

Grand Valley Regional Water Conservation Plan



UTILITIES, STREETS
& FACILITIES



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DRAFT

Acronyms

Name	Acronym
Acre feet	af
Cubic feet per second	cfs
City of Grand Junction	The City
Clifton Water District	Clifton
Colorado Water Conservation Board	CWCB
Commercial & Industrial	C-I
Gallons per day	gpd
Million gallons per day	mgd
Million gallons per year	mgy
Municipal and Industrial	M&I
The City, Clifton, and Ute	The Entities
United States Bureau of Reclamation	BOR
Ute Water Conservancy District	Ute, The District
Water Treatment Plant	WTP
Water Conservation Plan	WCP

Mission Statement

**TO PROMOTE WATER CONSERVATION
BY EXAMPLE, EDUCATION, AND INNOVATION
FOR THE PURPOSE OF
SECURING THE FUTURE WATER NEEDS
OF THE GRAND VALLEY**

Section One

The Regional Water Conservation Plan Entities:

The City of Grand Junction, Clifton Water District, and

The Ute Water Conservancy District

1. Introduction

Overview of the Grand Valley

The Grand Valley is located in Western Colorado and encompasses a large portion of Mesa County. Within the Grand Valley are the Cities of Grand Junction, Town of Fruita, Town of Palisade, and the unincorporated Towns of Clifton, Loma, and Mack. The Grand Valley was settled in the late 1800s and by the early 1900s, all of the major ditch companies and irrigation districts that divert water from the Colorado River, including a Bureau of Reclamation Project, were established. These ditch and canal systems provide irrigation water to most of the Grand Valley today. Located in Appendix A is a map of the major irrigation systems in the Grand Valley. Also located in Appendix A is a map of the domestic water providers in the Grand Valley.

The Grand Valley was established as a farming community and is still known for its peach orchards. Today a thriving wine industry is adding to the agricultural mix, however, recent growth has replaced much of the irrigated farm land with residential development. The climate in the Grand Valley is one of hot summers, temperate falls and springs with mild winters. The average precipitation is 8 inches or less with the irrigation season starting as early as late March and continuing through October.

A Water Conservation Plan

A Water Conservation Plan (WCP) is a plan for the development and utilization of a set of strategies. The purpose of a Water Conservation Plan is to help water purveyors improve their overall water use efficiency by addressing issues and problem areas and providing a defined method of solving problems and dealing with system inefficiencies. A WCP can also provide both water suppliers and the local communities a means of using their water resources in a wise and prudent manner thus managing this precious exhaustible resource to its maximal responsible use.

This WCP is intended to be broad and flexible so that it can be adapted to changing water conservation efforts over time. Through effort and cooperation of the City of Grand Junction, Clifton Water District, and the Ute Water Conservancy District (the Entities), this Regional Water Conservation Plan has been developed for the Grand Valley. The ultimate goal of creating a regional water conservation effort is to provide unified water education and community outreach programs that will aid the public in developing meaningful water conservation practices.

The Water Conservation Planning Process

Section 1: Profiling the Water Systems

For each of the Entities, information was gathered and documented in this plan to assist with identifying and analyzing water conservation opportunities. Included in each of the water providers' profile are descriptions of the water systems including the water rights and the delivery systems as well as the general population served. Each of the Entities profile also characterizes current water use and forecasts future demand. Historical data was obtained from Water Conservation Plans produced by each of the Entities in 1996.

Population forecasts were developed from the Colorado State Demographer and were derived through economic forecasts, labor supply and demand, and population migration. All variables were modeled and county population forecasts were developed based upon the 2010 U.S. Census. The State Demographer has estimated that growth in Mesa County will be 2% every five years, however, it should be noted that the population in Western Colorado has been on the decline for the past two years due to the general economic downturn of the United States.

Section 2: Current Water Conservation Measures and Programs

Section 2 discusses current programs and measures in the Grand Valley that have been developed to educate the public about water conservation and drought management. These programs and measures include all programs developed by both of the domestic water purveyors

and the irrigation water providers, as well as institutional interests that include the Mesa County Government and the Colorado State University research center.

Section 3: The Grand Valley Regional Water Conservation Plan

The development of the Regional Water Conservation Plan includes the formation of Water Conservation Goals, the identification and selection of Water Conservation Measures, the integration and modification of water demand forecasts, and the implementation of the Water Conservation Plan.

Water Conservation Goals: Water Conservation goals were set based on the criteria of:

- The Water Conservation Plan Mission
- The cost effectiveness of the Goals
- The Benefits of the Goals

Defining a Plan of Action

The Water Conservation measures or plans of action were determined by evaluating proposed alternatives. The Water Conservation Measures that best met the criteria were selected for implementation.

Implementation of the Plan of Action

Each Water Conservation Measure was prioritized for implementation based on its relative importance as determined by The Steering Committee and the Governing Board of Directors of the City, Clifton, and Ute. A planning-level budget and schedule was developed as well as prospective funding sources for each measure.

Evaluating and Monitoring the Progress and Updating the Water Conservation Plan

Progress reviews will be conducted annually with the Water Conservation Plan being updated every seven years at a minimum.

2. The City of Grand Junction

History and Water Rights

The City of Grand Junction was founded in 1881 and by 1911 had obtained adjudicated water rights from the Gunnison River and from Kannah Creek. In 1911 the City constructed a pipeline from Kannah Creek that delivered up to 5 mgd to the City's residents. In the late 1930s, the City constructed a treatment plant on "Reservoir Hill" that would treat up to 5 million gallons per day (mgd). The plant was expanded in 1946 to treat an additional 2.13 mgd.

In 1947 the City constructed Carson Reservoir in the Kannah Creek area to hold 650 acre-feet of water. In 1955, the City acquired Hallenbeck #1 Reservoir, aka Purdy Mesa Reservoir, Juniata Reservoir, and Reeder Reservoir, all located on Grand Mesa, along with direct flow rights to fill the reservoirs. At the same time, the City began plans to construct a second delivery pipeline. The second pipeline increased the delivery capacity to the City of 12.5 mgd. In 1957, the City also acquired water rights from the Gunnison River in the amount of 120 cubic feet per second (cfs) and acquired additional storage and direct flow rights in Raber Click and Juniata Reservoirs.

In 1972, the City constructed a new pump station on the Gunnison River and acquired water rights from the Colorado River in the amount of 120 cfs. During the 1960s, a new water treatment plant was constructed to treat up to 16 mgd. This plant is currently in use and provides the City's residents high quality water. The City currently has 8 mg of potable storage and approximately 13,000 acre-feet of raw storage.

During the late 1970s and early 1980s, the City helped the Clifton Water District build a new water treatment plant that would treat up to 8 mgd. The benefit to the City was that Clifton would provide up to 4 mgd to the City if needed. The City also enlarged Juniata Reservoir and the pumping capacity at the pump station on the Gunnison River. In addition, the City purchased several reservoirs on Grand Mesa and other priority direct flow rights on Kannah Creek. In 1989, the City purchased the Sommerville Ranch along with the ranch's water rights to insure that the City could provide water to

its residents even during the most severe drought. Table 2-1 is a list of the City of Grand Junction's water rights.

Retail Water Sales

The City currently provides treated retail water to residents and businesses that are located within the City's nine square mile service area. Except for two golf courses described later, all water used for irrigation within the City is treated water. For 2010 there were 9,185 taps in use with an average water demand of 1,738 million gallons per year for the years of 2004-2010. During that same time period, commercial water taps were approximately 14% of total taps. For the years of 2004-2010, commercial water use ranged between 36% and 39% of total water demand with almost one third of the commercial water use allocated to the top five largest commercial water users. The unbilled water was calculated to be 9.5% of treated water (the percent difference between treatment plant effluent and metered water sales). "Unbilled Water" is unaccounted water used in emergency fire fighting, main-line breaks, unfound leaks, unauthorized water use, and metering inaccuracies.

The average daily demand for January for the study period was 2.6 million gallons per day (mgd) and the average peak demand in July was 11.6 mgd. The ratio of the low day demand to the peak day demand was 4.4 or water demand for the peak day in July is four times that of an average day in January. This difference is mainly due to lawn irrigation and home cooler demand during the hot summer months. Table 2-2 shows the City's monthly and annual billed water for the years 2004-2010 as well as detailed water use for those years. Figure 2-1 illustrates the annual water demand for the years of 2004-2010. Table 2-3 shows the residential and commercial water use, number of taps, and percentage of water use in the City. Table 2-4 shows the City's top 5 largest C-I water users for 2010.

Table 2-4

City of Grand Junction Five Largest Commercial-Industrial Customers 2010			
Customer	Sector	Percentage	Water Use (mg)
City of GJ parks	Government	5.3%	90.3
St. Mary's Hospital	Hospital	2.3%	39.5
Mesa State College	Education	2.1%	36.5
Veteran's Hospital	Hospital	1.3%	22.8
Alsco	Service	1.1%	19.0
Total			208
Total water billed in 2010			1,713
Percentage of 2010 billed water			12.1%

Table 2-1
City of Grand Junction
Summary of Storage Rights - Kannah Creek
(values in acre-feet)

Name	Absolute	Conditional	Comments
Anderson Reservoir No. 1	504.0	468.0	Includes all refill rights for all reservoirs
Anderson Reservoir No. 2	568.4	595.0	
Anderson Reservoir No. 6	57.3	118.0	
Bolen A&J Reservoir No. 2	292.9	240.0	
Bolen Reservoir	534.9	521.0	
Carson Lake	637.0		
Deep Creek Reservoir #2	65.0		Amount is City Owned, total storage is 350.0 af
Hallenbeck #1 Reservoir	863.0	659.0	Aka Purdy Mesa Reservoir
Dry Creek Reservoir & Supply	600.0		Aka Chambers Reservoir, reservoir storage is 200 af
Flowing Park Reservoir	782.0		
Grand Mesa Reservoir No. 1	559.0		
Hallenbeck #2 Reservoir	985.4		Aka Raber Click Reservoir
Juniata Reservoir	9581.1	1794.1	Includes all refill rights
Purdy Mesa Reservoir No. 2		2.5	

Table 2-1
(continued)

City of Grand Junction
Summary of Direct Flow Rights - Kannah Creek
(values in cfs)

Name	Irrigation	Domestic/ Municipal	Comments
Bauer Ditch	13.18	1.0	
Bolen A&J Ditch	29.39	29.39	Municipal use is conditional
City Ditch		33.77	Include Mun. & Irr. Uses
Deep Creek Res #2 Supply D	20.0		Fills Deep Creek Res. #2
Grand Jct FL &WW		11.72	
Juniata Ditch	78.62	129.0	plus 75 cfs for other uses, includes enlargements
Kannah Crk Highline Ditch	67.9		49.11 cfs includes municipal uses
Laurent Ditch	33.72	1.0	Domestic use include stock

Table 2-1
(continued)

City of Grand Junction
Summary of Direct Flow Rights - Colorado and Gunnison River
(values in cfs)

Name	Irrigation	Domestic/ Municipal	Comments
Grand Junction Gunnison PL		120.0	Gunnison River, inclues Mun., Ind., Dom. uses
Redlands Tailrace pump station		50.0	Gunnison River, 14.0 cfs remains conditional
Colorado River Pipeline		81.43	Owned with Clifton, 62.86 cfs remains conditional
Gardener Diversion		10.0	aka Ridges Pumping Station
Ridges Pump Station #2		15.0	8.47 cfs remain Conditional
Ridges Ponds #1		4.5 af	
Ridges Ponds #2		2.3 af	
Ridges Ponds #3		32.5 af	
Ridges Ponds #4		71.0 af	
Ridges Well		0.077	

Somerville Ranch Water Rights - Whitewater Creek

Brandon Ditch	33.4	15.0	
Reeder Reservoir	179.7 af	700.0 af	
Somerville Reservoir #1	995.8	973.0	
Somerville Ranch Irrigation Sys.	3.0		
Somerville Wells No. 1&2			0.222 cfs & 0.444 cfs respectively

Table 2-2

City of Grand Junction Monthly Treated Water
(values in million gallons per month)

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
2004	88.04	79.09	73.00	116.52	130.53	183.52	265.19	239.89	251.49	154.42	105.77	91.02	1,778.47
2005	76.46	72.45	71.65	98.60	132.84	211.81	213.58	222.11	219.60	159.35	103.44	76.89	1,658.77
2006	88.83	78.99	96.05	100.84	151.57	239.92	242.27	214.48	226.76	143.72	87.82	91.56	1,762.80
2007	77.09	75.45	88.92	93.20	119.74	221.54	242.40	272.01	224.91	150.56	125.80	82.97	1,774.60
2008	72.07	80.18	75.72	164.98	172.12	279.24	235.80	198.83	194.80	98.59	80.02	95.90	1,748.25
2009	104.10	68.58	78.44	94.89	137.02	193.43	201.37	234.13	219.08	206.30	107.21	68.87	1,713.42
2010	60.69	78.06	86.75	124.36	169.05	249.91	229.51	177.16	206.17	111.84	82.34	87.11	1,662.95

Average 81.04 76.11 81.50 113.34 144.69 225.62 232.87 222.66 220.40 146.40 98.91 84.90 1,728.46

Detailed Water Use

Average Annual Water Use 1,728.5 mg
 Average Unbilled Water 182.4 mg
 Average Annual Water Loss 9.5%

Average Peak Day Use (July) 11.6 mgd
 Average Day Use (January) 2.6 mgd
 Avg Peak Day to Avg Day ratio 4.4

Figure 2-1

City of Grand Junction Water Demand

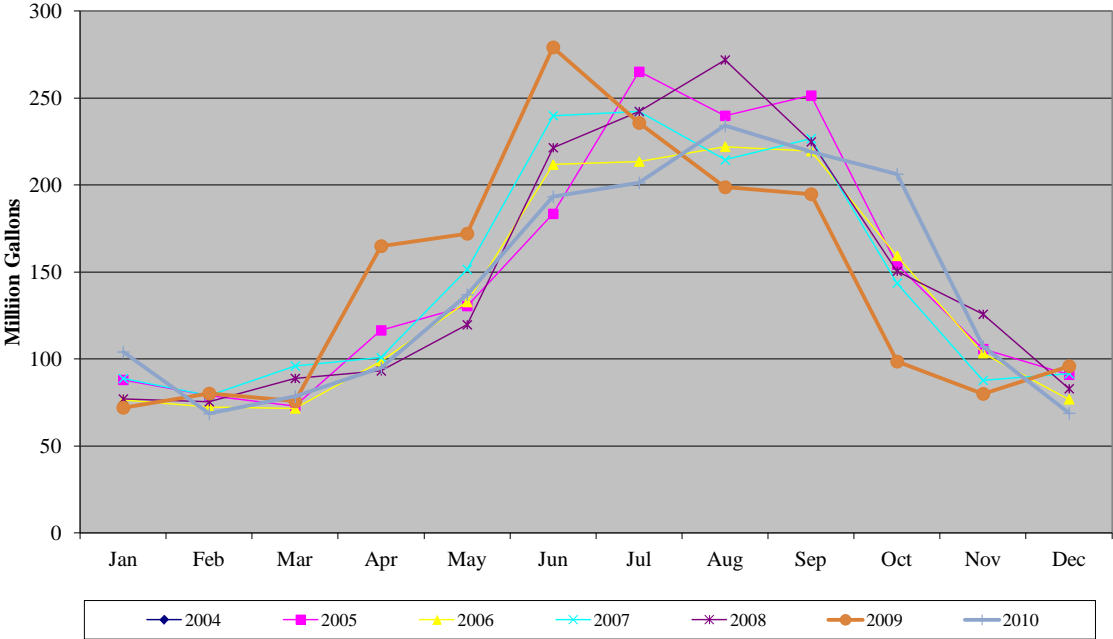


Table 2-3
City of Grand Junction
Water Use Patterns

Year	Customer Class	Total Taps	Metered Water (1000 gallons)	Average per Tap (1000 gallons)	Per Capita	Water Use % of Total	% of Taps
2010	Residential	7,897	1,101,370	139	111	64.3%	85.0%
	Commerical	1,288	629,929	489		36.8%	13.9%
	Total	9,185	1,731,299				
2009	Residential	7,977	1,059,819	133	109	61.9%	85.8%
	Commerical	1,316	653,607	497		38.1%	14.2%
	Total	9,293	1,713,426				
2008	Residential	8,139	1,072,170	132	110	61.3%	86.4%
	Commerical	1,280	676,077	528		38.7%	13.6%
	Total	9,419	1,748,247				
2007	Residential	8,259	1,136,014	138	117	64.0%	85.3%
	Commerical	1,421	638,582	449		36.0%	14.7%
	Total	9,680	1,774,596				
2006	Residential	8,124	1,126,770	139	118	63.9%	85.1%
	Commerical	1,420	636,025	448		36.1%	14.9%
	Total	9,544	1,762,795				
2005	Residential	8,087	1,064,358	132	113	64.2%	86.9%
	Commerical	1,220	594,409	487		35.8%	13.1%
	Total	9,307	1,658,767				
2004	Residential	8,082	1,126,662	139	119	63.3%	86.8%
	Commerical	1,229	651,810	530		36.7%	13.2%
	Total	9,311	1,778,472				

Note: Residential uses were combined for both single family and multi-family taps.

Commercial: includes City, Governmental & Commercial accounts

Per Capita: Calculated residential and multi-family population, 2.34 persons per unit;
annual residential billing divided by 365 (days per year) equals gallons per day;
gallons per day divided by population equals daily individual use.

Current Rate Structure and Tap Fees

Water Rates for the City were set to finance operation and maintenance of the water system, capital improvements of the water system, and legal expenses that insure the City's water rights. The City's water rates are based on an increasing block rate structure for all taps. The City's 2008 retail water sales totaled \$4,261,887.00. Tap fees and Plant Investment Fees provide monies for the operation and maintenance of the Water Treatment Plant. Table 2-3 and Table 2-4, below, show the City's water rates and tap fees. Taps of ¾ inch and 1 inch are typically residential taps while all other taps are commercial and industrial taps.

Table 2-5

City of Grand Junction Water Rates	
Rate	Gallons
\$9.00	0-3000
\$1.85	3,001-10,000
2.25 (per 1,000 gal)	10,001-20,000
2.65 (per 1,000 gal)	20,001 plus

Table 2-6

Tap Fees			
Tap Size	Tap	PIF*	Connection Fees
3/4 "	\$700	\$300	\$1,000
1"	\$875	\$375	\$1,250
1 1/2 "	\$2,050	\$900	\$2,950
2"	\$2,900	\$1,250	\$4,150
3"	\$2,975	\$6,875	\$9,850
4"	\$12,850	\$5,550	\$18,400
6"	\$19,850	\$8,550	\$28,400

* Plant Investment Fees

Planned New Water Facilities

Because the growth rate in the City has been relatively small, no new water treatment facilities or distribution lines are planned in the future

3. The Clifton Water District

History and Water Supply

The Clifton Water District (Clifton) was formed in 1951 to provide domestic water to residents in Mesa County located between the City of Grand Junction and the Town of Palisade, in an unincorporated area of Mesa County commonly referred to as Clifton. Clifton constructed a 0.68 mgd water treatment plant on Orchard Mesa with the water source being the City's Purdy Mesa Flowline. Clifton began serving water for 451 taps on April of 1958. The treatment plant was expanded to 1.27 mgd, however, it was abandoned in 1989 due to the plant's inability to produce water quality to meet Colorado Primary Drinking Water Standards.

During the late 1970s, a new water treatment plant was constructed with the help of the City of Grand Junction. The plant's initial capacity was 8.0 mgd but was expanded in 1982 to a 12.0 mgd capacity. The source of raw water for the new treatment plant was the Colorado River. In 2005, the treatment plant was upgraded with a new pretreatment settling system with plans to enhance the operations by constructing new filters and additional settling ponds in the future when growth warrants the expansion. Clifton currently has 10 mg of potable storage in six storage tanks.

Clifton owns 16.99 cfs in the Grand Valley Canal, owned and operated by the Grand Valley Irrigation Company (GVIC). Of the 16.99 cfs, 1,100 shares, equivalent to 11.46 cfs or 7.4 mgd, has been changed to an absolute domestic water right and is limited to 2,618 acre-feet during the irrigation season of April through October. The remaining 678 shares in the Grand Valley Canal remain irrigation water rights. The Grand Valley Canal water right is the calling water right on the Colorado River below the Shoshone dam near Glenwood Springs. Clifton also owns 4.0 cfs at the L.H. Hurt Pump, and 14.1 cfs absolute and 5.9 cfs conditional in the Grand Junction Colorado River Pipeline. Table 3-1 is a summary of Clifton's water rights.

Table 3-1**Clifton Water District
Water Rights**

Name	Absolute	Conditional	Adjudication Date	Comments
Colorado River Pipeline	14.87 cfs	5.13 cfs	1959	Clifton owns 20.0 cfs in water right
L.H. Hurt Pump	4.00 cfs		1959	Alternate Point at Grand Valley Canal
Grand Valley Canal	16.99 cfs		1912	100 shares domestic, 678 shares irrigation
				Domestic ltd. to 2618 af Apr-Oct

Retail Water Sales

Clifton currently provides retail water to residents and businesses that are located within Clifton's 10,720 acre service area (In-District) as well as 1600 acres located in the Whitewater area (a mix of both In-District and Out-of-District customers). There are currently 10,837 taps with an average water demand of 1,127.47 mgd for the years of 2004 - 2010. Commercial water sales ranged from 5.1% to 7.9% of total sales and averaged 75,641 mgd for the seven-year period, however, commercial water taps averaged only 2.2% of total water taps. Historical water use is predominately residential at 93% with commercial use at approximately 7%. Unbilled water has averaged 13% over the past seven years and is a result of water used in emergency fire fighting, main-line breaks, unfound leaks, unauthorized water use, and metering inaccuracies.

Approximately 70% of homes in the Clifton Water District enjoy the use of direct flow irrigation water from the Palisade Irrigation District (PID), the Mesa County Irrigation District (MCID), and the Grand Valley Canal (GVIC). These self-governing entities control and regulate the supply delivery of the available irrigation water with the Clifton Water District having no jurisdictional control over their operations. Water shares in the PID and MCID are attached to the land by law, with the GVIC providing water shares through a market based ownership system. For those customers that have the 'opportunity' to use the direct flow irrigation water, not all take advantage of the 'opportunity' for whatever reason. Those that don't use the direct irrigation flow water often utilize treated water for their outdoor irrigation purposes. As identified later in this document in the Clifton Water Rate Section, the per capita customer use data does include both those customers who utilize direct flow irrigation water and those that use domestic water for outdoor irrigation purposes.

The average daily demand for January for 2004-2010 was 2.1 million gallons per day (mgd) and the average peak demand in July for the same time period was 7.2 mgd. The ratio of the low day demand to the peak day demand was 3.4 or water demand for the peak day in July was three and nearly one-half times that of an average day in January. This difference was due to lawn irrigation, home cooler water demand and other seasonal activities. Table 3-2 shows Clifton's monthly

and annual demand for the years 2004-2010 as well as detailed water use for those years. Figure 3-1 illustrates the annual water demand for the same period. Table 3-3 shows the residential and commercial water use, number of taps, and percentage of water use in the Clifton Water District. It should be noted that while residential taps increased steadily over the seven-year period, commercial taps remained relatively constant and constituted only 2.2% of the total water taps and averaged 6.4% of water sales for the study period. Table 3-4 shows the top five C-I sector water users for 2010.

Table 3-2

Clifton Water District Monthly Treated Water
(values in million gallons)

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
2004	75.59	57.06	62.90	80.19	84.48	119.44	144.24	140.77	124.19	85.15	65.53	62.72	1,102.26
2005	61.75	53.65	56.50	73.75	82.78	117.58	127.16	137.82	116.61	92.17	101.20	68.25	1,089.22
2006	55.80	56.80	56.49	74.99	98.80	129.88	157.06	132.64	127.58	87.64	59.13	69.69	1,106.50
2007	64.60	68.10	64.12	76.87	108.39	130.29	158.60	146.86	128.67	84.61	63.39	72.09	1,166.59
2008	66.16	61.90	67.93	68.11	93.05	131.80	137.43	153.33	134.44	99.44	83.19	63.42	1,160.20
2009	65.73	68.08	61.65	64.84	105.46	111.34	124.13	152.21	123.33	105.22	75.33	61.15	1,118.47
2010	66.77	67.62	59.86	66.28	100.64	121.79	148.27	156.33	116.83	103.85	78.32	62.52	1,149.08
Average	65.20	61.89	61.35	72.15	96.23	123.16	142.41	145.71	124.52	94.01	75.16	65.69	1,127.47

Detailed Water Use

Average Annual Water Use	1,127.5 mg
Average Unbilled Water	184.0 mg
Average Annual Water Loss	13%
Average Peak Day Use (July)	7.2 mgd
Average Day Use (January)	2.1 mgd
Avg Peak Day to Avg Day ratio	3.4

Figure 3-1

Clifton Water District Water Demand

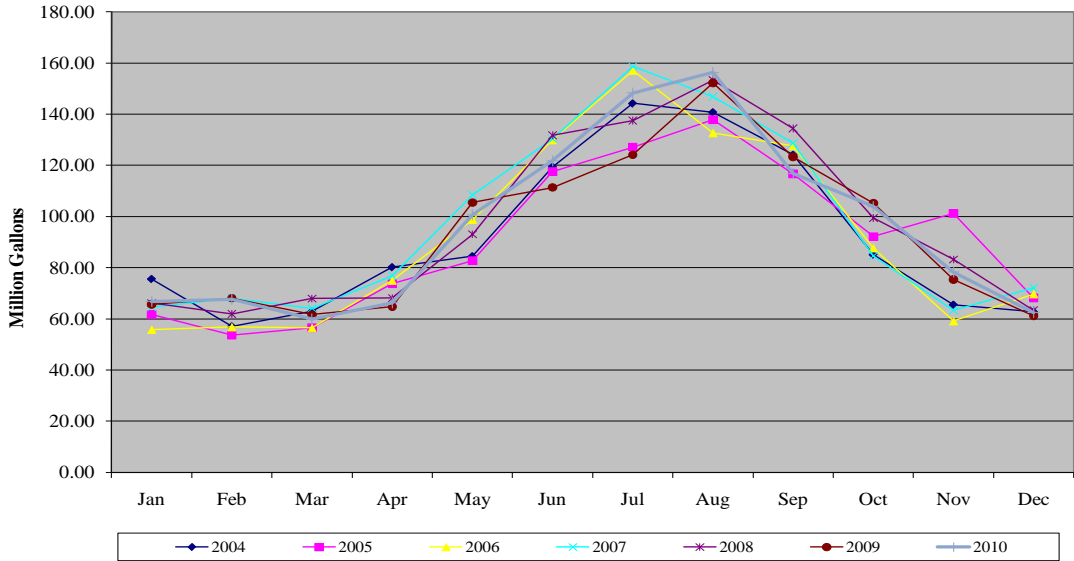


Table 3-3

Clifton Water District Billed Water by Sector

Year	Customer Class	Total Taps	Metered Water (1000 gallons)	Average per Tap (1000 gallons)	Per Capita	Water Use % of Total	% of Taps
2010	Residential	10,590	1,060,601	100	79	92.7%	97.7%
	Commercial	247	88,479	358		7.3%	2.3%
	Total	10,837	1,149,080				
2009	Residential	10,619	1,036,822	98	80	92.7%	97.8%
	Commercial	241	81,648	339		7.3%	2.2%
	Total	10,860	1,118,470				
2008	Residential	10,499	1,068,544	102	83	92.1%	97.8%
	Commercial	238	91,656	385		7.9%	2.2%
	Total	10,737	1,160,200				
2007	Residential	10,127	1,081,429	107	88	92.7%	97.8%
	Commercial	227	85,161	375		7.3%	2.2%
	Total	10,354	1,166,590				
2006	Residential	10,155	1,045,642	103	86	94.5%	97.9%
	Commercial	223	60,858	273		5.5%	2.1%
	Total	10,378	1,106,500				
2005	Residential	9,925	1,033,670	104	87	94.9%	97.6%
	Commercial	244	55,550	228		5.1%	2.4%
	Total	10,169	1,089,220				
2004	Residential	9,417	1,036,124	110	91	94.0%	97.9%
	Commercial	202	66,136	327		6.0%	2.1%
	Total	9,619	1,102,260				

Note: Residential includes: Single Family Residential, Multi Family Residential and Trailer Parks

Commercial includes: Commercial, Restaurants, Schools, Churches, Firelines

Per Capita: Per capita calculations (2010) = Unit connections times 2.73 (calculated people per unit) equals Clifton population

Calculated people per unit was 2.65 for the years of 2000-2009.

annual residential billing divided by 365 (days per year) equals gallons per day;

gallons per day divided by Clifton population equals daily individual use.

Table 3-4

Clifton Water District Five Largest Commercial-Industrial Customers 2010			
Customer	Sector	Percentage	Water Use (mg)
Haliburton Energy	Commercial	0.8%	8.2
Coronado Plaza	Multi-Use	0.5%	5.1
Kroger	Supermarket	0.3%	3.5
IPS New West Station	Multi-Use	0.2%	2.5
Best Western Clifton Inn	Hotel	0.2%	1.9
Total			21.2
Total water billed in 2010			1,086.6
Percentage of 2010 billed water			2%

Current Rate Structure and Tap Fees

Clifton’s inclining block water rate structure was developed for two specific purposes: 1) to effectively finance day to day operations; and, 2) to encourage water conservation by charging an increased monetary rate for higher use which helps prolong capital investment and improves long range planning efforts.. The Plant Investment Fees support the upgrades of the Water Treatment Plant and distribution system. Current rates were set on January 1, 2011 for In District and Out of District residential and commercial taps and are based on an increasing block rate structure. These rates are evaluated annually by staff to assure rates collected are sufficient to meet the day to day operational cost with the evaluation being reviewed by the District’s Board of Directors during each year’s budget cycle. Tables 3-4 and 3-5 list Clifton’s current water rates and Plant Investment Fees.

Table 3-5

**Clifton Water District Water Rates
January 1, 2012**

Residential: Meters 3/4" x 5/8" through 2"

In District		Out of District	
Rate	Amount (gallons)	Rate	Amount (gallons)
\$14.50	0-3,000	\$21.75	0-3,000
\$2.25 each 1,000 gallons	3,001-10,000	\$3.38 each 1,000 gallons	3,001-10,000
\$2.60 each 1,000 gallons	10,001-18,000	\$3.90 each 1,000 gallons	10,001-18,000
\$3.50 each 1,000 gallons	>18,000	\$5.25 each 1,000 gallons	>18,000

Non-Residential: Meters 3/4" x 5/8" through 10"

In District		Out of District	
Rate	Amount (gallons)	Rate	Amount (gallons)
\$14.50	0-3,000	\$21.75	0-3,000
\$2.25 each 1,000 gallons	3,001-10,000	\$3.38 each 1,000 gallons	3,001-10,000
\$2.60 each 1,000 gallons	>10,001	\$3.90 each 1,000 gallons	>10,001
*Demand Charge	\$200 first 1,000 gallons	\$300 first 1,000 gallons	
	\$4.00 each additional 1,000 gallons	\$6.00 each 1,000 gallons	

* A Demand Charge is assessed when a Combination Meter is utilized and the usage flow exceeds the "low flow" meter causing the "high flow" meter to register additional usage.

Metered Fire Hydrant and/or Fill Station Use: \$2.30 per 1,000 gallons

Table 3-6

Residential Plant Investment Fees

Non-Residential Plant Investment Fees

Tap Size	In District	Out of District
3/4 "	\$5,000	\$7,500
1"	\$10,000	\$15,000
1 1/2 "	\$15,000	\$22,500
3"	\$33,750	\$50,625

Tap Size	In District	Out of District
3/4 "	\$5,000	\$7,500
1"	\$10,000	\$15,000
1 1/2 "	\$15,000	\$22,500
3"	\$33,750	\$50,625
1" x 4" Combd	\$50,700	\$76,050
1 1/2" x 6"	\$76,050	\$114,075
2" x 8"	\$114,075	\$171,113
2" x 10"	\$171,113	\$256,670

Additional Water Tap Fees

Main Line Extension Fees	
Tap Size:	Extension Fee
2"	\$500
4"	\$1,000
2"	\$1,500
8"	\$2,500
10"	\$3,000
12"	\$3,500

Note: Service of taps greater than 3 inches requires Board action to determine cost.

Planned New Water Facilities

The Clifton WTP was upgraded in 2005 and plans to enhance and increase the filtration capacity. These efforts are in process, however, due to the economic downturn and current population decline, plans for future upgrades have been put on hold until population growth increases and funding becomes available.

4.0 The Ute Water Conservancy District

History and Water Supply

The Ute Water Conservancy District was formed on April 4, 1956 by decree of the Mesa County Court. The District encompasses approximately 85% of Mesa County population starting at Cameo east of the Town of Palisade and terminating near the Colorado-Utah State line.

The primary source of supply for the District is the Jerry Creek Reservoirs (No. 1 and 2) with a combined capacity of 8,623 AF. The Jerry Creek Reservoirs are filled from the Ute Pipeline Headgates No.1 or No.2 that have a senior water right for 20 cfs and a junior water right is for 30 cfs. The Ute Pipeline headgate No. 1 diverts water directly from Plateau Creek and Headgate No. 2 diverts water from the Lower Molina Power Plant. The District generally diverts water from Headgate No. 2 due to better water quality and yield. The District has an environmental constraint of 20 minimum stream flows in Plateau Creek when diverting from headgate No. 1 that was imposed by the US Army Corps of Engineers when the diversion was constructed in 1977 during that year's drought.

The District has converted their irrigation water rights from the Carver Ranch purchase to municipal use. The Water Court decree has limited the diversions to 508.9 acre-feet per year. These water rights are diverted from Mesa and Coon Creeks by a third intake into the Ute Pipeline. The District owns seven other ranch properties that still remain in agriculture. These ranches have numerous direct flow rights, storage rights and Collbran Water Conservancy District shares.

The raw water from the Jerry Creek Reservoirs is delivered to the District's water treatment plant via an 18.2 mile long, 48-inch diameter Plateau Creek Pipeline. The Pipeline has a capacity to deliver 40.3 mgd, or 62.2 cfs, from the Jerry Creek Reservoirs. The Pipeline travels along the Plateau Creek valley floor for approximately 11.2 miles before entering the Lower Canyon Tunnel. After exiting the Lower Canyon Portal, the Pipeline alignment follows Plateau Creek for approximately 1.2 miles before entering the 3,300 ft long Lower Mesa Tunnel. Upon

exiting the Lower Mesa Tunnel the Pipeline travels along the south-westerly wall of De Beque Canyon above Interstate 70 for approximately 3.2 miles before entering the District's water treatment plant.

In addition to the Plateau Creek Pipeline, diversions can also be made from the Colorado River through the Rapid Creek Pumping Pipeline that has a capacity of 12 cfs and a decreed water right of 15 cfs. Since the formation of the Ute Water Conservancy District, Ute has acquired numerous water rights in the Grand Mesa watershed. Table 4-1 is a list of storage rights and Table 4-2 is a list of direct flow rights owned by Ute Water Conservancy District.

In 1976 and again in 1985, the WTP was expanded to meet the growing demand for domestic water. The WTP has recently undergone a \$35 million dollar expansion that included installation of four new filters. The present WTP capacity is 28.8 MGD with treated storage of approximately 16 million gallons of water. Ute currently has approximately 1,450 miles of distribution pipelines and serves 29,484 residential and commercial taps with an estimated population of about 79,600.

Table 4-1

**Ute Water Conservancy District
Summary of Storage Rights**

**Grand Mesa Tributaries
(values in acre-feet)**

Name	Source	Acre-feet	Use	Comments
Big Creek Reservoir Company	Big Creek	372.8	Irr.	32 shares
Big Park Reservoir	Leon & Park Creeks	5,650.0	Dom.	Cond.
Bull Basin Reservoir No. 1	Bull Creek	125.6	Irr.	100% interest
Bull Basin Reservoir No. 2	Bull Creek	96.1	Irr.	two adjudications
Bull Creek Reservoir Company	Bull Creek	33.0	Irr.	33 shares
Buzzard Creek Dam & Reservoir	Buzzard Creek	4,500.0	Dom.	Conditional
Coon Creek Reservoir & Canal Co.	Coon Creek	396.5	Irr.	781 shares
Coon Creek Reservoir No. 3	Coon Creek	201.0	Irr.	3/8 interest
Cottonwood Lakes Reservoir Co.	Cottonwood Creek	316.16	Irr.	52 shares
Jerry Creek Reservoir No. 1	Plateau Creek	1,102.0	Dom.	
Jerry Creek Reservoir No. 2	Plateau & Jerry Creeks	9,591.1	Dom.	7791 af cond. refill rt.
Kirkendall Reservoir	Leon Creek	110.0	Irr.	1922.49 af cond.
Mesa Creek Res. And Canal Co.	Mesa Creek	44.5	Irr.	89 shares
Monument Reservoir No. 1	Leon Creek	572.7	Irr.	4,682 af cond.
Monument Reservoir No. 2	Leon Creek	254.0	Irr.	
Owens Park Reservoir	Owens & Buzzard Crk	6,992.9	Dom.	Cond.
Stubbs McKinney & Clark Res	Bull Creek	206.0	Irr.	aka Long Slough
Twin Reservoir	Bull Creek	94.6	Irr.	Half interest
Vega Reservoir	Plateau Creek	797.0	Irr.	
Willow Creek Reservoir	Buzzard Creek	19,488.0	Irr.	Cond.

Table 4-2

**Ute Water Conservancy District
Summary of Water Rights**

**Grand Mesa Tributaries Direct Flow Rights
(values in cfs)**

Tributary & Water Right	Irrigation	Domestic	Adjudication	Comments
Big Creek				
Palmer Ditch	20.23		1887	2/9 interest in 2nd & 3rd adj.
Golden Age Ditch				
Bull Creek				
Boyle Creek Ditch	0.60		1941	Conditional
Bull Basin Highline Ditch	5.9		1941	
Stubbs McKinney & Clark Res				
Feeder Ditch	7.0		1941	
Coon Creek				
Atwell East Ditch	2.82	2.82	1979	Domestic use is conditional
Charles A Atwell East Ditch	0.75		1941	
Brown Ditch	2.08		1941	Additional 1.0 cfs for Stock
Coon Creek Pipeline		6.0	1979, 1984	1.9 cfs is conditional
Craig & Stewart Ditch	4.68		1890	
Heely Ditch No. 4	2.00		1959	
Heely Ditch No. 5	0.66		1959	
Pisel Ditch	0.65			
Vance & Fortsch Ditch	2.6		1941	
Welch Ditch	1.625		1898, 1959	
Wildcat Ditch				0.153 cfs for Stock
Leon Creek				
Kiggins & Salisbury Ditch	31.2		1905, 1941, 1959	Ownership of 300 shares
Leon Ditch	6.69		1890, 1903, 1939	40% ownership in Ditch
Little Finn Ditch	3.25		1889, 1939	aka Provo Ditch

Table 4-2
(Continued)

Tributary & Water Right	Irrigation	Domestic	Adjudication	Comments
Mesa Creek				
Atwell Waste & Seep Ditch	3.06		1916	0.06 cfs conditional
Carver Ranch Pipeline		11.0	1979	Mesa Intake
Independent Ditch	8.17		1890	7.11 cfs conditional
Mason & Eddy Ditch		8.842	1890, 1941	Ltd. 508 af
Mesa Creek Ditch		6.5	1890	
	16.62		1941	
Plateau Creek				
Blackman, Dunlap & Clark D.	0.72		1905	
Heely Ditch No. 1	0.66		1959	
Heely Ditch No. 2	0.66		1959	
Heely Ditch No. 3	0.66		1959	
Heely Ditch No. 6	0.66		1959	
Ute Pipeline		50.0	1959, 1972	
Rapid Creek				
Marin Crawford Ditch		8.0	1986	
Salt Creek				
Cedar Ditch	3.7		1941, 1959, 1972	
Hill-Johnson Ditch	1.57		1959	7/24 interest in ditch
Colorado River				
Bridges Switch PP & PL		30.0	1982	Conditional
Grand Valley Canal	1.895		1912	GVIC, 182 shares
Ute Pumping Station & PL		50.0	1972	Conditional

Retail Water Sales

Ute currently provides retail water to residents and businesses that are located its service area. There are currently 33,881 active taps with an average water demand of just under 3,000 million gallons per year for the years of 2004 – 2010. The unbilled water for the study period was calculated to be 6% of treated water and is a product of flushing in the distribution lines and unauthorized use of firelines.

Approximately 95% of homes in the Ute Water Conservancy District enjoy the use of direct flow irrigation water. Residents within the Ute Water District receive irrigation water from the Government Highline Canal, operated by the Grand Valley Water Users Association. Also providing irrigation water in the District is the Redlands Canal, owned and operated by the Redlands Water & Power Company, the Grand Valley Canal, owned and operated by the Grand Valley Irrigation Company, and the Orchard Mesa Canal, owned and operated by the Orchard Mesa Irrigation District.

Monthly Water Demand 2004-2010

The average daily demand for January for the years 2004-2010 was 6.2 million gallons per day (mgd) with an average peak demand in July of 14.3 mgd. The ratio of the low day demand to the peak day demand was 2.3 or water demand for the peak day in July was 2.3 times greater than an average day in January. This difference is estimated to be the result of home cooler demand during the hot summer months and lawn irrigation. Unbilled water averaged 6% over the past seven years and is a result of unauthorized fireline use, Table 4-3 shows Ute's monthly and annual demand for the study period as well as detailed water use for those years and Figure 4-1 illustrates the monthly water demand.

Sector Water Use

Table 4-4 shows billed water use patterns for residential and commercial-industrial sectors for 2004 through 2010 as well as percentage of water use and percentage of taps by each

sector. For the years 2004-2010, residential water use averaged 75% of water sales and 96% of active water taps. The commercial-industrial sector averaged 25% of water sales but only 3.5% of active water taps. As shown in Table 4-4, the distribution of water taps for the Commercial-Industrial (C-I) sector has remained constant over the years.

When looking at the C-I sector, it was noted that the 5 largest C-I customers were billed for 9.1% of the total water use in 2010. The C-I customers include an egg production facility (agricultural use), two manufacturing facilities, and two large retail stores. Table 4-5 shows the distribution of water use for the 5 largest C-I customers for 2010.

Table 4-5

Ute Water Five Largest Commercial-Industrial Customers 2010			
Customer	Sector	Percentage	Water Use (mg)
LLG	Manufacturing	3.0%	84.0
Colorado Egg Producer	Agricultural	1.9%	53.0
Coors Tek	Manufacturing	1.9%	53.0
Wal-Mart Stores	Retail	1.2%	35.0
Safeway Stores	Retail	1.1%	30.0
	Total		255.0
Total water billed in 2010			2815.0
Percentage of 2010 billed water			9.1%

Table 4-3

Ute Water Conservancy District Monthly Billed Water
(values in million gallons)

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
2004	176.07	158.99	165.17	208.98	234.87	282.39	320.99	335.45	296.24	236.49	158.68	203.31	2,777.63
2005	181.75	158.21	192.59	197.84	211.04	325.48	361.49	315.75	325.74	241.98	198.91	201.69	2,912.47
2006	207.31	176.00	182.93	214.46	279.10	373.41	396.65	343.33	332.41	233.75	206.55	195.51	3,141.42
2007	203.24	186.08	184.95	251.13	255.81	342.04	386.72	366.18	356.63	229.88	217.14	188.53	3,168.33
2008	185.95	180.67	183.96	194.15	254.35	296.30	354.75	386.02	323.33	257.36	203.36	179.34	2,999.54
2009	198.99	162.85	182.29	201.80	250.92	275.42	331.29	354.46	313.22	246.88	185.97	189.89	2,893.97
2010	190.21	143.30	161.91	206.70	230.69	286.34	357.21	319.83	302.24	250.06	189.77	176.42	2,814.68

Average 191.93 166.58 179.11 210.72 245.25 311.63 358.44 345.86 321.40 242.34 194.34 190.67 2,958.29

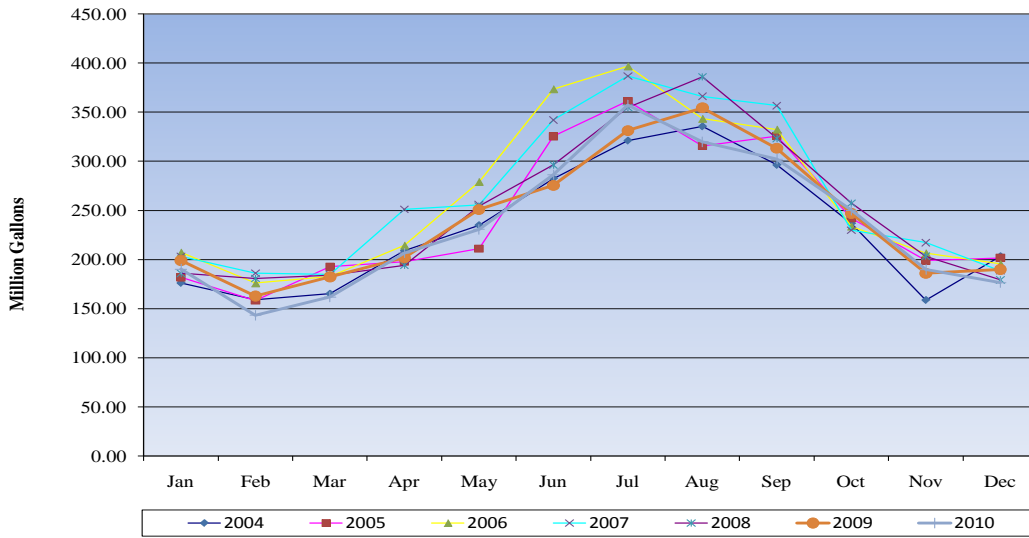
Detailed Water Use

Average Annual Water Use 2,958.3 mg
 Average Unbilled Water 183.5 mg
 Average Annual Water Loss 6%

Average Peak Day Use (July) 14.3 mgd
 Average Day Use (January) 6.2 mgd
 Avg Peak Day to Avg Day ratio 2.3

Figure 4-1

Ute Water Conservancy District Water Use



**Table 4-4
District Retail Water Sales by Sector**

Year	Customer Class	Total Taps	Metered Water (1000 gallons)	Average per Tap (1000 gallons)	Per Capita	Water Use % of Total	% of Taps
2010	Residential	32,643	2,139,267	65.5	76.7	76.0%	96.3%
	Commercial	1,238	675,771	545.9		24.0%	3.7%
	Total	33,881	2,815,038				
2009	Residential	31,937	2,186,567	68.5	71.9	75.5%	96.3%
	Commercial	1,223	707,831	578.8		24.5%	3.7%
	Total	33,160	2,894,398				
2008	Residential	32,253	2,232,344	69.2	71.9	74.4%	96.5%
	Commercial	1,156	767,198	663.7		25.6%	3.5%
	Total	33,409	2,999,542				
2007	Residential	31,387	2,416,643	77.0	80.3	76.2%	96.5%
	Commercial	1,139	752,784	660.9		23.8%	3.5%
	Total	32,526	3,169,427				
2006	Residential	30,452	2,307,791	75.8	79.0	73.5%	96.5%
	Commercial	1,098	833,636	759.2		26.5%	3.5%
	Total	31,550	3,141,427				
2005	Residential	29,495	2,165,112	73.4	76.7	74.3%	96.6%
	Commercial	1,037	747,361	720.7		25.7%	3.4%
	Total	30,532	2,912,473				
2004	Residential	28,482	2,138,939	75.1	79.0	77.0%	96.6%
	Commercial	999	638,713	639.4		23.0%	3.4%
	Total	29,481	2,777,652				

Note: Residential includes single family and multi-family units as well as mobile home parks.

Commercial includes: Commercial, Restaurants, Schools, Churches, Firelines

Per Capita: Per capita calculations (2010) = Unit connections times 2.34 (calculated people per unit) equals Ute population annual residential billing divided by 365 (days per year) equals gallons per day; gallons per day divided by Ute population equals daily individual use.

Current Rate Structure and Tap Fees

Ute’s water rate structure was developed to finance the District’s operation and maintenance of the water system and to support the operation and upgrades of the Water Treatment Plant. Rates were set with an aggressive increasing block rate structure. An additional “Conservation Rate” was instituted in 2008 that was set at \$10.00 per 1,000 gallons for water use of over 30,000 gallons per month. Table 4-5 and Table 4-6 list Ute Water’s current water rates and tap fees.

Table 4-5

**February 1, 2012
Meters 3/4" X 5/8" through 1"**

Residential		Non-Residential	
Rate	Amount (gallons)	Rate	Amount (gallons)
\$15.00	3,000	\$15.00	3,000
\$3.50 each 1,000 gallons	3,001-9,000	\$3.50 each 1,000 gallons	3,001-9,000
\$4.00 each 1,000 gallons	9,000-15,000	\$4.00 each 1,000 gallons	9,001-15,000
\$4.75 each 1,000 gallons	15,001-21,000	\$4.75 each 1,000 gallons	over 15,000
\$5.50 each 1,000 gallons	21,001-30,000		
\$10.00 each 1,000 gallons	over 30,000		

Agriculture	
Rate	Amount (gallons)
\$15.00	0-3,000
\$3.50 each 1,000 gallons	3,001-9,000
\$4.00 each 1,000 gallons	9,001-15,000

Table 4-5 (continued)

1 1/2 " Meters

Non-Residential		Agriculture	
Rate	Amount (gallons)	Rate	Amount (gallons)
\$75.00 minimum	15,000	\$75.00 minimum	15,000
\$3.50 each 1,000 gallons	next 30,000	\$3.50 each 1,000 gallons	next 30,000
\$4.00 each 1,000 gallons	next 30,000	\$4.00 each 1,000 gallons	next 45,000
\$4.75 each 1,000 gallons	over 75,000		

2" Meters

Non-Residential		Agriculture	
Rate	Amount (gallons)	Rate	Amount (gallons)
\$120.00 minimum	24,000	\$120.00 minimum	24,000
\$3.50 each 1,000 gallons	next 48,000	\$3.50 each 1,000 gallons	next 48,000
\$4.00 each 1,000 gallons	next 48,000	\$4.00 each 1,000 gallons	next 72,000
\$4.75 each 1,000 gallons	over 120,000		

3" Meters

Non-Residential		Agriculture	
Rate	Amount (gallons)	Rate	Amount (gallons)
\$262.50 minimum	52,500	\$262.50 minimum	52,500
\$3.50 each 1,000 gallons	next 105,000	\$3.50 each 1,000 gallons	next 105,000
\$4.00 each 1,000 gallons	next 105,000	\$4.00 each 1,000 gallons	next 105,000
\$4.75 each 1,000 gallons	over 262,500		

Table 4-5 (continued)

4" Meters

Non-Residential		Agriculture	
Rate	Amount (gallons)	Rate	Amount (gallons)
\$450.00 minimum	90,000	\$450.00 minimum	90,000
\$3.50 each 1,000 gallons	next 180,000	\$3.50 each 1,000 gallons	next 180,000
\$4.00 each 1,000 gallons	next 180,000	\$4.00 each 1,000 gallons	next 180,000
\$4.75 each 1,000 gallons	over 450,000		

6" Meters

Non-Residential		Agriculture	
Rate	Amount (gallons)	Rate	Amount (gallons)
\$1,050.00 minimum	210,000	\$1,050.00 minimum	210,000
\$3.50 each 1,000 gallons	next 420,000	\$3.50 each 1,000 gallons	next 420,000
\$4.00 each 1,000 gallons	next 420,000	\$4.00 each 1,000 gallons	next 420,000
\$4.75 each 1,000 gallons	over 1,050,000		

Table 4-6

Tap Fees			
Residential		Non-Residential and Agriculture	
3/4" X 5/8"	\$ 5,800.00	3/4" X 5/8"	\$ 5,800.00
3/4" X 3/4"	\$ 7,250.00	3/4" X 3/4"	\$ 7,250.00
1"	\$ 8,700.00	1"	\$ 8,700.00
		1 1/2"	\$ 13,000.00
		2"	\$ 19,200.00
		3"	\$ 34,500.00
		4"	\$ 60,500.00
		6"	\$ 151,500.00

Planned New Water Facilities

Due to the recent expansion of the District's WTP, no facilities are planned for the foreseeable future. However, the District is currently undergoing a raw water supply study to determine its needs and potential sources for raw water through 2045.

5.0 Future Water Demands in the Grand Valley

Projected Future Water Demand

Ute Water Conservancy District contracted HDR/HLB Decision Economics Inc. to provide an independent assessment of population forecasts and a risk adjusted population forecast of the District’s service area. The study area encompassed most of Mesa County; however, it excluded some portions of the City of Grand Junction, the Town of Palisade and part of the area known as Clifton. The assessment reviewed population forecasts by the U.S. Census Bureau, the Colorado State Demographer, Pearse & Associates population forecast conducted for Mesa County in 1995, and BBC Research and Consulting. Table 5-1, below, is a summary of the forecasts:

**Table 5-1
Population Forecasts**

Name	Years Forecasted	Annual Growth Rate (CACR*)	Area Forecasted
U.S. Census Bureau	2000-2035	1.00%	Colorado
Colorado State Demographer	2000-2035	2.00%	Mesa County
BBC Research & Consulting	2005-2035	1.98%	Mesa County
Mesa County Administration	2000-2020	2.93%	Mesa County
HDR	2010-2025	2.95%	Ute District
*Compound Annual Growth Rate			

The City of Grand Junction

Because the City of Grand Junction water service area is surrounded by other water providers, growth has occurred at an annual rate of 0.70% between 2004 and 2008 with new taps of only 335 taps for the time period. The number of taps decreased by 34 in 2008 and 348 in 2009, however, City managers expect the growth rate in the City water service area to rebound and re-

turn to the historic growth rate after 2010. Table 5-2 is a projection of water demand by the year 2025. Water demand was projected to increase at a 0.70% rate between the years 2010 and 2025. Projected water demand was calculated using projected population multiplied by 110 (average gallons per day) then calculated at an annual value and converted to million gallons. The City of Grand Junction’s unbilled water is anticipated to remain constant at a rate of 8.5%

Table 5-2
City of Grand Junction
15-Year Estimated Water Demand
 (values in million gallons)

	Year	2010	2015	2020	2025
	Historic:				
1	Population	27,161			
	Billed Water				
2	Residential Demand	1,101.4			
	Commercial - Industrial Demand	629.9			
3	Unbilled Water	181.7			
4	Total Water Demand	1,913.0			
	Projected:				
5	Population		28,125	29,123	30,157
	Projected Sector Demand:				
6	Residential Demand		1,140.1	1,180.2	1,221.7
7	Commercial - Industrial Demand		651.0	651.0	651.0
8	Projected Unbilled Water		188.0	192.2	196.6
9	Projected Total Water Demand		1,979.1	2,023.4	2,069.3

- 1 2010 census
- 2 Billed water by sector
- 3 Unbilled water was 9.5% of total treated water for 2010
- 4 Billed water plus unbilled water
- 5 Growth to average 0.7% per year
- 6 Annual increase calculations: Population increase times 110 gpd times 365 divided by one million
- 7 C-I demand historical range of 600 mg - 651.8 mg; estimated to remain at historical high values
- 8 Projected unbilled water is 9.5% of total demand
- 9 Sum of sectors and unbilled water

Clifton Water District

The projected future water demand for the Clifton Water District was based on the number of water taps and the water demand for the years 2004-2010. The number of taps increased for that time period by approximately 11% or an annual average of 2.25%. The per capita water demand for the residential sector averaged 85 gallons per day (gpd) for that same time. In cases where untreated irrigation water is unavailable, treated water is utilized for outdoor irrigation and is included in the per capita calculation (reference Table 3-3)The growth rate and water demand between 2008 and 2010 was flat but optimistic projections are for the growth rate to return to the projected 2% per year by the State Demographer. Table 5-3 is a calculation of the projected water demand for the Clifton Water District through 2025. Projected water demand was calculated using projected population multiplied by a per capita of 85 (gpd) then calculated at an annual value and converted to million gallons. The commercial-industrial sector was estimated to remain at the historic five-year high and the unbilled water was anticipated to remain constant at a rate of 13%. Note: the unbilled water for 2010 was unusually high at 14.7%.

Ute Water Conservancy Water District

Projected water demand for the Ute Water Conservancy District was based on the population study conducted by HDR/HLB Decision Economics Inc. Values for estimated populations were based on an anticipated growth rate of 2.95% per year. Table 5-4 is a calculation of the projected water demand for Ute Water Conservancy District through 2025. Projected residential water demand was calculated at the current per capita rate of 77 (gpd) multiplied by the forecasted population then calculated at an annual value and converted to million gallons. In cases where untreated irrigation water is unavailable, treated water is utilized for outdoor irrigation and is included in the per capita calculation (reference Table 4-4)The commercial-industrial sector was estimated to remain at the historic five-year high and unbilled water was estimated to be 5% of total treated water.

Table 5-3

**Clifton Water District
15-Year Estimated Water Demand**
(values in million gallons)

	Year	2010	2015	2020	2025
	Historic:				
1	Population	33,000			
	Billed Water				
2	Residential Demand	1,060.6			
	Commercial - Industrial Demand	88.5			
3	Unbilled Water	198.0			
4	Total Water Demand	1,347.1			
	Projected:				
5	Population		36,363	40,384	44,282
	Projected Sector Demand:				
6	Residential Demand		1,158.8	1,276.2	1,390.0
7	Commercial - Industrial Demand		88.5	91.7	91.7
8	Projected Unbilled Water		186.3	204.4	221.4
9	Projected Total Water Demand		1,433.6	1,572.3	1,703.1

- 1 2010 Census
- 2 Billed water by sector
- 3 Unbilled water was 14.7% of total treated water for 2010
- 4 Billed water plus unbilled water
- 5 Growth estimated to average 2% per year
- 6 Annual increase calculations: Population increase times 80 gpd times 365 divided by one million
- 7 C-I demand historical range of 88.5-91.7 mg; estimated to remain at historical high after 2015
- 8 Projected unbilled water is 13% of total water demand
- 9 Sum of sectors and unbilled water

Table 5-4

**Ute Water Conservancy District
15-Year Estimated Water Demand**
(values in million gallons)

	Year	2010	2015	2020	2025
	Historic:				
1	Population	79,600			
2	Residential Demand	2,139.3			
	Commercial - Industrial Demand	675.8			
3	Unbilled Water	150.0			
	Total Billed Water	2,965.0			
	Projected:				
5	Population		92,278.2	106,975.7	124,014.2
	Projected Sector Demand:				
6	Residential Demand		2,495.6	2,908.6	3,387.5
7	Commercial - Industrial Demand		833.6	833.6	833.6
8	Projected Unbilled Water		175.0	197.0	222.0
9	Projected Total Water Demand		3,504.2	3,939.2	4,443.1

- 1 2010 census
- 2 Billed water by sector
- 3 Unbilled water was 5% of total treated water for 2010
- 4 Sector billed water plus unbilled water
- 5 HDR population estimated at a 2.95% annual growth rate
- 6 Annual increase calculations: population increase times 76.7 gpd times 365 divided by one million
- 7 C-I demand estimated to remain at historical high of 833.6 mg
- 8 Projected unbilled water is 5% of total water demand
- 9 Sum of sectors and unbilled water

Table 5-5 is a summary of anticipated water demand in the Grand Valley from 2010 through 2025. It should be noted that the values used for the projected water demand are planning values only and are based on current research by both HDR and the State Demographer. The Entities, however, are experiencing a reduction in water demand and active taps due to the downturn in the local economy and the general nation-wide recession.

Table 5-5

**Grand Valley
15-Year Estimated Water Demand**
(values in million gallons)

Year	2010	2015	2020	2025
Projected:				
City of Grand Junction	1,913.0	1,979.1	2,023.4	2,069.3
Clifton Water District	1,347.1	1,388.8	1,473.8	1,552.9
Ute Water Conservancy District	2,965.0	3,504.2	3,939.2	4,443.1
Projected Total Water Demand	6,225.1	6,872.1	7,436.4	8,065.3

Section Two

The Grand Valley Regional Water Conservation Plan

6.0 Current and On-going Water Conservation

In 1996, the City of Grand Junction (the City), the Clifton Water District (Clifton), and the Ute Water Conservancy District (Ute), collectively referred to as the Entities, each developed a Water Conservation Plan. The City, Clifton, and Ute have taken pro-active positions on water issues and view water conservation as not only necessary for the future but also responsible management of their water resource. The City Council for the City, and the Boards of Directors for Clifton and Ute support water conservation as part of their general mission and are taking the lead in promoting water conservation in the Grand Valley and are now participating in a Regional Water Conservation Plan for the Grand Valley. The current water conservation activities include the Drought Response Information Project (DRIP), the Annual Children's Water Festival, low water use landscape projects, leak detection programs, and increasing block rate structures.

Drought Response Plan

As a result of the 2002-2003 drought, the City, Clifton, and Ute along with the Town of Palisade collectively embarked upon the development of a regional Drought Response Plan. The Drought Response Plan (DRP) was designed to provide Governing Boards and City Councils with a set of options to consider when dealing with a prolonged drought event. Appendix B contains a copy of the Drought Response Plan. Implementation of the Drought Response Plan was and is accomplished through an on-going annual effort, budgeted and paid for by the four domestic water providers. One of the key components of the DRP was to initiate a Drought Response Information Project (DRIP) to provide public education through all sources of media on why and how to reduce per capita consumption across all water use classes in the respective service areas. The DRIP Group consists of staff members of the four domestic providers (the City, Clifton, Ute, and the Town of Palisade) as well as representatives of the Colorado State University Extension Service. This group has run an active media campaign on water conservation for the past six years. The media campaign includes water conservation video presentations on the local public access channel, interviews with various DRIP members on local radio and television stations,

weekly water conservation columns in the local newspapers, and face to face presentations to local service groups, homeowner's associations, and community gatherings to further spread the Grand Valley water conservation message. During the summer months, the group participates in the local Farmer's Markets sponsored by the Grand Junction Downtown Association and the Town of Palisade. DRIP members provide information on household and lawn water conservation. A year-round water conservation reference base is provided on the DRIP website (www.thedripwebsite.com).

Additionally, as a part of the DRIP, the domestic water managers meet monthly to discuss storage levels, potential water shortages and local and regional water issues. Representatives from the City, Clifton and Ute participate in the Mesa County Wise Water Use Council. This Council is made up of parties in Mesa County (staff members from local governments, domestic water providers, irrigation water providers, soil conservation entities, mosquito control entities, CSU Extension Service, local agricultural groups, and federal agencies) that have interests in local water use issues.

The Children's Water Festival

Ute, Clifton, and the City sponsor the Children's Water Festival held each year at Mesa State College in Grand Junction. Each year for the past 18 years over 1,800 fifth-grade students attend the two-day program to learn the different roles that water plays in their lives, in their community, and the world. Over 300 water experts participate in the festival by providing workshops and exhibits. Indoor and outdoor classes range in topic from water rights, water conservation, water pollution, water treatment and distribution, water and wildlife including the endangered species in the Colorado River, and everyone's dependency on clean water supplies. Exhibits show the water cycle, modern irrigation systems, water measurement, the benefits of water conservation, and many other displays. The Children's Water Festival is underwritten and sponsored by many businesses and agencies in the Grand Valley.

Low Water Use Landscape Programs

Within the City of Grand Junction are two major golf courses, parks and ball fields, schools, trails, open space, and street medians. The golf courses are irrigated with non-potable water provided by the Grand Valley Irrigation Company and The Redlands Water and Power Company. The parks and baseball fields, schools, trails, open space, and street medians are all irrigated with treated water from the City of Grand Junction. Seven years ago the City invested in the Maxi-Com Irrigation Program which is a centralized program that runs and monitors all of the irrigation systems in the City including the golf courses. The program is tied to a satellite that downloads information regarding evapotranspiration (ET). The centralized computer program then sets the clocks for each irrigation system according to estimated ET. Each of the 125 clocks that run each irrigation system also have rain gages attached to them which trigger a stop action when a rain event occurs. Through the use of the Maxi-Com Irrigation Program and other improvements in the irrigation system, the irrigation water use in parks, schools, trails, open space, and street medians was reduced by 27.07 mg from 2008-2010. In 2008 the City parks, etc. used 176.43 mg of water, in 2009 the parks, etc. used 166.05 mg of water, and in 2010, the parks, etc. used 149.36 mg of water. This was accomplished through higher efficiency and accuracy of irrigation output as well as the monitoring of each system for leaks and breaks. Also, in 2008, the Lincoln Park football field was converted from grass to sports turf.

Leak Detection Programs

The City, Clifton, and Ute leak detection efforts all utilize various methods and techniques to pinpoint water loss either on the customer's meter or within their respective distribution systems. These methods and techniques include: listening devices, visual observations, usage evaluations and customer notifications.

Due to the Grand Valley's soil composition, service and main leaks almost always surface helping in the rapid response of fixing leaks before major structural or road damage occurs. For those leaks not surfacing, the entities use several different manufacturer's equipment for investigative purposes. This equipment includes General Gen-Ear Water Leak Locator, Heathscope, and Subsurface Leak Detection Inc. Currently none of the entities possess system-wide

leak evaluation equipment, however, in the past, various 3rd party vendors have performed these evaluations within limited areas of the entities service areas. Past attempts at using 3rd party leak detections vendors was inconclusive. Main line leak and break history data are tracked for capital expenditure evaluations for future pipe mainline replacements and upgrades.

Meter reading and billing software used by the entities includes Neptune, Caselle, Springbrook and Northstar. The various software programs allow for high/low meter reading comparisons between other existing historical data sets. Additionally, month-to-month comparisons are performed by billing staff and for those accounts that show atypical usage increases, field technicians are notified via work orders to perform follow up site visits to investigate potential customer leaks. Monthly meter collection data is also used in system-wide trend evaluations for help in determining unaccounted for water. WTP personnel are continuously monitoring plant output versus tank levels and system pressures which provide potential major line break information to distribution personnel for immediate investigation and follow up.

Increasing Block Rate Structures

All three entities have an increasing block rate billing structure as explained in previous chapters.

7.0 Grand Valley Regional Water Conservation Plan

Goals and Objectives

The City, Clifton, and Ute have taken pro-active positions on water issues and view water conservation as not only necessary for the future but also responsible management of its water resource. As stated earlier, the City Council for the City and the Board of Directors for Clifton and Ute supports water conservation as part of their general mission and have taken the lead in promoting water conservation in the Grand Valley. The Entities have come together to develop a Regional Water Conservation Plan for the Grand Valley and have identified the following goals and objectives to be achieved through the implementation of measures and programs outlined in this WCP.

Goal 1: Continue to educate the community, landscape contractors, and customers regarding codes and ordinances that promote xeric landscapes and water conservation.

Goal 2: Continue to create public awareness of wise water use and conservation.

Goal 3: Reduce residential sector water demand in the Grand Valley by 10% over the next seven years.

Goal 4: Promote water saving awareness in the commercial/industrial sectors.

Plan Elements

The Colorado Water Conservation Board (CWCB) has listed elements that must be considered in a Water Conservation Plan. Below is a list of minimum required Water Conservation Plan Elements that must be fully considered.

- ◆ Water efficient fixtures & appliances
- ◆ Low water use landscapes
- ◆ Water-efficient industrial & commercial water-using processes
- ◆ Water reuse systems
- ◆ Distribution system leak identification & repair
- ◆ Dissemination of information regarding water use efficiency measures

- ◆ Water rate structures & billing designed to encourage water use efficiency
- ◆ Regulatory measures designed to encourage water conservation

Following are measures and programs designed to address the plan elements and achieve the goals and objectives of this Water Conservation Plan.

Regional Water Conservation Measures and Programs

Water efficient fixtures & appliances:

A regional toilet retro-fit program for residential customers in the Grand Valley will be initiated. The toilet retro-fit program will be administrated through DRIP which is the entities water conservation information program. The toilet retro-fit will target high residential water users based on their billing records. The goal is to offer rebates of \$75 for the replacement of 50 high water use toilets, 3.5 or greater gallons per flush (gpf), with 1.28 gpf toilets in residential homes each year. The estimated annual cost is \$3,750.00 for fixtures and \$1,500.00 for administrative costs. According to Vickers, the replacement of a 3.5 gpf toilet with a 1.6 gpf toilet will save 9,337 gallons per year per household. It is estimated that a 20% water saving is realized by the replacement of a 1.6 gpf toilet with a 1.28 gpf toilet. The estimated annual water savings is 11,200 gallons per household or 560,000 gallons per year for 50 toilet retro-fits. Each Entity will track the water use of the accounts within their service area where the retro-fit toilets were installed. The tracking results will be reviewed annually by the DRIP Committee for documented water savings and program effectiveness as well as public response. It is estimated that most of the demand for fixture upgrades will be within the City and Clifton since those communities have the oldest homes.

Low water use landscapes:

Annually, landscape audits will be offered to the 10 highest water use residential customers that utilize domestic water for outdoor irrigation. Over the next seven years this will result in a minimum of 70 landscape audits in the identified regional plan area. The estimated annual cost will be \$1,000.00 and the audits will be conducted by a trained staff and consultants. The estimated water saving for landscape audits is considered to be a 10%-15% reduction in water use (Vickers). Since all of the irrigation in the City is from treated water, the City's water use values were used as a base for calculating potential water savings from landscape audits. In 2010, there were 7,897 active residential water taps in the City service area with an average base demand of 10,000 gallons per month per home. Peak season, July and August, demand per home has been calculated to be 28,800 gallons per month. The difference between winter and summer water use was 18,800 gallons that was attributable to lawn irrigation and evaporative cooling in homes. A conservative estimated savings of 10% is 1880 gallons per home per month and may be as high as 2500 gallons per month per home depending upon the seasonal rainfall. The annual water savings from audits for the months of May through September may be as high as 125,000 gallons for each home with a total of 125,000 gallons for 10 homes per year. It is estimated that most of the irrigation audits demand will be from homes in the City.

Water-efficient commercial & industrial water-using processes:

Water audits will be offered to the top ten C-I water users over the next seven years. Since it is unknown how much water savings will be realized by the commercial water use audits, it was estimated that the results of the audits may be a conservative water savings of 3%-5% per C-I audit. The estimated cost of a water use audit for a C-I customer will be \$750.00 per audit with a total of \$7,500.00 for the program. The C-I audits will be performed by internal staff utilizing the best management practices as identified by the Colorado WaterWise Guidebook of Best Practices For Municipal Water Conservation in Colorado. Below is Table 7-1, a listing of the top ten C-I water users in the region showing the 2010 water use and the potential 3% and 5% water savings from the audits. At the 3% water savings from audits, the Grand Valley could see a savings of 13.9 mg. At the 5% water savings from audits, the Grand Valley could see a

savings of 23.2 mg. It is estimated that most of the demand for the C-I audits will be in the City and in Ute’s service area. The program for the C-I water audits will be reviewed annually by the DRIP Committee for documented water savings and program effectiveness.

Table 7-1

**Ten Largest Commercial-Industrial Customers
in the Region**

Customer	Sector	Water Use (mg)	3% Savings	5% Savings
City of GJ parks	Government	90.3	2.7	4.5
LLG	Manufacturing	84.0	2.5	4.2
Coors Tek	Manufacturing	53.0	1.6	2.7
Colorado Egg Producer	Agricultural	53.0	1.6	2.7
St. Mary's Hospital	Hospital	39.5	1.2	2.0
Mesa State College	Education	36.5	1.1	1.8
Wal-Mart Stores	Retail	35.0	1.1	1.8
Safeway Stores	Retail	30.0	0.9	1.5
Veteran's Hospital	Hospital	22.8	0.7	1.1
Alsco	Service	19.0	0.6	1.0
Total		463.1	13.9	23.2

Water reuse systems: Statutorily, water diverted through each of the Entities delivery systems is prohibited from reuse therefore this plan element has not been included for further consideration

Distribution system leak identification & repair: Measures and programs are presently in place as explained in Chapter 6.0, Current Water Conservation Planning.

Dissemination of information regarding water use efficiency measures: Measures and programs are currently in place as explained in Chapter 6.0, Current Water Conservation Planning.

Water rate structures & billing designed to encourage water use efficiency: Measures and programs are currently in place as explained in Chapter 6.0, Current Water Conservation Planning.

Regulatory measures designed to encourage water conservation: Regulations or ordinances that strictly prohibit the wasting of water are in place for each of the Entities.

The City: The City currently has an ordinance, 13.08.370 Wasting Water, which states “The owner or lessee of any premises to which any water shall be conducted from the water mains shall keep all pipes and their fixtures from the curblineline to his premises and on such premises in good repair and protected from the frost, and tight, so as to prevent waste of water. Upon any waste resulting from a breakage of such pipes or fixtures, or any imperfection of such pipes or fixtures, the owner or lessee shall forthwith stop such waste of water by repairing the old work or by laying new work. It shall be unlawful to use water so that it is wasted by flowing off lawns and gardens into the street gutters.” (Code 1994 § 38-132; Code 1965 § 31-34) The City is currently developing standards for the installation of irrigation systems in new developments. New subdivisions that have irrigation water available will need to design and install irrigation systems to standard and undergo inspection as part of the infrastructure in the development. These systems will also be included in as-built construction drawings on file with the City, and will have a one-year warranty -the same as the rest of the infrastructure required with new development. After construction the irrigation system will then be owned and maintained by the subdivision’s Homeowner’s Association (HOA). The standards should be completed sometime this summer.

Clifton: Policy #420, Water Usage Fees, Unintentional Water Use and Water Meter Testing. The District is not responsible for water on the customer's side of the meter. When a leak is detected on the customer's side of the meter, the customer should notify the District as soon as possible. Once a leak is detected on the customer side of the meter it is the customer's responsibility to repair the leak as expeditiously as possible. The District will read the meter as soon as possible after receiving notice of the leak. The customer must contact the District within 180 calendar days of detection of a leak to request an adjustment. Clifton is currently looking at developing a more extensive policy regarding wasting of water.

Ute: The following statement is in Ute's District Rules and Regulations: "Each customer shall be responsible for maintaining the entire length of their service line from the road right-of-way property line to the structure(s) or property served. Leaks or breaks in the customer's service line shall be repaired by the customer in a timely manner. If District personnel discover, determine or confirm the existence of a leak, the customer will be so notified. If satisfactory progress toward repairing the leak has not been accomplished within a reasonable length of time, as determined by the District, the District may shut off the service until the leak(s) or break(s) have been repaired. Only the loss of metered water that is a direct result of underground leaks or breaks in the customer's service line will be considered for leak adjustments, and only after the District confirms the repair. An individual customer shall be entitled to no more than one leak adjustment to their water bill in any consecutive twelve (12) month period and, when approved, leak adjustments will cover a period of water loss not to exceed sixty (60) days."

Mesa County: Mesa County has recently adopted a new landscape code for new construction development projects. The DRIP members provided input and document reviews in support of Mesa County's efforts to develop the new landscape code. The new code utilizes a "point system" that encourages the use of low water demand landscapes that encourage long term water conservation. The code allows for projects to include undisturbed native landscapes as key components to the overall landscape plan requirements. There is a heavy emphasis on utilizing drought tolerant plant species that meet the published cold-hardiness zones unique to Mesa County. For proposed developments in areas that have no access to irrigation ditch water, the governing domestic water utility have a major say in the final approved landscape plan as it per-

tains to potable water use for outdoor irrigation. The specific requirement of the code can be found at the Mesa County website, www.mesacounty.us/planning, within the Landscape Handbook Quicklink.

Table 7-2, below, outlines the three Water Conservation Programs, time frames for each program and, estimated costs.

Table 7-2
Grand Valley Regional Water Conservation Plan Measures
And Estimated Water Saving

Water Conservation Program	Start Date	End Date	Number	Water Savings	Program Cost
Toilet Retro-fit Program	2012	2018	50/yr	11,200 gallons per home, 560,000 gallons per year	\$5,250.00/yr.
Landscape Audits	2012	2018	10/ yr.	25,000 gallons/yr. 250,000 over 10 years	\$1,000.00/yr.
C-I Water Audits	2012	2018	10	3% - 13.9 mg 5% - 23.2 mg	\$7,500.00

Modification of Water Demand Forecast

Modification of the demand forecast was calculated using the estimated water savings from the outlined programs above. Table 7-3, below, is a summary of estimated water savings in the Grand Valley from Water Conservation Programs.

Table 7-3

**Grand Valley
15-Year Estimated Water Demand
With Water Savings
(values in million gallons)**

		2010	2015	2020	2025
1	Total Water Demand	6,225.10	6,872.1	7,436.4	8,065.3
	Estimated Water Savings:				
2	Landscape Audits		0.38	0.63	0.63
3	Fixture Retro-fits		1.68	2.8	2.8
4	C-I Audits		0.00	23.20	0.00
5	Total Estimated Water Savings		2.06	26.63	3.43
6	Projected Water Demand with Savings		6,870.0	7,409.8	8,061.9

- 1 Water demand from the City, Clifton, and Ute.
- 2 Estimated annual water savings for ten homes May -Sept.: 125,000 gallons.
Irrigation audits to begin in the summer of 2012.
- 3 Toilet retro-fit savings is 560,000 gallons per year for 50 homes. Program to begin 2012.
- 4 Estimated C-I water savings at 5%, audits wil begin in 2013.
- 5 Total of all program savings.
- 6 Estimated water demand with program water savings.

Monitoring and Evaluation of the Water Conservation Program Components

The Water Conservation Programs will be announced and implementation will begin during 2012. Monitoring the success of the Water Conservation Program components will include measuring water use as well as money spent on the selected conservation measures and programs. The program elements will be audited annually for effectiveness and water savings. Each entity will be responsible for their individual effectiveness audits and will then be compiled, reviewed, and presented in an annual report by the DRIP Steering Committee. This annual report will be posted public review on the DRIP webpage and be presented to each of the governing bodies of the three entities. Specific data tracking and monitoring will be established as each individual water conservation program measure is implemented. Additionally, the following data will be compiled annually for each entity:

- Monthly metering data, both raw and delivered potable water
- Annual data on new development for each entity, including number of new single family dwelling units, multi-family units, commercial and industrial properties developed
- Annual accounting of new landscape installations
- Public Feedback Regarding the Water Conservation Measures Implemented

Plan Updates and Revisions

The required schedule for updating the Water Conservation Plan is seven years. The progress towards achieving the water savings goals will be monitored on an annual basis, as stated above, by the Entities through the DRIP program. The Entities may opt to update the Plan prior to the seven year requirement if the annual Plan review indicates actual water savings deviating beyond the anticipated projections. The deviations could result from numerous factors which could include greater or lower customer participation in the offered water conservation programs or greater or lower than projected service population growth and resultant water demands.

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