

# 5 WATER RESOURCES

This chapter includes plans for protecting the City’s water supply and delivering potable (drinkable) water, plans for upgrading and maintaining the wastewater (sanitary sewer) system, and a plan for the management of surface water and storm water.

## WATER SUPPLY

### INTRODUCTION

Coon Rapids relies on groundwater primarily from glacial drift and the Franconia, Ironton, and Galesville aquifers to supply its domestic water needs. The City pumps an average of 8.8 million gallons of water per day (MGD) or 3 billion gallons annually. There is capacity to pump a maximum of 30 MGD. Firm capacity is 26.8 MGD. Maximum day water pumping capacity is projected to be 30.94 MGD. It has a maximum storage capacity of 14.5 million gallons in its reservoirs and towers.

A *Water Master Plan* update was completed in August of 2000. The inventory, analysis of needs, and recommendations for improvements to the system contained in the *Water Master Plan* form the basis for this chapter of the Coon Rapids Comprehensive Plan.

### INVENTORY

The water supply system consists of several wells, two treatment plants, water reservoirs and towers, and distribution lines.

**Wells** - Coon Rapids has 11 primary and 13 seasonal water wells. The table below provides information about the wells.

**TABLE 5-1 City of Coon Rapids Well Inventory**

CITY WELL #	YEAR INSTALLED	WELL DEPTH (FT)	CASING DEPTH (FT)	CAPACITY (GALLONS PER MINUTE)	SOURCE*	STATUS
1	1958	472	217	750	F-I-G	Seasonal
2	1959	685	220	850	F-I-G	Seasonal
3	Abandoned					
4	1960	602	233	1000	F-I-G	Seasonal
5	1961	695	265	900	F-MTS	Seasonal
6	1961	158	118	250	J	Seasonal
7	1964	632	189	1600	F-I-G	Seasonal

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CITY WELL #	YEAR INSTALLED	WELL DEPTH (FT)	CASING DEPTH (FT)	CAPACITY (GALLONS PER MINUTE)	SOURCE*	STATUS
8	1965	702	283	1000	F-MTS	Primary
9	1969	500	294	1000	F-I-G	Primary
10	1971	684	272	1000	F-MTS	Primary
11	1973	627	157	1200	F-MTS	Primary
12	1975	604	209	850	F-MTS	Seasonal
13	1977	693	395	850	F-MTS	Seasonal
14	1977	613	328	1650	F-MTS	Primary
15	1977	615	225	1400	F-MTS	Primary
16	1981	653	395	1500	F-MTS	Seasonal
17	1981	121	81	1450	DRIFT	Primary
18	1986	637	575	1200	MTS-H	Seasonal
19	1987	135	30	1100	DRIFT	Seasonal
20	1988	135	95	1100	DRIFT	Primary
21	1990	203	170	1200	DRIFT	Primary
22	1990	105	81	500	DRIFT	Seasonal
23	1992	123	93	500	DRIFT	Seasonal
24	2004	388	90	1500	Bedrock	Primary
25	2004	388	90	1500	Bedrock	Primary

\***Groundwater Source Abbreviations:** Glacial Drift (DRIFT), Jordan Sandstone (J), Franconia Formation (F), Ironton Sandstone (I), Galesville Sandstone (G), Mt. Simon Sandstone (MTS), Hinckley Sandstone (H)

### Reservoirs and Towers

There are three elevated storage tanks and two ground storage reservoirs. Table 5-2 below provides information on the location, year constructed, and volume of the storage facilities in millions of gallons (MG).

**TABLE 5-2 Tower and Reservoir Location and Volumes**

STORAGE FACILITY	LOCATION	CONSTRUCTED	TOTAL VOLUME
East Water Tower	Near Foley and Northdale Boulevards	1958	0.5 MG
East Ground Storage Reservoir	Adjacent to the East Water Treatment Plant near Foley and Northdale Boulevards	1965	5.5 MG
West Water Tower	115 <sup>th</sup> Lane and Eidelweiss Street	1960	1.0 MG
West Ground Storage Reservoir	Adjacent to the West Treatment Plant near 105 <sup>th</sup> and Uplander	1975	5.0 MG
Hanson Blvd. Tower	Hanson and 131 <sup>st</sup> Avenue	2003	2.5 MG
Total Volume			14.5 MG

Map W-1 below shows the locations of the storage facilities.

## Treatment Plants

There are two water treatment plants. Their primary function is to remove iron and manganese.

## Distribution Lines

There are 292 miles of water main.

## Pricing

The 2006 water pricing rate was \$1.33 per 1,000 gallons along with a \$6.60 service charge. Water use is billed on a quarterly basis.

## Use

Residential users consume 85% of the water pumped by the City. Table 5-3 below shows the amount of water sold to each major class of user in the City in 2005.

**TABLE 5-3 Water Use by Land Use Type**

USER TYPE	TOTAL GALLONS SOLD	PERCENTAGE OF TOTAL SOLD
Residential	2,206,074,200	85
Institutional	61,880,000	2
Commercial	300,578,400	11
Industrial	76,478,400	3
Total Sold	2,645,011,000	100
Unmetered/Unaccounted	189,192,000	

The 2.6 billion gallons pumped per year in 2005 is equivalent to 7.8 million gallons per day. This volume already is equivalent to the Metropolitan Council's 2030 projection for use. This number does not reflect the almost .2 billion gallons per year that are unmetered or unaccounted for. The installation of new meters between 2007 and 2012 is expected to reduce the amount of unmetered water in the City.

The Metropolitan Council's projected future water use is shown in Table 5-4 below.

**TABLE 5-4 Coon Rapids Projected Water Use in Million Gallons Per Day**

	1990	1995	2000	2010	2020	2030	2040
Residential	4.5	5.3	5.4	5.7	5.8	5.9	6.0
Total Non-residential	1.1	1.3	1.5	1.7	1.8	1.8	1.8
Unmetered/Unaccounted	0.05	0.07	0.07	0.07	0.08	0.08	0.08
Major Crop Irrigation	0.0	0.0	0.07	0.0	0.0	0.0	0.0
Water Level Maintenance	0.01	0.01	0.0	0.0	0.0	0.0	0.0
Total	5.7	6.7	7.0	7.5	7.7	7.8	7.9

Source: *Projected Water Demand for the Twin Cities Metropolitan Area*, Metropolitan Council, May 2001.

**Drinking Water Quality** – One or more contaminants regulated under the federal Safe Drinking Water Act have been detected in trace amounts in one or more of the

## Water Resources

Coon Rapids water sources. However, the water supplied to users meets state and federal drinking water standards for potability.

**Conservation Efforts** – Coon Rapids recognizes the need to conserve the water resource. The City has a standing odd/even sprinkling ban from June 1 to August 31. Notification of the ban is given to residents in the summer city-wide newsletter. In addition, local ordinances ([Chapter 13-218](#)) provide for additional emergency requirements when the need arises. The specific list of emergency measures is enumerated in [Chapter 13-220](#). They include the following:

- (1) Limitation on times of water usage.
- (2) Ban on lawn and garden sprinkling.
- (3) Ban on irrigation.
- (4) Ban on car washing.
- (5) Ban on usage of water for air conditioning or cooling.
- (6) Ban on all usage for specified periods.
- (7) Ban on washing mobile equipment.
- (8) Ban on cleaning outdoor surfaces.
- (9) Ban on washing buildings inside or out.
- (10) Ban on washing machinery and equipment.
- (11) Ban on the use of ornamental fountains.
- (12) Ban on pumping of additional water into swimming pools.
- (13) Any other reasonable restrictions.

## NEEDS

The City of Coon Rapids recognizes the following needs in the operation of its municipal water system.

- Protection of aquifers from pollution
- Enough water to adequately fight fires
- Conservation of the water resource
- Supplemental water supply in case of emergency
- Pressure improvements
- Elimination of dead-end lines
- Continuous tower and well rehabilitation
- Partial sealing of wells to prevent cross connection between aquifers

**GOALS, OBJECTIVES, AND POLICIES**

The goals and policies below address these needs.

**Goal #1: Provision of municipal water service to residents and businesses in the community in the most fiscally responsible manner possible.**

Objectives:

- 1-1. Adequate water supply.
- 1-2. Reasonable costs.

Policies:

- 1-1. A well rehabilitation program will be established to assure the continued safe and reliable operation of the City’s wells.
- 1-2. The City will develop the pumping capacity so that the firm pumping capacity (total system pumping capacity minus the top two producing wells) exceeds the projected daily projected use.

**Goal #2: Provision of high quality drinking water that will not negatively impact the natural water resources of the community or region.**

Objectives:

- 2-1. Safe, unpolluted water.
- 2-2. Water conservation.

Policy:

- 2-1. The City will continue its efforts to urge residents to conserve at all times of the year, not just during drought periods.

**Goal #3 Protection of the water resource to the extent possible through the development of an emergency preparedness program that allows for the City to supply quality water to community users in a prioritized manner.**

Objective:

## Water Resources

- 3-1. Adequate water for emergency situations such as fire or contamination of water supply.

Policies:

- 3-1. The City will continue its standing odd/even sprinkling ban from June 1 to August 31.
- 3-2. The City will adopt appropriate additional measures to alleviate water supply shortages when the need arises ([Chapter 13-218](#) of the City Code). The water use restrictions in Chapter [13-220](#) may be required.

### PLAN

No new water storage or treatment capacity is proposed as a part of this plan. Coon Rapids believes that the system is complete. The City will focus its efforts to meet the goals above by continuing a routine well rehabilitation program. In addition, new radio-read water meters will be installed over the 2007 to 2012 time period to address the need of a substantial amount of water being unmetered or under counted. Conservation efforts will include periodic information for consumers in an annual newsletter. The newsletter will stress the need to conserve water. The City will also explore a system that discourages unusually heavy residential consumption of water by substantially increasing the cost of water beyond a certain level of consumption.

### IMPLEMENTATION

The City will adequately fund the operations and maintenance of its water supply system through its annual operating budget. Operating and capital costs are funded by the user fees charged against residential and commercial customers. There are currently no major capital improvements planned for the water supply system.

# WASTEWATER

## INTRODUCTION

A sanitary sewer system to carry wastewater to the sewage treatment facility is a basic municipal service. Wastewater is the water that is either flushed or flows through a drain into the sanitary sewer system. All wastewater generated in Coon Rapids flows to a main metropolitan interceptor sewer pipe and eventually to the Metropolitan Wastewater Treatment Plant on the Mississippi River south of downtown St. Paul.

A plan to identify problems in the wastewater system and establish goals and policies to address system issues was prepared by Short Elliot and Hendrickson (SEH) and delivered to the City in August of 2006. That plan, entitled *City of Coon Rapids Sanitary Sewer System Plan*, should be consulted for detailed information. The highlights of that plan are included here.

## INVENTORY

The Coon Rapids wastewater system includes over 241 miles of sewer pipe ranging in size from 8 inches to 42 inches in diameter. There are 16 sewage lift stations which serve small isolated areas. These lift stations serve approximately 10 percent of the City's population. There are neither private nor public wastewater treatment plants in the City.

The average daily flow (ADF) in 2006 was approximately 5.7 million gallons per day (MGD). Once the City is fully developed, the estimated average flow will be 6.35 MGD according to the *City of Coon Rapids Sanitary Sewer System Plan*.

No new trunk sewers are planned in the City.

Map W-2 shows Coon Rapids' existing sanitary sewer system including lift stations, existing connections points to the Metropolitan Distribution System.

Map W-3 shows the connection points between Coon Rapids and its surrounding communities.

Appendix D, Table 1 in the *City of Coon Rapids Sanitary Sewer System Plan* contains a table that provides the following information:

- a. Capacity and design flows for existing trunk sewers and lift stations.
- b. Information on the number of existing and potential connections by local sewer service district.
- c. Projected flow volume in five-year increments through 2030 and build out.

## NEEDS AND CHALLENGES

The forecasts of population, households, employment, and wastewater flows for Coon Rapids as contained in the Metropolitan Council adopted *Water Resources Management Policy Plan* are listed in Table 5-6 below. These forecasts are for sewer development. The housing unit and household forecasts were estimated based on Sewer Availability Charge (SAC) data, annual City reports, current trends, and other information relating to Coon Rapids. The wastewater flows are based on historical wastewater flow data and the projected sewer housing and employment data.

**TABLE 5-6 Projected Sewer Flow by Population, Household, and Employment**

YEAR	2010	2020	2030	PROJECTED FLOW
Sewered Population	65,650	66,000	65,000	
Sewered Households	25,560	26,500	27,000	
Sewered Employment	24,200	26,000	27,800	
Average Annual Wastewater Flow (Millions of gallons per day)	6.19	6.00	5.86	6.35
Allowable Peak Hourly Flow (Millions of gallons per day)	14.24	13.8	13.48	15.23

Source: *City of Coon Rapids Sanitary Sewer System Plan*, August 2006, Appendix D, Table 1.

The wastewater system needs are those characteristic of a mature community. Maintenance and selective replacement of an aging system is paramount rather than construction of many miles of new pipe and lift stations each year. Neither new sewers nor relief sewers are deemed necessary to handle the flow from their respective service areas. The City's challenges for the wastewater system are highlighted below.

- **Deterioration of the Vitrified Clay Pipe (VCP) portion of the system.** There are over 66 miles (27% of the system) of this kind of pipe which is notorious for inflow and infiltration problems.
- **Inflow and infiltration (I/I) of storm water, ground water, or sump pump water into the system.** The City of Coon Rapids has adopted ordinances in Chapter 13-700 that prohibit the discharge of any storm water, surface water, subsurface drainage, cooling water, or unpolluted industrial process water into any sanitary sewer. The City inspects properties at the time that water meters are changed to see if there are violations to Chapter 13-700. If there are, orders are issued to make corrections. Though Coon Rapids has not been cited as having an I/I problem, it will continue its efforts to eliminate I/I violations.

- **Discharge of restaurant grease into the system.** In Chapter 13-705 of its City Code, Coon Rapids requires grease, oil, and sand interceptors when they are necessary.
- **Keeping up with the required inspection and maintenance of the system.** In 2006, the City completed a plan that outlined the tasks and costs for maintaining its system.
- **Phasing out individual sewer treatment facilities (ISTS).** It is estimated that there are 25 ISTS in the City. The policy is that these facilities not be rebuilt unless it is a substantial hardship where a lift station would be required for one property or if City sewer service is not available.

### GOALS AND POLICIES

(The Short Elliot and Hendrickson (SEH) plan adopted by the City in 2006 did not contain objectives.)

#### **Goal #1: Minimal claims against the City related to sewer backups.**

Policies:

- 1-1. The City will maintain and replace lift stations as necessary.
- 1-2. The City will inspect sewers to determine their specific maintenance needs.

#### **Goal #2: Standards and procedures for system maintenance.**

Policies:

- 2-1. The City will follow the standards suggested in the *Coon Rapids Sanitary Sewer System* plan adopted in 2006 including the rebuilding of three lift stations.
- 2-2. The City will continue to follow the requirements in [Chapter 13-500](#) of its City Code that regulates Individual Sewer Treatment Systems.

#### **Goal #3: Compliance with local and regional standards for wastewater management.**

Policy:

- 3-1. The City will work with the Metropolitan Council and other governmental agencies to complete the trunk sanitary sewer system.

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### Goal #4: Minimized inflow and infiltration (I/I) into the system.

#### Policies:

- 4-1. The City will systematically inspect, line, and/or replace VCP as necessary to reduce I/I.
- 4-2. The City will require modification of sump pump water discharge into the storm water system rather than the wastewater system as part of any water meter change.
- 4-3. The City will continue to follow the requirements as set forth in [Chapter 13-700](#) of its City Code. These requirements prohibit the discharge of any storm water, surface water, subsurface drainage, cooling water, or unpolluted industrial process water into any sanitary sewer. The City inspects properties at the time that water meters are changed to see if there are violations to Chapter 13-700. If there are, orders are issued to make corrections.

### IMPLEMENTATION PLAN

The City will use its capital budget, operations and maintenance budget, and City ordinances and regulations to implement its wastewater plan.

Table 5-4 on page 56 of *City of Coon Rapids Sanitary Sewer System Plan* illustrates the annual operations, maintenance and capital expenditures recommended by SEH. The City will focus on relining clay pipe over the first five years of the plan. It is expected that the City will replace three lift stations between 2007 and 2022.

# STORM WATER

## INTRODUCTION

Storm water is the water that does not soak directly into the ground after a rainfall or snowfall event. It includes rain that falls on parking lots, roof tops, streets, steep slopes, and soils that are unable to absorb the rain as fast as it falls. This water flows into a complex system of natural ponds, ponds created as part of real estate developments, City streets, and into the streams, drainageways, and storm sewers that eventually flow to the Mississippi and Rum Rivers.

The volume and quality of the runoff are issues of public concern. Minnesota and federal regulations require that cities adopt ordinances that limit the amount of runoff so as to reduce flood damage, maintain surface water quality, and recharge groundwater.

Coon Rapids completed a major study in 2003 that resulted in the adoption of the *Comprehensive Storm Water Management Plan*. The plan is intended to meet the requirements of the *Metropolitan Surface Water Management Act* and the Board of Water and Soil Resources (BWSR) Rules Chapter 810. The highlights of the City's storm water plan are included here.

The City of Coon Rapids has developed two more programs to manage the quality of surface water runoff. The City completed its *Storm Water Pollution Prevention Program* (SWPPP) in 2006 and its *Nondegradation Report* in 2007.

## Needs

The *Comprehensive Storm Water Management Plan* contains a detailed discussion of the storm water management challenges and needs in the City. It should be consulted for further information. That plan identified nearly 50 geographic problem areas.<sup>1</sup> The problem areas fall into three categories as follows:

- Lake and stream water quality
- Flooding and storm water rate control within the City
- Flooding or storm water rate controls between the City and adjoining entities

The attached Map W-4 shows the location of the storm water problem areas in Coon Rapids.

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<sup>1</sup> Comprehensive Storm Water Management Plan, WSB, 2003, Section V.

## Water Resources

The SWPPP identified the following waterways as impaired.

<u>Waterway</u>	<u>Nature of Impairment</u>	<u>1990-2006 Trend</u>
<u>Mississippi River</u>	<u>Fecal Coliform, Mercury, PCB</u>	<u>Decreases in runoff volume, phosphorus loading, and TSS loading</u>
<u>Coon Creek</u>	<u>Biological Invertebrates</u>	<u>Increases in runoff volume and phosphorus loading. Slight decrease in TSS</u>
<u>Sand Creek</u>	<u>Biological Invertebrates</u>	<u>Decreases in runoff, phosphorus loading, and TSS</u>
<u>Pleasure Creek</u>	<u>Biological Invertebrates</u>	<u>Increase in runoff, phosphorus loading, and TSS</u>
<u>Springbrook Creek</u>	<u>Biological Invertebrates</u>	<u>Increases in runoff, phosphorus loading, and TSS</u>

Based on the Nondegradation Analysis, the City has, and will continue to experience annual phosphorus and TSS loads less than 1990 conditions by utilizing current storm water management policies of the City. An increase in runoff volumes will occur from 1990 to 2020. However, these increased runoff volumes have been determined to be insignificant due to reasons outlined in Section V of the Nondegradation Report. Since TSS and phosphorus loads are projected to decrease and increased runoff volumes have been determined insignificant, no mitigation plan is necessary, and the City meets the Nondegradation Requirements of the MPCA.

Map W-5 shows the location of the impaired waters in Coon Rapids.

Several Best Management Practices (BMPs) have been adopted to contend with storm water needs. Two of the BMPs address the City's responsibility in dealing with Total Maximum Daily Loads (TMDL). The City will be responsible for reviewing all discharges from its Municipal Separate Storm Sewer System (MS4) and evaluating potential storm water impact. If the City determines that their MS4 SWPPP does not meet the applicable waste load allocation, schedule, and objectives of the TDML, the City will make the appropriate modifications to the SWPPP.

## GOALS AND POLICIES

The City has adopted a number of goals and policies that conform to the overall purpose that is specified in Minnesota Statutes Section 103B.201. The

*Comprehensive Storm Water Management Plan* did not contain objectives. The goals and policies have been developed to complement county, regional, and state goals and policies.

**Goal #1: Runoff Volumes – Land use development practices that limit public capital expenditures necessary to control excessive volumes and rates of runoff.**

Policies:

- 1-1. Uses or activities within the 100-year floodplain that include structures, fill, obstruction of flood flows, or cause increased flood elevations are prohibited.
- 1-2. Future discharge rates from new development and redevelopment will, at a minimum, not exceed the existing discharge rates, or rates which would interfere with sensitive downstream uses. Discharge rates shall be consistent with the discharge rates outlined within the City’s hydraulic/hydrologic model.
- 1-3. For the 1- or 2-year and 100-year return frequency events, the rate of storm water runoff leaving the City should not exceed the rate of runoff that leaves the City under existing conditions (at a minimum).
- 1-4. Within a Drainage Sensitive Uses Area, rate control calculations showing the post-development 100-year peak flow rate shall not exceed predevelopment 25-year peak flow rate (by sub watershed).
- 1-5. The City prefers to provide rate control through the use of regional storm water retention systems versus site-by-site retention systems.
- 1-6. All hydrologic studies will be based on standard hydrologic criteria and ultimate or anticipated development of the entire tributary drainage area.
- 1-7. Drainage calculations for the 2-, 10-, and 100-year critical events must be submitted and approved as part of any development applications prior to the issuance of any building or grading permit.
- 1-8. The design storm events shall be defined as having the Soil and Conservation Service Type II distributions as shown in Table 5-7 below:

**TABLE 5-7 Rainfall Event Probability**

Event Frequency	Event Duration	Probability of Occurance in Any Given Year	Rainfall Amount (Inches)
1-year	24-hour	99%	2.4
2-year	24-hour	50%	2.8
5-year	24-hour	20%	3.5
10-year	24-hour	10%	4.2

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100-year	24-hour	1%	5.9
100-year	10-day runoff	1%	7.2 (inches of runoff)

- 1-9. The critical 1% chance event will be defined as the event that requires the greatest storm water storage volume in a storage facility. These facilities include lakes, ponds, and their outlets.
- 1-10. Major storm water facilities (i.e., ponds, pond outlet systems, and major conveyance systems) will be designed using a 100-year event.
- 1-11. All minor drainage systems and local storm water collection systems analyses and design will be based on a 10-year event unless otherwise specified.
- 1-12. Detention facility design will include access for maintenance of the outlet structure and to the facility in general.
- 1-13. 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.
- 1-14. Culvert crossings or storm sewer systems in county or state right-of-way may have a design frequency that differs from the 10-year event. Each agency shall be contracted to determine the appropriate design frequency.
- 1-15. The City will utilize natural ponding areas, such as wetlands and lakes, for the impoundment and treatment of surface water runoff as appropriate.
- 1-16. The City intends to use both designated and non-designated areas to store storm water runoff. Non-designated areas include general depressions, areas lacking easements, low points, and streets where structures and/or property is not damaged, and any inundation that occurs will only be temporary in nature.
- 1-17. Available storage volume of landlocked areas shall be established by estimating the water surface elevation resulting from a 100-year, 10-day runoff (7.2 inches) and saturated or frozen soil conditions (Curve Number = 100).
- 1-18. 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.
- 1-19. The City will encourage the development of enhanced infiltration practices wherever it is practical. The City will not maintain private infiltration areas.

- 1-20. The City will require that a maintenance plan that includes procedures for maintenance and funding be submitted prior to approval of private infiltration basins.
- 1-21. The City will perform maintenance measures to assure proper function of the City-owned drainage systems as outlined in the Storm Water Maintenance Plan in Appendix N of the *Comprehensive Storm Water Management Plan*.
- 1-22. The City intends to assist in addressing problems associated with structural inundation caused to the extent outlined in the *Analysis of Water Resource Problem areas within the City of Coon Rapids* by working with property owners to identify and implement economic solutions to minimize damage risks to existing structures in flood prone areas. The City's assistance can be through public improvements or technical advice for private flood proofing improvements.
- 1-23. Anti-seepage collars shall be used on culverts and shall be installed so as to increase the creep distance or seepage line along conduit by 15% under public streets when there is:
  - Water ponding structures with a pool depth of two feet and a two-day duration.
  - 250-acre watershed or more.
  - Design head of 10 feet or more.
- 1-24. The minimum building elevation for new development or redevelopment shall meet the following criteria:
  - a) The basement floor will be four feet above the currently observed groundwater elevations in the area.
  - b) The basement floor elevation will be two feet above the elevation of any known historic high groundwater elevations for the area. Information on historic high groundwater elevations can be derived from any reasonable sources including piezometer data, soil boring data, percolation testing logs, etc.
  - c) The basement floor elevation will be two feet above the 100-year high surface water elevation for the area unless it can be demonstrated that this standard creates a hardship, and that the basement floor will be one foot above the highest anticipated groundwater elevation that could result from high surface water elevation groundwater in the area during the 100-year critical duration rainfall event. The impact of high surface water

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elevations on groundwater elevations in the vicinity of the structure can take into consideration the site's distance from the floodplain area, the soils, the normal water elevation of surface depressions in the area, the static groundwater table, and historic water elevations in the area.

- 1-25. Where the construction of a form outlet is not practical for landlocked areas, the minimum building elevation shall be the greatest of either two feet above the level resulting from two concurrent 100-year, single event rainfall events or two feet above the 100-year, 10-day snowmelt.
- 1-26. Any new development or redevelopment within the City will maintain a minimum building opening of three feet above the anticipated 100-year high water elevation as a standard practice. However, if this three foot freeboard requirement is considered a hardship, the standard could be lowered to two feet if the following can be demonstrated:
- a) That, with the two-foot freeboard area, storm water storage is available which is equal to or exceeds 50% of the storm water storage currently available in the basin below the 100-year elevation.
  - b) That a 25% obstruction of the basin outlet over a 24 hour period would not result in more than one foot of additional bounce in the basin.
  - c) An adequate overflow from the basin is available that will provide assurance that one foot of freeboard will be maintained for the proposed low building opening.
- 1-27. For those areas within the Coon Creek Watershed District and the Lower Rum River Watershed District, a review and permit from the respective watershed district is required in conformance with the district standards. For those areas of the City in the Six Cities Watershed District, the City will review and issue permits for all projects.

### **Goal #2 Water Quality - Maintained or improved quality of water in lakes, streams or rivers within or immediately downstream of the City.**

Policies:

In addition to the policies under Goal #1, the following policies apply to water quality.

- 2-1. In the design and construction of new systems, or modifications to the existing storm water conveyance systems, pretreatment of storm water runoff to Nationwide Urban Runoff Program (NURP) standards must be provided prior

to discharge unless otherwise indicated in the City's *Wetland Management Plan*.

- 2-2. NURP ponds or pond networks must be designed with total phosphorus removal efficiency in the 65-70% range. Storm water treatment can be provided via a single pond, which 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. The City will continue to monitor infiltration rates within pond areas by performing periodic surveys of pond water levels.
- 2-3. In areas where NURP treatment basins are not feasible to construct and a variance from the applicable watershed districts and City has been acquired, the Minnesota Pollution Control Agency *Guidelines for Protecting Water Quality in Urban Areas* may be substituted.
- 2-4. Phosphorus loading to a drainage system or water body will be reduced to the greatest practical extent through the use of Best Management Practices specified in the City's 2006 SWPPP.
- 2-5. For algae control on municipal storm ponds, the City will undertake the following:
  - a) Limits on annual spending for algae/storm pond chemical treatment will be established.
  - b) Use of Best Management Practices from adjoining property owners as a prerequisite to treating their pond. This involves the property owners in taking responsibility for improving the water quality of the pond such as keeping yard and pet waste from entering the pond and maintaining a buffer around the pond.
  - c) A minimum 15-foot vegetative buffer will be required around existing storm ponds.
  - d) City education of residents about the function and purpose of storm water ponds and buffers. This will assist in residents taking steps to reduce nutrient loading.
- 2-6. The City will follow the Storm Water System Maintenance Plan in Appendix N of the *Comprehensive Storm Water Management Plan*.
- 2-7. The City will require skimmers in the construction of new pond outlets, and will add skimmers to the existing ponds whenever feasible and practical.

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- 2-8. The City will continue to implement the public education program as described in Appendix O of the *Comprehensive Storm Water Management Plan*.
- 2-9. The City will continue to work cooperatively with Anoka County to implement the household hazardous waste disposal program and educate residents on the proper disposal of household hazardous waste.
- 2-10. The City will require buffers as described in Coon Rapids' *Wetland Management Plan* around storm ponds, lakes, wetlands, and streams in all new or redeveloped properties.
- 2-11. The City will develop and implement a water quality monitoring program.
- 2-12. The City will attempt to eliminate known illegal connections to the City's storm water conveyance system.
- 2-13. The City will work with neighboring municipalities to require rate control and treatment prior to the discharge of storm water across municipal boundaries.
- 2-14. The City has established a 31-foot standard street width.
- 2-15. Future outlets to DNR Public Waters must first pass through a sediment pond/trap prior to discharging into the water body.
- 2-16. All on-site wastewater systems will be the responsibility of the owner. If an on-site wastewater system fails, the owner will be required to connect to the City's sanitary sewer system.
- 2-17. The Coon Rapids Fire Department will take steps to minimize hazardous spills and the effects on protected waters.
- 2-18. The City will follow the Best Management Practices (BMPs) in the SWPPP.

### **Goal #3: Recreation, Fish and Wildlife - Protected and enhanced recreational facilities and wildlife habitat.**

Policies:

In addition to the policies above, the following policies will be followed.

- 3-1. The City will cooperate with the Minnesota Department of Natural Resources, Army Corps of Engineers, U.S. Environmental Protection Agency, U.S. Fish and Wildlife Service, and other appropriate agencies in promoting public enjoyment and protection of fish, wildlife, and recreational resources in the City.
- 3-2. Activities related to recreation, parks, open space, and trails systems shall be consistent with the City's *Parks, Open Space, and Trail System Plan*.
- 3-3. Restoration of the City's fish and wildlife resources will be undertaken as outlined in the City's *Parks, Open Space, and Trail System Plan*.

### **Goal #4: Public Information and Education – Education efforts that inform the public on pertinent water resource management issues and increase public participation in water management activities.**

Policies related to the education of the public are contained under the preceding goals in this chapter.

### **Goal #5: Public Ditch Systems – Well managed public ditches.**

Policies:

- 5-1. The Coon Creek Watershed District will manage County Ditches #23, 39, 47, 54, and 62.
- 5-2. The Six Cities Watershed District will manage Public Ditch #17.

### **Goal #6: Ground Water Protection – Coordinated and managed programs that control surface water runoff to the degree necessary to meet requirements for ground water protection or management as required by Anoka County, Minnesota Pollution Control Agency, Minnesota Department of Health, and Minnesota Department of Natural Resources.**

## Water Resources

### Policies:

- 6-1. The City will cooperate with state and regional agencies on ground water monitoring, inventorying, and permitting programs.
- 6-2. The City will work towards groundwater protection through the implementation of floodplain and shoreland ordinances in conformance with state and county regulations.
- 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 ground water.
- 6-4. The City will cooperate with the Minnesota Department of Health to insure 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.
- 6-5. The City will sweep the streets twice annually and more often in sensitive areas.

### **Goal #7: Wetlands - Protected wetlands in conformance with the requirements of the City's *Wetland Management Plan* and State of Minnesota *Wetland Conservation Act*.**

### Policies:

- 7-1. The City will implement its *Wetland Management Plan*.
- 7-2. The City will act as the Local Government Unit (LGU) for the *Wetland Conservation Act* in conformance with the City's *Wetland Management Plan*.
- 7-3. Prior to issuance of any City grading or building permits, all development and redevelopment activities must comply with the *Wetland Conservation Act* and the City's *Wetland Management Plan*.
- 7-4. The City will not allow any burning, filling, or draining of an existing wetland without its expressed written approval.
- 7-5. The City will sweep the streets as outlined in the *Comprehensive Storm Water System Plan*.

- 7-6. Buffers, as specified in the *Wetland Management Plan*, are required around storm ponds, lakes, wetlands, and streams upon new development or redevelopment.
- 7-7. Wetland banking opportunities will be pursued by the City in accordance with the *Wetland Conservation Act*.

### **Goal # 8: Erosion – Limited soil erosion and sedimentation.**

Policy:

- 8-1. Require landscaping and/or ground cover requirements as part of all site plans.

### **THE PLAN**

The City will incrementally address the problems shown on Map W-4 as funds are available each year.

### **IMPLEMENTATION**

The City established a Storm Water Drainage Utility in 2002 to provide funds for storm water control projects. These funds will be allocated annually to address storm water issues. In addition, the site plan review process will assure that new developments implement the policies stated in this chapter.