CHAPTER 7

WATER RESOURCES MANAGEMENT ELEMENT

Management of the region's water supply, protection of the surface water resources, and treatment of its sewage directly affect the health of citizens of all municipalities. For this reason, statutes and Metropolitan Council policies specify exact standards and requirements that must be met in this section of each municipality's comprehensive plan.

A growing population and increasing demand present a challenge to the Metropolitan Council's mission that is reflected in the *2030 Water Resources Management Policy Plan:* protect the region's ground and surface water resources so that the growing population of the region will continue to have a safe and adequate water supply.

Requirements

The local water resources management plan typically appears within the public facilities section of the comprehensive plan. Minnesota law requires all municipalities to develop three chapters that constitute their water resources management plan:

• A wastewater and comprehensive sewer plan that specifies areas to be sewered by the public system, sets standards of operation for private systems, and identifies areas that are not suitable for public or private systems.
• A surface water management plan that protects water quality and addresses water quantity issues.
• A water supply plan that ensures a safe and sufficient water supply now and in the future.

Use Metropolitan Council forecasts

In crafting the local water resources management plan, municipalities must use the Metropolitan Council's forecasts for population, household and employment growth. They must also ensure that the forecasts used in this chapter correspond with those in the comprehensive plan's background and land use plan chapters.

The Comprehensive Sanitary Sewer Plan, Local Surface Water Management Plan, and Supply & Distribution Plan all correspond to the background and land use plan chapters in the Farmington 2030 Comprehensive Plan – 2008 Update. The following sections discuss executive summaries of each of the plans within this chapter. To review the entire plan, please see the corresponding plans attached to the Farmington 2030 Comprehensive Plan – 2008 Update.

COMPREHENSIVE SANITARY SEWER ELEMENT

The Metropolitan Land Planning Act (amended 1995) requires local governments to prepare comprehensive plans and submit them to the Metropolitan Council to determine their consistency with metropolitan system plans. The local Comprehensive Plan is to include a sanitary sewer element covering the collection and disposal of wastewater generated by the community. Similarly, the Metropolitan Sewer Act requires local governments to submit a Comprehensive Sewer Policy Plan (CSPP) which describes the current and future service needs required from MCES.

The City of Farmington was connected to the Metropolitan Council Environmental Services (MCES) trunk sanitary sewer system in 1977 when the Empire Wastewater Treatment Facility replaced the City of Farmington Wastewater Treatment Facility. The MCES provides wastewater treatment at Empire for the Lakeville, Apple Valley, Rosemount, Farmington, and Empire areas, and in the future will also provide treatment to Elko-New Market.

The City of Farmington's existing and proposed sanitary sewer system for the ultimate development of the City is shown on Map 1 at the back of the attached. The City has eight major sewer districts, named Districts 1 through 8, which each define the limits of service for a separate trunk system. The existing trunk system, which covers areas D1, D3, D4, D5, D6, and D8, is shown in red lines. Two trunk lines (in blue) are proposed to serve areas D2 and D7 in the future. The trunk line to D2 in the far northwest portion of the City is currently not planned to be installed until after 2030. Additional proposed trunk lines are also shown on Map 1 in areas D4 and D6 as possible new trunk lines depending on the timing of Phase 2 of the Elko-New Market Interceptor.

Farmington's trunk sanitary sewer system discharges to two existing MCES interceptors that travel through the City, which are shown in yellow on Map 1. Interceptor #7103-1 (Lakeville-Farmington Interceptor) enters Farmington from Lakeville to the west, and districts D2, D3, D4, D5, and D6 discharge to this interceptor. Interceptor #7409 (Apple Valley Interceptor) enters Farmington from Lakeville to the north,
and also carries sewer flow from Apple Valley and Rosemount. Districts D1, D7, and D8 discharge to this interceptor.

Modeling of the sanitary sewer system was based on a variety of parameters, such as: land use, population density, standard wastewater generation rates, topography, and future land use plans.
Based on the topography of the undeveloped areas, the sewersheds were created and the most cost-effective locations for future trunk line facilities were determined. The location of smaller sewer laterals and service lines are dependent upon future land development plats and cannot be accurately located from a study of this type.

The Metropolitan Council identified Farmington as a community with at least one Infiltration and Inflow (I/I) exceedance event recorded between June 1, 2004 and June 30, 2006, and assessed a surcharge to begin in 2007 and last for five years, until 2011.

The City has since drafted an I/I Reduction Plan which proposes improvements over a period of five years to reduce I/I which will cost more than the surcharge. If this plan is approved by the Metropolitan Council, the City will receive credit for the entire surcharge. The I/I Reduction Plan consists of six components:

1. Resume monitoring wastewater flow in the City system
2. A sump pump cross connection inspection and removal program
3. A program to investigate known or suspected areas of foundation drains, leaking cleanouts, and leaking services
4. A manhole inspection and repair program
5. An ongoing sewer cleaning, televising, and repair program
6. Stringent requirements for new sanitary sewer and home construction

The Comprehensive Sanitary Sewer Plan presented is intended to serve as an inventory of City of Farmington's existing sanitary sewer trunk facilities and as a guide for expanding the trunk sewer system to service future development in the City. Based on the information analyzed in this study and presented in this report, the following outcomes are desired:

1. That the Metropolitan Council use the City's population and flow projections in determining the appropriate capacity for its own facilities.
2. That the City Council adopt the sanitary sewer layout, as presented in the Trunk Sewer System Map, as the development guide for sanitary sewer construction within the study area.
3. That the system design flows and criteria in Appendices C and D be used for sizing all future sanitary sewer trunk facilities, but that flow projections of Section 2 be used when representing the impact of Farmington's system on the Metropolitan Disposal System and the Empire WWTF.

WATER SUPPLY AND DISTRIBUTION PLAN

Introduction

This report presents a Comprehensive Water Supply and Distribution Plan for a water system that will meet both the near-term and ultimate needs of the City of Farmington (see attached report). The most recent Comprehensive Water Plan was completed in 2006.

Growth and Water Demand

Farmington has experienced rapid growth over the last 10 years. From 1990 to 2000, its population increased by 208%, going from a population of 5,940 to 12,365. The Metropolitan Council certified Farmington's estimated population of 18,589 residents as of April 1, 2007. Water needs will continue to increase as the City builds to an estimated

2030 served population of approximately 32,700. The ultimate saturation population is estimated to be about 65,000.

Water use has increased steadily as population has grown. The City of Farmington currently pumps approximately 810 million gallons of water into the system each year. This corresponds to an average daily use of 2.2 million gallons per day. Maximum day water use was on July 16, 2007 with 6 million gallons being pumped in one day (MGD). The projected water demand for 2030 is a daily average of 3.8 MGD with an estimated daily maximum of 11.0 MGD. The projected ultimate average day demand is 8.5 MGD and the ultimate maximum day demand is 23.2 MGD. Projected water demands were based on the Ultimate Land Use Plan for the City of Farmington.

Existing Facilities

The existing water supply and distribution system has served Farmington's needs quite well. The existing distribution system operates under a single pressure zones, with a high water level (HWL) of 1117.33. Farmington presently obtains its raw water supply from seven wells throughout the city.

Two storage facilities stabilize pressures during peak water demands, and also serve as a source of water during fires or power outages. There is a total existing useful storage volume of 1.79 million gallons (MG).

Water from the supply wells is chlorinated, fluoridated, and pumped into the system. Raw water from the Jordan aquifer is considered to be hard and has occasional high concentrations of iron and manganese, but does not presently require treatment. The need for treatment in the future will be evaluated in light of customer desires and the mandates of the Safe Drinking Water Act.

2030 Capital Improvements

The recommended improvements necessary to meet Farmington's estimated 2030 trunk water supply and distribution needs will cost about $14,250,000. Improvements include:

- 3 new supply wells
- raw water transmission main
- 1 new storage tower
- trunk distribution system improvements

Ultimate Water System

The improvement program for Farmington's ultimate trunk water supply and distribution system is estimated to cost an additional $49,650,000. The ultimate system shown on the map in the back of this report consists of the 2030 improvements plus the following:

- 11 new supply wells

- additional raw water transmission main
- an additional 2 water storage towers
- over 10 miles of additional trunk water distribution mains
- a proposed water treatment plant, in case of future raw water quality problems.

Economic Analysis

This report recommends that the City maintain the current system of using area charges and connection charges to finance the proposed Capital Improvement Plan. Area charges of $2,765 per acre developed are proposed to pay for 100% of distribution system costs and 25% of the ultimate supply and storage costs. Connection charges of $805 per residential equivalent connection are proposed to pay for 75% of the ultimate supply and storage costs. If water treatment is implemented, a special connection charge of $945 per residential equivalent connection will be required from both existing and future consumers to pay for water treatment.

The City should review the Capital Improvement Program annually and modify the program as needed to better serve community development needs. The entire water supply and distribution plan should be revised every five to ten years.

Recommendation

Based upon the results and analysis of this study, it is recommended that Farmington City Council:

1. Adopt this study and the Capital Improvements Program as a guide to the orderly expansion of the City's water system.
2. Annually review the Capital Improvements Program and water system service charges and make amendments, if necessary, to better serve community development needs.
3. Expedite acquisition of site for wells, storage facilities, and any easements required to connect these sites to the water system.
4. Monitor water quality and consumer complaints to screen out problems with high iron and manganese concentrations and insure compliance with drinking water quality standards. The need for water treatment should be evaluated as raw water quality problems arise in the future.

LOCAL SURFACE WATER MANAGEMENT PLAN

Background

This Local Surface Water Management Plan will serve as a comprehensive planning document to guide the City of Farmington in conserving, protecting, and managing its surface water resources (see attached report). This report builds upon previous Surface Water Management Plans and addendums completed by the City in 1985, 1997 and 2006.

This plan may be periodically amended to remain current with local practices and policies.

This plan has been created to meet the requirements detailed in Minnesota Statutes 103B and Minnesota Rules 8410, administered by the Minnesota Board of Water and Soil Resources. This plan is consistent with the goals and policies of the Metropolitan Council's *2030 Water Resources Management Policy Plan.*

This plan is also consistent with the Vermillion River Watershed Joint Powers Organization (VRWJPO) Watershed Plan, adopted by the watershed in November 2005. The VRWJPO plan provides a summary of water and natural resources within the district, and recognizes the impact of urban development on the hydrology of the Vermillion River and adjacent resources. The City of Farmington shares in the benefits and responsibilities of addressing those issues.

Goals

Farmington is a growing community. Development and changes in land use will continue into the future and have the potential to decrease water quality, increase flooding, impact water resources and increase public expenditures on surface water management. The goals identified in this LSWMP are to:

1. Provide effective and responsible local management of water resources.
2. Protect and enhance surface water quality in the City.
3. Provide flood protection for person and property, and manage the rate and volume of runoff entering rivers, streams, lakes and wetlands within the City.
4. Protect groundwater quality and quantity to preserve it for sustainable and beneficial purposes.
5. Maintain and enhance the functions and values of wetlands within the City.
6. Preserve floodplains and manage adjacent uses to prevent flood damage.
7. Develop or improve recreational open space areas, fish and wildlife habitat, and public accessibility in conjunction with water quality improvement projects.
8. Protect and conserve water and natural resources by promoting sustainable growth and integrated land use planning.
9. Increase public awareness of the function and value of surface water resources and the impacts associated with human activities.
10. Maintain adequate funding for surface water management.

Organization

This LSWMP is organized as follows:

- ✶ Section 2 describes the physical environment; the natural resources and land uses within the City.
- ✶ Section 3 summarizes the inventories, assessments and modeling completed for this plan, and provides a current assessment of surface water management in Farmington.
- ✶ Section 4 lists the goals and policies identified to address surface water management needs in the City.
- ✶ Section 5 summarizes current ordinances and capital projects planned to implement the goals and policies listed in Section 4.
- ✶ Section 6 outlines the continued administration of this plan.

Summary

The preparation of this plan included a hydrologic model of this current surface water system in Farmington. The City has been divided into seven major drainage districts as shown on Map 1. The map shows several existing and proposed regional ponds for stormwater management. The City has successfully implemented a regional ponding approach since the preparation of its first Storm Drainage Plan in 1985. The design of drainage systems continues to become more complex. Runoff reduction, infiltration, pollutant removal, groundwater recharge and stream protection are a few of the current goals in system design. Portions of the Vermillion River and its tributaries are designated trout streams, listed in Minnesota Rule 6264.005, Subpart 4. Listed sections and streams in and near Farmington are shown in Figure 2.2.3.

There are eight Public Waters wetlands within Farmington identified on Map 3. The City will enforce the requirements of the Wetland Conservation Act, including requirements for no net loss of wetland quantity, quality and biological diversity.

The MPCA's 2008 Impaired Waters List (still in draft form) includes new listings within Farmington, identified in Figure 2.2.1. Sections of the Vermillion River, North Creek, Middle Creek, South Creek and the South Branch of the Vermillion River are impaired for aquatic recreation be fecal coliform. The Vermillion River is also impaired for aquatic life by turbidity. The City will be required to update this surface water management plan to incorporate the findings of each completed TMDL study.

The City will maintain full authority for watershed management permitting of land alteration activities within the City. The VRWJPO adopted Watershed Rules in March 2007. This plan compares the regulatory controls of the two agencies and identifies specific City codes that must be updated to achieve consistency with the VRWJPO. Per State statute, City Codes will need to be updated within 180 days after adoption of this plan by the watershed.

The EPA's NPDES program required the City of Farmington to obtain permit coverage in 2003, by implementing a storwater pollution prevention program. Many of the goals and policies discussed in this LSWMP are directly related to requirements listed in the NPDES program.

Surface water management activities in Farmington are funded through a combination of stormwater utility revenue and area charges for new development. The City will periodically review and update the schedule of utility fees and area charges to maintain adequate support for the stormwater management program.

This Local Surface Water Management Plan will be incorporated into the City's 2008 Comprehenisve Plan update and will be applicable until 2018, at which time an updated plan will be required. Periodic amendments may be required to incorporate changes in local practices.