

RESOLUTION NO. 24-12

**A RESOLUTION ADOPTING THE GRAND VALLEY REGIONAL WATER
CONSERVATION PLAN**

Recitals:

In 1996 the City of Grand Junction, the Ute water Conservative District and the Clifton Water District adopted water conservation plans. After receiving a grant from the Colorado Water Conservation Board in 2009, these same entities came together and wrote a combined, regional plan that would apply to all three entities and their customers.

Upon completion of the Plan and review by the Conservation Board staff, the plan was published and public comment was solicited for a period of sixty days. There was little formal comment, although many individuals offered verbal comment to water department staff on the need for a plan and offered water saving ideas and suggestions.

The Plan identifies conservation goals as well as measures and programs for reducing water consumption. These goals promote Xeric landscapes, provide education to the public on how to use water wisely, efforts to reduce residential consumption by 10%, and promote water saving awareness in the commercial sectors of the community.

The Plan offers rebates to encourage replacements of water consuming plumbing fixtures, residential landscape audits, and commercial and industrial audits.

The overall goal of the Conservation Plan is to promote water use awareness across the community, establish a long-term habit of using water wisely, and to partner with other water providers in the Grand Valley and across the state in saving water for future uses.

NOW, THEREFORE BE IT RESOLVED BY THE CITY COUNCIL OF THE CITY OF GRAND JUNCTION THAT:

The Grand Valley Regional Water Conservation Plan (attached) is adopted as the official policy of the City of Grand Junction and by its adoption the City encourages its customers to use water efficiently as detailed in the Plan.

Adopted this 20th day of June, 2012.



Mayor

Attest:



City Clerk

Grand Valley Regional Water Conservation Plan



Acknowledgements

This project was funded through a grant provided by the Colorado Water Conservation Board, a division of the Department of Natural Resources in the State of Colorado. The City of Grand Junction, the Clifton Water District, and Ute Water Conservancy District provided oversight of the completion of this project and provided in kind service as well as cash contributions as a provision of the funding. Rebecca Nichols of RHN Water Resources Consultants, LLC acted as the project manager and the primary author of this document.

Many people contributed to this project. Especially important to this project was the contribution that Rick Brinkman representative from the City of Grand Junction, Dave Reinertsen and Kelly McLaughlin representatives from the Clifton Water District, and Joe Burtard and Steve Ryken representatives from the Ute Water Conservancy District made with their time and knowledge. Also important are the contributions that the respective managers made to the project.

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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
Gallons per Capita per Day	GPCD
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

1.0 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 City of Grand Junction, City of Fruita, Town of Palisade, and the unincorporated areas of Clifton, Loma, and Mack. The Grand Valley was settled in the late 1800s and by the early 1900s, six major ditch companies and irrigation districts that divert water from the Colorado and Gunnison Rivers, 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 fruit 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 9-10 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 of supply and demand 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

Introduction

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 (Rick Brinkman-City, Joe Burtard-Ute, and Dave Reinertsen-Clifton) and the Governing Boards 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

Introduction

Progress reviews will be conducted annually by the Steering Committee to evaluate the effectiveness of water efficiency measures and conservation plan goals. The Water Conservation Plan will be evaluated, updated to meet additional State requirements, and modified as necessary by the Steering Committee.

2.0 The City of Grand Junction

History and Water Rights

The City of Grand Junction was founded in 1881 and by 1911 had obtained the Paramount water right of 7.81 c.f.s. 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 the lower slopes of the 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 in Raber Click and Juniata Reservoirs.

In 1959, the City 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 4.5 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 Somerville 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.

Table 2-1

**City of Grand Junction
Summary of Storage Water Rights**

Water Right Name	Stream Name	Acre Feet	Use	Comments
Anderson Reservoir No. 1	North Fork of Kannah Creek	506.0	IM	
Anderson Reservoir No. 2	North Fork of Kannah Creek	595.0	IM	
Anderson Reservoir No. 6	North Fork of Kannah Creek	118.0	IM	
Bolen A&J Reservoir No. 2	North Fork of Kannah Creek	293.0	IM	
Bolen Reservoir	North Fork of Kannah Creek	535.7	IM	
Carson Lake	Kannah Creek	637.0	M	
Deep Creek Reservoir #2	Kannah Creek	66.5	I	
Dry Creek Reservoir & Supply	Kannah Creek	66.0	I	Aka Chambers Reservoir
Flowing Park Reservoir	Kannah Creek	782.0	IM	
Grand Mesa Reservoir No. 1	Kannah Creek	559.0	I	
Hallenbeck #1 Reservoir	Kannah Creek	659.0	IM	Aka Purdy Mesa Reservoir
Hallenbeck #2 Reservoir	Kannah Creek	459.0	IM	Aka Raber Click Reservoir
Juniata Reservoir	Kannah Creek	7,204.0	IM	
Purdy Mesa Reservoir No. 2	Kannah Creek	2.5	M	
Reeder Reservoir	North Fork of Kannah Creek	179.7	I	
Somerville Reservoir #1	Whitewater Creek	973.0	IM	

I – Irrigation, M - Municipal

Table 2-1
Continued

City of Grand Junction
Summary of Direct Flow Water Rights

Water Right Name	Stream Name	Cubic Feet per Second	Use	Comments
Bauer Ditch	North Fork of Kannah Creek	13.18	IS	
Brandon Ditch	Whitewater Creek	33.40	IM	
City Ditch	North Fork of Kannah Creek	22.80	M	
Grand Jct Flowline	Kannah Creek	11.72	M	
Juniata Ditch 1st Enlarged	Kannah Creek	129.00	M	
Kannah Crk Highline Ditch	Whitewater Creek	49.11	IM	
Laurent Ditch	North Fork of Kannah Creek	33.72	IS	
Gunnison River Pipeline	Gunnison River	120.00	M	
Colorado River Pipeline	Colorado River	80.00	DM	
Somerville Ranch Irrigation System	Whitewater Creek	3.00	IS	
Somerville Wells No. 1	Whitewater Creek	0.22	DS	
Somerville Wells No. 2	Whitewater Creek	0.44	DS	

D – Domestic, I – Irrigation, M – Municipal, S - Stock

Retail Water Sales

The City of Grand Junction incorporated area covers 39 square miles with a population of over 58 thousand. The City water service area covers 9 square miles and serves a population of just over 27 thousand people. The majority of the service area is in the center of the City, and west Orchard Mesa. The rest of the incorporated portions of the City is served by the Ute Water Conservancy District (see domestic water providers map, appendix A). For 2011 there were 9,185 taps in use with an average water demand of 1,691 million gallons per year for the years of 2005-2011. During that same time period, commercial water taps were approximately 14% of total taps. For the years of 2005-2011, 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 9.7% 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 2.7 million gallons per day (mgd) and the average daily demand in July was 7.9 mgd. The ratio of the January daily demand to the July daily demand was 2.9 or water demand for July is 2.9 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 2005-2011 as well as detailed water use for those years. Figure 2-1 illustrates the annual water demand for the years of 2005-2011. 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 2011.

Table 2-2

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

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
2005	76	72	72	99	133	212	214	222	220	159	103	77	1,659
2006	89	79	96	101	152	240	242	214	227	144	88	92	1,763
2007	77	75	89	93	120	222	242	272	225	151	126	83	1,775
2008	72	80	76	165	172	279	236	199	195	99	80	96	1,748
2009	90	79	78	95	137	169	224	236	216	204	102	74	1,703
2010	95	60	77	85	120	164	245	222	176	205	111	82	1,644
2011	87	54	79	75	134	154	207	185	233	181	76	78	1,543
Average	84	71	81	102	138	206	230	222	213	163	98	83	1,691

Detailed Water Use

Average Annual Water Use	1,690.6 mg
Average Unbilled Water	184.3 mg
Average Annual Water Loss	9.7%
Average Day Use (July)	7.9 mgd
Average Day Use (January)	2.7 mgd
Avg Jul Day to Avg Jan Day ratio	2.9

• Figure 2-1

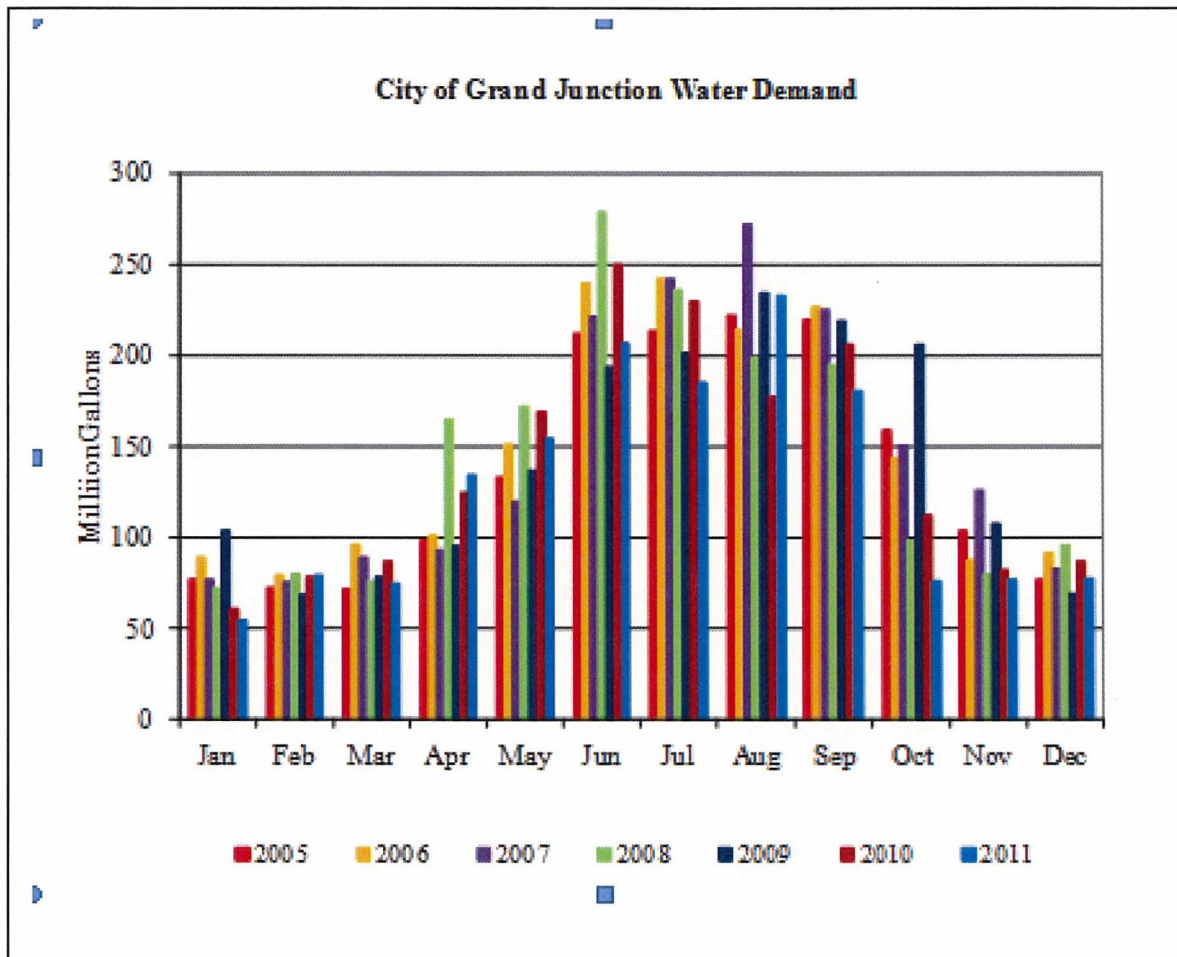


Table 2-3
City of Grand Junction
Sector Water Use

Year	Customer Class	Total Taps	Metered Water (1000 Gallons)	Average per Tap (1000 Gallons)	Per Capita	Water Use % of Total
2011	Residential	7,897	962,291	122	98	62.4%
	Commercial	1,288	580,838	451		37.6%
	Total	9,185	1,543,129			
2010	Residential	7,897	1,014,260	128	104	61.7%
	Commercial	1,288	629,929	489		38.3%
	Total	9,185	1,644,189			
2009	Residential	7,977	1,059,819	133	109	62.2%
	Commercial	1,316	642,728	488		37.8%
	Total	9,293	1,702,547			
2008	Residential	8,139	1,072,170	132	110	61.3%
	Commercial	1,280	676,077	528		38.7%
	Total	9,419	1,748,247			
2007	Residential	8,259	1,136,014	138	117	64.0%
	Commercial	1,421	638,582	449		36.0%
	Total	9,680	1,774,596			
2006	Residential	8,124	1,126,770	139	118	63.9%
	Commercial	1,420	636,025	448		36.1%
	Total	9,544	1,762,795			
2005	Residential	8,087	1,064,358	132	113	64.2%
	Commercial	1,220	594,409	487		35.8%
	Total	9,307	1,658,767			

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.

Table 2-4

**City of Grand Junction
Five Largest Commercial-Industrial Customers 2011**

Customer	Sector	Percentage	Water Use (million gallons)
City of Grand Junction	Government	9.8%	150.5
Colorado Mesa University	Education	2.6%	43.8
St. Mary's Hospital	Hospital	2.3%	39.0
School Dist 51	Education	1.8%	30.0
Mesa County	Government	1.7%	29.1
Total water used by the five largest C-I customers in 2011			292
Total water billed in 2011			1,543
Percentage of 2011 billed water			19.0%

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. Tap fees and Plant Investment Fees provide monies for the operation and maintenance of the Water Treatment Plant. Table 2-5 and Table 2-6, below, show the City's water rates and tap fees. Taps of $\frac{3}{4}$ 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
January 1, 2012**

Rate	Gallons
\$9.00 (includes 3,000 gal)	0-3,000
\$1.85 (per 1,000 gal)	3,001 – 10,000
\$2.25 (per 1,000 gal)	10,001 – 20,000
\$2.65 (per 1,000 gal)	20,001+

Table 2-6

City of Grand Junction Tap Fees

Tap Size	Tap	PIF*	Total 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 future expansion of the water treatment facilities or distribution lines is currently planned, though an aggressive capital plan is in place to replace aging infrastructure.

3.0 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, 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 5.53cfs in the Grand Valley Canal remains an irrigation water right. 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
Summary of Direct Flow Water Rights

Water Right Name	Stream Name	Cubic Feet per Second	Use	Comments
Colorado River Pipeline	Colorado River	20.00	DM	
L.H. Hurt Pump	Colorado River	4.00	D	Alt. Point at Grand Valley Canal
Grand Valley Canal	Colorado River	16.99	DI	1,100 shares domestic, 678 shares irrigation, Dom. Ltd. to 2618 af Apr-Oct

D – Domestic, I – Irrigation, M - Municipal

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 1,125.90 mgd for the years of 2005 - 2011. 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 the study period was 2.1 million gallons per day (mgd) and the average daily demand in July was 4.8 mgd. The ratio of the January daily demand to the July daily demand was 2.3 or water demand for July is 2.3 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 2005-2011 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 2011.

Table 3-2

Clifton Water District Monthly Treated Water

(values in million gallons per month)

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
2005	62	54	57	74	83	118	127	138	117	92	101	68	1,089
2006	56	57	56	75	99	130	157	133	128	88	59	70	1,107
2007	65	68	64	77	108	130	159	147	129	85	63	72	1,167
2008	66	62	68	68	93	132	137	153	134	99	83	63	1,160
2009	66	68	62	65	105	111	124	152	123	105	75	61	1,118
2010	67	68	60	66	101	122	148	156	117	104	78	63	1,149
2011	72	62	59	68	86	108	140	133	131	104	67	61	1,091
Average	65	63	61	70	96	122	142	145	125	97	75	65	1,126

Detailed Water Use

Average Annual Water Use 1,125.9 mg
 Average Unbilled Water 184.0 mg
 Average Annual Water Loss 13%

Average Day Use (July) 4.8 mgd
 Average Day Use (January) 2.1 mgd
 Avg Peak Day to Avg Jan Day 2.3

Figure 3-1

Clifton Water District Water Demand

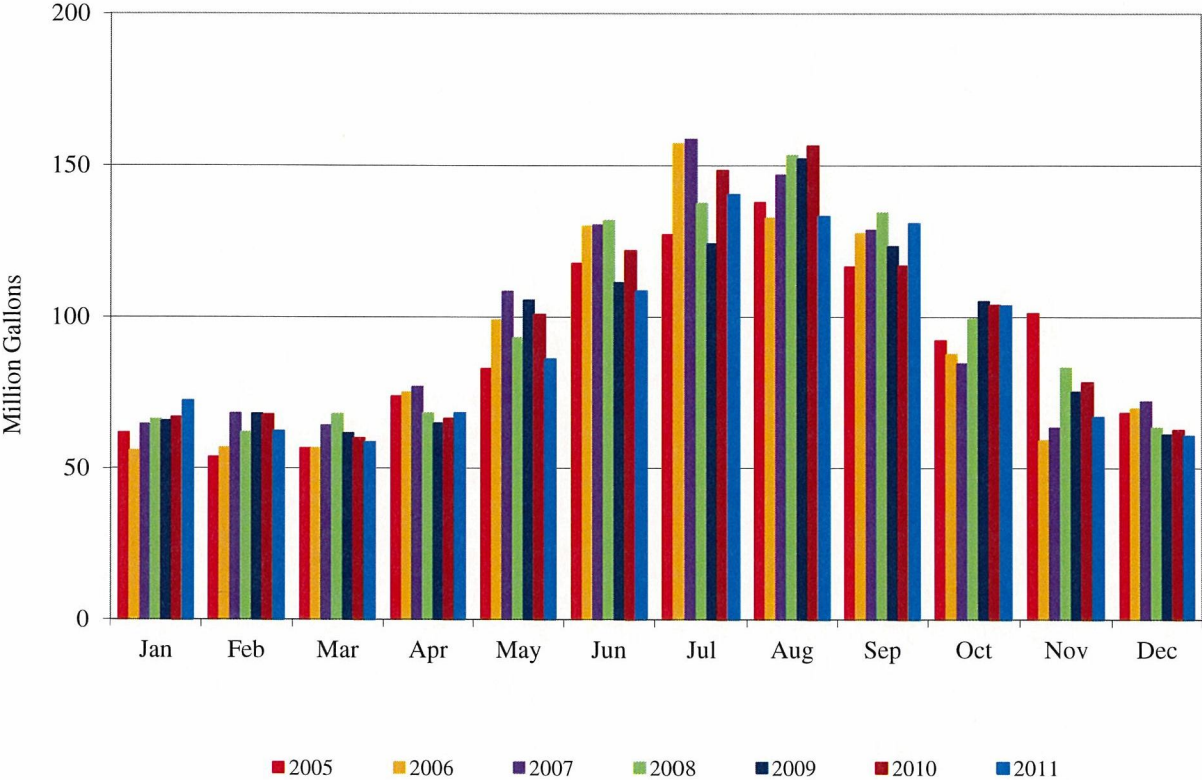


Table 3-3
Clifton Water District
Sector Water Use

Year	Customer Class	Total Taps	Metered Water (1000 gallons)	Average per Tap (1000 gallons)	Per Capita	Water Use % of Total
2011	Residential	10,787	1,003,737	93	76	92.0%
	Commercial	255	87,281	342		8.0%
	Total	11,042	1,091,018			
2010	Residential	10,590	1,060,601	100	79	92.7%
	Commercial	247	88,479	358		7.3%
	Total	10,837	1,149,080			
2009	Residential	10,619	1,036,822	98	80	92.7%
	Commercial	241	81,648	339		7.3%
	Total	10,860	1,118,470			
2008	Residential	10,499	1,068,544	102	83	92.1%
	Commercial	238	91,656	385		7.9%
	Total	10,737	1,160,200			
2007	Residential	10,127	1,081,429	107	88	92.7%
	Commercial	227	85,161	375		7.3%
	Total	10,354	1,166,590			
2006	Residential	10,155	1,045,642	103	86	94.5%
	Commercial	223	60,858	273		5.5%
	Total	10,378	1,106,500			
2005	Residential	9,925	1,033,670	104	87	94.9%
	Commercial	244	55,550	228		5.1%
	Total	10,169	1,089,220			

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 2011**

Customer	Sector	Percentage	Water Use (million gallons)
Haliburton Energy	Commercial	0.9%	9.9
Coronado Plaza	Multi-Use	0.4%	4.0
Kroger	Supermarket	0.3%	3.1
Crystal Clear Car Wash	Car Wash	0.2%	2.3
IPS New West Station	Multi-Use	0.2%	2.2
Total water used by the five largest C-I customers in 2011			21.5
Total water billed in 2011			1091.2
Percentage of 2011 billed water			2.0%

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, 2012 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	Gallons	Rate	Gallons
\$14.50 (includes 3,000 gal)	0-3,000	\$21.75 (includes 3,000 gal)	0-3,000
\$2.25 (per 1,000 gal)	3,001-10,000	\$3.38 (per 1,000 gal)	3,001-10,000
\$2.60 (per 1,000 gal)	10,001-18,000	\$3.90 (per 1,000 gal)	10,001-18,000
\$3.50 (per 1,000 gal)	18,000+	\$5.25 (per 1,000 gal)	18,000+

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

In District		Out of District	
Rate	Gallons	Rate	Gallons
\$14.50 (includes 3,000 gal)	0-3,000	\$21.75 (includes 3,000 gal)	0-3,000
\$2.25 (per 1,000 gal)	3,001-10,000	\$3.38 (per 1,000 gal)	3,001-10,000
\$2.60 (per 1,000 gal)	10,001+	\$3.90 (per 1,000 gal)	10,001+

*Demand Charge	\$2.00 (1st 1,000 gal)	\$3.00 (1st 1,000 gal)
	\$4.00 (each add 1,000 gal)	\$6.00 (each add 1,000 gal)

* 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

Clifton Water District Tap Fees

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

* - Plant Investment Fee – Clifton Water does not install water tap or provide materials for water tap.

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 has 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 Water Rights**

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

D – Domestic, I – Irrigation

Table 4-1

(Continued)

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

Water Right Name	Stream Name	Cubic Feet per Second	Use	Comments
Palmer Ditch	Big Creek	20.23	I	2/9 int. in 2nd & 3rd adj.
Golden Age Ditch	Big Creek			
Boyle Creek Ditch	Bull Creek	0.60	I	Conditional
Bull Basin Highline Ditch	Bull Creek	5.90	I	
Stubbs McKinney & Clark Res Feeder Ditch	Bull Creek	7.00	I	
Atwell East Ditch	Coon Creek	2.82	DI	Domestic use conditional
Charles A Atwell East Ditch	Coon Creek	0.75	I	
Brown Ditch	Coon Creek	2.08	I	Additional 1.0 cfs for Stock
Coon Creek Pipeline	Coon Creek	6.0	D	1.9 cfs is conditional
Craig & Stewart Ditch	Coon Creek	4.68	I	
Heely Ditch No. 4	Coon Creek	2.00	I	
Heely Ditch No. 5	Coon Creek	0.66	I	
Pisel Ditch	Coon Creek	0.65	I	
Vance & Fortsch Ditch	Coon Creek	2.60	I	
Welch Ditch	Coon Creek	1.625	I	
Wildcat Ditch	Coon Creek	0.153	S	
Kiggins & Salisbury Ditch	Leon Creek	31.20	I	Ownership of 300 shares
Leon Ditch	Leon Creek	6.69	I	40% ownership in Ditch
Little Finn Ditch	Leon Creek	3.25	I	aka Provo Ditch

D – Domestic, I – Irrigation, S - Stock

Table 4-1
(Continued)

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

Water Right Name	Stream Name	Cubic Feet per Second	Use	Comments
Atwell Waste & Seep Ditch	Mesa Creek	3.06	I	0.06 cfs conditional
Carver Ranch Pipeline	Mesa Creek	11.00	D	Mesa Intake
Independent Ditch	Mesa Creek	8.17	I	7.11 cfs conditional
Mason & Eddy Ditch	Mesa Creek	8.842	D	Ltd. 508 af
Mesa Creek Ditch	Mesa Creek	6.50	D	
Mesa Creek Ditch	Mesa Creek	16.62	I	
Blackman, Dunlap & Clark D.	Plateau Creek	0.72	I	
Heely Ditch No. 1	Plateau Creek	0.66	I	
Heely Ditch No. 2	Plateau Creek	0.66	I	
Heely Ditch No. 3	Plateau Creek	0.66	I	
Heely Ditch No. 6	Plateau Creek	0.66	I	
Ute Pipeline	Plateau Creek	50.0	D	
Marin Crawford Ditch	Rapid Creek	8.0	D	
Cedar Ditch	Salt Creek	3.70	I	
Hill-Johnson Ditch	Salt Creek	1.57	I	7/24 interest in ditch
Bridges Switch PP & PL	Colorado River	30.0	D	Conditional
Grand Valley Canal	Colorado River	1.895	I	GVIC, 182 shares
Ute Pumping Station & PL	Colorado River	50.0	D	Conditional

D – Domestic, I - Irrigation

Retail Water Sales

Ute currently provides retail water to residents and businesses that are located its service area (see domestic water providers map, appendix A). This includes approximately 75% of the incorporated area of the City of Grand Junction. 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 2005 – 2011. 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 2005-2011

The average daily demand for January for the study period was 6.1 million gallons per day (mgd) and the average daily demand in July was 12.1 mgd. The ratio of the January daily demand to the July daily demand was 2.0 or water demand for July is 2.0 times that of 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 2005 through 2011 as well as percentage of water use and percentage of taps by each sector. For the years 2005-2011, 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 2011. 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 2011.

Table 4-2

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
2005	182	158	193	198	211	325	361	316	326	242	199	202	2,912
2006	207	176	183	214	279	373	397	343	332	234	207	196	3,141
2007	203	186	185	251	256	342	387	366	357	230	217	189	3,168
2008	186	181	184	194	254	296	355	386	323	257	203	179	3,000
2009	199	163	182	202	251	275	331	354	313	247	186	190	2,894
2010	190	143	162	207	231	286	357	320	302	250	190	176	2,815
2011	184	170	161	204	212	279	342	296	337	244	187	173	2,789
Average	193	168	179	210	242	311	361	340	327	243	198	186	2,960

Detailed Water Use

Average Annual Water Use	2,959.9 mg
Average Unbilled Water	183.5 mg
Average Annual Water Loss	6%
Average Day Use (July)	12.1 mgd
Average Day Use (January)	6.2 mgd
Avg Jul Day to Avg Jan Day ratio	2.0

Figure 4-1

Ute Water Conservancy District Water Use

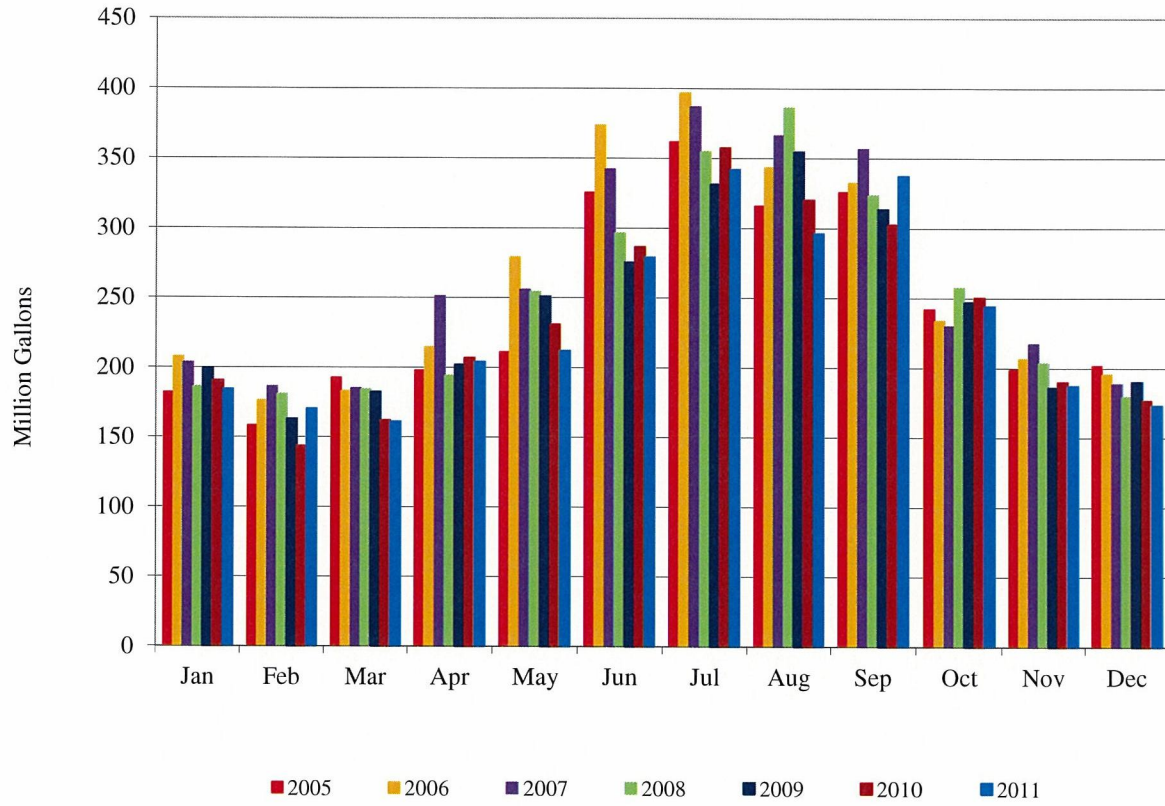


Table 4-3
Ute Water District
Sector Water Use

Year	Customer Class	Total Taps	Metered Water (1000 Gallons)	Average per Tap (1000 Gallons)	Per Capita	Water Use % of Total
2011	Residential	33,057	2,107,328	64	75	75.4%
	Commercial	1,249	687,649	551		24.6%
	Total	34,306	2,794,977			
2010	Residential	32,643	2,139,267	66	77	76.0%
	Commercial	1,238	675,771	546		24.0%
	Total	33,881	2,815,038			
2009	Residential	31,937	2,186,567	68	72	75.5%
	Commercial	1,223	707,831	579		24.5%
	Total	33,160	2,894,398			
2008	Residential	32,253	2,232,344	69	72	74.4%
	Commercial	1,156	767,198	664		25.6%
	Total	33,409	2,999,542			
2007	Residential	31,387	2,416,643	77	80	76.2%
	Commercial	1,139	752,784	661		23.8%
	Total	32,526	3,169,427			
2006	Residential	30,452	2,307,791	76	79	73.5%
	Commercial	1,098	833,636	759		26.5%
	Total	31,550	3,141,427			
2005	Residential	29,495	2,165,112	73	77	74.3%
	Commercial	1,037	747,361	721		25.7%
	Total	30,532	2,912,473			

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.

Table 4-4
Five Largest Commercial-Industrial Customers 2011

Customer	Sector	Percentage	Water Use (million gallons)
LLG	Manufacturing	0.9%	26.0
Colorado Egg Producer	Agricultural	0.5%	14.0
Coors Tek	Manufacturing	0.4%	12.0
Wal-Mart Stores	Retail	0.3%	9.0
Safeway Stores	Retail	0.2%	7.0
Total water used by five largest C-I customers in 2011			68
Total water billed in 2011			2,815
Percentage of 2011 billed water			2.4%

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

**Ute Water Conservancy District
Water Rates
February 1, 2012**

Meters 3/4" X 5/8" through 1"

Residential

Rate Gallons

\$15.00 (includes 3,000 gal)	0-3,000
\$3.50 (per 1,000 gal)	3,001-9,000
\$4.00 (per 1,000 gal)	9,001-15,000
\$4.75 (per 1,000 gal)	15,001-21,000
\$5.50 (per 1,000 gal)	21,001-30,000
\$10.00 (per 1,000 gal)	over 30,000

Non-Residential

Rate Gallons

\$15.00 (includes 3,000 gal)	0-3,000
\$3.50 (per 1,000 gal)	3,001-9,000
\$4.00 (per 1,000 gal)	9,001-15,000
\$4.75 (per 1,000 gal)	over 15,000

Agriculture

Rate Gallons

\$15.00 (includes 3,000 gal)	0-3,000
\$3.50 (per 1,000 gal)	3,001-9,000
\$4.00 (per 1,000 gal)	9,001-15,000

1 1/2" Meters

Non-Residential

Rate Gallons

\$75.00 (includes 15,000 gal)	15,000
\$3.50 (per 1,000 gal)	next 30,000
\$4.00 (per 1,000 gal)	next 30,000
\$4.75 (per 1,000 gal)	over 75,000

Agriculture

Rate Gallons

\$75.00 (includes 15,000 gal)	15,000
\$3.50 (per 1,000 gal)	next 30,000
\$4.00 (per 1,000 gal)	next 45,000

Table 4-5 (continued)

2" Meters

Non-Residential		Agriculture	
Rate	Gallons	Rate	Gallons
\$120.00 (includes 24,000 gal)	24,000	\$120.00 (includes 24,000 gal)	24,000
\$3.50 (per 1,000 gal)	next 48,000	\$3.50 (per 1,000 gal)	next 48,000
\$4.00 (per 1,000 gal)	next 48,000	\$4.00 (per 1,000 gal)	next 72,000
\$4.75 (per 1,000 gal)	120,001+		

3" Meters

Non-Residential		Agriculture	
Rate	Gallons	Rate	Gallons
\$262.50 (includes 52,500 gal)	52,500	\$262.50 (includes 52,500 gal)	52,500
\$3.50 (per 1,000 gal)	next 105,000	\$3.50 (per 1,000 gal)	next 105,000
\$4.00 (per 1,000 gal)	next 105,000	\$4.00 (per 1,000 gal)	next 105,000
\$4.75 (per 1,000 gal)	262,501+		

4" Meters

Non-Residential		Agriculture	
Rate	Gallons	Rate	Gallons
\$450.00 (includes 90,000 gal)	90,000	\$450.00 (includes 90,000 gal)	90,000
\$3.50 (per 1,000 gal)	next 180,000	\$3.50 (per 1,000 gal)	next 180,000
\$4.00 (per 1,000 gal)	next 180,000	\$4.00 (per 1,000 gal)	next 180,000
\$4.75 (per 1,000 gal)	450,001+		

6" Meters

Non-Residential		Agriculture	
Rate	Gallons	Rate	Gallons
\$1,050.00 (includes 210,000 gal)	210,000	\$1,050.00 (includes 210,000 gal)	210,000
\$3.50 (per 1,000 gal)	next 420,000	\$3.50 (per 1,000 gal)	next 420,000
\$4.00 (per 1,000 gal)	next 420,000	\$4.00 (per 1,000 gal)	next 420,000
\$4.75 (per 1,000 gal)	over 1,050,001+		

Table 4-6
Ute Water Conservancy District

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 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. 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 gpcd 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 10.0%

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 (gpcd) 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 (gpcd) 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 (gpcd)

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 6% of total treated water.

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			
2	Residential Demand	1,014			
	Commercial - Industrial Demand	630			
3	Unbilled Water	164			
4	Total Water Demand	<u>1,808</u>			
Projected:					
5	Population		28,125	29,123	30,157
Projected Sector Demand:					
6	Residential Demand		1,140	1,180	1,222
7	Commercial - Industrial Demand		651	651	651
8	Projected Unbilled Water		179	183	187
9	Projected Total Water Demand		<u>1,970</u>	<u>2,014</u>	<u>2,060</u>

- 1 2010 census
- 2 Billed water by sector
- 3 Unbilled water was 10.0% 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 gpcd 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 10.0% of total demand
- 9 Sum of sectors and unbilled 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			
2	Residential Demand	1,061			
	Commercial - Industrial Demand	88			
3	Unbilled Water	198			
4	Total Water Demand	<u>1,347</u>			
Projected:					
5	Population		36,363	40,384	44,282
Projected Sector Demand:					
6	Residential Demand		1,159	1,276	1,390
7	Commercial - Industrial Demand		88	92	92
8	Projected Unbilled Water		186	204	221
9	Projected Total Water Demand		<u>1,434</u>	<u>1,572</u>	<u>1,703</u>

- 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 gpcd 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			
	Commercial - Industrial Demand	676			
3	Unbilled Water	141			
	Total Billed Water	<u>2,956</u>			
Projected:					
5	Population		92,278	106,976	124,014
Projected Sector Demand:					
6	Residential Demand		2,496	2,909	3,387
7	Commercial - Industrial Demand		834	834	834
8	Projected Unbilled Water		200	225	253
9	Projected Total Water Demand		<u>3,529</u>	<u>3,967</u>	<u>4,474</u>

- 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 gpcd 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 6% of totalwater demand

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 temporary 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	1,808	1,970	2,014	2,060
Clifton Water District	1,347	1,434	1,572	1,703
Ute Water Conservancy District	2,956	3,529	3,967	4,474
Projected Total Water Demand	6,111	6,933	7,553	8,237

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 Council 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 eight 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 City of Grand Junction, Ute Water District, and Clifton Water District, contribute \$5,000 per entity per year to fund DRIP efforts.

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 three 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, The Redlands Water and Power Company, and Ridges Irrigation District. 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. All three entities have pipe replacement capital plans that will further reduce unbilled water losses, as older pipes are replaced.

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. We are estimating 2.6 people per resident and approximately 4 flushes per person per day. 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 of Grand Junction water service area and the Clifton water service area 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 a greater share 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 1,880 gallons per home per month and may be as high as 2,500 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 25,000 gallons for each home with a total of 250,000 gallons for 10 homes per year. It is estimated that most of the irrigation audits demand will be from homes in the City of Grand Junction water service area.

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 2011 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 16.4 mg. At the 5% water savings from audits, the Grand Valley could see a savings of 27.4 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	150.5	4.5	7.5
Colorado Mesa University	Education	43.8	1.3	2.2
St. Mary's Hospital	Hospital	39.0	1.2	2.0
School District 51	Education	30.0	0.9	1.5
Mesa County	Government	29.1	0.9	1.5
LLG	Manufacturing	26.0	0.8	1.3
Colorado Egg Producer	Agricultural	12.0	0.4	0.6
Haliburton	Commercial	9.9	0.3	0.5
Wal-Mart Stores	Retail	9.0	0.3	0.5
Safeway Stores	Retail	8.0	0.2	0.4
Total		357.3	10.7	17.9

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

pertains 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**

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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 per home, 250,000 gallons per year	\$1,000.00/yr.
C-I Water Audits	2012	2018	10	3% - 10.7 mg 5% - 17.9 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

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

	2010	2015	2020	2025
1 Total Water Demand	6,111	6,933	7,553	8,237
Estimated Water Savings:				
2 Landscape Audits		1.00	2.25	3.50
3 Fixture Retro-fits		1.68	4.48	7.28
4 C-I Audits		8.95	17.90	17.90
5 Total Estimated Water Savings		11.63	24.63	28.68
6 Projected Water Demand with Savings		6,921	7,528	8,208

- 1 Water demand from the City, Clifton, and Ute.
- 2 Estimated annual water savings for ten homes May -Sept.: 250,000 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 will 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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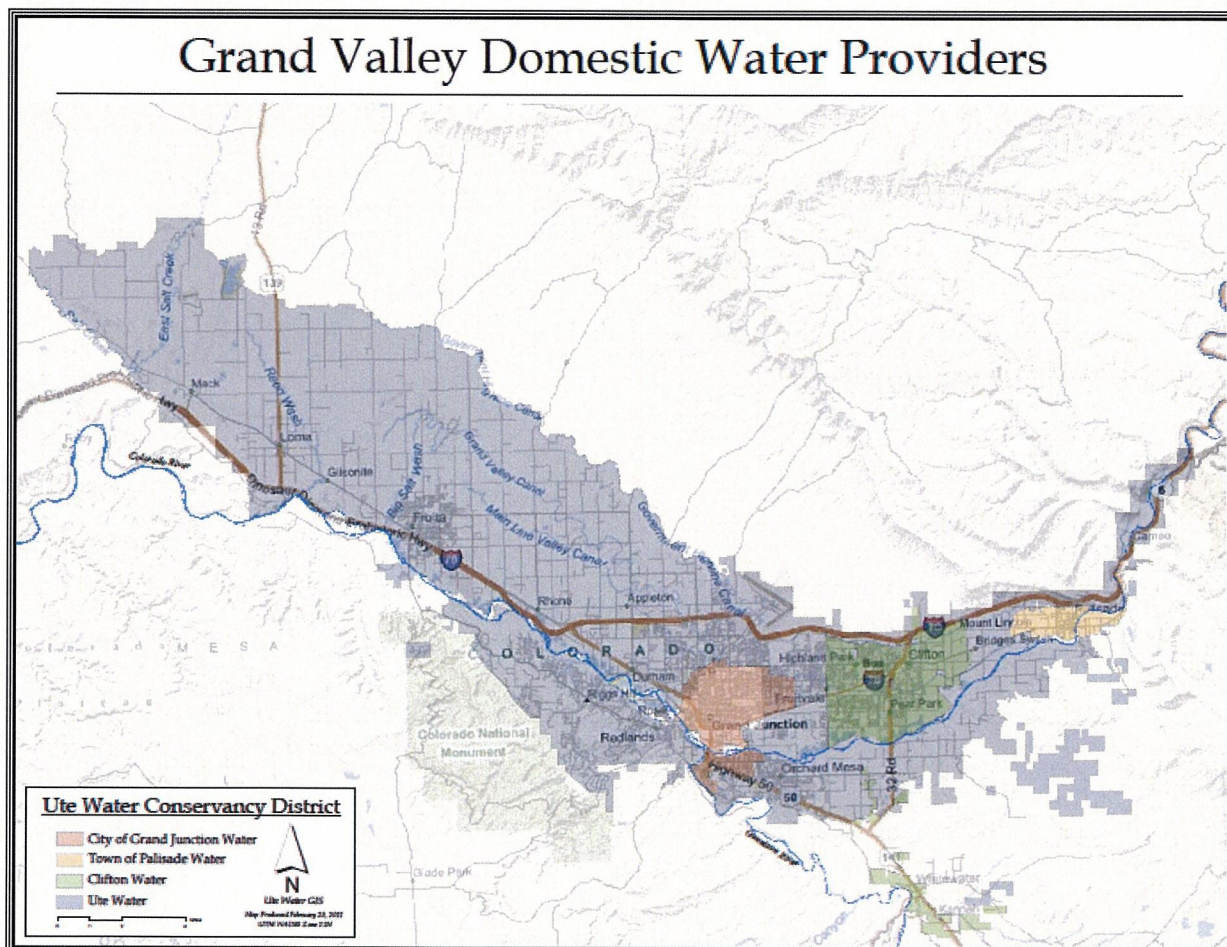
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Appendix A

Grand Valley Domestic Water Providers



**Clifton Water District, City of Grand Junction, Town of Palisade and Ute
Water Conservancy District Drought Response Plan**

Drought Response Plan

Clifton Water District

City of Grand Junction

Town of Palisade

Ute Water Conservancy District

April 2003

Revised June 2012

INTRODUCTION

Drought can be defined as an extended period of below-average precipitation and/or stream flow that stresses a water supply. Drought is a natural, on-going situation in Colorado - a phenomenon that has recurred regularly throughout Colorado's history.

For planning purposes, the City of Grand Junction, Ute Water Conservation District, Clifton Water District and the Town of Palisade water supply strategy is to have enough water to meet unrestricted customer usage during a period similar to the 1977 or 2002 droughts.

No one can predict how long a drought will last or if it will be worse than those used in our calculations. Therefore, even though Grand Valley domestic water supply currently exceeds its use, the providers must be prepared to recognize drought conditions early and respond appropriately. The attached Drought Response Plan (DRP) is designed to provide Governing Boards and City Councils with a set of options to consider in dealing with a prolonged drought.

Each domestic water provider has developed a water conservation plan. Implementation of this plan will be accomplished through an on-going annual effort, budgeted and paid from the four domestic water providers. These plans include, but are not limited to, the following items:

- Initiate Drought Response Information Project to provide public education through all sources of media on why and how to reduce per capita consumption.
- Encourage all customer classes to evaluate, redesign and reconstruct existing landscapes and outdoor water uses to reduce overall consumption.
- All public institutions to take the lead in evaluating in-door and out-door water use practices. Parks, open spaces, medians, golf courses, fountains, etc. to be audited for current consumption and redesigned or re-operated to reduce consumption.
- Examine all municipal and county code provisions that affect water usage, such as landscape standards, storm water best management practices, and building codes provisions and amend, if appropriate, these code provisions to meet not only the objectives of the Code as originally intended but also to reduce water consumption.
- Campaign proclamation to alert public to the need to conserve water.
- Acquaint customers with measures they can expect if Stage I or Stage II drought occurs.
- Monitor potential drought response effectiveness; recommend adjustments as needed to the City Councils and Governing Boards and report to the public regularly.
- Highlight unusually high use on customers' bills. Contact these customers and special interest groups with heavy water use to get their ideas and suggestions for obtaining long-term reductions. (Golf courses, parks, hospitals, schools, government.)

- Suggest water use surveys (comprehensive water use analyses) for high volume water users in all customer classes, advise them on ways to reduce water use and, where appropriate, suggest retrofit devices.
- Coordinate with Mesa County; invite to meetings.
- Meet with citizens groups and convey messages of basic water conservation and Stage I and Stage II drought conditions.
- Publish “water waste reduction” suggestions for households and aggressively promote it by including it with water bills, putting it on web sites, and using other effective distribution methods, including bill boards, and Public Service Announcements.
- Train customer service employees to respond to conservation-related questions and give information.
- Communicate with the irrigation districts and companies to cooperatively work with them to ensure that adequate irrigation water will be available throughout irrigation season.
- Develop some Demonstration Xeriscape™ areas for customers to identify with.
- Encourage Xeriscaping and low-water consumption practices.
- Quarterly meetings of domestic water providers to review water supply projections, current reservoir capacity and ongoing conservation efforts.
- Consider incentives by the domestic water providers to customers to replace out-dated, water consuming in-door plumbing fixtures, faucets and shower heads.
- Each provider consider adjusting increasing block rate (separation of residential from commercial/industrial rates.)
- Train and assign field and customer service personnel to:
 - Monitor outdoor use.
 - Offer suggestions to customers on water wise use.
 - Identify and work with high water users.

Denver Water holds the trademark for the term Xeriscape. The word Xeriscape was created in 1981 for landscape water conservation education programs. The name is a combination of “landscape” and the Greek word “xeros”, which means “dry.”

DROUGHT RESPONSE PLAN

The Drought Response Plan is based **on two stages** of drought, each of which is triggered by either a combination of the Historic User Pool projections, Water Provider storage, or stream flow projections.

Stage I Drought - On-going intensive water conservation – Conditions are similar to 2002 drought, but no real impacts to area domestic water providers; Statewide drought conditions

may or may not exist that affect area irrigators. Some voluntary water use reductions anticipated. Actions undertaken involve predominately sharing water supply.

- The 2002 drought had a Statewide drought declaration, Ute Water Conservancy Districts primary water source and the Lower Molina power plant was out of water by mid July, Vega reservoir did not fill. The Town of Palisade's cabin reservoir had only 75% of normal but springs remained steady. The City of Grand Junction's Purdy Mesa and Juniata Reservoirs started out about 75% full with about 1,100 acre feet of municipal water available on top of Grand Mesa. The Historic User Pool (HUP) received approximately 75 – 80% of full allocation but had water for full irrigation season.

Stage II Drought - At least one of the four water provider's supply is at or near minimum target levels (to be determined) for either storage or stream flows requiring drastic water conservation measures to ensure water needs, for the most essential uses are met for all Valley water customers. Mandatory water use reductions and a drought rate imposed.

- Moving from a Stage I Drought to a Stage II Drought will be dependent on several factors. During a Stage I drought all water providers will have gone from meeting on a quarterly basis to be meeting on a monthly basis and all water supplies, either storage or stream flows, will be monitored very closely. If it is anticipated that the Historic User Pool (HUP) is expected to only receive 75% of entitlement and irrigation districts are anticipating they will not be able to stretch available water supplies throughout entire irrigation season we will need to take stronger action to ensure our domestic supplies are not over burdened. Domestic water suppliers usually have enough water resources to supply their current water demands, if outside irrigation demand that has normally been supplied by one of the irrigation canals is suddenly added to the domestic demand it will cause both treatment and capacity delivery problems. Individual triggers for each domestic water provider have been discussed and will be modified as weather and demand dictate. Currently the Ute Water District trigger for moving to Stage II will be they will be at 75% of storage capacity in Jerry Creek reservoirs by mid summer. The Town of Palisade's Cabin Reservoir is below 75% capacity right after spring runoff and Ute Water may not have capacity to keep them whole. Clifton Water District will use the 75% of Historic User Pool storage available as their trigger as does not anticipate any numeric triggers, only hardship may be getting water to treatment facility from river. The City of Grand Junction is anticipating a trigger of 50% of storage for Juniata and Purdy Mesa Reservoirs by end of irrigation season.

This plan identifies two ways to respond to a drought: increasing water supply and decreasing water use.

Increasing Water Supply. The four area water providers can possibly augment their water supply from other sources. There are several options for doing this, each presenting its own set of intergovernmental and technical considerations. Among the possibilities:

- Call back water rights we allow others to use. (Ranch lessees)
- Augment raw water sources through River Pump Stations if river water is in priority.
- Pay an upstream water user to allow us to divert more water.
- Seek waivers from State agencies to allow us to divert and use irrigation water decrees if available.
- Purchase Municipal Water contracts from federal projects if available. (possibly must do in advance)

Decreasing Water Use. The prime drought response is to budget water use for the most essential uses for the drought's duration. There are a wide variety of options that could be used to decrease water use. In general, we expect that reductions would be voluntary as outlined above in the introduction. Voluntary measures would continue with a Stage I drought. Mandatory measures would be implemented during a Stage II drought. We believe it is important to ensure that any discomfort, difficulty or potential loss is shared as equitably as possible across all customer classes.

Stage I Drought – Based on past experience of other domestic water providers we can expect to achieve between 0% and 10% reduction in water consumption with the following measures.

- Monthly meetings of domestic water providers to review water supply projections, current reservoir capacity and ongoing conservation efforts.
- Continue all measures outlined in the on-going water conservation plan implementation as outlined above.
- Initiate campaign to alert public of Stage I drought conditions.
- Monitor drought response effectiveness; recommend adjustments as needed to the City Councils and Governing Boards, report to the public regularly.
- Request all government entities to reduce their own short term domestic water use by 30 percent of last five year average to demonstrate leadership in dealing with the crisis, and then publicize the results.
- Publicize creative water saving efforts of individuals and business customers as examples of leadership.
- Assist city and county health departments in distributing guidelines for using gray water where legal and appropriate.
- Suggest the following ideas to reduce indoor water use:
 - Serve water in restaurants only upon request.

- Encourage all hotels, motels, inns and bed and breakfast establishments to have only showerheads meeting maximum flow rates of 2.5 gallons per minute and faucet aerators meeting maximum flow rates of 2.2 gallons per minute.
- Promote the reduction of water-cooled air conditioning.
- Suggest the following ideas to reduce outdoor water use:
 - Cut back on street cleaning, sidewalk and driveway washing—except where spills of toxic or hazardous substances or where public health and safety issues can only be resolved by washing the impermeable surface.
 - Suggest to customers other ways to clean sidewalks or driveways and any other hard surfaces without the use of hoses.
 - Suggest to customers other ways to wash vehicles to minimize water waste.
 - Suggest home owners not to fill private swimming pools.
 - Require that ornamental fountains in buildings and parks be turned off.
- Provide information and assistance to customers planning for post-drought landscape revival or replacement.

Stage II Drought - Based on past experience of other domestic water providers we can expect to achieve between 10% and 20% reduction in water consumption with the following measures.

- Continue all measures initiated in Stage I droughts.
- Increase meeting frequency from monthly to weekly.
- Adjust drought water rates to increase financial incentives for using less water.
- Intensify public information to reinforce the need for extreme measures (generate awareness of drought status, response, policy recommendations, requirements and penalties).
- Provide information and assistance to customers planning for post-drought landscape revival or replacement.
- Eliminate all fire hydrant uses except those required for public health and safety.
- Reduce indoor water use:
 - Eliminate serving water in restaurants except upon request.
 - Require all hotels, motels, inns and bed and breakfast establishments to have only showerheads meeting maximum flow rates of 2.5 gallons per minute and faucet aerators meeting maximum flow rates of 2.2 gallons per minute.
 - Assist County health department in distributing guidelines prohibiting use of gray water.
- Intensify reductions of outdoor water use:
 - Increase penalties for wasting water, violating any permits or ignoring restrictions.
 - Prohibit street, sidewalk and driveway washing by flushing methods—except where spills of toxic or hazardous substances or where public health and safety issues can only be resolved by washing the impermeable surface.
 - Prohibit curbside car/truck washing by all customers.
 - Prohibit car/truck washing on dealers' lots.
 - Prohibit filling private swimming pools.
 - Require that ornamental fountains in buildings and parks be turned off.

- Impose restrictions in landscape water use in proportion to the severity of the drought.
- Prohibit all new landscaping including planting of trees and shrubs.
- Train and assign field and customer service personnel to:
 - Police outdoor water use.
 - Issue warnings.
 - Impose penalties for water waste, violations of any permits and noncompliance with restrictions.
- Prohibit outdoor water use (as a last resort in an extremely severe drought) except for subsistence irrigation of trees and shrubs.

PUBLIC OUTREACH

During a drought, it is essential that the four area water providers communicate effectively not only with their customers, but also with other area water suppliers, local governments, and other groups who may be affected by this drought response. An intense water conservation effort was developed in 2003 and has with support from Ute Water Conservancy District, Town of Palisade, Clifton Water District and the City of Grand Junction. The outreach campaign is administered through the four water providers and is the Drought Response Information Project or DRIP.

SUMMARY

While the options listed in the Drought Response Plan are based on lessons learned here and from other water utilities during past droughts, it is important to understand that every drought is different and that the Governing Boards and City Council will adjust and refine measures based on actual drought conditions. This plan is intended to help staff, customers, stakeholders and the Boards and Council be better prepared when a drought occurs.