CHAPTER 4

CONSERVATION PROGRAM, SUPPLY ANALYSIS, SYSTEM SOURCE RELIABILITY AND INTERTIES

OBJECTIVE

The objectives of this Chapter are to assess the development and implementation of the Association's Conservation Program to promote efficient water use, the adequacy of the Association's water rights to provide for existing as well as future needs, system source reliability, and to describe existing and proposed interties.

CONSERVATION PROGRAM

CONSERVATION PLANNING REQUIREMENTS

The Washington Legislature passed the Water Use Efficiency Act of 1989 (43.20.230 RCW), which directs the Department of Health (DOH) to develop procedures and guidelines relating to water use efficiency. In response to this mandate, the Department of Ecology (Ecology), the Washington Water Utilities Council, and DOH jointly published a document entitled *Conservation Planning Requirements* (1994). This document provides guidelines and requirements regarding the development and implementation of conservation programs for public water systems. Conservation programs developed in compliance with this document are required by DOH and by Ecology as part of a public water system water right application. Conservation must be evaluated and implemented as an alternate source of supply before state agencies approve applications for new or expanded water rights.

The *Municipal Water Supply – Efficiency Requirements Act* passed in 2003 codified additional requirements including additional water use efficiency requirements for municipal water utilities. Regulations and guidance implementing the additional requirements of the Municipal Water Law were developed by the Washington Departments of Health and Ecology, the Water Use Efficiency Rule (2007). The Municipal Water Law was challenged in King County Superior Court and parts of the law were struck down. The law has been appealed to the State Supreme Court. A portion of the law that has been challenged relates to privately owned water systems. Privately owned systems are no longer considered municipal water suppliers and thus may not be obliged to meet state water use efficiency requirements.

Required conservation measures for a public water system include water use reporting, demand forecasting methodology, and the development of a Water Use Efficiency Program. The state's conservation planning requirements including the new Municipal Water Law requirements establish varying conservation requirements and elements based

on the size of the water utility (number of connections). The Municipal Water Law requires conservation plans for water utilities the size of the Association (1,000 to 2,499 connections) have certain minimum requirements. Information and program elements to meet these requirements are contained in this chapter and/or in other chapters of the Water System Plan.

The Association's Conservation Program documents actions and planning efforts that the Association has taken relating to the implementation of water conservation measures. The *Conservation Planning Requirements* establish varying implementation requirements based on the number of connections served by the water system. In 2009, the Association served 2,092 connections, and therefore is classified as a "medium" sized public water system. A medium system is defined as serving between 1,000 and 25,000 customers. Water conservation measures for medium systems are discussed further in this Chapter. Consistent with the state guidelines, the Association's Conservation Program contains water use data collection, water demand forecasts, and a water conservation plan. Water use data and water demand forecasts were developed in Chapter 2 of this Plan and summarized below.

At this time, the Association is in full compliance with the *Conservation Planning Requirements* and the *Municipal Water Law Interim Guidance.*

WATER USE DATA REPORTING

A summary of the Association's water use data for each of the required types of data listed in the *Conservation Planning Requirements* is presented in Table 4-1.

TABLE 4-1

Summary of Water Use Data Collection

Required Data Type[(1)]	Unit of Measure	Collection Frequency	Comments
Water Service Connections	# connections	Annual	Reported Yearly
Source of Supply Meter Readings	Gallons	Daily	Production data is collected at the Wells daily and reported on a monthly basis.
Import/Export from Emergency Intertie	Cubic Feet	Monthly	
Export from Other Interties	Cubic Feet	Monthly	Wholesale to Wilderness Rim
Wholesale Water Purchased	NA	NA	
Peak Day	Gallons	Daily	Daily meter readings are taken at the Wells.
Peak Month	Gallons	Annual	Peak month is tabulated monthly based on flow meter readings.

TABLE 4-1 – (continued)

Summary of Water Use Data Collection

Required Data Type[(1)]	Unit of Measure	Collection Frequency	Comments
Unaccounted for Water	Percent	Annual	Calculated monthly
Accounted for Water	Cubic Feet	Monthly	Customer meter readings are read monthly.
Single-Family[(2)] Service Meter Readings	Cubic Feet	Monthly	Customer meter readings are read monthly.
Multifamily Service Meter Readings	Cubic Feet	Monthly	
Industrial/Commercial Service Meter Readings	Cubic Feet	Monthly	
Population Served	# people	Annual	Reported Annually
Economic Data			See existing water rates in Table 4- 7
Conservation Data			See water forecasting in Table ?

(1) Water use data collection requirements are based on DOH 1994 Conservation Planning Requirements

(2) Single-family unit is defined as a house with one family and one service meter.

OWNERSHIP AND MANAGEMENT OF THE CONSERVATION PROGRAM

The Sallal Water Association is a small "medium-sized utility", as defined by the Conservation Planning Requirements (WDOH and WDOE) with 1,416 single-family connections, 43 other connections (commercial, industrial, and irrigation) and wholesaled water to Wilderness Rim's 633 single-family residences (as of 2007). In assessing the requirements of the Conservation Plan and Program, the Association is in compliance with, and already gathering information on the required measures. Data collection, a conservation-minded rate schedule, and customer education in the wise use of water are all facets of a good conservation program that have been implemented by the Association. The Association is also involved in developing additional long-term strategies to meet the growth and future needs of the service area.

The Association is an associate member of the East King County Regional Water Association (EKCRWA). EKCRWA is a member of the Central Puget Sound Water Suppliers Forum which has been instrumental in the development and sustainment of the Partnership for Water Conservation that supports a variety of regional and local water conservation media and the development of regional and statewide conservation policies and Best Management Practices (BMPs). The Association will continue to support the work of the EKCRWA, the Forum and the Partnership.

In 1989, the eastern portion of King County was designated a Critical Water Supply Area and the East King County Regional Water Association (EKCRWA) was formed. The EKCRWA developed a Coordinated Water Supply Plan (CWSP), which was approved in 1990. The CWSP sets out water conservation goals and a variety of tools or measures to reach those goals. The WDOH's Conservation Planning Requirements also provide conservation programs and requirements for data collection and forecasting and evaluation of conservation programs.

Since the approval of the East King County Coordinated Water Supply Plan by the King County Council in June of 1990, The Association has developed and implemented its ongoing programs to work toward achieving the goals set by the regional plan and conserve its available water supply. The Association began conservation efforts in 1995 to work toward the 8 percent reduction in water use per connection by the year 2000, using 1990 as the base year.

As part of its conservation program, the Association has increased its inclined-block water rates numerous times since 1995. These rate adjustments were coupled with increased information options to assist in the Association's water efficiency program. The Association encourages water users to employ water saving techniques. Meters are required for each customer. Meters are read monthly and checked for possible leaks or unusual high water usage. Customers are notified either by phone or by letter if a possible leak is detected. These communications with Association members point out the importance for water waste elimination/conservation and offering the Association's help in efforts to lower their water usage.

The Association continues to work on water efficiency/conservation at their monthly Board of Trustees meeting. Each member of the Board receives a copy of the water management report and graphs each month. High water usage and conservation issues are routinely discussed at Association Board meetings.

The Association agrees with the principal put forth, that "increased water use efficiency should receive consideration as a potential source of water in state and local water resource planning processes" (Department of Ecology and Health Conservation Planning Requirements, page 1). This type of thinking is fundamental to Sallal's conservation program. Water conservation is an integral part of the Association's management of its finite water resource. The rest of this chapter contains the measures and narration of the Association's Conservation Plan and Program.

CONSERVATION PROGRAM OBJECTIVES

The Association is operated as a cooperative and strives to provide cost-efficient water to its members. Water conservation, repair of leaks, and individual communication with members about suspected leaks or irrigation system problems have been a long-standing practice and continue to be fundamental to the Association's conservation objectives.

Additionally, the Association has always tried to implement cost-effective conservation measures which reduce per capita demand and reduce the ratio of the maximum day demand (MDD) to average day demand (ADD). The Association has been and continues to be further motivated to introduce additional cost effective conservation measures to further extend the Association's currently righted quantity of water.

The specific goals for the Association's Conservation Program are listed below:

- Attain maximum utilization/efficiency of current water supply.
- Maintain or reduce annual water consumption levels.
- Maintain or reduce peak daily and peak monthly summer peak water use.
- Maintain low volumes (<10%) of lost and unaccounted for water.
- Maintain Education and Awareness Programs.

EXISTING CONSERVATION PROGRAM EFFECTIVENESS

The East King County Coordinated Water Supply Plan set regional goals of an 8 percent reduction in water use per connection by the year 2000, using 1990 as the base year. Based on historical data, in 1990, an average of 294 gallons per day was the average daily use per connection. In 2000, Sallal's average daily use per connection was 285 gallons per day. The Association, like many of the rural water purveyors, has experienced a growth in large estate-style homes located on large landscaped lots with in-ground irrigation systems. The Association's Conservation Program had allowed it to maintain a relatively constant daily production rate despite the influx of a new development. Table 4-2 provides the annual water production and connection count from 1995 through 2007. Table 4-2 indicates an overall reduction of 10 percent from 263 gallons/day/ connection in 1995 to a current usage of 235 gallons/day/connection (227 gpd/ERU).

Tables 4-2 and 4-3 provide water production per capita and a comparison of the Association's per capita water use to other similar rural or semi-rural urban water systems in the Snoqualmie Valley shows it to be in the lower range of these water systems. Population numbers for the Association are difficult given its location and sporadic growth patterns, and were assumed to be 3.25 individuals per connection based on School District #410 data.

The 2002 WSP set a goal of an 8 percent reduction in water use over the period 2002 – 2011, as well as, a reduction in peak water use. The Association has not achieved that goal on an ERU basis; ERU use has remained at approximately 210 gpd/ERU. However, the majority of growth since the 2002 WSP has been in large single-family homes on large lots in the Upland area. Water use for both domestic and irrigation purposes, in this type of home is significantly higher than the typical Sallal single-family residential users.

The Association does not keep separate categories of water use consumption by type of single-family home, thus the determination of ERU water use lumps all single-family homes together. Recent analyses by another local water association (Ames Lake Water

Association) found that large lot residential development uses water on the order of 60 percent higher than the overall average day residential demand (223 gpd/ERU vs. 389 gpd/ERU). As shown in the Water System Plan in Table 2-8, and subsequent discussion, the average day ERU usage in the Sallal system is 213 gpd, similar to the average value observed in Ames Lake. The fact that the water use per ERU has remained relatively constant, despite the influx of large homes to the Sallal system, that use significant amounts of water, indicates that the inclined block rate structure and other conservation measures instituted by Sallal have had success.

Specific numeric goals for water use reductions per ERU for the Sallal system will depend heavily upon future zoning. Therefore, the Association believes that it would imprudent to try to project future reductions in water usage at this time.

TABLE 4-2

1995 to 2007 Water Production Per Capita

Year	Total Production (gallons)	Average Day Demand	Connections	GPD/Connection
1995	180,929,119	495,696	1,887	263
1996	178,349,068	487,293	1,940	251
1997	205,970,648	564,303	1,996	283
1998	192,639,916	527,781	2,037	259
1999	184,841,119	506,414	2,059	246
2000	188,834,870	515,942	2,068	249
2001	167,908,719	460,024	2,101	219
2002	181,456,600	497,141	2,145	232
2003	191,077,482	523,500	2,189	239
2004	181,394,750	495,614	2,036	243
2005	171,799,727	470,684	2,056	228
2006	180,960,865	495,783	2,074	238
2007	180,118,048	493,474	2,092	235

TABLE 4-3

Per Capita Water Use for Other Water Systems

System	Year	Population	Use per Capita (gpd)
Sallal Water Association	2007	6,756	73
North Bend	2007	5,184	125
Ames Lake Water Association	2007	2,977	76
Snoqualmie	2007	8,600	121

The Association population is estimated based on a multiplier of 3.25 individuals/connection.

In summary, the Association has been very successful in the overall reduction of their daily production per day per ERU. This success is reflective of the efforts undertaken by the Association Board of Trustees, Operators, Mangers and members of the Association over the past 10 years.

WATER DEMAND FORECAST

Per Capita Water Production and Water Demand Forecast

The Association's production per capita for 2007 is 73 gpcd (180,118,048 gallons/365 days/6,799 people). Water demand forecasting for the Association's water system is also provided in Chapter 2 of this Water System Plan. Population projections for the North Bend, Snoqualmie and Association Area are predicted at 0.5 percent based on 2003 population projections by the PSRC. However, this growth estimate appears low based on observed historical trends in the area and consequently a rate of 3 percent was used for estimations.

The Association's Conservation Program goal is to maintain the current ERU and per capita consumption over the next several years. This goal is appropriate for the Association, because they have achieved significant conservation and are now one of the lower per capita water users in the Snoqualmie Valley. With the influx of additional business, multi-family housing and the continued development of larger residential homes on acreage, the Association will be challenged to maintain the current levels of conservation.

REQUIRED MEASURES FOR ALL SYSTEM

The following conservation measures are required for all public water system regardless of size. The Association's level of compliance and implementation is noted below the required conservation measure. Recommendations for future actions, if applicable, are also provided.

Source Meter Installation

The installation of flow meters on each source of supply is required for all water systems to measure the amount of water entering the distribution system.

Level of Implementation

All sources of supply for the Association have source meters.

Program Promotion

Program promotion includes publicizing the need for water conservation through distribution of DOH brochures, bill inserts, and requiring efficient plumbing fixtures in new development.

Level of Implementation

The Association has previously distributed brochures and has racks for distribution of brochures at the Association's North Bend offices. The Association is currently evaluating additional opportunities including a web site for promotion of the conservation program. The Association is a water utility co-operative and as such has no land use or governance powers; water efficient plumbing fixtures are required by the plumbing code.

Non-Revenue Water/Leak Detection and Repair Program

If a system's non-revenue water exceeds 20 percent (10 percent under the new Municipal Water Law requirements), the conservation program must also provide an implementation program that includes leak detection and repair, and other measures to reduce non-revenue water.

Level of Implementation

Lost and unaccounted for water is the metered source production less the metered consumption of water. This difference is due to leaks in the system, unauthorized water use, faulty meters, and inaccurate estimations of main flushing and fire flows. Water used for flushing or fire flows that is estimated or measured is removed from the calculation of lost and unaccounted for water. The Association's lost and unaccounted for water has averaged below 10 percent for the past 10 years. The Association will continue to implement leak detection and repair programs as needed to maintain lost and unaccounted water below 10 percent.

CONSERVATION STRATEGIES AND MEASURES

Conservation is one strategy the Association is using to manage its limited water resources for the needs of both people and fish. In particular, the Association has focused

on programs that reduce overall consumption and peak demand during the summer and early fall. The Association's Conservation Program goal is to maintain the current ERU and per capita consumption over the next several years. As discussed above, this goal is appropriate for the Association, because they have achieved significant conservation levels that have been achieved.

As discussed, the Association has recently become passed the threshold into a "medium-sized water system" under the Conservation Planning Requirements. Many of the enhanced conservation measures are programs required for implementation by larger sized utilities or water systems with more regulatory/zoning authority than the Association. In particular, the Association has no authority or control of land zoning, codes, ordinances or regulations. As a co-operative under Washington State laws, conservation measures must pass the test of "cost effectiveness" to be implemented by the Association.

The Association conservation measures are grouped by the following strategies;

- Water Rate Structures – Conservation Pricing
- Water Supply/System Efficiency
- Public Information and Education
- Technical Assistance

Water Rate Structures – Conservation Pricing

Another means of promoting water conservation is through water rates that can provide an economic incentive for the Association's members to conserve water. Studies have shown that conservation pricing is a very effective incentive that results in a change in behavior and efforts to save water. The effect that price has on water use has been well documented, and provides an explanation and a means to effectively quantify the savings in water based on the *price elasticity* of water.

The concept of price elasticity is based on the cause and effect relationship between water use and price. American Water Works Association (AWWA) defines price elasticity as "…the responsiveness of water use to price changes." Further explanation of the AWWA definition of price elasticity is stated as follows:

> *"A price (or income) elasticity indicates the percentage change in water sales that is likely to result from a given percentage change in price (or income). Thus, a price elasticity of –0.3 means that, other things being equal, a 10 percent price increase will result in a 3 percent reduction in water use."*

Though cost is an important factor that directly affects water use, it is important to note that it is not the only factor. Other factors that influence water use include climate,

precipitation, and customer demographics. AWWA provided the following considerations when comparing the sensitivity of water use to water rates:

- Consumers react to the total bill more than to the rate of the final block of use.
- Rate design affects water use but not necessarily water use price elasticity. Price elasticity does not vary substantially across uniform, declining block, and inclining block rates.
- Each user class responds differently to rate changes. Price elasticity varies substantially across customer classes.
- The components of residential demand have different sensitivities to rate changes. Summer use is more sensitive to rate changes than winter or domestic use, both in the short term and long term.
- Water demand varies between peak and off-peak periods. Peak usage is more price-sensitive than off-peak usage. However, increasing monthly billing rates does not guarantee a reduced peak day water system demand, because customers can reduce their total monthly usage without reducing their peak day usage.
- Customer education programs affect price elasticity. Education provides the customer base with ways to be more efficient with water use. Customers can learn to conserve water without dramatically affecting their lifestyle. Customers that are not educated on conservation measures are less likely to be affected by the price of water, because their choices are limited to shutting the water off or leaving it on.

The Association's primary approach to water conservation and control of member's water usage is through the water rate schedule. The Association operates as a member-owned, non-profit cooperative and administers changes to its members' water rates by a Board of Trustees decision. The Association has made effective use of this tool since 1995.

Structuring water rates to encourage conservation is a fundamental conservation strategy, and based on practical experience, seems often to be the most effective. Generally the more water costs per the amount used, the customers will use less water. The Association communicates these rate increases directly with its members to inform them of rate increases and give their members more control over their water bills. Specific higher-end users are contacted directly and informed of their consumptive histories and potential new rate impacts. The Association currently provides historic water use for the previous year on each monthly water bill; additionally, the billing includes a water

conservation message. The Association is researching additional methods to provide consumptive history information to its members.

As part of the Association's Conservation Program, a graduated rate schedule has been used since 1995 to assist the Sallal conservation program. The Association's rate structure is based on trying to reduce excessive water use and summer peak demand while still providing water for normal household use at an affordable rate. During the summer of 2000, the Association determined that approximately 72 percent of their members were using less than 2,000 cubic feet (14,961 gallons) per month; 14 percent were using 2,000 – 3,000 cubic feet (14,961 – 22,441 gallons) per month; 9 percent were using 3,000 – 4,000 cubic feet (22,441 – 29,922 gallons) per month, and 5 percent were using over 4,000 cubic feet (29,922 + gallons) per month. The Association through their rate structure tries to provide a deterrent for water usage over 3,000 cubic feet (22,441 + gallons) per month or approximately 19 percent of the Association's members. The Association has raised their rates several times since 1995 with the most recent increase being implemented on January 2008. Graduated rates were established based on monthly metered usage and to discourage high water use in particular extensive outdoor watering during the summer peak season. Annually, the result of the rate increase will be analyzed to compare the percentage of rate increase to the percentage of water use reduction. Based on these percentages, the rate schedule will be adjusted by the Board of Trustees as necessary to achieve the conservation goal. See Table 4-4 below for the Association's rate schedule (Appendix K).

TABLE 4-4

Monthly Usage Rate Schedule Effective January 2009 (for All User Categories)

Amount cubic feet	Rate Amount per 100 cubic feet
1-500	$1.59
501-800	$1.87
801-1500	$2.40
1501-3000	$2.90
3001-7000	$7.22
7001+	$14.45
Wholesale	$1.59 cf

Water Supply System Efficiency

Water system efficiency is fundamental to good management of the water resources. Water lost to leaks, breaks, and inefficient water system operation is wasted. Reducing and maintaining non-revenue water to acceptable levels (<10%) is a key strategy of the Association. Increasing the water system efficiency also signals to the public the commitment of the Association and shows that it "practices what it preaches" to its

members. The Association's non-revenue (lost/unaccounted for) water has averaged less than 10 percent over the past 6 years as discussed in Chapter 2.

System Production and Service Meters

The Association has meters at all current production wells and will include meters on all new source facilities. The Association requires service meters for all members. The Association promotes water conservation by encouraging the use of smaller sized meters for a single-family residential use (5/8 inch unless a larger size is required by the plumbing code or fire sprinklers). Additionally, the price setting for the cost of the meter installation is directly proportional to the potential volume of water that the meter can provide.

Leak Detection

Meters are read monthly, checked for possible leaks and maintained as needed. Members are notified if a possible leak is noted during the meter reading or based on their consumptive use history. Any member using an abnormal amount of water during a monthly billing cycle is sent a letter identifying the high user, pointing out the importance for water waste elimination/conservation and offering the Association's help in efforts to lower their water usage and/or determine if they have a leak.

The Association has an on-going Leak Detection Program and has found that its distribution system is relatively healthy and generally free of leaks. The Association also has a monitoring program to monitor the installation of water system piping by subcontractors and housing developers, which has resulted in significant improvement in the quality of the initial water system installation.

The Association will continue distribution system maintenance and will repair all reported leaks. As shown in Table 2-7, the Association's unmetered water has averaged 6.5 percent. This total is tabulated each month and presented to the Board of Trustees at their monthly meetings.

System Maintenance

Line flushing and tank cleaning are part of routine water system maintenance and maintaining water quality. Some water mains with dead-ends or very few members may require more frequent flushing. The Association is taking steps to reduce the amount of flushing by looping mains where economically feasible and by using fire-hydrant withdrawal (usually for washing or construction activities) as a tool to further withdraw water from sections of pipe requiring frequent flushing. However, while the goal is to reduce the amount of water needed for flushing, flushing will remain part of routine water system maintenance.

Public Information and Education

Public Information and Education programs are the backbone of an effective conservation program. There is a fundamental need to inform water consumers both why they should conserve and what conservation programs or resources are available to help them.

The Association participates in regional programs through its membership in the East King County Regional Water Association (EKCRWA) and indirectly through EKCRWA in the Central Puget Sound Water Suppliers Forum and the Partnership for Water Conservation (an organization that is merging with the former Water Conservation Coalition of Puget Sound). Regional conservation programs supported by the Partnership/WCCPS have included radio spots, conservation brochures/materials, guest speakers at the Seattle Flower and Garden show and water conservation information booths at local fairs. The Association is also investigating additional sub-regional conservation programs and on-going cooperative efforts with the City of North Bend and other surrounding purveyors.

Outreach

The Association provides, upon request, a representative to address groups concerning their Association, water conservation, regional geology and their source of water supply. The Association routinely makes presentations at their Annual Meeting about the Association's activities and water conservation issues.

The Association plans to target homeowner associations, and other local community groups in the Association's Service Area. Invitations will be extended on an annual basis to these organizations. Informal and formal homeowner associations represent a significant percentage of the Association's single-family members. Some of these homeowner associations have covenants requiring maintenance of traditional landscaped entries. Meeting with homeowners directly would serve to educate them on alternative waterwise-landscaping practices and motivate them to institute changes that can benefit the environment and conserve water. A variety of conservation brochures and pamphlets are distributed at the outreach meetings.

The Association is also looking at accessing new homeowners that move within the service area by providing local "Welcome Wagon" groups with informational and water conservation materials to distribute. The Association provides conservation information (brochures) with each new meter installation and in each New Membership Packet in order to provide exposure to the Association's Conservation Program to new members joining the Sallal Water Association.

The Association is currently evaluating additional outreach opportunities including PowerPoint presentations on the Sallal Water Association, water source issues and water conservation and outreach opportunities through the Association's web site currently

under development (www.Sallal.com). There are numerous other resources available including waterwise gardening programs developed by the American Water Works Association and the Pacific Northwest Section of the American Water Works Association (AWWA).

Conservation Program Promotion

The Association, as a member of the EKCRWA, has participated in the development and/or distribution of a number of brochures and other water conservation media messages. These brochures, as well as those available from the AWWA and the Health have been obtained from time to time and made available to members through mailings and annual meetings. The Association also has a brochure rack with a variety of conservation materials located in the North Bend office available to the numerous walk-in members. The Association is reviewing the possibility of a newsletter or "what's new" section of their web site to further enhance communication with its members. The newsletter/web site would contain conservation measures and depending upon the season of distribution, the articles could feature indoor, outdoor, or other components of the conservation program such as education programs and residential leak detection and repair. The goal would be to have the newsletter / web page update published on a regular schedule and to provide customers with information that will influence their habits and water use patterns.

As discussed above, the Association is also looking to the future with the development of the Association web site that would provide conservation information and future distribution of newsletters to its members over the Internet. This could potentially prove to be a cost-effective means of reaching the general membership not only for conservation tips but also to keep the community updated on recent events and outreach programs as well as an educational tool by providing links to other organizations.

Technical Assistance

<u>Customer Assistance</u>

The Association's technical assistance program consists of providing rapid response to system questions from it's members; and/or directing inquiries to the appropriate local, state, or federal resources (if the Association does not have the answers). As previously discussed, the Association is a co-operative and places a high value on customer relations and customer service with its members. The Association currently provides assistance to members as requested and is reviewing various options to provide additional technical assistance to its members. Programs currently under review would include providing landscape water audits and other water conservation technical assistance. The Association is evaluating cost-effective options such as sub-contracting with neighboring utilities for temporary conservation staffing or utilizing the services of conservation agencies such as the Partnership for Water Conservation. Customer Assistance is an area

where the Association is looking for new cost-effective ways to be of better service to its members.

CONSERVATION PROGRAM IMPLEMENTATION

Identification of Selected Conservation Activities

Since its inception in 1969, the Association has always had a conservation philosophy to utilize the public water resource in such a manner as to not promote waste. It is recommended the Association continue with and/or implement the following practices to promote water conservation.

Water Rates

To assist with the Association's conservation program, the water rates are scheduled to increase in January 2009. Since 1995, the Association has implemented inclined-block water rate schedule based on metered usage in order to discourage high water use over 3,000 cubic feet per month (748 gal/day). The result of the rate increase will be analyzed annually on a per customer basis to compare the percentage of rate increase to the percentage of water use reduction. Based on these percentages, the rate schedule will be adjusted by the Board as necessary to achieve the conservation goal of maintaining current water use. Water rates will remain the primary tool used to achieve conservation goals.

Water Meters

The Association encourages water users to employ water saving techniques. Meters are required for each customer. Meters are read monthly and checked for possible leaks. Customers are notified if a possible leak is detected.

Water Bills showing Consumptive History and Conservation Message

The water use for the same period 1-year before is shown on each member's monthly billing for comparison. Reminder notes are put on billings May through August, such as "Use what you need, need what you use," "Do your part, be water smart," "Use water wisely," "Rainfall low use water wisely," and "Saving water today insures water for tomorrow," etc. The Association will continue to use consumptive history and bill messaging to increase member's awareness of water conservation.

Water Theft

A portion of the unaccounted for water is often due to water theft, in particular from the fire hydrants in rural portions of the Association's service area. To try to stop unauthorized use of fire hydrants, the Association established a $250 fine per occurrence when a person or entity is found taking water from the system via this manner. This has

proven to be a very effective way to reduce the unauthorized use of fire hydrants. Residents are a great help in this area as many of them continue to show a commitment to the preservation of their water resource by contacting the office when they are aware of unauthorized use of fire hydrants taking place.

Leak Detection and Repair Program

While the lost and unaccounted for water has historically been less than 10 percent and is not required to develop a Leak Detection and repair program under the new Municipal Water Law regulations. However, the Association will maintain an informal leak detection program that monitors for potential leaks by monitoring abnormal use and well production patterns. The Association will continue to make prompt repairs to water lines once potential leaks are noted.

Water System Management

Operators, Managers, and Board of Trustees are committed to the previously stated objectives of the Conservation Plan:

- Attain maximum utilization/efficiency of current water supply.
- Maintain or reduce annual water consumption levels.
- Maintain or reduce peak daily and peak monthly summer peak water use.
- Maintain low volumes (<10%) of lost and unaccounted for water.
- Maintain Education and Awareness Programs.

The management of the water system includes procedures to monitor the system facilities and operations on a regular basis. A telemetry system has been implemented that provides approximately "real time" assessment of well production, well levels and tank levels. The Association will continue to work towards maintaining a lower level of water demand from individual connections. The Association will continue to analyze its rates and fees to provide incentives for water use efficiency. The Association will continue to monitor its operations from a management and policy basis to promote water conservation and water efficiency. The Association will continue to update its rules and regulations to reflect the most current acceptable practices for water conservation and water use efficiency. The Association will help its customers understand and practice wise water uses, promote efficient and responsible water use and encourage water waste elimination/conservation.

Additional conservation requirements are anticipated in the future as the Municipal Water Law Regulations are finalized and implemented. In addition, as a condition for purchasing wholesale water from Seattle Public Utilities (either for mitigation of for domestic supply), additional water conservation requirements may be required for both Sallal and the City of North Bend. The Association anticipates that an update of the Conservation Plan will be implemented prior to the next scheduled update (2013) of the Water System Plan.

SOURCE OF SUPPLY ANALYSIS

The Association is pursuing an agreement with North Bend to allow a shared use of the new water right (Chapter 3) to meet projected increases in demand. An obvious need of the Association is to obtain enough water to allow build-out of the current zoning within its service area boundary. While the zoning in the service area is a mix of commercial to residential both within and outside of Urban Growth Areas (UGAs), an estimate of the total additional volume of water needed to meet the build out requirements of the Sallal service area is approximately 495 acre-feet (Table 3-7). The new right received by the City of North Bend should be adequate to cover the anticipated growth.

The Water Association, like many of the other independent public water suppliers in the region, would prefer to remain independent and meet the needs of its service area with the abundant, excellent quality groundwater in this region. An evaluation of potential new sources of supply identified the following alternatives or approaches for the Association to obtain additional sources of water:

- Continued efforts to obtain new groundwater rights – individually or in partnership
- Groundwater water rights purchase/transfer
- Consolidation of exempt wells
- Water conservation
- Interties – local support
- Connection to the regional system (SPU water)
- Regional Sources – Snoqualmie Aquifer
- North Bend – Sallal Water Supply Project

A number of these options were extensively explored including availability of water rights in the area and an investigation of neighboring water systems' ability to meet additional demands and provide wholesale water. However, the recent approval of the water right application to the City of North Bend and shared use of that water right will allow the association to meet projected needs over the next 20 years.

<u>North Bend – Sallal Water Supply Project</u>

Approval of the City of North Bend's 1992 groundwater application is anticipated to satisfy demand for planning horizon. Multiple wells using this new groundwater right water right will be used to serve the Urban Growth Area (UGA) that is currently served by both the City of North Bend and by the Association. This project has been under development for over 7 years. The North Bend-Sallal Water Supply Project has the following elements:

- Groundwater produced from two to three new North Bend production wells would be utilized in a staged manner to serve the entire UGA area. Currently, approximately half of the UGA is served by the City of North Bend and approximately half by the Association. Water would be wholesaled from North Bend to the Association. It is currently anticipated that Sallal would continue to serve its portion of the UGA well into the future. The Wholesale and Operational Agreement between the Association and the City of North Bend is currently under development.

- The quantity of water permitted under the new North Bend water right would be sufficient to serve the entire UGA (North Bend and Sallal portions) to anticipated build-out and should be adequate to serve demands for the UGA for the next approximately 50 year period.

- The new North Bend water right may require mitigation due to instream flows not being met on a continuous basis on the Snoqualmie River. The new water right would be fully mitigated (gallon for gallon) during periods that the Snoqualmie River does not meet instream flows. Currently the project envisions purchasing raw water from SPU (Hobo Springs source) or other major water right holder in the vicinity and delivering this raw water to a tributary (Boxley Creek) of the Snoqualmie River to mitigate the impacts of the production well withdrawals. The Association's wells in the watershed area would be utilized as a potential backup mitigation source during the infrequent winter periods when the flows from Hobo Springs may be inadequate for total mitigation. The mitigation system would be controlled by telemetry and operated under a management program to provide near real time mitigation of the new production wells. Alternative mitigation options including seasonal use of the deeper Snoqualmie Aquifer as additional sources of mitigation water are also under study and evaluation.

- Significant hydrogeologic, engineering, and financial studies have been completed on the North Bend – Sallal Water Supply Project over a number of years. Contract negotiations are underway with SPU for the purchase of the raw water for mitigation.

As discussed above, a sufficient quantity of water for the Association to serve their portion of the North Bend – Sallal UGA would be wholesaled from the new North Bend production well(s) to the Sallal Water Association. This would allow water currently used by the Association to serve members within the UGA to be utilized in other portions of the Sallal service area.

WATER RECLAMATION AND REUSE

Current Conditions

The Association only provides water service and does not provide any sewer services within its service area. All developed parcels (residential, commercial and industrial) within the service area are served by in-ground septic systems. The closest waste water treatment facility is located on the west side of the City of North Bend and is operated by the City to serve their customers within the City of North Bend Service Area. The North Bend waste water treatment plant discharges treated wastewater to the Snoqualmie River. No sewer service lines are currently extended into the Association's service area although expansion into the UGA is anticipated in the future.

Applicability of Future Water Reclamation and Reuse to Sallal Water System

The future water reclamation and reuse opportunities for the Association are somewhat unique and are tied to the Mitigation Program for the anticipated North Bend – Sallal Water Supply Project. Wastewater collected from the UGA (including parcels within the Sallal Service Area portion of the UGA in the future) would be treated by the North Bend wastewater treatment plant and discharged to the Snoqualmie River. As part of the proposed Mitigation Program, this return discharge from the wastewater treatment plant would be quantified to determine actual consumptive impacts from the new production wells and the quantity of water needed to mitigate these impacts would be delivered via a telemetry controlled distribution system to a tributary of the Snoqualmie River. This Mitigation Program including the utilization of the wastewater treatment plant discharge to the Snoqualmie River is a specific required element of the mitigated water rights that would be issued by the Washington Department of Ecology.

Given this anticipated requirement to use current and future treated waste water treatment plant returns to enhance stream flows in the Snoqualmie River, it is considered unlikely that other uses of the reclaimed water would or could be undertaken by the Association in the near future. Therefore, there is no current or anticipated future applicability of water reclamation and reuse to the Association's water system.

SUPPLY ALTERNATIVES SUMMARY

The management, staff and consultants of the Association have evaluated a variety of options over the last 6 years to find an additional source of water. The recent approval of the City of North Bend's demand over the 20-year planning period.