Left Hand Water District

May 22, 2015

Mr. Ben Wade, CWCB
1313 Sherman Street, Room 721
Denver, CO 80203

RE: Left Hand Water District Municipal Water Efficiency Plan Update

Dear Mr. Wade:

Left Hand Water District would like to submit a locally adopted Municipal Water Efficiency Plan update for review and approval by the Colorado Water Conservation Board's Office of Water Conservation and Drought Planning. This letter is also intended to meet the Cover Letter Submittal Requirements for CWCB review.

Name and contact information:

Left Hand Water District
Attn: Christopher Smith, P.E., General Manager
PO Box 210
Niwot, CO 80544-0210
T: (303) 530-4200
F: (303) 530-5252

List of organizations and individuals that assisted in plan development:

Clear Water Solutions, Inc.
Michelle Hatcher and Steve Nguyen

Quantity of retail water delivery and population for past five years:

Table 1: Water Demand by Customer Category

Customer Category	2009	2010	2011	2012	2013	*Average*
	Values in AF unless otherwise stated					
Residential	2,654	2,848	2,943	3,360	2,695	***2,900***
Commercial	369	397	438	487	446	***427***
Multi Housing	48	52	55	60	61	***55***
Dual System	53	57	58	86	84	***68***
Landscape	79	79	88	96	95	***87***
Master Meter Community	190	209	200	179	166	***189***
Master Fire Meters	0.2	0.1	0.5	0.1	0.6	***0.3***
Hydrant Meters	11	7	58	41	19	***27***
Total	3,404	3,649	3,841	4,308	3,568	***3,754***
Total Population	18,678	18,776	18,892	19,054	19,258	
Residential GPCD	141.0	150.7	154.1	172.5	139.7	***151.6***
Total GPCD	**162.7**	**173.5**	**181.5**	**201.3**	**165.4**	***176.9***

Table 2: Left Hand Water District Population

Year	Population	Growth Rate
2009	18,678	0.6%
2010	18,776	0.5%
2011	18,892	0.6%
2012	19,054	0.9%
2013	19,258	1.1%
2014	19,380	0.6%
2015	19,979	3.1%
2016	20,578	3.0%
2017	21,177	2.9%
2018	21,776	2.8%
2019	22,375	2.8%
2020	22,973	2.7%
2021	23,572	2.6%
2022	24,171	2.5%
2023	24,770	2.5%
2024	25,369	2.4%

Public review and comment information:

Left Hand Water District held its public-review period from February 26, 2015 to April 27, 2015. Notification was posted in the Longmont Times-Call on March 1, 2015 announcing the public review timeframe and that a draft plan would be available for the public to review at the Left Hand Water District main office. The draft plan was also posted on the Left Hand Water District website on February 26, 2015. During the public review period the District received one set of comments on the Water Efficiency Plan update; those comments were addressed within the report.

The District is pleased with the Municipal Water Efficiency Plan update that has been developed and will commit the resources necessary, as they become available, for the implementation of the plan.

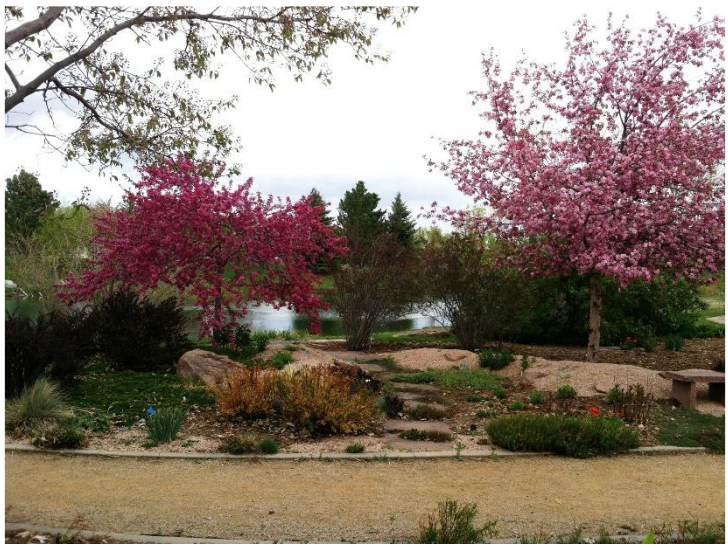
Please let me know if you have any further requirements.

Sincerely,

Left Hand Water District
Christopher Smith, P.E.
General Manager

LEFT HAND WATER DISTRICT

2015 MUNICIPAL WATER EFFICIENCY PLAN UPDATE



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EXECUTIVE SUMMARY

Left Hand Water District (District *or* LHWD) is located approximately 25 miles north of Denver along the Colorado Front Range. The District currently provides treated water to approximately 19,400 people. Although the area was characterized as generally rural 50 years ago, in the last two decades, LHWD has seen portions of its service area rapidly transform into more urban-type development.

Left Hand Water District has developed a Municipal Water Efficiency Plan (Plan) update in accordance with the Water Conservation Act of 2004 and to meet the provisions of Colorado Revised Statute section 37-60-126. As part of CRS 37-60-126, a State-approved Plan will qualify the District for continued funding from the Colorado Water Conservation Board (CWCB) and the Colorado Water Resources and Power Development Authority for water supply and delivery projects. LHWD has made a number of efforts in the last 20 years to improve their water use efficiency and have implemented a number of steps and programs throughout that time. The District looks forward to its continued partnership with CWCB and the state to continuously improve its efficiency and conservation efforts.

The District relies on two sources of water, shares of capital stock in the Left Hand Ditch Company (LHDC) and the Colorado-Big Thompson (C-BT) Project. The District produces treated water at two water treatment plants (WTP), the Spurgeon WTP and the Alva Dodd WTP. The District's distribution system also includes eight treated water storage tanks, six primary pressure zones, eleven pump/booster stations, and over 275 miles of pipelines.

In 2013, LHWD's customers utilized approximately 3,570 acre-feet (AF) of treated water. The District is expected to increase its annual water demand through new growth to approximately 7,060 AF of treated water (or 7,890 AF of raw water) over the planning period which extends to 2024. Water savings from this water conservation planning effort is estimated to save 6,530 acre-feet over the planning period. The savings from this planning effort will make a considerable contribution toward the water supplies needed to serve the 2024 demand.

This report documents LHWD's water system, past and future water use, and the water efficiency planning process used in accordance with CWCB's Municipal Water Efficiency Plan Guidance Document.

Past and Current Water Efficiency Activities

LHWD has implemented a variety of water efficiency activities since 1995/96 when the first Water Conservation Plan was prepared. In a more recent update,

the 2008 Water Conservation Plan implemented additional activities. The water efficiency activities that have been historically implemented are shown in **Table ES-1**.

Table ES-1: LHWD's Existing and On-going Water Efficiency Activities

Selected Water Efficiency Activities	Historical Period of Implementation
Foundational Activities	
Meter Testing and Replacement/Meter Upgrades	*2008 - present*
Identify Unmetered/Unbilled Treated Water Uses	*2000 - present*
Water Efficiency Rate Structure with Regular Updates to Rate Study	*1985 - present*
Leak Detection and Repair (Enhanced in 2011)	*1996 - present*
Leak Detection Program in Mobile Home Parks	*2011*
Tap Fees with Water Use Efficiency Incentives (smaller lots)	*2005 - present*
Water Line Replacement Program	*1998 - present*
Recycling WTP Filter Backwash	*2011 - present*
Master Plans/Water Supply Plans	*1996 - present*
Targeted Technical Assistance and Incentives	
Slow the Flow Commercial and Residential Irrigation Audits	*2009 - present*
Rebate for Low-Flow Toilets	*2009 - present*
Water Efficient Washing Machine Rebates	*2009 - present*
Rebate for ET Irrigation System Controllers	*2011 - present*
Ordinances and Regulations	
Time of Day Watering Restriction	*1994 - present*
Education Activities	
Combined Educational Activities (Bill Stuffers, Newsletter, Newspaper Articles, Mass Mailings, Website, Social Networking)	*2009 - present*
Landscape Design (Xeriscape) and Maintenance Classes	*2009 - present*
Xeriscape Demonstration Garden	*1995 - present*

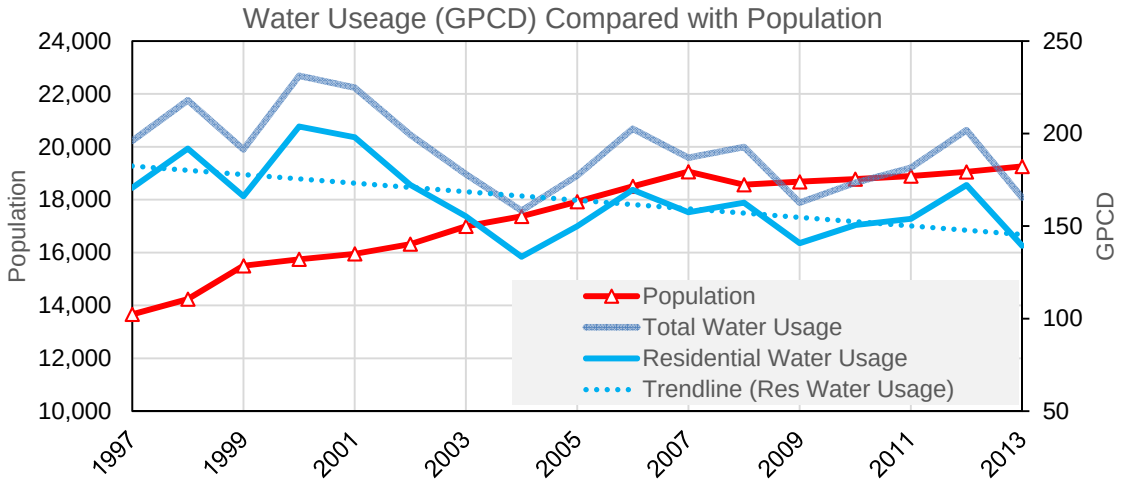
The water savings from several of the District's *Foundational* and *Targeted Technical Assistance and Incentives* activities are shown in **Table ES-2**. The estimated water savings evident from 2009 – 2013 is approximately 575 acre-feet.

Table ES-2: Water Savings Estimates of Individual Activities

Historical and Current Water Efficiency Activities	Annual Water Savings for Past Five Years (AF)					Total Five-Year Water Savings	*Average Annual Savings*
	2009	*2010*	*2011*	*2012*	*2013*		
Foundational Activities							
Leak Detection and Repair (Enhanced in 2011)	5	5	10	10	10	**40**	***8***
Recycling WTP Filter Backwash	85	91	96	108	89	**469**	***94***
Leak Detection Program in Mobile Home Parks	n/a	n/a	57	0.0	0.0	**57**	***19***
Targeted Technical Assistance and Incentives							
Slow the Flow Indoor Residential Audit and Fixture Replacement	n/a	n/a	0.4	0.4	0.4	**1.1**	***0.4***
Commercial Water Audit and Fixture Replacement	n/a	n/a	2.4	2.4	2.4	**7.1**	***2.4***
Rebate for Low-Flow Toilets	n/a	n/a	0.2	0.2	0.2	**0.7**	***0.2***
Total Annual Savings	90	96	166	121	102	**575**	***124***

The water savings for the remaining activities, whose savings are not analyzed in **Table ES-2**, are more difficult to quantify. Therefore we estimated the water savings of the remaining activities using demand data to compare historical annual per capita water demands before and after the implementation of the water efficiency activities. **Figure ES-1** shows the annual historical per capita water demands in relation to population. Although water usage varies considerably year to year, there is a clear trend of reduced water use as the District and its customers have made efforts to be more conservative and efficient. Much of the variability can be explained due to temperature and precipitation variability.

Figure ES-1: Population compared with per capita water usage



A preliminary set of goals have been developed prior to the selection of the water efficiency activities to provide a means to screen and evaluate the selected activities. Goals from the District's 2008 Water Conservation Plan have been assessed and incorporated into the new goal development process.

A meeting was initially held with District Staff to discuss water efficiency goals appropriate for LHWD. The following preliminary goals were established by District Staff:

- In keeping with the savings goal established in LHWD's 2008 Water Conservation Plan, the targeted water savings goal for this Plan will be to lower the total per capita water use by 10% over the ten-year planning period.
- The targeted ten-year water savings goals for the following customer categories are as follows:
    - Residential (Single-Family): 11.0%
    - Commercial: 5.0%
    - Multi Housing (Multi-Family): 5.0%
    - Dual System: 2.5%
    - Landscape: 10.0%
    - Master Meter Community: 15.0%
    - Master Fire Meters: 2.5%
    - Hydrant Meters: 2.5%
    - Non-Revenue Water: 10% (of total treated water demand)
- To develop a water efficiency program that can be implemented within District staffing constraints and with Staff approval.
- To implement water efficiency activities that are compatible with the community and their District Board representatives.

LHWD used a four-phase process for selecting and fully evaluating water efficiency activities. The four phases include: 1) assessment; 2) identification; 3) qualitative screening; and 4) evaluation and selection.

The initial screening of the water efficiency activities with District Staff resulted in selecting 22 candidate activities for further evaluation. Some of the activities were combined within the Statewide Water Supply Initiative (SWSI) Levels Framework to assist in evaluation and avoid double counting savings. The second screening was accomplished by evaluating each activity based on the following evaluation criteria:

- No System Limitations
- Staff and Board Approval
- Financial Feasibility
- Public Acceptance

All 22 evaluated activities were chosen for continuation or re-implementation. The activities selected are as follows:

- Meter Testing and Replacement/Meter Upgrades
- Identify Unmetered/Unbilled Treated Water Uses
- Water Efficiency Rate Structure with Regular Updates to Rate Study
- Enhanced Leak Detection and Repair
- Leak Detection Program in Mobile Home Parks
- Tap Fees with Water Use Efficiency Incentives (smaller lots)
- Water Line Replacement Program
- Recycling WTP Filter Backwash
- Master Plans/Water Supply Plans
- Slow the Flow Commercial and Residential Irrigation Audits
- Rebates for Low-Flow Toilets
- Water Efficient Washing Machine Rebates
- Rebates for ET Irrigation System Controllers
- Time of Day Watering Restrictions
- General Educational Activities
    - Bill Stuffers
    - Newsletters
    - Newspaper Articles
    - Mass Mailings
    - Website (water efficiency and other information)
    - Social Networking (Facebook)
- Landscape Design (Xeriscape) and Maintenance Classes
- Xeriscape Demonstration Garden

Table ES-3 compares the anticipated water savings from the selected activities with the original goals and then adjusts the water saving goals for this Plan update. Over the ten-year planning period, the selected activities provide an overall estimated water savings of 6,530 acre-feet. Most of the preliminary goals were fairly close (less than 2% difference) to the final calculations. Only Master Meter Community had to be reduced from 15.0% to 9.4%. The adjusted goals reflect the goals believed to be obtainable by District Staff. After the goals were adjusted to reflect the expected water savings, the estimated water use reduction is 9.8%. Therefore, LHWD will target a per capita reduction in its water use by 9.8% over the planning period because of implementation of this Plan.

Table ES-3: Water Efficiency Goals Comparison

Water Use Categories:	Total Projected Water Use (2015 to 2024)	Reduction Goals for Planning Horizon		Total Water Savings from Selected Programs	Resulting Reduction	Adjusted Reduction Goals for Planning Horizon	
	(AF)	(%)	(AF)	(AF)	(%)	(%)	(AF)
Residential	46,185	11.0%	5,080	4,716	10.2%	10.2%	4,716
Commercial	6,806	5.0%	340	357	5.2%	5.2%	357
Multi Housing	880	5.0%	44	32	3.6%	3.6%	32
Dual System	1,077	2.5%	27	39	3.6%	3.6%	39
Landscape	1,388	10.0%	139	133	9.6%	9.6%	133
Master Meter Community	3,009	15.0%	451	284	9.4%	9.4%	284
Master Fire Meters	5	2.5%	0.1	0.06	1.4%	1.4%	0.06
Hydrant Meters	432	2.5%	11	6	1.4%	1.4%	6
Non-Revenue Water	7,036	10.0%	704	964	9.1%	9.1%	964
Total Water Production:	66,818						
Total Demand Reduction:			6,796	6,530			6,530
Total Percent Reduction:			10.2%		9.8%	9.8%	

Implementation and Monitoring Plan

The implementation plan defines the process necessary to carry out the selected water efficiency activities. All activities except one are currently in place and will remain ongoing. *The Leak Detection Program in Mobile Home Parks* was implemented in 2011 for one mobile home park in the District's service area. Sometime in the next two years, LHWD would like to pursue a similar program with the other major mobile home park served by the District.

Monitoring types of demand data can be beneficial in tracking the savings generated from implementing a water efficiency plan. LHWD monitors total treated water produced on a daily basis. Other categories of raw and treated water and customer accounts are monitored on a monthly and annual basis. The demand data which will be collected during the monitoring period of the plan is presented in **Table ES-4**.

Chris Smith (General Manager), Betsy Wheeler (Water Programs Specialist), and Meghan Connolly (Engineering Technician) are chiefly responsible for implementation and monitoring of this Plan. They also realize that the most successful Plan is one that involves a team effort from many staff and other key personnel.

Table ES-4: Selection of Demand Data for Efficiency Plan Monitoring

Monitoring Data	HB 10-1051 Reporting Requirement					Selection			
	Annual	Monthly	Bi-Monthly	Daily		Annual	Monthly	Bi-Monthly	Daily
Total Water Use									
Total treated water produced (metered at WTP discharge)						X	X		X
Total treated water delivered (sum of customer meters)	√					X	X		
Raw non-potable deliveries									
Reclaimed water produced (metered at WWTP discharge)									
Reclaimed water delivered (sum of customer meters)									
Per capita water use						X	X		
Indoor and outdoor treated water deliveries						X	X		
Total Water Use									
Treated water peak day produced						X	X		
Reclaimed water peak day produced									
Raw water peak day produced/delivered									
Non-revenue water-built into Water Loss Report	√					X	X		
Water Use by Customer Type									
Treated water delivered		√				X	X		
Raw non-potable deliveries									
Reclaimed water delivered									
Residential per capita water use						X	X		
Unit water use (e.g. AF/account or AF/irrigated acre)						X	X		
Indoor and outdoor treated water deliveries						X	X		
Large users						X	X		
Other Demand Related Data									
Irrigated landscape (e.g. AF/acre or number of irrigated acres)						X			
Precipitation						X	X		
Temperature						X	X		
Evapotranspiration						X	X		
Drought index information						X			
Economic conditions						X			
Population						X	X		
New taps						X	X		

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INTRODUCTION

The Left Hand Water District (LHWD or District) is a quasi-municipal special district formed by election in May 1990 to provide potable water service to customers within the District's service area. The Left Hand Water Supply Company is the District's predecessor and was formed in the early 1960's. Early on, the Left Hand Water Supply Company was characterized as generally rural and dominated by agricultural land use with few urban and commercial areas. In the last two decades, the LHWD has seen portions of its service area rapidly transform into more urban-type development.

LHWD is located approximately 25 miles north of Denver along the Colorado Front Range as shown in **Figure 1.1a**, Section 1.1. The District's population in 2004 was estimated to be 17,369 and grew to an estimated 19,380 people by 2014. A district population of nearly 26,000 is estimated by 2025.

The District relies on two sources of water, shares of capital stock in the Left Hand Ditch Company (LHDC) and the Colorado-Big Thompson (C-BT) Project. The District owns shares of capital stock in LHDC of which about 36% are available for potable delivery due to LHDC by-laws. LHWD also owns units of C-BT water. C-BT water originates in the Colorado River Basin on the west slope of the Rocky Mountains and is pumped from Lake Granby through the Adam's Tunnel to the east slope near Estes Park. The C-BT water is delivered to one of LHWD's water treatment plants via the Boulder Feeder Canal.

LHWD has made a number of efforts in the last 20 years to improve their water use efficiency and have implemented a number of steps and programs throughout that time. A Water Conservation Plan (WCP) was first completed in in July 1996, and most recently, an updated WCP was completed in July 2008. Those plans outlined several water efficiency activities that were implemented as early as 1995 (prior to WCP completion) and have been continued ever since.

Other more recent programs have included a voluntary residential indoor water audit from 2009 to 2012 and a similar voluntary commercial indoor water audit from 2009 to 2012. An improved leak detection and repair program was also implemented in 2011 and has been adopted as ongoing annual effort. A complete list of current and past efforts is discussed later in Section 2.3. Individuals and organizations involved in current and past efforts include: Left Hand Water District Board of Directors and staff members, American Leak Detection (ALD), Center for Resource Conservation (CRC), and Great Western Institute (GWI).

Several documents were reviewed and utilized to develop this Municipal Water Efficiency Plan (MWEP or Plan) update. The Colorado Water Conservation Board (CWCB) *Municipal Water Efficiency Plan Guidance Document* was used

as a guide to develop this plan. Left Hand Water District's Water Conservation Plan from July 2008 and the Left Hand Water District 2014 Treated Water Master Plan (2014 TWMP) were also used for comparisons to previous goals, implementations, and projections. There are many acronyms, terms, and terminology that are commonly used in water efficiency and planning, and some additional terms are common in this geographical area; a list of terms and their meanings is included in **Appendix A**.

SECTION 1.0 – PROFILE OF EXISTING WATER SUPPLY SYSTEM

1.1 Overview of Existing Water Supply System

Service Area

LHWD is located north and west of the Denver Metro area. The District encompasses approximately 110 square miles. The coverage of the service area is generally from the foothills near the Boulder-Longmont area east to Interstate 25. On the following page, **Figure 1.1a** shows LHWD's location and boundary as well as other important elements of LHWD's water supply network and LHDC's original boundary (shown in orange). LHWD's boundaries lie mainly in Boulder and Weld Counties with a small portion in the county of Broomfield. Portions of Boulder, Broomfield, Erie, Firestone, and Longmont lie within the District boundaries and are served by the District. There are also six non-contiguous areas that are served by the District; five are in unincorporated Boulder County and one is in Longmont. There are a number of other water districts in the area; Central Weld County Water District (CWCWD) is adjacent to LHWD to the east, Longs Peak Water District is adjacent to the north, and Little Thompson Water District is located to the northeast.

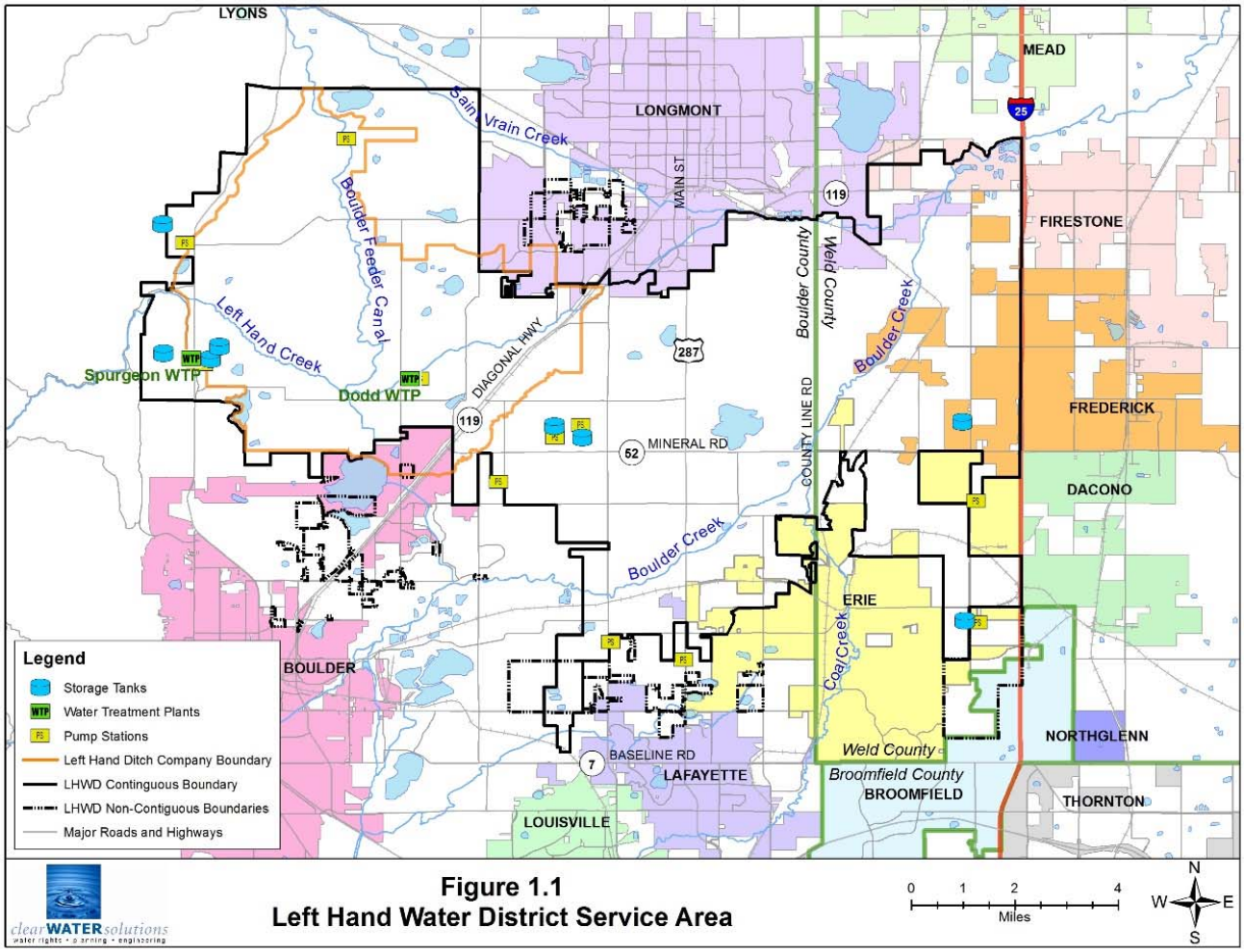
The population for a water district is difficult to determine because it is comprised of many different governing entities. Census data can be obtained for counties and municipalities, even regions, but data is not available for special districts. To determine the population for LHWD, the number of households was calculated from the tap data and multiplied by the average number of people per household; 2.51 people per household was used for this study and is a weighted average of the Boulder County and Weld County data. The population of the District for the last five years is shown in **Table 1.1b**.

Table 1.1a: District Population for Past Five Years

Year	Population[1]	Growth Rate
2010	18,776	1.1%
2011	18,892	0.6%
2012	19,054	0.9%
2013	19,258	1.1%
2014	19,380	0.6%

[1]Population estimated from number of taps, demographics, and other information available.

Figure 1.1a: Left Hand Water District Service Area



Water Supply

The District relies on two sources of water, shares of capital stock in the LHDC and the C-BT Project. The District owns 2,854 shares of capital stock in LHDC. Each share of LHDC entitles the District to direct flow diversions from Left Hand Creek plus diversion of water stored in LHDC reservoirs. LHWD also owns 6,754 units of C-BT water. C-BT water originates in the Colorado River Basin on the west slope of the Continental Divide and is pumped from Lake Granby through the Adam's Tunnel to the east slope near Estes Park. Water is then distributed to several Front Range reservoirs. It was constructed by the Bureau of Reclamation between 1938 and 1957 and is maintained by the Northern Colorado Water Conservancy District (Northern Water). The C-BT water is delivered to one of LHWD's water treatment plants via the Boulder Feeder Canal.

LHWD has seven interconnections with adjacent water providers, four with CWCWD, and one each with the City of Boulder, Town of Erie, City of Longmont, and Longs Peak Water District. Water is received by the CWCWD Del Camino interconnect and the

Boulder interconnect on a continuous basis by contract to serve developments within LHWD's boundary. This water is accounted for in the produced water tabulation and is billed to those customers. The other interconnections are used for emergency purposes only.

Currently LHWD does not supply non-potable or reclaimed water. The dual systems within the District obtain the non-potable water from a different provider. Some additional detail will be included about non-potable water later in the report.

Key Existing Facilities

The District produces water at two water treatment plants (WTP), the Spurgeon WTP and the Alva Dodd WTP. The Spurgeon plant is the older of the two and has been operating continuously for more than 30 years. It is the primary WTP and was completely rehabilitated from 2000 to 2003. The WTP site consists of the plant, Spurgeon Reservoir for raw water storage, and 2.8 million gallons (MG) of treated water tank storage. Spurgeon WTP operates year round at a maximum capacity of 7.5 million gallons per day (MGD). The Spurgeon Plant can treat LHDC water directly and C-BT through exchange.

The Dodd WTP was built in 1988 and expanded in 1998. It is a peaking plant and typically operates from May to September. It receives C-BT water from the Boulder Feeder Canal and LHDC water from the Williamson Ditch and operates at a maximum capacity of 8.0 MGD. The LHWD is in the early phases of a major expansion of the Dodd WTP and pumping station that will result in a minimum firm installed and pumping capacity of 10 MGD by 2016.

The LHWD distribution system has eight treated water storage tanks with a total capacity of 14.88 MG that are located in five of the six primary pressure zones within the system. The system also includes 14 pressure reducing valves to lower pressure between zones. Eleven pump/booster stations are used, in addition to gravity, to move the water through the system.

The treated water flows by gravity or pump stations from the storage tanks through over 275 miles of pipelines ranging in diameter from one inch to 30 inches. The breakdown of pipe diameters and mileage are shown below in **Table 1.1b**. The original system was built in the early 1960's to serve a generally rural residential population spread throughout the District. Smaller diameter pipes were used to serve this low density. As the density and consumption of the District's customers grew, major pipeline expansions were added in 1974, 1976 – 77, 1981, 1996 – 98, and 2001 – 2003, and 2007 – 2010.

LHWD is located in the South Platte River Basin where the Statewide Water Supply Initiative (SWSI) 2010 identified a 58% gap between water needs and water supplies in the Basin by 2050. Water efficiency is one method the SWSI report identified for meeting this gap.

Table 1.1b: Miles of LHWD Distribution System Pipeline

Diameter	Miles
18" and above	20
10" to 16"	69
8"	88
6" and below	100

1.2 Water Supply Reliability

Colorado-Big Thompson Project

Water supply reliability is the ability of the District's water supplies to meet the needs of its customers during times of stress. The C-BT Project imports an average of 213,000 acre-feet (AF) of water each year to many public and private water users along the northern Front Range and northeastern Colorado for agricultural, municipal and industrial uses. The system has approximately 740,000 AF of gross storage and consists of 310,000 units. There is approximately 2.3 times the storage than would be needed to deliver a 100% quota. This gives the C-BT system some drought reliability.

In over fifty years of C-BT project operation, the average yield has been 0.73 AF per unit and the commonly used average quota is 70 percent. The yield has never been less than 0.50 AF per unit (50 percent quota) or more than 1.0 AF per unit (100 percent quota). The historical annual quota established by the Northern Water Board is shown on the following **Figure 1.2a**. **Table 1.2a** shows that LHWD has a firm C-BT yield of 3,377 AF.

Figure 1.2a: Historical C-BT Quota

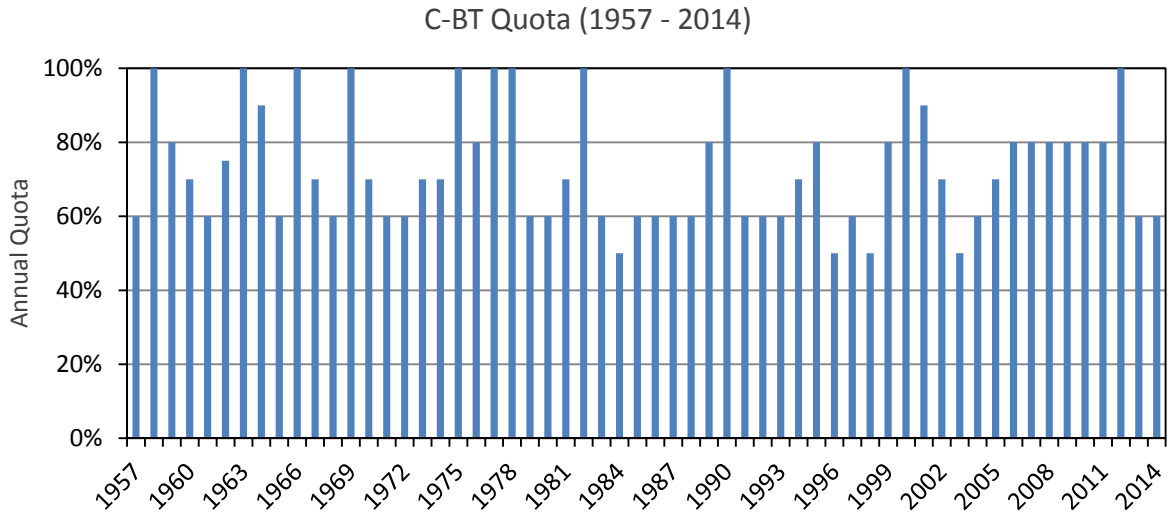


Table 1.2a: LHWD's Current Water Supply Firm Yield

Water Source	Shares/ Units	Average Yield (AF/share)	Firm Yield (AF/share)	Average Total (AF)	Firm Total (AF)
Left Hand Ditch Company	2,732	1.02	0.43	2,787	1,175
Colorado-Big Thompson	6,754	0.74	0.50	4,998	3,377
Total				**7,785**	**4,552**

Northern Water defines a C-BT annual carryover program (ACP) to C-BT Allottees, which allows C-BT owners to carry over unused C-BT units from the previous year to the following year. Per Northern Water Annual Carryover Program Procedures:

> *"As with past carryover programs, the District Board, staff, and counsel will review the advantages and consequences of the ACP on a continuing basis. And while the Board recognizes the Program's benefit to many C-BT allottees, it may modify or discontinue the ACP at any time." –NorthernWater.org, accessed February 2015*

Considering this procedure, a 50% quota is what most water providers use as the firm yield for C-BT.

Left Hand Ditch Company

The District owns 2,854 of 16,800 shares of capital stock in LHDC or 17%. LHWD has converted 2,732 of these shares to municipal use, which it delivers through the Spurgeon WTP. The native shares are used for irrigation on a farm owned by the District or rented back to other shareholders. Through its ownership in LHDC and agreement with the Company, the District can purchase a minimum of 500 AF and up to 1,000 AF of storage per year for its use in any of the LHDC reservoirs. Between direct diversions and storage, each LHDC share yields an average of 1.2 AF per share minus an administrative charge to the District bringing the average yield to 1.02 AF per share. The firm yield is 0.43 AF per share as shown in **Table 1.2a**. The table also shows that LHWD has a firm total water supply total of 4,552 AF.

Other Factors that Potentially Impact Water Supply

The C-BT supplies are stored in Lake Granby on the western slope of Colorado. Should a fire ever occur in the area, water quality would be a major issue for LHWD and other C-BT Allottees. There is a tremendous amount of beetle kill to trees surrounding Lake Granby. This beetle kill poses an increased risk to fire. Similar to other water suppliers, LHWD would be vulnerable to its abilities to treat large quantities of degraded water quality from ash and soot runoff. This has been an ongoing issue for other water treatment facilities when fire has been present in the basin used for raw water supply.

LHWD's water supplies would also be vulnerable in an extended drought. The District currently maximizes its carryover each year through the Northern Water District, but a multi-year drought would likely decrease or eliminate LHWD's carryover account. Over a decade ago, Colorado experienced one its severest water shortages on record during the Drought of 2002. More recently, Colorado experienced another drought that stretched from 2012 through August of 2013. LHWD's drought contingency plan was implemented during these shortages, and they were able continue to provide adequate water for their clients.

1.3 Supply-Side Limitations and Future Needs

District System Limitations

LHWD completed a 2014 Treated Water Master Plan in July 2014. This plan focused on infrastructure and system capacity needs to meet future growth. This plan identified capital improvement projects within the District and the timing for those projects using a WaterCAD hydraulic model and specific documentation of the existing distribution system.

The 2014 Treated Water Master Plan recommends detailed system improvements for current distribution, five, ten, and 20-year upgrades and for ultimate build-out. These recommendations are based on existing infrastructure and projected water demand using the projection method described in Section 2.4. The original distribution system that delivered water to rural residents has been gradually replaced either with parallel pipelines or new larger ones. In more recent years, a more aggressive replacement funding program of $2 million per year has been budgeted for modernizing the system.

The current system needs include pipeline upgrades and some additional pumping capacity. Additional water treatment capacity is needed in five, ten, 20 years, and at build-out and will take place at the Dodd WTP. Additional treated water storage and pumping capacity is also needed at those same time increments. Increased water conservation may temporarily delay some of these recommended system improvements.

Floods bring particular challenges to water suppliers like LHWD. In September 2013, the Front Range experienced some the largest rainfall amounts recorded for this area in the last 100 years. The District sustained damage at 15 discrete sights throughout their service area including over 3,000 feet of treated water pipeline as well as raw water delivery channels. Damages were originally estimated at over $2 million. Throughout the ordeal, the District personnel coordinated efforts with multiple parties to establish temporary structures for water supply during the winter months. By Mid-March of 2014, more permanent structures were in place for the higher demand water deliveries that would be necessary for the summer months.

Future Water Supply

Increasing pressure on water from population growth in the Front Range has driven the price for raw water up significantly in the last ten to fifteen years. Water providers need to maintain a balance between revenue generated from their customers and the cost of system operation and maintenance and water acquisition. The main water sources that have been available to the District are C-BT and LHDC. Windy Gap water, also managed by Northern Water, and a new water supply project called the Northern Integrated Supply Project (NISP) are other possible future water sources that will be available.

NISP and the Windy Gap Firming Project are currently in the National Environmental Policy Act (NEPA) permitting process. Construction of these projects will occur only if a permit is obtained from the federal government and all NEPA requirements are satisfied. In December of 2014, the U.S. Bureau of Reclamation issued a Record of Decision for the Windy Gap Project, enabling continued progress of the design and construction of the Chimney Hollow Reservoir, the main storage reservoir for the project. LHWD is currently participating in NISP, and if the project makes it through the permitting process, the District will be obligated to pay for its share of the design and construction costs; these are currently estimated at approximately $12,500 per AF.

In 1963, C-BT water could be purchased for $35 per unit from farmers that felt they had more water than they could use. The market price near the end of 2014 was approximately $21,500 per unit or $30,700 per AF assuming a 70% quota. **Figure 1.3a** shows how the price of C-BT units has varied from 1957 to 2014.

C-BT water can still be purchased from farmers and ditch companies, but it rarely represents a farmer's surplus water supply. It is usually sold to finance continued agricultural operations, settle an estate, or accommodate development of farmland. In 1957, 85% of the C-BT units were owned by individual farmers and mutual ditch companies. By the end of 2014, only 33% of the C-BT units were owned by individuals and mutual ditch companies. **Figure 1.3b** shows the transfer of C-BT units from agricultural ownership to municipal and industrial ownership over the life of the C-BT Project.

At the current rate of acquisition by cities and water districts, it is projected that few if any C-BT units will be available for purchase in the near future. However, the construction of other regional projects such as the previously mentioned Windy Gap Firming Project and NISP may take some pressure off of the C-BT system. If so, C-BT supplies could be available through 2030 or 2040.

Figure 1.3a: Price of C-BT Units

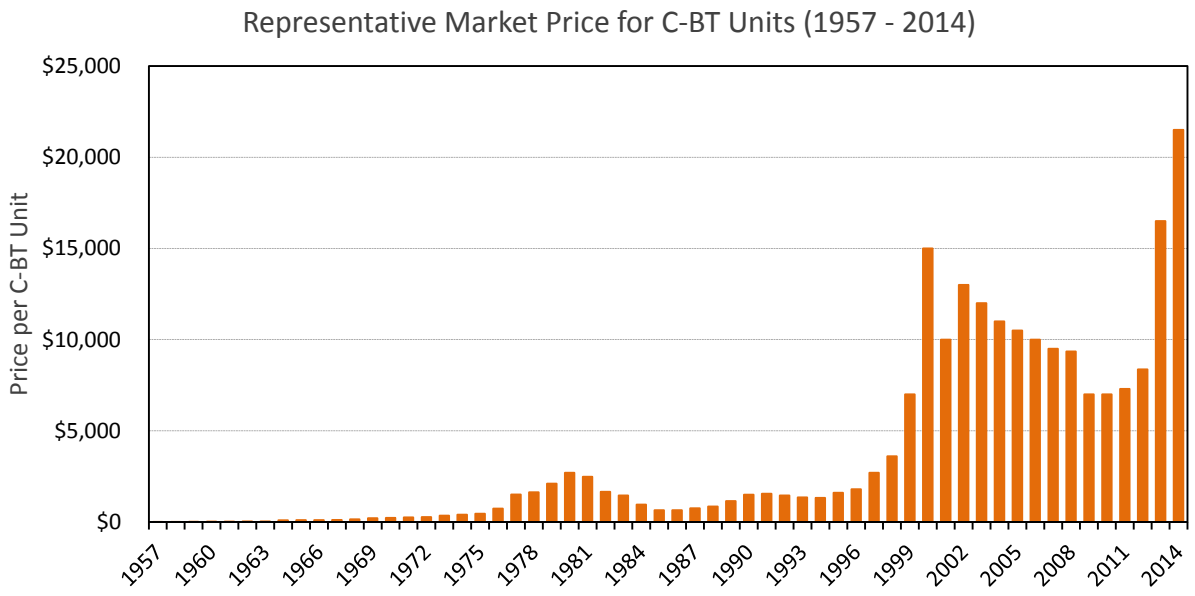
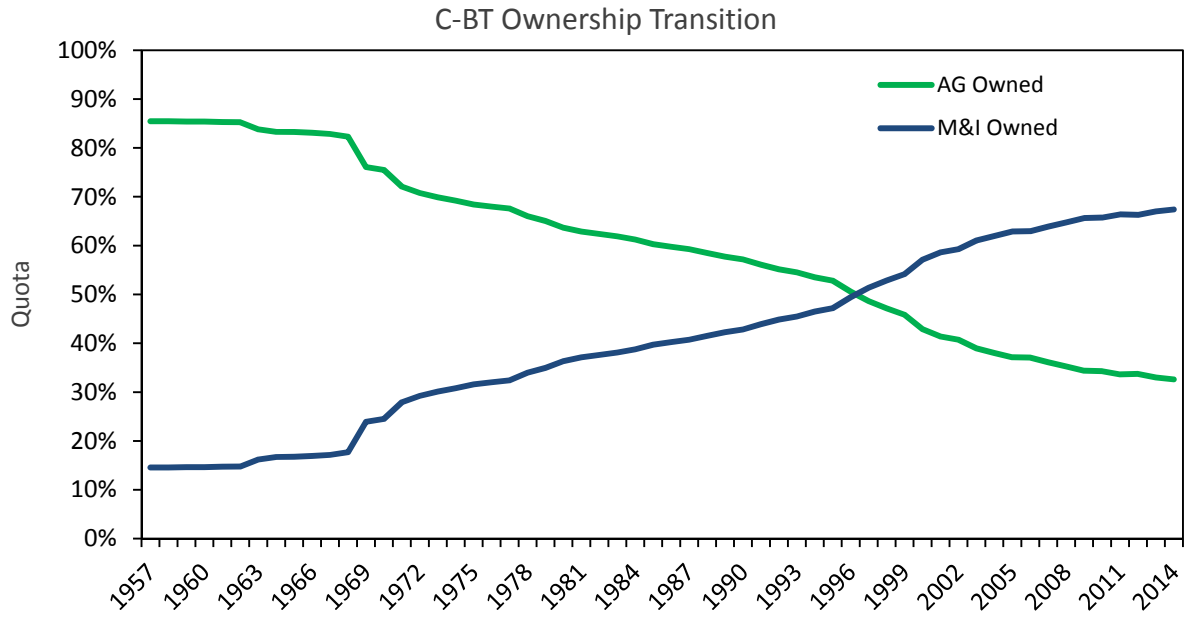


Figure 1.3b: C-BT Ownership Transfer



While LHDC water may still be available for purchase from agricultural users, the growth opportunities within the Ditch Company's service area that lie within the District boundary are limited. Since these shares can only be used in the LHDC service area, they do not further the District's supply in areas where it will be needed.

SECTION 2.0 – PROFILE OF WATER DEMANDS AND HISTORICAL WATER EFFICIENCY ACTIVIES

2.1 Demographics and Key Characteristics of the Service Area

LHWD provides potable and fire protection water to a service area that encompasses approximately 110 square miles. The District provides service to approximately 6,730 taps for various end users. Over the past 20 years, the District has seen a steady growth rate between one and two percent per year. There continues to be the steady shift from a rural setting to a more urban-style development.

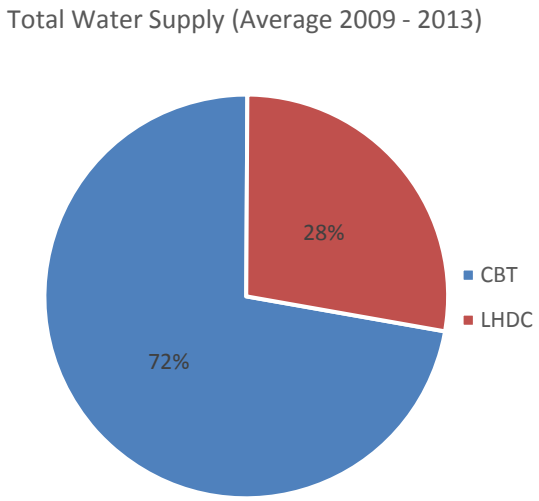
The District breaks its billing system into the following categories: Residential, Commercial, Multi Housing, Dual System, Landscape, Master Meter Community, Master Fire Meters, and Hydrant Meters. Each of these categories will be discussed in more detail in Section 2.2.

2.2 Historical Water Demands

Annual Treated Water

As mentioned previously, LHWD receives its water from two sources, C-BT and LHDC. For the past five years, C-BT has supplied approximately 72% of the raw water for the District. The remaining portion of raw water was supplied by LHDC. These percentages are very similar to the previous 10 years. The approximate percentage from both of these sources averaged from 2009 through 2013 is illustrated in in **Figure 2.2a**.

Figure 2.2a: Percentage of Total Water Supply Source.



After treating the water from the two sources, the water is delivered to the end users through the system taps. **Table 2.2a** shows the annual treated water deliveries made by LHWD for the last five years.

Table 2.2a: LHWD Annual Treated Water Delivery

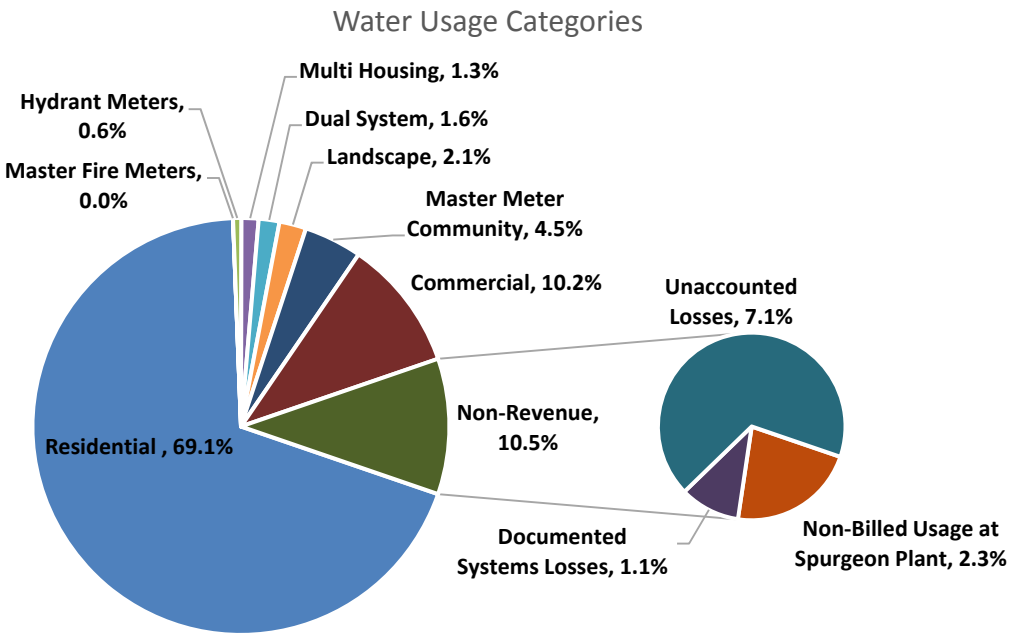
Year	Annual Treated Water Deliveries (AF)
2009	3,404
2010	3,649
2011	3,841
2012	4,308
2013	3,568
Average	***3,754***

Table 2.2b summarizes the various water uses per customer category. Values were calculated as an average over the years 2009 - 2013. The basic breakdown by percentage for the same years is further illustrated in **Figure 2.2b**. Also included is Non-Revenue Water (losses) that will be discussed later. A more complete table covering the most recent 17 years available is provided **Appendix B**. Each of the customer categories is also described in more detail following the table and chart.

Table 2.2b: Five-Year Average Supply and Water Use by Category

Water Use Category		Water Supply (Years 2009 – 2013 averaged) AF/year	Percent of Total
Residential		2,900	69.1%
Commercial		427	10.2%
Multi Housing		55	1.3%
Dual System		68	1.6%
Landscape		87	2.1%
Master Meter Community		189	4.5%
Master Fire Meters		0	0.0%
Hydrant Meters		27	0.6%
Total Billed		3,754	89.5%
Non-Revenue	Non-Billed Usage at Spurgeon Plant	98	2.3%
	Documented Systems Losses	46	1.1%
	Unaccounted Losses	298	7.1%
Total Produced		**4,196**	**100.0%**
Total Supplied (Produced - Unaccounted Losses)		**3,906**	**92.9%**

Figure 2.2b: Water Usage Categories



Residential Water Uses

Residential water use includes both indoor and outdoor use. This customer category is typically single-family homes and constitutes the largest water use in the District, at 69.1% of all raw water supplied. Residential water use in the District is currently 2,900 AF per year.

The District encompasses a large area within unincorporated Weld, Boulder, and Broomfield Counties. The density of residential development within unincorporated areas tends to be lower than in incorporated areas within these Counties. For this reason, the District has some large-lot residential water users that require more water supply than those with smaller lot sizes. The District currently has over 50 residential customers that consume over 1 AF of water per year.

Multi Housing Water Uses

Multi Housing (or Multi-Family) water use typically describes those residential communities that are made up of multiple dwellings within one structural unit. Examples of this might be apartment complexes and condominium units. Multi Housing water use in the District averaged 55 AF per year for 2009 – 2013 or 1.3% of all raw water supplied.

Dual System Water Uses

Dual System water uses includes the potable (indoor) portion of water supplied to residential communities that receive outdoor (primarily irrigation water) from a separate, non-potable water supplier. Dual System water use in the District averaged 68 AF per year (2009 – 2013) and constitutes approximately 1.6% of the raw water in the District.

Master Meter Community

Master Meter Community includes mobile home parks and subdivisions that have their own sub-metering and distribution systems. The 2009-2013 average use for this category was 189 AF, which constituted 4.5% of the raw water supplied for the District.

Commercial Water Uses

Commercial water users in the District include office buildings, hotels, schools, retail stores, restaurants, car washes, tree farms or nurseries, and some manufacturing and light industrial facilities. Commercial water use is the second largest water use category in the District. Commercial water use averaged 427 AF per year (2009 – 2013) in the District which constituted 10.2% of the raw water supplied.

The largest commercial water users in the District include tree farms, car wash and vehicle service centers, schools and municipal facilities, manufacturing facilities, and railroads.

Landscape Uses

During the years from 2009 through 2013, the District supplied an average 87 AF of potable water per year to landscape only customers. This accounted for 2.1% of the total raw water supplied. These customers include HOAs and open space areas.

Fire and Hydrant Meter Uses

The District supplies water for firefighting and other temporary uses such as construction and special events from the various hydrants in the service area. The District supplied an average of 27 AF per year (2009 – 2013) for such uses or 0.6%. This amount is highly variable year to year, and much of it depends on demand for temporary use of water from hydrants.

Annual Non-Revenue Water

Annual non-revenue water consists of unbilled authorized uses, documented system losses, and unaccounted losses. On average, from 2009 through 2013, 10.5% of all water produced by the District at their treatment facilities is lost. This average, however, is not completely representative of a typical year. During 2013, the District sustained considerable damage due to the September 2013 Flood. Increased losses occurred after the flood and while the repairs were taking place. The average of Non-Revenue

Water for years 2008 – 2012 was 9.5%. The District, however, will continue to make an effort to reduce the system losses and increase the efficiency of water distribution.

Every water distribution system has some degree of system loss. However, with the systematic surveillance and repairs, the losses can be kept to a minimum. Pipes and connections become more vulnerable with age and can disrupt activities like tying in new connections. With the current water balance and pressure reports, consistent surveillance from maintenance personnel, and an aggressive replacement program, unaccounted system losses have come down from over 20% in 1996 to an annual average (2009 – 2013) of 7.0%.

Table 2.2c: Annual Non-Revenue Water

Year	Non-Billed	Documented System Losses	Unaccounted Losses	All Losses (Non-revenue water)
2008	2.5%	0.2%	5.5%	8.2%
2009	3.0%	1.3%	4.6%	9.0%
2010	2.3%	0.9%	7.6%	10.9%
2011	2.1%	1.6%	5.3%	9.0%
2012	1.9%	0.7%	7.9%	10.5%
[1]2013	2.4%	1.0%	9.8%	13.1%
[2]Average	***2.3%***	***1.1%***	***7.0%***	***10.5%***

[1]2013 had above normal losses due to damage incurred during the September 2013 flood.
[2]Average for 2009 – 2013. If 2008 – 2012 are averaged, the percentages are: 2.4, 1.0, 6.2, and 9.5.

Annual Treated Water Use by Customer Category

The District's average annual water demand for 2009 - 2013 for each customer category is shown on **Table 2.2d**. For additional demographic information see **Table B1** in **Appendix B**. LHWD has added several categories of billing data over the past 17 years to help identify specific use categories. The total annual water usage from 2009 – 2013 has ranged from 3,404 to 4,308 AF and averaged 3,754 AF. Also shown in **Table 2.2d** is the total and residential per capita water use, expressed as gallons per capita per day (GPCD). The GPCD is calculated as the total water use divided by the population and residential water use (Single Family, Multi Housing, Dual System, and Master Meter Community) divided by the population.

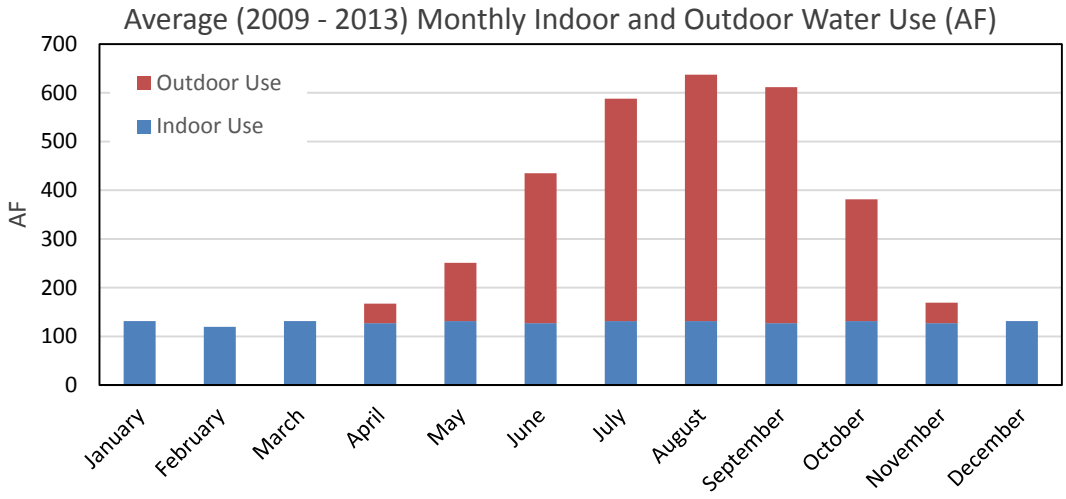
Table 2.2d: Annual Treated Water Use by Customer Category

Customer Category	2009	2010	2011	2012	2013	*Average*
	Values in AF unless otherwise stated					
Residential	2,654	2,848	2,943	3,360	2,695	***2,900***
Commercial	369	397	438	487	446	***427***
Multi Housing	48	52	55	60	61	***55***
Dual System	53	57	58	86	84	***68***
Landscape	79	79	88	96	95	***87***
Master Meter Community	190	209	200	179	166	***189***
Master Fire Meters	0.2	0.1	0.5	0.1	0.6	***0.3***
Hydrant Meters	11	7	58	41	19	***27***
Total	3,404	3,649	3,841	4,308	3,568	***3,754***
Total Population	18,678	18,776	18,892	19,054	19,258	
Residential GPCD	141.0	150.7	154.1	172.5	139.7	***151.6***
Total GPCD	**162.7**	**173.5**	**181.5**	**201.3**	**165.4**	***176.9***

Indoor and Outdoor Demands

The indoor and outdoor use was estimated using the total usage per month for the five years (2009 – 2013) of data. The total monthly water use during the months from December through March was assumed to be only associated with indoor use. The basis for this assumption was determined from analyzing monthly use patterns over the previous five years as well as years prior to the period. A daily average for indoor use was calculated by dividing the total winter water use (December through March) by the number of days during the same four month period. The indoor use for the other months of the year (April through November) was calculated as the average indoor use per day multiplied by the days per month. The outdoor monthly use was assumed to be the difference between the total monthly use and the indoor monthly use. **Figure 2.2c** is a chart breaking-out the estimated average monthly indoor and outdoor water use. During the course of an average year (2009 – 2013), outdoor use constituted an estimated 59% of the total billed usage.

Figure 2.2c: Average Monthly Indoor & Outdoor Water Use



2.3 Past and Current Water Efficient Activities and Impact to Demands

Current Water Efficiency Measures

Table 2.3a shows the existing and on-going water efficiency activities for the District. As can be seen from the Water Efficiency Activities list, the District is continuously making efforts to improve its own foundational activities such as its Enhanced Leak Detection and Repair Program. LHWD also strives to encourage its customers to be water conscious through incentives and educational activities like "Slow the Flow Irrigation Audit Program" which has been popular enough to warrant a waiting list. LHWD has recently expanded its Water Conservation Demonstration Garden to further illustrate to its customers ways they can beautify their landscape while saving water at the same time (see **Figure 2.3a**).

The District has been diligently conducting a leak detection program for over fifteen years. It has resulted in lowering the unaccounted-for distribution system losses from over 20% to an annual average of 7.0% for 2009 – 2013. The program entails running high and low reports on customers with the billing software and creating weekly pressure charts and monthly node reports from the in-house hydraulic model. Additionally, old lines and areas of high activity are walked by maintenance staff and reports from customers are used to identify and repair leaks.

Table 2.3a: LHWD's Existing and On-going Water Efficiency Activities

Selected Water Efficiency Activities	Historical Period of Implementation
Foundational Activities	
Meter Testing and Replacement/Meter Upgrades	*2008 - present*
Identify Unmetered/Unbilled Treated Water Uses	*2000 - present*
Water Efficiency Rate Structure with Regular Updates to Rate Study	*1985 - present*
Leak Detection and Repair (Enhanced in 2011)	*1996 - present*
Leak Detection Program in Mobile Home Parks	*2011*
Tap Fees with Water Use Efficiency Incentives (smaller lots)	*2005 - present*
Water Line Replacement Program	*1998 - present*
Recycling WTP Filter Backwash	*2011 - present*
Master Plans/Water Supply Plans	*1996 - present*
Targeted Technical Assistance and Incentives	
Slow the Flow Commercial and Residential Irrigation Audits	*2009 - present*
Rebate for Low-Flow Toilets	*2009 - present*
Water Efficient Washing Machine Rebates	*2009 - present*
Rebate for ET Irrigation System Controllers	*2011 - present*
Ordinances and Regulations	
Time of Day Watering Restriction	*1994 - present*
Education Activities	
Combined Educational Activities (Bill Stuffers, Newsletter, Newspaper Articles, Mass Mailings, Website, Social Networking)	*2009 - present*
Landscape Design (Xeriscape) and Maintenance Classes	*2009 - present*
Xeriscape Demonstration Garden	*1995 - present*

Figure 2.3a: LHWD's Peterson Plant Select Demonstration Garden

Water conservation occurs from both passive savings and active programs. Passive savings are those correlated with changes made by customers without any utility incentive; examples of these could be replacing old inefficient fixtures with newer more efficient models. Active programs, on the other hand, are like the ones listed in **Table 2.3a** that have been initiated by the utility, in this case LHWD. Overall between passive and active savings, LHWD continues to see a general downward trend of per capita usage. This trend will be discussed in more detail later in this section.

Numerous factors can contribute to overall water usage, so it is difficult to pinpoint what is the greatest contributor to increases and decreases in usage. Drought and drought restrictions (i.e. Drought of 2002) will reduce water use considerably. An improving economy like that of the LHWD area after the recent recession will often include additional construction and overall increase in total water use. Some other factors may include tourism, floods (September 2013), and other significant events.

Water Savings Estimates of Individual Activities

The water savings from several of the District's *Foundational Activities* and *Targeted Technical Assistance and Incentives Activities* are shown in **Table 2.3b**. The estimated water savings evident during 2009 – 2013 from the activities listed is approximately 575 AF.

Table 2.3b: Water Savings Estimates of Individual Activities

Historical and Current Water Efficiency Activities	Annual Water Savings for Five Years (AF)					Total Five-Year Water Savings	*Average Annual Savings*
	2009	*2010*	*2011*	*2012*	*2013*		
Foundational Activities							
Leak Detection and Repair (Enhanced in 2011)	5	5	10	10	10	**40**	***8***
Recycling WTP Filter Backwash	85	91	96	108	89	**469**	***94***
Leak Detection Program in Mobile Home Parks	n/a	n/a	57	0.0	0.0	**57**	***19***
Targeted Technical Assistance and Incentives							
Slow the Flow Indoor Residential Audit and Fixture Replacement	n/a	n/a	0.4	0.4	0.4	**1.1**	***0.4***
Commercial Water Audit and Fixture Replacement	n/a	n/a	2.4	2.4	2.4	**7.1**	***2.4***
Rebate for Low-Flow Toilets	n/a	n/a	0.2	0.2	0.2	**0.7**	***0.2***
Total Annual Savings	90	96	166	121	102	**575**	***124***

Leak Detection and Repair

Even prior to the 2008 WCP, the District had been performing monthly leak detection utilizing pressure charts from all pressure release valve vaults and pump stations. LHWD also compares billing volumes to monthly production reports with additional "high use" reports on individual customer accounts. The District targets these areas of high activity and older infrastructure for leak detection. District personnel also physically walk portions of the system. Repairs are made immediately after investigations when leaks are detected. In 2011, the District added yet another level of leak identification; they partnered with American Leak Detection to electronically inspect for leaks throughout the system. Although ALD found the system to be "well maintained in all areas", several leaks were discovered resulting in important repairs that translated into valuable water savings.

Recycling WTP Filter Backwash

WTP filter backwash water is generally equal to between 2.5 – 5.0% of the total water production. The District collects filter backwash water at both of its WTPs and directs it into the raw water reservoirs located at each plant. This program is well established and will continue as is.

Leak Detection Program in Mobile Home Parks

Through the District's partnership with ALD for its system leak detection, a large network of leaks was discovered in the River Valley Mobile Home Community. With the success of those discoveries and consequential repairs, the District has plans to coordinate with its other major mobile home community, LongView Estates, to see if additional leaks are can be identified.

Slow the Flow Indoor Residential Audit and Fixture Replacement

As part of the Water Efficiency Grant (PO# OE PDA 11000000105) provide by CWCB, the District partnered with the CRC to offer indoor residential audits and fixture replacements. Although the program saw some success in water savings, participation was much lower than expected; therefore the program was not continued. More details are outlined in the District's "Water Efficiency Grant Report, Final Report – 2013".

Commercial Water Audit and Fixture Replacement

The District partnered with an outside agency, Great Western Institute, for the Commercial Water Audit and Fixture Replacement program. GWI performed the audits, replacements, and analysis. Similar to the previously mentioned Residential Audit and Fixture Replacement, the commercial version had some success in water savings, but participation was very low, therefore this program was not continued.

Rebate for Low-Flow Toilets

Since 2009, the District has offered rebates for low-flow toilets. Toilets that use 1.6 gallons or less per flush (gpf) qualify for a $50 bill credit; dual flush toilets qualify for a $100 bill credit. This program has been fairly popular with an average of over 45 rebates issued over the five years since it was implemented. Water savings was tracked for numerous participating customers, and on average they saw a savings of over 4% for indoor water usage. Certain winter months (e.g., February) saw average savings as high as 10%.

Water Savings Estimates Using Demand Data

Despite the resources available to estimate water savings, the savings of some activities, such as those that are highly dependent on human behavior (e.g. public education programs) are much more difficult to quantify and, in many cases, cannot be estimated with reasonable accuracy. Additionally, data was not collected for certain activities. For the activities that we were unable to quantify, demand data was used to estimate savings.

Related to the activities listed previously in both **Table 2.3a** and **2.3b**, **Figure 2.3b** illustrates an overall water efficiency trend: The population of LHWD has had a steady increase over the past 15 years; although the GPCD water usage has varied considerably year to year, the per capita usage has had a downward trend. Much of the variability in the water usage can easily be linked to the trends in the climate; as a comparison, both the average yearly temperature and total precipitation is shown for the same years in **Figure 2.3c**. The downward trend in usage, however, is a clear indication of the water savings that has occurred through the various water efficiency activities incorporated. Although somewhat similar to **Figure 2.3b, Figure 2.3d** shows the total usage of water has remained fairly flat even though the population has had a steady increase as indicated previously.

Figure 2.3b: Population compared with per capita water usage

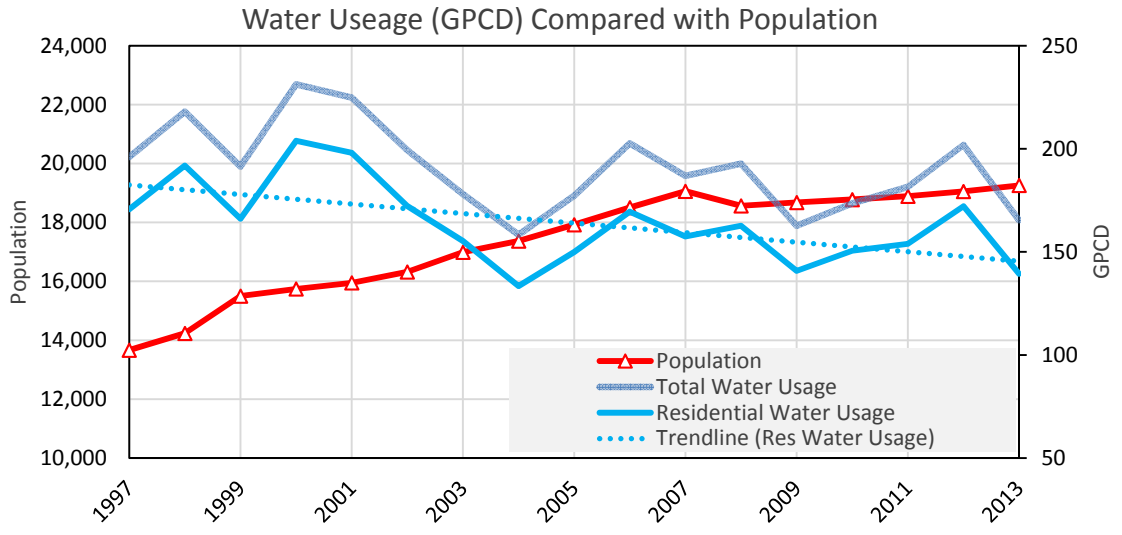


Figure 2.3c: Climate data to compare with water usage.

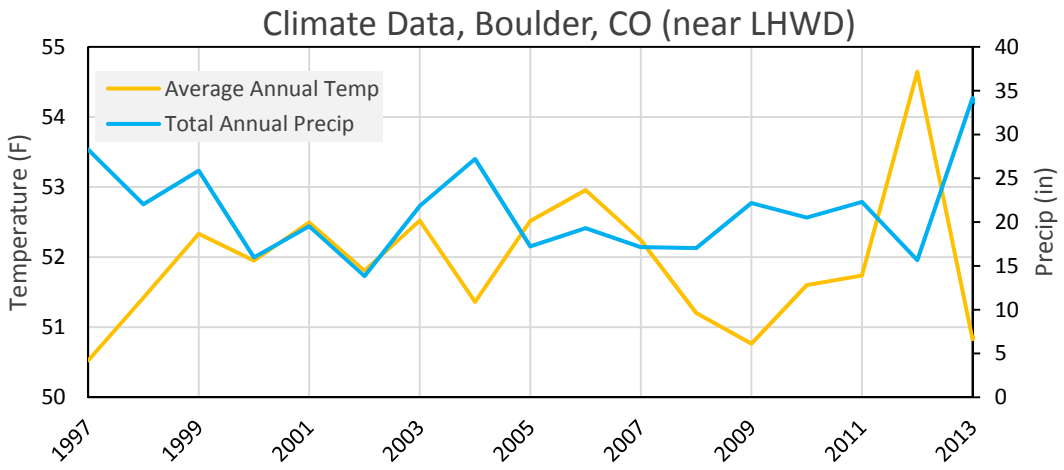
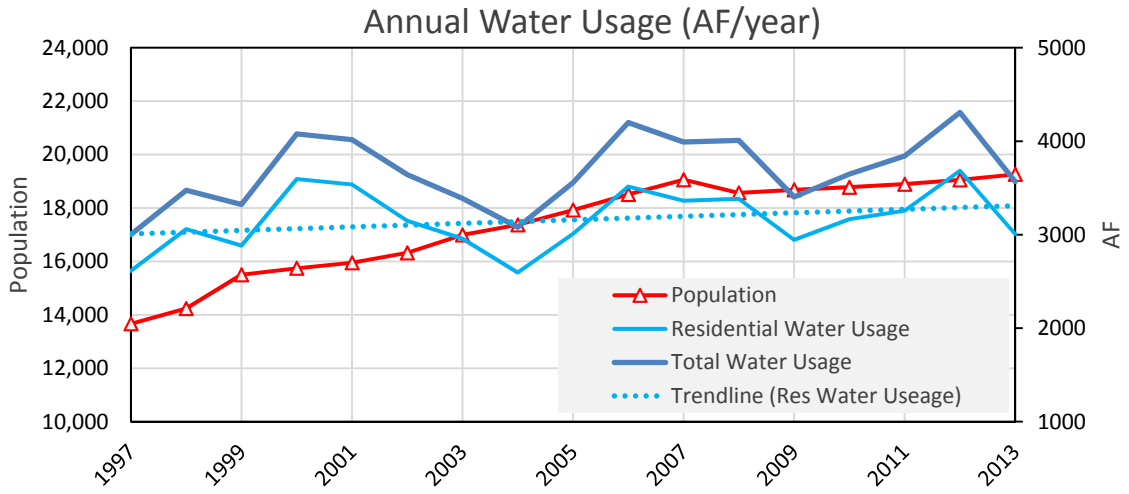


Figure 2.3d: Population compared with total water usage



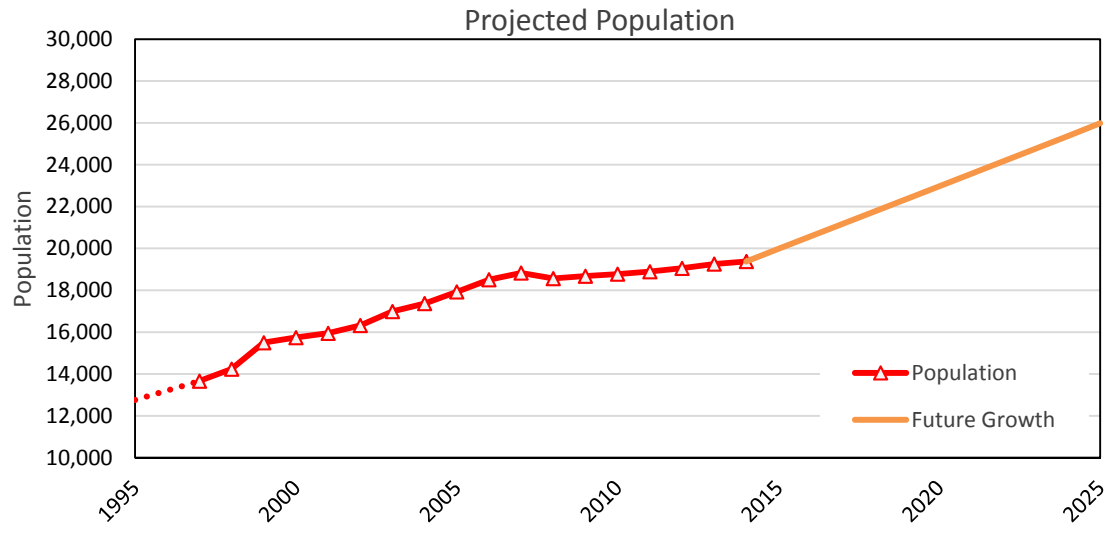
2.4 Demand Forecasts

Population estimates shown in five year increments for the previous 15 years and projected population for the next 10 years is presented in **Table 2.4a** and illustrated in **Figure 2.4a.** A conservative future estimate was developed by the District staff based on the general growth trend of the District following the recent recession and economic recovery.

Table 2.4a: LHWD Population Growth in five year increments

Year	Population	Average Yearly Growth Rate
2000	15,744	-
2005	17,925	2.8%
2010	18,776	0.9%
2015	19,979	1.3%
2020	22,973	3.0%
2025	25,982	2.6%

Figure 2.4a: LHWD Population Growth



Determining water demand forecasts for LHWD is also difficult because it is comprised of many different governing entities. A tap equivalent (TE, see Definitions of Terms) is used to quantify the water demand for each of the customer categories. TEs are then converted to average day use per tap by using a factor of approximately 625 gallons per day per tap equivalent (gpd/TE). A more detailed description of the different components and factors that were used to calculate the TE is included in the 2014 TWMP. The report details each area served by the District including unincorporated areas of Boulder and Weld Counties, as well as the City of Boulder, City of Longmont, Town of Erie, Town of Frederick, and the City and County of Broomfield. Various sources of information from each municipality and county within the District's boundary were used to project future growth. From the various land use plans and growth rates, water demand in 2014 (current year for that document), 2019 (five-year planning horizon), and 2024 (ten-year planning horizon) was determined. The 2014 TWMP projected use out to build-out (estimated to occur between 2050 and 2060). For this Plan update, most of the projections will focus on the next 10 years.

As part of this Plan, a baseline demand forecast has been estimated. The baseline is unchanged from current use patterns, and therefore the baseline does not incorporate any future water conservation or efficiency activities. As is shown in **Table 2.4b**, the majority of the treated water is anticipated to continue to be used by the residential community. Steady growth and therefore demand is anticipated in all categories with similar percentages representing each customer category. Estimations for population, TEs, and demand projections were determined from information and input provided by LHWD and the 2014 TWMP document. Build-out is not anticipated during the next 10 years, and therefore the steady increase in demand is not predicted to taper off. **Figure 2.4b** illustrates the raw water and treated water demand.

Table 2.4b: Demand Projections

Year	Population	Total Tap Equivalents (TE)	Average Day Demand (MGD)	Total Raw Water Demand (AF)
2014	19,380	7,350	4.59	5,146
2015	19,979	7,729	4.83	5,411
2016	20,578	8,127	5.08	5,690
2017	21,177	8,546	5.34	5,983
2018	21,776	8,986	5.62	6,291
2019	22,375	9,457	5.91	6,621
2020	22,973	9,795	6.12	6,857
2021	23,572	10,144	6.34	7,102
2022	24,171	10,507	6.57	7,356
2023	24,770	10,882	6.80	7,618
2024	25,369	11,270	7.04	7,890

Table 2.4c: Demand Projections for Customer Categories

Year	Treated Water Demand (AF)	Residential (AF)	Commercial (AF)	Multi Housing (AF)	Dual System (AF)	Landscape (AF)	Master Meter Community (AF)	Master Fire and Hydrant Meters (AF)
2014	4,604	3,557	524	68	83	107	232	34
2015	4,841	3,740	551	71	87	112	244	35
2016	5,090	3,933	579	75	92	118	256	37
2017	5,353	4,135	609	79	96	124	269	39
2018	5,629	4,348	641	83	101	131	283	41
2019	5,924	4,576	674	87	107	138	298	43
2020	6,135	4,740	698	90	111	142	309	45
2021	6,354	4,909	723	94	114	148	320	46
2022	6,581	5,084	749	97	119	153	331	48
2023	6,816	5,266	776	100	123	158	343	50
2024	7,059	5,454	804	104	127	164	355	52

SECTION 3.0 – INTEGRATED PLANNING AND WATER EFFICIENCY BENEFITS AND GOALS

3.1 Water Efficiency and Water Supply Planning

Forecasted Modified Water Demands

A modified demand forecast that includes the impacts of the proposed water efficiency activities are shown in **Figure 3.1a** and **Table 3.1a**. Under the revised forecast, it is estimated that total demands for LHWD in 2024 will be about 1,973 AF greater than they are in 2014. LHWD plans to accomplish this level of water efficiency by continuing successful programs already implemented (i.e. Enhanced Leak Detection and Toilet Rebates) and revisiting successful programs of the past (i.e. Leak Detection for Mobile Home Parks). No major implementations of new projects are planned in the next 10 years, therefore the projected water savings is represented by a steady reduction of per capita use. Overall raw water demand, however, will continue to increase.

Figure 3.1a: Demand Projections with Modified Demands

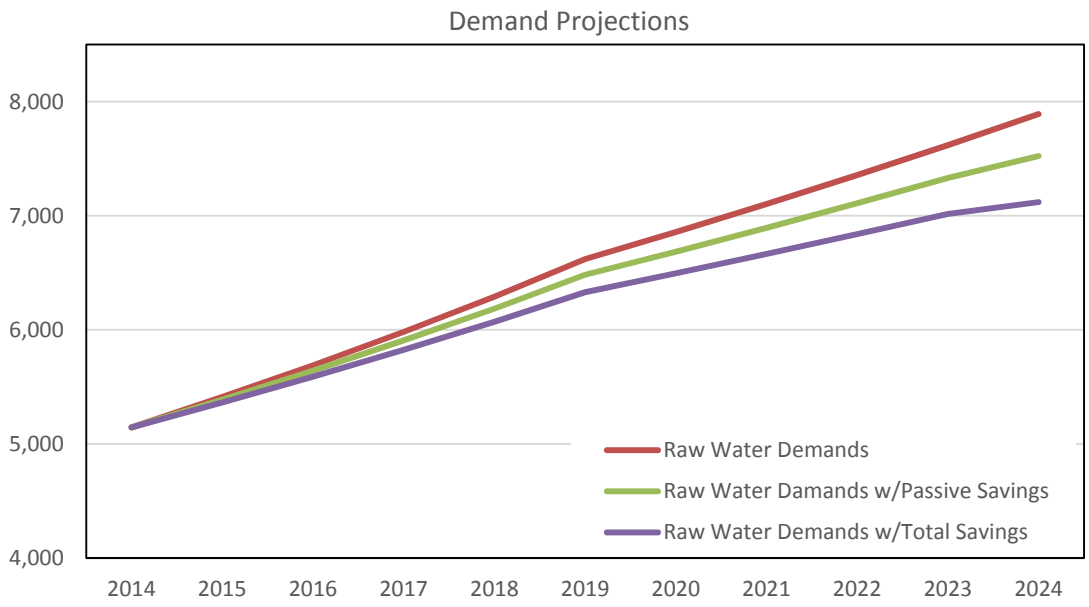


Table 3.1a: Demand Projections – Unmodified and Modified

Year	Unmodified Raw Water Demands (AF)	Raw Water Demands Passive Savings (AF)	Raw Water Demands Combination Savings (AF)
2014	5,146	5,146	5,146
2015	5,411	5,388	5,363
2016	5,690	5,642	5,590
2017	5,983	5,908	5,825
2018	6,291	6,186	6,070
2019	6,621	6,482	6,330
2020	6,857	6,685	6,495
2021	7,102	6,894	6,665
2022	7,356	7,109	6,838
2023	7,618	7,331	7,015
2024	7,890	7,523	7,119
Savings		4.7%	9.8%
Increase use from 2014	2,744	2,377	1,973
Difference from Unmodified		367	771

Impacts to Future Water Facilities and Supply Acquisitions

Water efficiency planning is very important to LHWD. The benefits of this water efficiency planning effort may include:

- Freeing up water supplies for increased growth and development
- Additional water to cover shortages in droughts or other emergency situations
- Delaying purchase of additional water supplies

3.2 Water Efficiency Goals

Water efficiency goals are intended to lay out a set of targeted objectives that if accomplished will result in the identified benefits. A preliminary set of goals have been developed prior to the selection of the water efficiency activities to provide a means to screen and evaluate the selected activities. Goals from the District's 2008 Water Conservation Plan have been assessed and incorporated into the new goal development process.

A meeting was initially held with District staff to discuss water efficiency goals appropriate for LHWD. The following preliminary goals were established by District Staff:

- In keeping with the savings goal established in LHWD's 2008 Water Conservation Plan, the targeted water savings goal for this Plan will be to lower the total per capita water use by 10% over the ten-year planning period.
- The targeted ten-year water savings goals for the following customer categories are as follows:
    - Residential (Single-Family): 11.0%
    - Commercial: 5.0%
    - Multi Housing (Multi-Family): 5.0%
    - Dual System: 2.5%
    - Landscape: 10.0%
    - Master Meter Community: 15.0%
    - Master Fire Meters: 2.5%
    - Hydrant Meters: 2.5%
    - Non-Revenue Water: 10% (of total treated water demand)
- To develop a water efficiency program that can be implemented within District staffing constraints and with Staff approval.
- To implement water efficiency activities that are compatible with the community and their District Board representatives.

The success of the stated goals will be measured through monitoring of billing data, screening and evaluating activities that are acceptable to District Staff and soliciting District Board and community feedback on water efficiency activities.

SECTION 4.0 – SELECTION OF WATER EFFICIENCY ACTIVITIES

4.1 Summary of Selection Process

LHWD used a four-phase process for selecting and fully evaluating water efficiency activities. The four phases include: 1) assessment; 2) identification; 3) qualitative screening; and 4) evaluation and selection.

Assessment, Identification and Qualitative Screening

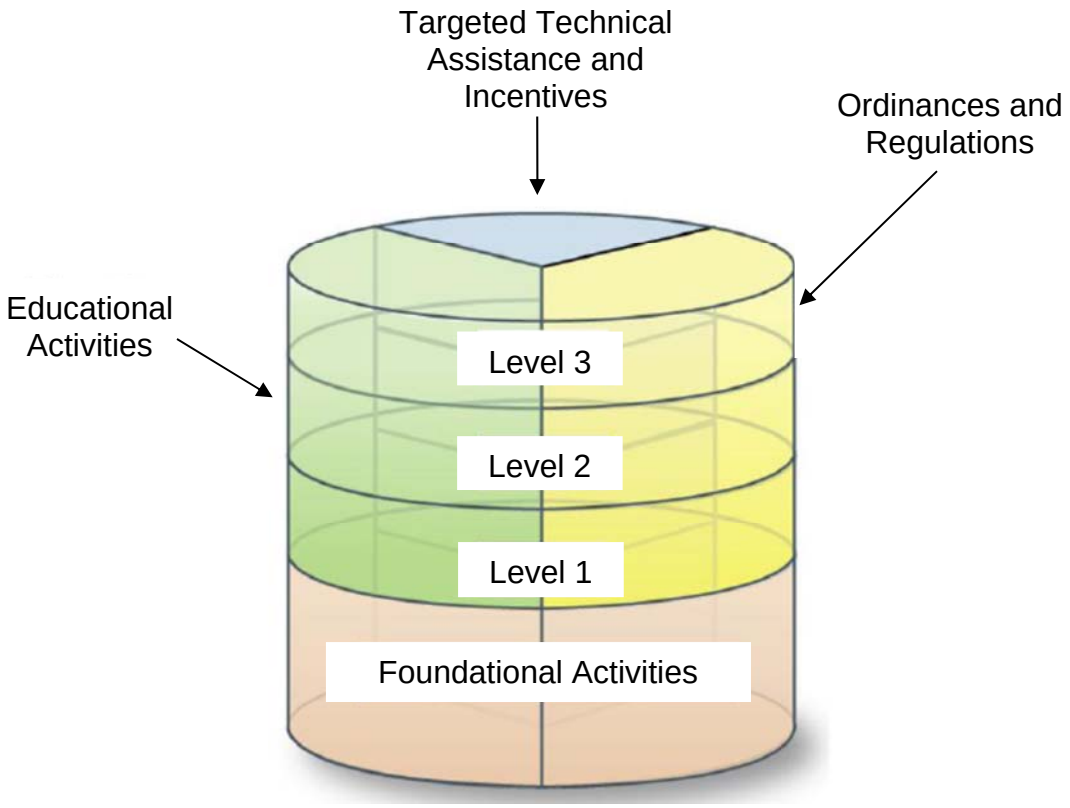
Using the analysis performed and presented in Section 2.3, the District identified areas where water efficiency could be enhanced. With the water saving success of the Enhanced Leak Detection program and the popularity of the outdoor audit program, the District would like to continue these activities as well as a number of others. In addition to these activities, the District generally wants to focus on activities that assist with meeting their water efficiency goals.

We utilized Worksheets D-G from the *Municipal Water Efficiency Plan Guidance Document* to identify a list of water efficiency activities that are generally compatible with the District's needs. A copy of Worksheets D-G can be found in **Appendix C** of this report.

The list of activities evaluated are organized according to the SWSI Levels Framework. The SWSI Levels Framework was developed as a component of the 2010 SWSI update to organize water efficiency activities into a model that assists municipalities in prioritizing and selecting activities. The framework may be represented as a cylinder consisting of the following four categories in **Figure 4.1a**.[1]

[1] These categories were initially introduced the 2010 SWSI Conservation Level Analysis Final Report as a component of CWCB's water conservation technical platform. Note: The SWSI Levels Framework terminology may have been updated since this report.

Figure 4.1a: SWSI Levels Framework



SWSI Levels Framework includes the following levels of water efficiency activities:

- **Foundational Activities** – These activities focus on system operations and water efficiencies that are under LHWD's direct control and can improve the effectiveness of the planning efforts by ensuring sufficient metering and data tracking.
- **Targeted Technical Assistance and Incentives** – These measures cover activities that LHWD and its customers can do to improve existing water efficiency.
- **Ordinances and Regulations** – These measures include regulatory activities designed to encourage water efficiency.
- **Education Activities** – These efforts educate the public on the benefits of water efficiency, inform customers on how they can reduce their water usage, and publicize water efficiency activities that LHWD is implementing.

Further discussion regarding the SWSI Levels Framework are provided in subsequent sections.

District staff developed qualitative screening criteria used to evaluate the preliminary list of activities. The screening criteria include: 1) beneficial in water savings; 2) Staff availability and approval; 3) District Board and public approval. Activities not meeting the screening criteria were eliminated. The specific reason for elimination of activities can be found in Worksheets D-G, located in **Appendix C.**

Evaluation and Selection

The evaluation and selection phase of the selection process involved development of evaluation criteria, evaluation of the activities, and selection of the final activities for implementation. The evaluation criteria included:

- No System Limitations
- Staff and Board Approval
- Financial Feasibility
- Public Acceptance

4.2 Water Efficiency Activities

The initial screening of the water efficiency activities with District staff resulted in selecting 22 candidate activities for further evaluation. Eliminated activities will be evaluated with future planning efforts. Some of the activities were combined within their SWSI Levels Framework to assist in evaluation and avoid double counting savings. The benefits and costs of the selected measures and programs are shown in **Table 4.2a**. Details about the cost-benefit evaluation and information about each measure can be found in the following section with further detail is available in **Appendix C**.

Foundational Activities

- **Meter Testing and Replacement/Meter Upgrades**
  Since 2010, the District has made it a goal to replace all commercial water meters every five years and residential meters every ten years.
- **Identify Unmetered/Unbilled Treated Water Uses**
  Beginning as far back as 1996 (LHWD 1996 Water Conservation Plan), LHWD has documented unaccounted losses. The District has used those records to address the sources of the losses and reduce the overall difference between raw water and treated water.
- **Water Efficiency Rate Structure with Regular Updates to Rate Study**
  District customers are billed monthly applying an inclined rate structure for most of the customer categories. This rate structure encourages water efficiency and is presented in Table 4.2b. Approximately every five years, the District contracts with an outside firm to conduct a rate study. In addition, LHWD also performs its own internal evaluation on an annual basis to determine if any rate adjustments are needed. The District believes it is better to incorporate small rate increases spread out over time rather one large increase after several years.

Table 4.2a: Water Effciency Activity Evaluatior

Water Efficiency Activities for Evaluation	Existing/ Potential Activity	Targeted Customer Category	Review of Qualitative Screening			Evaluation								
			Qualitative Goals			Projected Water Savings					Projected Implementation Costs over Planning Period Including Lost Revenue	Quantitative Goals		
			Benefit in Water Savings	*Staff Approval and Availability*	*District Board and Public Approval*	Total Water Savings over the Planning Period (MG)	Total Water Savings over the Planning Period (AF)	Average Annual Water Savings (MG/yr)	Average Annual Water Savings (AF/yr)	Cost per 1,000 gal saved		*Helps to Achieve Overall Savings Goals*	*Low Cost w/ Significant Water Savings*	*Beneficial to Community*
Foundational Activities														
Meter Testing and Replacement/Meter Upgrades	E	All Categories	X	X	X	**46.70**	**143.32**	**4.67**	**14.33**	**$29.02**	**$88,638**	X		X
Identify Unmetered/Unbilled Treated Water Uses	E	Non-Revenue Water	X	X	X	**208.78**	**640.74**	**20.88**	**64.07**	**$4.72**	**$985,819**	X		X
Water Efficiency Rate Structure with Regular Updates to Rate Study	E	All Categories [a]	X	X	X	**955.02**	**2,930.86**	**95.50**	**293.09**	**$0.03**	**$30,500**	X	X	X
Enhanced Leak Detection and Repair	E	Non Revenue Water	X	X	X	**52.20**	**160.18**	**5.22**	**16.02**	**$2.53**	**$132,000**	X		X
Leak Detection Program in Mobile Home Parks	E	Master (Non-Revenue Water)	X	X	X	**55.00**	**168.79**	**5.50**	**16.88**	**$3.37**	**$185,498**	X		X
Tap Fees with Water Use Efficiency Incentives (smaller lots)	E	Res	X	X	X	**21.65**	**66.43**	**2.16**	**6.64**	**$7.42**	**$160,540**			
Water Line Replacement Program	E	Non Revenue Water	X	X	X	**10.44**	**32.04**	**1.04**	**3.20**	**$1,959.63**	**$20,457,000**	X		X
Recycling WTP Filter Backwash	E	Non Revenue Water	X	X	X	**219.00**	**672.09**	**21.90**	**67.21**	**$0.00**	**$0**	X	X	X
Master Plans/Water Supply Plans	E	All Categories	X	X	X	**52.20**	**160.18**	**5.22**	**16.02**	**$7.91**	**$413,105**	X		X
Targeted Technical Assistance and Incentives														
Slow the Flow Commercial and Residential Irrigation Audits	E	Res, Com, Land	X	X	X	**12.15**	**37.27**	**0.22**	**0.68**	**$12.58**	**$152,743**	X		X
Rebate for Low-Flow Toilets	E	Res, M-F	X	X	X	**13.87**	**42.56**	**0.25**	**0.77**	**$9.53**	**$132,133**	X		X
Water Efficient Washing Machine Rebates	E	Res, M-F	X	X	X	**11.93**	**36.62**	**0.22**	**0.67**	**$8.68**	**$103,617**	X		X
Rebate for ET Irrigation System Controllers	E	Res	X	X	X	**1.45**	**4.46**	**0.03**	**0.08**	**$14.16**	**$20,564**	X		X
Ordinances and Regulations														
Time of Day Watering Restriction	E	Res, Com, Land	X	X	X	**266.20**	**816.95**	**26.62**	**81.69**	**$5.30**	**$1,411,228**	X		X
Education Activities														
Bill Stuffers	E	All Categories [a]	X	X	X	**164.50**	**504.83**	**16.45**	**50.48**	**$0.83**	**$137,335**	X	X	X
Newsletter	E		X	X	X							X	X	X
Newspaper Articles	E		X	X	X							X	X	X
Mass Mailings	E		X	X	X							X	X	X
Website	E		X	X	X							X	X	X
Social Networking (e.g. Facebook)	E		X	X	X							X	X	X
Landscape Design (Xeriscape) and Maintenance Classes	E	Res, Com, Land	X	X	X	**10.16**	**31.17**	**0.18**	**0.57**	**$8.63**	**$87,658**	X		X
Xeriscape Demonstration Garden	E	Res, Com, Land	X	X	X	**26.62**	**81.69**	**2.66**	**8.17**	**$24.06**	**$640,473**	X		X

[a] All categories except Master Fire Meters and Hydrant Meters

Table 4.2b: Tiered Rate Structure

Customer Class	Rate Structure	Water Usage Charge/1,000 gallons
Residential	First 4,000 gallons	$3.15
	Next 16,000 gallons	$4.24
	Next 30,000 gallons	$5.41
	Over 50,000 gallons	$6.68
Dual System	First 4,000 gallons	$3.15
	Next 4,000 gallons	$4.24
	Over 8,000 gallons	$13.30
Commercial	All usage	$3.92
Multi-housing	All usage	$4.35
Master Meter – Single System	All usage	$3.15
Master Meter – Dual System	Under usage limit/8,000 gal per dwelling	$3.15
	Over usage limit/8,000 gal per dwelling	$6.68
Commercial – Dual System	Under usage limit/8,000 gal per dwelling	$3.92
	Over usage limit/8,000 gal per dwelling	$6.68
Landscape	Under 50,000 gal	$3.92
	Over 50,000 gal	$6.68
Hydrant Meter/Bulk Water	All usage	$9.00

- **Enhanced Leak Detection and Repair**
  Along with identifying unmetered/unbilled treated water uses starting around 1996, the District identified leak detection and repair as a primary method to reduce losses. Throughout nearly 20 years, the District has continued to utilize this activity to realize water savings. In 2011 the District enhanced the program even more (see Section 2.3).
- **Leak Detection Program in Mobile Home Parks**
  As mentioned in Section 2.3, the District plans to reintroduce this efficiency activity to incorporate the other major mobile home park in the service area.
- **Tap Fees with Water Use Efficiency Incentives (smaller lots)**
  The District will continue to encourage smaller residential lots (7,000 or less square feet) designated by developers by charging reduced tap fees. Larger lots (20,000 square feet or larger) will be charged an additional amount over the average size lots (7,000 – 20,000 square feet).
- **Water Line Replacement Program**
  LHWD has budgeted $2 million per year to replace older and higher use pipeline.
- **Recycling WTP Filter Backwash**
  Also mentioned in Section 2.3, the recycling WTP backwash is well established, and the District plans to continue the program as is.
- **Master Plans/Water Supply Plans**

The District has seen many benefits in developing, updating, and evaluating Master Plans, Water Supply Plans, Capital Improvement Plans, and Water Efficiency Plans. These plans have increase the Districts awareness of activities and programs they can incorporate to help play their part in this region's overall need for water efficiency.

Targeted Technical Assistance and Incentives

- **Slow the Flow Commercial and Residential Irrigation Audits**
  The District plans to continue to partner with CRC to offer the Slow the Flow irrigation audits for their customers. This program helps educate the District's customers on how to water more effectively and efficiently.
- **Rebates for Low-Flow Toilets**
  The toilet rebate program has been fairly popular, and the District plans to continue offering rebates for low-flow toilets. More detail is mentioned in Section 2.3.
- **Water Efficient Washing Machine Rebates**
  Rebates are also offered by the District (in the form of bill credits) for Water Efficient Washing Machines. This was program first established in 2009 and has also been fairly popular with the District having an average of almost 40 participants per year.
- **Rebates for ET Irrigation System Controllers**
  Along with the toilet and washing machine rebates, the District also offers a bill credit for customers who install SMART irrigation controllers. SMART controllers sense either the soil moisture or climate conditions and adjust the irrigation scheduling accordingly. Although this program has not been very well utilized by LHWD customers, the District plans to continue the program with hopes it will grow in popularity.

Ordinances and Regulations

- **Time of Day Watering Restrictions**
  Watering restrictions are voluntary and recommended even when there is not a Drought Contingency Plan in place. The District continues to encourage its customers to use water wisely. During times of drought, the District has four levels of contingencies outlined and ready to put in place depending on the severity of the water shortage.

Educational Activities

- **General Educational Activities**
  These General Educational Activities include: Bill Stuffers, Newsletters, Newspaper Articles, Mass Mailings, Website (water efficiency and other information), and Social Networking (Facebook). For ease of evaluating and avoiding overlap of the costs and benefits, these activities were combined into the one category.

- **Landscape Design (Xeriscape) and Maintenance Classes**
  LHWD has offered Xeriscape Landscape Design classes since 2009. During the summer of 2015, LHWD is planning on partnering with CRC to offer "Garden in a Box" to their customers who participate in the class. Some Boxes will be given away as door prizes; additional Boxes will be available for purchase at a discount.
- **Xeriscape Demonstration Garden**
  Since 1995, Left Hand's Administration Building has been home to a garden designed to promote water conservation. The garden was expanded in 2007 and remains a beautiful example for customers to admire low-watering landscape options and get ideas for their own landscaping adventures.

Comparison of Costs and Benefits

As shown in Table 4.2a, the cost for the evaluated activities varied from $0 per 1,000 gallons for the "Recycling WTP Filter Backwash" to $1,960 per 1,000 gallons for the *Water Line Replacement Program*.

4.3 Selection of Activities for Implementation

The second screening was accomplished by evaluating each activity based on the evaluation criteria discussed in Section 4.1 (No System Limitations, Staff and Board Approval, Financial Feasibility, and Public Acceptance). All 22 evaluated activities were chosen for implementation.

In Section 3, water efficiency goals were established for the customer categories:

- Residential (Single-Family): 11.0%
- Commercial: 5.0%
- Multi Housing (Multi-Family): 5.0%
- Dual System: 2.5%
- Landscape: 10.0%
- Master Meter Community: 15.0%
- Master Fire Meters: 2.5%
- Hydrant Meters: 2.5%
- Non-Revenue Water: 10.0%

The selected water efficiency activities and associated water savings were arranged within the targeted customer categories to more easily compare the anticipated savings to the original goals. Some of the measures contribute savings to more than one category. **Table 4.3a** shows the water savings for the selected activities, sub-totaled for each category.

Table 4.3a: Combined Water Savings of Selected Water Efficiency Activities

Water Efficiency Measures and Programs	Estimated Annual Water Savings (MG)	Estimated Total Water Savings over Planning Period (MG)
Non-Revenue Water		
Meter Testing and Replacement/Meter Upgrades	0.5	5
Identify Unmetered/Unbilled Treated Water Uses	2.2	22
Enhanced Leak Detection and Repair	5.2	52
Water Line Replacement Program	1.0	10
Recycling WTP Filter Backwash	21.9	219
Master Plans/Water Supply Plans	0.5	5
Subtotal - MG	**31.4**	**314**
Acre-Feet	**96.4**	**964**
Residential (Single-Family)		
Meter Testing and Replacement/Meter Upgrades	3.2	32
Identify Unmetered/Unbilled Treated Water Uses	14.4	144
Water Efficiency Rate Structure with Regular Updates to Rate Study	86.6	866
Tap Fees with Water Use Efficiency Incentives (smaller lots)	2.2	22
Master Plans/Water Supply Plans	3.6	36
Slow the Flow Commercial and Residential Irrigation Audits	0.2	10
Rebate for Low-Flow Toilets	0.2	13
Water Efficient Washing Machine Rebates	0.2	9
Rebate for ET Irrigation System Controllers	0.03	1
Time of Day Watering Restriction	22.9	229
Education Activities (Combined areas not including Xeriscape categories)	14.4	144
Landscape Design (Xeriscape) and Maintenance Classes	0.1	7
Xeriscape Demonstration Garden	2.29	23
Subtotal - MG	**150.4**	**1,537**
Acre-Feet	**461.5**	**4,716**
Commercial		
Meter Testing and Replacement/Meter Upgrades	0.5	5
Identify Unmetered/Unbilled Treated Water Uses	2.1	21
Water Efficiency Rate Structure with Regular Updates to Rate Study	4.3	43
Master Plans/Water Supply Plans	0.5	5
Slow the Flow Commercial and Residential Irrigation Audits	0.01	1
Time of Day Watering Restriction	2.7	27
Education Activities (Combined areas not including Xeriscape categories)	1.1	11

Water Efficiency Measures and Programs *(cont.)*	Estimated Annual Water Savings (MG)	Estimated Total Water Savings over Planning Period (MG)
Commercial *(cont.)*		
Landscape Design (Xeriscape) and Maintenance Classes	0.03	2
Xeriscape Demonstration Garden	0.3	3
Subtotal - MG	**11.4**	**116**
Acre-Feet	**35.1**	**357**
Multi Housing (Multi-Family)		
Meter Testing and Replacement/Meter Upgrades	0.1	1
Identify Unmetered/Unbilled Treated Water Uses	0.3	3
Water Efficiency Rate Structure with Regular Updates to Rate Study	0.3	3
Master Plans/Water Supply Plans	0.1	1
Rebate for Low-Flow Toilets	0.004	0.2
Water Efficient Washing Machine Rebates	0.01	0.5
Education Activities (Combined areas not including Xeriscape categories)	0.3	3
Subtotal - MG	**1.0**	**10**
Acre-Feet	**3.0**	**32**
Dual System		
Meter Testing and Replacement/Meter Upgrades	0.1	1
Identify Unmetered/Unbilled Treated Water Uses	0.3	3
Water Efficiency Rate Structure with Regular Updates to Rate Study	0.3	3
Master Plans/Water Supply Plans	0.1	1
Rebate for Low-Flow Toilets	0.01	0.3
Water Efficient Washing Machine Rebates	0.01	1
Education Activities (Combined areas not including Xeriscape categories)	0.3	3
Subtotal - MG	**1.2**	**13**
Acre-Feet	**3.6**	**39**
Master Meter Community		
Meter Testing and Replacement/Meter Upgrades	0.2	2
Identify Unmetered/Unbilled Treated Water Uses	0.9	9
Water Efficiency Rate Structure with Regular Updates to Rate Study	1.9	19
Leak Detection Program in Mobile Home Parks	5.5	55
Master Plans/Water Supply Plans	0.2	2
Rebate for Low-Flow Toilets	0.01	1

Water Efficiency Measures and Programs *(cont.)*	Estimated Annual Water Savings (MG)	Estimated Total Water Savings over Planning Period (MG)
Master Meter Community *(cont.)*		
Water Efficient Washing Machine Rebates	0.03	2
Education Activities (Combined areas not including Xeriscape categories)	0.2	2
Subtotal - MG	**9.0**	**92**
Acre-Feet	**27.8**	**284**
Master Fire Meters		
Meter Testing and Replacement/Meter Upgrades	0.0003	0.003
Identify Unmetered/Unbilled Treated Water Uses	0.0014	0.014
Master Plans/Water Supply Plans	0.0004	0.004
Subtotal - MG	**0.002**	**0.02**
Acre-Feet	**0.006**	**0.06**
Hydrant Meters		
Meter Testing and Replacement/Meter Upgrades	0.03	0.3
Identify Unmetered/Unbilled Treated Water Uses	0.14	1.4
Master Plans/Water Supply Plans	0.03	0.3
Subtotal - MG	**0.2**	**2**
Acre-Feet	**0.6**	**6**
Landscape		
Meter Testing and Replacement/Meter Upgrades	0.1	1
Identify Unmetered/Unbilled Treated Water Uses	0.4	4
Water Efficiency Rate Structure with Regular Updates to Rate Study	2.2	22
Master Plans/Water Supply Plans	0.1	1
Slow the Flow Commercial and Residential Irrigation Audits	0.02	1
Time of Day Watering Restriction	1.1	11
Education Activities (Combined areas not including Xeriscape categories)	0.1	1
Landscape Design (Xeriscape) and Maintenance Classes	0.02	1
Xeriscape Demonstration Garden	0.1	1
Subtotal - MG	**4.1**	**43**
Acre-Feet	**12.7**	**133**
Grand Total - (MG)	**209**	**2,128**
Acre-Feet	**641**	**6,530**

These savings were compared to the original goals set in Section 3. **Table 4.3b** compares the anticipated water savings from the selected activities with the original goals and then adjusts the water saving goals for this Plan.

Over the ten-year planning period, the selected activities provide an overall estimated water savings of 6,530 acre-feet. Most of the preliminary goals were fairly close (less than 2% difference) to the final calculations. Only Master Meter Community had to be reduced from 15.0% to 9.4%. The adjusted goals reflect the goals believed to be obtainable by District Staff.

After the goals were adjusted to reflect the expected water savings, the estimated water use reduction is 9.8%. Therefore, LHWD will target a per capita reduction in its water use by 9.8% over the planning period because of implementation of this plan.

Table 4.3b: Water Efficiency Goals Comparison

Water Use Categories:	Total Projected Water Use (2015 to 2024)	Reduction Goals for Planning Horizon		Total Water Savings within Categories	Resulting Reduction	Adjusted Reduction Goals for Planning Horizon	
	(AF)	(%)	(AF)	(AF)	(%)	(%)	(AF)
Residential	46,185	11.0%	5,080	4,716	10.2%	10.2%	4,716
Commercial	6,806	5.0%	340	357	5.2%	5.2%	357
Multi Housing	880	5.0%	44	32	3.6%	3.6%	32
Dual System	1,077	2.5%	27	39	3.6%	3.6%	39
Landscape	1,388	10.0%	139	133	9.6%	9.6%	133
Master Meter Community	3,009	15.0%	451	284	9.4%	9.4%	284
Master Fire Meters	5	2.5%	0.1	0.06	1.4%	1.4%	0.06
Hydrant Meters	432	2.5%	11	6	1.4%	1.4%	6
Non-Revenue Water	7,036	10.0%	704	964	9.1%	9.1%	964
Total Water Production:	66,818						
Total Demand Reduction:			6,796	6,530			6,530
Total Percent Reduction:			10.2%		9.8%	9.8%	

**Represents the actual loss rate of Non-Revenue Water*

SECTION 5.0 – IMPLEMENTATION AND MONITORING PLAN

5.1 Implementation Plan

The implementation plan defines the process necessary to carry out the selected water efficiency activities. A description of the steps the District will use to implement the water efficiency plan is presented in Worksheet J, **Appendix C**. All activities except one are currently in place and will remain ongoing. The *Leak Detection Program in Mobile Home Parks* was implemented in 2011 for one mobile home park in the District's service area. Sometime in the next two years, LHWD would like to pursue a similar program with the other major mobile home park served by the District.

5.2 Monitoring Plan

Monitoring types of demand data can be beneficial in tracking the savings generated from implementing a water efficiency plan. LHWD monitors total treated water produced on a daily basis. Other categories of raw and treated water and customer accounts are monitored on a monthly and annual basis. The demand data which will be collected during the monitoring period of the plan is presented in Worksheets K and L, **Appendix C**. An abbreviate table of Worksheet K is presented in the following, **Table 5.2a.**

Table 5.2a: Selection of Demand Data for Efficiency Plan Monitoring

Monitoring Data	HB 10-1051 Reporting Requirement					Selection			
	Annual	Monthly	Bi-Monthly	Daily		Annual	Monthly	Bi-Monthly	Daily
Total Water Use									
Total treated water produced (metered at WTP discharge)						X	X		X
Total treated water delivered (sum of customer meters)	√					X	X		
Raw non-potable deliveries									
Reclaimed water produced (metered at WWTP discharge)									
Reclaimed water delivered (sum of customer meters)									
Per capita water use						X	X		
Indoor and outdoor treated water deliveries						X	X		

Monitoring Data *(cont.)*	HB 10-1051 Reporting Requirement					Selection			
	Annual	Monthly	Bi-Monthly	Daily		Annual	Monthly	Bi-Monthly	Daily
Total Water Use									
Treated water peak day produced						X	X		
Reclaimed water peak day produced									
Raw water peak day produced/delivered									
Non-revenue water-built into Water Loss Report	√					X	X		
Water Use by Customer Type									
Treated water delivered		√				X	X		
Raw non-potable deliveries									
Reclaimed water delivered									
Residential per capita water use						X	X		
Unit water use (e.g. AF/account or AF/irrigated acre)						X	X		
Indoor and outdoor treated water deliveries						X	X		
Large users						X	X		
Other Demand Related Data									
Irrigated landscape (e.g. AF/acre or number of irrigated acres)						X			
Precipitation						X	X		
Temperature						X	X		
Evapotranspiration						X	X		
Drought index information						X			
Economic conditions						X			
Population						X	X		
New taps						X	X		

SECTION 6.0 – ADOPTION OF NEW POLICY, PUBLIC REVIEW, AND FORMAL APPROVAL

6.1 Public Review Process

A public review process is required for all State approved plans. Since LHWD has had a municipal water efficiency program in place since 1996, the public has become familiar with the efficiency concept and activities. The District's public education program has contributed to this level of awareness. For this water efficiency planning process, the public was notified of the 60-day comment period from February 26, 2015 to April 27, 2015 and how to submit comments. The plan was available on LHWD's website and in its office for review. One set of public comments were received during the 60 day comment period. To the extent possible, comments were addressed in the revised water efficiency plan update. Copies of public notice announcements, all public comments, and the official plan adoption resolution are provided in **Appendix E**.

6.2 Local Adoption and State Approval Process

After the public comment period, the comments were incorporated into the planning document as well as any additional revisions. The LHWD Board will adopt the Plan at the Board meeting on May 21, 2015, and the Plan will be submitted to CWCB following the Board Meeting.

CWCB will provide written notification of approval, conditional approval, or disapproval within 90 days of submittal. Conditions for conditional approval or disapproval will be addressed if necessary. The soonest possible approval of the Municipal Water Efficiency Plan will be in Fall 2015. Research and set up of programs can begin upon approval and implementation of the selected measures will begin in late 2015.

6.3 Periodic Review and Update

The District plans to review and update this conservation plan every seven years. The next update is scheduled to be completed in 2022.

APPENDIX A

Definition of Terms

Acre-foot (AF):	The amount of water it would take to cover one acre of land to a depth of one foot; approximately 325,851 gallons
BMP:	Best Management Practice
Build-out:	Maximum development of city, town, district, or service area
Average Day Demand:	Average daily treatment plant production divided by the total tap equivalents served
C-BT Quota:	The percentage set by the Northern Water Board of Directors each water year which determines the amount of AF per unit of C-BT, i.e. 70% quota equals 0.7 AF per C-BT unit
C-BT:	Colorado-Big Thompson (also see Northern Water)
Central Weld (CWCWD):	Central Weld County Water District
Demand management:	The implementation of water efficiency activities to reduce water deliveries (demands) and or improve efficiencies within the distribution system. For purposes of this document, demand management refers to both system and customer water demands. Demand management is used interchangeably with water efficiency.
Demand-side:	The distribution and consumption of treated water supplies for domestic purposes or the delivery and use of reclaimed water or untreated raw (i.e. ditch water, groundwater) for non-potable purposes such as irrigation or industrial processes.
Dual water supply systems:	Water supply systems that use a combination of treated water to meet potable water needs and reclaimed water and/or non-treated water (i.e. untreated ditch water and groundwater) to meet non-potable water needs.
ET Controllers:	Evapo-transpiration controllers adjust the amount of water applied from sprinkler systems based on soil moisture and weather conditions.
GPCD:	Gallons per Capita per Day
gpd:	Gallons per day
LHDC:	Left Hand Ditch Company

Maximum Day:	The largest amount of water used in a single day.
MWEP:	Municipal Water Efficiency Plan
NCWCD:	Northern Colorado Water Conservancy District. More often referred to as Northern Water (see Northern Water)
NISP:	Northern Integrated Supply Project
Non-Potable Use:	Water that is not treated and used for irrigation or other uses than potable. The District currently does not have a non-potable water supply.
Non-revenue water:	Annual non-revenue water (previously referred to as unaccounted for water) consists of unbilled authorized uses (i.e. hydrant flushing), apparent losses, and real losses. Real losses consist of leaks in the water distribution system that does not reach the end user. Apparent losses consist of unauthorized consumption, customer metering inaccuracies, and data handling errors
Northern Water:	Northern Colorado Water Conservancy District. Northern Water is a public agency created in 1937 to contract with the federal government to build the Colorado-Big Thompson Project. The C-BT provides supplemental water to more than 640,000 acres of irrigated farm and ranch land and about 880,000 people in Northeastern Colorado
Peak Hour:	The largest amount of water used in a single hour – typically occurs on the Maximum Day
Phreatophytes:	Species of plants and trees that consume groundwater through their root zones below the water table such as Cottonwood and Russian Olive trees
PIF:	Plant Investment Fee, fee charged to developers for on-going maintenance cost of infrastructure replacement and repair
Potable Use:	Water that is treated to drinking water standards for municipal use, including residential and commercial use. The District's C-BT water is used for potable use.
SFE:	Single Family Equivalent, unit of measure used in planning to adjust water use for multi-family dwellings,

	such as District homes or condominiums, to a single residential equivalent.
Supply-side:	Water supply operations and facilities that include the diversion, extraction, storage, and transmission of untreated water.
System water demand:	Volume of water necessary to meet customer water needs within a certain period of time. System water demand is typically measured at the point of discharge from the water treatment plant and includes non-revenue water. In dual water supply systems, system water demand may also include the distribution and delivery of non-potable water (i.e.: reclaimed water and untreated ditch and groundwater) to meet irrigation needs.
TE:	Tap Equivalent, unit of measure used by LHWD to adjust water use for larger taps such as multi-family or commercial, to a single residential tap equivalent of 5/8”.
Water efficiency:	Water efficiency includes the practices, techniques, and technologies that extend water supplies either directly through water savings or through substituting alternative supplies such as reuse. For purposes of this document, water efficiency is inclusive of water conservation and is used instead of "water conservation." The term water efficiency captures the essential objective of a local plan which is to improve the efficiency of a municipal demand and water supply system. Water efficiency includes both system demands and customer water demands.
Water efficiency activities:	Traditionally water efficiency activities have been referred to as water conservation measures and or water conservation programs. For purposes of this document, measures and programs are replaced with water efficiency activities. Water efficiency activities encompass all efforts to either save water or improve efficiencies within a water supply system.
WTP:	Water treatment plant

APPENDIX B

Additional Tables

Table B1: Seventeen Years of Categorized Water Use

Water Use (acre-feet)									
Year (AF)	Residential (AF)	Commercial (AF)	Multi Housing (AF)	Dual System (AF)	Landscape (AF)	Master Meter Community (AF)	Master Fire Meters (AF)	Hydrant Meters (AF)	Total Billed Usage (AF)
1997	2,464	376	148					13.0	3,001
1998	2,858	403	203					13.0	3,476
1999	2,662	426	222					13.0	3,323
2000	3,313	470	281	0.7				13.0	4,078
2001	3,231	465	307	0.7				13.0	4,017
2002	2,879	482	267	2.4			1.02	11.4	3,644
2003	2,694	426	248	14.3			0.48	5.3	3,388
2004	2,323	467	249	24.0			0.03	17.8	3,081
2005	2,723	507	254	33.9			0.15	40.5	3,559
2006	3,225	556	189	42.2	44.6	58	0.63	83.7	4,200
2007	3,051	503	54	50.3	99.0	208	0.41	25.6	3,991
2008	3,078	488	50	54.9	95.4	200	0.25	41.6	4,009
2009	2,654	369	48	52.6	78.6	190	0.17	10.7	3,404
2010	2,848	397	52	56.6	79.1	209	0.07	7.3	3,649
2011	2,943	438	55	58.4	88.1	200	0.47	57.6	3,841
2012	3,360	487	60	86.2	95.5	179	0.14	41.0	4,308
2013	2,695	446	61	84.4	94.5	166	0.57	19.1	3,568
Average	***2,870***	***451***	***169***	***39.0***	***84.4***	***173***	***0.38***	***24.1***	***3,679***

Notes: The Master Meter Community taps were in the Multi Housing category until 2006.

Landscape accounts were in the commercial category prior to 2006.

One of the 2007 Master Meter Community taps was moved from Multi Housing, which is reflected in the water use.

APPENDIX C

Municipal Water Efficiency Plan Guidance Document Worksheets

WORKSHEET D - IDENTIFICATION AND SCREENING OF FOUNDATIONAL ACTIVITIES

Water Efficiency Activities for Screening [1]	State Statute Requirement [2]	Identification		Qualitative Screening [5]					Carry to Evaluation [6]	Reason for Elimination [7]
		Existing/ Potential Activity [3]	Targeted Customer Category [4]	*No System Limitations*	*Staff and Board Approval*	*Financially Feasible*	*Public Acceptance*	Notes on Additional Pros/Cons to Consider		
Metering										
Automatic Meter Reading Installation and Operations	V, VII		All Categories			X	X			Radio towers necessary, additional costs, other available systems not user friendly
Submetering for Large Users (Indoor and Outdoor)	V					X				Not offered at this time due to expense and possible public negative response
Meter Testing and Replacement [b]	V	E	Non-Revenue Water	X	X	X	X		X	
Meter Upgrades [b]	V	E		X	X	X	X		X	
Identify Unmetered/Unbilled Treated Water Uses	V	E	Non-Revenue Water	X	X	X	X		X	
Data Collection - Monitoring and Verification										
Frequency of Meter Reading (1/month)	VII	E	All Categories	X	X	X	X			Will not increase at this time without automatic meters (see Automatic Meter above)
Tracking Water Use by Customer Type	VII	E		X	X	X	X			Part of existing billing system, difficult to quantify
Upgrade Billing System to Track Use by Sufficient Customer Types	VII	E		X	X	X	X			Part of existing billing system
Tracking Water Use for Large Customers	VII	E		X	X	X	X			Part of existing billing system
Area of Irrigated Lands in Service Area (e.g. acres)	VII		Com, Land	X			X			Limited staff time for GIS data processing
Water Use Efficiency Oriented Rates and Tap Fees										
Water Rate Adjustments	VII, VIII	E	All Categories [a]	X	X	X	X		X	Note: These categories are combined on the Cost Benefit Analysis
Frequency of Billing (monthly)	VII	E		X	X	X	X		X	
Tap Fees with Water Use Efficiency Incentives (small lots)	VII	E		X	X	X	X		X	
Inclining/Tiered Rates	VII, VIII	E		X	X	X	X		X	
Water Budgets	VII, VIII		All Categories	X						Staff not available. Labor intensive
System Water Loss Management and Control										
System Wide Water Audits	V		Non-Revenue Water	X						Combined with leak detection and repair
Control of Apparent Losses (with Metering)	V			X						Expense
Enhanced Leak Detection and Repair	V	E		X	X	X	X		X	
Water Line Replacement Program	V	E		X	X	X	X		X	
Recycling WTP Filter Backwash	V	E		X	X	X	X		X	
Leak Detection Program in Mobile Home Parks	V	E	Master	X	X	X	X		X	
Planning										
Integrated Water Resources Plans			All Categories	X						
Master Plans/Water Supply Plans		E		X	X	X	X		X	
Capital Improvement Plans		E		X	X	X	X			
Feasibility Studies				X	X	X	X			No studies currently in progress
Staff										
Water Conservation Coordinator			All Categories							Funding not available

Instructions:

[1] This column provides a list of possible activities & identifies the Best Practice activity as defined in the Colorado WaterWise Guidebook of Best Practices (BP) for Municipal Water Conservation in Colorado. List additional activities identified through the planning process.

[2] This column identifies, by roman numeral, the elements that correspond with the best practices and that shall be fully considered in the planning process per Colorado State Statute 37-60-126.

[3] Specify whether the activity is "Existing" or a "Potential" activity to carry through screening by entering an "E" or "P", respectively.

[4] As applicable, specify which customer category (residential, commercial, etc.) is/would be impacted by the activity.

[5] Enter screening criteria based on qualitative goals developed in Step 3 and insert an "X" for activities that meet the listed screening criteria.

[6] Based on the screening process, indicate which activities will be carried onto the evaluation phase with an "X".

[7] If eliminated via screening, comment on why.

Notes:

[a] All categories except Master Fire Meters and Hydrant Meters

[b] To be combined on Cost Benefit Analysis

WORKSHEET E - IDENTIFICATION AND SCREENING OF TARGETED TECHNICAL ASSISTANCE INCENTIVES

Water Efficiency Activities for Screening [1]	State Statute Requirement [2]	Identification					Qualitative Screening [6]					Carry to Evaluation [7]	Reason for Elimination [8]
		Existing/ Potential Activity [3]	SWSI Framework Levels [4]			Targeted Customer Category [5]	*No System Limitations*	*Staff and Board Approval*	*Financially Feasible*	*Public Acceptance*	Notes on Additional Pros/Cons to Consider		
			Level 1 Municipal Uses	Level 2 Customers with the Largest Water Use	Level 3 Customer Type(s) in Service Area								
Installation of Water Efficient Fixtures and Appliances													
Slow the Flow Indoor Residential Audit and Fixture Replacement	I	E		X	X	Res, M-F, Dual, Master	X						Already attempted, was not popular, very few participants
Urinal Retrofits	I			X	X		X						See "Slow the Flow Indoor" above
Toilet Retrofits	I			X	X		X						See "Slow the Flow Indoor" above
Showerhead Retrofits	I			X	X		X						See "Slow the Flow Indoor" above
Faucet Retrofits (e.g. aerator installation)	I			X	X		X						See "Slow the Flow Indoor" above
Water Efficient Washing Machines	I			X	X		X						See "Slow the Flow Indoor" above
Water Efficient Dishwashers	I			X	X		X						See "Slow the Flow Indoor" above
Efficient Swamp Cooler and Air Conditioning Use	I			X	X		X						Not very applicable in this region
Low Water Use Landscapes													
Irrigation Equipment Retrofits	II		X	X	X	All Categories [a]	X	X	X	X			CRC is not currently offering this program
Removal of Phreatophytes	II		X	X	X		X						Limited need
Slow the Flow Commercial and Residential Irrigation Audits	II, III	E		X	X		X	X	X	X		X	
Irrigation Scheduling/Timing	II		X	X	X		X						Difficult to enforce
Rebate for ET Irrigation System Controllers	II		X	X	X		X	X	X	X		X	
Residential Outdoor Meter Installations	II			X	X	Res, M-F, Dual, Master							Not financially feasible
Xeriscape	II					Res, Com, Land	X	X					Not financially feasible
Other Low Water Use Landscapes	II					Res, Com, Land	X	X					Not financially feasible
Water-Efficient Industrial and Commercial Water-Using Processes													
Specialized Nonresidential Surveys, Audits and Equipment Efficiency Improvements	III			X	X	Com, Land	X						See next comment
Commercial Indoor Water Audits and Fixture Replacement	III	E		X	X	Com	X						Already attempted, similar to residential, difficulties with larger corporations, very few participants
Commercial Indoor Fixture and Appliance Rebates/Retrofits	III			X	X		X						Similar to above
Cooling Equipment Efficiency	III			X	X		X						Not very applicable in this region
Restaurant Equipment	III				X		X						Very limited customers for this
Incentives													
Rebate for Low-Flow Toilets	X	E		X	X	Res, M-F, Dual, Master	X	X	X	X		X	
Urinal Rebates	X			X	X		X						Low participation anticipated from previous rebates, smaller demographic
Showerhead Rebates	X			X	X		X						Already addressed with indoor audit
Water Efficient Faucet or Aerator Rebates	X			X	X		X						Already addressed with indoor audit
Water Efficient Washing Machine Rebates	X			X	X		X	X	X	X		X	
Water Efficient Dishwasher Rebates	X			X	X		X						CRC indicates dishwashers are not a good source of water savings, cost prohibitive
Rebate for ET Irrigation System Controllers	II, X	E		X	X	Res, Com, Land, Master	X	X	X	X		X	
Landscape Water Budgets Information and Customer Feedback	X			X	X		X						Staff limitations
Turf Replacement Programs/Xeriscape Incentives	X			X	X								Difficult to enforce land use or codes for future residence, anticipated poor public acceptance
Give-aways	X				X	Res, M-F, Dual, Master							Limited customer traffic at LHWD office. Still have a few free items that have not been given away.

Instructions:

[1] This column provides a list of activities & if applicable, identifies the Best Practice activity as defined under *Colorado WaterWise Guidebook of Best Practices (BP) for Municipal Water Conservation in Colorado.* List additional activities identified through the planning process.
[2] This column identifies, by roman numeral, the elements that correspond with the best practices and that shall be fully considered in the planning process per Colorado State Statute 37-60-126.
[3] Specify whether the activity is an "Existing" or "Potential" activity to carry through screening by entering an "E" or "P", respectively.
[4] Specify which level the historical/potential activities fall under by entering an "X" in the appropriate column.
[5] As applicable, specify which customer category (residential, commercial, etc.) is/would be impacted by the activity.
[6] Enter screening criteria based on qualitative goals developed in Step 3 and insert an "X" for activities that meet the listed screening criteria.
[7] Based on the screening process, indicate which activities will be carried on the evaluation phase with an "X".
[8] If eliminated via screening, comment on why.
Notes:
[a] All categories except Master Fire Meters and Hydrant Meters

WORKSHEET F - IDENTIFICATION AND SCREENING OF ORDINANCES AND REGULATIONS

Water Efficiency Activities for Screening [1]	State Statute Requirement [2]	Identification					Qualitative Screening [6]				Carry to Evaluation [7]	Reason for Elimination [8]
		Existing/ Potential Activity [3]	SWSI Framework Levels [4]			Targeted Customer Category [5]	*No System Limitations*	*Staff and Board Approval*	*Financially Feasible*	*Public Acceptance*		
			Level 1 Customer Type(s) within the Existing Service Area	Level 2 New Development	Level 3 Point of Sales on Existing Building Stock							
General Water Use Regulations												
Water Waste Ordinance	IX		X			All Categories [a]	X					Difficult to measure water savings and difficult to enforce
Time of Day Watering Restriction	IX	E	X				X	X	X	X	X	
Day of Week Watering Restriction (ability through Drought Contingency Plan)	IX	E	X				X					Only implemented during periods of drought
Water Overspray Limitations	IX		X				X					No jurisdiction
Landscape Design/Installation Rules and Regulations												
Rules and Regulations for Landscape Design/Installation	IX			X		All Categories [a]	X					No jurisdiction. Difficult to enforce
Landscaper Training and Certification	IX		X	X			X					
Irrigation System Installer Training and Certification	IX		X	X			X					
Soil Amendment Requirements	IX			X			X					
Irrigation Equipment Requirements	IX		X				X					
Outdoor Water Audits/Irrigation Efficiency Regulations	IX		X				X					
Outdoor Green Building Construction	IX			X			X					
Indoor and Commercial Regulations												
High Efficiency Fixture and Appliance Replacement	IX		X		X	All Categories [a]	X					No jurisdiction. Difficult to enforce
Commercial Cooling and Process Water Requirements	IX			X		Com	X					
Green Building Construction	IX			X		All Categories [a]	X					
Indoor Plumbing Requirements	IX			X			X					
City Facility Requirements	IX		X			Com	X					
Required Indoor Residential Audits	IX		X			Res, M-F, Dual, Master	X					
Required Indoor Commercial Audits	IX		X			Com	X					
Commercial Water Wise Use Regulations (Car Washes, Restaurants, etc.)	IX			X			X					

Instructions:

[1] This column provides a list of possible activities & if applicable identifies the Best Practice activity as defined under Colorado WaterWise Guidebook of Best Practices (BP) for Municipal Water Conservation in Colorado. List additional activities identified through the planning process.

[2] This column identifies, by roman numeral, the elements that correspond with the best practices and that shall be fully considered in the planning process per Colorado State Statute 37-60-126.

[3] Specify whether the activity is an "Existing" or "Potential" activity to carry through screening by entering an "E" or "P", respectively.

[4] For current/historical activities, specify which level the activities fall under by entering an "X" in the appropriate column.

[5] As applicable, specify which customer category (residential, commercial, etc.) is/would be impacted by the activity.

[6] Enter screening criteria based on qualitative goals developed in Step 3 and insert an "X" for activities that meet the listed screening criteria.

[7] Based on the screening process, indicate which activities will be carried on the evaluation phase with an "X".

[8] If eliminated via screening, comment on why.

Notes:

[a] All categories except Master Fire Meters and Hydrant Meters

WORKSHEET G - IDENTIFICATION AND SCREENING OF EDUCATION ACTIVITIES

Water Efficiency Activities for Screening [1]	State Statute Requirement [2]	Identification					Qualitative Screening [6]				Carry to Evaluation [7]	Reason for Elimination [8]
		Existing/ Potential Activity [3]	SWSI Framework Levels [4]			Targeted Customer Category [5]	*No System Limitations*	*Staff and Board Approval*	*Financially Feasible*	*Public Acceptance*		
			Level 1 One-Way	Level 2 One-Way with Feedback	Level 3 Two-way communication							
Customer Education												
Bill Stuffers	VI	E	X			All Categories [a]	X	X	X	X	X	
Newsletter	VI	E	X				X	X	X	X	X	
Newspaper Articles	VI	E	X				X	X	X	X	X	
Mass Mailings	VI	E	X				X	X	X	X	X	
Website	VI	E	X				X	X	X	X	X	
Water Fairs	VI		X			Res, M-F, Dual, Master	X					Northern Water has water fairs. No need to duplicate
K-12 Teacher and Classroom Education Programs	VI			X			X					Limited schools in area. Costs
Message Development/Campaign	VI		X			All Categories [a]	X					Staffing limitations
Interactive Website	VI		X				X					Potential for future planning efforts
Social Networking (e.g. Facebook)	VI	E	X	X			X	X	X	X	X	
Customer Surveys	VI	E		X			X					Surveys done through CRC for participants
Focus Groups	VI				X		X					Staffing limitations
Citizen Advisory Boards	VI				X		X					Staffing limitations
Technical Assistance												
Customer Water Use Workshops	VI			X		All Categories [a]	X					Staffing limitations
Landscape Design (Xeriscape) and Maintenance Classes	VI	E		X			X	X	X	X	X	
Xeriscape Demonstration Garden	VI	E	X				X	X	X	X	X	
Water Conservation Expert Available	VI				X		X					Staffing limitations

Instructions:
[1] This column provides a list of possible activities & if applicable identifies the Best Practice activity as defined under Colorado WaterWise Guidebook of Best Practices (BP) for Municipal Water Conservation in Colorado. List additional activities identified through the planning process.
[2] This column identifies, by roman numeral, the elements that correspond with the best practices and that shall be fully considered in the planning process per Colorado State Statute 37-60-126.
[3] Specify whether the activity is an "Existing" or "Potential" activity to carry through screening by entering an "E" or "P", respectively.
[4] For current/historical activities, specify which level the activities fall under by entering an "X" in the appropriate column.
[5] As applicable, specify which customer category (residential, commercial, etc.) is/would be impacted by the activity.
[6] Enter screening criteria based on qualitative goals developed in Step 3 and insert an "X" for activities that meet the listed screening criteria.
[7] Based on the screening process, indicate which activities will be carried on the evaluation phase with an "X".
[8] If eliminated via screening, comment on why.
Notes:
[a] All categories except Master Fire Meters and Hydrant Meters

WORKSHEET I - SELECTED WATER EFFICIENCY ACTIVITIES AND ESTIMATED WATER SAVINGS

Selected Water Efficiency Activities [1]	Historical Period of Implementation	Period of Implementation [2]	Implementation Actions [3]	Milestone Deadlines [4]	Annual Budget [5]	Entity/Staff Responsible for Implementation [6]	Coordination and Public Involvement [7]	Additional Comments [8]
Foundational Activities								
Meter Testing and Replacement/Meter Upgrades	*2010 - present*	*ongoing*	Continue present plan (reevaluate in 7 years)	Res: 1/10 years Com, 1/5 years	$135,537	Distribution/Engineering		
Identify Unmetered/Unbilled Treated Water Uses	*2000 - present*	*ongoing*	Continue present plan		$2,340	Treatment		
Water Efficiency Rate Structure with Regular Updates to Rate Study	*1985 - present*	*ongoing*	Continue present plan	In-house evaluation 1/year, outside evaluation 1/5 years	$3,050	Finance		
Leak Detection and Repair	*1996 - present [b]*	*ongoing*	Continue present plan	1/year	$13,200	Distribution/Engineering		
Leak Detection Program in Mobile Home Parks	*2011*	*2015-2016*	Contact LongView Mobile Home Community; Get estimates from American Leak Detection		$11,200	Engineering	Contact LongView and American Leak Detection	
Water Line Replacement Program	*1998- present*	*ongoing*	Continue present plan	Approximately what percentage of system? 2% [a]	$2,045,700	Engineering		
Recycling WTP Filter Backwash	*2011 - present*	*ongoing*	Continue present plan		$0	Treatment		
Master Plans/Water Supply Plans	*1996 - present*	*ongoing*	Continue present plan		$17,250	Treatment		
Targeted Technical Assistance and Incentives								
Slow the Flow Commercial and Residential Irrigation Audits	*2009 - present*	*ongoing*	Continue present plan		$9,300	Betsy Wheeler	CRC/ Betsy Wheeler	
Rebate for Low-Flow Toilets	*2009 - present*	*ongoing*	Continue present plan		$5,759	Betsy Wheeler		
Water Efficient Washing Machine Rebates	*2009 - present*	*ongoing*	Continue present plan		$4,300	Betsy Wheeler		
Rebate for ET Irrigation System Controllers	*2011 - present*	*ongoing*	Continue present plan		$1,275	Betsy Wheeler		
Ordinances and Regulations								
Time of Day Watering Restriction	*1994- present*	*ongoing*	Continue present plan		$650	Administration		
Education Activities								
Combined Educational Activities (Bill Stuffers, Newsletter, Newspaper Articles, Mass Mailings, Website, Social Networking)	*2009 - present*	*ongoing*	Continue present plan		$5,082	Administration/Betsy Wheeler	Included in bills, URL links to website(s)	
Landscape Design (Xeriscape) and Maintenance Classes	*2009 - present*	*ongoing*	Garden in a box to be introduced in 2015		$3,300	Betsy Wheeler	CRC, website, email, campaign	
Xeriscape Demonstration Garden	*1995 - present*	*ongoing*	Continue present plan		$50,000	Administration	Plant Select® Water Wise garden	

Instructions:
[1] Provide the list of water efficiency activities selected for implementation during Step 4.
[2] Provide period in which activity is going to be implemented.
[3] Include information on specific actions necessary to implement the activities (e.g. advertise rebates to public).
[4] Indicate timing of when the action are scheduled to be implemented (e.g. when leaks will be repaired, when rebate program will start, etc.).
[5] Insert anticipated annual costs.
[6] Specify which entity/staff responsible for implementing the activities.
[7] If applicable, comment on necessary coordination among staff/other entities and how the public will be involved. This includes educational campaigns, feedback, direct participation in certain actions, etc.
[8] Add any additional comments.

Notes:
[a] approx. 250 miles of total system pipeline, 5 miles of pipeline replaced per year = ~2%
[b] Enhanced leak detection and repair implemented in 2011

WORKSHEET K - SELECTION OF MONITORING DEMAND DATA FOR MONITORING PLAN

Monitoring Data [1]	HB 10-1051 Reporting Requirement [2]				Selection [3]				Entity/Staff Responsible for Data Collection and Evaluation [4]	Schedule/Timing of Monitoring [5]	Comments [6]
	Annual	Monthly	Bi-Monthly	Daily	Annual	Monthly	Bi-Monthly	Daily			
Total Water Use											
Total treated water produced (metered at WTP discharge)					X	X		X	Treatment		
Total treated water delivered (sum of customer meters)	√				X	X			Treatment		
Raw non-potable deliveries											
Reclaimed water produced (metered at WWTP discharge)											
Reclaimed water delivered (sum of customer meters)											
Per capita water use					X	X			Engineering/Admin.		Per capita use based on residential population (Res, M-F, Dual, Master)
Indoor and outdoor treated water deliveries					X	X			Treatment		Estimated from daily average use during Dec - Feb
Treated water peak day produced					X	X			Treatment		
Reclaimed water peak day produced											
Raw water peak day produced/delivered											
Non-revenue water-built into Water Loss Report	√				X	X			Treatment		
Water Use by Customer Type											
Treated water delivered		√			X	X			Treatment		
Raw non-potable deliveries											
Reclaimed water delivered											
Residential per capita water use					X	X			Engineering/Admin.		Per capita use based on estimated residential population (Res, M-F, Dual, Master)/residential use
Unit water use (e.g. AF/account or AF/irrigated acre)					X	X			Engineering/Admin.		Both taps and TE[a] used to evaluate
Indoor and outdoor treated water deliveries					X	X			Engineering/Admin.		Estimated from daily average use during Dec - Feb
Large users					X	X			Engineering/Admin.		individual customers and aggregate total
Other Demand Related Data											
Irrigated landscape (e.g. AF/acre or number of irrigated acres)					X				Engineering/Admin.		specify whether total irrigated lands in service area and/or per customer types (e.g. parks)
Precipitation					X	X			Engineering/Admin.		
Temperature					X	X			Engineering/Admin.		
Evapotranspiration					X	X			Engineering/Admin.		
Drought index information					X				Engineering/Admin.		
Economic conditions					X				Engineering/Admin.		
Population					X	X			Engineering/Admin.		
New taps					X	X			Engineering/Admin.		

Instructions:
[1] This worksheets provides a list of possible demand data. Add additional demand data provider would like to monitor.
[2] Specifies annual reporting requirements per HB 10-1051.
[3] Select demand data provider plans to use to monitor effectiveness of water efficiency activities by inserting an "X" in appropriate boxes.
[4] Specify staff/entity responsible for data collection and evaluation.
[5] Specify the timing and/or set schedule in which data will be collected and evaluated.
[6] Add any additional comments.

WORKSHEET L - MONITORING PLAN

Selected Water Efficiency Activities [1]	Customer Category Impacted [2]	Demand Monitoring Data [3]				Other Monitoring Data [5]							Entity/Staff Responsible for Data Collection and Evaluation [6]	Schedule/ Timing of Monitoring [7]	Comments [8]
		Annual Treated water delivered	Monthly Treated water delivered	Monthly Non-Revenue Water	Number of Participants	Description of Parameter(s) to Record [4]	Annual costs	Lessons learned	Water saving estimates	Administration data	Relevant public feedback	Records of significant changes			
Foundational Activities															
Meter Testing and Replacement/Meter Upgrades	All Categories				X	*Number of meters tested, replaced, make, model, size*	X	X					Distribution/Engineering	Com = 1/5 years Res = 1/10 years	
Identify Unmetered/Unbilled Treated Water Uses	Non-Revenue Water	X	X	X		*Estimated volume of unbilled water*		X					Treatment	monthly	
Water Efficiency Rate Structure with Regular Updates to Rate Study	All Categories [a]	X	X			*Total billed volume*	X	X					Finance	Internal = annually External = 1/5 years	
Leak Detection and Repair	Non Revenue Water	X	X	X		*Number of repairs, approximate loss reduction*	X	X	X				Distribution/Engineering	Annual	
Leak Detection Program in Mobile Home Parks	Master (Non-Revenue Water)	X	X	X		*Number of repairs, approximate loss reduction*	X	X	X				Engineering	As needed	
Water Line Replacement Program	Non Revenue Water					*Length of pipe replaced, locations*	X	X					Engineering	Annual	
Recycling WTP Filter Backwash	Non Revenue Water			X		*Approximate amount used/saved*	X	X	X				Treatment	Daily	
Master Plans/Water Supply Plans	All Categories						X	X					Treatment	1/7 years	
Targeted Technical Assistance and Incentives															
Slow the Flow Commercial and Residential Irrigation Audits	Res, Com, Land				X	*Number of audits, customer feedback*	X	X			X		CRC/Betsy Wheeler	Offered each summer	
Rebate for Low-Flow Toilets	Res, M-F	X	X		X	*Number of rebates, $ amount, apparent water savings*	X	X	X				Betsy Wheeler	Continuously up to $8,000 budgeted per year	
Water Efficient Washing Machine Rebates	Res, M-F	X	X		X	*Number of rebates, $ amount, apparent water savings*	X	X					Betsy Wheeler		
Rebate for ET Irrigation System Controllers	Res [b]	X	X		X	*Number of rebates, $ amount, apparent water savings*	X	X					Betsy Wheeler		
Ordinances and Regulations															
Time of Day Watering Restriction	Res, Com, Land	X	X										Administration	Voluntary, continuously	
Education Activities															
Combined Educational Activities (Bill Stuffers, Newsletter, Newspaper Articles, Mass Mailings, Website, Social Networking)	All Categories [a]						X	X			X		Administration/Betsy Wheeler	Monthly	
Landscape Design (Xeriscape) and Maintenance Classes	Res, Com, Land				X	*Number of participants*	X	X					CRC/Betsy Wheeler	Offered each summer	
Xeriscape Demonstration Garden	Res, Com, Land				X		X	X					Administration	Continuously	

Instructions:

[1] Provide the list of water efficiency activities selected for implementation during Step 4.

[2] As applicable, specify which customer category (Residential, Commercial, etc.) is/would be impacted by the activity.

[3] Enter type of demand data selected in Worksheet K (e.g. total annual treated water delivered or monthly treated water delivered by customer type). Enter an "X" for each activity that will be monitored by the respective demand data type.

[4] If applicable, enter description of parameters to record for each activity (e.g. number of workshops, fixture/meter replacements, rebates and audits; acres of xeriscape; and length of pipeline replaced).

[5] Select other data to be collected for monitoring of each activity by inserting an "X" in appropriate boxes.

[6] Specify staff/entity responsible for data collection and evaluation.

[7] Specify the timing and/or schedule in which data will be collected and evaluated.

[8] Add any additional comments.

APPENDIX D

Activity Cost and Benefit Analysis

Meter Testing and Replacement Program

Existing meters are tested periodically for leaks and accuracy and are replaced as necessary. Faulty meters account for apparent losses, or losses due to meter inaccuracies, and real losses also known as physical losses.

Planning Period	2014 to 2023
Years in Planning Period	10
Program Length	10

Estimated Water Savings

Annual Estimated Savings Rate	0.25%	
Annual Estimated Water Production without Savings	1,868	MG/yr
Estimated Annual Water Savings	**4.67**	MG/yr
Estimated Savings over Planning Period	**46.7**	MG

Notes:

2013 system unaccounted leakage/loss rate was 10%. Natural Resources Defense Council estimate 10% of homes have leaks that waste 90 gals or more per day. These leaks are often unaccounted for in faulty meters.

Costs

Total Cost to Water Provider

Labor Costs		
Staff Hours	826.5	
Hourly Cost	$65.00	
Annual Staff Costs	$53,722.00	
Third Party Costs		
Evaluation and Follow-up Costs		
Annual Labor	**$53,722.00**	
Materials Costs		
Unit Cost	$114.27	/participant
Number of Participants	716	/year
Annual Materials	**$81,815.00**	/year

The $114.27 unit cost includes meter testing, replacement costs, and labor. Residential = $112/meter, Commercial = $135/meter

Estimated Annual Cost	**$135,537.00**	/year
Estimated Total Cost over Planning Period	**$1,355,370.00**	
Cost per 1000 Gallons Saved	**$29.02**	

Identify Unmetered/Unbilled Treated Water Uses

The District will continue to identify unmetered and unbilled treated water uses in order to assess whether losses can be addressed. These losses are considered non-revenue water.

Planning Period	2014 to 2023	
Years in Planning Period	10	
Program Length	10	years

Estimated Water Savings

Annual Estimated Savings Rate	1.00%

Notes:

By specifically identifying these losses, additional actions can be taken to reduce the water lost. This measure has the potential to improve all categories. A conservative reduction of 1.25% of projected annual water use was assumed.

Category	Average Water Use MG	*Estimated Annual Water Savings gallons/yr*
Non Revenue Water	219.86	2,198,565
Residential	1,443.14	14,431,433
Commercial	212.65	2,126,514
Multi Housing	27.51	275,098
Dual System	33.66	336,585
Landscape	43.38	433,758
Master Meter Community	94.01	940,092
Master Fire Meters	0.14	1,411
Hydrant Meters	13.50	135,026

Estimated Annual Water Savings	**20.88**	MG/yr
Estimated Savings over Planning Period	**208.8**	MG

Costs

Total Cost to Water Provider

Labor Costs		
Staff Hours	36	/year
Hourly Cost	$65.00	/hour
Annual Staff Costs	$2,340.00	
Third Party Costs		/year
Evaluation and Follow-up Costs		/year
Annual Labor	**$2,340.00**	/year

Notes:

Estimated staff costs for Staff to spend approximately 50 hours per year at $60.00/hour to help develop within the District.

Identify Unmetered/Unbilled Treated Water Uses

Water Rates

Rate Category	Current Rates (per 1,000 gals)
Weighted average of customer rates	$5.15

Savings	$9,624,193.51	/year
Savings	$9,527,951.57	/year
Estimated Annual Revenue Loss Related to Water Savings	**$96,241.94**	/year

Estimated Annual Cost	**$98,581.94**	/year
Estimated Cost over Planning Period not including Lost Revenue	**$23,400.00**	
Set-up and Lost Revenue	**$985,819.35**	
Cost per 1000 Gallons Saved	**$4.72**	

Notes:

The annual revenue loss was estimated based on current rates for all District customers.

Estimated Revenue assumes that the current rates will not change over the planning period.

Water Efficient Rate Structure with Regular Updates to Rate Study - Existing Measure

Based on many studies, a water efficient water rate most effectively encourages efficient water use. A rate study is necessary to ensure maximum water conservation savings.

Planning Period	2014 to 2023
Years in Planning Period	10
Program Length	10

Estimated Water Savings

Customer Category	Average Water Use (MG/yr)	Annual Estimated Savings Rate	*Estimated Annual Water Savings (MG/yr)*
Residential	1,443.14	6%	86.59
Commercial	212.65	2%	4.25
Multi Housing	27.51	1%	0.28
Dual System	33.66	1%	0.34
Landscape	43.38	5%	2.17
Master Meter Community	94.01	2%	1.88

Notes:

Assumed a conservative reduction of per customer category of projected total billed water. Rate change studies have shown a greater savings (Southwest Florida Water Management District study - 13%).

Estimated Annual Water Savings	**95.5**	MG/yr
Estimated Savings over Planning Period	**955**	MG

Costs

Total Cost to Water Provider

Labor Costs		
Staff Hours	10	/year
Hourly Cost	$65.00	/hour
Annual Staff Costs	$650.00	
Third Party Costs (Rate study)	$2,400.00	/year
Evaluation and Follow-up Costs (Labor/Consultant)		/year
Annual Labor	**$3,050.00**	/year

Notes:

Annual staff costs include coordination with consultants.

Annual Revenue Lost due to water savings is not incorporated into the Total Cost to Water Provider because these costs are absorbed and included in the rate adjustments to the customers.

Total Cost to Water Provider

Estimated Annual Cost	**$3,050.00**	/year
Estimated Total Cost over Planning Period Including Set-up	**$30,500.00**	
Cost per 1000 Gallons Saved	**$0.03**	

System Wide Water Audits - Enhanced Leak Detection and Repair Program

This measure would include leak detection and repair for the District water delivery infrastructure.

Planning Period	2014 to 2023
Years in Planning Period	10
Program Length	10

Estimated Water Savings

Annual Estimated Savings Rate	0.25%	
Annual Estimated Water Production without Savings	2,088	MG/yr
Estimated Water Production over Planning Period without Savings	20,878	MG
Estimated Annual Water Savings	**5.22**	MG/yr
Estimated Savings over Planning Period	**52.2**	MG

Notes:

2013 system leakage/loss rate was 9.8% (or 13.1% for all non-revenue water) .

The estimated production (without savings) equals the current projected water usage including metered and non-revenue water.

Costs

Total Cost to Water Provider

Labor Costs		
Staff Hours	80	/year
Hourly Cost	$65.00	/hour
Annual Staff Costs	$5,200.00	
Third Party Costs (Leak Detection Consult)	$8,000.00	/year
Evaluation and Follow-up Costs (Labor/Consultant)		/year
Annual Labor	**$13,200.00**	/year

Notes:

Third Party Costs include:
- Leak survey preformed annually by a consultant.

Annual staff costs include coordination with consultants.

Estimated Annual Cost	**$13,200.00**	/year
Estimated Total Cost over Planning Period Including Set-up	**$132,000.00**	
Cost per 1000 Gallons Saved	**$2.53**	

Leak Detection in Mobile Home Parks

Left Hand Water District addressed the leaks found in River Valley Mobile Home Community in 2011. The program was very successful, and it was felt that offering this type of program to LongView Community (mobile home park) would be beneficial.

Planning Period	2014 to 2023
Years in Planning Period	10
Program Length	10

Estimated Water Savings

Mobile Home Community	Average Water Use gallons	*Estimated Annual Water Savings*
River Valley Village	18,181,818	2,000,000
LongView	31,818,182	3,500,000

Notes:

River Valley Village mobile home park had repairs performed in Aug 2011. Longview mobile home park was proposed to be evaluated during the Program Planning Period.

Annual Estimated Savings Rate	11.00%	
Estimated Annual Water Savings	**5.50**	MG/yr
Estimated Savings over Planning Period	**55.0**	MG

Costs

Total Cost to Water Provider

One Time Labor and Material Costs	
One Time Staff Cost	$1,200.00
One Time 3rd Party Cost and Materials	$10,000.00
One Time Labor/Material Cost	**$11,200.00**

Notes:

Third Party Costs include:
- Leak survey preformed by a consultant.

Annual staff costs include coordination with consultants and time for repairs.

Water Rates

Rate Category	**Current Rates** (per 1,000 gals)
Master Meter Community	$3.17

Notes:

Average rates are shown for planning purposes only.

Estimated Revenue assumes that the current avg rates will not change over the planning period.

Estimated Annual Revenue Loss Related to Water Savings	**$17,437.84**	/year
Estimated Annual Cost	**$13,943.78**	/year
Estimated Cost over Planning Period not including Lost Revenue	**$11,120.00**	
Estimated Total Cost over Planning Period Including Set-up and Lost Revenue	**$185,498.36**	
Cost per 1000 Gallons Saved	**$3.37**	

Tap Fees with Water Use Efficiency Incentives (Lot based water dedication)

The District will continue to encourage smaller lots designated by developers by charging reduced fees for smaller lot sizes.

Planning Period	2014 to 2023	
Years in Planning Period	10	
Program Length	10	years

Estimated Water Savings

Annual Estimated Savings Rate	0.15%

Notes:

A conservative reduction of 0.15% of projected annual water use was assumed. 0.15% was calculated by a 3% growth rate multiplied by 5% savings (based on participation and overall savings).

Category	Average Water Use MG	*Estimated Annual Water Savings gallons/yr*
Residential	1,443.14	2,164,715

This measure mostly impacts future Residential customers. Although a few other customer categories may be impacted, those have been incorporated into the Residential category.

Estimated Annual Water Savings	**2.16**	MG/yr
Estimated Savings over Planning Period	**21.6**	MG

Costs

Total Cost to Water Provider

Labor Costs		
Staff Hours	15	/year
Hourly Cost	$65.00	/hour
Annual Staff Costs	$975.00	
Third Party Costs		/year
Evaluation and Follow-up Costs		/year
Annual Labor	**$975.00**	/year

Notes:

Estimated staff costs for Staff to spend approximately 15 hours per year at $65.00/hour to help develop within the District.

Tap Fees with Water Use Efficiency Incentives (Lot based water dedication)

Water Rates

Rate Category	Current Rates (per 1,000 gals)
Residential	$5.38

Savings	$10,052,675	/year
Savings	$10,037,596	/year
Estimated Annual Revenue Loss Related to Water Savings	**$15,079**	/year

Estimated Annual Cost	**$16,054**	/year
Estimated Cost over Planning Period not including Lost Revenue	**$9,750**	
Set-up and Lost Revenue	**$160,540**	
Cost per 1000 Gallons Saved	**$7.42**	

Notes:

The annual revenue loss was estimated based on current rates for all District customers.

Estimated Revenue assumes that the current rates will not change over the planning period.

Water Line Replacement Program

This measure involves a continuing process of replacing old pipes within part of District

Planning Period	2014 to 2023	
Years in Planning Period	10	
Program Length	10	years

Estimated Water Savings

Annual Estimated Savings Rate	2.5%	
Estimated Percentage of Usage of Area Affected	2.0%	
Annual Estimated Water Usage for Area Affected	41.76	MG/yr
Estimated Water Production over Planning Period without Savings	417.57	MG
Estimated Annual Water Savings	**1.04**	MG/yr
Estimated Savings over Planning Period	**10.4**	MG

Notes:

The line replacement is estimated to affect approximately 2% of the service area each year.

Costs

Total Cost to Water Provider

Labor & Material Costs		
Cost per year	$2,045,700.00	/year
Total Costs over Planning Period	**$20,457,000.00**	

Notes:

Costs provided by Left Hand Water District.
Cost accounts for staff labor:
Engineering Staff:
416 hours @ $65/hour
Inspection Staff:
416 hours @ $45/hour
Cost also accounts for general contractor costs + labor and material per foot of pipe replacement.

Estimated Annual Cost (distributed across 10 years)	**$2,045,700.00**	/year
Estimated Total Cost over Planning Period Including Set-up	**$20,457,000.00**	
Cost per 1000 Gallons Saved	**$1,959.63**	

Recycling WTP Filter Backwash - Existing Measure

Currently, 97.5 percent of the backwash at the District water treatment plant is recycled back into the treatment process.

Planning Period	2014 to 2023
Years in Planning Period	10
Program Length	10

Estimated Water Savings

Planning Period Savings Rate	1.0%	
Estimated Annual Water Savings	**21.9**	MG/yr
Estimated Savings over Planning Period	**219**	MG

Notes:

Estimated Backwashes:
2/day
30,000/backwash
Approximately 21.9 MG/year

Costs

Total Cost to Water Provider

Labor Costs		
Staff Hours	0	/year
Hourly Cost		/hour
Annual Staff Costs	$0.00	
Annual Labor	**$0.00**	/year

Notes:

No additional labor costs are associated with WTP Filter Backwash. No revenue is lost due to water savings since measure is performed prior to meters.

Estimated Annual Cost	**$0.00**	/year
Estimated Total Cost over Planning Period Including Set-up	**$0.00**	
Cost per 1000 Gallons Saved	**$0.00**	

Development, Updating, and Evaluation of Master Plans and Water Supply Plans

The District would like to continue developing, updating, and evaluating plans (i.e. Master Plans, Water Supply Plans, Capital Improvement Plans, and Water Efficiency Plans) that will improve its overall water efficiency and plan for future use.

Planning Period	2014 to 2023	
Years in Planning Period	10	
Program Length	10	years

Estimated Water Savings

Annual Estimated Savings Rate	0.25%

Category	Average Water Use MG	*Estimated Annual Water Savings gallons/yr*
Non-Revenue Water	219.86	549,641
Residential	1,443.14	3,607,858
Commercial	212.65	531,629
Multi Housing	27.51	68,774
Dual System	33.66	84,146
Landscape	43.38	108,439
Master Meter Community	94.01	235,023
Master Fire Meters	0.14	353
Hydrant Meters	13.50	33,757

Estimated Annual Water Savings	**5.22**	MG/yr
Estimated Savings over Planning Period	**52.2**	MG

Notes:

This measure has the potential to improve all categories. A conservative reduction of 0.25% of projected annual water use was assumed.

Costs

Total Cost to Water Provider

Labor Costs		
Staff Hours	50	/year
Hourly Cost	$65.00	/hour
Annual Staff Costs	$3,250.00	
Third Party Costs	$14,000.00	/year
Evaluation and Follow-up Costs		/year
Annual Labor	**$17,250.00**	/year

Notes:

Estimated staff costs for Staff to spend approximately 50 hours per year at $65.00/hour to help develop within the District.

Development, Updating, and Evaluation of Master Plans and Water Supply Plans

Water Rates

Rate Category	Current Rates (per 1,000 gals)
Weighted average of customer rates	$5.15

Estimated Average Annual Revenue without Water Savings	$9,624,193.51	/year
Estimated Average Annual Revenue with Water Savings	$9,600,133.03	/year
Estimated Annual Revenue Loss Related to Water Savings	**$24,060.48**	/year

Estimated Annual Cost	**$41,310.48**	/year
Estimated Cost over Planning Period not including Lost Revenue	**$172,500.00**	
Set-up and Lost Revenue	**$413,104.84**	
Cost per 1000 Gallons Saved	**$7.91**	

Notes:

The annual revenue loss was estimated based on current rates for all District customers.

Estimated Revenue assumes that the current rates will not change over the planning period.

Slow the Flow Commercial and Residential Irrigation Audits

Slow the Flow commercial and residential irrigation audits are performed by Center for ReSource Conservation (CRC).

Planning Period	2014 to 2023	
Years in Planning Period	10	
Program Length	10	years

Estimated Water Savings

Annual Estimated Savings Rate	5%

Customer Category	Outdoor Water Use Per Tap gallons/tap	*Estimated Annual Water Savings gallons/yr/tap*	*Annual Program Participants (taps)*
Residential	105,594	5,280	35
Commercial	254,266	12,713	1
Landscape	466,358	23,318	1

Estimated Annual Water Savings	**0.221**	MG/yr
Estimated Savings over Planning Period	**12.1**	MG

•The outdoor use estimates are based on the following approximations for each customer category: Residential = 63.4%, Commercial = 50.3%, Landscape = 97.2%
•Assumed a conservative estimate of 5% savings of projected outdoor water usage . Customers have to put Auditor's advice and suggestions into practice.
•Program Participants based on average participants from years 2009 - 2014.

Costs

Total Cost to Water Provider

Labor Costs		
Staff Hours	20	/year
Hourly Cost	$65	/hour
Annual Staff Costs	$1,300	
Third Party Costs	$8,000	/year
Evaluation and Follow-up Costs	$0	/year
Annual Labor	**$9,300**	/year
Materials Costs		

Notes:

Costs include staff time for implementing and evaluation. Third Party Costs include CRC time.

Water Rates

Rate Category	**Current Rates** (per 1,000 gals)
Residential	5.38
Commercial	*3.94*
Landscape	*6.40*

Slow the Flow Commercial and Residential Irrigation Audits

Estimated Average Annual Revenue without Water Savings	$119,485.27	/year
Estimated Average Annual Revenue with Water Savings	$113,511.01	/year
Annual Revenue Loss Related to Water Savings	**$5,974.26**	/year

Notes:

The annual revenue loss was estimated based on current rates for the following District customer categories (Residential, Commercial, and Landscape).

Estimated Revenue assumes that the current rates will not change over the planning period.

Estimated Annual Cost	**$15,274.26**	/year
Estimated Cost over Planning Period not including Lost Revenue	**$93,000.00**	
Estimated Total Cost over Planning Period Including Set-up and Lost Revenue	**$152,742.64**	
Cost per 1000 Gallons Saved	**$12.58**	

Residential Low-Flow Toilet Rebate - Existing Measure

The District will continue to offer rebates (in the form of bill credits) to customers for Low-Flow (1 - 1.6 gallons per flush (gpf)) and Dual Flush Toilets.

Planning Period	2014 to 2023
Years in Planning Period	10
Program Length	10

Estimated Water Savings

Annual Estimated Percent Savings	**10%**

Annual Estimated Water Use Per Tap without Savings

Customer Category	Water Use Per Tap gallons/person	Annual Program Participants	**Estimated Annual Water Savings (MG/yr)**	**Estimated Savings over Planning Period (MG)**
Residential =	66736	34	0.23	12.54
Multi Housing =	23427	2	0.00	0.23
Dual System =	17524	3	0.01	0.28
Master Meter Community =	24,185	6	0.01	0.82

Estimated Annual Water Savings	**0.25**	MG/yr
Estimated Savings over Planning Period	**13.87**	MG

Notes:

Estimated Water Use is based on the *following 2009-2013 average:*
Residential = 0.51 AF/tap

A rebate would be available for toilets using 1.0 - 1.6 gallons per flush or dual flush toilets.

Savings based on 2009-2014 Toilet Rebate program data provided by Left Hand Water District staff. After the data was filtered, calculated savings came to 10% for this Cost/Benefit analysis.

Estimated Savings over Planning Period is calculated by compounding the estimated annual water savings per the total number of participants for each given year.

Costs

Total Cost to Water Provider

Labor Costs		
Staff Hours	**25**	/year
Hourly Cost	$65.00	/hour
Annual Labor	$1,625.00	/year
Rebates		
Rebate Cost	$91.87	
Number of Participants	45	/year
Annual Rebate Cost	**$4,134.15**	

Notes:

Annual staff time is estimated at approximately 25 hours. This time includes water savings tracking.

Residential Low-Flow Toilet Rebate - Existing Measure

Water Rates

Rate Category	Average Monthly Usage (gals/tap)	Current Rates (per 1,000 gals)
Residential	5,561	$5.38
Multi Housing	1,952	$3.94
Dual System	1,460	$4.35
Master Meter Community	2,015	$6.03

Notes:

Revenue losses are only based on the water use and do not include the base rates.

Estimated revenue assumes that the current rates will not change over the planning period.

Estimated Average Annual Revenue without Water Savings	$74,541.52	/year
Estimated Average Annual Revenue with Water Savings	$67,087.36	/year
Annual Revenue Loss Related to Water Savings	**$7,454.15**	/year

Estimated Annual Cost	**$13,213.30**	/year
Estimated Cost over Planning Period not including Lost Revenue	**$57,591.50**	
Estimated Total Cost over Planning Period Including Lost Revenue	**$132,133.02**	
Cost per 1000 Gallons Saved	**$9.53**	

High Efficiency Clothes Washer Rebate

The District will continue to offer rebates (in the form of bill credits) to customers for High-Efficiency Clothes Washers.

Planning Period	2014 to 2023
Years in Planning Period	10
Program Length	10

Estimated Water Savings

Annual Estimated Residential Water Use Per Tap without Savings

Customer Category	Water Use gallons/person	Annual Program Participants
Residential	66,736	30
Multi Housing	23,427	2
Dual System	17,524	3
Master Meter Community	24,185	5

Residential, Multi Housing, Dual System, and Master Meter Community Annual Use	131,871	gallons/tap/yr
Total	131,871	gallons/tap/yr

People per Household	2.51	
Laundry loads per person per day*	0.37	
Saving per load with a high efficiency washer	16	gallons/load
Gallons Saved per Household per Year	5,424	gallons/yr

Annual Program Participants	40	/year
Maximum No. of Participants over Planning Period	400	

Estimated Annual Water Savings	**0.22**	MG/yr
Estimated Savings over Planning Period	**11.93**	MG

Notes:

Estimated Water Use is based on the following 2009 - 2013 average:
Residential = 0.51 AF/tap
Multi Housing = 1.79 AF/tap
Dual System = 0.15 AF/tap
Master Meter Community = 24.85 AF/tap

*Savings based on 0.37 loads per person per day *. Saving 16 gal per load (43 gal/load avg. rate - 27 gal/load conservation rate*) and 2.7 people per household.*

Estimated Savings over Planning Period is calculated by compounding the estimated annual water savings per the total number of audit participants for each given year.

**Based on "Handbook of Water Use and Conservation" by Amy Vickers*

Costs

Total Cost to Water Provider

Labor Costs		
Staff Hours	20	/year
Hourly Cost	$65.00	/hour
Annual Staff Costs	$1,300.00	
Evaluation and Follow up Costs	$0.00	/year
Annual Labor	**$1,300.00**	/year
Rebates		
Rebate Cost	$75.00	
Number of Participants	40	/year
Annual Rebate Cost	**$3,000.00**	

Notes:

Estimated annual staff time is estimated at approximately 20 hours for all programs. This time includes water savings tracking.

High Efficiency Clothes Washer Rebate

Water Rates

Rate Category	Current Rates (per 1,000 gals)
Residential	$5.38
Multi Housing	$4.35
Dual System	$6.03
Master Meter Community	$3.17

Notes:

Estimated Revenue assumes that the current rates will not change over the planning period.

Estimated Average Annual Revenue without Water Savings	$64,681.85	/year
Estimated Average Annual Revenue with Water Savings	$58,620.13	/year
Annual Revenue Loss Related to Water Savings	**$6,061.72**	/year

Estimated Annual Cost	**$10,361.72**	/year
Estimated Cost over Planning Period not including Lost Revenue	**$43,000.00**	
Estimated Total Cost over Planning Period Including Set-up and Lost Revenue	**$103,617.21**	
Cost per 1000 Gallons Saved	**$8.68**	

Rebate for ET Irrigation System Controller

The District will continue to offer rebates (in the form of bill credits) to customers for installing SMART irrigation controllers. SMART controllers sense either the soil moisture or climate conditions and adjust the irrigation scheduling accordingly.

Planning Period	2014 to 2023
Years in Planning Period	10
Program Length	10

Estimated Water Savings

Annual Estimated Percent Savings	**5%**

Annual Estimated Water Use Per Tap without Savings

Customer Category	Outdoor Water Use Per Tap gallons/tap	Annual Program Participants/taps
Residential	105,594	5

Estimated Annual Water Savings	**0.026**	MG/yr
Estimated Savings over Planning Period	**1.452**	MG

Notes:

Estimated Water Use is based on the *following 2009-2013 average:*
Residential = 0.51 AF/tap

Savings based on 2009-2014 ET Controller Rebate program data provided by Left Hand Water District staff.

Estimated Savings over Planning Period is calculated by compounding the estimated annual water savings per the total number of participants for each given year. Because of the extremely low participation rate, other categories (i.e., Commercial and Landscape) were not included in this savings estimate.

Costs

Total Cost to Water Provider

Labor Costs		
Staff Hours	**10**	/year
Hourly Cost	$65.00	/hour
Annual Labor	$650.00	/year
Rebates		
Rebate Cost	$125.00	
Number of Participants	5	/year
Annual Rebate Cost	**$625.00**	

Notes:

Annual staff time is estimated at approximately 10 hours

Rebate for ET Irrigation System Controller

Water Rates

Rate Category	Average Monthly Usage (gals/tap)	Current Rates (per 1,000 gals)
Residential usage Fee - *weighted average*	8,799	$5.38

Notes:

Revenue losses are only based on the water use and do not include the base rates.

Estimated revenue assumes that the current rates will not change over the planning period.

Estimated Average Annual Revenue without Water Savings	$15,627.06	/year
Estimated Average Annual Revenue with Water Savings	$14,845.71	/year
Annual Revenue Loss Related to Water Savings	**$781.35**	/year

Estimated Annual Cost	**$2,056.35**	/year
Estimated Cost over Planning Period not including Lost Revenue	**$12,750.00**	
Estimated Total Cost over Planning Period Including Lost Revenue	**$20,563.53**	
Cost per 1000 Gallons Saved	**$14.16**	

Time of Day Watering Restrictions - Existing Measure

Currently customers are being asked to voluntarily limit irrigation of landscaped areas to two days per week, and to minimize or discontinue water use for non-essential purposes. Water supply is monitored throughout the year to determine what, if any, additional measures will be needed.

Planning Period	2014 to 2023	
Years in Planning Period	10	
Program Length	10	years

Estimated Water Savings

Annual Estimated Savings Rate	2.5%	

Notes:

Estimate that approximately 63% of Residential, 50% of Commercial, and 97% of Landscape is outdoor use.

Assume a conservative estimate of 2.5% savings of projected outdoor water usage .

Customer Category	Outdoor Water Use gallons	*Estimated Annual Water Savings gallons/yr*
Residential	915,730,207	22,893,255
Commercial	106,905,870	2,672,647
Landscape	42,173,620	1,054,341

Estimated Annual Water Savings	**26.6**	MG/yr
Estimated Savings over Planning Period	**266**	MG

Costs

Total Cost to Water Provider

Labor Costs

Staff Hours	10	/year
Hourly Cost	$65.00	/hour
Annual Staff Costs	$650.00	
Annual Labor	**$650.00**	/year

Notes:

Costs include staff time for implementing water restrictions for existing measure.

Water Rates

Rate Category	Current Rates (per 1,000 gals)
Residential	5.38
Commercial	3.94
Landscape	*6.40*

Notes:

The annual revenue loss was estimated based on current weighted rates for select customer categories

Estimated Revenue assumes that the current rates will not change over the planning period.

Estimated Average Annual Revenue without Water Savings	$5,618,912.84	/year
Estimated Average Annual Revenue with Water Savings	$5,478,440.02	/year
Annual Revenue Loss Related to Water Savings	**$140,472.82**	/year

Estimated Annual Cost	**$141,122.82**	/year
Estimated Cost over Planning Period not including Lost Revenue	**$6,500.00**	
Estimated Total Cost over Planning Period Including Set-up and Lost Revenue	**$1,411,228.21**	
Cost per 1000 Gallons Saved	**$5.30**	

Educational Activities

Analysis of costs and benefits for educational activities are combined as shown below. Activities include Bill Stuffers, Newsletter, Newspaper Articles, Mass Mailings, Water Efficiency Page on District Website and Social Networking.

Planning Period	2014 to 2023
Years in Planning Period	10
Program Length	10

Estimated Water Savings

Customer Category	Avg. Annual Water Use over Planning Period (MG)	Estimated Annual Savings Rate	Estimated Annual Water Savings (MG/yr)
Residential	1,443.14	1%	14.43
Commercial	212.65	0.5%	1.06
Multi Housing	27.51	1%	0.28
Dual System	33.66	1%	0.34
Landscape	43.38	0.25%	0.11
Master Meter Community	94.01	0.25%	0.24

Estimated Annual Water Savings	16.4	MG/yr
Estimated Savings over Planning Period	**164**	MG

Costs

Total Cost to Water Provider

Labor Costs		
Staff Hours	40	/year
Hourly Cost	$65.00	/hour
Annual Labor	**$2,600.00**	/year
Materials Costs		
Unit Cost (cost of Bill Stuffers)	$0.25	/participant
Avg. Number of Participants (receiving bill stuffers) over Planning Period	9,928	/year
Annual Materials	**$2,481.94**	/year

Notes:

Staff hours include time spent preparing newsletter, updating website, and preparing bill stuffers.

In 2013 there were over 6,700 active tap accounts, not including Master Fire and Hydrant Meters. The average affected number of taps during the planning period is projected to be 8,672.

The annual revenue loss was estimated based on current rates for all District customers and assumes rates will not change over the planning period.

Water Rates

Rate Category	Average Monthly Usage (gals/tap)	Current Rates (per 1,000 gals)
Residential	13,868	$5.38
Commercial	42,148	$3.94
Multi Housing	48,661	$4.35
Dual System	4,089	$6.03
Landscape	39,971	$6.40
Master Meter Community	674,718	$3.17

Educational Activities

Estimated Average Annual Revenue without Water Savings	$9,501,943.02	/year
Estimated Average Annual Revenue with Water Savings	$9,415,427.44	/year
Estimated Annual Revenue Loss Related to Water Savings	**$86,515.58**	/year

Estimated Annual Cost	**$91,597.52**	/year
Estimated Cost over Planning Period not including Lost Revenue	**$50,819.39**	
Estimated Total Cost over Planning Period Including Lost Revenue	**$137,334.97**	
Cost per 1000 Gallons Saved	**$0.83**	

Landscape Design (Xeriscape) and Maintenance Classes

This measure includes continuing with District's existing Xeriscape program

Planning Period	2014 to 2023
Years in Planning Period	10
Program Length	10

Estimated Water Savings

Annual Estimated Savings Rate*	5.0%

Customer Category	Outdoor Water Use Per Tap gallons/tap	Annual Program Participants (taps)	*Estimated Annual Water Savings gallons/yr*	*Estimated Annual Water Savings (MG/yr)*
Residential	105,594	25	131,992	0.132
Commercial	293,558	2	29,356	0.029
Landscape	466,358	1	23,318	0.023

Estimated Annual Water Savings	**0.185**	MG/yr
Estimated Savings over Planning Period	**10.2**	MG

Notes:

This measure will mostly impact the following three customer categories: Residential, Commercial, and Landscape. Other customer categories may participate, but the impact would be minimal. Even in the Landscape category, there are approximately 60 customers, so program participants may be less than 1 per year.

Costs

Total Cost to Water Provider

Labor Costs		
Staff Hours	40	/year
Hourly Cost	$65.00	/hour
Annual Staff Costs	$2,600.00	
Third Party Costs	$0.00	/year
Annual Labor	**$2,600.00**	/year

Notes:

Staff costs include communication and outreach. Actual class time is also included.

Landscape Design (Xeriscape) and Maintenance Classes

Materials Costs

Number of Participants	28	/year
Material Cost per Participant	$25.00	/ participant
Annual Materials Budget	$700.00	/year
Annual Materials	**$700.00**	/year

Water Rates

Rate Category	Current Rates (per 1,000 gals)
Residential	$5.38
Commercial	$3.94
Landscape	$6.40

Average rates are shown for planning purposes only.

Estimated Revenue assumes that the current avg rates will not change over the planning period.

Estimated Average Annual Revenue without Water Savings	$109,316.58	/year
Estimated Average Annual Revenue with Water Savings	$103,850.75	/year
Estimated Annual Revenue Loss Related to Water Savings	**$5,465.83**	/year

Estimated Annual Cost	**$8,765.83**	/year
Estimated Cost over Planning Period not including Lost Revenue	**$33,000.00**	
Estimated Total Cost over Planning Period Including Set-up and Lost Revenue	**$87,658.29**	
Cost per 1000 Gallons Saved	**$8.63**	

Xeriscape Demonstration Garden

Maintaining a xeriscape demonstration garden is an excellent way to educate the public to the water savings and beauty available from xeriscaping. LHWD has designed, maintained, and continued to expand a xeriscape demonstration garden at their facility for nearly 20 years.

Planning Period	2014 to 2023
Years in Planning Period	10
Program Length	10

Estimated Water Savings

Annual Estimated Savings Rate	0.25%

Customer Category	Outdoor Water Use (gallons)	*Estimated Annual Water Savings gallons/yr*	*Estimated Annual Water Savings (MG/yr)*
Residential	915,730,207	2,289,326	2.29
Commercial	106,905,870	267,265	0.27
Landscape	42,173,620	105,434	0.11

Estimated Annual Water Savings	**2.66**	MG/yr
Estimated Savings over Planning Period	**26.6**	MG

This measure affects projected non-dual use outdoor water usage for Residential, Commercial, and Landscape tap customers. Other customer categories may also benefit, but participation would be considerably less given the demographics.

Estimate that approximately 58% of total customer use is outdoor use.

Costs

Total Cost to Water Provider

Labor Costs		
Staff Hours	40	/year
Hourly Cost	$65.00	/hour
Annual Staff Costs	$2,600.00	
Third Party Costs	$3,500.00	/year
Annual Labor	**$6,100.00**	/year
Materials Costs		
Annual Materials Budget	$500	/year
Annual Materials	**$500.00**	/year
Other Associated Costs		
Associated Costs	$43,400.00	
Annual Associated Cost.	**$43,400.00**	/year

Notes:

Cost is for garden, installation, plants and planting materials, and on-going maintenance.

Xeriscape Demonstration Garden

Water Rates

Notes:

Rate Category	Current Rates (per 1,000 gals)
Residential	$5.38
Commercial	$3.94
Landscape	$6.40

Estimated Average Annual Revenue without Water Savings	$5,618,913	/year
Estimated Average Annual Revenue with Water Savings	$5,604,866	/year
Annual Revenue Loss Related to Water Savings	**$14,047**	/year

Estimated Annual Cost	**$64,047.28**	/year
Estimated Cost over Planning Period not including Lost Revenue	**$500,000.00**	
Estimated Total Cost over Planning Period Including Set-up and Lost Revenue	**$640,472.82**	
Cost per 1000 Gallons Saved	**$24.06**	

APPENDIX E

Public Comments and Responses

AFFIDAVIT OF PUBLICATION

TIMES-CALL

State of Colorado
County of Boulder

I, the undersigned agent, do solemnly swear that the LONGMONT TIMES-CALL is a daily newspaper printed, in whole or in part, and published in the City of Longmont, County of Boulder, State of Colorado, and which has general circulation therein and in parts of Boulder and Weld counties; that said newspaper has been continuously and uninterruptedly published for a period of more than six months next prior to the first publication of the annexed legal notice of advertisement, that said newspaper has been admitted to the United States mails as second-class matter under the provisions of the Act of March 3, 1879, or any, amendments thereof, and that said newspaper is a daily newspaper duly qualified for publishing legal notices and advertisements within the meaning of the laws of the State of Colorado; that a copy of each number of said newspaper, in which said notice of advertisement was published, was transmitted by mail or carrier to each of the subscribers of said newspaper, according to the accustomed mode of business in this office.

The annexed legal notice or advertisement was published in the regular and entire edition of said daily newspaper once; and that one publication of said notice was in the issue of said newspaper dated **March 1, 2015**.

TERRY LOWE
Agent

Subscribed and sworn to before me this 3rd day of **March, 2015** in the County of Boulder, State of Colorado.

Melissa L Najera
Notary Public

Account #221046
Ad #5640812
Fee $17.16

MELISSA L NAJERA
NOTARY PUBLIC
STATE OF COLORADO
NOTARY ID 20064049936
MY COMMISSION EXPIRES DEC. 11, 2018

RECEIVED
MAR 05 2015
BY:

LEFT HAND WATER DISTRICT, COLORADO
NOTICE OF WATER EFFICIENCY PLAN UPDATE

Left Hand Water District has completed a draft Water Efficiency Plan. The Plan is designed to promote the efficient consumption of all water usage by residents, businesses, and local governments; the goal of the Plan is to encourage more beneficial use of our water resources and insure a future adequate water supply.

Prior to finalization of the Water Efficiency Plan, the District welcomes input from its customers. The District shall have a 60-day public review period beginning the date of this notice through April 27, 2015. A complete copy is on file and available for public inspection in the main District Office, 6800 Nimbus Road, Longmont, CO 80503, during regular business hours. The District will also post the plan on its website at http://lefthandwater.org/.

All written comments are due to Christopher Smith, General Manager, prior to April 27, 2015 at 6800 Nimbus Road, Longmont, CO.

Dated the 26th day of February, 2015.

LEFT HAND WATER DISTRICT, COLORADO
Lilah Imes
Executive Assistant

Published: Longmont Times-Call
March 1, 2015 - 5640812

RESOLUTION OF THE LEFT HAND WATER DISTRICT
REGARDING ADOPTION OF A WATER CONSERVATION PLAN

Resolution 2015-02

WHEREAS, the Board of Directors (the "**Board**") of the Left Hand Water District (the "**District**") recognizes the importance of conserving water and improving water use efficiency; and

WHEREAS, under Sec. 37-60-126, CRS, prompted by the Water Conservation Act of 2004, water providers delivering over 2,000 acre feet or more per calendar year are required to develop, adopt, and make publicly available and implement a water use efficiency plan; and

WHEREAS, on August 14, 2008, the Board adopted Resolution 2008-05 implementing the District's water conservation plan; and

WHEREAS, the Board desires to adopt an updated water conservation plan (the "**Plan**") that will describe the role of water use efficiency in the District's water supply planning; and

WHEREAS, the Plan was presented for review and comment at the Board meeting held on February 19, 2015; and

WHEREAS, a notice announcing the availability of the Plan for public review and comment was published on March 1, 2015 in the *Times Call* and the Plan was publicly available for a period of not less than sixty (60) days, commencing on February 20, 2015 and concluding on April 30, 2015, and public was invited to be heard at the Board meeting held on May 21, 2015.

NOW, THEREFORE, BE IT RESOLVED, that the Board of Directors of the Left Hand Water District hereby adopts the 2015 Municipal Water Efficiency Plan Update attached hereto as Exhibit "A" and incorporated herein by reference.

Passed and adopted at a regular meeting of the Board of Directors of the Left Hand Water District held this 21st day of May, 2015.

LEFT HAND WATER DISTRICT

By: _____
President

ATTEST:

_____
Secretary