CHAPTER SEVEN

INFRASTRUCTURE & PUBLIC SERVICES

Growth that is sustainable in terms of resources and services is a major theme of this Comprehensive Plan. For public facilities and services, sustainability means ensuring that new development does not create demands that cannot be met without diminishing the quality of available services and resources. This chapter provides a context for the existing and future infrastructure and services in the community. By understanding the past and present conditions, we are then able to plan, guide, and manage future resources and demands. This chapter specifically establishes:

- Policies and standards for public facilities, utilities, and services that will maintain or enhance the quality of life;
- Procedures to ensure that growth is approved only upon availability of water and sewer service;
- Thresholds and performance criteria for use and development review to gauge the ability of public service to sustain growth;
- Policies to ensure that infrastructure and public facilities are designed in an environmentally sensitive manner and promote conservation, recharge, and waste volume reduction; and
- An equitable method of paying for facilities and service needed to accommodate new development.

The following themes and guiding policies apply to this chapter.

THEMES

- **Character.** Maintain and respect River Falls' unique personality, sense of place, and character.
- **Sustainable Growth.** Ensure that development is sustainable and that growth, conservation, redevelopment, and natural resource protection are balanced.
- **Urban Form.** Promote a compact urban form that encourages sensitive/ compatible infill development.
- **Housing.** Actively participate in the creation of affordable housing.
- **Quality of Life.** Enhance the quality of life of the community and ensure the availability of community services for residents.
- **Intergovernmental Cooperation.** Maintain a cooperative intergovernmental perspective with towns, counties, and state, and work with private and governmental entities toward that goal.

7.1 WATER MANAGEMENT

7.1.1 Water System

The City through the River Falls Municipal Utilities (Municipal Utility) has provided water service for all City residents since 1894. As of December 2004, water was provided to 3,884 customers. River Falls Municipal Utility is operated for and on behalf of the City of River Falls. The existing service area includes all land within the corporate limits of the City. Figures 7-1 and 7-2 show the existing water distribution and available fire flow contours for the City.

Municipal Utility is treated as a separate entity with individually maintained booking and accounting records. They are responsible for the management of the water system. The River Falls Municipal Utility Comprehensive Water Plan of October 1999 leads the effort for regional water planning. Growth patterns identified through this Plan will be utilized for determining the need for future supply development.

7.1.2 Water System Facilities

The main features of the City's water supply system are wells, storage tanks, and the distribution network. River Falls operates municipal wells that utilize the underlying Ordovician and Cambrian Sandstones. Specifically the wells obtain the City's water supply from the Jordan aquifer. Within the City there are presently four municipal wells operating. The following is a history of wells in the City of River Falls:

- **Well No. One,** located on North Main Street, will stay abandoned.
- **Well No. Two,** located on South Second Street, was constructed in 1948. This well is approximately 401 feet deep, and the groundwater flow is from the southwest. This well was capable of supplying 600 gallons per minute (gpm) in 1965, 580 gpm in 1987, and 560 gpm in 1995. In 1998, Well No. Two was reconstructed, and the pumping capacity for the year 1999 increased to 1,180 gpm. The well house electrical system was updated.
- **Well No. Three,** located on Cedar Street, is west of the Kinnickinnic River. Drilled in 1953 to a depth of approximately 379 feet, the groundwater flow is from the southwest. This well was capable of supplying 575 gpm in 1965, 635 gpm in 1987, and 680 gpm in 1995. In 1999, this was also reconstructed and the electrical system was updated, which increased the pumping capacity to 1,200 gpm.
- **Well No. Four,** located on Sycamore Street in 1967 and reaches a depth of 415 feet. This well was capable of supplying 985 gpm in 1987 and 1,010 gpm in 2000. Groundwater flow is from the west to northwest.
- **Well No. Five,** located on Division Street, was constructed in 1979. This well is approximately 440 feet deep and was capable of supplying 1,500 gpm in 1987, 1,509 gpm in 1995, and 1,550 gpm in 2000. Groundwater flow is from the south to southwest.
- **Private Wells.** The UWRF college farm well and the Golf Course well are private. The golf course well, which is a major well, provides water only to the golf course and is approximately 451 feet in depth and test pumped at 757 gpm. This well has a calculated specific capacity of 30 gpm per foot of draw down; a specific capacity that is greater than the other wells. The well is located to the east at a higher elevation and obtains most of its water from the Prairie DuChien aquifer.
- **Storage and Distribution Network**. Water is treated with fluoride, chlorine, and phosphate prior to delivery into a network of storage tanks and approximately 51 miles of transmission and distribution lines. Approximately five miles of the water mains are less than six inches in diameter. The smallest acceptable pipe allowed by the WDNR for new mains is six inches. The smallest acceptable pipe allowed by the City for new mains is eight inches.

The largest pipe size used in the City water system is 16 inches. The majority of pipe is either cast iron or ductile materials. The storage system consists of three water storage reservoirs ranging in capacity from approximately 250,000 to 750,000 gallons, totaling approximately 1,300,000 gallons. Ground storage capacity is 750,000, and elevated storage capacity is approximately 550,000 gallons.

Figure 7-1 Existing Water Distribution.

Figure 7-2 Available Fire Flow Contours.

City of River Falls Reservoirs

- Reservoir One is located north of Division Street on top of Mound Park. The capacity was upgraded from 200,000 gallons to 750,000 gallons at an overflow elevation of approximately 1,056 feet U.S. Geological Survey (USGS) elevation.
- Reservoir Two is located on Sycamore Street, adjacent to Well No. Four. This elevated tank has a storage capacity of approximately 300,000 gallons and was constructed in 1967.
- Reservoir Three is located on the northeastern edge of the City limits, adjacent to the River Falls Golf Course and near the end of Golf View Drive. This is the most recent of the above-ground water storage systems and was constructed in 1991. The storage capacity of this elevated tank is approximately 250,000 gallons.

7.1.3 Water Supply

Currently, River Falls operates four municipal wells that obtain water from the Jordan aquifer. Information on the four wells is presented in Table 7.1.

City of River Falls Well Fields

Recharge area information is based on Ground-Water Resource and Geology of St. Croix County, Wisconsin by R. G. P. Borman, and the USGS (1976) and Generalized Water Table Evaluation Map of St. Croix County, Wisconsin by I. D. Lippelt (1990). The groundwater flow in this area and the recharge follow the Kinnickinnic River, generally from the northeast to southwest.

Precipitation is the source of all groundwater in the region. In this area groundwater supplies 100% of the drinking water. Recharge is greatest in the areas where sand and gravel are at the surface. Areas with thin, unconsolidated material overlaying dolomite that contains fractures and solution channels have a higher rate of recharge. The recharge area for the municipal wells was determined from groundwater flow contours. The main recharge area for all of the wells is located generally east and north of the well sites.

Reservoir Three River Falls Golf Course.

The municipal wells are located within the City limits, range in depth from 379 feet to 440 feet, and utilize the underlying Ordovician and Cambrian sandstones. The Prairie DuChien/ Jordan (Trempealeau) acquifer is the major principal groundwater source in the region. None of the wells are located in floodplains.

City wells are on an eight-year routine maintenance schedule. Adding new wells in the City or replacing existing ones is difficult and expensive. Most of the City wells were drilled before

Table 7.1 Existing City Well Information.

Well	1995 gpm	1995 gpd	1995 Yield	1999 gpm	1999 gpd[2]	1999 Yield[1]	Well Depth (feet)	Const.	Reconst.
Well Two (Oak St.)	560	270,000	20	1,180	570,000	20	401	1948	1984 1998
Well Three (Cedar St.)	680	320,000	16	1,200	580,000	18	379	1953	1979 1990 1999
Well Four (Sycamore St.)	1,000	480,000	25	1,010	480,000	25	415	1967	2003
Well Five (W. Division)	1,510	720,000	13	1,550	740,000	13	440	1979	2001
Total	3,750	1,790,000		4,940	2,370,000				

1 = Yield (specific capacity) units are in gpm/ft of draw down.
2 = gpd rating is based on eight -hour run time.

1967, and some date back as far as 1948. Since 1967, only one new well has been drilled in the City. In October of 2001, the Municipal Utility had the City Council approve an ordinance to create a Wellhead Protection Plan.

A groundwater model was developed for the Municipal Utility for the purpose of delineating wellhead protection areas for the four utility wells. The model accurately reproduces stream bareflow discharges and is believed to accurately represent average regional flow conditions in the Prairie DuChien/Jordan (Trempealeau) aquifer.

7.1.4 Water Demand

Municipal Utility has the responsibility of ensuring that an adequate production margin exists between total demand and total supply. A reserve margin will help ensure an adequate supply of water for future growth as well as for present demand.

The current average daily usage is approximately 1,119,172 gallons. The total water pumped in 2004 was 409,617,000 gallons. The per capita water usage is approximately 89 gpd. The projected water usage over the next 20 years is estimated to increase at the rate of 1.7% each year. The projected daily usage in 20 years is 1,600,000 gallons. This is a result of the anticipated increase in population (Table 7.2).

The maximum day usage for 2004 was approximately 2.5 million gallons. The projected 2020 maximum day is 3.7 million gallons. The projected maximum day was calculated using the current maximum day to average day ratio and then applying that ratio to the 20-year projected average day. The projected 2020-peak hour (maximum day) is 3,310 gpm. The peak hour was calculated using a peaking factor of 3.0 over average day usage.

The River Falls water system provides fire flow volumes to assist the Fire Department in fighting fires. The upper limit of fire flow that River Falls is expected to provide is 3000 gpm. This 3000 gpm fire flow is an upper limit established by the Insurance Services Office.

Table 7.2 Water Demand Projections.

	1995	2000	2005	2010	2015	2020
Population	10,610	13,000	14,000	16,000	18,000	20,000
Average Day (gpd)	1,100,000	1,200,000	1,320,000	1,500,000	1,700,000	1,900,000
Max. Day (gpd)	2,530,000	2,760,000	3,036,000	3,450,000	4,140,000	4,500,000
Max. Day (gpm)	1,750	1,900	2,100	2,400	2,700	3,000
Peak Hour (gpm)	2,270	2,470	2,730	3,120	3,400	3,710

7.1.5 Current Water Planning Efforts

The Municipal Utility prepared a Comprehensive Water Plan in the fall of 1999. This study was intended to cover five major technical areas:

1. System demands,
2. Supply evaluation,
3. Water treatment review,
4. Distribution system modeling, and
5. Capital Improvement Program.

These five technical sections and a wellhead protection plan for the City wells are detailed in this 1999 Comprehensive Water Plan.

7.1.6 Water and Sewer Facilities in Rural Residential Areas

The counties and towns will review any new residential cluster or subdivision development to determine whether individual water and/or sanitary sewer systems will be sufficient to safeguard public health. These decisions will be based on local conditions and the proposed placement of the houses. The counties and towns will also seek advice from appropriate state agencies. In all cases, septic tank siting, design, and construction requirements must be satisfied.

7.1.7 Water Management

Chapter 3, Section 3.1 (Water Services) of the Comprehensive Water Plan outlines the existing water system and facility. This section discusses production, storage, maintenance, distribution, and capital improvements for a future water service system. The Comprehensive Water Plan states that, "to prepare a water system study that will be useful as a planning document, two basic planning issues must be identified." The two issues discussed in the report consist of the utility service area and the population projection within the utility service area.

The 1998 Comprehensive Sanitary Sewer Study defined the water utility service area. The population projections for the City of River Falls that were used in this study were based on population projections in the report titled City of River Falls Master Plan Update, 1995-2020 (1995). Detailed land use assumptions were not available to incorporate into the population projections. The 1998 study projections need to be updated. The information below provides a guide for potential and proposed improvements to the year 2020. These data have been extracted from the River Falls Municipal Utility Comprehensive Water Plan of October 1999.

7.1.8 Production

Production facilities are related to the production or supply of water. In the past, the capacity of existing production facilities has managed to keep pace with growth. The recent upgrade of Wells No. Two and Three has given the Municipal Utility a significant amount of new production capacity. The Municipal Utility should continue periodic upgrades of the existing wells. The potential locations are based on groundwater flow and potential contamination sites.

7.1.9 Storage

Due to increased development pressure, there will be a need to construct a storage tank west of the north industrial area. The reservoir will be valuable for fire protection in the growing north industrial area and will add to the total storage volume available in the system. The reservoir will be sized to store the gallons needed and will have an overflow elevation equal to the Mound Reservoir and the South Sycamore tank. Tank sizes and locations are subject to actual development requirements in this area and prudent system design.

7.1.10 Maintenance

Wells No. Two and Three were recently reconstructed. Well No. Five was reconstructed in 2001, and Well No. Four was reconstructed in 2003. The 300,000-gallon Sycamore water tower was painted on the interior and exterior in 1998. Repainting is expected in approximately 2013. The 250,000-gallon Golf View water tower received new exterior paint in 1999. The interior was painted in 2004. The 750,000-gallon Mound reservoir is constructed of concrete and should be monitored for changes in width and length.

7.1.11 Distribution

A calibrated computer model was utilized to analyze projected system projects during the next 20 years. During 2000, a 12-inch loop was installed along Cemetery Road and an 8-inch loop along Sixth Street. These two improvements increased the available fire flows on the south side to 2,000+ gpm. The 2,000-gpm available fire flow meets the needs for the residential land use in this area. For the next 20-year period, a development rate of 60 acres/year was determined using population projections and information from the 1998 Comprehensive Sanitary Sewer Study. The area included for potential improvements is within the 30-square mile study area. Potential areas that will probably develop in the next 20 years include the southeast, East Division and West Division Street, and northwest (along Highway 35). Potential growth is somewhat limited to the northeast and southwest due to the Kinnickinnic River.

High elevation areas within the study area that would require a separate pressure zone are delineated in Figures 7-3 and 7-4. The critical elevation contour used to determine the pressure zone was calculated using a typical tower operating level and subtracting 35 psi, which is the minimum design static distribution pressure, allowed by WDNR. Figure 7-4 shows the available fire flows with the proposed improvements at year 2020.

- **East Growth.** The Golf View pressure zone is expected to grow over the next 20 years. Potential growth may include some of the area above the 1,100-foot contour. Potential improvements in this area should consist of a 16-inch trunk water main with 8-inch mains in residential areas.
- **Southeast Growth.** Growth in this area during the next 20 years is limited to the area that can be served by the main pressure zone. This area is confined to elevations below 960 feet USGS. A 12-inch trunk water main loop with 8-inch mains in residential developments will serve this area, including the new high school.
- **West Growth.** The west area will also be served from the main pressure zone. There are some small parts of this area that are above the 960 contour. Proposed improvements for this area call for a 12-inch trunk water main extending west on W. Division Street and County Highway MM. Residential development will utilize 8-inch looped water mains.
- **Northwest Growth.** The northwest area along Highway 35 will experience residential, commercial, and industrial growth during the next 20 years. This area is presently served by an existing 14-inch water main that is not looped. The 14-inch line crosses the Kinnickinnic River to serve the north area. Looping, additional line, or work on the existing

- Figure 7-3 Proposed Water Improvements.

Figure 7-4 Improved Fire Flow Contours.

water line may be needed to serve additional growth. High elevation areas within the study area would require a separate pressure zone. Figures 7-3 and 7-4 show the available fire flows with the proposed improvements at year 2020.

7.1.12 Capital Improvement Program

One of the objectives of the Comprehensive Water Plan was to develop a 10-year Capital Improvement Program for water system improvements. The Capital Improvement Program provides information on the anticipated cost and timing of future improvements. The Plan was updated in June 2002 and March 2004 with the Needs Assessment for Water Impact Fees.

Schedule of Improvements

Table 7.3 lists a schedule of water utility proposed improvements. This schedule is from the Needs Assessment Report for Water Impact Fees and is classified as either completed, in the 5-year Capital Improvement Plan or beyond the 5-year Capital Improvement Plan.

The timing of future improvements will be influenced by a number of parameters. Items such as the location of the service area boundary, development pressures in specific areas, aging facilities and/or facilities which are undersized, availability of funds, etc., all play a role in the timing of future improvements. Because of the factors involved, it is difficult to accurately predict the time of future improvements, especially those that may occur far into the future. However, some areas of the study area are more likely to experience rapid development then others. The estimated time of improvements is based on input from Municipal Utility staff as well as knowledge of potential future growth areas.

Table 7.3 Schedule of Improvements.

Improvement	Schedule
Whitetail Ridge to Hwy U (Bypass)	Completed
Oversizing at Boulder Ridge	Completed
Cemetery Road to Hwy 65	Completed
Quarry Road to Sterling Ponds	Completed
Sterling Ponds Water Main Oversizing	Completed
E. High Pressure Zone Booster Station	Completed
Hwy 65/Hwy 29 Main Crossing	5-Year Capital Improvement Plan
New Well Investigation	5-Year Capital Improvement Plan
North Booster Station	5-Year Capital Improvement Plan
Boulder Ridge to Quarry Road	Beyond 5-Year Capital Improvement Plan
North Reservoir Construction	Beyond 5-Year Capital Improvement Plan
New Well Construction	Beyond 5-Year Capital Improvement Plan
Golfview Booster Station	Beyond 5-Year Capital Improvement Plan

Source: Water System Needs Assessment, SEH (2004)

7.2 WASTEWATER MANAGEMENT

The Municipal Utility has managed the wastewater since 1930. The Municipal Utility performs all administrative duties, plant operation, plant maintenance, development and review, facility planning treatment, collection system maintenance and repair, and mapping and modeling of the City's sewer system. The wastewater service area generally includes land whose sewage can be drained by gravity or by the use of lift stations to the City's Wastewater Treatment Facility. This area includes all land within the City limits as shown in Figure 7-5 Current Sanitary Sewer Service Area and Figure 7-6 Current Sanitary Sewer Flow Diagram. The sewer system in River Falls consists of a Wastewater Treatment Facility, four small pumping stations, and collection and intercepting pipes. The existing system is capable of expansion to the northwest and northeast with some expansion to the north and very minor expansion to the south.

The City's Wastewater Treatment Facility was constructed in 1962–1963. Its is located south of Maple Street at the south end of a private road called Apollo Road along the western City limits and adjacent to the Kinnickinnic River. In 1968, an aerobic digester was added, and in 1980, major upgrades of the facility were performed to provide the current treatment capacity.

In 1996 River Falls joined with 10 other area communities to construct a regional sludge processing facility in Ellsworth, because new WDNR standards limit land spreading to only summer months. The West Central Wisconsin Biosolids Facility produces a high quality Class A sludge that has less restrictions on it because of the quality of the end product. In 1999, new regulations required the reduction of phosphorous being released into the waters of Wisconsin. A biological phosphorous reduction unit was constructed and put on line in March of 2000. This consisted of two anaerobic basins, one anoxic basin, six mixers, a chemical feed system (acetic acid), central system, and building to house the chemical feed system and control system.

In March 2002, the dissolved air floatation thickener (DAFT) unit was completed. The building that houses the DAFT unit is used to thicken waste activated sludge from the activated sludge process. Thickened sludge is discharged from the DAFT unit to the sludge storage tank located immediately adjacent to the east side of the DAFT building. Presently, solids are thickened to 1.9–2.9% by the DAFT unit.

7.2.1 Collection System

The existing wastewater collection system consists of approximately 55 miles of sewer mains and currently serves an area of 1,720 acres (2.7 square miles). The plant is a secondary-type treatment system utilizing a modification of the activated sludge process. Treated effluent is discharged into the Kinnickinnic River upstream of the "lower dam." In 2004, the plant was treating an average of approximately 1.1 million gpd, approximately one-half of the total capacity. Presently River Falls wastewater is collected at the treatment plant via four major collection routes:

- **Northeast.** The South Side Lake George Interceptor services the downtown portion of the City and the immediate adjoining areas east of the Kinnickinnic River.
- **Southeast.** The South Fork Interceptor services the southern and eastern areas. Improvements to the system have been made, and the lift station that services the southwestern portion of the City was replaced in 1991.
- **West.** The Common Interceptor, commonly known as the Mann Valley sewer, collects wastewater generated west of the Kinnickinnic River.
- **North.** The Lametti Interceptor collects wastewater generated north of the Kinnickinnic River.

Several lift stations that are operated and maintained by the Municipal Utility are used because of topographical constraints. The City Wastewater Treatment Facility was upgraded in 1980 to treat an average-day flow of 1.8 million gallons per day (mgd) and biochemical oxygen demand (BOD) loading of 3,150 lbs. (BOD/day). Projected flows and BOD loading are as follows:

Table 7.4 Wastewater Plant Projected Flows and BOD Loadings.

Year	Flow (mgd)	BOD (lbs/day)
Design	1.8	3,150
2020	1.85-2.78	3,705-8,895
2050	3.88-5.82	7,770-18,650

Source: Comprehensive Sanitary Sewer Study (1998).

7.2.2 Septic Systems

The adjacent towns and St. Croix and Pierce Counties are all working to protect groundwater through proper siting, design, and maintenance of all septic systems. Development in these rural areas will only be allowed where testing indicates that soils are suitable for on-site treatment systems over the long term. Septic tank sites and their design shall meet state requirements. A site proven suitable for a back up (replacement leaching field) for all septic systems will be required. A policy is being considered that will require septic systems to meet minimum standards when property is sold or transferred by mortgage, contract for deed, or other device.

The counties are presently working on an on-site system ordinance that would require an application and review procedure and requirements for the issuance of an on-site system permit. The counties intent is to have all applications include subsurface testing. Preliminary plats will be approved only upon a determination that the soils in the platted area generally are suitable for the installation of on-site systems consistent with the ordinance requirements. The ordinance will contain installation, inspection, and acceptance procedures and maintenance requirements. The program is intended to provide for record keeping, remedial action, enforcement, public education, and the bonding and licensing of installers and pumpers. It should be noted that septic systems are not allowed within the City of River Falls. The Towns of Kinnickinnic and Clifton do not have town land use plans. River Falls Town and Troy Town Land Use Plans state the following in regard to septic systems:

- **Town of River Falls Septic Systems.** The 1982 River Falls Township Land Use Plan states the following for soil suitability for septic systems: The soil suitability for on-site septic systems is very limiting in River Falls. Only 11% of the land area of the town has soils that are suitable for the installation of private septic systems as determined by the Soil Conservation Service (presently National Resource Conservation Service). Seventy-six percent of the town soils are classified as having severe or very severe limitations for septic systems. The remaining 13% of the soils have a moderate limitation that means a septic system can be installed with sufficient design modifications.
- **Town of Troy Septic Systems.** The 1992 Town of Troy Growth Management Plan provides a map that delineates the limitation of soils to support septic systems. The map provides information regarding areas for good percolation that support septic systems; areas of moderate percolation that are slow and where drainage fields would need to be enlarged to ensure proper septic functions; and areas of severe percolation for septic systems. Areas near the St. Croix River are underlain by out-wash gravel that would pose very rapid percolation rates with minimal filtration of septic tank effluence. The result is groundwater contamination. Areas in the eastern part of the town are underlain by clay soils that provide a very slow percolation rate. Septic effluence would not move through the soil fast enough to allow effective septic tank function.

7.2.3 Wastewater

Expansion of Collection System and Treatment Plant Capacity

The City of River Falls Municipal Utility prepared a Comprehensive Sanitary Sewer Study in the fall of 1998. This report was intended to be used as a reference document for sanitary sewer system improvements to serve the future development areas by gravity feed.

The recommendations in the report were made to provide the most cost-effective means to accommodate future growth around the City of River Falls. The report was divided into sections that represented five distinct future service areas. The areas of future development surrounding the City of River Falls were defined in a joint effort involving the Municipal Utility and the River Falls Planning Department. The total future service area evaluated as part of the study is approximately 7,320 acres (11.4 square miles), which is more than four times larger than the current service area. Figure 7-7 Sanitary Sewer Service Area Overview shows the location of the five service areas; they are also listed in Table 7.5.

Table 7.5 Future Service Areas.

Future Service Area	Acreage
Northeast	670
Southeast	1,000
Southwest	430
West (Mann Valley)	2,540
North	2,680
Total	7,320

Year 2020

The maximum projected flow (1.8 mgd) exceeds the average-day design flow and at 2,837 lbs/day exceeds 90% of the corresponding BOD average-day design loading. This projected loading suggests that some year 2020 daily flows and loadings will exceed capacity. A Facility Plan Amendment (1994) prepared by RUST Environment and Infrastructure determined that the Wastewater Treatment Plant's capacity would be reached near year 2015. The RUST flow and loading projections included an unspecified flow and BOD loading of 10% of the projected growth (as allowed by Wisconsin Administrative Code NR 110).

The Municipal Utility approved a Wastewater Treatment Facility Master Plan in December of 2002. It identified major key improvements and/or upgrades needed at the Wastewater Treatment Facility:

- Phase I Improvements
  - Hydraulic profile to ultimate build out.
  - New headworks facilities including new screening and grit removal.
  - Expand the final clarifier complex including the replacement of two clarifiers.
- Phase II Improvements
  - Increase influent pump station capacity.
  - Expand biological treatment capacity or implement interim biological improvements.
- Phase III Improvements
  - Expand sludge handling/storage.
  - New administration building.
  - Refurbish administration/laboratory building.
  - Upgrade disinfection system.

The Municipal Utility approved the Wastewater Treatment Facility Phase I Facility Plan in 2003. The expansion and refurbishing of the administration/laboratory/personnel building will be moved from Phase III to Phase I to streamline required lab processes and procedures and provide new personnel facilities. Construction for Phase I is scheduled for 2004–2005. Phase II is scheduled for years 2009–2011, depending on growth. Phase III is scheduled for years 2018-2020.

Figure 7-5 Current Sanitary Sewer Service Area.

Figure 7-6 Current Sanitary Sewer Flow Diagram.

Figure 7-7 Sanitary Sewer Service Area Overview.

Figure 7-8 Minor Watershed Boundaries.

7.3 SOLID WASTE MANAGEMENT

In areas within the Urban Area Boundary, burning refuse has been a method employed for disposal. Although waste incineration has been practiced in the community, this practice was brought to an end within the City limits. The community has modified collection methods and made efforts to reduce solid waste; however, landfilling still remains the form of disposal.

7.3.1 Disposal

The 16-acre community landfill located southwest of the City is no longer operational. Waste Management, Inc. now provides solid waste and curbside recycling services in the City. Presently, the City contracts for the transfer of solid waste and recyclable materials.

The 1992 Town of Troy Growth Management Plan states that solid waste is managed through the town's household waste disposal and recycling center. The center is located next to the town garage at the intersection of Townsvalley Road and Chinnock Lane. Residents pay an annual fee that allows them to drop off their household waste and recyclables. Household waste and recyclables are in turn transported and disposed of by a private hauler. Other adjacent towns also provide such services for their residents.

The River Falls Landfill was closed in 1998 in accordance with federal and state requirements and conditions contained in the closure plan. Landscaping and land use (conservancy) consistent with this Plan have been implemented for this site.

7.3.2 Waste Volume Reduction Program

Several initiatives are being pursued toward reducing the volume of waste generated in the community service area. These initiatives include recycling of waste materials, reduction of waste at the source, waste exchange, backyard composting, community composting sites, green waste processing and utilization, and construction and demolition waste reprocessing.

The Closure and Capping of a Landfill Site.

7.3.3 Looking Ahead

The community's approach to solid waste has been reactive to the waste disposal needs of the area. The community may face a much more complicated and costly network of waste management issues—transfer and transport, reduction, expanding service areas, and heavily regulated disposal requirements.

Because of this, efforts are needed to deal with the financial and operational demands of changing regulations, technology and service demands, and expectations regarding solid waste collection and disposal. A intergovernmental cooperative waste management plan with the City, towns and counties could further address the financial and operational demands.

7.4 STORM WATER MANAGEMENT

The community of River Falls is located in southern St. Croix County and northern Pierce County in western Wisconsin. The Kinnickinnic River bisects the community from the northeast to the southwest. The South Fork of the Kinnickinnic River splits the UWRF campus, which is located in the southeastern part of the City. The Kinnickinnic and its tributaries are valuable trout streams, representing a major natural resource for the community. Numerous watersheds surround the community, as shown in Figure 7-8.

The City of River Falls and adjacent townships are facing growing development pressures from the Minneapolis/St. Paul Metropolitan area. The Kinnickinnic River and its tributaries are valuable trout waters of regional significance, representing a major natural amenity of the community. However, the effect of storm water from the City and the surrounding towns has the potential to degrade the physical and biological characteristics of the Kinnickinnic River and its tributaries. The increase in urban and rural runoff, and the associated thermal and sediment-related pollution from present and future land uses will have a detrimental effect on the cold-water fishery of the Kinnickinnic River and its major tributaries without proper management of surface and ground water.

The protection of the water quality of the Kinnickinnic River is critical to the environmental and economic future of the community. Development in the Kinnickinnic River Watershed needs to be carefully planned to protect the existing resources.

With an increase in development pressure, there is less opportunity for run-off to infiltrate and recharge groundwater and cold-water feeder streams. Uncontrolled storm water runoff will result in increased water temperatures that threaten high quality trout waters. Beginning in 1991, the City prepared a Water Management Plan entitled "Water Management Plan for the Kinnickinnic River and Its' Tributaries." The Water Management Plan was completed in 1995. The intent of this Plan was to gather all basic information and planning data into a single document that described existing conditions, specific policies and standards, and recommended actions for the future enhancement of the community's water resources. This plan was prepared in accordance with the Wisconsin Department of Natural Resources (WDNR) administrative 205 J grant program, with input from the UWRF, Trout Unlimited, and the adjacent towns. Implementation of this plan will require the cooperation of neighboring towns, as well as counties, state and federal agencies, and the WDNR. The Water Management Plan was designed to "deliver good quality storm water runoff to the Kinnickinnic River at acceptable rates and volumes to reduce pollutant loading and stream bed/stream bank degradation, and maintain a river temperature suitable to support a cold water fishery."

The Water Management Plan identified the need for revisions to existing City ordinances regarding Storm Water Management. The City Council adopted a new Storm Water Management Ordinance on April 9, 2002 that sets forth storm water management and erosion control standards which apply to all land development and land disturbing activities. Key strategies that have been implemented in this ordinance include:

- Controlling rates of storm water runoff from developing and redeveloping areas as a method of preventing downstream flooding;

- Controlling the volume of storm water runoff leaving developing and redeveloping areas as a method of replicating pre development hydrology.

- Controlling the amount of sediment and associated pollutants contained in storm water runoff from developing and redeveloping areas.

7.4.1 Rate Control

Since 1982, City of River Falls ordinances have regulated rainfall events up to the 6", 100-year, 24-hour design storm, which have a 1% probability of happening in a given year. The main purpose of such rate control regulations is to prevent flooding due to development. The current ordinance continues to require runoff from 2, 10, and 100-year events to be captured and controlled such that the rate of storm water discharge does not exceed pre-development conditions. This follows the guidelines for quantity discharge as published in the Wisconsin Stormwater Manual which was created by the WDNR and the University of Wisconsin-Madison. Ironically, newly adopted Wisconsin DNR rules regarding runoff management (NR151) only regulate the 2-year, 24-hour design storm.

7.4.2 Volume Control

As stated by the WDNR in the Wisconsin Storm Water Manual, the first flush of storm water runoff carries the pollutants from impervious surfaces typical of urban areas. *"It is well -established that relatively small storms are responsible for t he majority of the annual pollutant loads in urban runoff (Schueler, 1987; Pitt, 1989; Roesner, 1991) and that the runoff volume is the critical determinant of pollutant loading and control (Pitt, 1989). Therefore, management practices designed for water quality control need to adequately treat these frequent, relatively small storms."*

"Studies in the Midwestern United States have shown that 90% of the average annual rainfall depth is produced from rains equal to or less than about 1 inch (Roesner, L., et al, 1991; Pitt, R., 1991). Practices that encourage infiltration of storm water from these numerous small rainfall events may also effectively improve water quality."

The City of River Falls has chosen to adopt a higher threshold in its Storm Water Ordinance. It requires infiltration of additional runoff generated by a 1.5 inch rainfall. Furthermore, before being accepted by the City, infiltration performance must be tested and shown to be twice that required by the ordinance. This safety factor is required to account for anticipated degradation in performance over time.

7.4.3 Sediment Control

In the Wisconsin Storm Water Manual, the WDNR recommends that urban water quality basins be designed to remove 80% of the total suspended solids from runoff generated from developed areas. Current City Code requires that development implement measures to remove 85% of the total suspended solids carried in runoff from new development.

7.4.4 Monitoring

Successful implementation of these strategies should result in the following desirable outcomes:

- No downstream flooding attributable to storm water runoff from developing and redeveloping areas.
- No detectible change in the thermal regime of the Kinnickinnic River associated with storm water runoff from developing and redeveloping areas
- No detectible increase in the amount of sediment and associated pollutants attributable to storm water runoff from developing and redeveloping
- No reduction in groundwater recharge attributable to developing and redeveloping areas.
- No reduction in base flow of the Kinnickinnic River associated with storm water runoff from developing and redeveloping areas.
- No detrimental change in the macro-invertebrate habitat of the Kinnickinnic River associated with storm water runoff from developing and redeveloping areas.
- No reduction in the Trout populations of the Kinnickinnic River associated with storm water runoff from developing and redeveloping areas.

- No detrimental change in Trout habitat in the Kinnickinnic River associated with storm water runoff from developing and redeveloping areas.

Ongoing monitoring of storm water management strategies to determine if the desired outcomes are being met is crucial. If monitoring results show that strategies are not achieving desired outcomes, strategies should be revised based on the monitoring results.

7.5 UTILITIES

7.5.1 Gas Services

Natural gas service for the community area is provided by the St. Croix Valley Natural Gas Company, a private company based in the City of River Falls. St. Croix Valley Natural Gas serves residential, commercial, industrial, and public customers.

7.5.2 Telecommunications

Telephone service is provided by SBC (Ameritech) with easy links to the Twin Cities fiber optic network. The City maintains a City cable access television station: RFCC-TV, Public Access Television, (Channel 16).

Logo for Municipal Utilities.

7.5.3 Electric Service

Electric

The existing electric production and delivery system consists of three basic components: generation, transmission, and distribution. Traditionally large generating stations or power plants fueled by nuclear energy, fossil fuels, or hydropower have produced electricity. From these central generating stations, electricity is transmitted by major power lines and stepped down at substations several times before it is finally distributed to the end users or customers. The electric system serving the River Falls area is linked to other systems to form regional multistate grids designed to balance supply with demand and to ensure reliability. The size and complexity of the system serving a particular area is directly related to the area's population and economic base, the sources of generating fuel, and the specific mix of residential, commercial, industrial, and institutional activities of the community and surrounding area.

The City of River Falls has owned and operated its own electric utility since 1900. In 1900, the Municipal Utility installed generation consisted of one hydroelectric unit rated at 250 kW. Today the Municipal Utility operates 375 kW of hydroelectric generation and 21,474 kW of dual fueled engine generation. The municipal power plant is located along the Kinnickinnic River in southwestern River Falls. During the last 105 years, the City has purchased power and energy from Dairyland Power Cooperative, and Northern States Power Company. The City of River Falls is one of 39 municipal owner/members of Wisconsin Public Power Incorporated (WPPI). The Municipal Utility is funded entirely by retail rates that are reviewed and authorized by the Wisconsin Public Service Commission. As of December 2004, there were approximately 5,342 consumers receiving electric service.

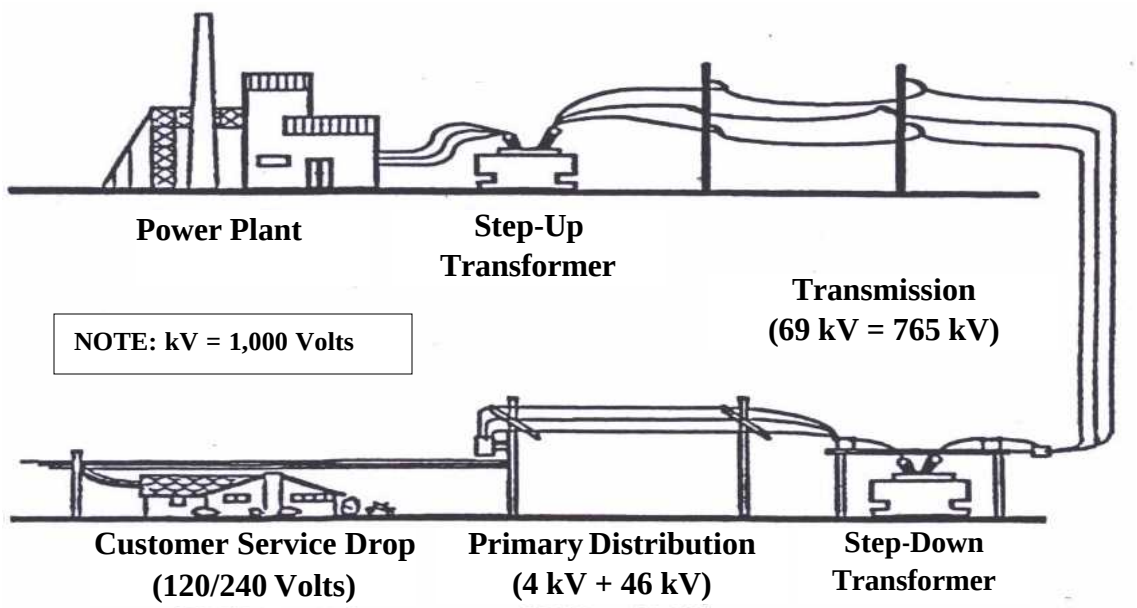

Figure 7 -9 Power Plant Flow Chart.

Electric Facility Plan

There is a need for an electric facility plan that promotes the policies adopted in the City of River Falls Master Plan and this Plan. The electric facility plan should reflect the goals and determination of these documents, as well as those expressed in public hearings held throughout the development of the above plans. The electric facility plan should advocate a model of sustainability, including the use of emergent technologies for the implementation of cleaner, more efficient, and more cost-effective electric generation that is connected to the existing power grid.

The electric facility plan should anticipate traditional expansion needs with sufficient capacity and reliability to accommodate future growth. Finally, the electric facility plan should provide site criteria and design standards for electric generation, transmission, subtransmission, and distribution facilities and should detail the review process, including early neighborhood notification for work related to existing and proposed facilities.

Recognizing the changing regulatory framework as well as the emerging technologies related to the electric industry, the electric facility plan should anticipate how these issues might affect planning for the River Falls area. The Plan could do this through the siting and development standards and by prescribing a review process for both facilities proposals and for changes in the Plan. The primary goal of an electric facility plan is to provide a framework for the planning and implementation of an electric facility for the River Falls area. In light of the changing technology resources, the plan should attempt to balance health and environmental concerns with economic considerations and establish a form for public review and input.

At the same time, working with the best available models for future growth of the area, the plan should attempt to identify those areas where growth will necessitate electric facility expansion. A facility plan should apply to all service providers within the sewer service area. Through this Plan and past documents, the community has expressed an interest in implementing policies for energy efficiency and renewable energy technology for the purpose of energy conservation and improvement of air quality. Due to concerns about the environmental effects and long term availability, the facility plan should advocate actions at the local level that help reduce

reliance on conventionally based power. The increased energy efficiency and use of renewable energy will help lower concerns about climate change, ozone, acid rain, and other adverse environmental effects. An electric facility plan would serve the best interest of the public and the community, work with the established electric provider network, and at the same time, consider growth and new opportunities in the field. To support the above, the electric facility plan should consider the following objectives:

- Plan for future growth and provide standards for site development and design.
- Provide a forum for public input in electric facility planning.
- Promote energy saving and energy efficiency.
- Incorporate reliable energy resources into electric facility planning.
- Continue to monitor scientific research regarding electric and magnetic fields.
- Conserve archaeological, natural, and cultural resources within state guidelines.

City of River Falls Power Plant.

Underground Lines

Undergrounding is the placement of electric or other utility lines (such as telephone, cable, etc.), structures, and equipment below ground. The benefits of and desire for undergrounding includes improved aesthetics through a reduction of visual clutter, improved road safety, the potential for greater reliability because equipment is less vulnerable to damage, and in some cases, reduced wear and maintenance costs. Figure 3-6 in the Sewer Service Area Water Quality Management Plan (2000) shows an example of shared space for utilities. The Municipal Utility has details of existing practices outside the road right-of-way. The disadvantages of underground lines are: significantly increased costs, especially for exiting lines, and increased repair time following an outage

New corridors or line locations, whether in the City, the county, or both, must balance the desire to protect open space and to mitigate negative impacts on view sheds. There is an equally important need to protect sensitive natural resource areas and to provide design solutions that weigh the benefits of protection against factors of economy and cost.

Electric and Magnetic Fields

National and international research on the possible relation of ELF-EMF to health has been ongoing for over 20 years. In the Energy Policy Act of 1992 the United States Congress authorized the Electric and Magnetic Field Research and Public Information Dissemination (EMF-RAPID) Program. Three government agencies, the National Institute of Environmental Health Science, the National Institutes of Health, and the Department of Energy were directed to manage a program to research, analyze, and provide scientific evidence of possible health risks related to exposure to low frequency electric and magnetic fields.

The National Institute of Environmental Health Science was charged with oversight of the health effects portion of the program and was directed to provide a report at the conclusion of the study. The report was released in June of 1999. Briefly stated, the program looked to two kinds of analysis for possible human health risks associated with exposure to ELF-EMF. Epidemiological studies, which identify statistical correlations between disease and select factors that may be related to the human population, provided the strongest evidence for an association to two forms of cancer: childhood leukemia and chronic lymphocytic leukemia in occupationally exposed adults. Laboratory studies failed to find any relationship between EMF exposure for changes in biological functions or disease status. The report concludes that while the evidence was influenced to warrant aggressive regulatory action, passive regulatory action was warranted because of the "fairly consistent patterns of a small, increased risk of increasing exposure that is somewhat weaker for chronic lymphocytic leukemia than for childhood leukemia."

The report noted that the lack of connection between the human data and the laboratory data "severely complicate the interpretation" of the results. It added, "given the weak magnitude of the increased risk, "some other factors or common source of error could explain these findings. However, no consistent explanation other than exposure to ELF-EMF has been identified."

7.5.4 Alternative Energy and Conservation

There has been a growing interest in using energy resources more wisely than in the past. With concern about America's dependence on foreign oil or the pollution caused by using fossil fuels, the idea of living within our means—sustainable energy use—continues to gain in popularity. In a larger context, the use of renewable resources promotes greater self-reliance, energy stability, and a cleaner environment for future generations. The following are two examples:

These wind turbines are part of a wind farm in Minnesota.

7.5.5 Wind Energy

Wind turbines are a good example of the growing competitiveness of renewable energy technologies. The cost of electricity produced by modern wind turbines has declined from over 25 cents per kilowatt-hour in 1981 to 7 to 9 cents per kilowatt-hour today, and industry estimates suggest it could fall as low as 4 to 6 cents per kilowatt-hour in five years. At the current price, wind power is competitive, or nearly so, with electricity generated by new fossil-fired power plants, and in the 2000s, it should be one of the least expensive sources of electricity, fossil or renewable.

Reliability problems affecting early wind-turbine designs have been largely resolved, and mature and well-maintained systems are available 95–98% of the time. Other renewable sources of electricity, such as solar-thermal electric power plants and photovoltaic cells, also promise to become competitive within a decade, particularly if market demand grows to allow greater production of systems.

The people in this house enjoy hot water that is heated with a solar thermal system.

7.5.6 Solar Energy

Solar energy has the potential to help meet current and future energy demands. Solar collectors covering less than 1% of U.S. territory—one-tenth the area devoted to agriculture—could make more energy available than the United States consumes in a year. There is an interest in passive solar heating and cooling systems because they simplify rather than complicate life. Passive systems are simple in concept and use, have few moving parts, and require little or no maintenance. Also, these systems do not generate thermal pollution, since they require no external energy input and produce no physical by-products or waste. Since solar energy is conveniently distributed to all parts of the globe, expensive transportation and distribution networks for energy are also eliminated.

7.5.7 Intergovernmental Cooperation

Joint Powers Agreements or Cooperative Agreements allow the City and towns to work jointly to establish impact fee structures, reduce sprawl, and ensure realization of this Plan. A City and towns agreement should be discussed for impact fees and future services.

Areas of cooperation that are relevant to impact fees include:

- **Water Systems.** The City and towns could plan for areas to be connected to the City water system, in order to promote development within the future growth area of the Urban Area Boundary (future growth area is the area between UBA and city limits). An agreement would then become the basis for the assessment of impact fees to finance capital facilities for water supply needed to serve the new growth within the Urban Area Boundary. Agreements could be drafted between property owners so that they would not resist annexation or attachments when the property is serviced by City infrastructure and is contiguous to the City limits. Criteria would need to be developed for such a program.

The City and towns would need to collaborate to upgrade or develop new water wells, reservoirs, and water supply lines. The City and towns could agree that the City would undertake this project, with funding provided at least partially by impact fees, if the required nexus between this upgrade and the increased need for water necessitated by growth is made. Impact fees could be assessed by the City both in the City and within the future growth area to be serviced by this upgraded water supply system, pursuant to the Development Fee Act, if the City and towns entered into a Joint Powers Agreement. A Joint Powers Agreement or Cooperative Agreement could also identify areas intended for annexation into the City, which are now within the future growth area and may enable the City to assess and collect impact fees in these areas to extend water service to them in special circumstances.

- **Wastewater.** The Municipal Wastewater Treatment Facility and sewage collection system serves a significant need within the Urban Area Boundary. The City and the towns should consider developing a means for legal cooperation and enforcement of wastewater service related ordinances in the future growth area. The towns could include in their codes the same provisions the City has as a basis for sanitary sewer service. An ordinance would provide for services within the future growth area to be offered on the same basis as they are offered anywhere else in the City.
- **Streets.** An agreement might also be utilized to enable the City to assess and collect impact fees in the future growth area for arterial roads, which are impacted by growth.

The City and the towns also have the option of cooperation in other areas, including fire protection/buildings, parks, and community services. The City will need to enter into agreements with the towns or amend the current extraterritorial agreement to enable impact fees to be assessed by the City within the future growth area.

7.6 IMPACT FEES

The purpose of impact fees is to generate funds to pay for the capital cost of growth. New residents and businesses place demands on public roads; water and sewer systems; drainage systems; parks; and library, police, fire and emergency facilities. A development fee act would enable local governments to charge new developments for the costs of capital improvements needed to serve the new developments.

The use of impact fees to cover costs for capital improvement projects is becoming more popular for communities. Although an impact fee can be structured several ways, it is typically a per acre fee which is charged to new development within a particular impact area. The impact area has a boundary and contains a certain number of acres. As these acres are developed, an impact fee is collected from the developer based on the size of the parcel. From an audit standpoint, financial advisors often prefer the use of impact fees to other methods for financing capital improvement projects. Because an impact fee is usually project-specific and links a specific project to a defined benefit area, it can be easier to justify and, therefore, is less likely to be challenged. However, state statutes contain specific requirements for the use of impact fees, and these must be closely examined prior to implementation.

Impact fees are not a panacea for all capital needs. They may only be used to pay for the costs of new capital projects that directly serve growth in the area. They cannot be used to pay for renovation or for deficiencies in service levels to existing developments. A project funded by impact fees must serve the area for which the fees were collected, and the projects must be completed within a given period of time from the date the fees are assessed. A more detailed review will be needed to assess the benefits of developing a fee act that would allow local governments to charge new developments for the costs of capital improvements needed to serve the new developments.

In June 2002, the City Council approved Ordinances for Water Impact Fees and Sanitary Sewer Connection Fees. The water utility has one fee covering the needs assessment project cost for a 20-year project plan. The sanitary sewer has five different areas with needs assessment project costs for each area. The five areas are the north, northeast, west, southeast, and southwest. Another charge for the sanitary sewer is a cost for the Wastewater Treatment Facility. The ordinance allows for the fees to be reviewed every two years, which the Municipal Utility has done and the City Utility Commission and City Council approved the review in March 2004.

There are park, fire and library impact fees for the city. These impact fees shall be paid sixty percent (60%) at the time of recording of the final plat with the county and forty percent (40%) at the time of building permit issuance.

GUIDING POLICIES AND IMPLEMENTING POLICIES

7-G-1 Cooperate with the state, counties, and towns in protecting and conserving safe, reliable groundwater resources.

7-1-I-1 Maintain, and enforce comprehensive water supply protection policies, including watershed, wellhead protection plan, and aquifer protection measures.

7-G-2 Cooperate with the state, counties and towns in managing runoff so as to promote the recharge of rivers and groundwater resources while protecting human life, property, and the Kinnickinnic River watershed from the negative effects of storm water runoff and snow melts.

7-2-I-1 Maintain and update the water resource management and wellhead protection plans. Include elements for conservation programs, reuse of treated wastewater effluent, river and surface source protection, staging areas; update this plan every five years.

7-2-I-2 Control rates, amounts, volume storm water runoff.

7-2-I-3 Ongoing monitor to determine if the controls are achieving the desired outcome or if revised strategies are necessary.

7-G-3 Provide for the installation and maintenance of safe, cost-effective public water system and sanitary sewer infrastructure according to Municipal Utility Capital Improvements plan and master plan for properties deemed serviceable within the Urban Area Boundary.

7-3-I-1 Maintain and update the public water system and wastewater collection system to ensure that the design and construction standards reflect evolving technology and the community's needs.

7-G-4 Protect groundwater resources and the Kinnickinnic River by providing adequate wastewater treatment capacity and, where practicable adopt methods and practices that reduce the amount of treated effluent that is discharged into the Kinnickinnic River .

7-4-I-1 Maintain and update the wastewater management plan and include elements for conservation programs, reuse of treated wastewater effluent, river and surface source protection, staging areas; update this plan every five years.

7-G-5 Cooperate with the state, counties and towns in managing solid waste recycling, processing and disposal in an environmentally sound and cost effective manner.

7-5-I-1 Encourage private and public sector-planning, regulations, programs for waste reduction, education and recycle.

7-G-6 Ensure that safe, efficient services are provided for existing and new development within the Urban Area Boundary by cooperating with regulatory agencies and utility providers.

7-5-I-1 Work with utility providers to maintain and update facility plans for current and future needs and encourage conservation of resources and innovative solutions to environmental problems.

7-G-7 Provide cost-effective shared services to customers.

7-7-I-1 Manage expenses and debt for the maintenance, upgrading and expansion of infrastructure and services while assess all applicable fees for new and redevelopment.

7-6-I-1 Coordinate a regional (City/towns/counties) effort for reviewing, updating and initiating fees for growth and development of shared use capital facilities within these jurisdictions.