

# **ASOTIN COUNTY PUBLIC UTILITY DISTRICT**

## **WATER USE EFFICIENCY and CONSERVATION PLAN**

### **Introduction**

The State of Washington Department of Health revised water conservation planning requirements as a result of the 2003 Municipal Water Law. An outgrowth of that law is the Water Use Efficiency Rule (Rule), which was finalized in January 2007. The Rule has several requirements and corresponding compliance dates. Some of the requirements are associated with water system plans, while other requirements are independent of the 6 year water system planning cycle. The Asotin County PUD 2006 Comprehensive Water System Plan was not technically subject to the new requirements, since it was submitted prior to the compliance dates for planning documents to adhere to the new requirements.

### **Water Conservation Program Review**

The new Water Use Efficiency Rule requires the Asotin PUD to review its current conservation program and adopt conservation goals and measures. The conservation program review has three purposes:

1. Describe the Asotin PUD existing conservation program
2. Review the Asotin PUD compliance with conservation planning requirements
3. Describe the proposed conservation program that the Asotin PUD will implement from 2008 through 2012 which will meet the requirements of the Water Use Efficiency Rule adopted by the State of Washington.

### **Water Conservation Objectives**

A first step in the preparation of a conservation plan is the establishment of objectives. Conservation objectives serve as the guide for the development of the conservation program. The PUD selected the following objectives for its water conservation program:

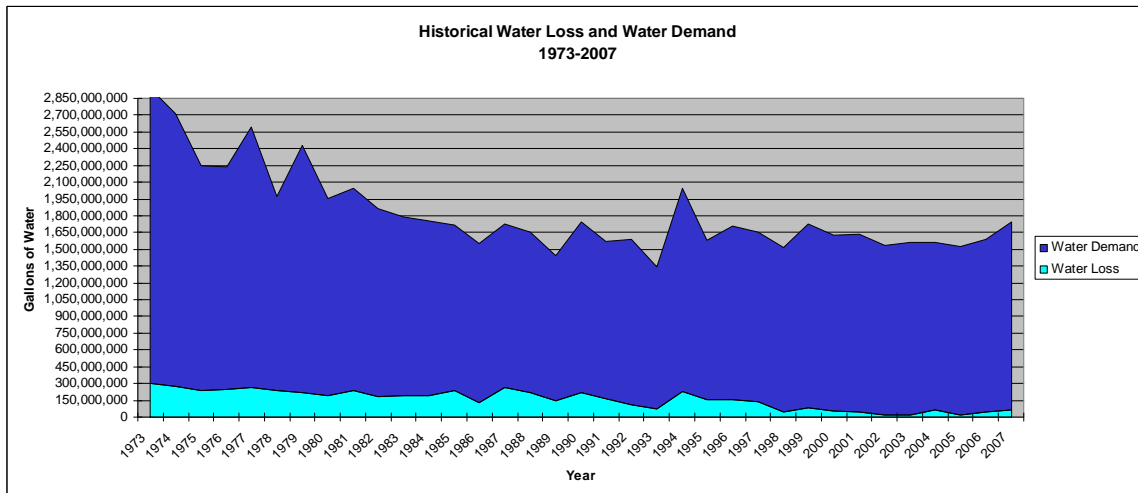
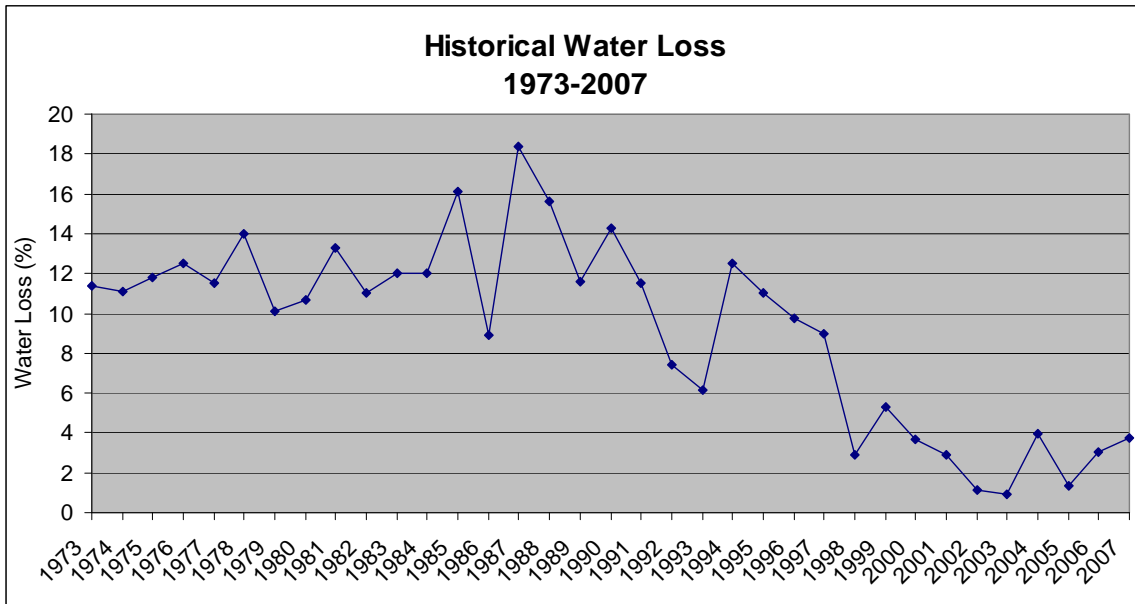
- Target cost effective activities that result in the greatest water savings for initial implementation.
- Be balanced and equitable, rather than unduly burden any one customer class or industry.
- Prioritize education because it results in long-term changes in water use habits.
- Meet or exceed the minimum requirements established by Washington State Department of Health (DOH).
- Be primarily voluntary, assistance-oriented and informational, rather than restrictive or forced.

## Water Conservation Program Description

The Asotin PUD water conservation program and conservation objectives are summarized in this section. This program is also described in Chapter 6 of the 2006 Asotin PUD Comprehensive Water System Plan update.

## Current and Past Conservation Activities

The Asotin PUD has also demonstrated a very low unaccounted-for demand of 3.4 percent over the past ten years, which is an indication of the excellent overall integrity of the water distribution system. Below are two charts which show historical water loss and historical water loss compared with water demand or production.



The Asotin PUD uses other methods to promote water conservation such as school outreach, billing showing consumption history, leak detection, and meter installation. PUD historical and ongoing conservation activities are summarized by category in the following table:

Summary of PUD No.1 of Asotin County's Water Conservation Measures Implemented to Date			
Measure	DOH Required or Recommended?	Description of Activities	Year Implemented
<b>Public Education</b>			
School Outreach	No	Provide videos, pamphlets, and teaching materials to local schools	2003
Program Promotion	Required	Distribution of brochures, customer newsletter	1988
<b>Technical Assistance</b>			
Bill Showing Consumption History	Recommended	Customer's water consumption record provided on water bill	1988
<b>System Measures</b>			
Source Meters	Required	Installation of source meters on all water supply wells	Various
Service Meters	Recommended	Installation of service meters (all accounts are currently metered)	Ongoing
Unaccounted Water/Leak Detection	Recommended	Repairing broken meters, identifying and repairing leaks	Ongoing
<b>Incentives/Other Measures</b>			
Conservation Pricing	Recommended	Replace declining block rate structure with levelized rate structure	1994

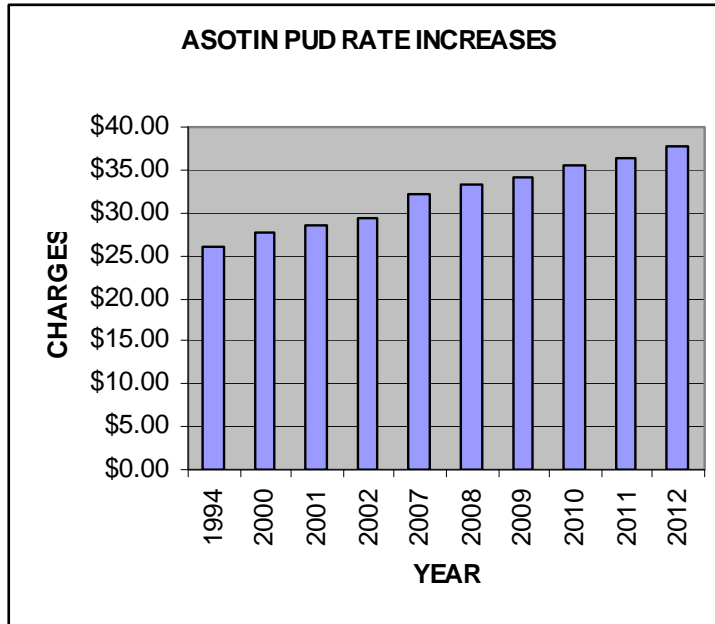
## Conservation Pricing

Rates can be used to encourage conservation action by customers. Rates typically consist of a fixed charge and a variable charge. There are four basic rate structures for the variable charge: uniform, declining block, increasing block, and seasonal. Both increasing blocks and seasonal rates are considered conservation pricing. Increasing blocks charge more per unit of consumption with additional consumption. Seasonal rates charge more per unit of consumption during the peak season.

The Asotin PUD has a uniform rate (same charge per unit of water used). In 1994, the PUD moved from a declining block rate (the more you use the less you pay) to a uniform rate. The change resulted in a decrease in water use by 5% of our customers – those who

use the most water. Since 1994 the PUD Board of Commissioners has raised the monthly minimum charge (fixed charge) and the uniform consumptive rate several times. The primary driver behind the rate increases was to meet increased costs and capital improvement needs.

Based on the 2006 Water System Plan and the financial and capital improvement programs provided in the Plan, the PUD Board of Commissioners evaluated and adopted a rate plan which provided for a one-time increase in the monthly minimum charge and an annual increase in the uniform consumptive rate beginning in 2007 continuing through 2012.



Through the setting of Water Use Efficiency – Conservation Goals the Asotin PUD evaluated the feasibility of adopting and implementing a conservation rate structure. The PUD evaluated implementing a seasonal conservation rate (the charge per unit increases during peak usage season; generally targeting outdoor summer use). Peak season for the PUD is a 5-month period from June 1<sup>st</sup> through October 31<sup>st</sup> of each year.

For each class of customer, residential, multi-family and commercial, those customers using over 500 cf or 3,740 gallons per day would be subject to the increased seasonal rate charge. Based upon water use in 2007 the seasonal conservation rate would affect 341 residential customers, 29 multi-family customers and 51 commercial customers. A total of 420 customers out of the nearly 7,000 customers would be subject to the conservation rate.

The PUD Board of Commissioners have chosen at this time to not introduce a conservation rate until further study has been completed and greater customer communication on the issue of water conservation is achieved.

## Water Reclamation Opportunities Evaluation

The Asotin PUD completed a preliminary evaluation of water reclamation opportunities as follows:

### Inventory of Large Water Users

- Clarkston School District
- Army Corp of Engineers
- City of Clarkston
- Asotin County Housing Authority
- Vineland Cemetery
- Various rental apartments and trailer parks

### Potential Reclaimed Water Use and Users

- School Yards, Clarkston School District
- Parks and Playgrounds, City of Clarkston and Army Corp of Engineers
- Street Sweeping, City of Clarkston
- Cemeteries, Vineland Cemetery

### Estimated Water Savings from Use of Reclaimed Water

• School Yards	29,000,000 gallons
• Parks and Playgrounds	24,000,000 gallons
• Street Sweeping	4,000,000 gallons
• Cemeteries	<u>6,900,000 gallons</u>
Total	63,900,000 gallons

The feasibility of developing reclamation opportunities is limited by several factors. Once water produced by the PUD reaches and is processed by the City of Clarkston Wastewater Treatment Plant it becomes the property of the City. The PUD and the City have not met to discuss reclamation opportunities. The location of the Treatment Plant in relation to the entities and potential uses is a limiting factor.

In order to get reclaimed water to the potential users, many miles of piping and appurtenances would need to be constructed. A project of this size would be cost prohibitive and would increase the price beyond the current PUD water rates. The only use that would be cost effective is for street sweeping. The water being discharge from the Treatment Plant augments flows in the Snake River. Discontinuance of this discharge may have negative environmental impacts.

### Estimated Conservation Savings

The Asotin PUD staff have not routinely calculated or tracked the estimated savings associated with the conservation program. This will change in the future as a systematic tracking method is implemented.

## **Conservation Requirements and Compliance Summary**

The conservation planning requirements that must be addressed in water system plans are contained in the following DOH documents and State law:

- Water Use Efficiency Rule (January 2007)
- Municipal Water Law: Interim Planning Guidance For Water System Plan/Small
- System Management Program Approvals (March 2004)
- Water System Planning Handbook (April 1997)

The State of Washington recently revised water conservation planning requirements as a result of the 2003 Municipal Water Law. An outgrowth of that law is the Water Use Efficiency Rule (Rule), which was finalized in January 2007. The Rule has several requirements and corresponding compliance dates. Some of the requirements are associated with water system plans, while other requirements are independent of the 6 year water system planning cycle. The 2006 Comprehensive Water System Plan was not technically subject to the new requirements, since it was submitted prior to the compliance dates for planning documents to adhere to the new requirements.

The following Table lists the requirements of the Rule and shows that Asotin PUD is either currently in compliance or likely will be in compliance for activities where compliance will be determined at a future date. There are seven main categories of requirements:

1. Meters
2. Data collection
3. Distribution system leakage.
4. Goals
5. Efficiency program
6. Demand forecast
7. Performance reports

Compliance with Water Use Efficiency Rule Requirements				
Category	WAC Section	Compliance Date	New Requirement	PUD in Compliance?
1. Meters	246-290-496	Fully metered by January 22, 2017. Submit metering plan by July 1, 2008.	1. Meter all <b>sources</b> .	<b>Yes</b> , all seven wells are metered.
			2. Meter all <b>service connections</b> .	<b>Yes</b> , all service connections are metered.
			3. For systems <b>not fully metered</b> : Create meter installation plan, perform activities to minimize leakage until fully metered, and report annually on installation and leak minimization actions.	<b>N/A</b> , since PUD is fully metered.
2. Data Collection	246-290-100	WSPs submitted after January 22, 2008.	1. Provide monthly and annual <b>production/purchase</b> numbers for each source.	<b>Yes</b> , tracked monthly and accounted for in 2006 Water System Plan.
			2. Provide annual <b>consumption</b> by customer class.	<b>Yes</b> , tracked monthly and accounted for in 2006 Water System Plan.
			3. Provide " <b>seasonal variations</b> " consumption by customer class.	<b>Yes</b> , tracked monthly and accounted for in 2006 Water System Plan.
			4. Provide annual quantity <b>supplied to other public water systems</b> .	<b>Yes</b> , water supplied to other public waters systems is quantified.
			5. Evaluate <b>reclaimed water</b> opportunities.	<b>Yes</b> , evaluated in 2006 Water System Plan.
			6. Consider water use efficiency <b>rate structure</b> .	<b>Yes</b> , conservation rates have been evaluated. Rates were changed from a declining block to a uniform rate. Annual rate increases planned through 2012.
3. Distribution System Leakage	246-290-820	First report completed by July 1, 2008. First compliance determination made by July 1, 2010.	1. <b>Calculate</b> annual volume and percent using formula defined in the Rule.	<b>Likely</b> . 2006 distribution system leakage was 3.03% and the ten -year average was 3.41%. Assuming this stays relatively constant, we will meet the 10% or less threshold. The leakage information will be reported, along with the annual Customer Confidence Report (CCR), which is distributed to all customers.
			2. <b>Report</b> annually: annual leakage volume, annual leakage percent, and, for systems not fully metered, meter installation progress and leak minimization activities.	
			3. Develop water loss control <b>action plan</b> (if leakage is over 10% for 3 year average).	
4. Goals	246-290-830	Goals established by January 22, 2008.	1. <b>Establish</b> measurable (in terms of water production or usage) conservation goals and re-establish every 6 yrs. Provide schedule for achieving goals.	<b>No</b> , will complete this process before the deadline of January 22, 2008.
			2. Use a <b>public process</b> to establish the goals.	
			3. <b>Report</b> annually on progress.	<b>Likely</b> , the goals information will be reported with the annual Consumer Confidence Report (CCR), which is distributed to all customers.
5. Efficiency	246-290-	WSPs submitted	1. <b>Describe existing</b> conservation program.	<b>Yes</b> , current conservation program described in 2006 Water System Plan and summarized in this report.

Compliance with Water Use Efficiency Rule Requirements				
Category	WAC Section	Compliance Date	New Requirement	PUD in Compliance?
Program	810	after January 22, 2008.	2. <b>Estimate water saved</b> over last 6 years due to conservation program.	<b>Likely.</b> We have not routinely tracked estimated conservation savings. We have tracked the decrease in water loss due distribution line repairs.
			3. Describe conservation <b>goals</b> .	<b>Yes,</b> see section titled "...Proposed Water Conservation Goals..."
			4. Evaluate and implement <b>1-12 measures</b> , depending on size. (6 measures for PUD)	<b>Yes,</b> PUD is required to evaluate and implement 6 measures. The PUD has proposed to evaluate and implement 8 measures.
			5. Describe conservation <b>programs for next 6 years</b> including schedule, budget, and funding mechanism.	<b>Yes,</b> see section titled "...Proposed Water Conservation Goals and Measures"
			6. Describe how customers will be <b>educated</b> on efficiency practices.	
			7. Estimate <b>projected water savings</b> from selected measures.	
			8. Describe how efficiency program will be <b>evaluated</b> for effectiveness.	<b>N/A,</b> PUD does not have transmission system.
			9. Estimated <b>leakage from transmission lines</b> (if not included in distribution system leakage).	
			6. Demand Forecast	246-290-100
2. Provide demand forecast reflecting <b>savings from efficiency program</b> .				
3. Provide demand forecast reflecting <b>all "cost effective" evaluated measures</b> .	<b>N/A,</b> since PUD is implementing more than the required minimum number of measures (6), this forecast is not relevant.			
7. Performance Reports	246-290-840	First report completed by July 1, 2008.	1. <b>Develop</b> annual report including: goals and progress towards meeting them, total annual production, annual leakage volume and percent, and, for systems not fully metered, status of meter installation and actions taken to minimize leakage.	<b>Likely,</b> the goals information will be reported with the annual Consumer Confidence Report (CCR), which is distributed to all customers.
			2. <b>Submit annually</b> by July 1 to DOH and customers and make available to the public.	

## **Proposed Water Use Efficiency Goals & Measures**

The goals of a conservation program should reflect the drivers of why a utility is pursuing conservation. Conservation drivers can include meeting regulatory requirements, minimizing impacts on water resources, decreasing operating costs, deferring capital improvements, and obtaining new supply. The conservation driver(s) applicable to any one utility depend on that utilities' specific supply situation and cost structures.

The Asotin PUD conservation program is driven by the desire to reduce system leakage both in the PUD distribution system and the customer's water system, to reduce operating costs, to educate and provide opportunities for customers to reduce their water consumption and to meet regulatory requirements. It should be noted that the Asotin PUD will continue to support source meters, service meters, system leak detection and repair, and the items listed in its 2006 Comprehensive Water System Plan.

### **Distribution System Leakage of 10% or less of production**

It is the goal of the Asotin PUD to perform annual leak detection surveys and to repair leaking distribution mains in a timely manner. This will ensure that we keep our water system leakage below 10% of production. 2006 distribution system leakage was 3.03% and the ten year average was 3.41%. Assuming this stays relatively constant, we will meet the 10% or less of production goal.

### **Replace Customer Service Meters and Source Production Meters**

The Asotin PUD initiated an Automated Meter Reading program in 2004 which provides for the replacement and/or retrofitting of inaccurate and out-dated meters with new electronic meters that can be read with an automated meter reading device. The AMR customer meter replacement/retrofit program will be completed by 2012. In addition the PUD is currently replacing all propeller driven source production meters with more accurate magnetic meters. Replacing both service and source meters will ensure accurate readings and allow for better analysis of water loss resulting in repair of system and customer service leaks. More accurate customer meter readings should encourage customer conservation.

### **Demand-Side Water Use Efficiency Measures**

The Asotin PUD conservation program for 2008-2012 will consist of the six (6) measures listed below. These measures have been selected due to a combination of factors including applicability to Asotin PUD service area, customer acceptance, cost effectiveness, and/or savings potential. Descriptions of each measure are discussed below. The six demand side measures for consideration under the Water Use Efficiency rule are:

1. Billing Statements showing consumptive History
2. Customer Education
3. Free Toilet Leak Detection Dye Tablets
4. Free Bathroom Faucet Aerators
5. Free Showerheads
6. Irrigation Efficiencies and Landscape Management

### **Billing Statements Showing Consumptive History**

The Asotin PUD will continue to show consumptive history on customer billing statements. Customer bills providing historical consumption data allow customers to understand how their use varies throughout the year and from year to year. This information helps customers make informed choices about how they manage their water use, including implementing conservation. Asotin PUD customer bills have included historical consumption data since the early 1990's. The bills have shown customer consumption for the same period from the previous year. Customer billing statements bills also include a graph showing water use for the previous 12 months.

### **Customer Education**

This Asotin PUD will continue to provide conservation information and tips on its website, in its customer handbook, customer brochures and on customer bills. The PUD will continue to provide and make available to students and teachers water and water conservation education programs. Education includes sponsoring and providing programs such as xeriscape landscaping practices and irrigation efficiency.

### **Free Toilet Leak Detection Dye Tablets**

This measure provides free toilet leak detection dye tablets for customers to determine if their toilets leak and provides detailed information on how to fix leaks. This measure applies to single family and multifamily sectors, both existing and new customers, as well as to businesses with tank style toilets. Only tank style toilets are targeted since most leaks occur in that type of toilet, usually via flapper leaks.

### **Free Bathroom Faucet Aerators**

This measure provides free bathroom faucet aerators for residential customers to replace less efficient aerators. The aerators will be 1.0 gallons per minute (gpm), which is more efficient than the maximum 2.5 gpm allowed under the plumbing code for residential sectors. The target audience includes both existing and new customers.

### **Free Showerheads**

This measure provides free low flow showerheads to residential customers. The main flow rate on the showerheads is 2.0 gpm, which is more efficient than the maximum 2.5 gpm allowed under the plumbing code. The showerheads also have a built in "soap & shave valve", which is a button that can be pressed to reduce the flow rate to 1.0 gpm while soaping up or shaving that do not require the full stream of water. The target audience is single family and multifamily sectors, both existing and new customers.

### **Irrigation Efficiencies and Landscape Management**

The Asotin PUD will partner with local colleges and university extension offices to provide customer education regarding irrigation efficiencies and landscape management. The PUD will utilize staff at the colleges and extension offices to provide expert advice and services in developing programs that promote irrigation and water use efficiencies. The PUD will also partner with other agencies such as the Bonneville Power Administration, Department of Health, Department of Ecology and the local Watershed Planning Unit to help secure funding

to assist the PUD and its customers in changing irrigation equipment and practices. The PUD will purchase an irrigation audit kit for use in conducting irrigation studies and promoting changes in irrigation practices for residential, multi-family and commercial customers. The PUD will also apply irrigation efficiencies and landscape management at its own facilities to reduce water use and promote drought tolerant landscaping.

**Estimated Savings through Measure Implementation – Proposed WUE Budget**

The estimated savings and direct costs of the conservation program are shown in the Table below. At full program implementation at the end of 2012, the program is estimated to save 27,700 gallons per day (gpd). The program has a total budget over the 5 year planning period of approximately \$74,150 which is an average annual cost of approximately \$14,830. The program will be funded through rates. The savings achieved by the program, and the corresponding progress towards reaching the Asotin PUD goal of saving 27,100 gpd by the end of 2012, will be estimated by tracking the number of devices and rebates distributed and multiplying them by their per unit savings. In addition, the cost of energy savings due to reduced water production will be calculated using the following formula: Water production per kilowatt hour (333 gal/kW) times the cost of electrical per kilowatt hour = energy savings.

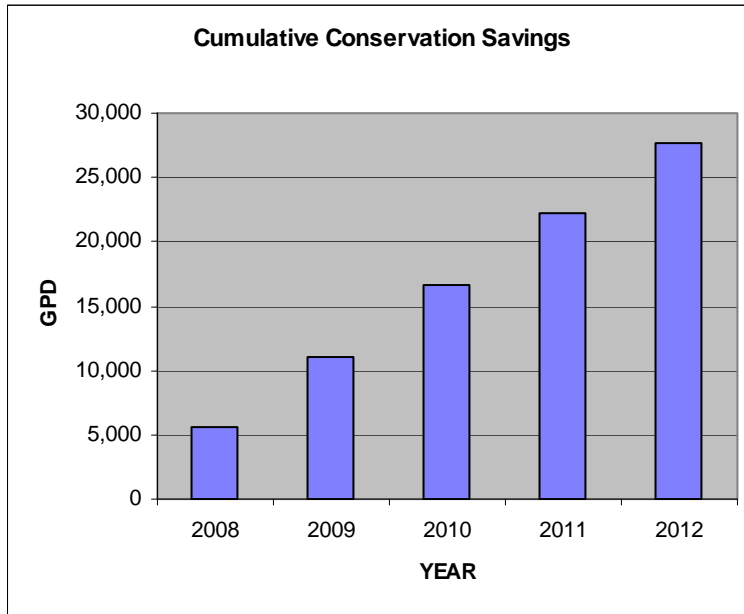
Savings and Direct Costs Summary										
Measure	Sectors <sup>1</sup>			Quantity of Devices <sup>2</sup>		Savings (at full implementation)		Direct Costs		
	SF	MF	C	Total	Avg Annual	GPD	% of Ttl	Total Over Plan Period	Avg Annual	% of Ttl
1. Bills Showing Consumptive History	X	X	X	n/a		Not Quantified.		\$0	\$0	0%
2. Customer Education	X	X	X	n/a		Not Quantified.		\$25,000	\$5,000	34%
3. Free Toilet Leak Detection Dye Tablets	X	X	X	17,500	3,500	9,100	33%	\$3,150	\$630	3%
4. Free Bathroom Faucet Aerators	X	X		3,500	700	10,100	36%	\$3,500	\$700	5%
5. Free Showerheads	X	X		3,500	700	8,500	31%	\$17,500	\$3,500	24%
6. Irrigation Efficiencies Landscape Management	X	X	X	n/a		Not Yet Quantified.		\$25,000	\$5,000	34%
Total	n/a	n/a	n/a	n/a	n/a	27,700	100%	\$74,150	\$14,830	100%

1. SF is single family. MF is multifamily. C is commercial.
2. The number of devices is higher than the number of participants since each participant has more than one fixture and the program assumes participants upgrade all their fixtures.

## Impact on Demand Forecast

The conservation program is anticipated to be implemented evenly over the 5-year planning period, meaning that one-fifth of the devices and rebates will be distributed each year. The cumulative annual savings, as well as their relationship to the demand forecast, are provided in the chart and graph shown below.

<b>Savings Schedule and Impact on Demand</b>			
<b>Year</b>	<b>Cumulative Annual Savings (gpd)</b>	<b>Projected Demand Without Conservation (ADD gpd)</b>	<b>Savings as % of Demand With Conservation</b>
2008	5,540	4,446,575	0.01%
2009	11,080	4,493,151	0.02%
2010	16,620	4,452,466	0.03%
2011	22,160	4,589,041	0.05%
2012	27,700	4,638,356	0.06%



The Asotin PUD demand will be reduced by the expected savings from the conservation program. While the conservation program outlined above is only for the next 5 years, it is anticipated that the PUD will continue to implement a conservation program in the future.