

WATER CONSERVATION

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4.1 Introduction

The Utah legislature revised a bill in 2004 requiring water agencies with more than 500 service connections to submit a water conservation plan to the Utah Division of Water Resources. The plans are to be updated every five years. This water conservation plan is prepared to meet the Utah Board of Water Resources requirements and to address the goals of CICWCD. Water conservation is a key element to provide for CICWCD's future water needs. Conservation can delay the need for expensive water projects, preserve the environment, and save taxpayers money.

The District's water consumption was divided into connections inside of District and outside of District. In 2012-2013 the usage for the District was 56,939,388 gallons. On average, the existing water system delivers 242 gpd per connection and the district used 242,561,650 gallons total for bulk connections.⁵

The purpose of this plan is to present a planning document for the District, which will guide its water conservation activities for the future to meet the 25% reduction requirement. Water conservation will benefit the District, the users, and the environment. The possible benefits include:

- Improved water service and more effective use of available water supply.
- Reduced operation and maintenance (O & M) costs, including lowering pumping costs.
- Development of additional water supply capabilities and diminished groundwater overdraft.
- Postponed need for new or expanded water supplies and infrastructure.
- Reduced impact of drought.
- Reduced indoor water use translates into reduced wastewater flow, which in result reduces O & M costs of waste water treatment facilities.
- Regional planning for water re-use.

It is important to mention here that conservation can suppress water sales and lower water revenues. The revenue loss impacts can be mitigated by periodic rate adjustments if reduction occurs slowly. These adjustments would be handled similarly to operating cost increases and can be integrated into financial planning.

⁵ These values were computed using data from 2012-2013.

4.2 Water Conservation Goals

The District can reduce per capita consumption by promoting and expanding water conservation. Currently there are many homes that do not have landscaping, but as landscaping is added water consumption per capita will increase substantially. As conservation goals and standards are integrated within the District, increase in per capita consumption can be avoided.

The State of Utah has proposed a goal to reduce the per capita water demand of the public systems by 25% from 1995 to 2025. To achieve this Ensign proposes several conservation goals:

1. Reduce current consumption by 25% by the year 2025. Water use in the District will increase as more residents add landscaping to their yard and as more commercial and industrial users connect to the system. Commercial and industrial users increase water consumption but do not increase population. CICWCD will have to introduce strict outdoor conservation measures to meet the states goals in the future.
2. Maintain a financially viable water system by adopting a conservation-oriented rate structure. A conservation oriented rate structure will have the largest effect on conservation.
3. Promote xeriscaping for landscapes, open spaces and yards: Improved irrigation practices and water efficient landscaping can enhance the appearance of the District. Continue to expand the secondary system to meet existing and future needs.

4.2.1 Past Water Conservation Efforts

In 2014 CICWCD adjusted the District's rate structure to have a higher base fee and a tiered structure. This structure helped CICWCD generate more revenue and promote conservations by charging connections that are usage a lot of water more fees.

4.2.2 Water Conservation Efforts in Surrounding Communities

Richfield City has recommended that the city and public plant certain types of plants, trees, and shrubs. They also recommend that residents plant species that are native to the area so that they may survive during drought conditions and limited water.

4.3 Recommended Water Conservation Measures for CICWCD

The latest water conservation measures are known as "Best Management Practices (BMPs)" in the State of California, "Reasonable Conservation Measures (RCMs)" in the State of Arizona, and, "Recommended Measures" in the State of Washington. All of these measures are discussed in this section. The intent of all the measures is the same: to encourage utilities to use these measures as the cornerstone of their water conservation program. The following programs are proposed:

4.3.1 *Public Information Program*

The water users of CICWCD should be informed of specific measures to establish or enhance a water conservation ethic among CICWCD's customers. The programs could include:

- Poster contests.
- Interactive web design.
- Social media contests.
- Presentations and tours with hands-on demonstrations.
- Advertisements on the radio and television.

Printed educational material such as bill inserts (providing information on the customer's bills showing water usage for the last billing period compared to the same period the year before), and Coordinating with other Districts, agencies, industry groups, public interest groups, and the media.

- The following steps could be used to design a public information program:
 - Develop a clean and persuasive statement of purpose.
 - Choose an appropriate theme.
 - Identify key target groups.
 - Select citizens for a water conservation committee.
 - Identify communication paths, resource materials, and volunteers.
 - Design and implement specific campaigns.
 - Ensure effective coordination and follow-through.

The program will target all customers within the District's service area. The purpose and a water conservation theme of the public information program will be decided upon. Examples of possible themes and slogans are:

- Save Water.
- Use Water Wisely.
- Save Water, Save Money, Save Energy.
- Save Water, It's Your Future.
- Save Water Today for Tomorrow.
- Water is Life, Don't Waste It.

A program logo reflecting the theme then can be selected or use the State's existing logo. The image could be realistic, stylized, or a friendly caricature with a suitable name. This theme can be retained or modified as needed in the future.

4.3.2 Public/Consumer Education Program

Public education can ensure long-term water conservation. Through public involvement, people become more aware of the hydrologic cycle and the limitations nature places on water availability. Public education can provide examples of practical ways for more efficient use. This can result in public realization of the value of water, reasons to conserve water and the benefits of implementing long term water conservation efforts. Consequently, significant water use reductions can be achieved and more public support for the conservation program can be generated.

The District will develop plans for a consumer education program focusing on the need for water conservation, community water problems, and feasible alternatives. The potential for water conservation programs will be discussed, including the rationale behind proposed actions and monetary benefits to the customers.

The free distribution of water conservation kits consisting of leak detection dye tablets, shower and faucet flow restrictors and faucet aerators kits can assist in reducing indoor domestic water use.

A water conservation program will be initiated in institutions (such as schools, churches and public buildings) including a leak detection program, metering and refitting of public facilities with water saving devices, and training seminars for public employees.

Public education programs on water conservation prove to be the best way of bringing about substantial water savings. Long term, on-going programs will promote a conservation ethic, making people more receptive to the idea of reducing water use to conserve limited water resources.

4.3.3 Secondary Water Systems among the neighbors

The use of secondary water systems can reduce the demand on high quality culinary water. The District will consider delivering low quality water for certain uses, particularly for landscape irrigation. A large portion of water supplies is typically used for landscape irrigation, where use of culinary-quality water is not needed.

CICWCD currently is considering placing a retention pond within the District for groundwater management and recharge purposes.

4.3.4 Reclaim Treated Wastewater

For water conservation, treated wastewater can be reclaimed for beneficial purposes such as agricultural and landscape irrigation, industrial processes, toilet flushing, and replenishing a groundwater basin (referred to as groundwater recharge).

4.3.5 Identify High Water Users

The high water users in the commercial and industrial sectors such as office buildings, hotels, motels, gas stations, restaurants, and individual industrial plants should be identified. The high water users should be approached with specific water conservation plans for their facilities.

4.3.6 Refitting Program with Water Saving Devices

A refitting program using water saving devices such as toilet displacement bottles, flow control-aerators and shower flow control should be planned. A pilot test program should be started before a large-scale program is begun.

4.3.7 Water Survey Programs for Single and Multifamily Residential Customers

The District is outdoor water survey of single- and multi-family residential customers and could offer indoor surveys. Specific activities for each indoor and outdoor survey should include the following:

- Indoors (Potential)
 - Check for leaks including toilets, faucets, and meter check.
 - Check flow rates for showerheads and faucets, and offer to replace or recommend replacement with low flow models as appropriate.
 - Check toilet flow rates and offer to install or recommend installation of displacement devices or direct customer to Ultra Low Flush Toilet (ULFT) replacement program, as appropriate; replace leaking toilet flapper, as necessary.
- Outdoors (Existing)
 - Check irrigation system and timer
 - Review or develop customer irrigation schedule in minutes of watering time per week for spring, summer, and fall.
 - Provide a rain shut-off device (optional)
 - Measure currently landscaped area (optional).
 - Measure total irrigation area (optional).

5.3.8 Conservation-Oriented Billing Rate Structures

The District's current Water Rate Schedule does not allow water usage for the base rate of \$25. Then by charging for all water used, the District can offer savings in direct correlation to water

used. For high water users, the “progressive” rate structure charges a higher rate as more and more water is used.

4.3.9 Landscaping Schemes with Low Water Consumption Rates

Since landscaping creates one of the greatest impacts on current water supplies, the District should promote water conservation through landscape planning by education and through the use of xeriscaping, the use of no- or low-water plants. See relevant Internet links.. Xeriscaping has the greatest potential for water saving where new construction is involved. CICWCD could offer incentives as new developments implement xeriscaping options for new connections.

4.3.10 High Efficiency Washing Machine Rebate

The District could start a rebate program to encourage residents using a more conservation-oriented higher-efficiency washing machine than their existing one. Front-loading washing machines typically use half as much water as top-loading machines. The District could set goals, criteria, objectives, and timetables for implementation of a program.

4.3.11 Linking With Useful Internet Sites

CICWCD could create an internet website that could be used for posting monthly District-wide water consumption, recommended lawn-watering rates and times, and other water conservation-related information. The District’s website could display links to the following useful sites, which District residents could visit to learn about different strategies for water conservation.

- (<http://www.conservewater.utah.gov>): Utah Division of Water Resources site.
- (<http://www.wasatch.com/~urc/conservation.html>): Utah River Council site. The site includes information on strategy to reduce water use, xeriscaping, other water conservation links and books on water conservation.
- (www.watereducation.utah.gov/conservation/default.asp): Sites for Water Conservation for Kids
- (<http://www.awra.org>): The American Water Resources District is an excellent source of water-related information and literature.
- (<http://www.waterlink.co.uk>): British website for scrutinizing every detail of water consumption, and water auditing.
- (<http://www.IRWD.org>): Site for Irvine Ranch Water District with excellent article on water conservation.
- (http://www.slcgov.com/Utilities/conservation/pdf/2004%20Conservation_Master%20Plan.pdf): Salt Lake District conservation website.
- (<http://extension.usu.edu/cooperative/utahhouse/files/plantlist.pdf>): There are drought resistant and water conserving plants listed on this website.
- (<http://www.conservewater.utah.gov/>): Utah Division of Water Resources’ Website.

- (http://www.tampagov.net/dept_water/conservation_education/Customers/Water_use_calculator.asp): Use the Indoor Water Use Calculator to estimate where you use and could conserve water in the house.
- (<http://www.epa.gov/watersense>): How to Conserve Water and Use It Effectively (EPA).

4.3.12 *The Water Conservation Checklist*

The following list of 23 “Water Conservation Tips” could be posted to District’s bulletin to educate residents:

- **Check your toilet for leaks:** A leak in your toilet may be wasting more than 100 gallons of water a day. To check, put a little food coloring in your toilet tank. If, without flushing, the coloring begins to appear in the bowl, you have a leak. Adjust or replace the flush valve or call a plumber.
- **Stop using your toilet as a wastebasket:** Every time you flush a piece of lint, facial tissue or other small bit of trash down the toilet, you waste five to seven gallons of water.
- **Put one or two plastic bottles in your five-gallon or larger toilet tank:** Your toilet can flush just as efficiently with less water than it now uses. To cut down on waste, put an inch or two of sand or pebbles in each of one or two plastic quart bottles to weigh them down. Fill them with water, screw on the lid and put them in your toilet tank, safely away from the operating mechanisms. Better yet, replace your old toilet with a new low-flush toilet. They are readily available in a variety of styles and colors.
- **Take shorter showers:** Long hot showers waste five to ten gallons of water every unneeded minute. Limit your showers to the time it takes to soap up, wash down and rinse off.
- **Install water-saving shower heads or flow restrictors:** Most shower heads put out five to ten gallons of water each minute, while three gallons is actually enough for a refreshing cleansing shower. Your local hardware or plumbing supply store stocks inexpensive water-saving shower heads that you can install yourself. For even less money, you can purchase a small plastic insert that will limit flow through your present shower head.
- **Turn off the water after you wet your toothbrush:** After you have wet your toothbrush and filled a glass for rinsing your mouth, there is no need to keep water pouring down the drain. The savings are small but frequent, and the message you send your children or grandchildren is huge.
- **Rinse your razor in the sink:** Before shaving, partially fill your sink with a few inches of warm water. This will rinse your blade just as efficiently as running water, and far less wastefully.
- **Check faucets and pipes for leaks:** Even the smallest drip from a worn washer can waste 50 or more gallons of water a day. Larger leaks can waste hundreds of gallons a day, enough to supply a whole family.

- **Use your automatic dishwasher only for full loads:** Every time you run your dishwasher, you use about 25 gallons of water. Consider replacing your older model with a newer water- and energy-efficient dishwasher. You would be surprised at the savings.
- **If you wash dishes by hand, don't leave the water running for rinsing:** If you have two sinks, fill one with soapy water and one with rinse water. If you have but one sink, gather all the washed dishes in the dish rack and rinse them with an inexpensive spray device.
- **Don't let the faucet run while you clean vegetables:** You can serve the same purpose by putting a stopper in the sink and filling the sink with clean water.
- **Keep a jug of drinking water in the refrigerator:** This ends the wasteful practice of running tap water to cool it off for drinking.
- **Use your automatic washing machine only for full loads:** Your automatic washer uses 30 to 35 gallons of water in a cycle. That's a lot of water for three T-shirts. Consider replacing your older model with a newer water- and energy-efficient machine.
- **Plant drought-resistant trees and plants:** There are many beautiful trees and plants that thrive in Utah with far less watering than other species. See Appendix for lists of trees, shrubs, grasses and flowers that are suitable for our area, but require less water.
- **Put a layer of mulch around trees and plants:** A layer of mulch will slow the evaporation of moisture.
- **Use a broom to clean driveways, sidewalks and steps:** Using a hose to push around a few leaves and scraps of paper can waste hundreds and hundreds of gallons of water.
- **Don't run the hose while washing your car:** Soap down your car with a pail of soapy water. Then use a hose just to rinse it off.
- **Teach your children that your hose and sprinklers are not toys:** There are a few things more cheerful than the sound of happy children playing under a hose or sprinkler on a hot day. Unfortunately, there are also few things more wasteful of precious water.
- **Water your lawn and other plants only when they need it:** Watering frequently can be very wasteful as it doesn't allow for cool spells or rainfall that can reduce the need for watering. A good way to see if your lawn needs watering is to step on some grass. If the grass springs back up when you move, it doesn't need water. Look at links on the District's website for Agricultural Extension sites that provide lawn-watering guides, to make sure you are applying enough and only enough water on your landscaping.
- **Deep-soak your lawn:** When you do water your lawn, do it just long enough for water to seep down to the roots, where it won't evaporate quickly and where it will do the most good. A light sprinkling which sits on the surface, will simply evaporate and be wasted. In addition it encourages shallow inefficient root systems. A slow steady fall of water is the best way to irrigate your lawn.

- **Water during the cool parts of the day:** Less water is lost to evaporation when the ground and the air are cool. Early mornings are better than at dusk, since it helps prevent the growth of fungus.
- **Don't water the gutter:** Adjust your sprinkler patterns in such a way that water lands on your lawn or garden, not on concrete or asphalt, where it does no good. Avoid watering on windy days when much of your water may be carried off before it ever hits the ground.
- **Check for leaks in pipes, hoses, faucets and couplings:** Leaks outside the house may not seem as unbearable since they don't mess up the floor or drive you crazy at night. But they can be just as wasteful as leaks in the line from the water meter, even more wasteful. Excess watering and leaks around foundations can cause subsidence and damage walls.

4.3.13 Additional Best Management Practices (BMPs) as Conservation Measures

In addition to the water conservation measures that the District currently employs, the following best management practices (BMPs) are recommended (Utah's M & I Water Conservation Plan, July 2003):

- **BMP 1 – Universal Metering**
 - Install meters on all residential, commercial, institutional and industrial water connections. Meters should be read on a regular basis (auto-read type meters would allow monthly readings).
 - Establish a maintenance and replacement program for existing meters.
- **BMP 2 – Water Conservation Ordinances**
 - Adopt an ordinance requiring water-efficient landscaping which include irrigation system efficiency standards and an acceptable plant materials lists.
 - Adopt an ordinance prohibiting the general waste of water. Then encourage citizens to call in reports of any water running down the street, so that leaks can be identified, and owners notified for repair action.
- **BMP 3 – Water Conservation Coordinator**
 - Designate a water conservation coordinator to facilitate water conservation programs.
- **BMP 4 – System Water Audits, Leak Detection and Repair**
 - Set specific goals to reduce unaccounted for water to an acceptable level.
 - Set standards for annual water system accounting that will quantify system losses and trigger repair and replacement programs, using methods consistent with American Water Works District's Water Audit and Leak Detection Guidebook.

- **BMP 5 – Large Landscape Conservation Programs and Incentives**
 - Encourage all large landscape facility managers and workers to attend specialized training in water conservation.
 - Provide outdoor water audits to customers with large amenity landscapes.
- **BMP 6 – Water Survey Programs for Residential Customers**
 - Implement residential indoor and outdoor water audits to educate residents on how to save water.
- **BMP 7 – Plumbing Standards**
 - Review existing plumbing codes and revise them as necessary to ensure water-conserving measures in all new construction.
 - Identify homes, office building and other structures built prior to **1992** and develop a strategy to require, distribute or install high-efficiency plumbing fixtures such as ultra low-flow toilets, showerheads, faucet aerators, etc.
- **BMP 8 – Conservation Programs for Commercial, Industrial and Institutional Customers**
 - Change business license requirements to require water reuse and recycling in new commercial and industrial facilities where feasible.
 - Provide comprehensive site water audits to those customers known to be large water users. Install separate meters for secondary irrigation water.
- **BMP 9– Reclaimed Water Use**
 - Use reclaimed or recycled water where feasible.
 - Encourage or enforce water-wise landscaping.

4.4 Progressive Water User Rates to Achieve Conservation

This BMP was mentioned in Section 5.3.8. A recent completed study by the Utah District of Conservation Districts with the Utah Division of Water Resources, Utah State University Center for Water Efficient Landscape and USU Extension investigated using an “increasing block” price structure. The study found significant reductions in water usage when an increasing price block was used with a base fee. The District’s current rate structure follows the states recommendations. The District’s current Water Rate Schedule is shown in Table 11 Water Rate Schedule.

During the summer, water use is highest due to outdoor irrigation. Currently, the average monthly bill in CICWCD during the summer is approximately \$44. The average monthly bill is based on the rate structure that promotes conservation. The assumption for the rates is that the majority of water users will not want their bills to increase and will reduce their water use to

keep the cost the same under the new rate schedule. To keep their water bill from increasing, users will have to use less water by reducing the amount of area that is irrigated.

Currently, the water use rate in CICWCD is not sustainable for future development based on average irrigation on a half acre lot. With a 0.2 acres of irrigation on a half acre lot (average landscaped area for a half acre lot in CICWCD based on aerial photography), the per capita use is 202 gallons. To meet the state goal of 151 gallons/user, outdoor irrigation in CICWCD should be limited to 0.0975 acres per lot. CICWCD can help assure that there is sufficient water for future residents by promoting aggressive outdoor conservation. Using a more conservation minded rate schedule will push water users to landscape more efficiently, using xeriscaping and drought resistant grass. The reductions do not have to occur immediately, but can take place over a period of time to allow users to adjust to the conservation rates. Conservation is the least expensive means of assuring there will be sufficient water for future needs.

4.6 Water Conservation Program to Meet Goals

To insure that the water conservation goals outlined in this report are achieved, the District should plan to participate in the following programs in the future:

- Public Information and Education Campaign
- Water Conservation Demonstration Garden
- Model Water-Efficient Residential and Commercial Landscape Ordinances
- Ultra Low Flush Toilet Replacement Program
- Residential, Commercial and Industrial Water Audits
- Water-Wise Landscaping Classes
- Large Water User Workshops
- Water Quest: Saving Water by the Yard
- District Facilities Re-Landscaping
- Water-Wise Landscape Awards
- Member Agency Assistance Program
- Water Conservation Plan Update
- Efficient use of surface water to reduce pumping groundwater.

4.7 *Water Conservation Plan Implementation Considerations*

Water conservation planning is a good investment for the District. The cost to develop an equivalent amount of water, treat it, and deliver it to the District residents is likely to be much higher.

4.8 *Staffing*

It appears that the responsibility would need to be given to a member or members of the current staff to conduct the following tasks:

- Implement public information program as described above.
- Conduct leak detection and repair.
- Coordinate water conservation program.

4.9 *Method to Track Water Conservation Progress*

The District should implement the following procedure to track water conservation progress:

- After first year of water conservation campaign, the District will compare monthly water supply data for each category of usage.
- The water supplied data and metered data will be compared to identify any leaks in the system. The detection and repair of the leaks will assist in estimating actual volume of water conservation.

Add more conservation measures when and if necessary.