

CITY OF CALIENTE, NEVADA

WATER CONSERVATION PLAN 2007

Plan Overview

This plan is a concentrated effort by the City of Caliente to plan for the conservation of available water resources, system modification and expansion to address current and potential deficiencies of its water system. Metered water usage and public education will be used to minimize system demands and to more efficiently utilize current system capacity. System expansion and modification will also be used to ensure even distribution of system capacity to all sections of the community and capacity for future demands.

Plan contents are and will be available for inspection by the residents of the City of Caliente at the County Library located in the Depot, at the City Offices and at the Caliente Senior Center. Public input will be accepted in open session of the City Council and in writing to the City Utility Division. This plan will be adopted by action of the City Council in open session.

As an adjunct to the approach all residents must have as they address the conservation of water in our desert community, public efforts are designed to improve the City's ability to address normal demands on our water supply as well as improvement of our state of readiness for a water-requiring disaster response.

Current rate structure is a flat charge for water usage per month. However, with meters in the final stages of installation, it is anticipated that prior to July 1, 2007 an approved rate system which will charge for water consumed per billing period will be in place. This graduated rate structure will appropriately charge high water usage locations for water consumed. It is also intended that individual residents will be allowed to approach the City Council in order to ensure that water usage charges are also in accord with income limitations.

Sanctions identical to those in place for utility services non-payment are intended for those who refuse to pay their fair share of the costs of providing water services. Individual cases of hardship will be dealt with as they are presented to the City Council through the utility staff.

Water District Description

Ownership: Water resources are owned by the residents of the City of Caliente through the mechanism of the municipal government.

Geographical Coverage: The water district is limited to those residences located within the physical boundaries of the City of Caliente.

Customers: Current number of utility connections is 541. The community is not truly categorized but the City of Caliente does have concentrations of low income residents and senior citizens. An income survey conducted in 2004 in conjunction with a grant application indicated that the City has 66.1% (797) low to moderate income residents. Due to the significant numbers of elderly residents, there are likely to be a considerable number of individual household adjustments to the rate structure which will have to be addressed by the City Council.

Water Resource Inventory

- **Water Source:** The water system is currently charged through the use of one active well. A new well is planned in the near future and the hydrological studies necessary for positioning that well most advantageously for avoidance of higher levels of dissolved arsenic in the City water supply. The current well is in the railroad yard and both active wells are likely to be located near the Eastern boundary of the City when the new well is completed.
- **Source Protection:**
 - **Watershed Management:** The Lincoln County Coordinated Resource Management Steering Committee is in the process of updating the 2000 Meadow Valley/Clover Creek Watershed Management Plan to address site specific conditions which may require management actions.
 - **Wellhead Protection:** The City of Caliente has prepared a wellhead protection plan and submitted this to the Nevada Bureau of Water Quality Planning. The State has not yet certified the Wellhead Protection Plan created under engineering supervision.
- **Water Rights:** The City of Caliente's water rights are currently at 25.4 acre feet, greater than the current water usage.
- **Water Storage:** Water storage for the City of Caliente is facilitated by three water tanks located approximately mid-community with a capacity of approximately 2.0 million gallons. These tanks are fed by the City wells which have experienced various periods of diminished capacity due to age and/or sanding. Inspection of the tanks will be accomplished as funding becomes available for professional inspection and maintenance.
- **Water Distribution:** The City distribution system has recently been expanded, repaired, and modified by professionals.
- **Water Consumption Rate:** The City of Caliente water system is currently metered at the wells. The best indication of total water consumption has been the amount of waste water introduced into the system. These readings have ranged from 300,000 to over 1,300,000 gallons per day. Accurate water consumption rate management will be part of the efforts of the City following implementation of the metering program at individual user sites.

Water Management Options, Opportunities, and Goals

Conservative water supply management practices are a matter of course for a well-run water utility. Supply management options other than leak detection and repair are: service metering, pressure reduction, watershed management, and various source water control strategies.

- **Watershed Management and Source Water Protection and Control:** The City of Caliente does not have management control over its watershed, but instead has representatives on the Watershed Management Technical Review Team (TRT) which produced the Watershed Management Plan in 2000. That plan is currently being revisited by the TRT and an updated version should be produced in the near future. Source water protection and control endeavors can ensure and enhance water quality, thereby assuring that the necessary quantity of high quality water is available for the residents of the City of Caliente.
- **Wellhead Protection Program:** In November 2003 the City, in conjunction with Farr West Engineering of Reno, Nevada, created a Wellhead Protection Program. This program is designed to ensure high quality water through management of activities that have the potential of negatively affecting water quality.
- **Water Service Metering:** It is widely observed in the water industry that metering water services is a strong incentive for later conservation. The City of Caliente has installed water meters for the bulk of the residents of the City and intend to have a full telemetry water usage metering system in place by July 1, 2007.

Demand Management Options

- **Fiscal Management:** Current budget restrictions demand fiscal responsibility in the provision of all areas of municipal services. Water system conservation and expansion efforts will have to be self-supporting. The new rate structure is so constructed.
- **Operational Management Options**
 - **Leaks:** As a significant portion of this effort, a professional firm was engaged to technologically review the current water distribution system in order that leaks in the system can be discovered and dealt with appropriately. The study indicated that there were only two small leaks, both at fire hydrant locations. These two leaks have been repaired and no others have since been discovered.
 - **Pressure:** The current service pressure ranges from 40 to 80 pounds per square inch. With the addition of a new City water tank, this pressure has become more consistent in all seasons of usage. This pressure has been determined by the elevation difference between the storage tanks and the users.
 - **Target Savings:** The City intends the water conservation plan to achieve a water savings of between 35% and 50%.

The City of Caliente realizes the need to enact a variety of demand management water conservation strategies due to the limited supply of water. The City of Caliente will achieve Demand

Management Options using the following criterion:

- Education of the public about the limits on the City water supply and the need to conserve water.

Water Conservation Education

The City of Caliente encourages the water users to conserve water by landscaping their property in a manner that will reduce the required amount of irrigation water. Educational materials and recommendations for the reduction of lawn size and plants that are adapted to arid and semiarid climates are planned to be provided to all residents as part of the education process.

Educational materials will be made available to the local schools for incorporation into the curriculum. It is also anticipated that City staff or Utility personnel will be available to address classes directly. Educational materials will also be distributed in customer's billing.

Demand management implies modifying people's habits and attitudes with respect to their use of water. Therefore, public education about water conservation is the necessary first step in any water conservation campaign focusing on demand management strategies. Successful demand management depends upon effective and persistent communication of the reasons for and goals of a water conservation program in general and specific water conservation measures in particular.

As a water conservation measure in and of itself, community education has an undeniable value, but one that is very difficult to quantify. It is anticipated that the educational process will result in a reduction of at least 10% in water usage. Water conservation education is somewhat a fact of life for the City of Caliente's water users as the residents are so closely tied to their natural resources.

Water Management

The City of Caliente will analyze the town's metered water usage and compare the data to the amount of water pumped from the water source(s). If the discrepancy is excessive, staff of the City of Caliente will investigate the difference and make recommendations to the City Council on possible repairs. System leak detection is a part of this process.

The City of Caliente will follow the Operation and Maintenance Manual to provide the proper maintenance for all aspects of the water system, which includes maintenance of water meters, pressure valves, well and water storage tanks.

Residential Fixture Retrofits

The easiest and most reliable ways to effect indoor water conservation involves installation (in new construction) and retrofitting in older homes of water saving plumbing fixtures. The Nevada State Legislature mandated water conserving plumbing fixtures in new construction and expansions beginning in 1993. These plumbing fixtures include the following: toilets which use less than 1.6 gallons per flush (gpf); showerheads whose flows are less than 1.5 gallons per minute (gpm); and

faucets with flows of less than 2.5 gpm. In contrast, plumbing fixtures found in the typical older home are likely to have the following water use characteristics: toilets – 3 to 8 gpf (due to the age of the homes in Caliente, most toilets are anticipated to use in excess of 5 gpf); showerheads – 3 to 7 gpm; and faucets – 3 to 5 gpm. City of Caliente will assist water users in becoming educated regarding the water saving plumbing fixtures. Local hardware outlets have ensured that such retrofit materials are and will be available.

City of Caliente water system anticipates incentivizing residential plumbing fixture retrofits. This has been a very popular demand management strategy for many communities, since the water savings often quickly pay for the cost of the measures. A variety of incentive methods have been used in other communities ranging from the low-cost/low-profile to the opposite extreme. The City of Caliente water system plans on implementing water conservation measures by making available, without cost to residents, literature on water conservation containing information on the following components: low flow showerhead(s), faucet aerator(s), water conservation literature, inexpensive toilet inserts, and dye tablets for testing for toilet leaks. Methods for distribution will vary but will be concentrated and focused.

Commercial and Institutional Fixture Retrofits

Applicability: All of the fixture retrofit options discussed for residential customers apply to commercial and institutional customers, as well.

Potential Water Savings: Since most commercial bathroom facilities see dramatically higher usage rates than residential units with the same fixtures, water savings potential for commercial retrofits will be all the more impressive.

Education for Efficient Water Use

Lawn watering and irrigation are not in and of themselves the causes of excessive water use. Inefficient landscaping and irrigation techniques waste water. Most people are ignorant of the various factors affecting irrigation efficiency. For instance:

- Most people over-water. Some soils can only absorb so much water, others percolate rapidly. When they become saturated, runoff occurs. This simple fact can be witnessed any summer day in Caliente.
- Typical rates of water application exceed the soil's absorption capacity. This is merely a restatement of the above point, but the implication is that neither standard watering technology nor its typical use are geared toward irrigation efficiency.
- People often water at times when plants don't really need the moisture and/or at times of the day when irrigation is least efficient.

Community education for water efficient landscaping has been a very widespread practice for communities implementing water conservation measures and will be a mainstay in the City of Caliente public education operation.

Cost-Effectiveness: All of the above efforts at education are relatively inexpensive but are generally not cost-free. Incentives and costs associated with these efforts will have to be borne by the rate structure of the water system as the City budget currently has no funds which might be diverted to such efforts.

RECOMMENDED WATER CONSERVATION ACTIONS

Summary

The following summarizes the recommended demand management water conservation measures. The residential sector includes:

- **Plumbing Fixture Retrofit Incentives:** Educate the public on the cost savings in water bills with the purchase and installation of low-flow toilets, showerheads and faucets. The standard rate structure being designed to accommodate all residential customers.
- **Community Education:** Use a wide variety of community education strategies to inform the public about the need for and methods of water conservation.
- **Residential Water Audits for Efficient Landscaping:** Conduct water audits on demand, at all residential water consumers' locations in order to educate and provide guidance for water efficient landscaping practices. "Sell" this measure to the very high volume user group.

Commercial Demand Management Strategies Include:

- **Plumbing Fixture Retrofit Incentives:** Implement standard rates to encourage commercial users to purchase and install low-flow toilets, urinals, showerheads, and faucets in their establishments.
- **Commercial Water Metering:** To incentivize the efficient use of water in a commercial environment.

Projected Achievements: The recommended plan of action balances the need to select cost-effective alternatives which are good investments with our responsibility to promote conservation of our natural resources. Providing incentives to retrofit residential and City water system fixtures makes us money – it's a good investment. Water audits save us money. Education, on the other hand, does

not show as positive a direct payback, yet is key, not only to the success of our specific programs, but to promote conservation of our natural resources.

Periodic Plan Review: The plan will be subject to periodic review by the City Council which will monitor progress toward the above goals. The plan will be amended, as needed.