



FAIRVIEW CITY
WATER MANAGEMENT & CONVERSATION PLAN

December 2015

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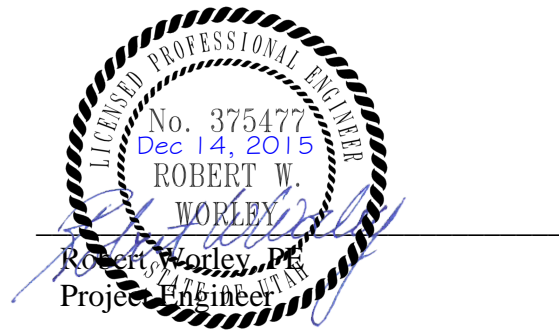
December 2015

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FAIRVIEW CITY WATER MANAGEMENT AND CONSERVATION PLAN-2015

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1.0 INTRODUCTION

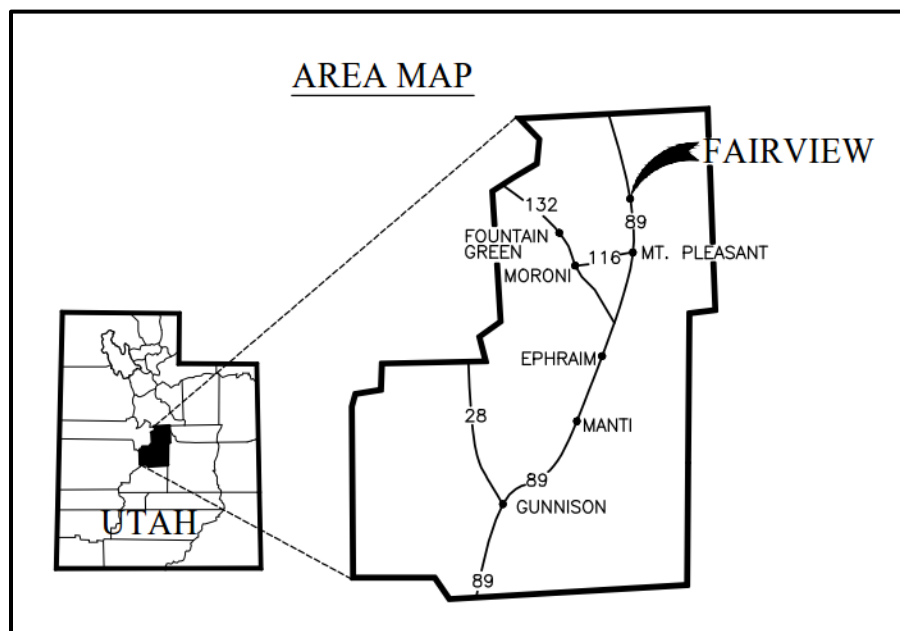
Fairview City has become increasingly concerned about the future cost and/or availability of a finite supply of water in the surrounding area. Concerns about statewide water supplies have been demonstrated by the State Legislature through passage of the Water Conservation Plan Act (House Bill 71) revised in the 2004 legislative session (Section 73-10-32 Utah Code Annotated).

This document constitutes the water conservation plan for Fairview City. It is intended to address the concerns of both Fairview City and the State of Utah while in compliance with the State of Utah Water Conservation Plan Act.

2.0 BACKGROUND INFORMATION

Fairview City is located in Sanpete County, approximately 45 miles south of Provo, along historic Highway 89. The Fairview City culinary water system provides water to approximately 1,343 residents, in addition to several commercial and agricultural facilities. The culinary water system supplies water for both indoor and outdoor use, although a secondary water system is also available to most of the residences in Fairview. A map of the area is shown below in Figure 2.1:

Figure 2.1: Area Map of Fairview



Fairview City leaders have recognized that the water needs of the community are a top priority. As a result, the City is in the process of funding and constructing a water project to improve its water system. They understand that a well-maintained and properly operated water system provides citizens with water where and when it is needed.

Fairview City has commissioned Sunrise Engineering, Inc. to complete an update to their water management and conservation plan. The intent of this plan is to implement better management practices and conservation efforts which will aid in maintaining and conserving their water resources for many years to come.

Fairview City understands the critical nature of maintaining and conserving their water resources in order to meet the water needs of their customers. As a result, the protection and maintenance of the City's water sources and distribution system is a top priority that is critical to providing the continuous water supply that the customers depend on.

Currently, there is no formal Water Conservation Coordinator for the City. Fairview City is a small community, and it would be an economic burden to add additional staff; therefore, any conservation coordination will be accomplished by existing City Council members and the water system operator.

2.1 CULINARY WATER CONNECTIONS

Fairview City currently provides 579 connections to the culinary water system. This includes 534 residential connections, 36 commercial connections, and 9 agricultural connections. Additionally, there are four locations with open irrigated lands, including the rodeo grounds lawn, the Fairview Elementary School lawn, the ball fields, and the City Park. Secondary irrigation may be available for use at some or all of these locations; however, the City continues to maintain the option to utilize culinary water on these areas as well.

3.0 EXISTING RESOURCES

3.1 Existing Water Rights

The water rights owned by Fairview City for culinary water use are shown below in Table 3.1.1.

Table 3.1.1: Fairview City Water Right Summary

Fairview City Culinary Water Rights			
	W.R. #	Source Type	Ac-ft
1	65-3044	Springs	723.97
2	65-281	Underground	687.78
3	65-1660	Underground	1119.27
Total			2531.02

It should be noted that Table 3.1.1 represents a cursory review of the water rights on record with the Utah Division of Water Rights.

3.2 Existing Sources

The culinary water system for Fairview City is fed by wells and springs. The City's springs are approximately 3 miles to the east of Fairview in Fairview Canyon adjacent to Cottonwood Creek.

The two main springs are Upper Tollgate Spring and Lower Tollgate Spring. The springs currently produce approximately 65 gpm, although the flow has decreased over the years.

In addition to the springs, the City has two main wells. Well #1 is located adjacent to the lower tank, and pumps reliably at 400 gpm. Well #2 is located in the southeast quadrant of town below the upper tank, and pumps at a maximum of 200 gpm, with rapid drawdown. Due to the drawdown of Well #2, the current safe yield of Well #2 is considered to be 130 gpm. The total source capacity is 595 gpm.

4.0 CURRENT AND FUTURE WATER USE

4.1 Projected Growth Rates

The 1970 Census population for Fairview City was 696. During the 2010 Census, it was determined that the population was 1,247. The average annual growth rate between the years 1970 and 2010 was 1.47%. The Utah Governor's Office of Planning and Budget projects that Fairview City's annual growth rate through 2020 will be 1.29%. As significant growth continues to push out into the rural areas surrounding the Wasatch Front, it is reasonable to assume that Fairview will continue to grow at its recent historic growth rate or even at a slightly higher growth rate. Therefore, the population growth rate used for this plan is 1.50%.

Table 4.1.1 should the projected population for Fairview City using an annual growth rate of 1.50%.

Table 4.1.1 Fairview City 20 Year Population Projection

Year	Projected Population
2015	1,343
2020	1,447
2025	1,559
2030	1,680
2035	1,809

4.2 Equivalent Residential Connections (ERC's)

There are currently 579 connections on the culinary water system. This includes 534 residential connections, 36 commercial connections, and 9 agricultural connections.

In this plan, reference will be made to Equivalent Residential Connections (ERC's). One ERC is defined as the amount of culinary water required by an average residential connection. In accordance with the Division of Drinking Water's standards, an average residential connection is expected to use 400 gallons per day for indoor use, or approximately 12,000 gallons per month. Based on the records, the current system ERC's are as follows:

Table 4.2.1: ERC Equivalents per Connection Category

Current ERC's				
Category	Conn.	ERC/Conn.	Irr. Acres	Total ERC's
Residential	534	1		534
Commercial	36	1		36
Ag	9	1		9
Parks & Cemeteries			10.5	0
Total				579

The number of culinary water ERC's expected at the end of the planning period can be calculated using the compound interest formula and inserting the projected growth rate, the existing number of culinary water ERC's, and the 20 year planning period for culinary water improvements.

The projected number of ERC's for the 20 year planning period is calculated using the compound interest formula as follows: $F = \text{Connections} \times (1 + \text{rate})^{20 \text{ years}}$ where F is the projected number of connections and the rate of growth is 1.50% per year.

$$\text{Total ERC's: } F = 579 \text{ ERC's} \times (1 + 0.015)^{20} = 780 \text{ ERC's}$$

4.3 Present Water Usage and Future Water Needs

The actual billing summary for April 2013 to April 2014 showed that a total of 40,060,176 gallons were metered during this period. This equates to an average daily use of 129,192 gallons, or 218 gallons per ERC. The average daily per capita culinary water use is therefore 94 gpcd. It is estimated that 25% of Fairview City residential connections, and 33% of commercial connections use culinary water for irrigation purposes. Fairview City's annual usage (not including outdoor water provided by a private irrigation company) is summarized in Table 4.3.1.

Table 4.3. 1 Fairview City Annual Water Usage

Fairview City Water Usage (in Gallons)				
Year	Residential	Agricultural	Commercial	Total
April 2013 to April 2014	41,659,905	528,990	3,871,281	46,060,176
1 Year Total				46,060,176
Ave Daily Use				126,192
Gal/ERC/Day				218
Gal/Capita/Day				94

As part of the Fairview City Culinary Water Master Plan 2015, Sunrise Engineering calculated the current required amount of water rights for Fairview City water system based on the requirements stated in the Rules Governing Public Drinking Water Systems. The required water rights represent the average annual demand on the system using the States recommended quantities for indoor use (400 gal/ERC/day) and outdoor use (1.66 ac-ft/irrigated acre). The calculated water right requirement is 337 ac-ft or approximately 109.8 Million gal/year.

Fairview City is using approximately 63.8 Million gallons less than the estimated average annual demand using the State's values for indoor and outdoor usage.

The projected number of ERC's at the end of the 20 year study period is 780. If the water usage per ERC remains the same at 218 gal/ERC/day, the total system water usage in 20 years will be 170,040 gal/day, or 62 Million gal/year. In comparison, the 20 year projected annual system water demand using the State's estimated values for indoor and outdoor water use would be 448 ac-ft, or 146 Million gal/year. Fairview City would be using approximately 84 Million gallons less than the estimated average annual demand using the State's values for indoor and outdoor usage.

4.4 Water Budget

Fairview City's culinary water system is currently supplied by Upper Tollgate and Lower Tollgate Springs, in conjunction with Well #1 and Well #2. Fairview City's water rights related to culinary water from these aforementioned sources are 595 gpm, or 960.4 ac-ft. As noted in Section 4.3, the total annual water usage for the period of April 2013 to April 2014 was of 40,060,176 gallons, or 122.9 ac-ft/year. This presents a current surplus of 837.5 ac-ft/year.

5.0 WATER PROBLEMS, CONSERVATION GOALS, AND SOLUTIONS

5.1 Problems Identified

- Upper and Lower Tollgate Springs are currently overgrown with vegetation, and the spring collection boxes and piping are in a deteriorated state and are losing water. The amount of water currently being lost between the spring collection boxes and the green steel tank cannot currently be quantified. Crews recently discovered and repaired a leak in the spring line where a coupling had been pulled apart for an undetermined period of time. The leak was covered by undergrowth. The spring pipelines are very old, and it is recommended that the springs be redeveloped and the piping replaced.
- It is difficult to regulate the level in the green steel storage tank, and it frequently overflows to the creek. It is recommended that a check valve and an altitude control be installed downstream of the tank.
- Old 10" line from the Elementary School to 200 W is in need of replacement. This line has frequent ruptures results in repetitive significant water losses.
- Older service water meters need to be replaced using a full radio read system which will allow year round meter reading.

5.2 Conservation Goals and Solutions

In light of the problems identified above, Fairview City has set an ambitious goal to reduce the amount of water used in Fairview City by 10 % per person over the next 10 years. Fairview City believes that this goal can be achieved by following the steps listed below:

In order to meet this goal, Fairview City will implement the following measures:

1. Fairview City is preparing for a culinary water project that will repair the spring collection boxes and replace the old spring pipeline so water is no longer lost from the supply. The project will also correct water level control system for the green steel storage tank, replace the failing 10 inch pipeline, and convert the system to full radio read meter capability. Construction of all improvements should begin in 2017. The planned improvements are being made with conservation in mind.
2. Where feasible, Fairview City will take steps to control the amount of water applied to green areas in the city to more closely match recommended levels. Improved irrigation practices and water efficient landscapes can enhance the beauty of the City. When landscapes are upgraded the City will make an effort to make them more water efficient. These practices will set an example of conservation for citizens, and reduce the total amount of water used by the City.
3. Currently in Fairview, water meters cannot be read during the winter months due to snow and ice conditions. As part of the water project, Fairview City will upgrade their meter system so that all meters are newer more accurate radio read meters. The radio read system will reduce costs and improve efficiency of reading meters and it will allow reading of meters year round. Accurate meters reading water use year round will encourage citizens to conserve water.
4. Initiate a public education program. Water use during recent drought years, was generally down and efforts toward more efficient use have been observed. This may be a reflection of the ongoing statewide water conservation and education program over the past several years.

Fairview City will support state and local water education programs in local schools. It is expected that as time passes young adult citizens that have been continuously exposed to statewide "Slow the Flow" advertising during their school years will continue to become more aware of the need to conserve water, and act accordingly.

Fairview City will occasionally send inexpensive periodic public education flyers. It is believed that if people receive enough exposure to water conservation messages through statewide and local programs, they will subconsciously improve their water conservation habits.

5. Fairview City will continue to maintain a financially stable water system with conservation in mind. The City will monitor and track the rates charged to ensure that the water system is operated responsibly. As rate increases are required, overage tiers that penalize excessive use will be targeted first, rather than simple base rate increases.
6. Fairview City currently has a membrane wastewater treatment plant that produces Type 1 wastewater that can be reused in the City. However at the current time, the cost to install

the appropriate infrastructure to allow the reuse is beyond the City's budget. Fairview will revisit this option on a regular basis and when it becomes feasible, the City will take steps to reuse its wastewater where possible. It is expected that more and better funding may someday become available to help defray the costs for reuse systems.

7. With the new radio read system in place, Fairview should monitor use patterns. The metering software will be set up provide an alert where there are potential leaks, so that the property owners can be notified to fix the leaks, if applicable.
8. Fairview City and the local irrigation companies have policies that prohibit general waste of water and/or set time of day watering restrictions as necessary in the local area. There is no ability to store irrigation water coming into Fairview at this time. General waste of water is any practice that allows the water to run in one place over an extended period of time. Landscape irrigation during the hottest part of the day, from 10:00 am to 6:00 pm is not allowed when water supplies run short. Punishment for violations are established by the Council and or the irrigation companies and are generally in line with State guidelines.
9. Fairview has established emergency water conservation and contingency plans. The water conservation contingency plan for implementation due to severe drought or other emergency system supply shortages is outlined in 6.0 below

5.3 Education Program Information

The following information on efficient outdoor and indoor water use will be circulated periodically as a one-page conservation mailing (also included in Appendix A).

Efficient Outdoor Water Use:

- Water landscape only as much as required by the type of landscape, and the specific weather patterns of your area, including cutting back on watering times in the spring and fall.
- Do not water on hot, sunny, and/or windy days. You may actually end up doing more harm than good to your landscape, as well as wasting a significant amount of water.
- Sweep sidewalks and driveways instead of using the hose to clean them off.
- Wash your car from a bucket of soapy (biodegradable) water and rinse while parked on or near the grass or landscape so that all the water running off goes to beneficial use instead of running down the gutter to waste.
- Check for and repair leaks in all pipes, hoses, faucets, couplings, valves, etc. Verify there are no leaks by turning everything off and checking your water meter to see if it is still running. Some underground leaks may not be visible due to draining off into storm drains, ditches, or traveling outside your property.

- Use mulch around trees and shrubs, as well as in your garden to retain as much moisture as possible. Areas with drip systems will use much less water, particularly during hot, dry and windy conditions.
- Keep your lawn trimmed and all other landscaped areas free of weeds to reduce overall water needs of your yard.

Efficient Indoor Water Use:

- About two-thirds of the total water used in a household is used in the bathroom. Concentrate on reducing your bathroom use. Following are suggestions for this specific area:
 - Do not use your toilet as a wastebasket. Put all tissues, wrappers, diapers, cigarette butts, etc. in the trashcan.
 - Check the toilet for leaks. Is the water level too high? Put a few drops of food coloring in the tank. If the bowl water becomes colored without flushing, there is a leak.
 - If you do not have a low volume flush toilet, put a plastic bottle full of sand and water to reduce the amount of water used per flush. However, be careful not to over conserve to the point of having to flush twice to make the toilet work. Also, be sure the containers used do not interfere with the flushing mechanism.
 - Install low flow fixtures your faucets and shower heads. During a 4 minute shower 20 gallons of water can be conserved by simply using a low flow head.
- When getting a drink, cool water with ice cubes or cool water in the refrigerator in jug with a lid, instead of letting the tap run until cool water comes out.
- When using a dishwasher or laundry washer, make sure you wash full loads. If the washer adjusts water level, reduce water levels for smaller loads.

6.0 CULINARY WATER CONSERVATION CONTINGENCY PLAN

The following water conservation contingency plan is adopted as part of this plan:

Level 1 – Normal Years – In this condition there is currently plenty of culinary and irrigation water available for normal purposes.

- Eliminate watering on City property between the hours of 10 am and 6 pm.
- Encourage voluntary public water conservation measures (i.e. only watering during the cooler parts of the day).

- Mail information on conservation measures, which can be used outside as well as inside.

Level 2 - 75% of Normal Required Supply – In this condition, it is difficult to keep the culinary water tanks full during the daylight hours if people are using culinary water for outdoor purposes.

- Eliminate watering of City property.
- Educate the public about the water supply shortage and request cooperation using local public service radio announcements and local newspapers.
- Consider enactment of stiff emergency rate increases on overage tiers to curtail outdoor watering, without driving commercial customers out of business.
- Enact mandatory public conservation measures.
- Enforce outside watering restrictions, including watering times and quantities.

Level 3 - 50% or Less of Normal Required Supply – In this condition, it is difficult to maintain culinary tank levels during the full 24 hour day.

- Warn the public about water supply shortage and request continued cooperation using local public service radio announcements, local newspapers advertisements, and posted public flyers.
- Enact stiff emergency rate increases on overage tiers to further curtail outdoor watering, without driving commercial customers out of business.
- Strictly enforce all conservation policies with stiff fines for non-compliance.
- Physically restrict water supplies to (in order of priority):
 1. All outside irrigation systems.
 2. Parks and other non-essential support facilities.
 3. Commercial users, restricting the largest, non-animal life support users first.
 4. Residential areas
 5. Commercial animal life support users.
 6. Any other non-life support areas, insuring water supplies to hospitals, hospices, and all other health care facilities, and controlled designated area water facilities.

7.0 IMPLEMENTING AND UPDATING THE WATER CONSERVATION PLAN

This water conservation plan shall be adopted by the Fairview City Council by ordinance. A water conservation committee should be established with committee membership appointed by the City Council. The water conservation committee shall have responsibility to coordinate the water conservation program goals for the City, coordinate and enhance the education program, and to make regular reports to the Council. All committee members, council members, city staff, and members of the general public have the duty and responsibility to report general waste of water, and to conserve water wherever possible.

This Water Management and Conservation Plan will be revised and updated as required to meet changing conditions and needs. The ordaining ordinance for the Water Conservation Plan is attached as Appendix B.

APPENDIX A

FAIRVIEW CITY WATER CONSERVATION MESSAGE

FAIRVIEW CITY WATER CONSERVATION MESSAGE

EFFICIENT OUTDOOR WATER USE:

- Water landscape only as much as required by the type of landscape, and the specific weather patterns of our area, including cutting back on watering times in the spring and fall.
- Do not water on hot, sunny, and/or windy days. You may actually end up doing more harm than good to your landscape, as well as wasting a significant amount of water.
- Sweep sidewalks and driveways instead of using the hose to clean them off.
- Wash your car from a bucket of soapy (biodegradable) water and rinse while parked on or near the grass or landscape so that all the water running off goes to beneficial use instead of running to waste.
- Check for the repair leaks in all pipes, hoses, faucets, couplings, valves, etc. Verify there are no leaks by turning everything off and checking your water meter to see if it is still running. Some underground leaks may not be visible on the surface.
- Use mulch around trees and shrubs, as well as in your garden to retain as much moisture as possible. Where practical, areas with drip systems will use much less water, particularly during hot, dry and windy conditions.
- Keep your lawn well-trimmed and all other landscaped areas free of weeds to reduce overall water needs of your yard.

EFFICIENT INDOOR WATER USE:

- About two-thirds of the total water used in a household is used in the bathroom. Concentrate on reducing your bathroom use. Following are suggestions for this specific area:
 - Do not use your toilet as a wastebasket. Put all tissues, wrappers, diapers, cigarette butts, etc. in the trashcan.
 - Check the toilet for leaks. Is the water level too high? Put a few drops of food coloring in the tank. If the bowl water becomes colored without flushing, there is a leak.
 - If you do not have a low volume flush toilet, put a plastic bottle full of sand and water to reduce the amount of water used per flush. However, be careful not to over conserve to the point of having to flush twice to make the toilet work. Also, be sure the containers used do not interfere with the flushing mechanism.
 - Install low flow fixtures your faucets and shower heads. During a 4 minute shower 20 gallons of water can be conserved by simply using a low flow head.
- Catch and reuse wasted “gray” water for beneficial use on lawns and plants outside. When washing hands or rinsing vegetables, catch water in a basin then reuse on lawns or plants outside.
- When getting a drink, cool water with ice cubes or cool water in the refrigerator in jug with a lid, instead of letting the tap run until cool water comes out.
- When using a dishwasher or laundry washer, make sure you wash full loads. If the washer adjusts water level, reduce water levels for smaller loads.

APPENDIX B

WATER MANAGEMENT AND CONSERVATION PLAN ORDAINING ORDINACE

WATER CONSERVATION PLAN ORDINANCE

FAIRVIEW CITY

A Municipal Corporation

ORDINANCE NUMBER _____

AN ORDINANCE AMENDING PROVISION OF THE FAIRVIEW CITY MUNICIPAL CODE
PERTAINING TO THE ADOPTION OF A WATER CONSERVATION PLAN

Section 1 Preamble

- A. WHEREAS, Fairview City operates a culinary water system; and
- B. WHEREAS, the City Council understands the need to use water in a more efficient manner to allow for future sustained growth of the community.

Section 2 Ordaining Clause

NOW, THEREFORE, IT IS ORDAINED BY THE CITY COUNCIL OF FAIRVIEW CITY, UTAH:

Section _____ Subsection _____ of the Fairview City Municipal Code is hereby to read as follows:

Section 3 Water Conservation Plan

The Water Management and Conservation plan of Fairview City, is hereby adopted effective this _____ day of _____ 20____. The plan will be amended not less than every five years, or as required by the State of Utah, and will continue to play a vital role in the future development of Fairview City, Utah.

SIGNED:

Jeff Cox, Mayor		Clifford Wheeler, Council Member
Bawb Nielson, Council Member		Kenny Cox, Council Member
Cody Church, Council Member		Casey Anderson, Council Member



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