CHAPTER 5.
FUTURE WATER DEMAND

Population, urban development, and commercial/industrial activities in WRIA 54 are expected to increase over the next 20 years, bringing an increased water supply demand. Although millions of acre-feet of water flow in and out of WRIA 54 annually, as described in Chapter 4, the water resources available to meet new human water demand are limited. These resources are also needed to maintain the volume of aquifers, base flows in streams, and the ecological character of the watershed. They will need to be carefully managed to provide satisfactory water supply for all future needs.

ESTIMATED FUTURE WATER USE

Current annual water use is approximately 57,000 acre-feet, with about 28,000 acre-feet representing urban and domestic uses, Group A, Group B and self-supplied users. The remaining 29,000 acre-feet is used for agriculture and livestock. Current water rights established by permits and certificates in the WRIA account for about 147,000 acre-feet.

The demand for water to serve agriculture and livestock uses is not expected to increase substantially for two reasons. First, most farmable land is already under cultivation. Second, the trend in agricultural water use is toward more efficient use of water through improved irrigation systems and practices.

Future water demand to serve the anticipated population growth was calculated by extrapolating the per capita water consumption rate determined in Chapter 3 to the anticipated future population. In 2000 (the most recent census available) approximately 89,500 people were living in WRIA 54; most of that population were located in the eastern portion of the watershed in Spokane and Stevens Counties. This population used an estimated 320 gallons per capita per day of water, based on an assumed 2.5 residents per ERU and the Washington State Department of Health Water System Design Manual's recommended design value of 800 gallons per ERU.

By 2025, population is likely to increase by 37 percent, with an expected WRIA 54 population of approximately 122,300 (see Table 2-8). If the per capita demand does not change, then the domestic water use in 2025 would be approximately 44,000 acre-feet annually, a 57 percent increase. The Hutterian Brethren expect a growth in agricultural irrigation of approximately 9,000 acre-feet over the next 20 years for their operations on the Spokane Reservation and at West Plains and Long Lake. Even with this growth, it is expected that the loss of other irrigated agricultural lands to development and other uses would maintain agricultural water use at roughly the current level of 27,000 acre-feet; therefore, the total estimated water demand for 2025 will about 71,000 acre-feet.

Future needs for commercial/industrial activities are included in the per capita consumption rate. None of the WRIA 54 water purveyors have identified a projected need for commercial/industrial customers separate from their bulk projections. Since the water needed for these types of activities varies greatly with the type of industry, it is impossible to know at this time what that might be.

Table 5-1 identifies the current annual volume for Group A municipal purveyors and the projected 20-year volume taken from each purveyor's water system plan.

TABLE 5-1.
20-YEAR FUTURE WATER NEEDS PREDICTION

Jurisdiction	Annual Water Volume (acre-feet)		Increase	
	Current	Projected 20-Year	(acre-feet)	(%)
Airway Heights	1,136	2,149	1,013	89.2%
Medical Lake	610	857	247	40.5%
Fairchild Air Force Base	3,017	3,360	343	11.4%
Stevens County PUD LUD 4&6	1,792	2,638	846	47.2%
Stevens County PUD LUD 5	116	142	26	22.4%
Stevens County PUD LUD 18	267	286	19	7.1%
Stevens County PUD LUD 22	6	31	25	416.7%

INCHOATE WATER RIGHTS

Inchoate water rights are the portions of municipal rights that are not currently utilized but available for use as the municipality grows. The estimated inchoate rights for WRIA 54 municipalities, excluding the City of Spokane because it is not WRIA 54-specific, are presented in Table 5-2, along with the projected 20-year annual volume increase derived from Table 5-1.

TABLE 5-2.
ESTIMATED INCHOATE RIGHTS FOR WRIA 54

Jurisdiction	Annual Water Volume (acre-feet)		Inchoate Rights Remaining (acre-feet/year)	% of Inchoate Rights Used by 20-Year Increase
	Current Inchoate Rights	20-Year Increase in Demand[a]		
Airway Heights	489	1,013	-524	207.2%
Medical Lake	3,700	247	3,453	6.7%
Fairchild Air Force Base	1,473	343	1,130	23.3%
Stevens County PUD LUD 4&6	892	846	46	94.8%
Stevens County PUD LUD 5	1,000	26	974	2.6%
Stevens County PUD LUD 18	-873[b]	19	-892	—
Stevens County PUD LUD 22[c]	—	25	—	—
Total[d]	**6,681**	**2,494**	**4,187**	**37.3%**

a. 20-year demand increase taken from Table 5-1.
b. Negative value for inchoate right indicates current use exceeds current right.
c. No data available on annual volume associated with Stevens County PUD LUD 22 inchoate rights.
d. Totals exclude Stevens County PUD LUD 22 because of lack of data on annual volume of inchoate rights.

This information illustrates the capacity of each of these water purveyors to provide water to anticipated new customers with current water rights. At this time, the City of Airway Heights, Stevens County PUD LUD 4&6 and Stevens County PUD LUD 18 do not hold sufficient water rights to serve their anticipated

growth. The other purveyors do not show a similar deficit, but this situation could change if unanticipated growth or a large new industrial user were to locate within their service area.

It must be recognized that utilizing the inchoate rights held by municipal purveyors could place additional stresses on natural resources because they would use water that is presently reserved but not being physically used. Purveyors that fully use their inchoate rights may need to acquire additional water rights. If additional water rights cannot be acquired, municipalities may have to depend on purchasing water through interties from other municipalities with existing inchoate rights. Relying on interties for additional water demand places a community at risk if the provider of the intertie requires that water for its own uses.

FEDERAL AND TRIBAL RESERVED WATER RIGHTS

Like inchoate rights, federal and Tribal reserved water rights are not subject to continuous use provisions. Spokane Tribal rights for the waters of Chamokane Creek have been quantified in federal court as discussed in Chapter 3. The Spokane Tribe and U.S. government could assert reserved rights to other waters within WRIA 54 associated with fulfilling the needs of the lands held by these entities.

WATER CONSERVATION

Water conservation is a critical component of meeting existing and future water needs, including in-stream and out-of-stream uses. Water conservation measures include anything that reduces the amount of water needed to meet water supply uses. Conservation measures entail changing practices and improving system efficiencies to reduce water demand, preserve natural resources and inchoate rights, and accommodate future development opportunities. Water conservation best management practices that can reduce demand include reducing irrigation, changing landscaping materials, minimizing leaks and systems inefficiencies, and reusing or recycling water. An important finding of this Technical Assessment is that the use of water for irrigation, including commercial and residential landscaping, far exceeds water used for other purposes (Figures 3-7, 3-8, and 3-9). Therefore, conservation measures targeted to reducing water for landscaping and irrigation are likely to produce significant water savings.

In WRIA 54, Group A purveyors—Airway Heights, Fairchild Air Force Base, Medical Lake, the City of Spokane, and Stevens County—have developed water conservation plans as part of their water system management plans. A copy of the water conservation sections for these plans is provided in Appendix G.

Airway Heights

Airway Heights has set a goal to reduce water consumption by 5 percent, although a detailed schedule is not provided in the plan. Currently Airway Heights is meeting requirements to meter wells and to check for inconsistencies in the data. The City is also providing public education on water conservation methods and providing customer assistance. Airway Heights is not currently providing incentives to encourage water conservation. A more detailed look at Airway Heights water conservation actions can be found in an excerpt of the water system plan found in Appendix G.

Fairchild Air Force Base

Fairchild Air Force Base is working under a directive to implement four water conservation measures:

- Implement public information and education programs.
- Audit distribution systems to identify leaks and repair needs.
- Upgrade boiler/steam systems.

- Identify miscellaneous high water using processes.

Most of these measures were completed by 2002, and the only ongoing measure identified in the plan is to implement public information and education programs. An existing program to convert manual above-ground irrigation systems to an automatic underground setup is improving water efficiency. This program may be expanded by adding a precipitation-based irrigation system instead of a timer-based system.

A goal for water use reduction was not identified, but between 1989 and 2000 the water demand on Fairchild AFB has not increased, even though the irrigated area has increased by 60 percent. A more detailed look at the conservation practices being conducted at Fairchild AFB can be found in Chapter 4 of the base's water system plan in Appendix G.

Medical Lake

Medical Lake is metering all facilities and reviewing the meters to identify problems within the system. Medical Lake estimates that this has resulted in a two-percent saving in water use. A new wastewater treatment and reuse facility has been constructed, which treats two-thirds of the wastewater to reuse standards and diverts it to West Medical Lake. A portion of the treated water is used for irrigating the wastewater treatment plant facilities. A more detailed look at Medical Lake's water conservation actions can be found in an excerpt of the water system plan found in Appendix G.

City of Spokane

The City of Spokane's objective is to limit the growth of peak-day demand to allow existing resources to supply a growing number of customers. Almost all of the City's consumption is metered, with the exception of fire hydrants and some fire lines. Meters and data are checked to identify failing meters or problems in the system. The City has had a leak detection system in place since the 1970s. The City is also involved in a combined effort to promote water conservation. A more detailed look at the City of Spokane's water conservation actions can be found in an excerpt of the water system plan found in Appendix G.

Stevens County Public Utility District

Stevens County Public Utility District (PUD) has established a goal to provide all PUD customers with the knowledge and incentives to use water wisely and reduce wasteful water use practices. Stevens County PUD provides public education materials to residents as well as limited technical assistance for water conservation measures. Sources and service are metered and monitored, and a program is in place to identify unaccounted water. The PUD has worked on a reduced lawn watering demonstration project in the Suncrest system and experimented with changing water rates to promote water conservation. No specific reduction goals in terms of a percentage or volume of saving are provided in the plan. A more detailed look at Stevens County PUD's water conservation actions can be found in an excerpt of the water system plan found in Appendix G.