

CITY OF FORT LUPTON WATER CONSERVATION PLAN

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Prepared by:



*clear***WATER**solutions
water rights • planning • engineering



Clear Water Solutions, Inc.
8010 South County Road 5, Suite 105
Windsor, CO 80528

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CHAPTER 1 – INTRODUCTION

The City of Fort Lupton is located east of the South Platte River along Highway 85. The City's municipal drinking water was historically supplied from alluvial wells. This well water was used for domestic use as well as irrigation of parks and open space areas. In early 1997, the City shifted its water supply from well water to Colorado Big Thompson (CBT) water when it constructed a 3-million-gallon-per-day (MGD) water treatment plant (WTP). The Town of Hudson participated in 1/6th of this WTP construction. In 2001, the City expanded the WTP to a capacity of 5 MGD. Hudson did not participate in the enlargement.

The City encountered a unique water quality problem when it transitioned to CBT water. The well water that was historically delivered through the pipe distribution system had high hardness levels. As a result, this caused a build up of minerals along the pipe walls. When the City changed to the much softer CBT supply in 1997, the softer mountain water caused the historic build up of mineral deposits to begin to permeate back into the water supply, thus impacting water quality. From 1997 through the summer of 2005, the City blended sufficient well water with the CBT to maintain an acceptable level of hardness in the finished water supply to prevent this from occurring. The City performed a water quality study in 2005 and ceased the use of groundwater for blending in June 2005. The City is now adding minimal levels of Zinc Phosphate into the mountain water supply to keep the build up intact while providing an improved water supply to its constituents. As the City replaces outdated infrastructure within its distribution system in the future, the use of Zinc Phosphate will reduce and eventually be eliminated. The City continues to use its wells for non-potable irrigation of its parks, schools, open space areas, and its golf course. It also supplies a local power plant (Thermo) with well water.

The Thermo Power Plant is operated by Thermo Cogeneration Partnership and was annexed into the City in 1994. Thermo provides electric power through Public Service throughout the State of Colorado. Thermo uses City well water for cooling of its electric generators. A portion of the water delivered to Thermo is also delivered to the Colorado Greenhouse (CGH) facility to grow vegetables. The total non-potable use from Thermo and CGH nearly equals the City's total potable water use.

Like other Front Range cities, Fort Lupton is slated for significant growth. The need to provide water to meet this growth, coupled with the fact that water is becoming less available and more expensive with time, adds new water challenges for the City. The City recognizes the importance of water conservation and doing its part to preserve water supplies in the region for future generations. Since the City uses mountain water and well water, water conservation for Fort Lupton means potential benefits to both the potable and non-potable supplies. Reduction in well water usage also reduces augmentation

costs, another benefit to conserve water use. In order for the City to be successful in water conservation, the citizens of Fort Lupton must be involved through education and participation. This report will outline the planned conservation measures and programs with sufficient input from City Council, City staff and the public, so the City can reach its water conservation goals.

CHAPTER 2 – DEFINITION OF TERMS

<i>Acre-foot:</i>	The amount of water it would take to cover one acre of land to a depth of one foot; approximately 325,851 gallons.
<i>Augmentation:</i>	One-for-one replacement of water to the stream system for groundwater that is consumptively used. The City's well pumping requires augmentation.
<i>Consumptive Use:</i>	Water that is consumed and not returned to the stream system.
<i>Effluent Percentage:</i>	The percentage of water delivered through the WTP that eventually shows up at the wastewater treatment plant (WWTP).
<i>Maximum Day:</i>	The largest amount of water used in a single day.
<i>Peak Hour:</i>	The largest amount of water used in a single hour – typically occurs on the Maximum Day.
<i>Potable Use:</i>	Water that is treated to drinking water standards for municipal use, including residential and commercial use. The City's CBT and Windy Gap water is used for potable use.
<i>Non-Potable Use:</i>	Water that is not treated and either used for irrigation or other uses than potable, i.e. Thermo and City parks and open spaces. The City's well water is used for non-potable use.
<i>Return Flows:</i>	A portion of a water right that was historically used for irrigation that was not consumed by the crops and made its way back to the river system as surface water and groundwater. The City's Fulton Ditch water came from irrigated lands that have associated return flows from the historic irrigation practices.
<i>SFE:</i>	Single Family Equivalent – the amount of water used in a typical single-family home.

CHAPTER 3 – PROFILE EXISTING WATER SYSTEM

Physical Characteristics of the Existing Water System

Figure 3.1 shows the location of the City and its major water facilities.

Potable Water System

The City of Fort Lupton serves approximately 7,200 people over an area of six square miles. The City receives its CBT and Windy Gap water from Carter Lake through a 20-inch pipeline that flows south from the Town of Platteville. Water from the CBT system is treated in the City's WTP. Once treated, the water is delivered to both the Town of Hudson and the City of Fort Lupton. Fort Lupton residents are fed potable water via a 3-MG storage tank and subsequently two 1-MG water tanks (a.k.a the Tank Farm) located on College Avenue, just west of Aims Community College. The water is distributed from this Tank Farm to the City's customers. In 2006, the WTP had an average-day demand of 1.3 MGD and a maximum-day demand of 2.9 MGD.

Non-Potable Water System

The City currently uses five alluvial wells connected through a manifold system to fill the third 1-MG tank at the tank farm with well water. Water from this 1-MG tank is used for two separate and distinct purposes: 1) to irrigate portions of the golf course and City open spaces and 2) to deliver water to the Thermo Power Plant and CGH.

The City has a sixth well, located on the west side of the river, that is used to irrigate Pearson Park and for minor water uses within the WWTP. This well operates separately from the five wells on the manifold.

The Fulton Ditch flows north through the City. Currently, the City uses its Fulton water to irrigate the golf course and cemetery. The City's Fulton water is also routed back to the South Platte River for augmentation of the City's well use.

Water Distribution System

Fort Lupton currently has approximately 47 miles of water distribution mains as shown in Table 3.1. These mains run from the WTP down to and throughout the City. In terms of factors that affect the long-term reliability and adequacy of the piping system, the mains can be broken down into two very broad categories – lines constructed prior to the mid-1970's and lines installed subsequent to the mid-1970's. The older lines have shown significant problems with tuberculation or deposition of minerals from the pre-1997 well water system. In practice, these