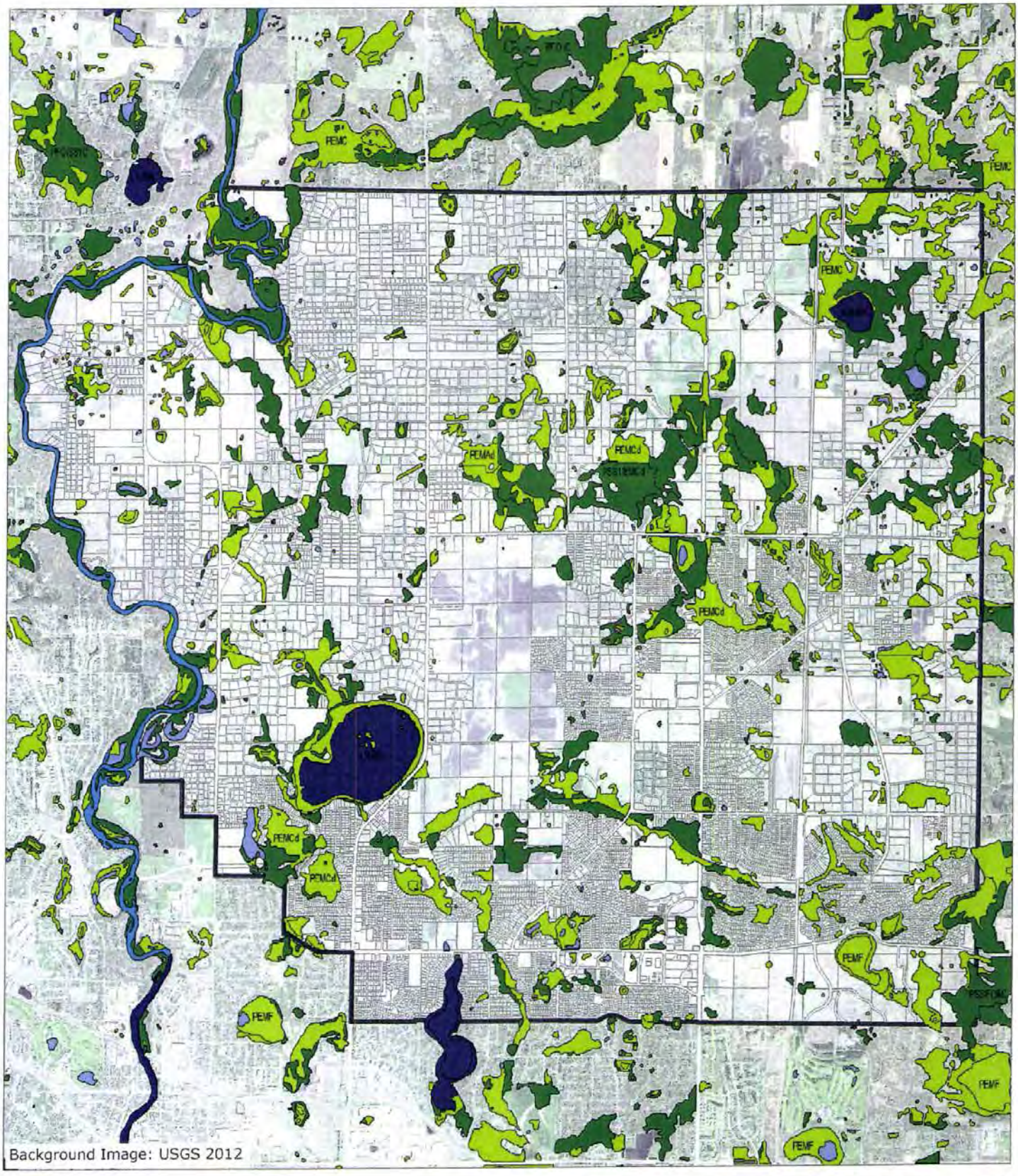
SCALE: FEET

LEGEND

- MUNICIPAL BOUNDARY
- PUBLIC DITCH
- PRIVATE DITCH
- FLOW DIRECTION

FIGURE 4.2.1b:
PUBLIC AND PRIVATE DITCHES
Third Generation Surface
Water Management Plan
Andover, MN

Hydromethods
www.hydromethods.com



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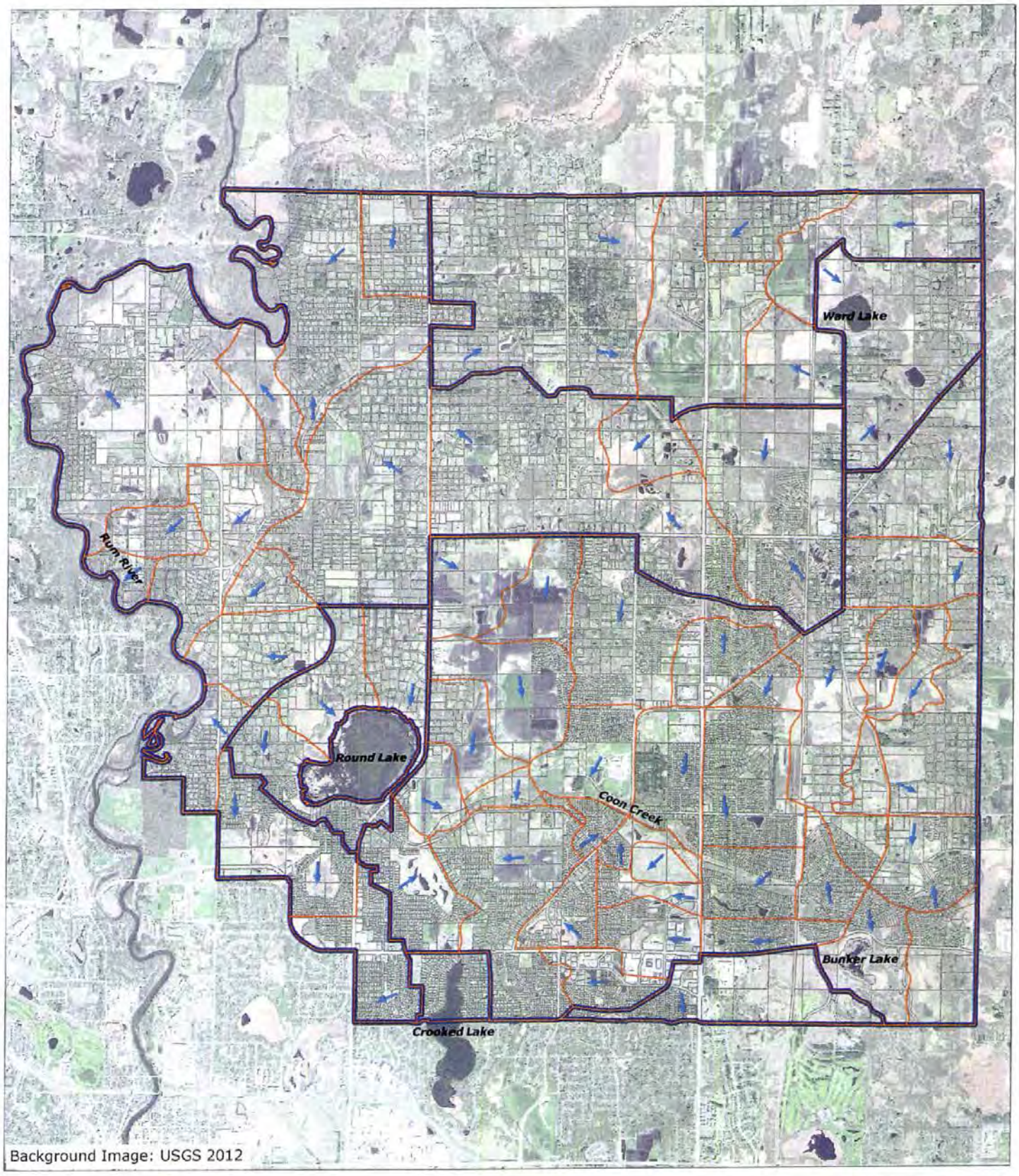
SCALE: FEET

Hydromethods, LLC
www.hydromethods.com

LEGEND

- Freshwater - Forested and Shrub Wetland
- Freshwater Emergent Wetland
- Freshwater Pond
- Riverine
- Lakes

FIGURE 4.2.2:
NWI MAP
Third Generation Surface Water Management Plan
Andover, MN



CITY OF ANDOVER

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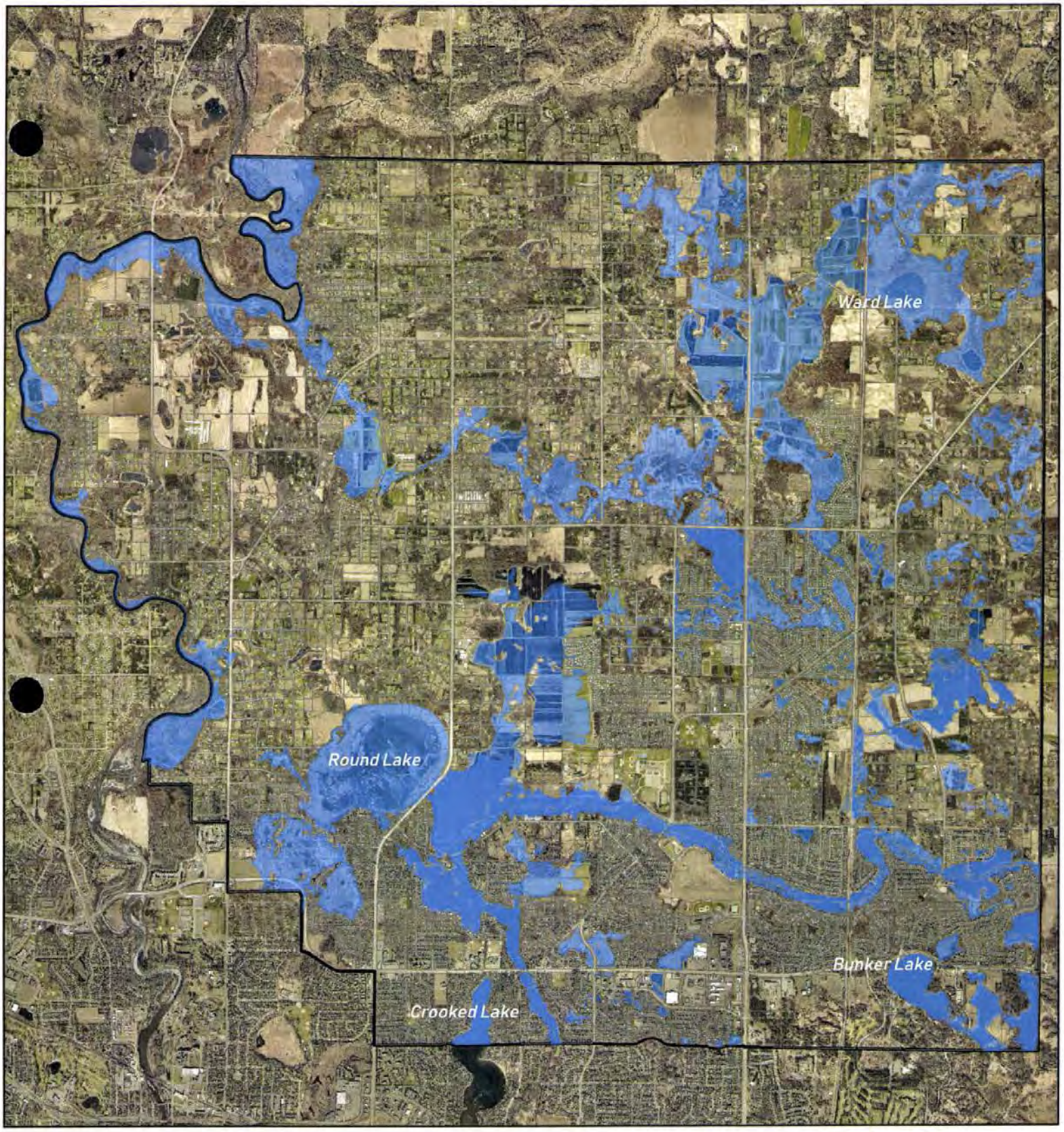
SCALE: FEET

LEGEND

- Major Watershed Boundary
- Minor Watershed Boundary
- Flow Direction

FIGURE 4.2.4:
HYDROLOGIC CHARACTERISTICS
Third Generation Surface Water Management Plan
Andover, MN

Hydromethods, LLC
www.hydromethods.com



CITY OF ANDOVER

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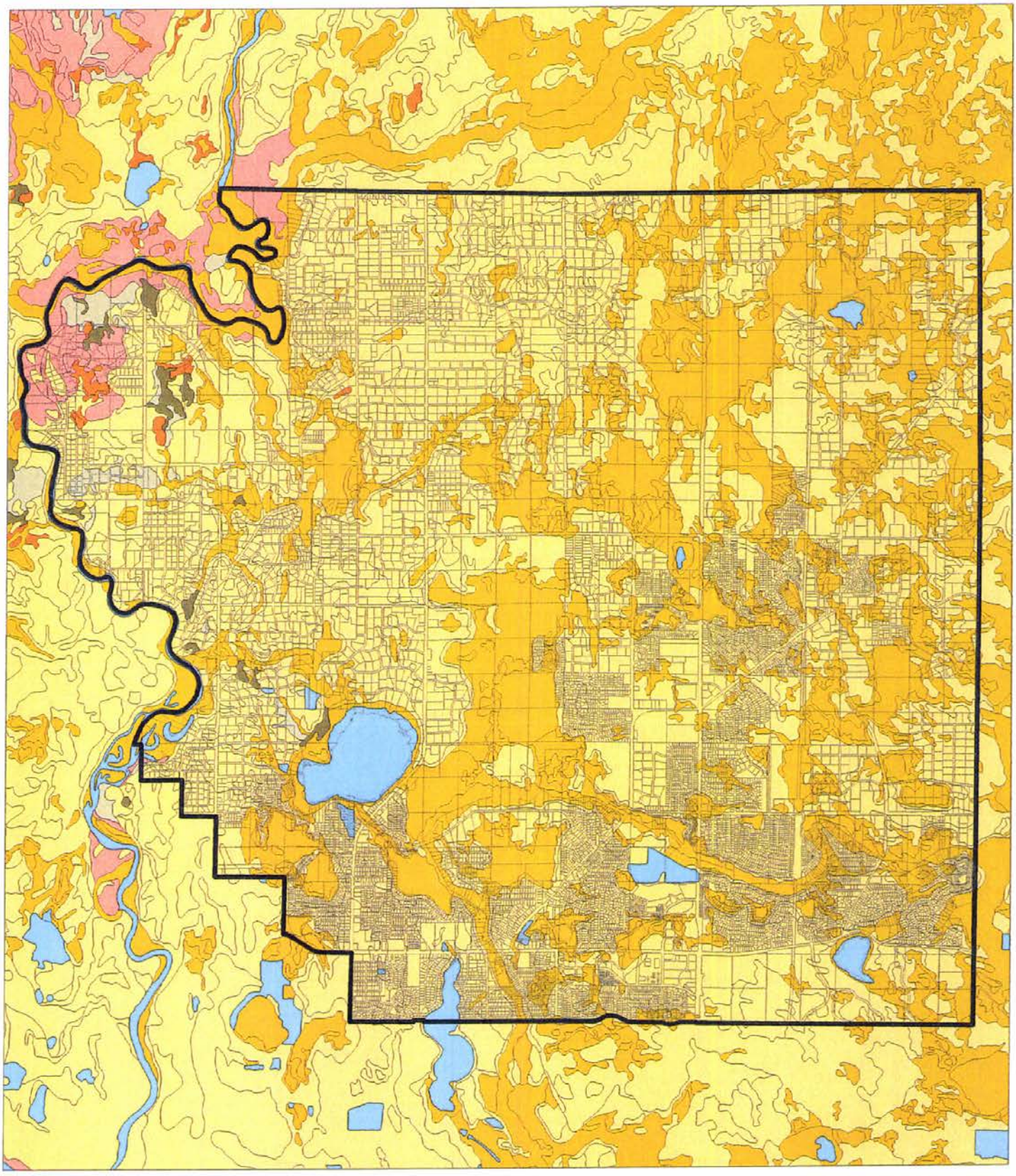
LEGEND

- Floodplain
- Parcels
- CITY LIMITS

FIGURE 4.2.8: FLOODPLAIN

Third Generation Surface Water anagement Plan
Andover, MN



CITY OF ANDOVER

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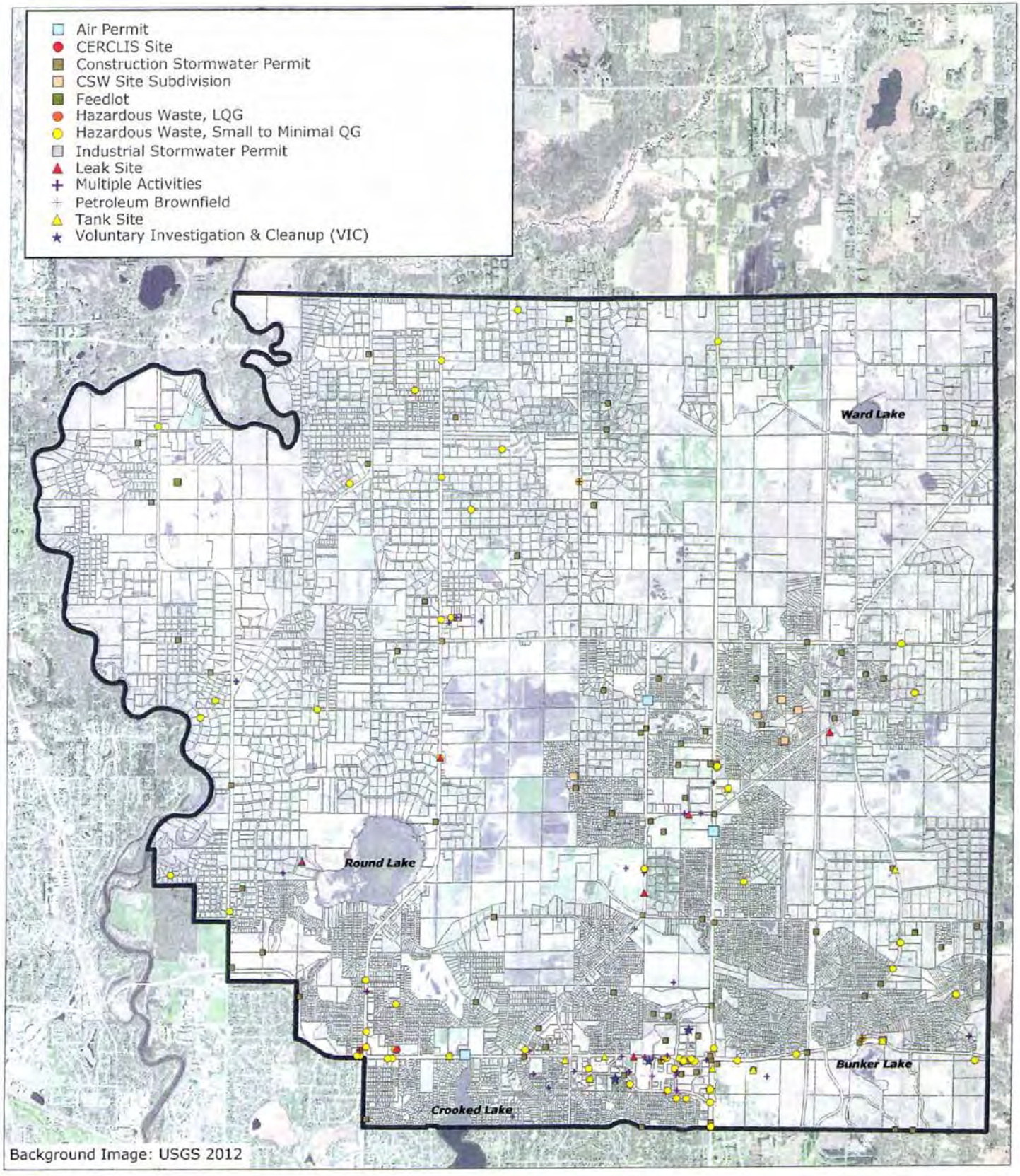
SCALE: FEET

LEGEND

- HSG A
- HSG A/D
- HSG B
- HSG B/D
- Open Water

FIGURE 4.4.1:
HYDROLOGIC SOIL GROUPS
Third Generation Surface
Water Management Plan
Andover, MN

Hydromethods, LLC
www.hydromethods.com



CITY OF ANDOVER

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MUNICIPAL BOUNDARY

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SCALE: FEET

Hydromethods, LLC
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FIGURE 4.7.1:
POTENTIAL POLLUTANT SOURCES

Third Generation Surface
Water Management Plan
Andover, MN

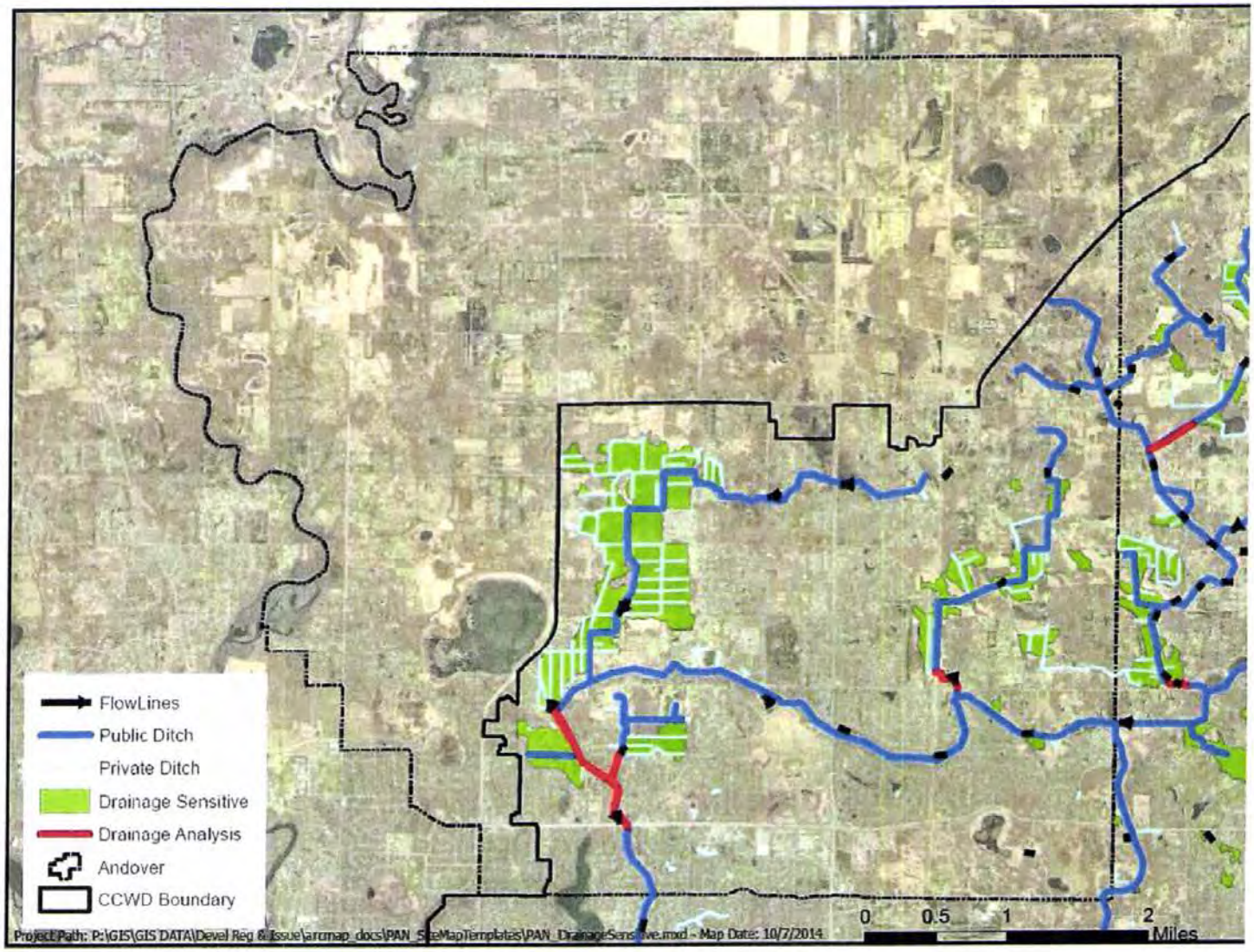


Image from CCWD

CITY OF ANDOVER

FIGURE 5.1.1:
DRAINAGE SENSITIVE USE AREAS
Third Generation Surface
Water Management Plan
Andover, MN

Hydromethods
www.hydromethods.com

APPENDICES

A. GOVERNING STATUTE AND RULE

B. CURRENT ZONING, FUTURE LAND USE, AND SEWER STAGING MAPS

C. CITY PARKS AND TRAILS MAP

D. DEVELOPER'S HANDOUT

E. MNDNR NATURAL HERITAGE INFORMATION

APPENDIX A:
GOVERNING STATUTE AND RULE

103B.235 LOCAL WATER MANAGEMENT PLANS.

Subdivision 1. **Requirement.** (a) After the watershed plan is approved and adopted, or amended, pursuant to section 103B.231, the local government units having land use planning and regulatory responsibility for territory within the watershed shall prepare or cause to be prepared a local water management plan, capital improvement program, and official controls as necessary to bring local water management into conformance with the watershed plan within the time period prescribed in the implementation program of the watershed plan and, as necessary, shall prepare or cause to be prepared amendments to the local comprehensive plan.

(b) Each town within the counties of Anoka, Carver, Dakota, Scott, and Washington authorized by general or special law to plan and regulate the use of land under sections 462.351 to 462.364 shall by resolution determine whether to prepare the local water management plan itself or to delegate all or part of the preparation of the plan to the county.

(c) Towns within counties that have adopted comprehensive plans applicable to the town must use county preparation of their plan to the maximum extent possible.

Subd. 2. **Contents.** (a) Each local plan, in the degree of detail required in the watershed plan, shall:

(1) describe existing and proposed physical environment and land use;

(2) define drainage areas and the volumes, rates, and paths of storm water runoff;

(3) identify areas and elevations for storm water storage adequate to meet performance standards established in the watershed plan;

(4) define water quality and water quality protection methods adequate to meet performance standards established in the watershed plan;

(5) identify regulated areas; and

(6) set forth an implementation program, including a description of official controls and, as appropriate, a capital improvement program.

(b) The Board of Water and Soil Resources shall adopt rules establishing minimum local plan standards and a model environmental management ordinance for use by local government units in implementing local water plans. The standards apply to plan amendments made to conform to changes in the watershed plans that are adopted under the board rules required by section 103B.231, subdivision 6.

Subd. 3. **Review.** After consideration but before adoption by the governing body, each local unit shall submit its water management plan to the watershed management organization for review for consistency with the watershed plan adopted pursuant to section 103B.231. If the county or counties having territory within the local unit have a state-approved and locally adopted groundwater plan, the local unit shall submit its plan to the county or counties for review. The county or counties have 45 days to review and comment on the plan. The organization shall approve or disapprove the local plan or parts of the plan. The organization shall have 60 days to complete its review; provided, however, that the watershed management organization shall, as part of its review, take into account the comments submitted to it by the Metropolitan Council pursuant to subdivision 3a. If the organization fails to complete its review within the prescribed period, the local plan shall be deemed approved unless an extension is agreed to by the local unit.

Subd. 3a. **Review by Metropolitan Council.** Concurrently with its submission of its local water management plan to the watershed management organization as provided in subdivision 3, each local unit of government shall submit its water management plan to the Metropolitan Council for review and comment by the council. The council shall have 45 days to review and comment upon the local plan or parts of the plan with respect to consistency with the council's comprehensive development guide for the metropolitan area. The council's 45-day review period shall run concurrently with the 60-day review period by the watershed management organization provided in subdivision 3. The Metropolitan Council shall submit its comments to the watershed management organization and shall send a copy of its comments to the local government unit. If the Metropolitan Council fails to complete its review and make comments to the watershed management organization within the 45-day period, the watershed management organization shall complete its review as provided in subdivision 3.

Subd. 4. **Adoption and implementation.** After approval of the local plan by the organization, the local government unit shall adopt and implement its plan within 120 days and shall amend its official controls accordingly within 180 days.

Subd. 5. **Amendments.** To the extent and in the manner required by the organization, all amendments to local water management plans shall be submitted to the organization for review and approval in accordance with the provisions of subdivisions 3 and 3a for the review of plans.

History: *1990 c 391 art 2 s 12; 1990 c 601 s 21; 1995 c 176 s 1-3; 1995 c 184 s 11*

CHAPTER 8410

BOARD OF WATER AND SOIL RESOURCES

LOCAL WATER MANAGEMENT

METROPOLITAN AREA LOCAL WATER MANAGEMENT

CONTENT OF WATERSHED MANAGEMENT ORGANIZATION PLANS

CONTENT OF LOCAL PLANS

METROPOLITAN AREA LOCAL WATER MANAGEMENT

8410.0010 SCOPE.

Subpart 1. **Application.** Upon adoption, parts 8410.0010 to 8410.0180 apply to the general administration of metropolitan watershed management activities and to amendments to existing plans made after January 1, 1995. If no plan has been submitted to the board by August 3, 1992, any plan thereafter submitted must be in compliance with parts 8410.0010 to 8410.0180. A watershed management organization must amend its plan consistent with parts 8410.0010 to 8410.0180 and submit amendments to the board according to its amendment schedule and amendment procedures outlined in part 8410.0140, but not later than ten years from the date of initial plan approval.

Subp. 2. **Failure to implement plans.** When the board determines that a plan is not being properly implemented under an action initiated according to part 8410.0180, and there is reason to believe that an improved plan would lead to improved water management, the board may direct the responsible authorities to develop an amended plan within a reasonable time frame. In making this determination, the board must consider items including, but not limited to:

A. when the plan was approved and adopted;

B. the status of local plan development and adoption;

C. the scope and anticipated costs to amend;

D. the availability of funds; and

E. the potential short- and long-term adverse impacts on the natural resources of the affected watershed.

Statutory Authority: *MS s 103B.101; 103B.211; 103B.231; 103B.227*

History: *17 SR 146*

Posted: *October 13, 1997*

8410.0020 DEFINITIONS.

Subpart 1. **Scope.** The definitions in this part and in Minnesota Statutes, section 103B.205, apply to parts 8410.0010 to 8410.0180.

Subp. 2. **Board.** "Board" means the Minnesota Board of Water and Soil Resources created by Minnesota Statutes, section 103B.101.

Subp. 3. **Capital improvement.** "Capital improvement" means a physical improvement that is not directed toward maintenance of an in-place system during its life expectancy.

Subp. 4. **Metropolitan Council or council.** "Metropolitan Council" or "council" means the Metropolitan Council as created by Minnesota Statutes, section 473.123.

Subp. 5. **Flooding problem.** "Flooding problem" means a flooding problem that has been identified as a problem by the watershed management organization or local unit of government.

Subp. 6. **Groundwater plan.** "Groundwater plan" means a county plan adopted under Minnesota Statutes, section 103B.255.

Subp. 7. **Local comprehensive plan.** "Local comprehensive plan" has the meaning given "comprehensive plan" in Minnesota Statutes, section 473.852, subdivision 5.

Subp. 8. **Local government unit or unit.** "Local government unit" or "unit" has the meaning given it in Minnesota Statutes, section 473.852, subdivision 7.

Subp. 9. **Metropolitan Water Management Act.** "Metropolitan water management act" has the meaning given it in Minnesota Statutes, sections 103B.201 to 103B.255.

Subp. 10. **Minor plan amendments.** "Minor plan amendments" means items such as recodification of the plan, revision of a procedure meant to streamline administration of the plan, clarification of the intent of a policy, the inclusion of additional data not requiring interpretation, or any other action that will not adversely affect a local unit of government or diminish a water management organization's ability to achieve its plan's goals or implementation program.

Subp. 11. **Minor watershed unit.** "Minor watershed unit" means each of the approximately 5,600 minor watershed units delineated on the state watershed boundaries map prepared under the requirements of Laws 1977, chapter 455, section 33, subdivision 7, paragraph (a).

Subp. 12. **Metropolitan Urban Service Area or area.** "Metropolitan Urban Service Area" or "area" has the meaning given on maps prepared by the Metropolitan Council. The latest version of the map identifying the area is incorporated by reference and is subject to periodic change. The latest version of the map identifying the area is available from the State Law Library through the Minitex interlibrary loan

system. The area is the seven-county metropolitan area that the council is committed by policy to provide regional planning for sanitary sewer, highway, transit, park, and airport facilities.

Subp. 13. **Natural surface water storage and retention systems.** "Natural surface water storage and retention systems" means public waters and wetlands as defined in Minnesota Statutes, section 103G.005, subdivisions 15 and 19.

Subp. 14. **Official controls.** "Official controls" has the meaning given it in Minnesota Statutes, section 473.852.

Subp. 15. **Plan.** "Plan" means the watershed management plan prepared by a watershed management organization or county as required by Minnesota Statutes, section 103B.231, subdivision 1.

Subp. 16. **Plan review authorities.** "Plan review authorities" means the Metropolitan Council, the Department of Health, the Department of Natural Resources, the Pollution Control Agency, the Board of Water and Soil Resources, and counties, cities, towns, and soil and water conservation districts partially or wholly within the watershed management organization as defined in Minnesota Statutes, section 103B.231, subdivisions 7, 8, and 9.

Subp. 17. **Public waters.** "Public waters" means waters of the state identified as public waters under Minnesota Statutes, section 103G.005, subdivision 15.

Subp. 18. **Seven-county metropolitan area.** "Seven-county metropolitan area" means the counties of Anoka, Carver, Dakota, Hennepin, Ramsey, Scott, and Washington, excluding the corporate boundaries of the city of New Prague.

Subp. 19. **Subwatershed unit.** "Subwatershed unit" means a hydrologic area less than the entire area under the jurisdiction of a watershed management organization.

Subp. 20. **Watershed.** "Watershed" means a drainage area with boundaries that are substantially coterminous with those of an aggregation of contiguous minor watershed units possessing similar drainage patterns and that cross the borders of two or more local government units.

Subp. 21. **Watershed district.** "Watershed district" means a district established under Minnesota Statutes, chapter 103D.

Subp. 22. **Watershed management organization or organization.** "Watershed management organization" or "organization" means: (1) a watershed district wholly within the metropolitan area; or (2) a joint powers entity established wholly or partly within the metropolitan area by special law or by agreement that performs some or all of the functions of a watershed district that has the characteristics and the authority specified under Minnesota Statutes, section 103B.211. Counties may be watershed management organizations if a joint powers watershed management organization does not perform and the responsibility for plan preparation is deferred to the counties. Lake improvement or conservation districts are not watershed management organizations.

Subp. 23. **Wetlands.** "Wetlands" means waters of the state identified as wetlands under Minnesota Statutes, section 103G.005, subdivision 19.

Subp. 24. **Wetland banking system.** "Wetland banking system" means an accounting system established by a unit of government for the purpose of tracking and managing net losses and gains to wetland values that occur as a result of development.

Statutory Authority: *MS s 103B.101; 103B.211; 103B.231; 103B.227*

History: *17 SR 146*

Posted: *October 13, 1997*

8410.0030 CONTENT OF JOINT POWERS AGREEMENTS.

Subpart 1. **Requirements.** In addition to a description of any authorities adopted under the content requirements of joint powers agreements as outlined in Minnesota Statutes, section 103B.211, subdivision 1, joint powers agreements establishing a watershed management organization must, at a minimum, contain the following items:

A. a purpose statement consistent with Minnesota Statutes, section 103B.201;

B. a complete legal description defining the boundary of the organization;

C. a requirement to adopt rules of order and procedure;

D. a process for establishing an annual budget and work plan;

E. a formula for determining each member's share of the annual operating budget;

F. a statement of how member appointees are to be compensated;

G. a procedure providing for the establishment of citizen and technical advisory committees or other means of public participation;

H. a section defining the powers and duties of the organization;

I. a section establishing the duties and terms of the officers of the organization;

J. a notification process on the location and time of meetings;

K. a section defining the voting requirements for decision making and capital improvements consistent with Minnesota Statutes, section 103B.211, subdivision 1, paragraph (c);

L. a section outlining meetings to be scheduled at least annually;

M. the process and responsibilities of the organization and its members for filling vacancies consistent with Minnesota Statutes, section 103B.227, subdivisions 1 and 2;

N. the duration of the agreement and a process for dissolution that provides for at least 90 days' notice of the intent to dissolve to the affected counties and the board; and

O. a section defining how the membership will be represented, with the total number of representatives to be at least three.

Subp. 2. **Updating.** Joint powers agreements must be updated if necessary to be in conformance with this chapter no later than July 27, 1993.

Subp. 3. **County membership.** A county may be a member of a joint powers agreement organization when the conditions described in Minnesota Statutes, section 103B.211, subdivision 3, are present.

Statutory Authority: *MS s 103B.101; 103B.211; 103B.231; 103B.227*

History: *17 SR 146*

Posted: *October 13, 1997*

8410.0040 REMOVAL OF ORGANIZATION REPRESENTATIVES.

A manager of a watershed district or a member of a joint powers board may be removed from the position by the appointing authority before term expiration for violation of a code of ethics of the watershed management organization or appointing authority or for malfeasance, nonfeasance, or misfeasance, after being provided an opportunity for hearing before the appointing authority. Managers holding the position as an elected official who are not reelected, or are serving an indefinite term at the pleasure of the appointing authority, may be removed by the appointing authority at will. A decision of the appointing authority may be appealed to the Board of Water and Soil Resources.

Statutory Authority: *MS s 103B.101; 103B.211; 103B.231; 103B.227*

History: *17 SR 146*

Posted: *October 13, 1997*

CONTENT OF WATERSHED MANAGEMENT ORGANIZATION PLANS

8410.0050 EXECUTIVE SUMMARY.

Each plan must have a section entitled "Executive Summary." The summary should outline the purpose of the watershed management organization; the membership of the organization's board of managers; the general boundaries of the organization; a brief history of the organization; a summary of the organization's goals, problems, and potential solutions; and the general content of required local plans.

Statutory Authority: *MS s 103B.101; 103B.211; 103B.231; 103B.227*

History: *17 SR 146*

Posted: *October 13, 1997*

8410.0060 LAND AND WATER RESOURCE INVENTORY.

Subpart 1. **Required.** Each plan must contain an inventory of water resource and physical factors affecting the water resources based on existing records and publications. If data publications and maps are available at a convenient central location, they may be included by reference. The plan must include a brief summary of the data and must identify where the publication can be obtained. At a minimum, the information in subparts 2 to 11 must be included in the plan. Subparts 2 and 4, item E, may be in the local plan instead of the watershed management organization plan.

Subp. 2. **Precipitation.** Each plan must include precipitation data normally used in the seven-county metropolitan area for hydrologic and hydraulic design.

Subp. 3. **General geology and topographic data.** Each organization plan shall contain a summary describing the general topographic relief, geology, aquifers, and all known groundwater and surface water connections. The summary should reference available publications and maps where data may be available in greater detail. A map defining appropriate subwatershed units within the organization must be included.

Subp. 4. **Surface water resource data.** Necessary surface water data within the watershed includes:

A. a map of the public waters and public ditch systems established under Minnesota Statutes, chapter 103D or 103E, including the location of existing dams and control structures;

B. a copy of the National Wetlands Inventory Map produced by the United States Fish and Wildlife Service and, if considered useful by the organization, a copy of the Metropolitan Mosquito Control District Mosquito Control Wetland Inventory;

C. either an inventory of the functional values of the wetlands present, a provision for a phased project to create the inventory within a given time frame, or the adoption of a specific process to identify the functional values on a case-by-case basis for the review of individual project proposals, all of which must be consistent with Minnesota Statutes, section 103B.3355;

D. a table of the major hydrologic characteristics of public waters if provided by the Department of Natural Resources in a format that can be readily incorporated in a plan;

E. maps showing the areas served by each existing stormwater system that identify existing stormwater ponds and the location of all stormwater outfalls;

F. a table summarizing available information on the 100-year flood levels and peak discharges of existing and proposed stormwater ponds and flood profile information that corresponds to the peak discharges of channelized flow passing through the watershed. The plan shall determine the need for additional data and recommend a schedule for the data. A discussion must also be provided relative to the consistency of the flood profile information developed as part of the stormwater management plan to that of any information published in a Federal Emergency Management Agency flood insurance study;

G. a general discussion of, or a map showing areas of, known flooding problems not identified as flood-prone in a published flood insurance study;

H. a listing of the existing flood insurance studies and a location of where they can be viewed;

I. a summary of water quality data and any related information, if available, from the Pollution Control Agency, the Department of Natural Resources, the Department of Transportation, the Department of Health, the Metropolitan Council, the Metropolitan Waste Control Commission, the water management organization, the soil and water conservation district, and the affected counties and cities;

J. a map or list, if available, showing the location of known existing and abandoned surface water quality and quantity monitoring sites;

K. a list of municipalities with approved shoreland ordinances and projected completion dates for those without ordinances; and

L. a table listing the amounts and locations of all surface water appropriations as permitted by the Department of Natural Resources and provided to the organization.

Subp. 5. **Groundwater resource data.** Necessary groundwater data includes any data required to be included in the organization plan by a county groundwater plan. If a county groundwater plan is not anticipated to be completed, the organization plan must include groundwater data as necessary to allow groundwater issues to be addressed.

Subp. 6. **Soil data.** Each organization plan must include a general discussion of the types of soil present, their development limitations, their infiltration characteristics, and their tendency to erode. The discussion must include a list of references where more detailed data are available.

Subp. 7. **Land use and public utility services.** Necessary land use and public utility services information is limited to information that existed at the time the plan or plan amendment was developed, including:

A. a general map of existing land uses;

B. a general map showing anticipated land uses; and

C. reference to the location of the metropolitan urban service area.

Subp. 8. **Water-based recreation areas and land ownership.** Necessary information on water-based recreation areas and land ownership includes a map or a discussion of the location of all existing and proposed local, regional, state, and federal parks, preserves, wildlife areas, recreation areas, canoe routes, and water accesses available for use by the public.

Subp. 9. **Fish and wildlife habitat.** Necessary information on fish and wildlife habitat includes:

A. a list and description of the Department of Natural Resources ecological and management classifications for lakes and streams, where available;

B. a list and description of the conclusions and recommendations of biological surveys or reconnaissance studies, where available; and

C. a description of state management plans for fish and wildlife areas, where available.

Subp. 10. **Unique features and scenic areas.** Necessary unique feature and scenic area information includes a map or a description or listing of unique features and scenic areas with relationships to water including state designated natural and scientific areas; areas containing county, state, and federal rare and endangered species; and other features such as waterfalls, springs, historic mills, and heritage elements identified by the Department of Natural Resources heritage program, to the extent it is available from the department.

Subp. 11. **Pollutant sources.** Necessary information on pollutant sources includes a map or list from appropriate agencies of:

A. known closed and open sanitary landfills, closed and operating open dumps, and hazardous waste sites identified under Minnesota Statutes, chapter 115A or 115B, and a summary of available water quality information relating to these sites; and

B. feedlots, abandoned wells as defined by the Department of Health, registered underground and aboveground storage tank sites, permitted wastewater discharges, and a summary of available water quality information relating to these sites.

If the information in this subpart is included in a county groundwater plan, the information can be excluded from the organization plan if suitable references are provided.

Statutory Authority: *MS s 103B.101; 103B.211; 103B.231; 103B.227*

History: *17 SR 146*

Posted: *October 13, 1997*

8410.0070 IMPACT ON OTHER UNITS OF GOVERNMENT.

During the development of its plan or plan amendments, each watershed management organization shall request a summary of the relevant water management policies and goals of each local, regional, and state review authority identified in Minnesota Statutes, section 103B.231, subdivisions 7, 8, and 9. The

organization shall take into consideration the goals and policies of the review authorities when drafting the organization's goals and policies. The organization's plan shall clearly outline and justify anticipated inconsistencies between its goals and policies and those of the authorities who responded if the requested information is furnished within 45 days of the organization's request.

Statutory Authority: *MS s 103B.101; 103B.211; 103B.231; 103B.227*

History: *17 SR 146*

Posted: *October 13, 1997*

8410.0080 ESTABLISHMENT OF GOALS AND POLICIES.

Subpart 1. **Plan contents.** Each plan must contain specific goal statements and corresponding policies relating to the overall purposes specified in Minnesota Statutes, section 103B.201. The goals and policies of the watershed management organization shall attempt to avoid conflict with county, regional, or state goals and policies. The goals must be outlined in sufficient detail to provide direction regarding what the policies should accomplish, provide direction to the organization's board, and allow for the success or failure of the goals and policies to be quantified. The goals and policies should recognize the fundamental relationship between water quality and land use. Development of goals and policies must, at a minimum, address the issues in subparts 2 to 9.

Subp. 2. **Water quantity.** Each plan must outline goals and policies describing how stormwater runoff will be managed. The maximum allowable peak runoff must be established for appropriate subwatersheds to the extent necessary to assure that the goals and policies of the organization will be met and address how runoff from developments creating more than one acre of new impervious surface will be managed with respect to Minnesota Statutes, section 103B.3365. The plan must describe the criteria used for defining "appropriate subwatersheds."

Subp. 3. **Water quality.** Each plan must outline specific water quality goals and policies for natural surface water storage and retention systems within the organization. Goals should be related to parameters or quantities that can be measured. The relationship of land use to water quality should be considered when developing goals and policies. The goals and policies should be developed to strive for compliance with applicable water quality standards and be suitable for the intended uses of natural surface water storage and retention systems.

Subp. 4. **Recreation and fish and wildlife.** Each plan must outline how water resource based recreational activities and wildlife interests will be protected or improved through the implementation of the plan. In consideration of these issues, the plan must determine whether there is a need to classify or prioritize individual water resources for management purposes.

Subp. 5. **Enhancement of public participation; information and education.** Each plan must outline goals and policies describing who will participate and when public participation will be encouraged. Goals and policies must at least address the creation and purposes of advisory committees and public information programs.

Subp. 6. **Public ditch systems.** If public ditch systems constructed under Minnesota Statutes, chapter 103D or 103E, are within the organization, the plan shall by policy define the organization's relationship to the ditch authority and recommend whether or not there are advantages to managing the ditch systems under the Metropolitan Water Management Act and determine whether ditch maintenance activities have the potential of adversely impacting any goal of the organization.

Subp. 7. **Groundwater.** If a county groundwater plan has not commenced at the time the plan or plan amendment is initiated, the organization shall assess the need and degree of involvement the organization has in groundwater management and establish appropriate goals and policies.

Subp. 8. **Wetlands.** Each plan must outline specific goals and policies regarding the management of wetlands within the organization and identify high priority areas for wetland preservation, restoration, and establishment. Wetland management goals and policies should address utilization, protection and preservation, and the enhancement or restoration of wetlands identified in the organization. Each plan must also evaluate the need to establish a wetland banking system.

Subp. 9. **Erosion.** Each plan must identify specific goals and policies that will control soil erosion consistent with the goals and policies outlined in this part.

Statutory Authority: *MS s 103B.101; 103B.211; 103B.231; 103B.227*

History: *17 SR 146*

Posted: *October 13, 1997*

8410.0090 ASSESSMENT OF PROBLEMS.

Each plan must contain an assessment of existing and potential water resource related problems using a combination of analysis of land and water resource data collected under part 8410.0060 and through the identification of existing or potential problems by residents or local, regional, or state agencies. During the development of the assessment, the watershed management organization shall request a brief assessment of existing problems affecting the organization from the plan review authorities, the Department of Transportation, and the Department of Agriculture based on data, plans, and other documentation in their possession. The organization should solicit comments from residents and local officials in the watershed district for information about problems that may be primarily local in nature. The organization's assessment shall include a discussion of the relationship of locally identified problems to problems identified by the plan review authorities, provided the information is received within 45 days of the organization's written request. The assessment of existing and potential problems as determined by the organization must, at a minimum, include the following topic areas:

A. specific lakes and streams with water quality problems;

B. flooding and stormwater rate control issues within and between communities;

C. impacts of water quality and quantity management practices on recreation opportunities;

D. impacts of stormwater discharges on water quality and fish and wildlife resources;

E. impact of soil erosion on water quality and quantity;

F. general impact of land use practices and, in particular, land development and wetland alteration on water quality and water quantity;

G. the adequacy of existing regulatory controls to manage or mitigate adverse impacts on public waters and wetlands;

H. the adequacy of programs to:

(1) limit soil erosion and water quality degradation;

(2) maintain the tangible and intrinsic values of natural storage and retention systems; and

(3) maintain water level control structures;

I. the adequacy of capital improvement programs to correct problems relating to:

(1) water quality;

(2) water quantity management;

(3) fish and wildlife habitat and public waters and wetland management; and

(4) recreational opportunities; and

J. future potential problems that are anticipated to occur generally within a 20-year period based on growth projections and planned urbanization identified in local and regional comprehensive plans. The assessments must include a discussion of the relationship between locally identified problems and the problems and goals identified in county, regional, state, and federal plans that are brought to the attention of the organization.

Statutory Authority: *MS s 103B.101; 103B.211; 103B.231; 103B.227*

History: *17 SR 146*

Posted: *October 13, 1997*

8410.0100 IMPLEMENTATION PROGRAM.

Subpart 1. **Plan contents.** Each plan must describe an implementation program consisting of nonstructural, structural, and programmatic solutions to the problems, issues, and goals identified under parts 8410.0080 and 8410.0090. In developing its implementation program, the requirements in subparts 2 to 7 must be followed. Each plan should clearly define the responsibility of the watershed management organization and the local units of government in carrying out the implementation program and further define the organization's role when a local unit of government is considering a variance or fails to implement its water resource management responsibilities.

Subp. 2. **Regulatory controls.** In establishing required regulatory controls, items A to E must be considered.

A. Each plan must provide for the regulation of activities in wetlands and specify respective duties of the organization and local units of government. Each plan must describe local controls and procedures regarding carrying out the local government responsibilities under the Wetland Conservation Act of 1991, Laws 1991, chapter 354, and any rules adopted under it. Each plan must also define any other controls the organization has determined to be necessary to achieve its water management goals that may be more restrictive than those required by the Wetland Conservation Act of 1991, Laws 1991, chapter 354. The description must consider, where applicable, the following topics:

(1) the relationship of the organization, state agencies, local soil and water conservation districts, and affected counties, cities, and towns with respect to authority, administration, and coordination;

(2) designated repositories for required maps or inventories of wetlands;

(3) procedures related to enforcement;

(4) a description of local wetland banking programs and their relationship to a corresponding state program; and

(5) the methods and procedures to be used in determining replacement of wetland values in mitigation proposals.

B. The organization shall specify controls or programs to reduce erosion and sedimentation to receiving waters. In rural areas, agricultural crop land erosion may be controlled by implementing zoning ordinances consistent with part 6120.3300, subpart 7, and may include other water resources outside of designated shoreland areas as considered appropriate by the organization. Organizations affected by specific state laws requiring adoption of uniform countywide erosion and sediment control standards or programs must comply with those laws. Any other organization must either adopt by reference an existing set of erosion and sediment control guidelines or best management practices published by a county, a soil and water conservation district, the board, or the Pollution Control Agency, or establish comparable erosion and sedimentation guidelines of its own for the purpose of administering erosion controls.

C. Each plan must specify controls that require all appropriate building permits, driveway permits, and grading permits to contain enforceable provisions to protect soil from erosion during and after construction, including sites for which approved erosion control plans are in place.

D. Each plan must identify member local units of government that have failed to adopt and administer a Department of Natural Resources approved shoreland and floodplain ordinance where mandated by state law. If the plan notes that flood damage has occurred outside of mapped floodplains or a potential for flooding exists adjacent to stormwater facilities, the plan shall require the local unit of government to determine if additional local controls are necessary to address the situation.

E. If a plan notes the existence of certain land uses that could adversely affect the organization's ability to achieve its water quality goals, and these uses cannot be properly managed or regulated with existing controls, the uses constitute a public nuisance according to Minnesota Statutes, section 609.74. In those cases, the plan must provide for the adoption of local controls to define and abate the nuisances. For the purpose of this chapter, public nuisances may include any action, failure to act, or land use practice that would impair water quality if allowed to continue.

Subp. 3. **Stormwater and drainage design performance standards.** Each plan must contain minimum standards and provide for appropriate controls for the design of new stormwater conveyance, ponding, and treatment systems consistent with the overall goals of the organization plan and consistent with Minnesota Statutes, section 103B.3365, subdivision 4. Included will be performance standards that provide for:

A. the establishment of target in-lake nutrient concentrations and corresponding pollutant loadings for sediment and nutrients;

B. the establishment of maximum permissible runoff rates for selected design storms based on considerations such as existing and future flood levels and expected increases in runoff volume with respect to impacts on downstream channels and adjacent development;

C. the establishment of standards to reduce the impacts of flooding on natural resources and personal and real property;

D. the establishment of design criteria for stormwater outlet structures to address floatable pollutants and to provide for access for maintenance and repair;

E. pond design methodology for nutrient entrapment consistent with the subwatershed goals; and

F. compliance with pollutant loading for specific subwatersheds consistent with local, regional, and statewide plans in consideration of Pollution Control Agency water quality standards.

Subp. 4. **Information program.** Each plan must provide for the publishing of at least one written communication per year identifying the representatives on the organization's board, current advisory committee members, how to contract the organization, its role in local water management, the goals and policies of the organization, when public meetings are held, how the organization is financed, where the plan can be viewed, and other information relative to the implementation of the plan. The communication may be accomplished through the publication of a newsletter, publication of all or a portion of an annual report, an article or news release submitted to a local newspaper widely distributed in the member communities, an attachment to a sewer or water bill, or other similar media format that annually reaches the general population.

Subp. 5. **Data collection programs.**

A. Each plan must establish water quality and quantity monitoring programs that are capable of producing accurate data to the extent necessary to determine whether the water quality and quantity goals of the organization are being achieved. The programs shall, at a minimum, include the location of sampling, the frequency of sampling, the proposed parameters to be measured, and the requirement of periodic analysis of the data.

B. Each plan should encourage all units of government collecting water quality and quantity management data to annually submit the data consistent with state compatibility guidelines to the organization and other appropriate state agencies for entry into public access data bases.

Subp. 6. **Management programs.** Each organization plan must assess or require local plans to assess the need for periodic maintenance of public works, facilities, and natural conveyance systems and specify any new programs or revisions to existing programs needed to accomplish its goals and objectives. Each plan must further identify which units of government or private parties are responsible for maintenance. Each plan must, at a minimum, assess or require local plans to assess:

A. the need and frequency for sweeping of public and private streets and parking lots;

B. the need and frequency for inspecting stormwater outfalls, sumps, and ponds;

C. the adequacy of maintenance programs for stormwater facilities and water level control structures owned by both organization members and nonmembers;

D. the condition of public ditches constructed under Minnesota Statutes, chapter 103D or 103E, if the organization has jurisdiction over these systems;

E. the need to establish a water body management classification system to provide for water quality and quantity management based on a hierarchical basis;

F. the need to establish local spill containment clean-up plans; and

G. the need for other management programs as considered necessary.

All proposed management programs establishing a classification system for the management of water bodies shall be consistent with chapter 7050. If organization classifications are inconsistent, the organization shall petition the Pollution Control Agency to revise the classifications in chapter 7050.

Subp. 7. **Potential structural solutions to problems.**

A. Each plan that documents existing water management problems that cannot be resolved by preventative actions shall investigate the feasibility of implementing structural solutions that would remediate or resolve each problem.

B. For each structural solution proposed, each plan shall provide a cost estimate and a recommendation as to how it should be funded.

C. Each potential structural solution identified under this part shall be assigned priorities. In assigning priorities, consideration shall be given to regional and state plans in conjunction with the organization's goals, policies, and problems identified in parts 8410.0080 and 8410.0090.

Statutory Authority: *MS s 103B.101; 103B.211; 103B.231; 103B.227*

History: *17 SR 146*

Posted: *October 13, 1997*

8410.0110 IMPACT ON LOCAL GOVERNMENT.

Subpart 1. **Existing local controls.** Each plan shall review the impact of local controls and programs required by the plans according to part 8410.0100. This review shall include concerns expressed by counties, cities, and townships with respect to their administrative and financial capabilities to adopt and enforce the controls and programs in addition to a table that generally describes the status of local controls and programs of affected counties, cities, and townships with respect to that required by the plan.

Subp. 2. **Financial impact on local government.** Each plan shall contain an analysis of the financial impact of implementation of the proposed regulatory controls and programs identified under part 8410.0100. The analysis shall include, at a minimum, an estimate of the costs associated with the plan's implementation and anticipated sources of revenue.

Subp. 3. **Adoption by reference.** All or part of a watershed management organization plan may be adopted by reference by a local unit of government for all or part of its local plan to the degree specified in the approved organization plan.

Statutory Authority: *MS s 103B.101; 103B.211; 103B.231; 103B.227*

History: *17 SR 146*

Posted: *October 13, 1997*

8410.0120 IMPLEMENTATION PRIORITIES.

Each plan must prioritize the plan implementation components to make the best use of available local funding; to prevent future water management problems from occurring to the maximum extent practical; and to ensure that regional, county, state, and federal grant funding is targeted properly.

Statutory Authority: *MS s 103B.101; 103B.211; 103B.231; 103B.227*

History: *17 SR 146*

Posted: *October 13, 1997*

8410.0130 IMPLEMENTATION COMPONENTS.

Subpart 1. **Controls.** Each organization plan must provide for the adoption of necessary regulatory controls, stormwater design standards, education programs, data collection programs, and maintenance programs that the plan identifies under part 8410.0100.

Subp. 2. **Responsibilities.** Each organization plan must clearly distinguish the responsibilities of the watershed management organization versus the responsibilities of affected counties, cities, and townships with respect to each implementation program element established according to part 8410.0100.

Subp. 3. **Schedule.** Each organization plan must include a schedule for implementation by the organization, joint powers agreement members, and affected local units of government. All plan controls and programs to be implemented by the organization must be in effect within one year of plan adoption. All local plan controls and programs must be developed and in effect within two years of adoption of the last organization plan in the local unit of government.

Subp. 4. **Capital improvement program.** Each organization plan shall include a capital improvement program that identifies specific capital improvements necessary to implement the water resource management goals and policies of the organization.

Subp. 5. **Enforcement.** Each organization plan must identify the procedure to be followed to enforce violations of the controls of the organization as well as those of the local unit of government.

Subp. 6. **Administration process.** Each organization plan must specify the administrative process and timelines for the submittal, review, and approval of local plans and variances by the organization.

Statutory Authority: *MS s 103B.101; 103B.211; 103B.231; 103B.227*

History: *17 SR 146*

Posted: *October 13, 1997*

8410.0140 PLAN CONTENTS; AMENDMENTS.

Subpart 1. **Amendment section.** Each plan must contain a section entitled "Amendments to Plan" containing the year the plan extends to and establishing the process by which interim amendments may be made and who may initiate the amendments.

Subp. 2. **General amendment procedure.** All amendments to a plan must adhere to the review process provided in Minnesota Statutes, section 103B.231, subdivision 11, except when the proposed amendments constitute minor amendments and:

A. the watershed management organization has held a public meeting to explain the amendments and published a legal notice of the meeting twice, at least seven days and 14 days before the date of the meeting;

B. the organization has sent copies of the amendments to the affected local units of government, the Metropolitan Council, and the state review agencies for review and comment; and

C. the board has either agreed that the amendments are minor or failed to act within 45 days of receipt of the amendments.

Subp. 3. **Minor amendments to capital improvements.** Amendments to an approved plan's capital improvement program may be considered to be minor plan amendments if the following conditions are met:

A. the original plan set forth the capital improvements but not to the degree needed to meet the definition of "capital improvement program" as provided in Minnesota Statutes, section 103B.205, subdivision 3; and

B. the affected county or counties have approved the capital improvement in its revised, more detailed form.

Subp. 4. **Form of amendments.** Unless the entire document is reprinted, all amendments adopted by the organization must be printed in the form of replacement pages for the plan, each page of which must:

A. on draft amendments being considered, show deleted text as stricken and new text as underlined;

B. be renumbered as appropriate; and

C. include the effective date of the amendment.

Subp. 5. **Distribution of amendments.** Each organization must maintain a distribution list of agencies and individuals who have received a copy of the plan and shall distribute copies of amendments within 30 days of adoption. All organizations should consider sending drafts of proposal amendments to all plan review authorities to seek their comments before establishing a hearing date or commencing the formal review process.

Statutory Authority: *MS s 103B.101; 103B.211; 103B.231; 103B.227*

History: *17 SR 146*

Posted: *October 13, 1997*

8410.0150 ANNUAL REPORTING REQUIREMENTS.

Subpart 1. **Requirement for annual financial, activity, and audit reports.** Within 120 days of the end of the watershed management organization's fiscal year, each organization shall submit to the board a financial report, an activity report, and an audit report for the preceding fiscal year if it has expended or accrued funds during this time. These reports may be combined into a single document. The audit report for the preceding fiscal year must be prepared by a certified public accountant or the state auditor and forwarded to the state auditor's office within 120 days of the end of the fiscal year.

Subp. 2. **Content of annual financial report.** The annual financial report must include the following information:

A. the approved budget;

B. a reporting of revenues;

C. a reporting of expenditures; and

D. a financial audit report or section that includes a balance sheet, a classification of revenues and expenditures, an analysis of changes in final balances, and any additional statements considered necessary for full financial disclosure.

Subp. 3. **Content of annual activity report.** The annual activity report must include the following information:

A. a list of the organization's board members, advisory committee members, and board member vacancies at the end of the reporting year, including the names of designated officers and members and information on how members can be contacted, and indicating the governmental organization that each board member represents for joint powers organizations and the county that each member is appointed by for watershed districts;

B. a list of organization employees and consultants, including mailing addresses and telephone numbers;

C. an assessment of the previous year's annual work plan that indicates whether the stated goals and objectives were achieved and, if they were not achieved, indicates why they could not be achieved;

D. a projected work plan for the next year indicating the desired goals and objectives;

E. a summary of the permits or variances issued or denied under ordinances or rules required by the organization or local plan and any enforcement actions initiated by either the organization or its local units of government;

F. a summary of water quality monitoring data collected by the organization or its local units of government;

G. an evaluation of the status of local plan adoption and implementation based on a review of the local unit of governments' activities by the organization during the past year;

H. a copy of the written communication required by part 8410.0100, subpart 3;

I. the organization's activities related to the biennial solicitations for interest proposals for legal, professional, or technical consultant services under Minnesota Statutes, section 103B.227, subdivision 5;

J. an assessment of changes in fund balances, including a description of the costs of each program element with respect to the overall annual budget; and

K. the status of any locally adopted wetland banking program.

Subp. 4. **Procedure for state audit.** The board shall use the procedure described in items A to D to determine whether to order a state financial or performance audit of an organization.

A. Before the board will consider ordering a state audit, a written complaint must be filed with the board's executive director requesting the board to order a state audit. The complaint must state as specifically as possible the grounds for requesting a state audit. Valid grounds for requesting a state audit include the mishandling or misuse of public funds or the documented failure to implement an approved plan.

B. The executive director shall determine whether there is a basis for a complaint before reporting the complaint to the board. The executive director shall ensure that the affected organization is notified of the complaint and given an opportunity to respond to the allegations before determining whether there is a basis for the complaint.

C. If the executive director determines there is a basis for the complaint, the complaint shall be reported to the board. The affected organization shall be given an opportunity to appear before the board at the time the complaint is reported to it and respond to the allegations in the complaint. The complainant shall also be given an opportunity to appear.

D. After having the complaint reported to it, and after providing an opportunity for the organization and the complainant to be heard by it, the board shall decide whether to order a state financial or performance audit of the organization.

Statutory Authority: *MS s 103B.101; 103B.211; 103B.231; 103B.227*

History: *17 SR 146*

Posted: *October 13, 1997*

CONTENT OF LOCAL PLANS

8410.0160 GENERAL STRUCTURE.

Each local plan must, at a minimum, meet the requirements for local plans in Minnesota Statutes, section 103B.235, except as provided by the watershed management organization plan under part 8410.0110, subpart 3. Each local plan must include sections containing a table of contents; purpose; water resource related agreements; executive summary; land and water resource inventory; establishment of goals and policies; relation of goals and policies to local, regional, state, and federal plans, goals, and programs; assessment of problems; corrective actions; financial considerations; implementation priorities; amendment procedures; implementation program; and an appendix. Each community should consider including its local plan as a chapter of its local comprehensive plan. Each local plan shall be adopted within two years of the board's approval of the last organization plan that affects local units of government.

Statutory Authority: *MS s 103B.101; 103B.211; 103B.231; 103B.227*

History: *17 SR 146*

Posted: *October 13, 1997*

8410.0170 STRUCTURE.

Subpart 1. **Purpose.** Each local plan must have a section entitled "Purpose" outlining the purposes of the water management programs required by Minnesota Statutes, sections 103B.205 to 103B.255.

Subp. 2. **Water resource management related agreements.** Appropriate water resource management related agreements that have been entered into by the local community must be outlined, including joint powers agreements related to water management that the local community may be party to between itself and watershed management organizations, adjoining communities, or private parties. Available information concerning these agreements in general conformance with the content of joint powers agreements for organizations as outlined in part 8410.0030 must be included.

Subp. 3. **Executive summary.** Each plan shall have a section entitled "Executive Summary" that generally summarizes the content of the local plan in a manner similar to that required for organization plans under part 8410.0050.

Subp. 4. **Land and water resource inventory.** Each local plan must contain a composite land and water resource inventory containing all relevant data from organization plans affecting it consistent with the data required by part 8410.0060.

Subp. 5. **Establishment of policies and goals.** Each local plan must state specific goals and corresponding policies related to the purpose of these plans, be consistent with the policies and goals of the organization plans within the city or township, and address the relation of the local plan to the regional, state, and federal goals and programs outlined in part 8410.0070.

Subp. 6. **Assessment of problems.** Each plan must contain a summary assessment of existing or potential water resource related problems, including those identified in organization plans that affect the community. The problem assessment must be completed for only those areas within the corporate limits of the community and meet the same content requirements as those outlined for organization plans under part 8410.0080, subparts 1 and 2.

Subp. 7. **Corrective actions.** Each local plan shall describe nonstructural, programmatic, and structural solutions to the problems identified in subpart 6. The mandatory actions for organization plans outlined in part 8410.0100, subparts 1 to 6, shall be considered except that actions must be limited to those that can be implemented at a local level. All corrective actions must be consistent with the organization plans having jurisdiction in the municipality or township.

Subp. 8. **Financial considerations.** Each local plan must contain an analysis of the financial impact of implementation of the proposed regulatory controls and programs identified under subpart 7. The analysis must include, at a minimum, the following items:

A. the estimated cost of adoption and enforcement of local controls and standards for the local municipality;

B. the estimated annual cost of implementation of other specified programs to each local municipality;

C. a discussion of local ability to fund adoption of and enforcement of local controls and standards, implementation of other specified programs, and capital improvements, including:

(1) levy limit constraints;

(2) effect on other city funding needs;

(3) establishment of watershed management taxing districts;

(4) creation of stormwater utilities; and

(5) monetary impact against homes or farmsteads in affected community;

D. the impact on the local municipality of local implementation of each capital improvement project component if ad valorem financing is used; and

E. a summary of grant funding that would likely be available to fund water management projects and programs.

Subp. 9. **Implementation priorities.** Each local plan must prioritize implementation components to make the best use of available local funding and prevent future water management problems from occurring to the maximum practical extent. Local plans must prioritize organization plan implementation components

in line with organization priorities as outlined under part 8410.0120 only for implementation components that must be facilitated by the local municipality or township.

Subp. 10. **Implementation program.** Each local plan must outline required implementation components that apply at a local level. These components shall be consistent with the required plan components outlined for organization plans under part 8410.0130. Official local controls must be enacted within six months of adoption of the local plan.

Subp. 11. **Amendment procedures.** Each local plan must contain a section entitled "Amendments to Plan" containing the year the plan extends to and establishes the process by which amendments may be made. The amendment procedure shall conform with the plan amendment procedure outlined in the organization plans that affect the community. Local plan amendments must be forwarded to each organization affected by the local plan amendment for review and approval before adoption.

Subp. 12. **Submittal and review.** After consideration and before adoption, the local plan shall be submitted to all affected organizations for review according to Minnesota Statutes, section 103B.235. Each local unit of government must also notify affected organizations within 30 days of adoption and implementation of the plan, including the adoption of necessary official controls.

Statutory Authority: *MS s 103B.101; 103B.211; 103B.231; 103B.227*

History: *17 SR 146*

Posted: *October 13, 1997*

8410.0180 DETERMINATIONS OF FAILURE TO IMPLEMENT.

Subpart 1. **Applicability.** This part applies when a plan is not being implemented for a watershed either because no watershed management organization exists, because the organization has not adopted an approved plan, or because the approved plan is not being carried out.

Subp. 2. **Establishing cause.** Before the board's involvement in determinations of whether a plan is being properly implemented, the board shall first establish just cause for the determination by review of a written complaint from an aggrieved party or through conclusions arrived at by board staff under the review of an organization's annual report. A complaint or appeal made by an aggrieved party under Minnesota Statutes, section 103B.231, subdivision 13, must be made in writing to the executive director of the board and must summarize the issues at dispute and the efforts the party made to resolve the problem.

Subp. 3. **Board staff responsibilities.**

A. Board staff may investigate issues relating to alleged failure to implement plans primarily by response from written complaint from an aggrieved party or by review of the organization's annual report. Within 30 days of receiving a written complaint, board staff are required to initiate a preliminary investigation of the facts as they appear based on personal observation, review of all relevant documents, and discussions with involved parties. The results of this preliminary investigation shall be reviewed with the executive director, and the board's legal counsel if appropriate, before preparation of a report. The report shall ascertain whether a failure to implement exists, define the exact nature of the failure to implement, and recommend a course of action.

B. On completion of a report regarding a complaint or review of an annual report, the staff shall send a copy of its report by certified mail to the organization members of record to set a time and place for a meeting agreeable to all parties to informally discuss the contents of the report if a conflict exists. The

complainant and any other aggrieved or affected party shall also be sent a copy of the report by certified mail and shall be invited to attend any meeting held to discuss the report.

C. The affected organization shall be allowed 30 days to hold a public meeting to develop a formal course of action if the joint powers agreement requires that process. Any formal response shall be sent by certified mail to the board and any aggrieved or affected party within 15 days of the meeting.

D. The affected organization and any aggrieved or affected party may not appeal to the board's dispute resolution committee established under Minnesota Statutes, section 103B.101, subdivision 10, to hear and resolve disputes over plan implementation until after the meeting has been held according to item B.

E. Based on information discovered at the meeting held according to item B, or receipt of the formal response received from the organization according to item C, board staff shall report to the board at a regular meeting as to the status of the dispute. If the board needs to take further action to resolve the dispute, board staff shall recommend the appropriate course of action, consulting with the board's legal counsel as appropriate.

Subp. 4. **Board responsibilities.**

A. On receipt of the board staff's report and recommendations, the board is required to do any or all of the following:

(1) nothing further if the staff's investigation finds that the subject plan is being properly implemented, provided the board concurs;

(2) advise board staff to conduct additional fact finding it considers necessary and report back to the board accordingly;

(3) order the dispute resolution committee to convene to attempt to negotiate the matter and to advise the board further; or

(4) issue findings of fact and conclusions of its investigation advising the affected organizations, county, or counties of the documented failure to implement the subject plan and advise the appropriate unit of government of its responsibility to implement the plan under Minnesota Statutes, section 103B.231, subdivision 3, paragraph (b), within a prescribed period of time.

B. On issuance of its findings under subpart 3, item A, the board shall notify the appropriate counties to proceed as required by Minnesota Statutes, section 103B.231, subdivision 3, paragraph (b) or (c), as applicable. If a county fails to act after it is notified, the board shall notify state agencies that they may initiate their prerogatives under Minnesota Statutes, section 103B.231, subdivision 3, paragraph (g).

C. The board's dispute resolution committee has the following duties and responsibilities with respect to disputes relating to failure to implement a plan:

(1) convene and hear appeals from both aggrieved parties and organizations not satisfied with the findings and recommendations of the board's staff report presented at the meeting required by subpart 2; and

(2) convene at the pleasure of the board as prescribed by item A to attempt to negotiate and settle disputes over determinations relating to implementation of plans and to further advise the board.

Statutory Authority: *MS s 103B.101; 103B.211; 103B.231; 103B.227*

History: *17 SR 146*

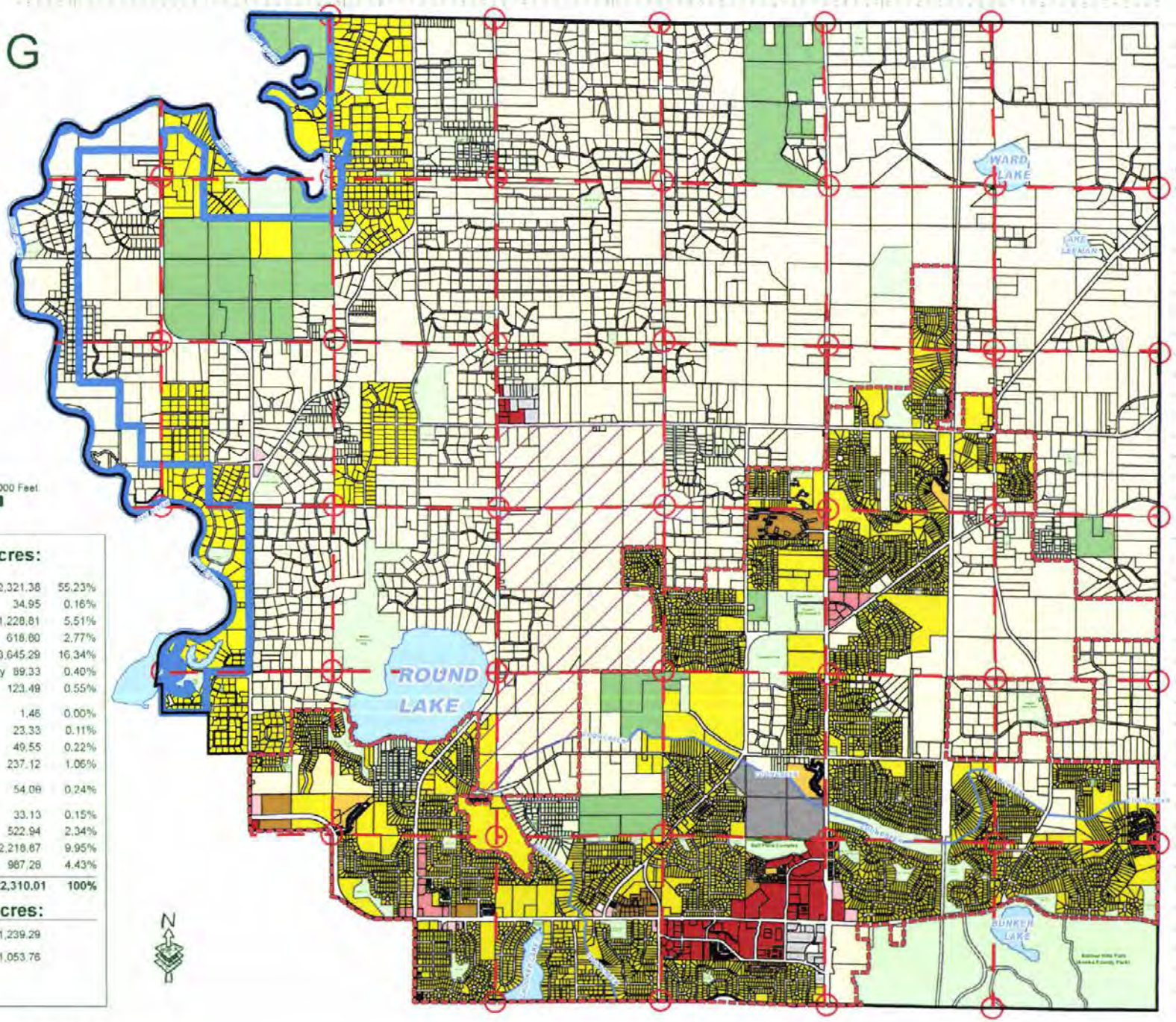
Posted: *October 13, 1997*

APPENDIX B:
CURRENT ZONING, FUTURE LAND USE, AND SEWER STAGING MAPS

CITY OF ANDOVER
Incorporated 1974

ELEMENTS | INDIAN TRIBES | FLOWERS | BIRDS | TREES

ZONING MAP



The information represented on this map displays the contents of the City of Andover Official Zoning Map. The Zoning Map is only a graphical depiction of the Zoning Districts. The Zoning Ordinance should be referenced for specific question concerning the various Zoning designations.

Zoning designations are subject to change. For questions or comments please contact the City of Andover.

City of Andover - Planning Department
1685 Crosstown Blvd. NW
Andover, MN 55304
(763) 755-5100

Map Date: June 2018
PC: 154,796

3,000 1,500 0 3,000 Feet

Zoning Designations:	Acres:	
Residential:		
R-1 - Single Family-Rural	12,321.38	55.23%
R-1A - Manufactured Housing	34.95	0.16%
R-2 - Single Family-Estate	1,228.81	5.51%
R-3 - Single Family-Suburban	618.80	2.77%
R-4 - Single Family-Urban	3,645.29	16.34%
M-1 - Multiple Dwelling Medium Density	89.33	0.40%
M-2 - Multiple Dwelling	123.49	0.55%
Commercial:		
LB - Limited Business	1.46	0.00%
NB - Neighborhood Business	23.33	0.11%
SC - Shopping Center	49.55	0.22%
GB - General Business	237.12	1.06%
Industrial:		
I - Industrial	54.09	0.24%
Other:		
GR - General Recreation	33.13	0.15%
Water	522.94	2.34%
Right-of-Way	2,218.67	9.95%
Agricultural Preserve	987.28	4.43%
Total	**22,310.01**	**100%**

Overlay Features:	Acres:
Park Area	1,239.29
Scenic River Way	1,053.76
MUSA	
Section Lines	

Document Path: H:\Gisdata\Planning\Projects\zoning_8.5x11.mxd

CITY OF ANDOVER
Incorporated 1974

Comprehensive Plan Figure 2.4
FUTURE LAND USE MAP

The information represented on this map displays the contents of the City of Andover Proposed Land Use Map. This map will replace Figure 2.4 Existing Land Use Map when the 2008 Comprehensive Plan is adopted. This map is a graphic depiction. The Planning Office should be referenced for specific questions concerning the content of the map. Land use designations are subject to change. For questions or comments please contact the City of Andover

City of Andover - Planning Department 1685 Crosstown Blvd. NW Andover, MN 55304 (763) 755-5100

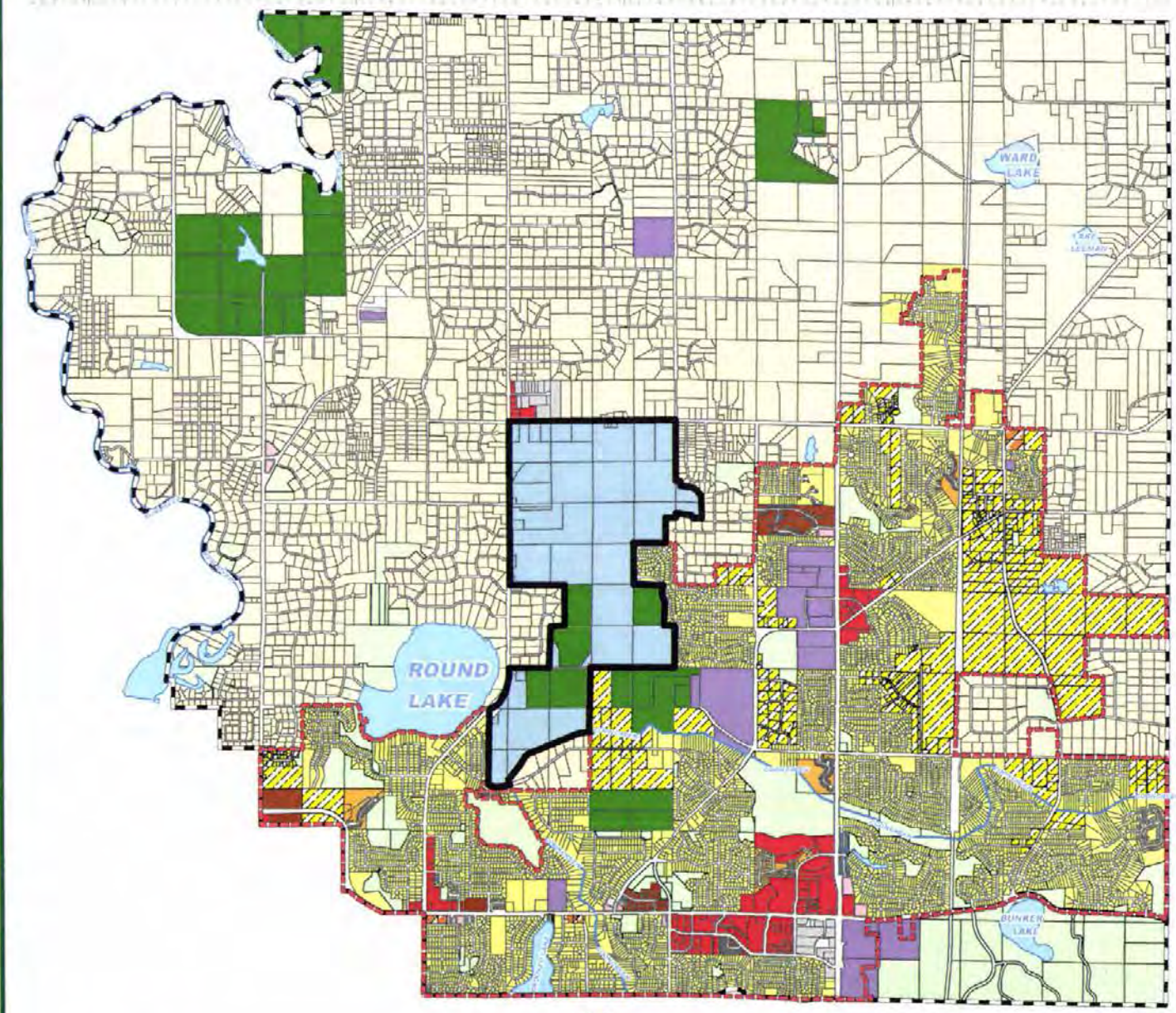
Map Date: June 2018

LEGEND

Land Use	Acres	% of Total
RR - Rural Residential	10,847.22	48.6%
URL - Urban Residential Low	3,069.79	13.75%
URM - Urban Residential Medium	75.259	.33%
URH - Urban Residential High	111.869	.50%
TR - Transitional Residential	1417.2	6.35%
LC - Limited Commercial	1.461	.007%
LC/MD - Limited Commercial/Medium Density	7.942	.04%
NC - Neighborhood Commercial	27.467	.12%
GC - General Commercial	330.557	1.15%
TC - Transitional Commercial	16.591	.07%
LI - Light Industrial	75.516	.44%
P - Public	468.54	2.1%
RRR - Rural Reserve Residential	970.404	4.35%
OS - Open Space	1,357.6	6.09%
AG - Agricultural	934.2	4.19%
Water	468.63	2.1%
Right of Way	2,162.29	9.69%
MUSA Boundary		
City Limits	22,312.39	100%

Gross Residential Density Range by Land Use

Land Use	Density Range
RRR - Rural Reserve Residential	1 unit per 10 acres with developable land reserved for future urban development
RR - Rural Residential	0.0 to 0.4 units per acre
URL - Urban Residential Low	1.75 to 3.6 units per acre PUD maximum density is 4 units per acre
URM - Urban Residential Medium	3.6 to 8 units per acre PUD maximum density is 8 units per acre
URH - Urban Residential High	8 to 12 units per acre PUD maximum density is 14.4 units per acre

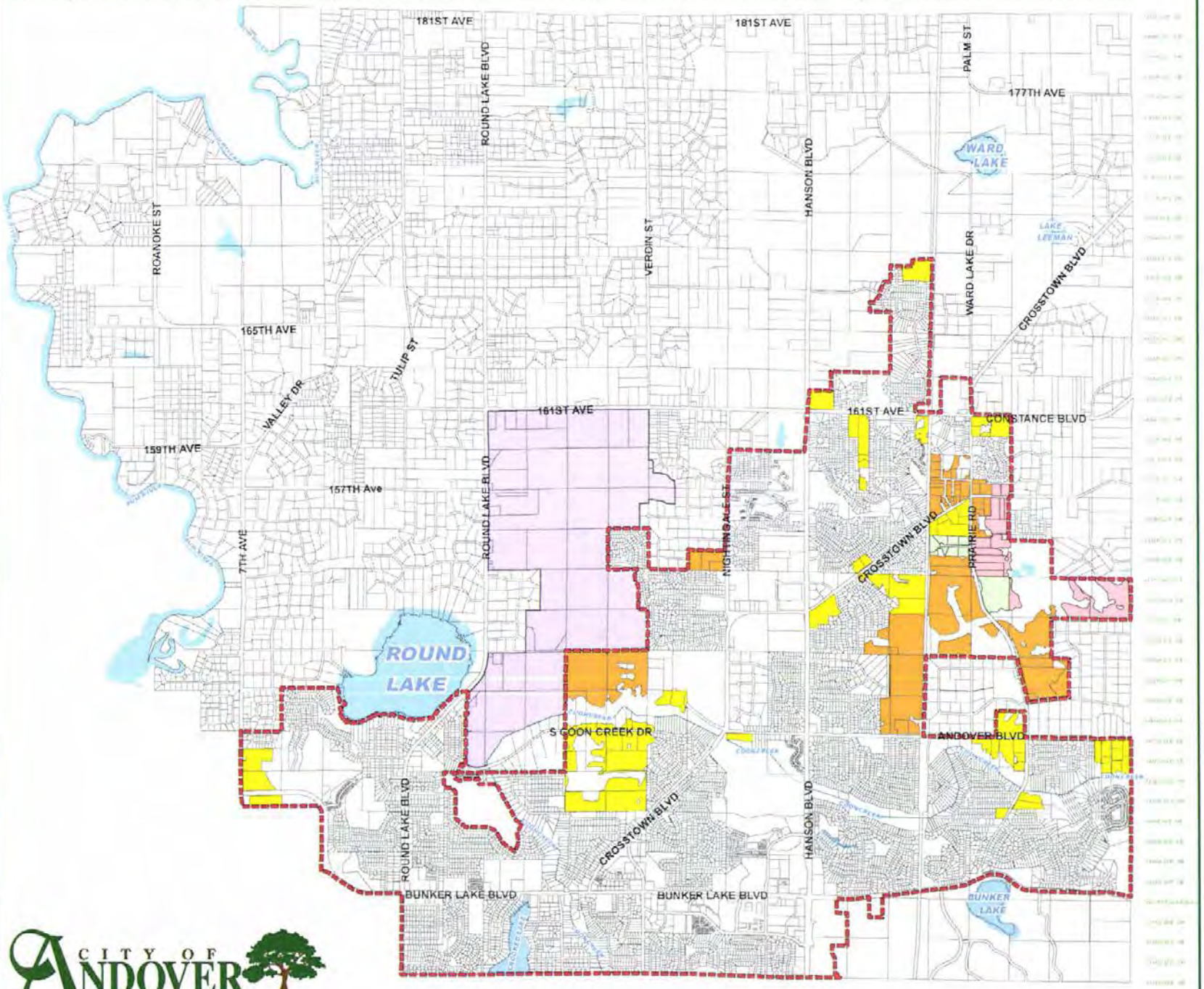


Map Sources:
City of Andover Engineering Department
City of Andover GIS
Anoka County GIS Office
Anoka Couny Assessor's Office

Map Update Date:
6/26/2018

0 2,500 5,000 10,000 Feet
0 0.25 0.5 1 1.5 2 Miles
1 inch = 5,096 feet 1:61,153

ELEMENTS | [illegible] TRIBES | FLOWERS | [illegible] | TREES



CITY OF ANDOVER

Document Path: H:\Gisdata\Planning\Projects\MUSA_Figure_4_4.mxd

CITY OF ANDOVER
Incorporated 1974

Sewer Staging Plan

Figure 4.4

The Sewer Staging Plan divides undeveloped land within the Municipal Urban Service Area into five year growth stages based primarily on the proximity of municipal sewer and water. The growth stages are intended to provide a reasonable estimate of urban growth to the year 2040.

City of Andover - Planning Department
1685 Crosstown Blvd. NW Andover, MN 55304
(763) 755-5100

Map Date: May 2018

LEGEND

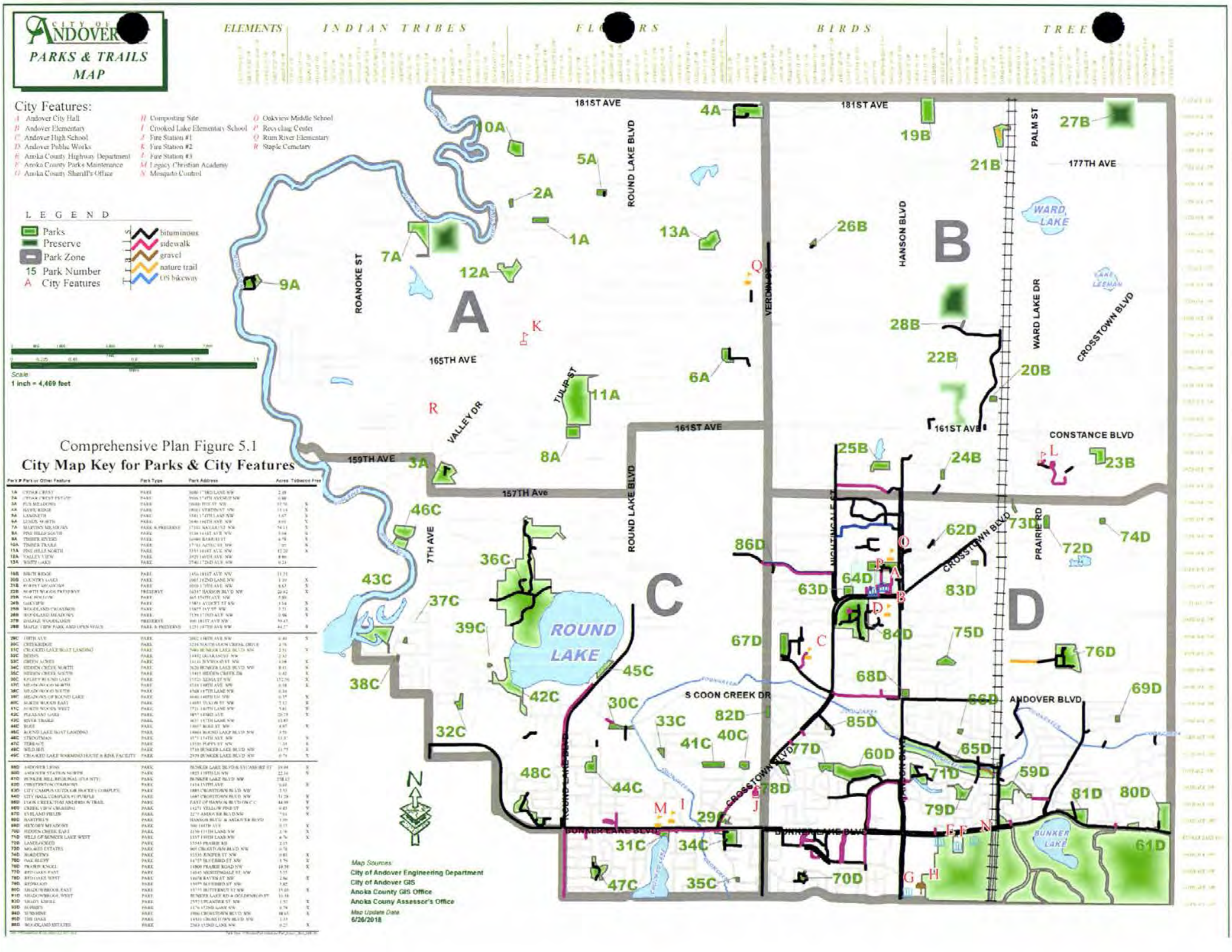
- MUSA Boundary
- 2018-2025
- 2025-2030
- 2030-2035
- 2035-2040
- Rural Reserve

N

0 2,500 5,000
Feet

0 0.25 0.5 1 1.5
Miles

APPENDIX C:
CITY PARKS AND TRAILS MAP


CITY OF ANDOVER
PARKS & TRAILS MAP
ELEMENTS
INDIAN TRIBES
FLO[redacted]RS
BIRDS
TREE[redacted]
City Features:
A Andover City Hall
B Andover Elementary
C Andover High School
D Andover Public Works
E Anoka County Highway Department
F Anoka County Parks Maintenance
G Anoka County Sheriff's Office
H Composting Site
I Crooked Lake Elementary School
J Fire Station #1
K Fire Station #2
L Fire Station #3
M Legacy Christian Academy
N Mosquito Control
O Oakview Middle School
P Recycling Center
Q Rum River Elementary
R Staple Cemetery
LEGEND
Parks
Preserve
Park Zone
15 Park Number
A City Features
bituminous
sidewalk
gravel
nature trail
US bikeway
Scale:
1 inch = 4,469 feet
Comprehensive Plan Figure 5.1
City Map Key for Parks & City Features
Park # Park or Other Feature
Park Type
Park Address
Acres
Tobacco Free
181ST AVE
177TH AVE
165TH AVE
161ST AVE
159TH AVE
157TH Ave
ROUND LAKE BLVD
ROANOKE ST
VALLEY DR
TULIP ST
VERDIN ST
HANSON BLVD
PALM ST
WARD LAKE DR
CROSSTOWN BLVD
CONSTANCE BLVD
PRAIRIE RD
NIGHTINGALE ST
ANDOVER BLVD
S COON CREEK DR
BUNKER LAKE BLVD
7TH AVE
WARD LAKE
LAKE LEEMAN
ROUND LAKE
BUNKER LAKE
A
B
C
D
1A 2A 3A 4A 5A 6A 7A 8A 9A 10A 11A 12A 13A
19B 20B 21B 22B 23B 24B 25B 26B 27B 28B
29C 30C 31C 32C 33C 34C 35C 36C 37C 38C 39C 40C 41C 42C 43C 44C 45C 46C 47C 48C
59D 60D 61D 62D 63D 64D 65D 66D 67D 68D 69D 70D 71D 72D 73D 74D 75D 76D 77D 78D 79D 80D 81D 82D 83D 84D 85D 86D
N
Map Sources:
City of Andover Engineering Department
City of Andover GIS
Anoka County GIS Office
Anoka County Assessor's Office
Map Update Date
6/26/2018

APPENDIX D:
DEVELOPER'S HANDOUT

CITY OF ANDOVER
SURFACE WATER MANAGEMENT PLAN
DRAINAGE PLAN REVIEW

DEVELOPER'S REQUIREMENTS

As part of the Andover's Third Generation Surface Water Management Plan (2015), the City has developed a number of policies to address storm water management. Developers are responsible for reviewing Watershed Management Organization or Watershed District permitting requirements and meeting design requirements as necessary.

Water Quantity Design Standards

ITEM	DESCRIPTION	Water Quantity
	Stormwater leaving a site must be routed to a public drainage system. Where there is a catch basin/low point in the street, an emergency overflow must be provided at an elevation no more than 6 inches above the curb in that location.	
	Activities such as placement of structures, fill, or other activities that will increase the flood stage of the 100-year or regional event are prohibited.	
	A hydrologic/hydraulic model must be submitted with all development plans. All hydrologic studies will be based on standard hydrologic criteria and ultimate or anticipated development of the entire tributary drainage area. The SCS unit hydrograph method is preferred; however, other methods are permitted.	
	Improvements to a structure must be above the regulatory, 100-year flood elevation. If the improvements are more than 50% of the current value of the structure, the entire structure must be brought into compliance with the current floodplain regulatory requirements.	
	Drainage calculations for rate and volume control must be submitted in accordance with CCWD or LRRWMO requirements, and approved as part of any development applications prior to the issuance of any building or grading permit. The post-development runoff rates from the site may not exceed predevelopment rates per requirements from the CCWD or LRRWMO.	
	Within Drainage Sensitive Use Areas (Figure 5.1.1; also see CCWD Watershed Management Plan for locations and additional information), rate control calculations showing that the post-development 100-year peak flow rate shall not exceed predevelopment 25-year peak flow rate (by subwatershed) shall be submitted. A Drainage Sensitive Use Area is defined as all those land uses that depend on subsurface drainage (i.e. local draining of the soil profile) for their continuation. For Non-Drainage Sensitive Use Areas, the post-development 100-year peak flow rate shall not exceed the predevelopment 100-year peak flow rate.	

	Design storm events shall be defined using the Soil Conservation Service (SCS) Type-II distributions, with rainfall amounts taken directly from the NOAA Atlas 14 website. The web site address is: http://hdsc.nws.noaa.gov/hdsc/pfds/pfds_map_cont.html?bkmrk=mn. The map navigation features can be used to zoom in and locate the particular site of interest. Double-clicking on a particular location allows the user to see rainfall values for that location. Rainfall amounts are provided for a wide range of recurrence intervals and durations, including the 1-year, 2-year, 10-year, 25-year, and 100-year, 24-hour storms. To determine the rainfall amount for the back-to-back 100-year, 24-hour storms, the rainfall amount for the 100-year 24-hour storm shall be doubled, and a duration of 48 hours shall be used. Runoff depth for the 100-year, 10-day snowmelt shall be 7.2 inches assuming frozen soil conditions. The 100-year, 10-day runoff event shall be 8.5 inches.	
	Major storm water facilities (i.e., ponds, pond outlet systems, and major conveyance systems) will be designed using a 100-year event.	
	All minor drainage systems and local storm water collection systems analyses and design will be based on a 10-year event unless otherwise specified.	
	For all storm water facilities (ponds, wetlands, storm water treatment ponds, ditches, etc.), design will include access for maintenance of the outlet structure and to the facility in general. Access will be a minimum 20' wide drainage and utility easement at a slope of 10:1 or flatter.	
	Culvert crossings or storm sewer systems in County or State right-of-way may have a design frequency that differs from the 10-year. Each agency shall be contacted to determine the appropriate design frequency.	
	The design of storm water facilities shall consider and identify location(s) of overflow(s) that prevent damage to adjacent properties from extreme water levels.	
	Available storage volume of landlocked areas shall be established by estimating the water surface elevation resulting from a 100-year, 10-day snowmelt runoff event, 100-year, 10-day runoff event, or back-to-back 100-year, 24-hour events, whichever is greater. The starting elevation of the water body prior to the event shall be either the existing Ordinary High Water Level (OHWL) as established by the MnDNR, or the elevation of hydric soils or highest anticipated water level, as determined by a geotechnical engineer.	
	Emergency overflows or outlets to drainage systems shall be provided to any landlocked area if the available storm water storage capacity is inadequate to prevent flooding of residences and if the available downstream conveyance system capacity is adequate to accept additional flow.	

For volume control, the City requires developers to infiltrate storm water runoff in areas where the risk to groundwater is minimal, the land use is compatible, and soil is conducive to infiltration. For projects that use infiltration, the following policies apply:

a. Pretreatment of storm water in accordance with the Minnesota Stormwater Manual will be required prior to discharge to an infiltration basin.
b. The infiltration basin will be sized to infiltrate 1 inch of runoff from the new impervious surface area in 48 hours.
c. Absent any better information, minimum infiltration rates of the soil shall be computed based on the current Minnesota Stormwater Manual guidelines. Watershed requirements for verification of infiltration rates must be followed where applicable. The following table of infiltration rates per soil type is reproduced from the Manual:

Hydrologic Soil Group	Infiltration Rate (in/hr)	Soil textures	Corresponding Unified Soil Classification
A	1.63	gravel sandy gravel silty gravels	GW - well-graded gravels, sandy gravels GP - gap-graded or uniform gravels, sandy gravels GM - silty gravels, silty sandy gravels SW - well-graded gravelly sands
	0.8	sand loamy sand sandy loam	SP - gap-graded or uniform sands, gravelly sands
B	0.45		SM - silty sands, silty gravelly sands
	0.3	loam, silt loam	MH - micaceous silts, diatomaceous silts, volcanic ash
C	0.2	sandy clay loam	ML - silts, very fine sands, silty or clayey fine sands
D	0.06	clay loam silty clay loam sandy clay silty clay clay	GC - clayey gravels, clayey sandy gravels SC - clayey sands, clayey gravelly sands CL - low plasticity clays, sandy or silty clays OL - organic silts and clays of low plasticity CH - highly plastic clays and sandy clays OH - organic silts and clays of high plasticity

The City will not maintain private infiltration areas on private property (e.g., homeowner raingardens). Private infiltration areas will be maintained through the Homeowners Association or landowner agreements and must be recorded with the property. A plan that includes procedures for maintenance and funding must be submitted prior to approval of private infiltration basins.

A review and permit from the Coon Creek Watershed District or Lower Rum River Watershed Management Organization may be required in conformance with the Watershed District or Watershed Management Organization standards. *(City)*

	The City requires the use of any combination of BMPs, with consideration given to Green Infrastructure techniques and practices, necessary to meet the following conditions on the site of a construction activity to the Maximum Extent Practicable: • For new development projects – **no net increase from pre-project conditions (on an annual average basis) of stormwater discharge volume**, unless precluded by the stormwater management limitations identified in the City's MS4 Permit. • For redevelopment projects – **a net reduction from pre-project conditions (on an annual average basis) of stormwater discharge volume**, unless precluded by the stormwater management limitations identified in the City's MS4 Permit.	
	The City prohibits the use of infiltration techniques to achieve the conditions for post-construction stormwater management in the Permit when the infiltration structural stormwater BMP will receive discharges from, or be constructed in areas: • Where industrial facilities are not authorized to infiltrate industrial stormwater. • Where vehicle fueling and maintenance occur. • With less than three feet of separation distance from the bottom of the infiltration system to the elevation of the seasonally saturated soils or top of bedrock. • Where high levels of contaminants in soil or groundwater will be mobilized by the infiltrating stormwater. The City restricts the use of infiltration techniques to achieve the conditions for post-construction stormwater management in the Permit, 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: • With predominately Hydrologic Soil Group D (clay, muck, peat, etc.) soils. • Within a Drinking Water Supply Management Area (DWMSA), which is the area surrounding a public water supply well that contains the wellhead protection area. • Where soil infiltration rates are more than 8.3 inches per hour.	
	Long-term maintenance of structural stormwater BMPs: For structural stormwater BMPs within the City and connected to the City's drainage system, the following maintenance provisions shall apply. a. The City may conduct inspections of structural stormwater BMPs, perform necessary maintenance, and assess associated costs when the City determines that the owner and/or operator of that structural stormwater BMP has not conducted maintenance. b. When ownership of a structural stormwater BMP is transferred to another party, the City shall maintain the right to ensure maintenance responsibility for the BMP. 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.	

Low Floor Elevation Standards

ITEM	DESCRIPTION	Low Floor Elevation
	Where a structure is located adjacent to a non-landlocked basin, the following standards apply in determining allowable low floor elevations: ***Definitions:*** ○ Non-landlocked basin: basin with positive outlet provided at NWL. ○ HWL (High Water Level): The 100-year elevation for a non-landlocked basin. ○ NWL (Normal Water Level): The basin outlet elevation, regardless of whether or not the basin is expected to drain dry or have standing water below the outlet. ○ HAWL (Highest Anticipated Water Level): Geotechnical engineer's professional opinion on the highest elevation the groundwater can be expected to reach. a. Low Floor Elevations: • For walkout lots: Min. of 2' above HWL or 3' above HAWL, whichever is greater. • For full basement / lookout lots: Preferred option is to achieve 2' above HWL or 3' above HAWL, whichever is greater. Low floor elevation must be a minimum of 2' above the defined NWL or 3' above the HAWL, whichever is greater. If low floor elevation is not at least 2' above the HWL, apply Darcy's Law to ensure that stage increase in the basin will not impact the low floor elevation. (see below)** b. Low Opening Elevations: • Defined as the bottom sill elevation of the lowest window on a lookout or full basement lot. For walkout lots, low floor elevation = low opening elevation. • Minimum of 2' above the HWL or 3' above the HAWL, whichever is greater. • If a window well is poured integrally with the foundation, the low opening elevation can be defined as the top of the window well. c. EOF (Emergency Overflow): An emergency overflow must be provided at the 100-year HWL elevation for all non-landlocked basins. This can be provided with an overflow grate on top of an outlet control structure (OCS) or via overland flow. d. Outlet Pipe Diameter: If the emergency overflow (EOF) is the grate on an Outlet Control Structure (OCS), then the outlet pipe from the OCS must be at least 15" in diameter AND be at least one pipe size greater than the inlet pipe into the OCS.	
**	In situations where the developer proposes to have the low floor elevation less than 2' above the HWL of an adjacent basin (only applies to full basement or lookout lots), Darcy's Law calculations shall be provided to show that the stage/discharge in the adjacent basin does not impact the low floor elevation of the structure. It will be necessary to include consideration for tail water conditions in the hydrology model for the downstream discharge point for the stormwater runoff from said basin (wetland, Rum River, County Ditch, Coon Creek, etc). Darcy's Law cannot be applied to a landlocked basin nor can it be used to construct a low floor lower than the 3' above the HAWL threshold.	

ITEM	DESCRIPTION	Low Floor Elevation
	Where a structure is located adjacent to a landlocked basin, the following standards apply in determining allowable low floor elevations: ***Definitions:*** o Landlocked basin: basin with no outlet provided below the design HWL. o HWL (High Water Level): The elevation from 2-100 Year storm events back to back, the 100-year runoff event, or the 100-year, 10-day snowmelt event, whichever is greater. o HAWL (Highest Anticipated Water Level): Geotechnical engineer's professional opinion on the highest elevation the groundwater can be expected to reach. a. Low Floor Elevation: For all lots, regardless of building type, the low floor elevation must be a minimum of 2' above the HWL, or 3' above the HAWL, whichever is greater. Darcy's Law is not allowed for setting low floor elevations lower than these thresholds adjacent to landlocked basins. b. When performing hydrologic/hydraulic modeling, the starting water surface elevation of the pond shall be set at the HAWL, or at the existing OHWL as determined by the MnDNR.	

Water Quality Design Standards

ITEM	DESCRIPTION	Water Quality
	In the design and construction of new, or modifications to existing, stormwater conveyance systems, pretreatment of storm water runoff in accordance with Minnesota Stormwater Manual recommendations must be provided prior to discharge.	
	Stormwater treatment can be provided via BMPs, a single pond that meets applicable criteria, or an on-site network of interconnected ponds. If an on-site pond network is used, the overall pollutant removal efficiency for the network must meet the criteria.	
	The City requires the use of any combination of BMPs, with consideration given to lower impact techniques and practices, necessary to meet the following conditions: • For new development projects – **no net increase from pre-project conditions (on an annual average basis) of stormwater discharges of Total Suspended Solids (TSS) and Total Phosphorus (TP)**, unless precluded by the stormwater management limitations identified in the MS4 Permit. • For redevelopment projects – **a net reduction from pre-project conditions (on an annual average basis) of stormwater discharges of Total Suspended Solids (TSS) and Total Phosphorus (TP)**, unless precluded by the stormwater management limitations identified in the MS4 Permit.	

	Construction projects must meet the permanent stormwater management requirements of the MPCA Construction Stormwater Permit. Where volume reduction is not feasible, and wet ponds are used to treat the Water Quality Volume as allowed by the MPCA, the City requires the following: a. A permanent pool average depth (basin volume/basin area) which shall be ≥3 feet, with a maximum depth of ≤10 feet. b. A stabilized emergency overflow (emergency outlet) adequate to control the 1% frequency/critical duration rainfall event, with a minimum 4' crest width and 0.5' rise. c. Basin side slopes above or below the normal water level should be no steeper than 4:1, and preferably flatter. d. A 10' wide safety bench at a slope of 10:1 is required from the normal water level to 1' below. e. The distance between inlets and outlets shall be maximized to prevent short-circuiting. f. A 20' vehicle maintenance access no steeper than 10:1 shall be provided to the pond Normal Water Level. g. A flood pool ("live storage") volume above the principal outlet shall be adequate so that the peak discharge rates are no greater than predevelopment conditions, in accordance with CCWD or LRRWMO requirements. h. If necessary, compound weir-walls are preferred over orifices within outlet control structures for control of low-flow events. No orifice smaller than 4" is permitted within outlet control structures. i. Pond outlet control structures shall be designed with a skimmer inlet placed a minimum of 1' below the NWL and 1' above the pond bottom. j. Pond embankment shall be constructed of properly compacted soils to prevent failure; provide filter diaphragm or anti-seepage collar as necessary at outlet pipe.	
	In areas of redevelopment where infiltration or ponding is not feasible, other means of treating storm water, such as inline proprietary treatment units, filtration systems, underground storage, or other measures identified in the Minnesota Stormwater Manual will be required.	
	Future outlets to MDNR Public Waters must first pass through a sediment pond/trap prior to discharging into the water body.	
	Permanent drainage/utility and maintenance vehicle access easements shall be provided for all drainage facilities.	

ITEM	DESCRIPTION	Water Quality
	Mitigation provisions: Per the MS4 Permit, any stormwater discharges of TSS and/or TP not addressed on the site of the original construction activity must be 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: 1) Locations that yield benefits to the same receiving water that receives runoff from the original construction activity. 2) Locations within the same MDNR catchment area as the original construction activity. 3) Locations in the next adjacent MDNR catchment area up-stream 4) Locations anywhere within the City. 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. c. Routine maintenance of BMPs cannot be used to meet mitigation requirements. d. Mitigation projects shall be completed within 24 months after the start of the original construction activity. e. The City shall determine, and document, who will be responsible for long-term maintenance on all mitigation projects. f. If the City 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 the City shall apply the payment to a public stormwater project.	

Additional Water Resources Design Standards

ITEM	DESCRIPTION	Additional Standards
	The City requires a 16.5 foot temporary buffer strip during construction upon development or redevelopment for protection of wetlands and storm water ponds, up from the delineated wetland boundary or the pond NWL. For areas within the CCWD or LRRWMO, additional buffer requirements may be applicable. The developer will be required to work with the CCWD or LRRWMO to meet their buffer requirements, where applicable.	
	A Ditch Maintenance Permit from the Coon Creek Watershed District is required for work in all public ditches within the Watershed District.	
	The CCWD requires a 100' drainage and utility easement (50' from centerline) on designated county ditches within the watershed, including the portion of Coon Creek within City limits.	
	The Lower Rum River WMO and Coon Creek Watershed District will act as the Local Government Unit (LGU) for the Wetland Conservation Act. (City)	
	The City requires the submission and approval of a grading, drainage, and erosion control plan prior to the issuance of any grading or building permits.	

ITEM	DESCRIPTION	Additional Standards
	All erosion and sediment controls proposed for compliance must be in place before any land-disturbing activity begins.	
	Adjacent properties must be protected from sediment deposition.	
	Soil erosion shall be prevented through the installation of erosion control practices in accordance with MPCA guidance materials.	
	It shall be the responsibility of the developer / contractor to keep streets and property adjacent to construction areas free from sediment carried by construction traffic at site entrances and access points, and from site runoff and blowing dust.	
	The natural scenic values and resources of the Rum River Scenic District will be conserved and protected to maintain a high standard of environmental quality.	

Stormwater Report Requirements

ITEM	DESCRIPTION	Submittal Requirements
	Narrative explaining pre-and post-development land use and general description of stormwater design and treatment	
	Location Map with scale no greater than one inch equals two hundred feet (1 "=200').	
	Existing Conditions and Proposed Conditions tributary area maps with labels, flow direction arrows, ponding areas, ditches, wetlands, storm sewer, and other related features.	
	Hydrology calculations (preferably in HydroCAD) for required events. For landlocked basins also include the 100-year, 10-day snowmelt event (7.2 inches), 100-year, 10-day runoff event (8.5 inches), and back-to-back 100-year, 24-hour storms.	
	Summary of pre- and post-development runoff rates and volumes.	
	Summary of water quality calculations detailing pre-and post- construction total suspended solids (TSS) and total phosphorus (TP) efficiencies.	
	Summary of volume control (infiltration) calculations.	
	Storm sewer calculations; design requirements are as follows (10-year design):	
	1. 12" minimum pipe size on leads, 15" minimum other than leads.	
	2. Provide calculations with A, Tc, i, Q_{actual}, Q_{full}, V_{actual}, V to be between 3 and 10 fps.	
	3. Provide tributary area map with flow arrows, structure numbers, pipes, ponds, etc.	
	4. Rational method is preferred method of calculation.	
	All calculations relating to CCWD and/or LRRWMO requirements (rate control, volume control, infiltration, water quality requirements, etc.)	

APPENDIX E:
MNDNR NATURAL HERITAGE INFORMATION

Minnesota Department of Natural Resources
Division of Ecological and Water Resources, Box 25
500 Lafayette Road
St. Paul, Minnesota 55155-4025
Phone: (651) 259-5109 E-mail: lisa.joyal@state.mn.us

May 16, 2014

Correspondence # ERDB 20140295

Mr. David Poggi
Hydromethods, LLC
1551 Lingston Avenue, Ste. 104
West St. Paul, MN 55118

RE: Natural Heritage Review of the proposed Andover Surface Water Management Plan Update

County	Township (N)	Range (W)	Section(s)
Anoka	32	42	1-30
Anoka	32	25	1,12,13

Dear Mr. Poggi,

As requested, the Minnesota Natural Heritage Information System has been queried to determine if any rare species or other significant natural features are known to occur within an approximate one-mile radius of the area of interest. Based on this query, several rare features have been documented within the search area. For details, please see the enclosed reports and the explanation of selected fields. For more information on the biology, habitat use, and conservation measures of these rare species, please visit the DNR Rare Species Guide at http://www.dnr.state.mn.us/rsg/index.html. I have also included fact sheets on the Blanding's Turtle and Wildlife-Friendly Erosion Control, as the database reports contain records of this state-listed threatened turtle.

Please note that the enclosed reports include records from the Rare Features Database only. For your information, there are two other databases available from the Natural Heritage Information System that you may find useful in your conservation planning efforts. These databases are the Minnesota Biological Survey (MBS) Native Plant Communities and the MBS Sites of Biodiversity Significance. Please note that there are several high quality native plant communities within the area of interest. GIS shapefiles of these databases can be downloaded from the DNR's Data Deli website at http://deli.dnr.state.mn.us. Please refer to the enclosed Guidelines for help in interpreting this data.

In addition, several Central Region Regionally Significant Ecological Areas (RSEA) are located within the area of interest. The DNR Central Region (in partnership with the Metropolitan Council for the 7-county metro area), identified these ecologically significant terrestrial and wetland areas by conducting a landscape-scale assessment based on the size and shape of the ecological area, land cover within the ecological area, adjacent land cover/use, and connectivity to other ecological areas. The purpose of the data is to inform regional scale land use decisions, especially as it relates to balancing development and natural resource protection. A GIS shapefile of this data layer can be downloaded from the DNR Data Deli at http://deli.dnr.state.mn.us. For more information on RSEAs, or to view pdf versions of the final maps, please visit http://www.dnr.state.mn.us/rsea/index.html. If you would like help interpreting the RSEA data, contact Hannah Texler, Regional Plant Ecologist for DNR's Central Region, at 651-259-5811 or hannah.texler@state.mn.us.

Finally, the area of interest also contains MBS Railroad Rights-of-Way Prairies (A GIS shapefile of MBS Railroad Rights-of-Way Prairies can be downloaded from the DNR Data Deli at http://deli.dnr.state.mn.us/). Given that more than 99% of the prairie that was present in the state before settlement has been destroyed, and more than one-third of Minnesota's endangered, threatened, and special concern species are now dependent on the remaining small fragments of Minnesota's prairie ecosystem, we feel that all prairie remnants merit protection.

The Division of Ecological and Water Resources supports including information about rare features in the Water Management Plan. A list of the native plant communities and the rare plant and

animal species that have been documented in the watershed should be included in the plan. We also recommend that the plan include goals and strategies to address how these rare species and significant native plant communities will be protected. For further information about how to address the protection of the rare features in the plan's goals & strategies, please contact Hannah Texler at the number listed above.

The Natural Heritage Information System (NHIS), a collection of databases that contains information about Minnesota's rare natural features, is maintained by the Division of Ecological and Water Resources, Department of Natural Resources. The NHIS is continually updated as new information becomes available, and is the most complete source of data on Minnesota's rare or otherwise significant species, native plant communities, and other natural features. However, the NHIS is not an exhaustive inventory and thus does not represent all of the occurrences of rare features within the state. Therefore, ecologically significant features for which we have no records may exist within the area of interest.

The enclosed results include an Index Report and a Detailed Report of records in the Rare Features Database, the main database of the NHIS. To control the release of specific location information, which might result in the destruction of a rare feature, both reports are copyrighted.

The Index Report provides rare feature locations only to the nearest section, and may be reprinted, unaltered, in an environmental review document (e.g., EAW or EIS), municipal natural resource plan, or report compiled by your company for the project listed above. If you wish to reproduce the index report for any other purpose, please contact me to request written permission. **The Detailed Report is for your personal use only as it may include specific location information that is considered nonpublic data under *Minnesota Statutes*, section 84.0872, subd. 2. If you wish to reprint or publish the Detailed Report for any purpose, please contact me to request written permission.**

For environmental review purposes, the Natural Heritage letter and database reports are valid for one year; they are only valid for the project location (noted above) and the project description provided on the NHIS Data Request Form. Please contact me if project details change or for an updated review if construction has not occurred within one year.

The Natural Heritage Review does not constitute review or approval by the Department of Natural Resources as a whole. Instead, it identifies issues regarding known occurrences of rare features and potential effects to these rare features. To determine whether there are other natural resource concerns associated with the proposed project, please contact your DNR Regional Environmental Assessment Ecologist (contact information available at http://www.dnr.state.mn.us/eco/ereview/erp_regioncontacts.html). Please be aware that additional site assessments or review may be required.

Thank you for consulting us on this matter, and for your interest in preserving Minnesota's rare natural resources. An invoice will be mailed to you under separate cover.

Sincerely,

Lisa Joyal

Lisa Joyal
Endangered Species Review Coordinator

enc. Rare Features Database: Index Report, Detailed Report, & Explanation of Fields
Blanding's Turtle Fact Sheet
Wildlife Friendly Erosion Control

cc: Brooke Haworth

Links: MBS Sites of Biodiversity Significance
http://www.dnr.state.mn.us/eco/mcbs/biodiversity_guidelines.html
MBS Native Plant Communities
http://www.dnr.state.mn.us/npc/index.html

Minnesota Natural Heritage Information System
Index Report of records within 1 mile radius of:
ERDB# 20140295 - ANdover Surface Water Management Update
Multiple TRS
Andover County

Rare Features Database:

Element Name and Occurrence Number	Federal Status	MN Status	Draft Status	SGCN Status	State Rank	Global Rank	Last Obs Date	EO ID #
Vertebrate Animal								
Buteo lineatus (Red-shouldered Hawk) #45 T32N R24W S6, T32N R25W S1; Anoka County		SPC		SGCN	S3B,SNRN	G5	1990-07-21	11060
Emydoidea blandingii (Blanding's Turtle) #126 T32N R24W S30, T32N R24W S29; Anoka County		THR		SGCN	S2	G4	2003-06-20	7294
Emydoidea blandingii (Blanding's Turtle) #280 T32N R24W S20, T32N R24W S28, T32N R24W S29, T32N R24W S21; Anoka County		THR		SGCN	S2	G4	1988	8820
Emydoidea blandingii (Blanding's Turtle) #281 T32N R24W S32, T32N R24W S29; Anoka County		THR		SGCN	S2	G4	1988-06-19	8816
Emydoidea blandingii (Blanding's Turtle) #282 T32N R24W S32, T32N R24W S31; Anoka County		THR		SGCN	S2	G4	1988-08-09	8821
Emydoidea blandingii (Blanding's Turtle) #285 T32N R24W S20, T32N R24W S17, T32N R24W S16, T32N R24W S18; Anoka County		THR		SGCN	S2	G4	1992-04-28	8813
Emydoidea blandingii (Blanding's Turtle) #422 T32N R24W S31; Anoka County		THR		SGCN	S2	G4	1989-09	10025
Emydoidea blandingii (Blanding's Turtle) #488 T32N R24W S30, T32N R25W S36, T32N R25W S25, T32N R24W S31; Anoka County		THR		SGCN	S2	G4	1989-06-01	11215
Emydoidea blandingii (Blanding's Turtle) #511 T32N R24W S20, T32N R24W S30, T32N R24W S29, T32N R24W S19; Anoka County		THR		SGCN	S2	G4	1990-04-22	11316
Emydoidea blandingii (Blanding's Turtle) #559 T33N R24W S31, T32N R24W S6, T33N R25W S36, T32N R25W S1; Anoka County		THR		SGCN	S2	G4	1990-05	11891
Emydoidea blandingii (Blanding's Turtle) #560 T32N R25W S2, T32N R25W S11; Anoka County		THR		SGCN	S2	G4	2008-07-08	11892
Emydoidea blandingii (Blanding's Turtle) #561 T32N R25W S3, T32N R25W S2; Anoka County		THR		SGCN	S2	G4	1989	11897
Emydoidea blandingii (Blanding's Turtle) #562 T32N R25W S2; Anoka County		THR		SGCN	S2	G4	1989	11893

Rare Features Database:

Element Name and Occurrence Number	Federal Status	MN Status	Draft Status	SGCN Status	State Rank	Global Rank	Last Obs Date	EO ID #
Vertebrate Animal								
Emydoidea blandingii (Blanding's Turtle) #614 T32N R24W S28, T32N R24W S34, T32N R24W S27; Anoka County		THR		SGCN	S2	G4	1992-08-22	14821
Emydoidea blandingii (Blanding's Turtle) #615 T33N R24W S36, T33N R24W S25; Anoka County		THR		SGCN	S2	G4	2006-04-23	14822
Emydoidea blandingii (Blanding's Turtle) #636 T32N R24W S20; Anoka County		THR		SGCN	S2	G4	1991-04-25	15618
Emydoidea blandingii (Blanding's Turtle) #640 T32N R24W S12, T32N R24W S14, T32N R23W S7, T32N R24W S13; Anoka County		THR		SGCN	S2	G4	2008-07-08	15622
Emydoidea blandingii (Blanding's Turtle) #675 T33N R24W S31, T32N R24W S6, T32N R25W S1, T33N R25W S36; Anoka County		THR		SGCN	S2	G4	2009-07-01	16938
Emydoidea blandingii (Blanding's Turtle) #764 T32N R24W S9, T32N R24W S10; Anoka County		THR		SGCN	S2	G4	1994-09-06	21076
Emydoidea blandingii (Blanding's Turtle) #863 T31N R24W S4, T32N R24W S35, T32N R24W S34, T31N R24W S3; Anoka County		THR		SGCN	S2	G4	2008-06-24	24990
Emydoidea blandingii (Blanding's Turtle) #1011 T32N R25W S25, T32N R25W S24, T32N R25W S26; Anoka County		THR		SGCN	S2	G4	2002-07-02	29991
Grus canadensis (Sandhill Crane) #326 Just outside Minnesota in adjacent jurisdiction(s).; Non-MN County - Located just outside Minnesota in adjacent jurisdiction(s).	No Status	Watchlist			S4B,SNR	G5	2008-06-18	15547
Haliaeetus leucocephalus (Bald Eagle) #2206 T32N R24W S30, T32N R24W S29; Anoka County		Watchlist		SGCN	S3B,S3N	G5	2005-04-20	29538
Heterodon nasicus (Plains Hog-nosed Snake) #7 T32N R24W S30, T32N R24W S29; Anoka County		SPC		SGCN	S3	G5	1987-07	7157
Heterodon nasicus (Plains Hog-nosed Snake) #17 T32N R24W S16, T32N R24W S15; Anoka County		SPC		SGCN	S3	G5	1990-09-11	11626
Heterodon nasicus (Plains Hog-nosed Snake) #29 T32N R23W S7, T32N R24W S12; Anoka County		SPC		SGCN	S3	G5	1997-05-24	24882

Rare Features Database:

Element Name and Occurrence Number	Federal Status	MN Status	Draft Status	SGCN Status	State Rank	Global Rank	Last Obs Date	EO ID #
Vertebrate Animal								
Heterodon nasicus (Plains Hog-nosed Snake) #32 Just outside Minnesota in adjacent jurisdiction(s).; Non-MN County - Located just outside Minnesota in adjacent jurisdiction(s).		SPC		SGCN	S3	G5	2009-06-09	29880
Lanius ludovicianus (Loggerhead Shrike) #8 T32N R24W S25, T32N R24W S24; Anoka County	No Status	END		SGCN	S1B	G4	1978-05-07	2495
Lanius ludovicianus (Loggerhead Shrike) #10 T32N R24W S34, T32N R24W S33; Anoka County	No Status	END		SGCN	S1B	G4	1977-05-31	2497
Perognathus flavescens (Plains Pocket Mouse) #1 T31N R24W S2, T32N R24W S35, T31N R24W S1, T32N R24W S36; Anoka County		SPC		SGCN	S3	G5	2008-08-07	2963
Perognathus flavescens (Plains Pocket Mouse) #17 T32N R24W S9, T32N R24W S10; Anoka County		SPC		SGCN	S3	G5	1990-08-12	13389
Pituophis catenifer (Gophersnake) #30 T32N R24W S6; Anoka County		SPC		SCGN	S3	G5	1990-07-03	11649
Pituophis catenifer (Gophersnake) #31 T32N R24W S14, T32N R24W S15; Anoka County		SPC		SCGN	S3	G5	1990-06-25	11648
Pituophis catenifer (Gophersnake) #32 T32N R24W S26, T32N R24W S27; Anoka County		SPC		SCGN	S3	G5	1990-06-25	11650
Pituophis catenifer (Gophersnake) #130 Just outside Minnesota in adjacent jurisdiction(s).; Non-MN County - Located just outside Minnesota in adjacent jurisdiction(s).		SPC		SCGN	S3	G5	2009-09-23	35185
Invertebrate Animal								
Cicindela patruela patruela (Northern Barrens Tiger Beetle) #26 T31N R24W S1; Anoka County		SPC		SGCN	S3	G3T3	2009-06-11	35655
Hesperia leonardus leonardus (Leonard's Skipper) #4 T31N R24W S11, T32N R24W S35, T31N R24W S2, T31N R24W S1, T [...]; Anoka County		SHL-SPC		SGCN	S3	G4T4	2009-09-10	23843
Lasmigona compressa (Creek Heelsplitter) #193 Just outside Minnesota in adjacent jurisdiction(s).; Anoka County		SPC		SGCN	S3	G5	2004-09-16	32743

Rare Features Database:

Element Name and Occurrence Number	Federal Status	MN Status	Draft Status	SGCN Status	State Rank	Global Rank	Last Obs Date	EO ID #
Invertebrate Animal								
Ligumia recta (Black Sandshell) #371 T32N R25W S13, T32N R25W S24; Anoka County		SPC		SGCN	S3	G4G5	2004-09-16	32744
Pelegrina arizonensis (A Jumping Spider) #17 T31N R24W S1, T32N R24W S36; Anoka County		SPC		SGCN	S3	GNR	2009-08-17	35660
Vascular Plant								
Aristida tuberculosa (Sea-beach Needlegrass) #15 T32N R24W S35, T31N R24W S2, T32N R24W S26; Anoka County		THR			S2	G5	2006-08-15-30	8859
Aristida tuberculosa (Sea-beach Needlegrass) #18 T32N R24W S23; Anoka County		THR			S2	G5	1989-09-15	9967
Aristida tuberculosa (Sea-beach Needlegrass) #35 T31N R24W S1; Anoka County		THR			S2	G5	2008-08-07	35672
Fimbristylis autumnalis (Autumn Fimbristylis) #8 T32N R24W S35, T32N R24W S36; Anoka County		SPC			S3	G5	1945-10-09	22962
Hieracium longipilum (Long-bearded Hawkweed) #25 T32N R24W S35, T32N R24W S36; Anoka County		Watchlist			SNR	G4G5	1988-09-27	8861
Hieracium longipilum (Long-bearded Hawkweed) #26 T32N R24W S35; Anoka County		Watchlist			SNR	G4G5	1988-09-27	8880
Hieracium longipilum (Long-bearded Hawkweed) #27 T31N R24W S2; Anoka County		Watchlist			SNR	G4G5	1988-09-27	8881
Hieracium longipilum (Long-bearded Hawkweed) #29 T32N R24W S23, T32N R24W S22; Anoka County		Watchlist			SNR	G4G5	1989-09-15	9963
Hudsonia tomentosa (Beach-heather) #25 T31N R24W S12, T31N R24W S11, T32N R24W S35, T31N R24W S2, T [...]; Anoka County		THR			S2	G5	1935-06-09	11167
Hudsonia tomentosa (Beach-heather) #38 T31N R24W S2, T32N R24W S35; Anoka County		THR			S2	G5	2012-07-24	34902

Rare Features Database:

Element Name and Occurrence Number	Federal Status	MN Status	Draft Status	SGCN Status	State Rank	Global Rank	Last Obs Date	EO ID #
Vascular Plant								
Hudsonia tomentosa (Beach-heather) #40 T31N R24W S1; Anoka County		THR			S2	G5	2008-08-07	35670
Nuttallanthus canadensis (Old Field Toadflax) #18 T32N R24W S35, T32N R24W S36; Anoka County		SPC			S3	G5	1992-06-30	13806
Oenothera rhombipetala (Rhombic-petaled Evening Primrose) #9 T32N R24W S35, T31N R24W S2; Anoka County		SPC			S3	G4G5	2006-08-15-30	5093
Oenothera rhombipetala (Rhombic-petaled Evening Primrose) #12 T32N R23W S31, T32N R24W S25, T32N R24W S36; Anoka County		SPC			S3	G4G5	1989-07-19	10003
Oenothera rhombipetala (Rhombic-petaled Evening Primrose) #13 T32N R24W S23, T32N R24W S22; Anoka County		SPC			S3	G4G5	1989-09-15	9966
Polygonum arifolium (Halberd-leaved Tearthumb) #15 T33N R24W S28, T33N R24W S27, T33N R24W S33, T33N R24W S34; Anoka County		Watchlist			S4	G5	1989-07-28	9965
Rotala ramosior (Tooth-cup) #4 T32N R24W S35, T32N R24W S36; Anoka County		THR			S2	G5	1945-10-09	5468
Scleria triglomerata (Tall Nut-rush) #8 T32N R24W S35, T31N R24W S2; Anoka County		END			S1	G5	1992-06-30	13804
Triplasis purpurea var. purpurea (Purple Sand-grass) #8 T31N R24W S2, T32N R24W S35, T32N R24W S26; Anoka County		SPC			S3	G4G5TN	2006-08-15-30	11642
Native Plant Community (This may not represent a complete list. Also see MCBS Native Plant Communities at http://deli.dnr.state.mn.us.)								
Alder - (Maple - Loosestrife) Swamp Type #1313 (NPC Code: FPn73a) T33N R24W S28, T33N R24W S27, T33N R24W S33, T33N R24W S34; Anoka County		N/A			SNR	GNR	1990-08-24	11533
Dry Barrens Oak Savanna (Southern): Oak Subtype #17 (NPC Code: UPs14a2) T32N R24W S35, T32N R24W S36; Anoka County		N/A			S2	GNR	1971	8865
Dry Barrens Oak Savanna (Southern): Oak Subtype #25 (NPC Code: UPs14a2) T32N R24W S23, T32N R24W S22; Anoka County		N/A			S2	GNR	1989-12-09	1238

Rare Features Database:

Element Name and Occurrence Number	Federal Status	MN Status	Draft Status	SGCN Status	State Rank	Global Rank	Last Obs Date	EO ID #
Native Plant Community (This may not represent a complete list. Also see MCBS Native Plant Communities at http://deli.dnr.state.mn.us.)								
Dry Barrens Prairie (Southern) Type #75 T32N R24W S35, T32N R24W S36; Anoka County	(NPC Code: UPs13a)	N/A			S2	GNR	1988-09-27	8863
Dry Barrens Prairie (Southern) Type #78 T32N R24W S23, T32N R24W S22; Anoka County	(NPC Code: UPs13a)	N/A			S2	GNR	1989-09-15	9971
Dry Sand - Gravel Oak Savanna (Southern) Type #55 T33N R24W S29, T33N R24W S32; Anoka County	(NPC Code: UPs14b)	N/A			S2	GNR	1992-09-08	18318
Northern Mixed Cattail Marsh Class #1025 T32N R23W S31, T32N R24W S36, T32N R24W S25, T32N R23W S30; Anoka County	(NPC Code: MRn83)	N/A			S4S5	GNR	1989-07-19	9972
Northern Rich Fen (Basin) Class #55 T33N R24W S29, T33N R24W S32; Anoka County	(NPC Code: OPn92)	N/A			S4	GNR	1992-09-08	18317
Pin Oak - Bur Oak Woodland Type #1278 T33N R24W S28, T33N R24W S27, T33N R24W S33, T33N R24W S34; Anoka County	(NPC Code: FDs37b)	N/A			SNR	GNR	1989-07-20	9949
Pin Oak - Bur Oak Woodland Type #1316 T33N R24W S27, T33N R24W S34; Anoka County	(NPC Code: FDs37b)	N/A			SNR	GNR	1989-07-28	9950
Sedge Meadow; Tussock Sedge Subtype #1173 T33N R24W S33; Anoka County	(NPC Code: WMn82b2)	N/A			S4	GNR	1989-07-28	9973
Tamarack Swamp (Southern) Type #88 T33N R24W S33, T33N R24W S34; Anoka County	(NPC Code: FPs63a)	N/A			S3	GNR	1989-07-20	9947
Tamarack Swamp (Southern) Type #90 T32N R23W S31, T32N R24W S36, T32N R24W S25, T32N R23W S30; Anoka County	(NPC Code: FPs63a)	N/A			S3	GNR	1989-07-19	9961

Records Printed = 72

Minnesota's endangered species law (*Minnesota Statutes*, section 84.0895) and associated rules (*Minnesota Rules*, part 6212.1800 to 6212.2300 and 6134) prohibit the taking of threatened or endangered species without a permit. For plants, taking includes digging or destroying. For animals, taking includes pursuing, capturing, or killing.

An Explanation of Fields:

Element Name and Occurrence Number: The Element is the name of the rare feature. For plant and animal species records, this field holds the scientific name followed by the common name in

parentheses; for all other elements it is solely the element name. Native plant community names correspond to Minnesota's Native Plant Community Classification (Version 2.0). The Occurrence Number, in combination with the Element Name, uniquely identifies each record.

Federal Status: The status of the species under the U.S. Endangered Species Act: LE = endangered; LT = threatened; LE,LT = listed endangered in part of its range, listed threatened in another part of its range; LT,PDL = listed threatened, proposed for delisting; C = candidate for listing. If null or 'No Status,' the species has no federal status.

MN Status: The legal status of the plant or animal species under the Minnesota Endangered Species Law: END = endangered; THR = threatened; SPC = special concern; NON = tracked, but no legal status. Native plant communities, geological features, and colonial waterbird nesting sites do not have any legal status under the Endangered Species Law and are represented by a N/A.

Draft Status: Proposed change to the legal status of the plant or animal species under the Minnesota Endangered Species Law: END = endangered; THR = threatened; SPC = special concern; Watchlist = tracked, but no legal status.

SGCN Status: SGCN = The species is a Species in Greatest Conservation Need as identified in Minnesota's State Wildlife Action Plan (http://www.dnr.state.mn.us/cwcs/index.html). This designation applies to animals only.

State Rank: Rank that best characterizes the relative rarity or endangerment of the taxon or plant community in Minnesota. The ranks do not represent a legal status. They are used by the Minnesota Department of Natural Resources to set priorities for research, inventory and conservation planning. The state ranks are updated as inventory information becomes available. S1 = Critically imperiled in Minnesota because of extreme rarity or because of some factor(s) making it especially vulnerable to extirpation from the state. S2 = Imperiled in Minnesota because of rarity or because of some factor(s) making it very vulnerable to extirpation from the state. S3 = Vulnerable in Minnesota either because rare or uncommon, or found in a restricted range, or because of other factors making it vulnerable to extirpation. S4 = Apparently secure in Minnesota, usually widespread. S5 = Demonstrably secure in Minnesota, essentially ineradicable under present conditions. SH = Of historical occurrence in the state, perhaps having not been verified in the past 20 years, but suspected to be still extant. An element would become SH without the 20-year delay if the only known occurrences in the state were destroyed or if it had been extensively and unsuccessfully looked for. SNR = Rank not yet assessed. SU = Unable to rank. SX = Presumed extinct in Minnesota. SNA = Rank not applicable. S#S# = Range Rank: a numeric range rank (e.g., S2S3) is used to indicate the range of uncertainty about the exact status of the element. S#B, S#N = Used only for migratory animals, whereby B refers to the breeding population of the element in Minnesota and N refers to the non-breeding population of the element in Minnesota.

Global Rank: The global (i.e., range-wide) assessment of the relative rarity or imperilment of the species or community. Ranges from G1 (critically imperiled due to extreme rarity on a world-wide basis) to G5 (demonstrably secure, though perhaps rare in parts of its range). Global ranks are determined by NatureServe, an international network of natural heritage programs and conservation data centers.

Last Observed Date: Date that the Element Occurrence was last observed to be extant at the site in format YYY-MM-DD.

EO ID #: Unique identifier for each Element Occurrence record.

Element Occurrence: An area of land and/or water in which an Element (i.e., a rare species or community) is, or was, present, and which has practical conservation value for the Element as evidenced by potential continued (or historical) presence and/or regular recurrence at a given location. Specifications for each species determine whether multiple observations should be considered 1 Element Occurrence or 2, based on minimum separation distance and barriers to movement.

Digital Appendix (DISC)

DA1. Previous Water Resource Management Plan (March 2005)

DA2. Current Watershed Plans

DA3. MPCA general permit MNR040000

DA4. City of Andover Wellhead Protection Plan

DA5. Public Waters Shapefiles

DA6. Public and Private Ditches Shapefiles

DA7. National Wetlands Inventory Shapefile

DA8. Major and Minor Subwatersheds Shapefile

DA9. FEMA Flood Insurance Study (FIS) and FIRM Panels

DA10. Anoka Conservation District 2013 Water Almanac

DA11. MnDNR Appropriations Shapefile

DA12. City of Andover 2018-2022 Capital Improvement Plan (CIP)