

# **Biglieri Water System**

## **Water Conservation Plan**

**February 1, 2010**

### **Prepared for:**

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## **Introduction**

The water supply in Nevada is a precious commodity and plays an important role in determining Nevada's future. Nevada is the one of the driest states in the nation as well as one of the fastest growing ones. Nevada's future, both from an economic and a quality of life view, depends heavily upon the wise management of the water supply.

Groundwater, in general, provides about 40 percent of the total water supply used in Nevada. In some areas, groundwater provides the entire water supply. Groundwater usage may vary considerably from year-to-year as it is sometimes pumped to supplement surface water sources.

Water use in Nevada can be classified as:

- Domestic (household, both indoor and outdoor) – Met by public supply or private supply (e.g. wells).
- Commercial (businesses) – Met by public supply or private supply (e.g. non-community systems).
- Industrial (manufacturing/construction) – Met by public supply or private supply (e.g. non-community systems).
- Thermoelectric (electric/fossil fuel/geothermal power generation) – Met by public supply in a minor fraction.
- Mining (mining processes) – Supply source varies widely from operation to operation and is dependent upon the mineral being recovered and the recovery process employed.
- Irrigation (land use) – Met by self-supplied or supplied by irrigation companies or districts.
- Livestock (farm needs) – Supply source varies.

While all classifications of water usages have shown an increase over the years, it has historically been irrigation water use which has accounted for the majority of the water use in Nevada.

It has been estimated that the domestic water use accounts for less than 15 percent of the water used in Nevada, but this is expected to rise to nearly 25 percent as the population increases (based upon existing water use patterns and conservation measures). It is expected that Nevada's population will become increasingly concentrated in its primary urban areas of Las Vegas (Clark County), Reno/Sparks (Washoe County) and Carson City, with varied spillover effects on neighboring counties.

It is vitally important that all residents understand the fundamental science of water, how it is managed in the state, and the issues affecting its management. Water education must become a priority and must include education of children as they are our future.

Because Nevada does not have a comprehensive state-wide conservation program, it is reliant upon the individual water suppliers for developing their own conservation programs. In 1991,

Nevada enacted a law requiring adoption of conservations plans by water suppliers. Minimum standards for plumbing fixtures were adopted in 1991 (Assembly Bill 359) by Nevada and in 1992 minimum flow standards for plumbing fixtures were adopted by the federal government (National Energy and Policy Conservation Act).

Conservation is an essential part of ensuring adequate water supply as it is no longer feasible to develop new sources. It has proven to be a cost-effective way to reduce demands and/or to extend a given water supply. It can easily be pursued by all water users regardless of the water system type. Key to evaluating the program's effectiveness is the water use measurement (through meters and other measurement devices). Various conservation measures can be put into place and the achievement of the goals set with these measures is vital to combating the expected increase in water usage.

## **Statutory Requirements**

This water conservation plan was prepared for the Biglieri Water System in accordance with Nevada Revised Statute (NRS) 540. As outlined in NRS 540.141, the provisions of this plan must include:

- a. Public Education
- b. Conservation Measures
- c. Water Management
- d. Contingency Plan
- e. Schedule
- f. Evaluation Measurements
- g. Conservation Estimates

In addition to the provisions of the water conservation plan, listed above, NRS 540.141 also requires a rate analysis to be performed and included with the submittal.

This plan is being submitted to the Nevada Department of Conservation and Natural Resources (DCNR), Division of Water Resources (DWR) for review and approval prior to its adoption by the Biglieri Water System, as required by NRS 540.131.

This plan will conform to all public notice requirements as found in NRS 540 and will be distributed to each tenant for public comment.

This is the original Water Conservation Plan for Biglieri Water System.

In accordance with NRS 540.131, this plan will be reviewed from time-to-time to reflect changes and must be updated every five (5) years to comply with NRS 540.131 and NRS 540.141. The next update of this plan is to be on, or before, February 1, 2015.

## **System Description**

Biglieri Water System rents retail spaces to five units (strip mall with common-area male/female bathrooms) and two residential rental houses, located at 11331 S. Virginia Street in Reno, Washoe County. These rentals are located on less than 3 acres of flat land. Nevada has classified Biglieri Water System as a privately-owned combined transient non-community water system and has issued a current water operation permit, NV0000736.

The estimated population served in 2009 was about five residential individuals and over 100 transient individuals (patrons of the strip mall). Biglieri Water System estimates that its customer base will remain the same on a yearly basis through 2010. The State of Nevada, through its State Water Plan, estimates the population growth for Washoe County through 2020 to be 1.79% annually.

The water supply is from groundwater which is located within Basin #087 (Truckee Meadows) of the Truckee River Basin. There are a total of two wells supplying the system and a total of two hydro-pneumatic pressure tanks. Each of these is identified in the tables below (Table 1 and Table 2).

**Table 1 – Source of Supply**

<b>Well No.</b>	<b>Depth (feet)</b>	<b>Production (gpm)</b>
<b>1 – Shop Well</b>	<b>95</b>	<b>22</b>
<b>2 – House Well</b>	<b>115</b>	<b>22</b>

**Table 2 – Tanks**

<b>Tank No.</b>	<b>Volume (gallons)</b>
<b>1 (Well 1)</b>	<b>120</b>
<b>2 (Well 2)</b>	<b>220</b>

Biglieri Water System has been granted water rights in the total amount of 0.94 MG (2.85 AF) per year. Application #43107 and #43108 have been certified and the combined duty of water rights may not exceed 0.694 MG (2.130 AF) per year. The current water rights are listed in the table below (Table 3).

**Table 3 – Water Rights**

<b>Application (Certificate No.)</b>	<b>Well No.</b>	<b>Diversion Rate</b>	<b>Annual Use</b>
<b>43107 (11729)</b>	<b>2</b>	<b>0.25 c.f.s. max</b>	<b>0.236 MG (0.724 AF)</b>
<b>43108 (11730)</b>	<b>1</b>	<b>0.25 c.f.s. max</b>	<b>0.694 MG (2.130 AF)</b>

Water is pumped from the wells directly into the pressure tanks. Water is then distributed to the customers. No treatment is required of the water.

The Biglieri Water System does not require a water operator. The owner performs quarterly and yearly monitoring and testing of water quality. The Biglieri Water System does not have any outstanding water quality issues.

The last sanitary survey was performed by the Washoe County Health District Environmental Health Services (WCHD-EHS) was completed on October 29, 2007, and showed no deficiencies with the system.

The Biglieri Water System does not currently meter any of its rentals for water use. Instead, a flat rate monthly space rental charge is assessed and this rate includes water. Each tenant is responsible for garbage, sewer, electricity and gas.

Wastewater collected from the service area is handled by Washoe County.

Space rents are by lease and are reviewed at the end of their term and adjusted accordingly.

## **Plan Provisions**

In accordance with NRS 540.131, this plan will be reviewed from time-to-time to reflect changes and must be updated every five (5) years to comply with NRS 540.131 and NRS 540.141. The next update of this plan is to be on, or before, February 1, 2015.

Biglieri Water System's owner will oversee the conservation efforts and will be responsible for implementation of conservation programs, monitoring of water use, and will review /revise the conservation plan when needed.

In an effort to promote voluntary conservation and aid in Nevada's future, the Biglieri Water System will enact the voluntary conservation measures found in the ***Conservation Measures*** section. When more stringent measures are needed, the Biglieri Water System will enact the measures found in the ***Contingency Measures*** section. All measures can be found in Appendix A.

As required by NRS 540.141, the water conservation plan must include the following provisions:

- a. Public Education
- b. Conservation Measures
- c. Water Management
- d. Contingency Plan
- e. Schedule
- f. Evaluation Measures
- g. Conservation Estimates

Each provision is discussed below.

### **Public Education**

Public education is a key for cooperation with conservation efforts, so funding for public education is crucial. The Biglieri Water System recognizes this and will establish a conservation education program and corresponding budget, if financially feasible.

It is the goal of the Biglieri Water System to increase public awareness to conserve water, encourage reduction in lawn sizes, encourage the use of climate-appropriate plants, and encourage the use of drip irrigation for its residential tenants. It encourages conscious decisions for water use for all tenants.

The conservation education program includes education materials such as pamphlets, flyers, and posters. New residential tenants will be provided these materials when service is established, while existing tenants will receive these materials periodically. Posters encouraging water conservation will be posted in the common area bathrooms for strip mall tenants. Education materials should also encourage reduction of lawn sizes, use of drip irrigation, use of climate-appropriate plants, and conservation tips and techniques (see Appendix B).

### **Conservation Measures**

The Biglieri Water System has already implemented conservation measures at its strip-mall area by removing all landscaping that may require water and by renovating water usage facilities in the strip mall with water-conserving ones. In addition, the residential units have been modified to reduce outside water usage by minimizing lawn areas, installing drip irrigation, and maintaining timed irrigation.

In an effort to promote conservation and voluntarily conserve water, the Biglieri Water System is adopting water-use regulations to promote water conservation during non-emergency situations. These regulations include the following non-essential water use:

- 1) Use of water through any connection when the Biglieri Water System has notified the tenant, in writing, to repair a broken or defective plumbing, sprinkler, watering or irrigation system and the customer has failed to make such repairs within 5 days after receipt of such notice.
- 2) Use of water which results in flooding or run-off in gutters, waterways, patios, driveways, or streets.
- 3) Use of water for washing aircraft, cars, buses, boats, trailers, or other vehicles without a positive shut-off nozzle on the outlet end of the hose.
- 4) Use of water through a hose for washing buildings, structures, sidewalks, walkways, driveways, patios, parking lots, or other hard-surfaced areas in a manner which results in excessive run-off or waste.
- 5) Use of water for outside plants, lawn, and landscape areas on odd numbered days. Watering of plants, lawn, and landscape areas are prohibited on Mondays.
- 6) Use of water for watering outside plants and lawn areas using a hand-held hose without a positive shut-off valve.

In the event these conservation measures are insufficient to control the water shortage, the Biglieri Water System may wish to implement the mandatory measures discussed in the ***Contingency Plan*** section below.

Biglieri Water System also promotes the development of water conserving principles into the planning, development, and management of any new landscape projects. Tenants are encouraged to consult with the local nursery or perform an internet search on the availability of water conservation plants and how to renovate existing landscapes. Tenants are also encouraged to evaluate irrigation management systems using metering, timing, and water sensing devices.

At present, it is not viable for the Biglieri Water System to offer financial incentives for water conservation to individual tenants. Instead, Biglieri Water System has taken the initiative to repair or replace defective plumbing at the residences and the strip mall. By its own initiative it is setting a good example and creating a good-will incentive.

## **Water Management**

Biglieri Water System does not have meters installed on its wells and is therefore unable to monitor and record water levels at well/tank sites.

Working relationships with other local water purveyors is not available at this time, therefore there are no interties. However, it does have two wells, which provides some redundancy. The owner has expressed a desire to be connected to city water, but has found this to be too cost prohibitive at this time (more than \$250,000 for a 625-foot mainline extension).

Biglieri Water System does not monitor unaccounted for water losses because the piping in the system is relatively new, rental spaces are not individually metered, and production meters are



not installed. Biglieri Water System does not have any plans, in the near future, to install production or individual water meters on each rental space because it is cost prohibitive.

Biglieri Water System does not have a formal leak detection program. Most mainlines have been replaced within the last 10 years and all leaks are repaired immediately. Biglieri Water System is taking an active role in ensuring mainlines are in good shape and do not leak.

Biglieri Water System does not have a formal well head protection program. Its wells are either protected by an enclosed ground pit or a fenced area.

Biglieri Water System does not have a formal capital improvement plan in place. However, when replacements are needed, they are replaced.

Biglieri Water System does not have a system for reusing of effluent. Effluent is treated by Washoe County.

Washoe County has adopted a Plumbing Water Conservation Ordinance which applies to structures which are renovated as well as all new construction. This ordinance is furnished to local suppliers and contractors. The Washoe County Building Department checks new construction, renovation, and expansions within Washoe County to ensure compliance with this ordinance.

## **Contingency Plan**

The objective of the contingency plan would be to manage the available resources to ensure continued supply of potable water during periods of drought or extended drought.

It is envisioned that voluntary conservation will be sufficient to ensure an adequate supply of water and reduce water usage. However, if a sustained drought (lack of precipitation) is encountered, it may be necessary to implement mandatory restrictions in order to ensure an adequate supply of water to meet essential needs.

Drought response would be three (3) stages: (1) warning stage, (2) alert stage, and (3) emergency stage. The stages are describes as follows:

In Stage 1, the warning stage, the Biglieri Water System would monitor its water supplies (by monitoring electrical usage) and would begin creating public awareness of the water supply situation and the need to conserve. Conservation measures at this stage would be voluntary.

In Stage 2, the alert stage, the Biglieri Water System would call for wide-based community support to achieve conservation, implement water use restrictions, and impose penalties for ignoring the restrictions. Conservation measures at this stage would be mandatory and violations would incur fines.

In Stage 3, the emergency stage, the Biglieri Water System would declare a drought and water shortage emergency, would enforce water use restrictions, impose fines for violations, and impose higher fees for water usage. Media relations would be activated in order to inform the customers and monetary assistance may need to be secured in an effort to mitigate the effects of the drought (e.g. federal funding assistance). Conservation measures at this stage would be mandatory, violations would incur fines, and renters could pay additional fees for water usage.

When a drought is declared over, voluntary conservation measures (see *Conservation Measures* section) will be reinstated and water supplies would continue to be monitored.

## **Schedule**

All of the provisions listed are either currently in place or will be in place after this conservation plan has been approved.

## **Evaluation Measurements**

Because individual spaces are not currently metered for water usage, it is impossible to determine the effectiveness of each plan element on an individual renter basis. In addition, sources are not metered for production. Currently it is cost-prohibitive for Biglieri Water System to install meters and therefore an effectiveness evaluation measurement, based upon water usage, cannot be performed. However, Biglieri Water System can monitor electrical usage (kWh) at each pump and correlate the effectiveness based upon electrical usage (as a whole system).

As a plan element is activated (e.g. mailing literature or declaring a drought stage), electrical usage figures can be compared to same-month historical data to estimate the plan element's effectiveness. This information will be utilized as a basis for any future water conservation plan revision and plan elements. If there is a decrease in electrical usage as a result of a particular measure/incentive, that measure/incentive can be expanded or improved upon, if possible. If it is discovered that a particular measure/incentive is ineffective, it will be discontinued and a new one can then be implemented to take its place.

## **Conservation Estimates**

During the Stage 1 phase of the conservation plan, it is estimated that conservation measures could be expected to provide at least a 5% reduction in water use.

During the Stage 2 phase of the conservation plan, it is estimated that conservation measures could be expected to provide at least a 10% reduction in water use.

During the Stage 3 phase of the conservation plan, it is estimated that conservation measures could be expected to provide at least a 15% reduction in water use.

The estimated water savings for various end-user efforts can be found in Appendix C.

## **Rate Analysis**

The charging of variable rates for the use of water has sometimes been shown to encourage conservation of water, but not in all systems. Oftentimes the end-user will continue to pay increasing block rates out of necessity for the water used. The use of variable water rates needs to be evaluated on a case-by-case basis.

At this time Biglieri Water System does not have the means necessary to charge variable rates for water to its individual space renters. Instead, it will re-visit this issue each time space rents are reviewed. If so warranted, a change in rates will occur and this conservation plan will be updated to reflect the new rates.

## **Appendices**

**APPENDIX A**  
**CONSERVATION MEASURES**

### **Stage 1 – Warning Stage**

1. Biglieri Water System would monitor water supplies (by monitoring electrical usage).
2. Biglieri Water System would begin creating public awareness of the water supply situation and the need to conserve.
3. Biglieri Water System would inform tenants of voluntary conservation measures (non-essential water uses, listed below).

Non-essential water uses are:

- 1) Use of water through any connection when the Biglieri Water System has notified the tenant, in writing, to repair a broken or defective plumbing, sprinkler, watering or irrigation system and the customer has failed to make such repairs within 5 days after receipt of such notice.
- 2) Use of water which results in flooding or run-off in gutters, waterways, patios, driveways, or streets.
- 3) Use of water for washing aircraft, cars, buses, boats, trailers, or other vehicles without a positive shut-off nozzle on the outlet end of the hose.
- 4) Use of water through a hose for washing buildings, structures, sidewalks, walkways, driveways, patios, parking lots, or other hard-surfaced areas in a manner which results in excessive run-off or waste.
- 5) Use of water for outside plants, lawn, and landscape areas on odd numbered days. Watering of plants, lawn, and landscape areas are prohibited on Mondays.
- 6) Use of water for watering outside plants and lawn areas using a hand-held hose without a positive shut-off valve.

## **Stage 2 – Alert Stage**

1. Biglieri Water System would set conservation goals and call for wide-based community support to achieve those goals.
2. Biglieri Water System would inform tenants of mandatory conservation measures (non-essential water uses, listed in Stage 1 are now mandatory).
3. Biglieri Water System would inform customers of penalties if mandatory conservation measures are not observed (penalties are listed below).

Penalties for violation of mandatory conservation measures are:

- 1<sup>st</sup> violation – written warning
- 2<sup>nd</sup> violation – \$25.00
- 3<sup>rd</sup> violation – \$50.00
- 4<sup>th</sup> violation – turn-off of water services

Offenses for separate water use restriction violations will each start at the warning stage (1<sup>st</sup> violation) and the penalties for the offenses are in addition to the regular rate schedule charges.

### **Stage 3 – Emergency Stage**

1. Biglieri Water System would declare a drought and water shortage emergency and use media relations to supplement efforts to keep customers informed.
2. Biglieri Water System would inform tenants of prohibited water uses (non-essential water uses, listed in Stage 1 are now prohibited).
3. Biglieri Water System would inform tenants of penalties if prohibited measures are not observed (penalties are listed below).
4. Biglieri Water System would seek monetary assistance in an effort to mitigate the drought (e.g. federal funding).
4. Biglieri Water System would inform customers of mandatory conservation water fees.

Penalties for violation of prohibited water use measures are:

- 1<sup>st</sup> violation – written warning
- 2<sup>nd</sup> violation – \$100.00
- 3<sup>rd</sup> violation – turn-off of water services

Offenses for separate water use restriction violations will each start at the warning stage (1<sup>st</sup> violation) and the penalties for the offenses are in addition to the regular rate schedule charges.

Stage 3 water rates could include an additional monthly water usage fee of \$50.00, or other such fee as deemed necessary.

If any tenant seeks a variance from the provisions of Stage 3, then that tenant shall notify Biglieri Water System in writing, explaining in detail the reason for such a variation. Biglieri Water System shall respond to each request.



**APPENDIX B**  
**PUBLIC EDUCATION MATERIALS**

There are several publications available for use at U.S. EPA website for general distribution (currently located at <http://epa.gov/watersense/pubs/index.htm#ideas>). These publications include such topics as:

- Simple Steps to Save Water,
- Ideas for Residences,
- Ideas for Commercial,
- Using Water Wisely In the Home,
- Outdoor Water Use in the US,
- Toilet Flush Facts,
- Watering Can Be Efficient,
- Irrigation Timers for the Homeowner, and
- Water Efficient Landscaping,

These publications can be utilized until Biglieri Water System develops system-specific publications.

There are also numerous website that provide tips for conserving water. One of these is: <http://www.wateruseitwisely.com/100-ways-to-conserve/index.php>. Customers can be directed to this website for tips to conserve water.

Specific tips for landscaping that can be provided to the customers are listed below. During drought conditions outdoor watering restrictions may be imposed, and therefore some of the following tips will not apply.

## **Tips for Landscaping**

### **Watering:**

- Detect and repair all leaks in irrigation systems.
- Use properly treated wastewater for irrigation where available.
- Water the lawn or garden during the coolest part of the day (early morning is best). Do not water on windy days.
- Water trees and shrubs, which have deep root systems, longer and less frequently than shallow-rooted plants which require smaller amounts of water more often. Check with the local nursery for advice on the amount and frequency of watering needed in your area.
- Set sprinklers to water the lawn or garden only—not the street or sidewalk.
- Use soaker hoses and trickle irrigation systems.
- Install moisture sensors on sprinkler systems.

### **Planting:**

- Have your soil tested for nutrient content and add organic matter if needed. Good soil absorbs and retains water better.
- Minimize turf areas and use native grasses.
- Use native plants in your landscape—they require less care and water than ornamental varieties.
- Add compost or peat moss to soil to improve its water-holding capacity.

### **Maintaining:**

- Use mulch around shrubs and garden plants to reduce evaporation from the soil surface and cut down on weed growth.
- Remove thatch and aerate turf to encourage movement of water to the root zone.
- Raise your lawn mower cutting height to cut grass no shorter than three inches—longer grass blades encourages deeper roots, help shade soil, cut down on evaporation, and inhibit weed growth.
- Minimize or eliminate fertilizing which requires additional watering, and promotes new growth which will also need additional watering.

### **Ornamental Water Features:**

- Do not install or use ornamental water features unless they recycle the water. Use signs to indicate that water is recycled. Do not operate during a drought.

**APPENDIX C**  
**END-USER WATER SAVINGS**

Here are just a few of the end-user water savings that could be realized:

### **Leaky Faucets**

**Issue:** Leaky faucets that drip at the rate of one drip per second can waste more than 3,000 gallons of water each year.

**Fix:** If you're unsure whether you have a leak, read your water meter before and after a two-hour period when no water is being used. If the meter does not read exactly the same, you probably have a leak.

### **Leaky Toilets**

**Issue:** A leaky toilet can waste about 200 gallons of water every day.

**Fix:** To tell if your toilet has a leak, place a drop of food coloring in the tank; if the color shows in the bowl without flushing, you have a leak.

### **Showering**

**Issue:** A full bath tub requires about 70 gallons of water, while taking a five-minute shower uses 10 to 25 gallons.

**Fix:** If you take a bath, stopper the drain immediately and adjust the temperature as you fill the tub.

### **Brushing Teeth Wisely**

**Issue:** The average bathroom faucet flows at a rate of two gallons per minute.

**Fix:** Turning off the tap while brushing your teeth in the morning and at bedtime can save up to 8 gallons of water per day, which equals 240 gallons a month!

### **Watering Wisely**

**Issue:** The typical single-family suburban household uses at least 30 percent of their water outdoors for irrigation. Some experts estimate that more than 50 percent of landscape water use goes to waste due to evaporation or runoff caused by overwatering.

**Fix:** Drip irrigation systems use between 20 to 50 percent less water than conventional in-ground sprinkler systems. They are also much more efficient than conventional sprinklers because no water is lost to wind, runoff, and evaporation. If the in-ground system uses 100,000 gallons annually, you could potentially save more than 200,000 gallons over the lifetime of a drip irrigation system should you choose to install it. That adds up to savings of at least \$1,150!

### **Washing Wisely**

**Issue:** The average washing machine uses about 41 gallons of water per load.

**Fix:** High-efficiency washing machines use less than 28 gallons of water per load. To achieve even greater savings, wash only full loads of laundry or use the appropriate load size selection on the washing machine.

### **Flushing Wisely**

**Issue:** If your toilet is from 1992 or earlier, you probably have an inefficient model that uses at least 3.5 gallons per flush.

**Fix:** New and improved high-efficiency models use less than 1.3 gallons per flush—that's at least 60 percent less than their older, less efficient counterparts.

Compared to a 3.5 gallons per flush toilet, a WaterSense labeled toilet could save a family of four more than \$90 annually on their water bill, and \$2,000 over the lifetime of the toilet.

### **Dish Washing Wisely**

**Issue:** Running dishwasher partial full and pre-rinsing dishes before loading the dishwasher.

**Fix:** Run the dishwasher only when it's full and use the rinse-and-hold dishwasher feature until you're ready to run a full load. Pre-rinsing dishes does not improve cleaning and skipping this step can save you as much as 20 gallons per load, or 6,500 gallons per year. New water-saver dishwashers use only about 4 gallons per wash.

Estimated water savings from EPA Water Conservation Guidelines 1998 (Appendix B, Table B-1):

Type	Estimated Usage (gpcpd)	Conservation Usage (gpcpd)	Savings (gpcpd)	Savings (%)
Toilet	18.3	10.4	7.9	43 %
Clothes Washers	14.9	10.5	4.4	30 %
Showers	12.2	10.0	2.2	18 %
Faucets	10.3	10.0	.3	3 %
Leaks	6.6	1.5	5.1	77 %

Benchmarks from selected conservation measures from EPA Water Conservation Guidelines 1998 (Appendix B, Table B-4):

Category	Measure	Reduction of End Use (% or gpcpd)
Universal metering	Connection metering	20 %
	Sub metering	20 – 40 %
Costing and pricing	10% increase in residential prices	2 – 4 %
	10% increase in non-residential prices	5 – 8 %
	Increasing-block rate	5 %
Information and education	Public education and behavior changes	2 – 5 %
End-use audits	General industrial water conservation	10 – 20 %
	Outdoor residential use	5 – 10 %
	Large landscape water audit	10 – 20 %
Retrofits	Toilet tank displacement devices (for toilets using > 3.5 gallons/flush)	2 – 3 gpcpd
	Toilet retrofit	8 – 14 gpcpd
	Showerhead retrofit (aerator)	4 gpcpd
	Faucet retrofit (aerator)	5 gpcpd
	Fixture leak repair	0.5 gpcpd
	Governmental building (indoors)	5 %
	Pressure reduction, system	3 – 6 % of total production
Pressure management	Pressure-reducing valves, residential	5 – 30%
	Low water-use plants	7.5 %
	Lawn watering guides	15 – 20 %
	Large landscape management	10 – 25%
	Irrigation timer	10 gpcpd
Replacements and promotions	Toilet replacement, residential	16 – 20 gpcpd
	Toilet replacement, commercial	16 – 20 gpcpd
	Showerhead replacement	8.1 gpcpd
	Faucet replacement	6.4 gpcpd
	Clothes washers, residential	4 – 12 gpcpd
	Dishwashers, residential	1 gpcpd
	Hot water demand units	10 gpcpd
Water-use regulation	Landscape requirements for new developments	10 – 20 % in sector
	Greywater reuse, residential	20 – 30 gpcpd