

6 Water Resources Management

The City of Rogers is responsible for managing the community's water supply and sanitary sewer systems, as well as protection of surface water and groundwater resources. This chapter describes the City's existing and future systems and establishes long-term goals and policies for managing and expanding these water resource systems. Although this chapter is a required element of the City's Comprehensive Plan, the City's water resources are guided by more detailed system plans that have been adopted outside of the Comprehensive Plan, consisting of the following plans:

- Comprehensive Sanitary Sewer Plan
- Comprehensive Water System Plan
- Surface Water Management Plan

SANITARY SEWER SYSTEM

The City of Rogers currently operates its own public sanitary sewer system with a wastewater treatment plant (WWTP). The City's initial sanitary sewer system was constructed in 1960 and has

been expanded substantially as the City has grown, including two expansions of the WWTP.

The City's current Comprehensive Sanitary Sewer Plan (CSSP) was adopted in January 2005 and amended in May 2005. The 2005 CSSP was updated in May 2009 to ensure future projections for population, households, and employment are consistent between the CSSP and the updated Comprehensive Plan. The updated CSSP is undergoing a separate review, approval, and submittal process at both the City and regional levels. The City's intent is to submit the updated CSSP in conjunction with the submittal of the Comprehensive Plan Update to the Metropolitan Council in 2009. The CSSP covers all land within the current boundaries of the City of Rogers as well as land that is planned to be annexed into the City as described in the Orderly Annexation Agreement by 2012 between the City and Hassan Township. Since ultimate development will occur over many years beyond 2012, interim improvements to the sanitary sewer system may be necessary depending upon the pace at which development occurs in each area of the City.

Existing Sanitary Sewer System

The City's existing sanitary sewer system consists of municipal trunk and lateral pipe lines, eleven (11) lift stations, and a WWTP. The existing system is organized into six (6) major sanitary sewer districts, plus the smaller Mallard Estates Lift Station area, based on the lift stations to which they flow:

- Central Rogers Sanitary Sewer District (CR)
- North Rogers Sanitary Sewer District (NR)
- Southwest Sanitary Sewer District (SW)
- Hassan Township Sanitary Sewer District (H)
- West Rogers Sanitary Sewer District (WR)
- East Rogers Sanitary Sewer District (ER)
- Mallard Estates Lift Station Sewer District (ME)

Some of these major sewer districts are broken down into subdistricts with a total of 11 subdistricts existing in 2009.

The portion of the TH 101 corridor, north of I-94, that is located in Hassan Township is part of the NR and H sewer districts as guided by a Joint Powers Agreement between the City and the Township.

The City's eleven (11) existing lift stations are distributed as follows:

- Two lift stations in the SW district;
- Two lift stations in the NR district;

- Three lift stations in the H district;
- Two lift stations in the ER district;
- One lift station in the WR district
- One lift station in the Mallard Estates residential subdivision.

The existing WWTP, which is located on South Diamond Lake Road just northwest of the intersection of I-94 and TH 101, is designed with capacity to accommodate 30-day average wet weather flow of 1.6 million gallons per day (MGD). In 2006, the WWTP treated an average of about 0.8 MGD with peaks of 1.0 MGD in the wet season.

The WWTP was expanded in 1978 and again during a three-phase expansion project in 1992, 1995 and 1996. In 1999, a WWTP Expansion Study was completed to consider the possibility of expanding the facility, and although an upgrade is possible, the study found that future expansions are improbable because of the higher standards required for wastewater treatment and the cost effectiveness of such an upgrade.

Future Sanitary Sewer System

The 2005 CSSP was completed to evaluate the City's future sanitary sewer demands for all land within the current boundaries of the City of Rogers as well as land that is planned to be annexed into the City by 2012 as described in the Orderly Annexation Agreement between the City and Hassan Township.



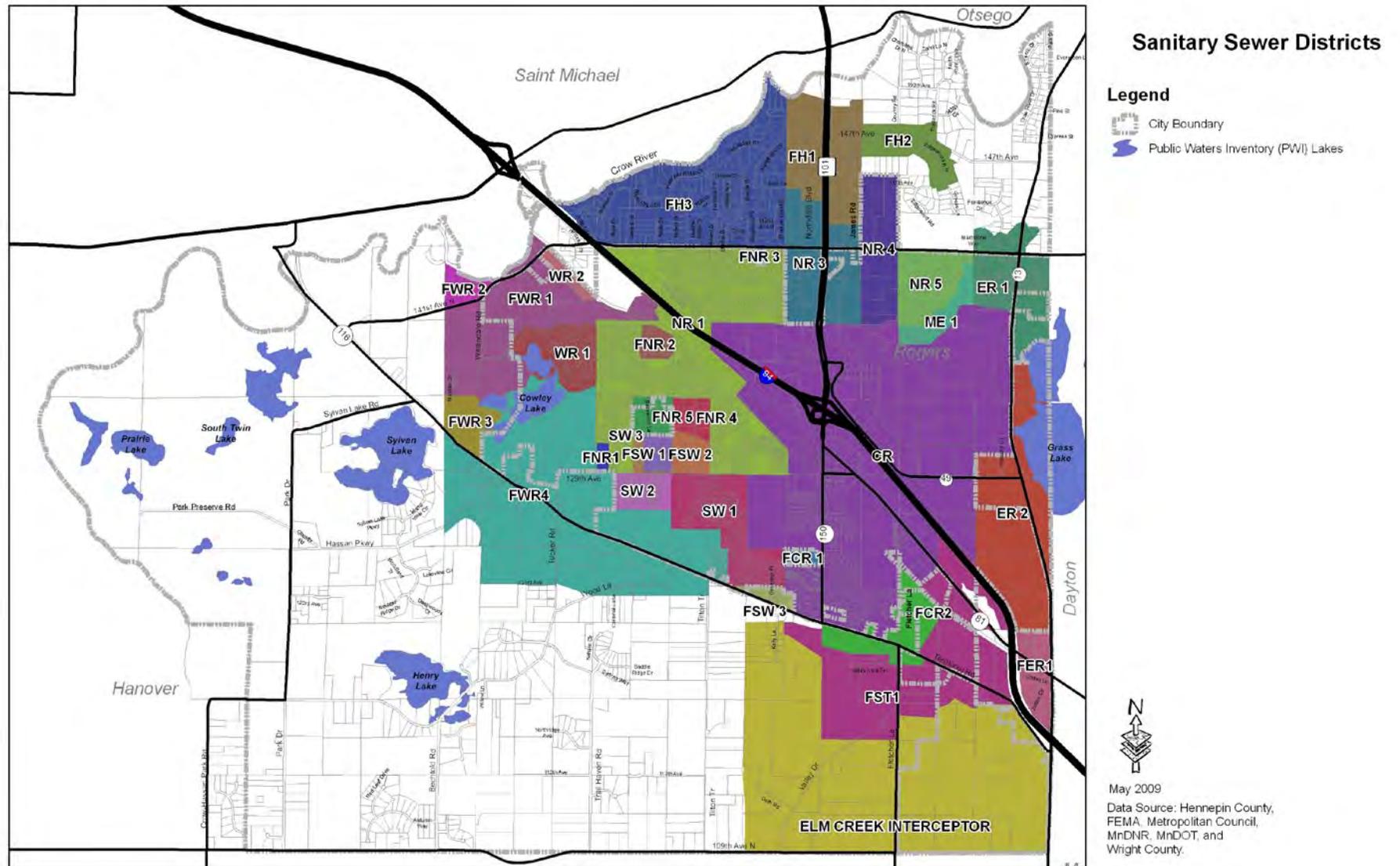


Figure 6.1: Rogers Planned Sanitary Sewer Districts, Existing and Future.



The scope of the CSSP is general in nature and detailed feasibility studies will be necessary to confirm final flow estimates and locations of future sanitary sewer facilities as the expansion areas develop in the future.

The CSSP proposes seven (7) additional future sewer districts for a total of 12 sewer districts:

- Future North Rogers Sanitary Sewer District (FNR)
- Future Central Rogers Sanitary Sewer District (FCR)
- Future West Rogers Sanitary Sewer District (FWR)
- Future Hassan Township Sanitary Sewer District (FH)
- Future Southwest Sanitary Sewer District (FSW)
- Future East Rogers Sanitary Sewer District (FER)
- Future Stone’s Throw Sanitary Sewer District (FST)

The proposed sewer districts are broken down into subdistricts to allow better evaluation of sewer flows, resulting in a total of

approximately 30 sewer subdistricts within the City.

In 2006, the City completed a study of the existing wastewater flows for the WWTP and the remaining capacity of the facility to accept additional wastewater flows from potential development in the 2010 orderly annexation area and southeast Hassan Township. The wastewater collection and treatment systems were analyzed by determining the wastewater flows that would be generated from the potential development areas within the 2010 orderly annexation area. This study showed that additional capacity will be needed around 2013 for unconstrained growth and 2015-2017 for constrained growth, depending upon the level of Inflow & Infiltration (I/I) reduction. Refer to Table 6.1 - Rogers Wastewater Treatment Plant Capacity Analysis (2006). Table 6.2 shows the revised projections for population, households and employment and projected sanitary sewer flows.

Existing flow to the plant (1.0 MGD wet season)	0.8 MGD
New flow for existing Rogers and 2010 annexation areas	1.2 MGD
Miscellaneous redevelopment of commercial areas	0.1 MGD
Total needed flow (2.3 MGD if I/I is not removed)	2.1 MGD
Existing plant capacity (wet weather)	1.6 MGD
Additional capacity (0.7 MGD with I/I)	0.5 MGD

Table 6.1: Rogers Wastewater Treatment Plant Capacity Analysis (2006)

The 2006 analysis of the Rogers Wastewater Treatment Plant (WWTP) capacity assumed:

Constrained Growth - growth will be limited to 183 housing units & 35 commercial acres per year.

Unconstrained Growth - there will be no limit on how fast development occurs.



In addition to sanitary sewer services provided by the City of Rogers, the southeast portion of Hassan Township is anticipated to be served by Metropolitan Council Environmental Services through the extension of the Elm Creek Interceptor (ECI). Figure 6.2 shows the large portion of southeast Hassan that is capable of being served by a gravity sewer system connected to the Elm Creek Interceptor. At this time, 0.87 MGD of the Elm Creek Interceptor’s capacity has been allocated for future development in southeast Hassan Township. This interceptor is projected to be available after 2012. Hassan Township has studied the potential for development in southeast Hassan, estimating a minimum of 1,791 households and 4,720 jobs by 2030. While there are currently no public sanitary sewer facilities in place, planning for the local infrastructure system to connect to the Elm Creek Interceptor is underway.

As previously mentioned, the 1999 WWTP Expansion Study conducted by the City of Rogers found that future expansions of the City’s WWTP are improbable because of the higher standards required for wastewater treatment and the cost effectiveness of such an upgrade. Consequently, the City continues its request that the Metropolitan Council consider development of a new regional WWTP facility that would replace the City’s WWTP, including future expansion needs, in a location yet to be determined. During the preparation of the 2008 update to the Rogers Comprehensive Plan, there were discussions

	Population Sewered	Households Sewered	Employment Sewered	Average Daily Flow (MGD)
2010*	8,510	2,940	8,100	1.00
2020	12,430	4,560	12,000	1.47
2030	18,670	7,220	15,500	2.20

* Note: 2010 projections are for the City of Rogers only. 2020 and 2030 projections reflect Rogers and Hassan Township, based on the planned annexation of Hassan Township in its entirety in 2012.

Table 6.2: Projected Sanitary Sewer Flows

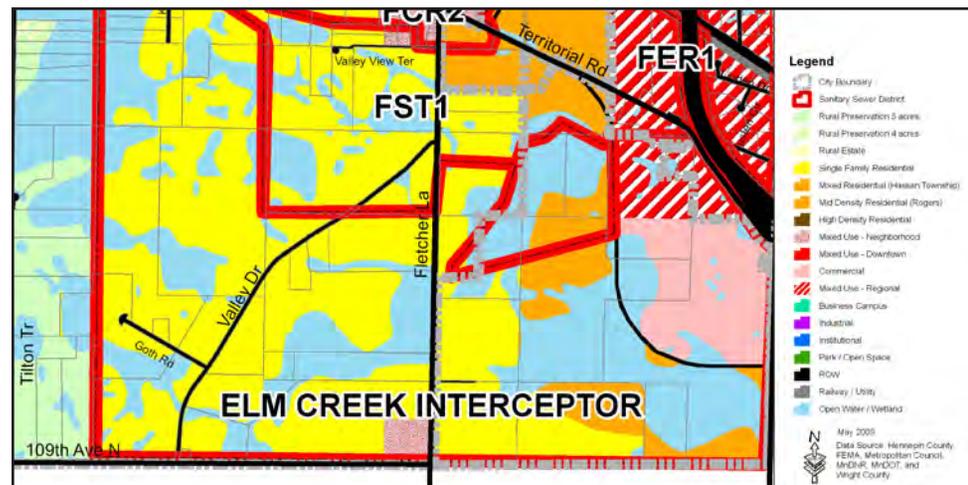


Figure 6.2: Southeast Hassan area to be served by Elm Creek Interceptor.



between the City and Metropolitan Council staff about the future desire for a new regional WWTP along the Crow River in northwestern Hassan Township. This new regional WWTP would enable the phasing out of the Rogers WWTP and provide the capacity needed to ultimately service a significant portion of western Hennepin County, including Rogers and the planned annexation areas in Hassan Township. The timing and location of the regional WWTP facility is dependent upon additional studies by the Metropolitan Council, successful acquisition of land for a new regional WWTP, and potential acquisition of the Rogers WWTP by the Metropolitan Council. The City anticipates that full development of the 2012 orderly annexation area will require expansion of the City's existing WWTP or borrowed capacity from the Elm Creek Interceptor, until such time that a new regional WWTP is in place.

On June 5, 2008, during the preparation of the update to the Rogers Comprehensive Plan, the City of Rogers and Hassan Township adopted a joint resolution to amend the Orderly Annexation Agreement (OAA) to complete the total annexation of Hassan Township by the City of Rogers no later than January 1, 2012, rather than August 15, 2030, as called for in the original OAA. This substantial modification to the OAA requires the City of Rogers to evaluate its current CSSP and undertake updates to the Plan that accommodate the expedited annexation date of the

entire township from 2030 to 2012. The City began the CSSP update process in Fall 2008 and intends to submit the updated CSSP in conjunction with the submittal of the Comprehensive Plan Update to the Metropolitan Council.

Plan for Individual Sewage Treatment Systems (ISTS)

There are fewer than 50 homes and businesses in the City of Rogers which are served by individual sewage treatment systems (ISTS). Individual sewage treatment systems (ISTS), commonly called septic systems, treat and disperse sewage for individual lots not served by a publicly-owned treatment facility.

The City of Rogers currently has provisions in Chapter 18, Article 3 of its City Code regulating the use of on-site sewage treatment. While it is homeowners' responsibility to keep ISTS operational, the Metropolitan Council expects all communities to have an ISTS management program which ensures that ISTS are properly installed, maintained, and managed. To effectively manage this, the City passed an agreement on February 24, 2009 to transfer maintenance and enforcement of ISTS to Hennepin County Environmental Health.

Inflow and Infiltration

The City's review of WWTP daily flow records indicate that some inflow and infiltration (I/I) occurs. Per MPCA criteria, it does not appear that the City's



overall I/I is excessive at this time. The City recognizes that there are some isolated areas where excessive I/I exists, such as downtown. The estimated wastewater flow for the City’s trunk sanitary sewer system includes an allowance for acceptable I/I levels.

The City has taken steps to prevent and reduce the amounts of extraneous water that enters into the public sanitary system through I/I. These steps include the following:

- using manhole castings with concealed pick holes;
- stringent testing of all new sanitary sewer lines;
- prohibiting connection of roof and foundation drains to the sanitary sewer system;
- enforce separate house drain systems on all new home construction.

The City will carefully monitor sewer construction to keep I/I at or below its current levels. However, a known contributor to I/I is the downtown area of the City. This segment of the system will be considered for a possible corrective project.

Sanitary Sewer System Goal

Goal 1: Ensure that public sanitary sewer services are constructed, extended, operated and maintained in an ecological, efficient and economic manner to support the City’s future growth plans.

Sanitary Sewer System Policies

- 1.1 Extend the City’s sanitary sewer system as outlined in the proposed future sanitary sewer districts in the Comprehensive Sanitary Sewer Plan (CSSP) and guided by the City’s future land use plan.
- 1.2 Continue to monitor and televise the collection system as a part of the system’s regular maintenance program.
- 1.3 Continue to use the Capital Improvements Program (CIP) process on an annual basis for determining and phasing of improvements to the sanitary sewer system.
- 1.4 Investigate the levels, causes and sources of excessive I/I and establish a correction program to prevent and reduce excessive I/I.
- 1.5 Assess the service costs to benefitting properties and utilize trunk charges for necessary oversizing and additional depth.
- 1.6 Work with the Metropolitan Council, Hassan Township and other agencies to connect to the Elm Creek Interceptor to provide southeast Hassan with municipal services.
- 1.7 Work collaboratively with the Metropolitan Council and Hassan Township in the exploration of a new regional wastewater treatment plant.

Goals — Statements about what the community wants to achieve through the implementation of the Comprehensive Plan

Policies — Action statements describing the proposed method of achieving the goal.



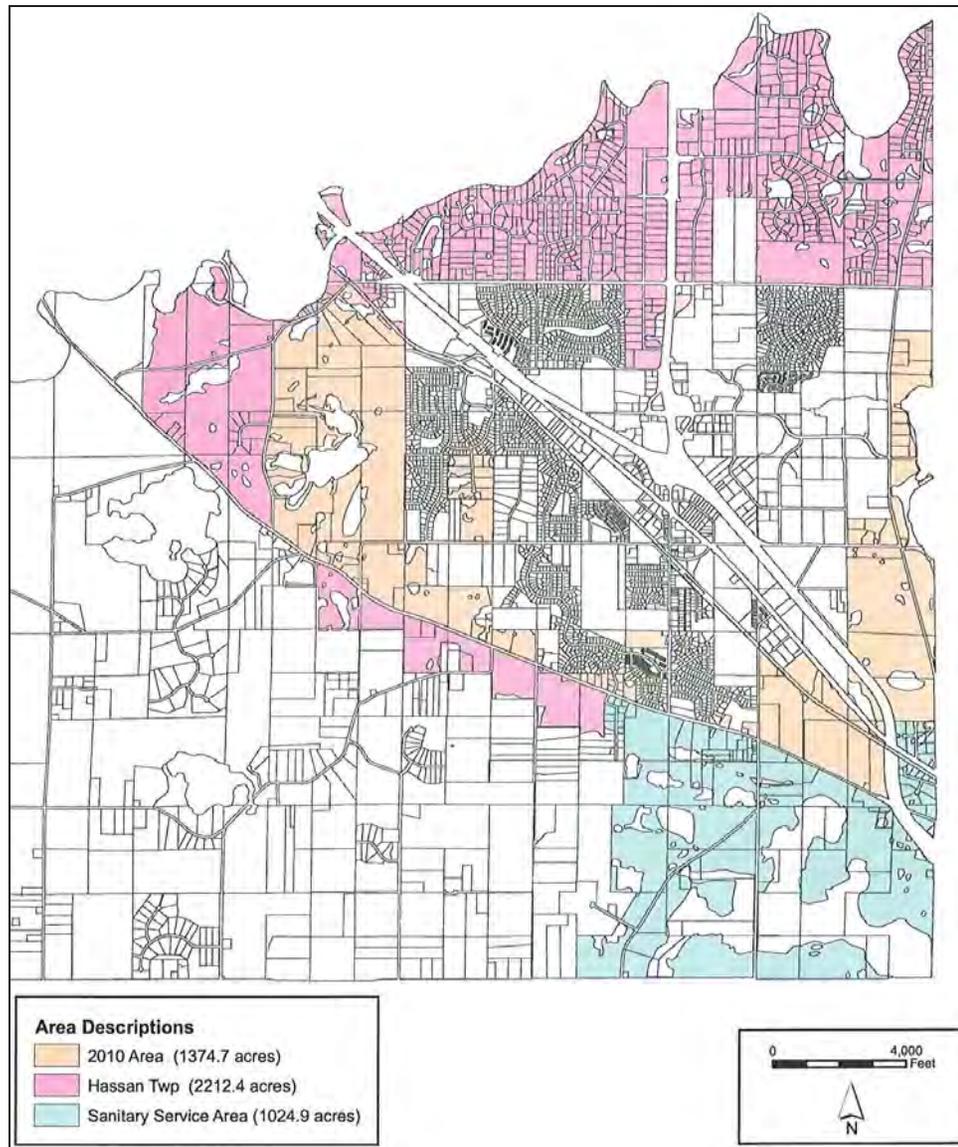


Figure 6.3: City of Rogers Comprehensive Water System Plan Update figure showing developable land in Hassan Township to be served by the City of Rogers through 2030.

WATER SUPPLY SYSTEM

The City of Rogers currently operates its own public water supply system. The City's source of water comes solely from groundwater from the Franconia-Ironton-Galesville (FIG) aquifer via six (6) confined aquifer water wells and two (2) elevated water towers. In 2005, the population serviced by Rogers' water supply system was 6,641, which was 99% of the City's population. Residential demand accounted for approximately 62% of the total demand with commercial/industrial at 32% and institutional/other demand at 4.5%.

The current Comprehensive Water Supply Plan (CWSP) was adopted by the City in February 2007. The CWSP covers all land within the current boundaries of the City of Rogers as well as land that is planned to be annexed into the City as described in the Orderly Annexation Agreement between the City and Hassan Township. Projected development will ultimately occur over many years at a pace that is difficult to predict, and most likely substantial development will occur beyond 2030. The City's intent is to update the 2007 CWSP in 2009 to ensure that projections for population, households, and employment are consistent between the CWSP and the updated Comprehensive Plan.



Existing System

The City’s existing water supply system operates on a dual water pressure system. There are currently six (6) water wells including a new well constructed in 2007, which increased the total capacity to 8.352 MGD. The firm well capacity, the city’s capacity with the largest well out of service, is 6.912 MGD.

The City currently has two (2) elevated water towers: the 400,000-gallon East Tower and the 750,000-gallon West Tower for a total storage capacity of 1.15 million gallons. Water is pumped by well pumps directly into the water system without filtration. Instead of filtration, Rogers’ existing water treatment process involves injecting chlorine gas for chlorination to inactivate bacteria and provide chlorine residual throughout the system, hydrofluosilic acid for fluoridation to prevent tooth decay, and polyphosphate C-5 for sequestering iron and manganese.

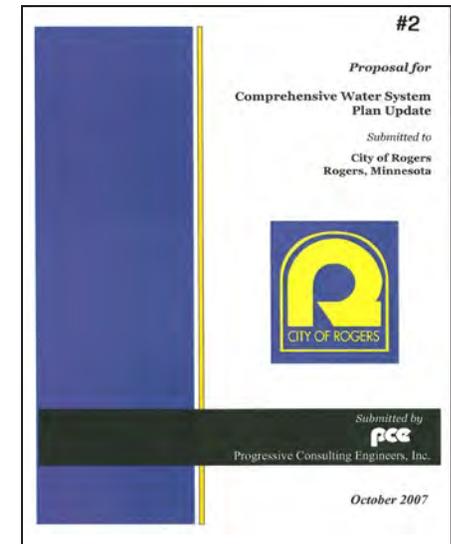
Due to the community’s current rural surroundings, there are no inter-system water connections with any other communities’ water systems. However, as Rogers and neighboring communities expand and annex land the distance continues to decrease between neighboring water supply systems. It may be possible in the future for Rogers to have an interconnection with another communities’ water system for emergency purposes.

Future System

The current CWSP reevaluated future water needs, recommended water system improvements, and outlined a capital improvement plan through 2030. Future needs are based on development projections within the City of Rogers and annexation projections for land in Hassan Township. Information from this plan is summarized as it relates to future water supply needs for the City as it grows through the year 2030.

The CWSP anticipates the annexation of significant areas of Hassan Township. These growth areas are shown on the map (Figure 6.3) on the next page taken from the 2007 CWSP update. Over 1,800 acres are assumed to be fully developed and annexed by 2015. These areas include southeast Hassan, land along Territorial Road, and land west of Willandale Road. The Plan also assumes the annexation of over 1,100 acres in north Hassan. However, the Plan assumes that as the area is already mostly developed with large lot residential it will not likely connect to the Rogers water system until 2015-2030. The Plan also recognizes that southwest Hassan Township may develop in the future but assumes this area would not be served by the Rogers water supply system.

Design flows are provided for 2006, 2015 and 2030 with and without the projected demands from Hassan Township. It is projected that Hassan Township will require a total of 1.927 MGD by 2015



City of Rogers Comprehensive Water System Plan Update, 2007.





Figure 6.4: High-Pressure Zone located in southern portion of Rogers, north and west of intersection of Territorial Road and Fletcher Lane.

and 2.331 MGD by 2030. As Hassan Township does not have a water distribution system, the City will not only be required to install wells to produce water but also construct water mains to distribute it.

After the construction of Well 8 in spring 2007, Rogers has a capacity of 8.352 MGD. Analysis of projected water demand indicates the need for an additional six 1,000 gallon per minute wells before year 2015 and one more before 2030.

Rogers current storage facilities include the 400,000 East Tower and the 750,000 gallon West Tower. A new 1.0 MG capacity elevated water tower is planned for 2008 at the south edge of Rogers to increase the system's reliability and fire flow capacity. In addition to this new water tower, anticipated growth will require 2.5 MGD of new storage by 2015 with 0.6 MGD of storage needed by 2030. The CWSP recommends two additional 2.0 MG capacity ground storage reservoirs to accommodate the City's growth through 2030.

The analysis of the existing distribution system shows that while it is able to meet present needs in most parts of the city, it is unable to meet the fire flow demand requirements in certain areas of the city.

One of these areas is a high-pressure zone located in the southern portion of the City, north of Territorial Road and west of Fletcher Lane (see Figure 6.4). All of the City's existing water wells and water towers are located in the City's normal-pressure

zone, which encompasses most of the City. Since the high-pressure zone has a higher elevation than the normal-pressure zone and water distribution to the high-pressure zone is handled through a single connection point, which is a booster station, the high-pressure zone currently inadequately served by the water supply system. Dead-ends and undersized mains are causing the City's other insufficient areas to have inadequate fire protection for extended time periods. Watermain additions are recommended to improve water circulation and supply, maintain optimal water surface elevation in the towers, and serve areas of future development with City water. In addition, a future water tower in the high-pressure zone would also improve water service in this area.

Other than North Hassan, the areas annexed from Hassan Township are planned to be connected to the water system as it develops up to year 2015. Existing development in north Hassan will be able to connect during reconstruction between 2015 and 2030.

To reduce the level of iron and manganese from the City's water wells, the CWSP recommends that the City evaluate the possibility of water treatment by filtration. If this method of water treatment is approved, the CWSP recommends two (2) water filtration plants: a south facility by the existing well field located near County Road 81 & Memorial Drive and a north facility by the existing well field located near Rogers High School.

Water Supply Goal

Goal 2: Ensure an adequate public water supply that is safe, of good quality, and in compliance with all governmental regulations.

Water Supply Policies

- 2.1 Provide a reliable and sufficient supply of water for the health and safety of citizens .
- 2.2 The City's water will meet or exceed the standards of the Minnesota Department of Health and the Federal Clean Water Act (CWA).
- 2.3 Provide water at a fair and affordable rate to citizens based on the system's operation, maintenance and replacement costs.
- 2.4 Promote water conservation activities designed to reduce the demand for water and improve water-use efficiencies of present and future water supply systems.
- 2.5 Sustain a high degree of public fire protection capacity based on Insurance Services Office (ISO) fire flow requirements together with American Waterworks Association (AWWA) and Ten States Standards recommendations relating to water pressure, fire flow, and fire flow duration.
- 2.6 Expand and modify the water supply system in accordance with the community's phased growth land use plan and as established in the Comprehensive Water System Plan.
- 2.7 Use the CIP process to plan for recommended system improvements and expansions identified in the Comprehensive Water System Plan, including new wells, water storage facilities, water treatment facilities, and new and reconstructed watermains.
- 2.8 Coordinate with surrounding communities for future potential interconnections between water systems so that water supply infrastructure can be properly sized as it is constructed.



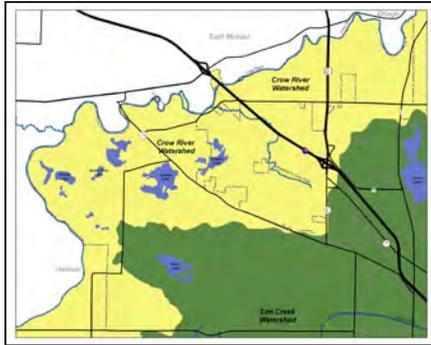


Figure 6.5: Watershed Districts.

SURFACE WATER MANAGEMENT

Surface water management in Rogers occurs within two watersheds, the Crow River Watershed and the Elm Creek Watershed, as shown in Figure 6.5. Within the community, drainage is managed by a series of channels that connect to ponds and wetlands that ultimately drain into the Crow River or Elm Creek.

The Board of Water and Soil Resources approved the Elm Creek Watershed Management Commission's (ECWMC) watershed plan in 2004. The City of Rogers was required to develop or adopt a local surface water management plan to be consistent with the watershed's plan within two years of adoption. The City is also required to adopt storm water management regulations at least as restrictive as the standards of the ECWMC.

The City of Rogers' completed its Surface Water Management Plan (SWMP) in February 2007 and submitted it to the ECWMC for their required review and approval. After incorporating revisions required by the ECWMC, Rogers' SWMP was found to be in compliance with the ECWMC's Second Generation Watershed Management Plan and approved by the ECWMC on November 14, 2007.

Surface Water Management Goal

Goal 3: The purpose or goal of Rogers' SWMP is to promote, preserve and enhance the natural resources within the City and protect them from adverse effects occasioned by poorly sited development or incompatible activities by regulating land disturbing or development activities that would have an adverse and potentially irreversible impact on water quality and unique and fragile environmentally sensitive land; by minimizing conflicts and encouraging compatibility between land disturbing and development activities and water quality and environmentally sensitive lands; and by requiring detailed review standards and procedures for land disturbing or development activities proposed for such areas, thereby achieving a balance between urban growth and development and protection of water quality and natural areas.