

**RESOLUTION NO. R- 07 -2010**

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

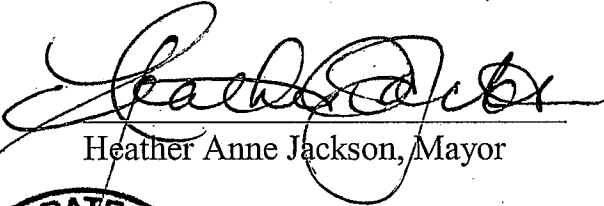
WHEREAS, the City Council of Eagle Mountain City, Utah finds that it is in the public interest to amend Resolution 21-2004 and reenact a Resolution stating the policy of the City with respect to water conservation planning; and

WHEREAS, the City Council intends to approve the *Water Conservation and Management Plan - 2010* 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 21-2004 is hereby amended and is adopted as set forth in Exhibit 1 as the Water Conservation Plan for Eagle Mountain City, Utah.

ADOPTED by the City Council of Eagle Mountain City, Utah, this 16<sup>th</sup> day of March, 2010.

EAGLE MOUNTAIN CITY, UTAH

  
\_\_\_\_\_  
Heather Anne Jackson, Mayor

ATTEST

  
\_\_\_\_\_  
Dionnuala B. Kofoed, City Recorder

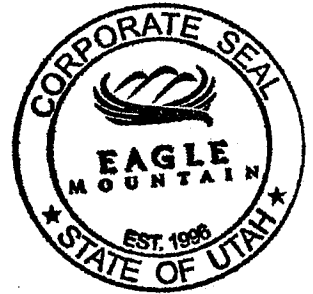


**CERTIFICATION**

The above resolution was adopted by the City Council of Eagle Mountain City on the day of March 14, 2010.

5 voting aye 0 voting nay

  
Fionnuala B. Kofoed, City Recorder

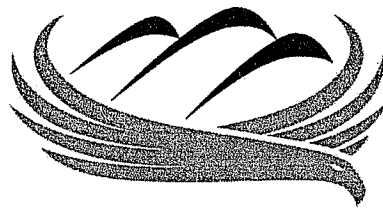


# **EXHIBIT**

## **1**

*EAGLE MOUNTAIN CITY, UTAH*

*Water Conservation and Management Plan*



**EAGLE**  
**MOUNTAIN**

March 2010

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# ***EAGLE MOUNTAIN CITY***

## **WATER CONSERVATION PLAN**

### **INTRODUCTION**

Water conservation in the state of Utah is quickly becoming an issue of utmost importance to both citizens and leaders. The year 2005 was the eighth straight year of precipitation deficit in Utah. In addition, 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, which passed the Water Conservation Plan Act (House Bill 153) in the 1999 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.

### **DESCRIPTION**

#### **Location**

Eagle Mountain City is located in 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 42 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 desert margin and the higher mountain regions. The average annual precipitation is 12.37 inches and the temperature varies with the season from below 36 degrees to 100 degrees F.

#### **Inventory of Water Resources**

Eagle Mountain City has water available from 5 wells. If each well were pumped at 80% of their pump capacity, the City would have the ability to produce 31.91 cfs or 23,104 acre-feet annually from these sources. Currently, the City has 9,485.44 acre-feet of water rights attributed to these five wells. Some of these water rights are banked with the City for future use and are not intended to be used for current residential, municipal, or institutional uses.

### **Amount of Parks and Open Land**

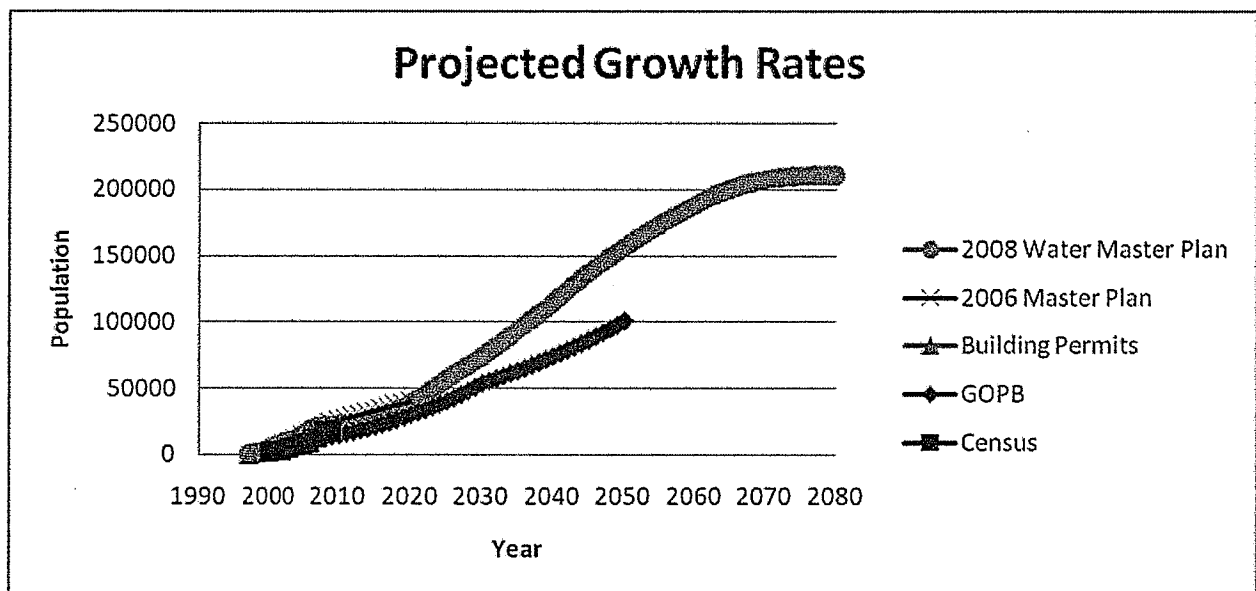
Maintaining open space continues to be high priority for residents and community leaders in Eagle Mountain. Currently, Eagle Mountain City maintains a total of 280 acres used for parks and improved open spaces.

## **DEMOGRAPHICS**

### **Current and Projected City Population**

Eagle Mountain City has based population projections on total utility connections, City surveys of household sizes, information from the Utah State Governors Office and Mountainlands Association of Governments, as well as a private study conducted in Black and Veatch. A model based on this information has been used to predict the City's 2009 population of approximately 21,508 residents. Estimated populations for 2015 and 2060 would be 37,405 and 188,377 respectively.

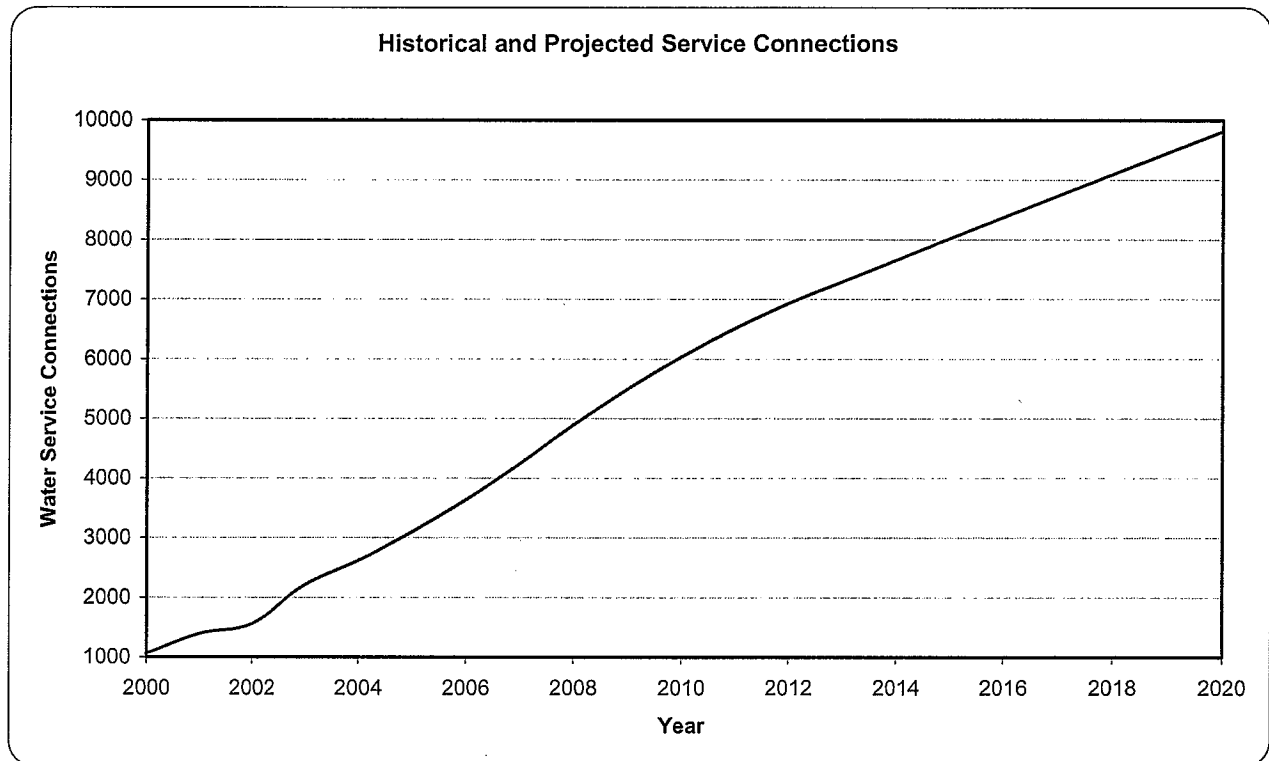
**Figure 1 – Projected Growth Rates**



## Current and Projected Water Requirement

As a result of the 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 2010 is approximately 5,443. **Figure 2** shows the projected water requirement in acre-feet as well as the total number of 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 required water rights needed to meet municipal demand in r 2010 is 4,129 acre-feet per year.

**Figure 2 – Historical and Projected Service Connections**



## 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 9,485 acre-feet of water already allocated to wells within the City, would bring the total volume of water available to Eagle Mountain City to 24,485 by the year 2020, as shown in Table 2 on the next page. However, the City would still have a deficiency of 10,777 acre-feet of water by the year 2060.



**Table 1 – Difference in Total Water Requirement and Total Water Available**

Year	Total Requirement (acre-ft)	Total Available (acre-ft)	Difference (acre-ft)
2003	1,672	4,662	2,990
2010	4,129	9,485	5,356
2020	7,206	24,485	17,279
2060	35,262	24,485	-10,777

**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.

**Political Problems**

- Political consequences may prevent Eagle Mountain’s water rates from keeping up with increasing costs.
- Current water pricing may not offer sufficient incentives or sufficient information for residents and businesses to effectively conserve water.

**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.

Eagle Mountain City is also beginning the process to study the feasibility to treat the wastewater effluent to a Type 1 standard which would allow the City to reuse this water for large scale industrial and recreational uses.

Table 3, on the next page , details the average daily per capita water consumption within Eagle Mountain. Please note that this average is well below the State average of 260 gpcd.

**Table 2 – Historical Average Daily Per Capita Water Consumption**

Year	Total Water Pumped (gallons)	Estimated City Population	Average Consumption (gpcd)
2001	345,366,678	6914	137
2002	418,837,898	8615	133
2003	577,783,065	10191	155
2004	668,819,244	11945	153
2005	698,254,679	14498	132
2006	867,390,000	18355	129
2007	1,113,637,000	20795	147
2008	1,213,822,175	21149	157
2009	1,242,406,000	21508	158

**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 ordinances. Fines of up to \$750 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.

**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 includes 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 watering lawn during windy periods.
- Increase days between watering lawn. 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. The following tables provide the current prices for culinary and secondary water use.

**Table 3 – Culinary Water Rates**

<b>Base Rate</b>	<b>\$20.00</b>
Every 1,000 gallons	\$0.80 per 1,000 gallons

**CONSERVATION GOALS**

Eagle Mountain City has instituted various methods of promoting and maintaining water conservation. These methods, in addition to existing conservation practices will help the city maintain a reduced water usage within the community. The City understands that to maintain the existing water use, the City will have to make conservation goals for future planning.

## **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 Works Department will be responsible for the implementation and enforcement of the water conservation policies within the City.
- The City's staff, Public Works Board 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 within the month.
- Landscape Efficiency will be implemented within the next 1½ months as the construction of a 6" Ranches water meter is being constructed and is operational.
- Reuse and recycling is the water conservation measure that is 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 is expected to continue to grow for the next several 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 nonaccounted water. Nonaccount 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 nonaccount waters.

#### C. INFORMATION AND EDUCATION

- Information available. The city has produced and continues to development an assortment of informational pamphlets to it's 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 cities 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 the these homes.

#### F. LANDSCAPE EFFICIENCY

- Promotion of landscape efficiency. The city currently 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 landscape's and xeriscape of the properties.
- Irrigation management. The city currently requires that 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

- Water use standards and regulations. The city has implanted and is currently requiring specific water regulations during droughts or other water emergencies.

## 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 preplaced approximately 400 meters over the last two years.
- 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 planning on 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.
- Workshops. The city would implement education course and training classes to individuals such as plumbers, plumbing fixture suppliers, and builders in order to educate and instruct those involved with the installation of the customers water usage.

### 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 is in the process of installing a 6" meter on the Ranches landscape and golf course one of the largest water users in the City.

#### 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.