

City of Medical Lake

CHAPTER 4 CONSERVATION PROGRAM AND SOURCE OF SUPPLY ANALYSIS

4.1 CONSERVATION PROGRAM

A copy of the City's Conservation Program and completed conservation checklists are included in the appendix of this Plan. For the most part the information required in the checklist under "A. Water Use Data" is presented in Chapter 2 of this Water System Plan. All sources are metered and these meters are read weekly. All services are metered and read monthly with the exception of the City Hall and irrigation water for City Parks. This use is partially metered with installation of the final meters scheduled for the year 2000. It should be noted that the school playgrounds are also watered but this irrigation usage is totally metered. The maximum amount of water consumed by the City occurred during one 10 day period in July 1998. The average use for the 10 days was 1,310,420 gallons. For the purposes of this Plan the peak daily use will be assumed to be 1,500,000 gallons.

The City's record keeping system is in place and the City should be able to monitor the effects of conservation efforts. With completion of the City Hall and Park metering projects all irrigation usage will be known. The City will also endeavor to make daily readings of all source meters during periods of peak demand in order to better define peak daily use. It is estimated that a 2% savings in annual water use will be realized from the conservation efforts. Primary elements of the City's Conservation Plan includes the following:

- Continue record keeping and enter data into computer system to better define amounts of water used by types of users and refine estimations of peak usage.
- Intensify efforts to curtail illegal use of water.
- Initiate program of mailing out informational pamphlets and brochures.
- Provide schools with informational literature to educate children about the need to conserve water and methods to accomplish same.
- Work with schools to change toilets and shower heads to low flow devices and eliminate continuous running drinking fountains.
- Continue leak detection efforts.

4.1.1 Leakage

The City prepares an annual pumping report tabulating all sources of water from weekly source meter readings. A copy of this annual report for 1998 is contained in the appendix

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with the Conservation Plan. Service meter readings are made monthly with hand-held meter readers and this data is then fed into the system's main computer in the City Hall for an automatic billing process. The billing codes do not necessarily correspond with the Department of Health categories of water use (single family, multi-family, commercial, irrigation, etc.) for determining ERUs. As a result it is necessary to refer to the complete print-out of all accounts to determine the DOH needs.

A summary of the annual water use for 1998 is as follows:

Total Source Readings	198,780,600 gallons
Total Service Meter Readings	162,559,800 gallons
Misc. Readings	<u>19,980,000 gallons</u>
Unaccounted Water	16,240,800 gallons

Percent Water Loss = 8%

The above misc. readings include the following:

City Standpipe & Hydrants (metered)	607,400 gallons
Water Main Breaks, Reservoir Overflow	450,000 gallons
Water Main Flushing & Sewer Cleaning,	
Street Sweeping	700,000 gallons
City Owned (Park, City Hall, etc.)	17,752,600 gallons
Fire Fighting	230,000 gallons
Construction Projects	<u>420,000 gallons</u>
	19,980,000 gallons

The City carries out an active leak detection program and has the equipment and manpower to make repairs promptly.

4.1.2 Reclaimed Water

In the spring of 2000 the City of Medical Lake will start-up a new Wastewater Treatment and Reuse Facility that will treat the wastewater from the City and from the DSHS Lakeland Village and the Eastern State Hospital campus. The City and the State have jointly financed the Project and the City will own and operate the final treatment facility. Prior to the start of the new treatment plant it has been concluded that 2/3 of the existing flow will be suitably treated to reuse status and returned to West Medical Lake; a portion of the flow will be discharged to Deep Creek; a portion of the reuse water will be used to irrigate the treatment plant landscape; all of the DSHS flow will be returned to West Medical Lake during the summer months. Unfortunately numbers have not been attached to these priority type needs due to the unreliability of some of the past flow data. As a result, the City does not know how much reclaimed or reuse water might be available to them for their specific use. There is concern that the future guaranteed volume might not

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be sufficient to warrant construction of a separate reuse system to irrigate the City Park, for example. It is estimated it will take a minimum of two years of operation to develop reliable flow data and monitor benefits to West Medical Lake. After that time the City should be in a position to begin planning a specific use for whatever amount of reclaimed water might be available. At the same time the City needs to develop a new source of potable water to meet it's projected needs. At this point in time it is impossible to determine if a reuse system could be installed in time nor can the benefits of a reuse system be predicted. By law the City has the water rights for the reclaimed water and the benefits afforded West Medical Lake may mitigate or be traded for a groundwater water right. The City will be working with the Department of Ecology to resolve this dilemma.

4.2 WATER RIGHT EVALUATION

The City of Medical Lake has a groundwater permit G3-28914P to appropriate 1,500 GPM and 2,400 acre-feet per year for their Craig Road well (SO4). The priority date of this permit is November 16, 1990. The well is in operation and it is the City's understanding that all of the appropriate paperwork has been filed with the Department of Ecology and issuance of a Certificate is pending. The City also receives water from their additional wells jointly with the DSHS. These three wells all have a Certificate of Water Right with one in the name of the State of Washington, Department of Institutions, one in the name of the Town of Medical lake and one in the name of the Town of Medical Lake and Washington State Department of Social and Health Services. The amount of water assigned to each of the two entities has never been identified and the system is simply operated for the mutual benefit of both parties. Historically the City has used about 40% of the water pumped from the three wells and this at lease provides a starting point. The following Table 4.2 provides a tabulation of the water right data for the four wells currently used by the City of Medical Lake.

**Table 4.2
City of Medical Lake Water Rights**

Source No.	Name	Cert./Permit	Max. GPM	Max Acre-Ft.	Priority Date
SO1	State of WA. Dept. of Institutions	3300-A	1,000	1,600	9/3/57
SO2	Town of Medical Lake	4404-A	1,000	1,600	5/27/59
SO3	Medical Lake & DSHS	G3-25319C	500	800	4/12/77
SO4	City of Medical Lake	G3-28914P	1,500	2,400	11/16/90
TOTAL			4,000 GPM	6,400 AC-FT.	

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All of the certificates and the City's permit are for municipal supply and the place of use for SO1, 2, and 3 includes both the City of Medical Lake and the State facilities at Eastern State Hospital and Lakeland Village. The City's permit for the Craig Rd. Well is for the area served by Medical Lake, Washington. It would appear that all of these water right documents are in order as currently written.

Using the assumed 40% share for the City, the City should have water rights for $(2,500 \times 40\%) + 1,500 = 2,500$ GPM and $(4,000 \times 40\%) + 2,400 = 4,000$ Acre-Feet/Year. From Table 2.5 the City's projected 20-year needs are for 1,584 GPM and 255,432,400 gallons/year or 784 Acre-Feet/Year.

The City does have sufficient water rights to meet their forecasted 20-year water needs. The Department of Ecology may opt to do some fine tuning on these rights but importantly it appears the City does have adequate water rights to meet their projected future water needs.

4.3 WATER SUPPLY ANALYSIS

The City of Medical Lake does not currently plan to seek additional water rights during the next 20-year planning period. Prior to the expiration of the 20-year period the City will be augmenting their current sources. Several alternatives may be considered including drilling a new well, intertie with the City of Spokane or possibly a reuse water system to reduce the demand on the system. This will be better defined in the years to come.

4.4 WATER SYSTEM RELIABILITY ANALYSIS

4.4.1 Water System Reliability Issues

- Source Reliability** All four of the wells serving the City of Medical Lake appear to be in the deep basaltic aquifer referred to as the Grande Rhonde. The aquifer underlies a vast area in Eastern Washington and is widely used for potable and irrigation water. It has a proven reliability but its widespread usage has caused concern that the water table is dropping. The CSS regularly monitors water levels in the three wells under their charge and the City monitors their Craig Rd. Well. For the past 5 years the water levels have stabilized and there is no indication that the water table is dropping. Both entities will continue their monitoring program to help provide an early warning signal that problems are developing.
- Water Right Adequacy** The City of Medical Lake has their own water right permit (G3-28914P) for their Craig Rd. Well, is named as the sole owner of a Certificate (4404-A) for the shared well SO2 and is named with DSHS on a Certificate (G3-25319C) for shared well SO3. The City also shares water from well SO1 which has a Certificate (3300-A) in the name of the State of Washington Department of Institutions. The City is currently constructing a wastewater facility that will be

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