

RESOLUTION NO. R-05-2020

**A RESOLUTION OF THE CITY COUNCIL
OF EAGLE MOUNTAIN CITY, UTAH.
AMENDING AND ADOPTING A WATER CONSERVATION PLAN
FOR EAGLE MOUNTAIN CITY**

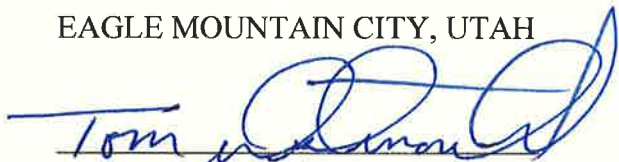
WHEREAS, the City Council of Eagle Mountain City, Utah finds that it is in the public interest to amend Resolution 01-2015 and reenact a Resolution stating the policy of the City with respect to water conservation planning; and

WHEREAS, the City Council intends to approve the *Water Conservation and Management Plan* dated October 2019 as the policy of Eagle Mountain City.

NOW THEREFORE, be it resolved by the City Council of Eagle Mountain City, Utah that the Water Conservation Plan approved in Resolution 01-2015 is hereby amended and is adopted as set forth in Exhibit 1 as the Water Conservation Plan for Eagle Mountain City, Utah.

APPROVED AND ADOPTED by the City Council of Eagle Mountain City, Utah, this 7th day of April, 2020.

EAGLE MOUNTAIN CITY, UTAH


Tom Westmoreland, Mayor

ATTEST:


Fionnuala B. Kofoed, City Recorder



CERTIFICATION

The above resolution was adopted by the City Council of Eagle Mountain City on the 7th day of April, 2020.

Those voting aye:

- Donna Burnham
- Melissa Clark
- Colby Curtis
- Jared Gray
- Carolyn Love

Those voting nay:

- Donna Burnham
- Melissa Clark
- Colby Curtis
- Jared Gray
- Carolyn Love

Those excused:

- Donna Burnham
- Melissa Clark
- Colby Curtis
- Jared Gray
- Carolyn Love



Fionnuala B. Kofoed, MMC
City Recorder

EXHIBIT 1

EAGLE MOUNTAIN CITY, UTAH

Water Conservation and Management Plan



October 2019

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Eagle Mountain City Water

2565 N. Pony Express Parkway

Eagle Mountain, UT 84005

801-789-6676

EAGLE MOUNTAIN CITY

WATER CONSERVATION PLAN

INTRODUCTION

Water conservation in the state of Utah is an issue of utmost importance to both citizens and leaders. The state continues to experience rapid growth, which results in increased water needs. Concern over these issues has also been demonstrated by the state legislature in the Water Conservation Plan Act (House Bill 71) passed and revised in the 2004 legislative session (Section 73-10-32 Utah Code Annotated). The public water supplier for Eagle Mountain City is also concerned about the current water situation. The following water conservation plan addresses the problems associated with the continual rapid growth and the increased water requirement for Eagle Mountain City. The plan also identifies current conservation measures and outlines new measures designed to reduce per capita water use and better educate water users.

DEFINITIONS

CUWCD	Central Utah Water Conservancy District	ERC	Equivalent Residential Connection
DDW	Division of Drinking Water	IFFP	Impact Fee Facilities Plan
psi	pounds per square inch	MG	Million Gallons
gpm	gallons per minute	PRV	Pressure Reducing Valve
SSA	South Service Area	NSA	North Service Area
WSA	West Service Area	IFC	International Fire Code

DESCRIPTION

Location

Eagle Mountain City is located in the Cedar Valley near the northern end of Utah County. Eagle Mountain City is west of Saratoga Springs, east of Cedar Fort and south of Camp Williams. The city is at an average elevation of 5,050 feet and has a total city area of approximately 53 square miles.

Climate

As with many surrounding Utah County communities, Eagle Mountain City has a semiarid or steppe climate due to its location between the deserts in the west and the higher mountains to the east. The average annual precipitation is 13.49 inches and the temperature varies with the season from below 36 degrees to 100 degrees F.

LEVEL OF SERVICE

Storage

- 400 gallons of storage per ERC for indoor use
- 2,848 gallons per irrigated acre for outdoor use in Zone 4
- Fire storage 1000 gpm for 2 hours (120,000 gallons)
- Emergency storage based upon an assessment of risk and the desired degree of system Dependability

Source

- 800 gallons per day of source capacity per ERC for indoor use
- 3.96 gpm of source per irrigated acre
- DDW defines safe yield of a well as 2/3 of the pump capacity
- Water Sources

A. Wells supplying up to 6150 acre-feet

1. Well 1
2. Well 2
3. Well 3
4. Well 5
5. White Hills Well 1
6. White Hills Well 2

B. Purchased 2460 acre-feet

Minimum Water Pressure Requirements

- 40 psi during peak day demands
- 30 psi during peak instantaneous demands
- 20 psi in during peak day demands with fire

Water Rights

- 0.53 acre-feet of water right per ERC
- 2.5 acre-feet per irrigated acre

EXISTING SYSTEM

Eagle Mountain City currently provides water to customers in the North and South Service Areas (NSA and SSA respectively). The City is in the process of connecting the water sources in the West Service Area (WSA) to the SSA. See [Figure 1](#) for the location of each service area.

From the City's billing information, it was determined that there are currently a total of 10,146 connections, the majority of which are residential, but this also includes 41 commercial units, 13 industrial, 21 churches, 8 schools and several open space connections. The City's per capita consumption of water has remained fairly stable over the last few years, staying under the state average of 185 gallons per capita per day. This is shown in [Table 1](#).

Table 1 Gallons Per Capita Per Day Use

Year	Population	Total Use ac-ft/yr	Usage gpcd
2014	24,000	4,333.94	161.21
2015	27,160	4,976.28	163.57
2016	33,200	5,228.54	140.59
2017	34,000	5,566.00	146.15
2018	38,170	5,502.70	152.09

Presently the system does not have a separate secondary irrigation system, so the water for irrigation is supplied from the culinary system.

The city is currently divided into seven pressure zones.

As of the date of this report, the city's entire water supply is provided by six wells and the supply provided by Central Utah Water Conservancy District. Storage is provided by eight water tanks totaling 9.7 MG of storage. Three of the tanks are at a common elevation. Tanks 4 and 5 are at higher elevations, Tank 4 serves primarily the north side of SR 73 and Tank 5 serves the lower zones through a PRV. White Hills tank 1 and 2 serve White Hills. The locations of the tanks and wells are shown in Figure 1.

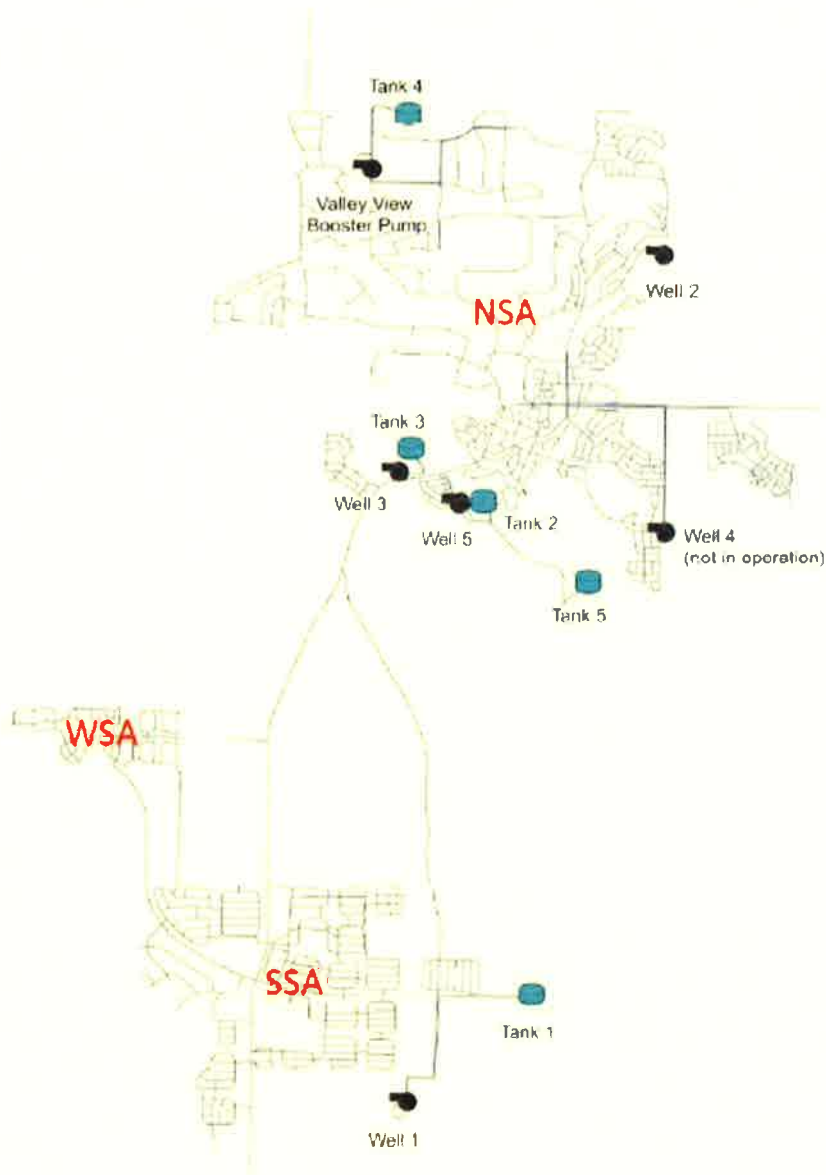


Figure 1 Eagle Mountain's Water System

DEMOGRAPHICS

Current and Projected City Population

Eagle Mountain City's estimated current population is about 40,000. It is estimated that by 2029 the population will grow to approximately 66,533 which is about 16,631 ERC's. By 2060 the city's population is estimated to grow to over 160,000 or in excess of 39,000 ERC's.

The Utah Governor's Office of Management and Budget developed 2012 baseline projections for each of the cities and towns in Utah. Rapid development in Eagle Mountain has caused the city's population to exceed these growth projections. Future growth was estimated using the number of residential building permits to gauge the city's population growth rate. The growth rate in the NSA has been higher than the SSA in recent years. Now that the NSA is reaching build out, the anticipated growth rate in the SSA will be higher in the coming years. This is where the City will need to focus most on maintaining the level of water service.

To specifically evaluate the impacts of growth over the planning period, the projected number of ERC's by year, over the planning period, have been identified and included in **Table 2 below**. To assist the city with long range planning growth, projections in five year increments to 2060 have also been included in the table.

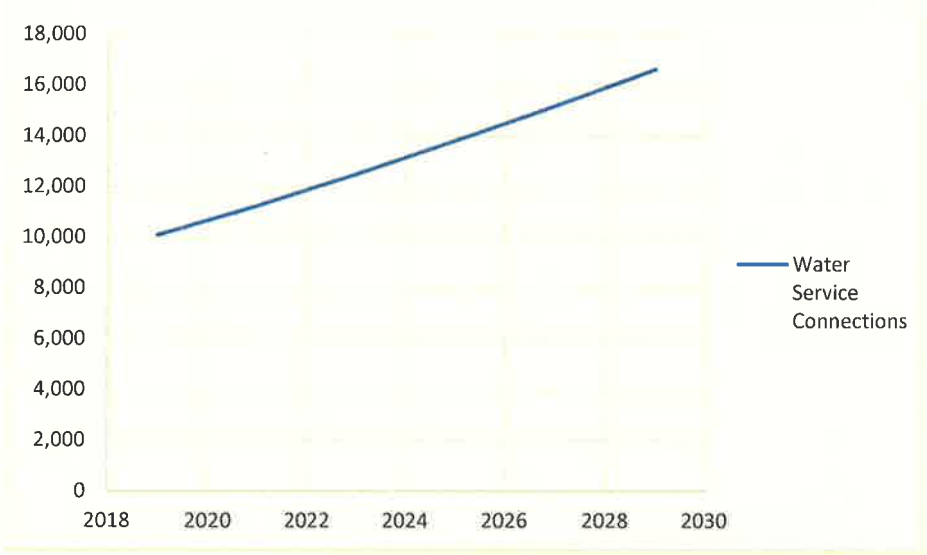
Table 2 – Growth Impacts

Year	Population	Added ERCs	Total ERCs
2019	40,365	539	10,935
2020	42,686	568	11,506
2021	45,033	571	12,107
2022	47,510	600	12,708
2023	50,005	602	13,338
2024	52,630	630	13,967
2025	55,261	629	14,625
2026	58,024	657	15,278
2027	60,781	653	15,958
2028	63,668	681	16,631
2029	66,533	673	17,333
2030	69,527		17,333
2035	80,651		18,756
2040	93,602		21,768
2045	112,322		26,121
2050	135,722		31,563
2055	152,009		35,351
2060	169,653		39,454

Current and Projected Water Requirement

As a result of the rapid population growth in Eagle Mountain City the number of service connections and the total water requirement have increased at an accelerated rate. On average, one service connection is needed for every four people in the city. Based on this average, the number of connections in the years 2019 and 2029 are approximately 10,091 and 16,633 respectively. **Figure 2** shows the historical and projected population growth with the corresponding number of service connections. The estimated water requirement per service connection is 750 gallons per day or 0.76 acre-ft per year. According to this estimate the water requirement in 2019 was 7,669 acre-feet per year and the projected requirement for 2029 is 12,641 acre-feet per year.

Figure 2 – Historical and Projected Growth



IDENTIFIED PROBLEMS

Physical Problems

In 2009, Eagle Mountain City contracted with The Central Utah Water Conservancy District for the right to use up to 15,000 acre-feet of water. This, coupled with the existing 10,089.44 acre-feet of water already allocated to wells within the City, brought the total volume of water available to Eagle Mountain City to 25,089.44. Based on the projected populations, the 25,089.44 acre-feet currently available could accommodate City needs until the year 2050, and the City would have a deficit of 7,145 acre-feet of water by the year 2060 as shown in **Table 3**.

Table 3 – Difference in Total Water Requirement and Total Water Available

Year	Total Requirement (acre-ft)	Total Available (acre-ft)	Difference (acre-ft)
2019	7,669	25,089	17,420
2024	10,000	25,089	15,089
2029	12,641	25,089	12,448
2050	25,787	25,089	-698
2060	32,234	25,089	-7,145

Social Problems

- Citizens of Eagle Mountain City lack education on efficient water use practices and landscaping water requirements. Current watering habits place a greater importance on convenience than on water conservation.

EXISTING CONSERVATION MEASURES

Eagle Mountain City has several projects within the City that have implemented water conservation measures. The City Hall, built in 2004, uses xeriscaping for approximately 60% of the total landscaped footprint of the site. Also, the City’s Public Works Building uses xeriscaping for approximately 50% of the total landscaping. In 2005, Eagle Mountain City began replacing grass in the street medians along Ranches Parkway in favor of xeriscape. Also in 2005, the City began landscaping street medians along Pony Express Parkway entirely with xeriscape, which is saving up to 80% of water required to irrigate these areas.

Eagle Mountain City has conducted a study of the feasibility to treat the wastewater effluent to a Type 1 standard which would allow the City to reuse this water for large scale uses.

Eagle Mountain City Water Ordinances

In order to discourage outside watering during daytime hours and wasteful use of water, the

Eagle Mountain City Council has enacted a watering ordinance. Fines of up to \$100 may be imposed for violation of these ordinances.

- The ordinance prohibits outside watering between the hours of 10:00a.m. and 6:00p.m. First Offense Violators will be issued a letter warning them to comply with the Ordinance Requirements. Second Offense Violators will have their water service terminated and will be subject to a \$100.00 reconnection charge.
- The City ordinance 15-2004 regulates alternate day outdoor watering based upon the (odd/even) addresses of the water users. Violations of this ordinance shall be punished as stated above.
- The public is being encouraged to participate in a sprinkling system efficiency study sponsored by the state “Slow the Flow” program.
- The City does not have a Water Conservation Coordinator but the City Code Enforcement Officer enforces the city water ordinance for conservation matters.

Public Education

Eagle Mountain City is also seeking to better educate the public on water conservation issues. Three main goals behind this effort are to convey information on the water deficit, to inform residents of the city’s conservation goals and to provide helpful tips on better landscaping and water conservation. The city has included a comprehensive list of landscape watering conservation tips on its website. The city also provides a monthly newsletter to all residents which include a section on water conservation. The following is a list of effective conservation practices included on the website and in the newsletter:

- Visually inspect sprinkler systems once every month during daylight hours. Check and fix any tilted, clogged or broken heads.
- Avoid watering landscape during the hottest hours of the day (10am until 6pm) to minimize evaporation.
- Water landscape in cycles by reducing the number of minutes on the timer and using multiple start times spaced one hour apart. This allows the water to soak into the soil and avoids runoff.
- Water lawn only when it needs it. If walking on dry lawn leaves footprints it is probably time to water.
- Turn sprinkler system off during or after a rainstorm and leave it off until the plants need to be watered again.
- Consider installing an automatic rain shutoff device on sprinkler system.

- Install drip irrigation system for trees, shrubs and flowers.
- Check sprinkler valves for leaks when checking all your heads.
- Avoid water lawn during windy periods.
- Increase days between watering lawns. Allowing the lawn to dry out between watering creates deeper roots makes it possible to water deeper and less often.
- Place a rain gauge in your backyard to monitor rainfall and irrigation.
- Test soil moisture with a soil probe or screwdriver before watering. If the soil is moist, don't water.
- Watch out for broken sprinklers, open hydrants, broken pipes and any other significant water losses in your community. Be sure to notify the property owner or the water district of the problem.
- Make sure the water coming out of sprinklers is not misting and drifting away in the wind. This is usually caused by pressures that are too high. If necessary, install a pressure reducer on sprinkler line.
- Water only once or twice every week during the spring and fall.

Water Rate Structure

Another conservation measure that the city has developed is a water rate structure that provides incentives to users for conserving water while maintaining adequate amount of revenue to cover expenses. **Table 4** provides the current prices for culinary water use. These rates are on top of a \$40 deposit and a \$20 monthly base rate.

Table 4 – Culinary Water Rates

Small Lots Usage	Large Lots Usage (1,000 gallons)	Rate (Per 1,000 Gallons)
Up to 65 kgal	Up to 120 kgal	\$0.80
65-115 kgal	120-170 kgal	\$0.85
115-165 kgal	170-230 kgal	\$0.90
Over 165 kgal	Over 230 kgal	\$0.95

CONSERVATION GOALS

Eagle Mountain City has instituted various methods of promoting and maintaining water

conservation. These methods, in addition to existing conservation practices will allow the City to deliver safe drinking water to all of its customers and help ensure long-term, low cost sustainability of the water system. The goals are the following:

1. Reduce annual water use by 20 percent by 2030
2. Increase public's awareness of water conservation.
3. Continue emergency planning for drought and system failures.
4. Look for opportunities to increase our reuse system.
5. Complete installation of the AMI infrastructure.

NEW CONSERVATION MEASURES

Eagle Mountain City is entertaining new methods of assisting residents and the community in conserving water. These measures include universal metering of all water users, information and education to residents, water use audits, improving landscape efficiencies, replacing old meters, and promoting new technologies as developed to residents that assist in water conservation, reuse of treated wastewater, and regulating water use to comply with the State recommended water use consumption rates.

IMPLEMENTATION TIME-LINE

A. Identification of Personnel Responsible for Implementing New Measures

- The City's Public Utilities Department will be responsible for the implementation and enforcement of the water conservation policies within the City.
- The City's Utilities and City Council will continue to address future modifications and alterations to the water conservation plans as necessary to maintain an efficient water use plan.

B. Implementation Schedule

- Universal metering is currently being implemented within Eagle Mountain. Replacement and recalibration of meters are currently being surveyed and repaired within the city's water districts.
- Information and Education pamphlets and billing inserts are being inserted to current water users invoices.

- Water Users Audits are being conducted currently in the water districts. The larger water users will have additional water audits to be implemented.
- Landscape Efficiency has been implemented as the construction of a 6” Ranches water meter has been constructed and is operational.
- Reuse and recycling is the water conservation measure that has the longest implementation time frame. It is anticipated with the City’s population growth the wastewater treatment plant’s addition of a tertiary treatment system would not be implemented for 5 to 10 years.
- Eagle Mountain City has received funding to begin the design of the first stage of the a reuse trunk line
- Water-use regulations are currently being implemented within the City. Any additional requirements for the regulations could be implemented and adopted by the City within a month.

CONSERVATION PRACTICES CURRENT AND FUTURE

The city’s current and future conservation plan will be described with the following subsections:

- A. Universal Metering
- B. Water Accounting and Loss Control
- C. Information and Education
- D. Water-Use Audits
- E. Retrofits
- F. Landscape Efficiency
- G. Replacement and Promotions
- H. Reuse and Recycling
- I. Water Regulation

CURRENT CONSERVATION PRACTICES

In order for the City of Eagle Mountain to help its population with water conservation the city has implemented numerous conservation measures. The city is also in the process of implementing a secondary water system measure to help address the problems identified with the current system. Because the city will experience rapid growth within the next few years the city has analyzed the current conservation plans. The City’s current implemented conservation

efforts are as follows:

A. UNIVERSAL METERING

- Source-water metering. The city is currently metering the source water that is serving the population of Eagle Mountain. Source metering is essential for water accounting purposes and water usage determination. The city has numerous metering devices on all of its storage system and on its wells to monitor daily and total flows.
- Service-connection metering. The city requires all existing development and future developments to install individual water metering devices to determine the amount of water the connections are using. This metering process is then used to determine the billing of the customer's usage.
- Fixed-interval meter reading. Eagle Mountain operates regular monthly individual meter readings of the customer's usage. The individual meter readings are then compared with the source meters to assist in the water usage amounts and to help determine potential problems within the system to further inform the customers of their water usage.

B. WATER ACCOUNTING AND LOSS CONTROL

- Analysis of unaccounted water. Unaccounted water is the discrepancy of the water from the individual meter to the source metered water usages. This analysis can then be used to determine the potential revenue-producing opportunities as well as the recoverable losses and leaks within the system.
- System audit. Periodic system audits are conducted by the city in order to determine the accuracy of the unaccounted waters.

C. INFORMATION AND EDUCATION

- Information available. The city has produced and continues to development an assortment of informational pamphlets to its customers. The education program helps to explain what water users can do to help in the conservation measures of the city. The information supplied informs the water users of the cost of supplying drinking water and demonstrate how water conservation practices will provide water users with long term savings.

D. WATER-USE AUDITS

- Large-landscape audits. Within the city the large landscape properties are audited for irrigation usage, application efficiency, and scheduling. Some of the properties that are audited are the parks, churches, high water use residents, and municipal properties. These audits are then used in conjunction with dedicated irrigation meters and other landscape efficiency practices.

E. PRESSURE MANAGEMENT

- Pressure-reducing valves. The city currently has pressure reducing valves within the city's water system and also requires pressure reducing valves on higher pressure homes. Technical assistance is given to customers to help address the higher pressures that are experienced by these homes.

F. LANDSCAPE EFFICIENCY

- Promotion of landscape efficiency. The city continuously promotes development of the new water conservancy principles into the planning, development, and management of new landscape projects such as the golf course, the existing parks, open space areas, and the municipalities' properties. The city also promotes future development to participate in the low water usage landscapes and xeriscape of the properties.
- Irrigation management. The city currently encourages the usage of irrigation metering, timing, and water sensing devices that promote low water usage in the large volume customer as well as the resident users.

G. WATER-USE REGULATION

- The ordinance prohibits outside watering between the hours of 10:00a.m. and 6:00p.m. First Offense Violators will be issued a letter warning them to comply with the Ordinance. Second Offense Violators will have their water service terminated and will be subject to a \$100.00 reconnection charge.
- The City ordinance 15-2004 regulates alternate day outdoor watering based upon the (odd/even) addresses of the water users. Violations of this ordinance shall be punished as stated above.
- The public is being encouraged to participate in a sprinkling system efficiency study sponsored by the state "Slow the Flow" program.

FUTURE CONSERVATION PLANS

Eagle Mountain City is aggressively pursuing the development of a more restrictive and effective conservation plan for the future water use practices. The city's plan is to implement the new program within the next 5-10 years and thus maintain its current low water usage. The city's plan on completing this goal is by implementing the following items of control.

A. UNIVERSAL METERING

- Metering accuracy analysis. It is the intent of the city to develop a program and time line schedule for the metering accuracy survey. Often times metering devices can be damaged deteriorate thus giving inaccurate readings regarding the water usage. The City has replaced approximately 100 meters over the last year.
- Meter testing, calibration, repair, and replacement. It also the intent of the city to develop a program to determine the accuracy of the metering system. The meters can be recalibrated on a regular basis to ensure accurate water according and billing.

B. INFORMATION AND EDUCATION

- Informative water bill. An informative water invoice goes well beyond the typical information used to calculate the bill based on water usage and rates. Comparison to previous bills and tips on how to conserve water usage will provide users to make informed decisions about their water usage.
- Water bill inserts. The city is including inserts in their customers' water bills that can provide information on water use and costs. Inserts also can be used to distribute tips for home water conservation.
- Public education program. Outreach methods include the use of operating booths at public events, to disperse pamphlets, videos, and other media to help educate the users through a civic organization.

C. WATER-USE AUDITS

- Audits of large-volume users. Water audits can begin by identifying the categories of

water use for the larger-volume users. The water audit can also identify areas in which overall water use efficiency can be improved through alternative technologies or practices.

- Selective end-use audits. Water audits can be widened to include selective audits by customer classes this class can focus on typical water use practices within each class. An audit program can be selective in terms of targeting customer groups that have particular needs for which water conservation would be particularly beneficial.

D. LANDSCAPE EFFICIENCY

- Landscape planning and renovation. Existing landscape within the city can be renovated with water conserving plans and practices. If the City was to require new developments and the large water users to adopt a drought tolerant planting requirement it would decrease the typical outdoor water use by 50%.
- Selective irrigation sub-metering. The city could install a sub-metering program in its larger water users to help the water user determine best conservation practices. The City has installed a 6" meter on the Ranches landscape.

E. REPLACEMENTS AND PROMOTIONS

- Promotion of new technologies. Demonstrations and pilot programs can be used to introduce and promote new products to be used within the city.

F. REUSE AND RECYCLING

- Large-volume irrigation applications. Reuse and recycling can be encouraged for large volume irrigation.
- Selective residential applications. Reuse and recycling programs can be used in the residential, municipal and large water users.

G. WATER-USE REGULATION

- Requirements for new developments. A regulation can be implemented to impose standards on new developments with regard to landscaping, drainage, and proper irrigation system design.

