

**A Water Conservation Plan  
For  
The Town of Monument,  
The Town of Palmer Lake and TriView Metropolitan District**



Prepared by:  
**Water Matters!**  
2419 West Bijou Street  
Colorado Springs, CO 80904

Photography by:  
**Delia Tharnish**

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## Executive Summary

The Towns of Monument and Palmer Lake, and the TriView Metropolitan District (the Entities) are very familiar with the need to conserve water in Colorado. Both Towns have experienced severe water shortages in the last three decades. Palmer Lake depends on ground water to meet peak demands in summer, Monument and TriView are wholly dependent on groundwater. The Water Infrastructure Planning Study (TetraTech, et al, 2009) warned that the Entities “will encounter limitations on the Denver Basin aquifer water supply before renewable water supplies are online. Even interim water projects require years to plan, permit, design and build. Action is needed to improve efficient use of existing supplies...” It is this immediate need to optimize existing supply that drives the Entities’ desire to complete a Water Conservation Plan.

Colorado House Bill 04-1365 encourages water providers to submit a Water Conservation Plan to the Colorado Water Conservation Board (CWCB). The Entities’ Water Conservation Plan is submitted in accordance with this Bill, with Colorado Revised Statutes 37-60-126 and CWCB’s Guidelines for developing water conservation plans.

Additionally, Colorado House Bill 10-1051 amends 37-60-126 (4), Colorado Revised Statutes, to require water providers’ Plans to include consideration of other specific elements, and beginning in 2013, requires water providers to report annually to the Colorado Water Conservation Board on customers’ water use by customer category, and to estimate the amounts of water saved for the year through the implementation of certain elements of those Plans, along with descriptions of any changes made to elements of the Plans.

None of the Entities has an existing Water Conservation Plan, although both the Town of Palmer Lake and the Town of Monument have ordinances in place that provide for specific actions to be taken should either Board declare a water emergency. Monument has a landscaping ordinance in place, as well. Several educational programs have been launched in the last few years. Each entity has measures in place that comprise significant elements of Colorado Water Wise’s foundational programs and measures, for example metering, billing systems and waster loss management.

The Entities’ Water Conservation Plan has been developed under the combined direction of the Entities’ staff, with input from their Boards of Directors and their customers. The planning process included 1) profiling the existing water supply system for each Entity, 2) profiling the water demands and historical demand management efforts of each Entity, 3) identifying water efficiency benefits and goals, 4) selecting water efficiency activities for implementation, and 5) developing implementation and monitoring plans. The Entities have invested significant time and resources in evaluating the effectiveness of their existing water conservation programs and measures, and in developing the goals, programs and measures included in the new plan, and are confident that Plan will meet with the intent and requirements of both HB 04-1365 and HB 10-1051.

The Conservation Plan will be posted on each Entity's webpage, advertised in the local newspaper, made available at the local library and both Town Halls for public review and comment. The public comment period will be thirty days.

The Plan considered all elements required to be considered by legislation. After considerable evaluation, the Entities have determined that, given significant constraints of staff and budget, and the already low per capita use in Monument and Palmer Lake, the largest and most cost effective savings can be achieved through:

- Expanding existing ordinances for landscaping, water waste and watering restrictions to be essentially the same in all communities, to target residential landscapes as well as commercial, and to include requirements for soil improvement
- Focusing on non-revenue water (water loss) in all three Entities,
- Expanding public education efforts to the extent affordable, and
- Offering limited targeted incentives and rebates to determine how dependable such savings will be in these communities for future planning

These activities are projected to result in total water savings of 15% of produced water over five years for the combined Entities. These savings equate to about 1268 acre feet. An acre foot is sufficient water to meet the water needs of two families for a year. From another perspective, 1268 acre feet would meet the water needs of all three Entities for over a year. Yet another perspective is this – Colorado State University estimates the cost per acre foot of new projects to be approximately \$16,200 per acre foot, a significant monetary savings for the three Entities.

## 1.0 Profile of the Existing Water Supply Systems

### 1.1 Overview of the Existing Water Supply Systems

The Town of Palmer Lake, the Town of Monument and TriView Metropolitan District are geographically contiguous water providers northwest of Colorado Springs in El Paso County. The three communities have separate water systems.

**The Town of Palmer Lake**, founded in 1889, is located in El Paso County, and comprises approximately 6 square miles, extending east to two miles west of I-25, west to the base of Sundance and Chataqua Mountains, north to County Line Road and south to unincorporated El Paso County. **Palmer Lake** is close to build out, expecting very little increase in population over the life of the Plan. The Town of **Palmer Lake** does not intend to pursue new supply, because of its built out status, and will look to conservation to ensure that the existing supply continues to meet that Town's demands.

**The Town of Monument**, established in 1879, is located in El Paso County, bordered by National Forest on the west, the United States Air Force Academy to the south, foothills and rock outcroppings to the north and rolling plains to the east. It covers approximately 5 square miles. **Monument** expects slow to modest growth, in line with that of Colorado Springs (about 1.5% per year). **Monument** will maintain and expand its current course of efficient use of its water supply, while looking for new supply to meet the demands of its moderate growth projections.

**TriView Metropolitan District** is comprised of approximately 2,580 acres in an area bounded on the west by the Santa Fe Trail on the west side of I-25, Kingswood Estates on the east and extending from Higby Road on the north to Baptist Road on the south. The District was formed in 1985 as a "quasi-municipal corporation and political subdivision of the State of Colorado" by District Court decree pursuant to the laws of the State. **TriView** was annexed into the Town of **Monument** in 1987.

**Tri View Metropolitan District** will also maintain and expand its current conservation efforts, while actively pursuing new, renewable water supplies, from tenuous sources like Flaming Gorge and/or the Super Ditch or some sort of system/supply sharing with Colorado Springs Utilities. All potential sources of supply for the Entities will be difficult and very costly, and at this time, are highly uncertain.

Because of the uncertainty of new supply relative to **Monument** and **TriView**, the Plan will be of short duration, to be updated in five years (sooner, if needed). That update will consider new viability of new, renewable sources of supply and, with a period of Plan implementation results to rely on, will be able to determine if implementation of new supply can be postponed, and the extent of new supplies needed.

**Precipitation** in the entities' geographical area over the last five years has ranged from 20 inches to 29 inches annually. Precipitation in the three entities is generally impacted by their proximity to the Palmer

Divide. The Palmer Divide is a ridge in Central Colorado that separates the Arkansas River basin from the Missouri River (via the Platte River) basin. It extends from the Front Range of the Rockies in central Colorado eastward toward the town of Limon.

This terrain feature is the cause of several small scale weather patterns, and can make a great difference in weather between Denver and Colorado Springs. Although this elevation (7000-7500 feet) technically qualifies it for the foothills category, it does not parallel a mountain chain as foothills do. The Palmer Divide is perpendicular to the mountains. Due to the orientation of the Palmer Divide with respect to the eastern plains, the weather can be similar to the foothills during active weather with enhanced precipitation, especially during snowstorms.

As noted in the Entities' grant application, growth since 2005 has been varied. **Palmer Lake** has experienced very slow growth. It is currently approaching its built-out level, and does not anticipate additional growth. **Monument's** growth has been modest, and is expected to continue in that pattern. **TriView**, however, has experienced rapid growth. Its growth slowed during the economic downturn recently experienced, however, it is poised to continue that rapid growth, depending on its ability to identify and bring online new, sustainable sources of water.

Table 1 summarizes water use and population change for each entity for five years.

**Table One - Retail Water Delivery for Past Five Years**

	2012	2011	2010	2009	2008
<b>Town of Palmer Lake</b>					
<b>Sources: surface and groundwater</b>					
Population	2370	2365	2362	2360	2360
Water Produced	<b>70,963,821</b>	<b>66,819,006</b>	<b>71,742,615</b>	<b>70,429,435</b>	<b>81,378,028</b>
<i>Residential - Billed</i>	44,303,019	49,586,617	42,535,414	43,241,363	45,974,627
<i>Commercial - Billed</i>	5,300,812	6,128,683	5,257,186	5,344,438	12,556,576
<b>Subtotal</b>	49,603,831	55,715,300	47,792,600	48,585,801	58,531,203
<b>Non- Revenue Water</b>	21,360,000	11,103,706	23,950,015	21,843,634	22,846,825
<i>Systemwide gpcd (produced/population)</i>	82	77	83	82	94
<i>Residential gpcd (residential billed/population)</i>	51	57	49	50	118
<b>Town of Monument</b>					
<b>Source: groundwater</b>					
Population	2263	2240	2218	2196	2174
Water Produced	147,325,000	129,096,000	125,250,000	121,250,000	116,400,000
<i>Residential - Billed</i>	82,775,000	72,363,850	70,014,750	67,778,750	65,067,600
<i>Commercial - Billed</i>	41,324,000	38,965,150	37,700,250	36,496,250	35,036,400
<b>Subtotal</b>	124,099,000	111,329,000	107,715,000	104,275,000	100,104,000
<b>Non- Revenue Water</b>	23,226,000	17,767,000	17,535,000	16,975,000	16,296,000
<i>Systemwide gpcd (produced/population)</i>	178	158	155	151	147
<i>Residential gpcd (residential billed/population)</i>	100	89	86	85	82
<b>Tri View Metropolitan District</b>					
<b>Source: groundwater</b>					
Population	2787	2732	2692	2652	2532
Water Produced	241,024,840	217,442,000	220,376,000	175,122,000	197,943,000
<i>Residential - Billed</i>	165,810,480	150,736,800	139,478,400	114,326,400	129,850,608
<i>Commercial - Billed</i>	42,229,680	37,684,200	34,869,600	28,581,600	32,462,652
<b>Subtotal</b>	208,040,160	188,421,000	174,348,000	142,908,000	162,313,260
<b>Non- Revenue Water</b>					



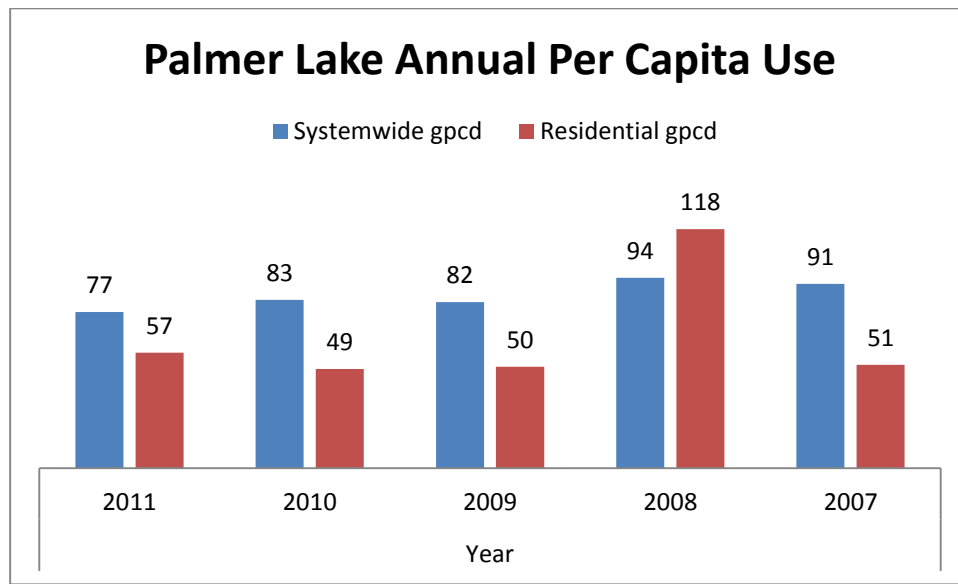
	32,984,680	29,021,000	46,028,000	32,214,000	35,629,740
<b>Systemwide gpcd (produced/population)</b>	237	218	224	181	214
<b>Residential gpcd (residential billed/population)</b>	163	151	142	118	141

**Palmer Lake** uses both surface water and Denver and Arapahoe Basin groundwater. Its ground water is used for meeting peak demands during the summer. The Town collects surface water as runoff from the Rampart Range tributary to **Monument** Creek. Its surface water treatment plant is located west of the Town and has a rated capacity of 1.1 MGD. The surface water treatment plant recently completed improvements to expand plant performance, reduce operational and maintenance requirements and increase its capacity. The Town’s potable water distribution system contains approximately 28 miles of transmission mains and pipelines. The Town operates and maintains two groundwater storage tanks with a combined total capacity of 0.75 million gallons. Its two wells have a combined production rate of 500 gallons per minute (gpm). It operates a water treatment plant for removal of iron and manganese from its wells, and from there distributes the water as needed to meet peak demands.

**Palmer Lake** has over 70 million gallons of annual water supply. Of this amount, nearly one third is groundwater from one Denver Basin well. The other two-thirds are surface water supplies from **Monument** Creek. The Town has one access point for each supply, and each access point is 100% metered. **Palmer Lake** has 899 residential taps and 49 commercial taps. Commercial use comprises less than 15% of the Town’s water. Because of the Town’s near built out position, it anticipates no new capital projects during the life of the Plan.

Figure 1 illustrates systemwide use and residential use in gallons per capita per day (gpcd). Systemwide use is calculated by dividing produced water by population; residential use is calculated by dividing the *amount billed* to residents by the population.

**Figure 1**



**Palmer Lake’s** commercial use is approximately 11% of total billed water. Its non-revenue water is approximately 17%. The majority of the Town’s pipelines date from 1930 to 1937. The original pipes were cast iron, later betterments were galvanized. The age of the cast iron pipes, and the propensity of the galvanized to leak contribute significantly to the high amount of non-revenue water.

As noted earlier, Palmer Lake depends on groundwater to meet its summer irrigation use. On a typical summer day, the Town uses just over twice the water used on a typical winter day – during peak summer use, groundwater supplies nearly half of demand. In 2010, the Town used just over 124 acre feet of surface water and 96 acre feet of groundwater. Its reservoir capacity is 144.2 acre feet, groundwater production capacity is approximately 70 acre feet.

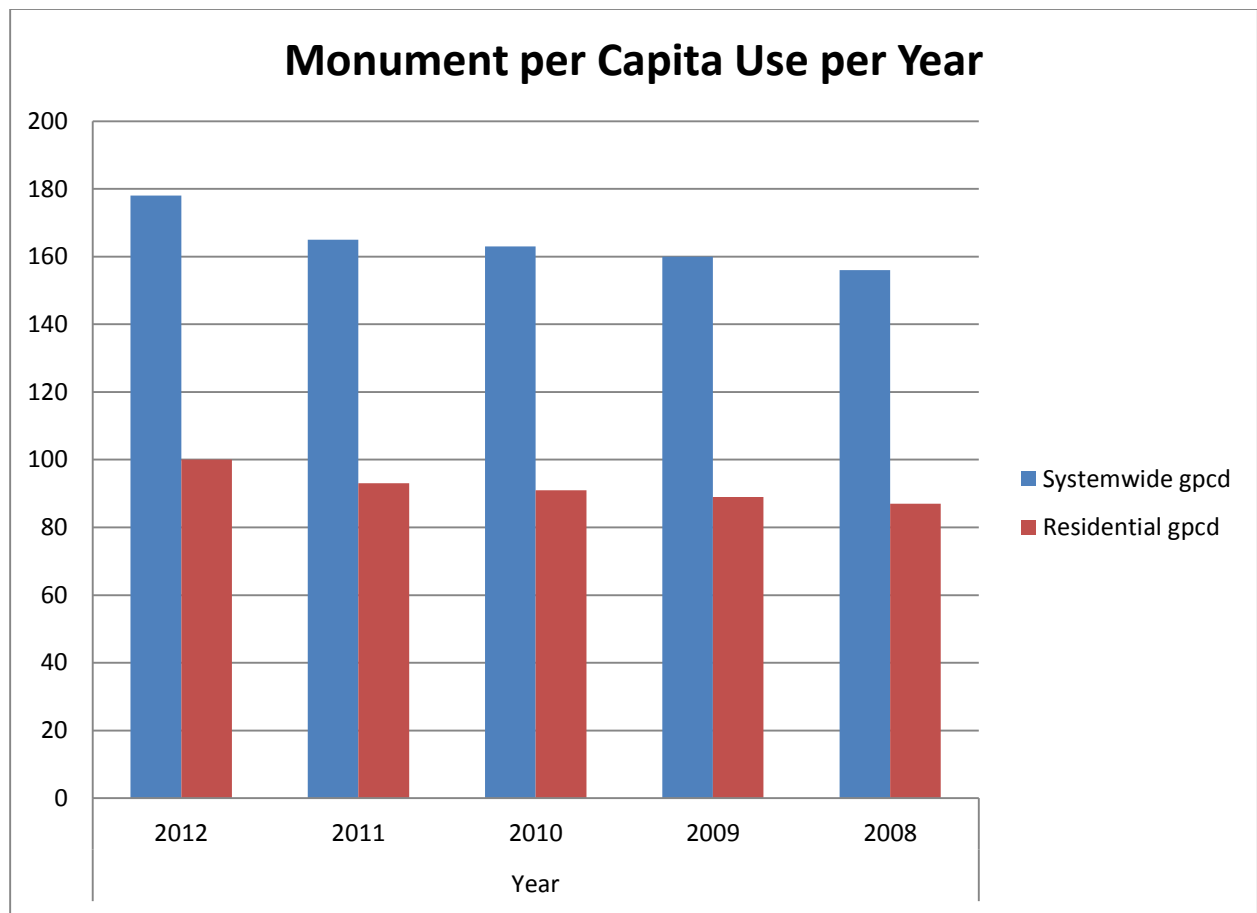
**Monument**'s source of supply is entirely groundwater. It owns four water treatment plants, three of which treat water from Denver Basin aquifers, one treats water from alluvial wells. Both plants remove iron and manganese and provide for disinfection in accordance with applicable regulations. **Monument** owns a total of nine wells. It has one storage tank with a capacity of 1 million gallons. **Monument** has sufficient adjudicated water to meet its present and immediate future needs, but its ability to pump and deliver that water is constrained both by its infrastructure and by the dwindling reliability of Denver Basin groundwater. **Monument**'s water system serves primarily single-family homes, but also serves a few multi-family homes, about 100 businesses, a mobile home park and a bulk fill station. The Town has 20 miles of mains and three pressure zones.

**Monument** has an annual supply of over 132 million gallons. All is groundwater, pumped from Denver Basin and the alluvium formation. Each of its nine wells is 100% metered.

**Monument** plans to build a new water storage tank within the life of this Plan. They are in the process of changing transponders for their AMR system. This change, when fully implemented, is expected to save the Town significant water. Staff believes data is already showing savings of note.

Figure 2 illustrates systemwide use, calculated by dividing produced water by population; and residential use, calculated by dividing the *amount billed* to residents by the population.

## Figure 2



**Monument's** commercial use accounts for about one third of its billed water use. The Town averages between 13% and 15% of non-revenue water.

Its nine wells have a decreed total capacity of 990.34 acre feet. In 2012, the Town pumped 452 acre feet from all nine of its wells together.

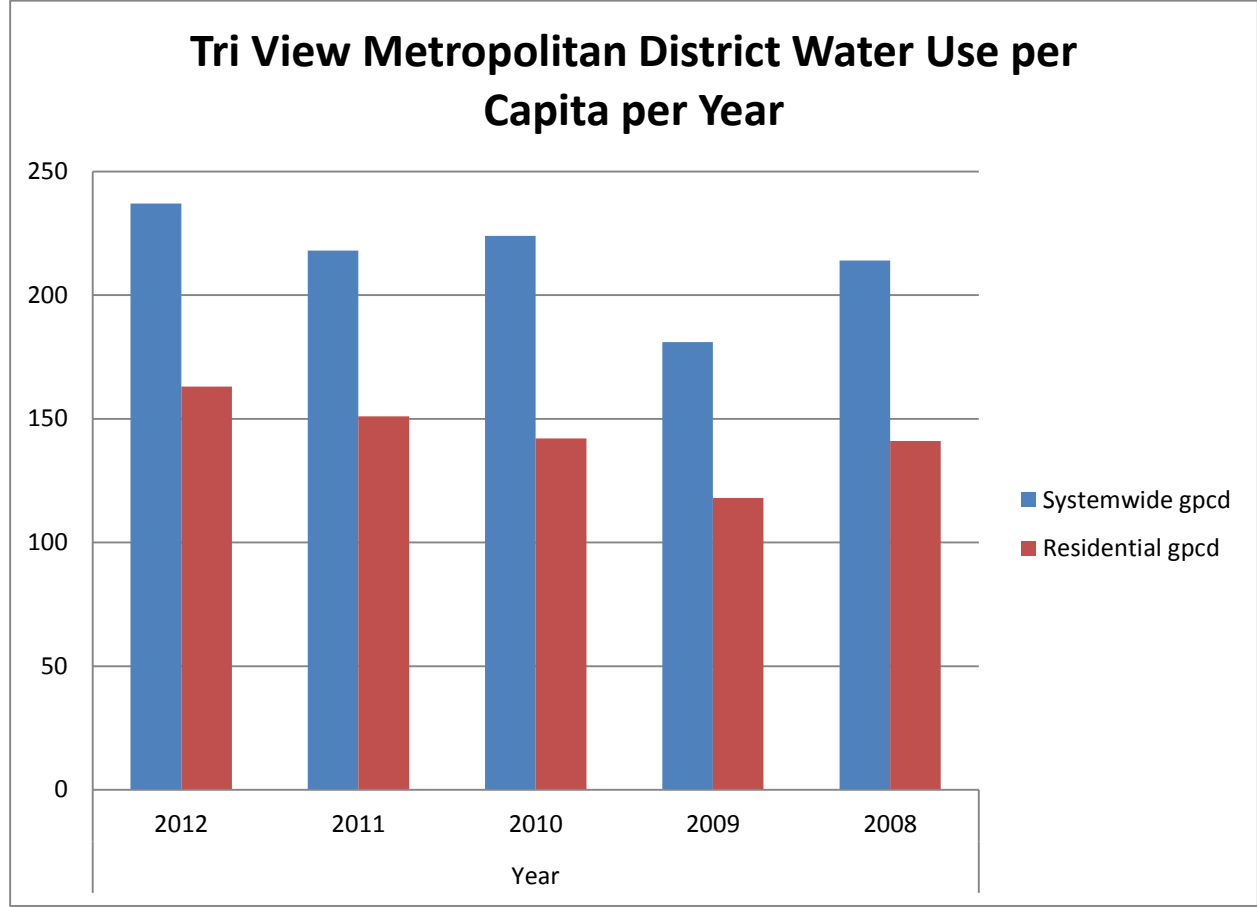
Typical summer use in **Monument** is about one and one half times greater than its winter use.

**TriView** gets its water from six wells in the Denver Basin Aquifer. It owns two water treatment plants, and one storage tank. Like the Town of **Monument**, it treats water for iron and manganese, together with provision of disinfection in accordance with applicable regulations. **TriView** has more pumping and delivery capacity than it has available water.

**TriView** Metropolitan District is only partially developed and currently serves primarily single family homes, but is anticipated to have single-family and multi-family residential developments as well as commercial and industrial developments and public areas when it is fully developed. The District currently serves a big box commercial development north of Baptist Road, east of and adjacent to I-25. **TriView** owns 20 miles of water mains, 1 storage tank and two treatment plants. The **TriView** water system is interconnected to the water treatment system owned by the Donala Water and Sanitation District. The District has an annual water supply of over 218 million gallons. The District's wells are 100 percent metered.

Figure 3 illustrates systemwide use, calculated by dividing produced water by population; and residential use, calculated by dividing the *amount billed* to residents by the population.

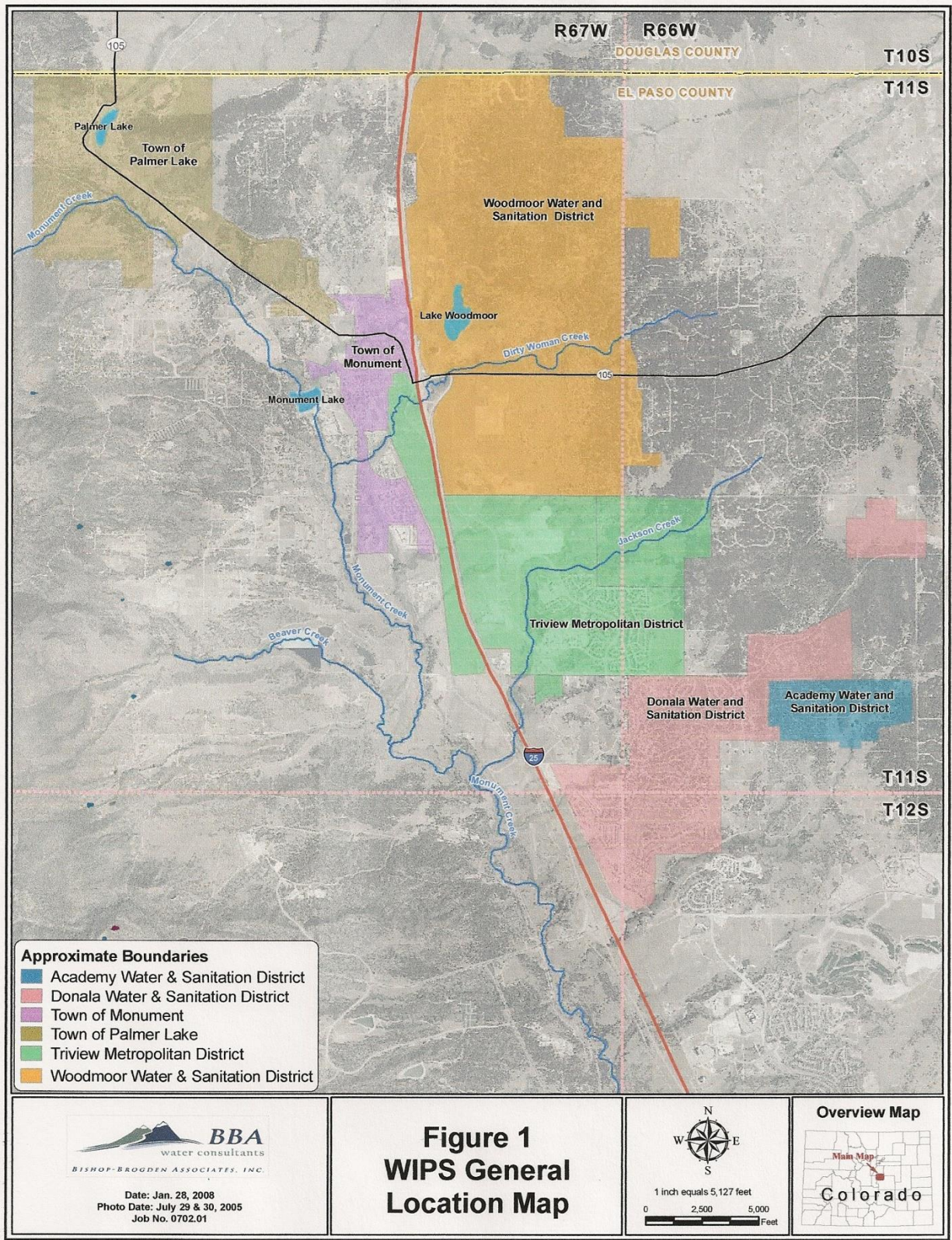
Figure 3



*TriView's* commercial use accounts for about 20% of its total demand. It is important to note that *TriView* has only recently begun to account for its Parks and Open Space demand. Therefore, both non-revenue water (approximately 13%) and non-residential use shown in this Plan may be skewed. The updated Plan will more accurately reflect both non-revenue water and non-residential use. *TriView's* adjudicated well capacity is 694 acre feet. In 2010 and 2011 the Town pumped 675 acre feet and 667 acre feet, respectively. Summer use is over twice as high as winter use.

The map on the following page, Figure 4, taken from the aforementioned Water Infrastructure Planning Study, 2009, shows the Towns of *Palmer Lake* and *Monument*, and *TriView* Metropolitan District, and their geographic relationship to several other entities, all of whom are dependent upon the Denver Basin Aquifer for present and future water supply.

**Figure 4 – Entity Locations**



**1.2 Water Supply Reliability**

Because both **Monument** and **TriView** rely on non-renewable Denver and Arapahoe Basin aquifers as their only water supply, and **Palmer Lake** depends on Denver and Arapahoe Basin water for peak demand, the long-term reliability and sufficiency of their water supplies are seriously constrained. Static water levels in these aquifers are declining throughout the region, leading to a decrease in well production and increased pumping costs. It is anticipated that the aquifer water level decline will continue even with current demands, ultimately resulting in the need for a renewable water supply to replace the groundwater supply. There are no reliable renewable water sources close to the Entities; a new water supply must be conveyed to the region from a great distance, such as the Arkansas River near Pueblo or the South Platte River near Denver. Projects from either direction are costly and will take a significant time to plan, design, permit and construct. Action is needed to improve already efficient use of existing supplies, to develop interim supplies and to build infrastructure to utilize future renewable supplies.

The Denver and Arapahoe Basin Aquifers, upon which both **Monument** and **TriView** rely solely, are both non-renewable and overused. Both entities have been seeking additional renewable sources for the last two decades. Several possibilities have been identified, but all are costly, uncertain, and well into the future. **Monument's** pumping and transmission capacity must be expanded in order to be able to deliver the water it currently has adjudicated. **TriView**, on the other hand, has excess infrastructure capacity but not sufficient firm supply to serve its anticipated growth. Adjudicated water rights for the wells and surface water of the Entities area discussed in the previous section.

Further complicating the Entities challenges for future water supply is their location in the Arkansas River Basin, which, according to the Colorado Statewide Water Supply Initiative report, is expected to fall short of meeting municipal consumers' demands by 18% by 2040.

Because of the uncertainties surrounding acquisition of a major renewable water supply source, this Plan will not include discussion of how the Entities will solve their future supply challenges. The Plan will discuss only water efficiency activities that have potential to defer, albeit briefly, the need to bring that new supply online.

Through its participation in the Pikes Peak Regional Water Authority, **Monument** (and **TriView**) are participating in the Colorado-Wyoming Project (studying feasibility of delivering water to Wyoming and Colorado from the Flaming Gorge Reservoir); the Super Ditch project (leasing agricultural water for municipal use); and the Southern Delivery System Project (negotiating with Colorado Springs Utilities for purchase and delivery of water through Southern Delivery System pipelines). Delivery of water to the Entities as a result of any of these projects coming online, including costs of participation lie well outside the scope of this Plan.

## **2.0 Profile of Water Demands and Historical Demand Management**

### **2.1 Demographics and Key Characteristics of the Service Area**

Residential per capita use for the Towns of **Monument** and **Palmer Lake** are low, 89 gpcd and 57 gpcd, respectively in 2011. Tri View Metropolitan District shows a higher 163 gpcd for that same year. The higher use reflects newer, larger homes with larger landscapes and larger common areas.

Non-revenue water in all entities is higher than the AWWA standard of 10%. Although all entities have leak detection practices in place, the higher non-revenue figures point to the efficacy of establishing a set of conservation practices that emphasize non-revenue water reduction. Tri View Metropolitan District has recently begun accounting for (and charging for) water used in its parks and open spaces. Since that change was just implemented in 2012, these numbers are too recent to identify trend, but implementation of this practice will certainly constitute an improvement in the total non-revenue water.

All Entities classify customers as residential or commercial. All break commercial use into meter size, and specify separate irrigation meters.

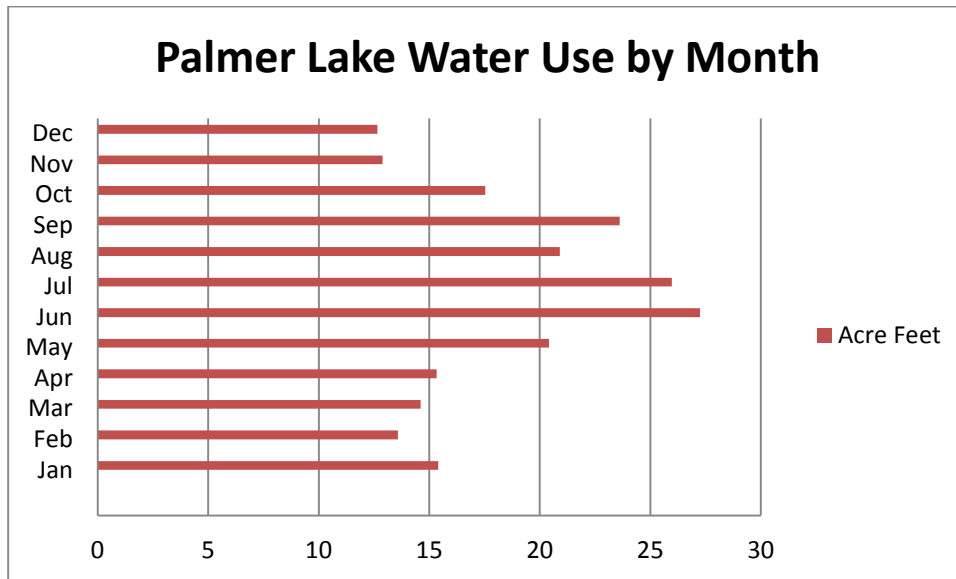
**Monument** and **Palmer Lake** are both old communities, dating to the late 1800s. **TriView** is a new community, with new housing stock and new commercial enterprises.

## 2.2 Historical Water Demands

Demands for the years 2008 through 2012 are shown in Table 1. Table 1 includes required annual distributed water and annual non-revenue water numbers. **Palmer Lake's** systemwide gpcd has been consistently decreasing over these five years. Monument's systemwide gpcd has increased, possibly reflecting its population growth. **TriView's** gpcd increased annually since 2008. The systemwide per capita increases reflect growing population, growing commercial, increased multifamily and additional common area.

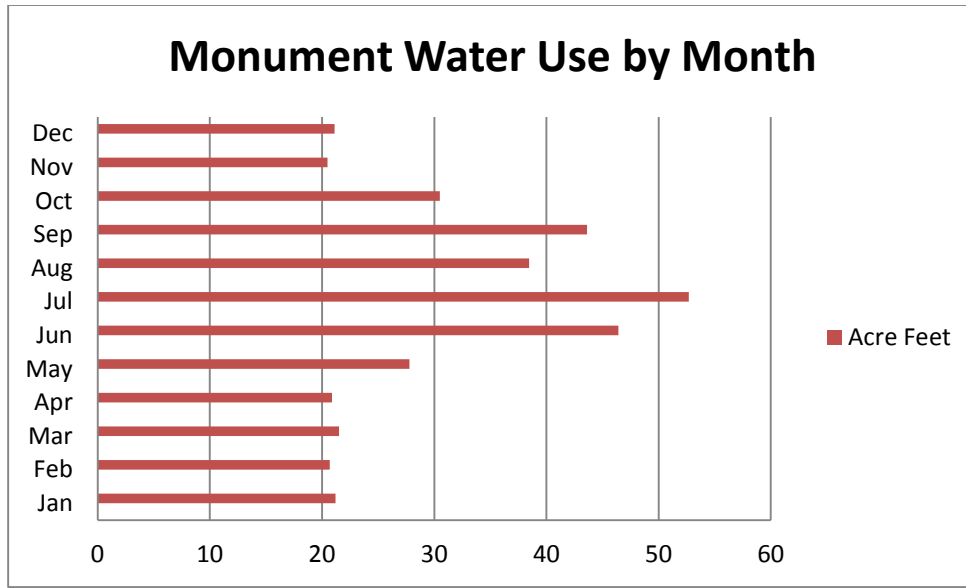
The following figures reflect monthly water use values in acre feet for each community as recorded during 2010.

**Figure 5**

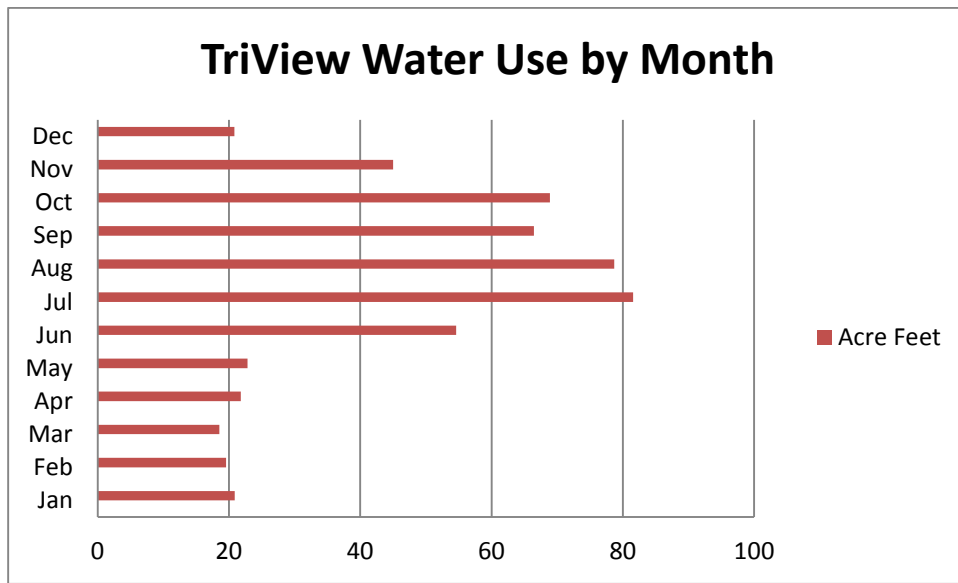


**Figure 6**





**Figure 7**



The potential for water use savings and non-revenue water loss recovery is clearly illustrated by the preceding figures. As in all western communities, summer water use in Palmer Lake, **Monument** and **TriView** is often three or more times greater than winter, or indoor, use.

## 2.3 Water Pricing

Each Entity sets its own water rates and tap fees. The following tables show the current pricing information for each.

**Table 2**

<b>Town of Palmer Lake Tap Fees, Rates and Pricing</b>				
<b>Taps</b>		<b>Minimum Fees</b>		<b>Comments</b>
Size	Fee	Size	Rate/Month	
¾"	\$ 10,000.00	¾" or less	\$ 37.00	Both residential and commercial pay a base rate of \$37/mo, no water included. All commercial use is billed at \$3.70 per thousand gallons. Residential tiers are 0-15,000 gallons, \$3.70/thousand; 15,001 to 20,000 - \$6.05/thousand, 20,001 and up - \$7.00/thousand
1 1/2"	\$ 31,000.00	1 1/2"	\$ 115.50	
2"	\$ 47,000.00	2"	\$ 179.05	
2 1/2"	\$ 86,000.00	3"	\$ 357.91	
Larger	As Negotiated	4"	\$ 559.54	
		6"	\$ 119.06	

Palmer Lake charges an additional 10% of the minimum rate charge (\$3.70) on each bill for deposit in the Capital Improvement Fund. An additional \$11.50 per customer is assessed for loan repayment of the Town's State Revolving Fund loan. Twice a year, the Board of Trustees reviews the status of the water fund, and if the fund is not generating sufficient revenue, it will, by resolution, adjust water rates.

**Table 3**

<b>Town of Monument Tap Fees, Rates and Pricing</b>				
<b>Taps</b>		<b>Minimum Fees</b>		<b>Comments</b>
Size	Fee	Size	Rate/Month	
3/4"	\$ 9,000.00	3/4"	\$ 8.80	Monument's rate tiers for all users are: 0 – 6,000 gallons - \$4.99 per thousand gallons 6,001 – 12,000 - \$5.99 per thousand gallons 12,001 – 24,000 - \$6.99 per thousand gallons Over 24,000 - \$7.99 per thousand gallons
1"	\$ 18,000.00	1"	\$ 9.00	
1 1/2"	\$ 36,000.00	1 1/2"	\$ 10.00	
2"	\$ 72,000.00	2"	\$ 10.80	
3"	\$ 162,000.00	3"	\$ 18.50	
		4"	\$ 23.70	
		6"	\$ 35.70	

**Table 4**

### TriView Metropolitan District Tap Fees, Rates and Pricing

Taps		Minimum Fees		Comments
Size	Fee	Size	Rate/Month	
Single Family	\$ 9,600.00	5/8"	\$ 11.00	Water volume charges are \$2.87 per thousand up to 6,000 gal., \$3.50 per thousand gal. from 6,001 to 20,000 and \$5.24 per thousand over 20,001.
Attached Single Family	\$ 7,200.00	1"	\$ 21.57	
Apartment	\$ 5,011.20	1 1/2"	\$ 43.12	
Commercial		2"	\$ 87.27	
1"	\$ 18,240.00	3"	\$ 204.86	
1 1/2"	\$ 42,240.00	4"	\$ 377.38	
2"	\$ 77,760.00	6"	\$ 905.71	
2 1/2"	\$ 127,200.00	8"	\$ 2,173.66	
3"	\$ 182,400.00			

All Entities bill monthly, all have the ability to add conservation messages to bills. Additionally, all Entities review bills monthly for especially high use that might indicate a residential or commercial leak. They then notify customers, and require action.

#### 2.4 Past and Current Demand Management Activities and Impacts on Demands

Both **Monument** and **Palmer Lake** have very old water systems, dating to the both Towns’ beginnings in the late 1800s. From inception to the present, both communities have known times of drastic water shortages resulting from drought conditions. Therefore, many of the programs and measures necessary to survive such a crisis are already in place.

Both have emergency water shortage ordinances in place, including stages of drought and attendant restrictions. **TriView**, being fully annexed, falls under **Monument’s** ordinances. **Monument** has solid landscaping ordinances in place which restrict turf areas and prescribe acceptable plant materials, but prior to this Plan the landscape ordinances apply only to commercial landscapes. **Monument** imposes watering restrictions every year by ordinance, **Palmer Lake** also limits watering by ordinance.

**Palmer Lake** contracts with Colorado Springs Utilities to test and replace meters, **Monument** does its own replacement. **TriView** also has a program in place to test and replace meters.

All three entities are fully metered, all require separate meters for large landscapes. All monitor high use bills and notify customers where leaks appear to be a problem. **Monument** and **Palmer Lake** have been metered since the early 1900s, **TriView** has been metered since its inception.

**Palmer Lake** recycles its backwash water (approximately 1 million gallons per year) at the treatment plant. **TriView** also recycles a portion of its backwash water. **TriView** sells excess effluent to other customers. **Monument** is actively pursuing a reuse program and expects to bring it online within two years. Monument Lake will ultimately play a role in the Town’s reuse efforts, as well as its augmentation plans, but the Lake’s exact role in this regard is still being defined, and will best be discussed in the next update to the plan. All Entities plan to make more extensive use of waste water in the future.

Schools and playing fields have made limited use of artificial turf.

All have websites for public information, each has sponsored modest educational programs, including giveaways, community education through CSU Master Gardeners and special events. **Monument, Palmer Lake** and **TriView** provide newsletters in customer bills. **Monument** has a full time Master Gardener on staff to assist its customers with water conserving landscaping concerns.

**Monument** has had limited incentive and rebate programs in the past, although these programs were reported as not particularly successful.

In the near future **Monument** will initiate a card control system for its new automated bulk fill station, anticipated to produce measurable savings. The Town has also formed an “audit team”, which will provide free water use audits to customers showing very high usage on a case by case basis.

**Table 5 - Summary of Current Conservation Activities – Palmer Lake**

Water Conservation Measures/Programs	Approx. Annual Water Savings (1000 gal.)	Date Implemented	Continue?
<b><i>Low water use requirements for new fixtures</i></b>	Exact savings unknown, full impact of EPAAct will be realized during this planning period. At that time, savings of 35% of indoor use are anticipated (passive savings not included in Plan)	1992	Yes
<b><i>Education/information dissemination</i></b>	EPA est. educational programs to save 4% of total use – assume approx. 1% for PL		
Website	-	2006 - Present	Yes
Newsletter		2006-Present	Yes
<b><i>Rate Structure and billing systems</i></b>			
Volume billing	Less than 1%	2002	Yes
Conservation rate structure	Less than 1%	2004	Yes
Monthly billing	Unknown, savings should be included in “Education”	Ongoing	Yes
<b><i>Regulation/Ordinances</i></b>			
Water waste prohibition	Estimated (Vickers) 20%	2011	Yes
Water restriction with enforcement			
<b><i>Water Reuse Systems</i></b>			
Backwash recycling at WTP	2% of total water production-	2002-	Yes
<b><i>Distribution System Efficiency</i></b>			
Leak Repair	.5% of produced water	Ongoing	Yes
Leak identification	-	Ongoing	Yes
Meter source water	-	Ongoing	Yes
Meter service connections	Estimated to save 20%	Ongoing	Yes
Meter testing and replacement	Include in above 20%	Ongoing	Yes

<b>Conjunctive Use</b>	Extends surface water supply by approx. 10%	Ongoing	Yes
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**Table 6 - Summary of Current Conservation Activities - Monument**

<b>Water Conservation Measures/Programs</b>	<b>Approx. Annual Water Savings (1000 gal.)</b>	<b>Date Implemented</b>	<b>Continue?</b>
<b>Low water use requirements for new fixtures</b>	Exact savings unknown, full impact of EPAct will be realized during this planning period. At that time, savings of 35% of indoor use are anticipated (passive savings not included in Plan)	1992	Yes
<b>Education/information dissemination</b>	EPA est. educational programs to save 4% of total use – assume approx. 1% for Mon/TriView		
Full time Master Gardener (Town Gardener)			
Community events	Include in 1%	2007-Present	Yes
Giveaways	Include in 1%	2007-Present	Yes
Website	-	2006 - Present	Yes
Newsletter		2006-Present	Yes
<b>Rate Structure and billing systems</b>			
Volume billing	Less than 1%	2002	Yes
Conservation rate structure	Less than 1%	2004	Yes
Monthly billing	Unknown, savings should be included in “Education”	Ongoing	Yes
<b>Regulation/Ordinances</b>			
Water waste prohibition, with enforcement	Estimated (Vickers) to save Up to 20%	2006	Yes
Watering restrictions			
Landscape regulations			
<b>Water Reuse Systems</b>	1% of total water production-	2004	Yes
<b>Distribution System Efficiency</b>			
Leak Repair	.5% of produced water	Ongoing	Yes
Leak identification	-	Ongoing	Yes
Meter source water	-	Ongoing	Yes
Meter service connections	Estimated to save 20%	Ongoing	Yes

**Table 7 - Summary of Current Conservation Activities - TriView**

<b>Water Conservation Measures/Programs</b>	<b>Approx. Annual Water Savings (1000 gal.)</b>	<b>Date Implemented</b>	<b>Continue?</b>
<b><i>Low water use requirements for new fixtures</i></b>	Exact savings unknown, full impact of EPAct will be realized during this planning period. At that time, savings of 35% of indoor use are anticipated (passive savings not included in Plan)	1992	Yes
<b><i>Education/information dissemination</i></b>	EPA est. educational programs to save 4% of total use – assume approx. 1% for Mon/TriView		
Community events	Include in 1%	2007-Present	Yes
Giveaways	Include in 1%	2007-Present	Yes
Website	-	2006 - Present	Yes
Newsletter		2006-Present	Yes
<b><i>Rate Structure and billing systems</i></b>			
Volume billing	Less than 1%	2002	Yes
Conservation rate structure	Less than 1%	2004	Yes
Monthly billing	Unknown, savings should be included in “Education”	Ongoing	Yes
<b><i>Regulation/Ordinances</i></b>			
Water waste prohibition (via Monument)	Estimated (Vickers) to save Up to 20%	2006	Yes
Watering restrictions			
Landscape regulations			
<b><i>Water Reuse Systems</i></b>			
Backwash, effluent sales	1% of total water production-	2004	Yes
<b><i>Distribution System Efficiency</i></b>			
Leak Repair	.5% of produced water	Ongoing	Yes
Leak identification	-	Ongoing	Yes
Meter source water	-	Ongoing	Yes
Meter service connections	Estimated to save 20%	Ongoing	Yes
Meter testing and replacement	Include in above 20%	Ongoing	Yes

Estimates of probable savings for each Entity have been made based on existing literature, especially Amy Vickers' Water Conservation Handbook, and the CWW's recently published Best Management Practices. Although exact savings cannot be stated with confidence, it is likely that both **Palmer Lake** and **Monument** are using thirty to forty percent less water than they would have been, were it not for their long standing practice of conservation. This estimate is borne out by the low per capita residential use in both Entities.

*TriView*'s systemwide use is higher than either of the other two Entities, but they, too, are probably saving thirty to forty percent over what they could have been using by virtue of being included in the conserving effects of *Monument*'s water use, watering restriction and landscape ordinances. *TriView* supports larger residential lots and substantial common areas, which although covered by watering restrictions and landscape ordinances will benefit from specific case by case programs such as landscape audits, which will be tested during the life of this Plan.

It is reasonable to estimate that the Entities have managed to save approximately 50 acrefeet over the five years reported in Table 1, based on their conservation efforts.

## 2.4 Demand Forecasts

Demand forecasts have been prepared for the coming five years. Because of the uncertainty of future supply, how it will be obtained, from where, and when it will be implemented – the Entities will review the Plan in 2018 and update/extend forecasts then. Should a significant amount of uncertainty (e.g., court cases, renewable supply acquisition, feasibility of large scale reuse projects) be resolved in the meantime, the Plan will be revised to reflect its new environment. The forecasting method used for this Plan assumes that per capita water use and the distribution of use across classes of users will remain the same as the population grows. This is a conservative method, realistically water conservation efforts should increase customers' awareness of water use and lead to lower water per capita use. This conservative approach may offset disproportionate commercial and/or multi-family growth in *TriView*.

*Palmer Lake* expects little or no growth in the coming five years. Its growth is limited by geography and infrastructure. *Monument* will likely experience moderate growth, on the order of 1.5%. *TriView* may grow a bit faster, as it is located along the I-25 corridor, and has room to grow. This expectation should also hold true for its commercial growth. *Palmer Lake* and *Monument* are somewhat constrained by terrain and close neighbors in regard to physical growth.

Water use was projected based on 2011 use, estimated rates of growth based on past growth and growth rates of surrounding communities. Non-revenue water was held constant. Forecasts have been prepared for the coming five years. The forecasting method used assumes that per capita water use and the distribution of use across classes of users will remain the same as the population grows.

**Table 8 Population and Water Use Projections - Town of Palmer Lake**

Year	Residential Water Use		Commercial Water Use			Total Projected Water Use-af
	Projected Growth Rate	Projected Water Use-af	Projected Growth Rate	Projected Water Use-af	Non-Revenue Water-af	
2012	0.5%	153	0.5%	19	34	206
2013	0.5%	154	0.5%	19	34	207
2014	0.5%	155	0.5%	20	34	208
2015	0.5%	155	0.5%	20	34	209
2016	0.5%	156	0.5%	21	34	211
2017	0.5%	157	0.5%	21	34	212

**Table 9 Population and Water Use Projections - Town of Monument**

Year	Residential Water Use		Commercial Water Use		Non-Revenue Water-af	Total Projected Water Use-af
	Projected Growth Rate	Projected Water Use-af	Projected Growth Rate	Projected Water Use-af		
2012	1.5%	225	1.5%	110	55	390
2013	1.5%	228	1.5%	112	55	396
2014	1.5%	232	1.5%	114	55	401
2015	1.5%	235	1.5%	117	55	407
2016	1.5%	239	1.5%	119	55	413
2017	1.5%	242	1.5%	121	55	419

**Table 10 - Population & Water Use Projections-Tri View**

Year	Residential Water Use		Commercial Water Use		Non-Revenue Water-af	Total Projected Water Use-af
	Projected Growth Rate	Projected Water Use-af	Projected Growth Rate	Projected Water Use-af		
2012	2.0%	471	2.0%	117	55	643
2013	2.0%	478	2.0%	119	55	652
2014	2.0%	485	2.0%	122	55	662
2015	2.0%	493	2.0%	124	55	672
2016	2.0%	500	2.0%	127	55	682
2017	2.0%	507	2.0%	129	55	692

### 3.0 Integrated Planning and Water Efficiency Benefits and Goals

#### 3.1 Water Efficiency and Water Supply Planning

Water conservation will play a significant role in the Entities’ water supply planning. As discussed earlier, each Entity has a different reason for conserving. **Palmer Lake** wishes to remain stable, offering a sustainable, high quality of life in its built-out state. **Monument** needs to decrease its reliance on non-renewable groundwater, and support modest growth during its search for additional renewable source water. **TriView** hopes to resume its robust growth, while reducing dependence on groundwater and searching for new renewable sources. All entities will benefit from reduced or even constant pumping expense resulting from demand reductions. According to Western Resource Advocates, the energy required to pump water from the Denver Basin will “rise precipitously in the next ten to 20 years.

The Entities each have constraints to setting ambitious conservation goals. For **Monument** and **Palmer Lake**, their current conservation practices and their very low per capita residential use leave modest room for improvement. If **TriView** is to reach its potential as a vibrant and upscale community a new source of renewable water must be found in the near future. Although conservation will give them a few years’ margin of safety, it cannot substitute for, nor long postpone the need for new supply. Additionally, all Entities have very tight budgets with little prospect for improvement.



**Monument** and **TriView** plan to undertake a master planning effort in the near future. Both entities are exploring various possibilities for renewable water supply. All are studying expanding the use of recycled water to stretch existing supplies. **TriView** already sells its excess effluent to various other entities. **Palmer Lake** reuses all its backwash water at its surface water treatment plant. As noted earlier, **Monument** plans to implement an expanded reuse program in the next two years. **Monument** has a detailed Comprehensive Plan on file, this Plan should be amended to include the adoption of the Water Conservation Plan.

Goals for the Water Conservation Plan have been developed based on staff interviews, research of the Entities' water use, history, planning studies and interviews with other consultants. The following goals will be subjected to public scrutiny as part of the public review process and its attendant public meetings. The Entities will make use of the tracking system being developed by CWCB to monitor progress toward goals in compliance with state reporting requirements that take effect in 2014. Goals of the Plan include:

1. **Palmer Lake** – Reduce systemwide per capita per day use so that the Town can reach build-out and beyond without the need for a new water source
2. **Monument** - Reduce systemwide gpcd to enable moderate growth
3. **TriView** – Reduce commercial, new development and large landscape use and control non-revenue water to enable the community to reach its economic potential
4. All Entities – reduce systemwide gpcpd use so as to remain attractive, viable economies for the planning period and beyond, and for **Monument** and **TriView**, allow a margin of safety before new sustainable sources of supply can be identified and implemented, and hold energy costs related to pumping to manageable levels

Given the low per capita use of **Palmer Lake** and **Monument**, and the number of foundational programs/measures already in place in all three Entities, overall savings goals for the Entities over the five year life of the Plan are anticipated to be in the range of 15 percent of combined systemwide use.

**Benefits of achieving the goals of the water conservation Plan include:**

Benefits of achieving the Plan's goals include:

1. An increase of supply
2. A decrease in pumping costs
3. A brief postponement of the urgency for new supplies

The Entities' conservation goals were developed based on a "gap analysis" of existing conservation measures, an analysis of current water use and past trends in water use, and extensive discussion with the staff of each Entity.

The stated goals will be further evaluated by the public during the Entities' public review period.

## **4.2 Demand Management Activities**

The Entities evaluated all programs and measures required by CWCB. The following tables show which programs and measures are already in place, which were evaluated further in this Plan, and which were chosen for implementation.

**Table 11 - Activity Evaluation for Palmer Lake, Monument and TriView**

Activity	In place now	Evaluate in Planning	Included in Plan
Water efficient toilets	no	yes	Cannot be included at this time, Budget will not allow for extensive rebates
Urinals	no	yes	
Showerheads	no	yes	
Faucets	no	yes	Will reconsider at Plan update
Washing Machines	no	yes	
Low water use landscapes	no	yes	Cannot be included at this time, Budget will not allow for extensive rebates
Drought resistant vegetation	no	yes	
Efficient irrigation equipment	no	yes	Will reconsider at Plan update
schedulers	no	yes	Inc. in education & tech. assist.
rain sensors	no	yes	rebates starting in year 2
Water efficient process	no	yes	Technical assistance will be offered, rebates cannot fit in budget
Cooling equipment	no	yes	
Water reuse systems	yes	yes	No opportunity for expansion at this time
Leak detection and repair	yes	yes	yes
Phreatophytes	no	no	None in area
Temporary transfers from ag	no	no	No opportunity
Conjunctive use	yes	yes	yes, Palmer Lake
System integration		no	to be considered at next update
Water saving ordinances	yes	yes	yes
Metering	yes	yes	yes
Meter insp. and repair	yes	yes	yes
Conservation pricing	yes	yes	yes

Water use audits	no	yes	offered on limited, targeted basis in year 4
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#### 4.2.1 Foundational Activities

##### Metering

As discussed previously in the Plan, all Entities are fully metered. Programs are in place for meter testing and replacement. Savings attributable to metering programs are estimated at 20% of systemwide use.

##### Billing Systems and Data Collection

All Entities have billing systems that encourage conservation through inclining block rates. All Entities divide customers into commercial and residential accounts, according to meter size. All have tap fees that escalate sharply according to meter size. All bill monthly, and all intend to add messages to bills pertaining to water conservation.

##### System Water Loss Management and Control

All Entities have leak detection systems in place, all contract with vendors for periodic inspections. Leak repair is prioritized according to size, urgency and budget. **Monument** and **Palmer Lake** have ongoing replacement programs for their aging pipelines. **TriView** has recently started accounting for water used for Open Space and Parks. As part of Plan implementation, all Entities will follow AWWA’s guidelines in Manual M36 for top down auditing for small systems.

#### 4.2.2 Targeted Technical Assistance and Incentives

The Entities plan to offer a limited number of targeted rebates, as shown in the Implementation Plan. This approach will allow the Entities to monitor savings of specific measures, without large expenditures. The savings will be monitored, and decisions made about expanding these measures when the Plan is updated.

**Monument** and **Palmer Lake** Town Halls will perform water audits to identify areas for improvement. Rain sensors will be installed on Town Hall grounds to improve irrigation efficiency, toilet and urinal replacement and upgraded irrigation controllers will be added incrementally.

**Table 12 - Screening Criteria for Measures and Programs**

Screening Criteria Categories	Category Number
Public Acceptance	1
Ratepayer Impact	2
Ease of Implementation	3
Staff/Resource Impact	4
Legal/Regulatory	5
Timeliness of Savings	6
Consistency with Existing Programs	7
Cost	8
Cost Effectiveness	9

Category numbers are assigned as identifiers. Given that the Entities are severely limited in funds, cost and cost effectiveness were the key considerations in choosing activity selection for implementation. Fortunately, the activities that will have the greatest associated savings are ordinance enhancement and non-revenue loss control. A few incentive/rebates have been included to test results for long term planning.

The activities shown in Table 14 have been selected for inclusion in the Entities' Water Conservation Plan. The list includes improved water loss control and technical assistance discussed above.

Water Loss Audits are anticipated to save water for the Entities by making more water available for constructive use. In fact, by striving to bring water loss in closer alignment with AWWA's acceptable limit of 10%, the Entities will achieve one of two major components of their savings goal.

The second major component is ordinance enhancement. Significant confidence in the savings potential of enhanced ordinances is possible, because both Towns already have ordinances in place for coping with water emergencies and stages of drought. These ordinances provide for no-nonsense enforcement, and empower Town officials, Trustees, police and fire departments as enforcers.

Monument and **TriView** will offer limited and targeted water audits to both residential customers and to large landscape customers (such as schools and common areas). Large commercial customers such as Walmart will be offered individual assistance as will small commercial entities. This technical assistance will be advertised on the Entities' webpages, in the local newspaper, and through direct mail.

Measures and programs selected for implementation, as discussed above, and their estimated savings are shown in the following tables.

**Table 13 - Water Savings From Selected Conservation Activities and Expected Water Savings -**

## All Entities

Year	Activity	Cost	Palmer Lake	Monument	TriView	Savings Expected	Comments
<b>2014</b>							
	Amend ordinances to add residential landscapes, soil amendments	\$0	yes	yes	yes	1%annual use	Ordinances provide enforcement
	Community Night Out - Adult Conservation Workshop	\$100	yes	yes	yes	.5% annual use	
	Offer technical assistance to large commercial/industrial re: conservation	\$0	yes	yes	yes	.5% annual use	Staff time not calculated
	Offer technical assistance to small businesses re: indoor conservation	\$0	yes	yes	yes	.5% annual use	Staff time not calculated
	Begin Non-Revenue Water Auditing	\$0	yes	yes	yes	1%annual use	AWWA estimates small utilities can do inhouse
	Savings 2014, all Entities					3% of total production or approx. 38 af	
<b>2015</b>							
	Community Night Out - Adult Conservation Workshop	\$100	yes	yes	yes	.5% annual use	
	Offer technical assistance to large commercial/industrial re: conservation	\$0	yes	yes	yes	.5% annual use	
	Offer technical assistance to small businesses re: indoor conservation	\$0	yes	yes	yes	.5% annual use	
	Continue Non-Revenue Water Auditing	\$0	yes	yes	yes	1%annual use	AWWA estimates small utilities can do inhouse
	Identify savings opportunities in Entity facilities (ULF toilets, ULF faucets, irrigation controllers)	\$0	yes	yes	yes		

	Savings 2015, all Entities	3% of total production or approx. 38 af				
<b>2016</b>						
	Offer \$25 rebates for rain sensors (20)	\$500	yes	yes	yes	3485 gal/unit - 69700 gal yr
	Community Night Out - Adult Conservation Workshop	\$100	yes	yes	yes	.5% annual use
	Offer technical assistance to large commercial/industrial re: conservation	\$0	yes	yes	yes	.5% annual use
	Offer technical assistance to small businesses re: indoor conservation	\$0	yes	yes	yes	.5% annual use
	Offer 2 residential water use evaluations	\$200	yes	yes	yes	13,500 gal/unit - 81,000
	Continue Non-Revenue Water Auditing	\$0	yes	yes	yes	1%annual use
	Replace toilets, faucets, controllers in Entity facilities	\$1,000	yes	yes	yes	
	Savings 2016, all Entities	3% of total production or approx. 38 af				
<b>2017</b>						
	Offer \$25 rebates for rain sensors (20)	\$500	yes	yes	yes	3485 gal/unit - 69700 gal yr
	Community Night Out - Adult Conservation Workshop	\$100	yes	yes	yes	.5% annual use
	Offer technical assistance to large commercial/industrial re: conservation	\$0	yes	yes	yes	.5% annual use
	Offer technical assistance to small businesses re: indoor conservation	\$0	yes	yes	yes	.5% annual use

<b>2018</b>	Offer two residential Water use evaluations	\$200	Yes	yes		13,500 Gal/unit – 54,000
	Offer four residential water use evaluations	\$400			yes	13,500 gal/unit – 54,,000
	Continue Non-Revenue Water Auditing	\$0	yes	yes	yes	1%annual use
	Continue replacement of older toilets, faucets, controllers in Entity facilities	\$1,000	yes	yes	yes	
	Savings 2017, all Entities					3% of total production or approx. 39 af
	Offer \$25 rebates for rain sensors (20)	\$500	yes	yes	yes	3485 gal/unit - 69700 gal yr
	Community Event - Water Festival for Kids	\$400	yes	yes	yes	3485 gal/unit - 69700 gal yr
	Community Night Out - Adult Conservation Workshop	\$100	yes	yes	yes	.5% annual use
	Offer technical assistance to large commercial/industrial re: conservation	\$0				
	Offer two residential Water use evaluations	\$200	Yes	yes		13,500 Gal/unit – 54,000
	Offer four residential water use evaluations	\$400			yes	13,500 gal/unit – 54,,000
	Continue replacement of older toilets, faucets, controllers in Entity facilities	\$1,000	yes	yes	yes	
	Savings 2018, all Entities					3% of total production or approx. 39 af

Implementing this Water Conservation Plan will have the effect of reducing water demands per capita, in turn reducing Entity income, however, the decreased water demand combined with the additional water available through reductions in non-revenue water will mitigate the urgency of securing renewable water supplies, and make more water available to accommodate growth.

Figure 8 – Palmer Lake Water Use with Conservation Modifications

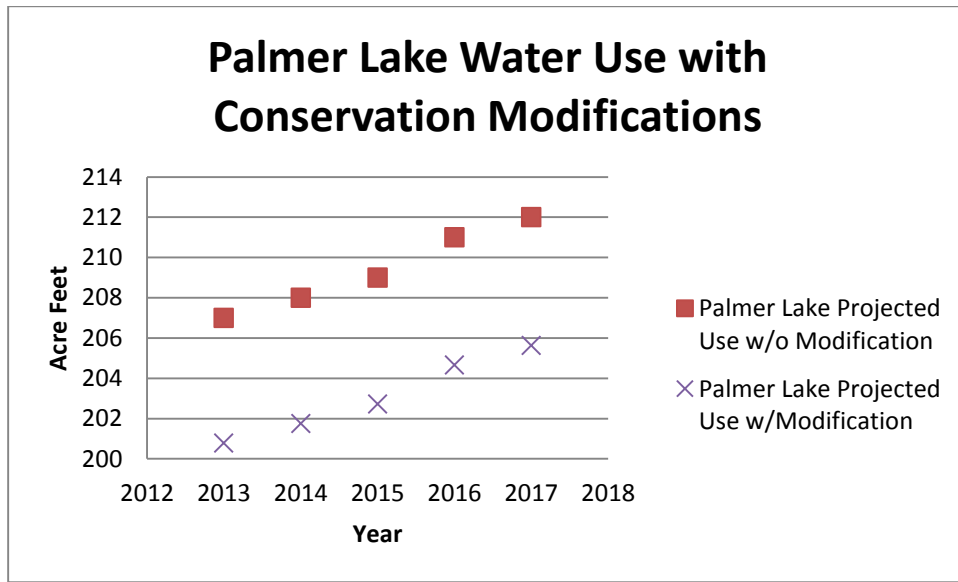


Figure 9 – Monument Water Use with Conservation Modifications

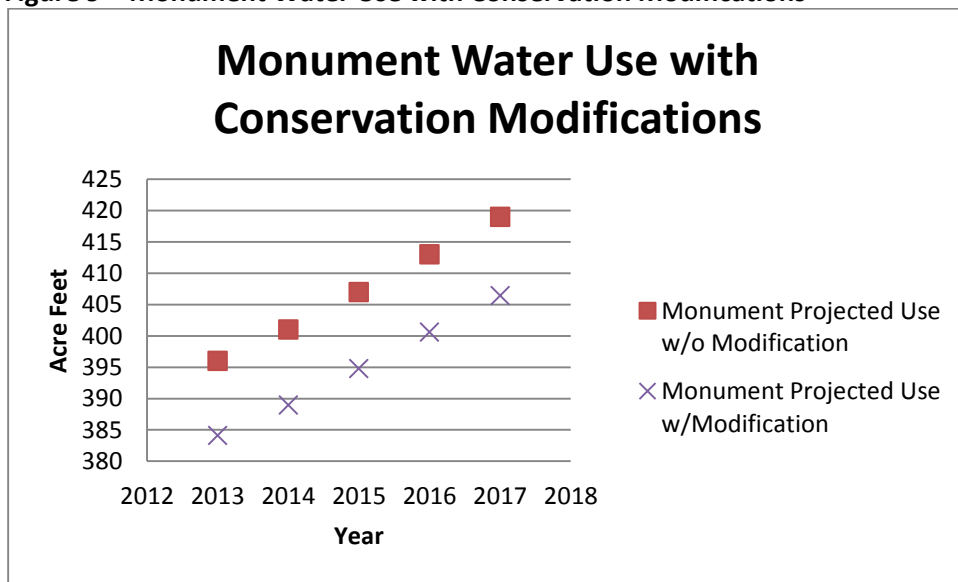
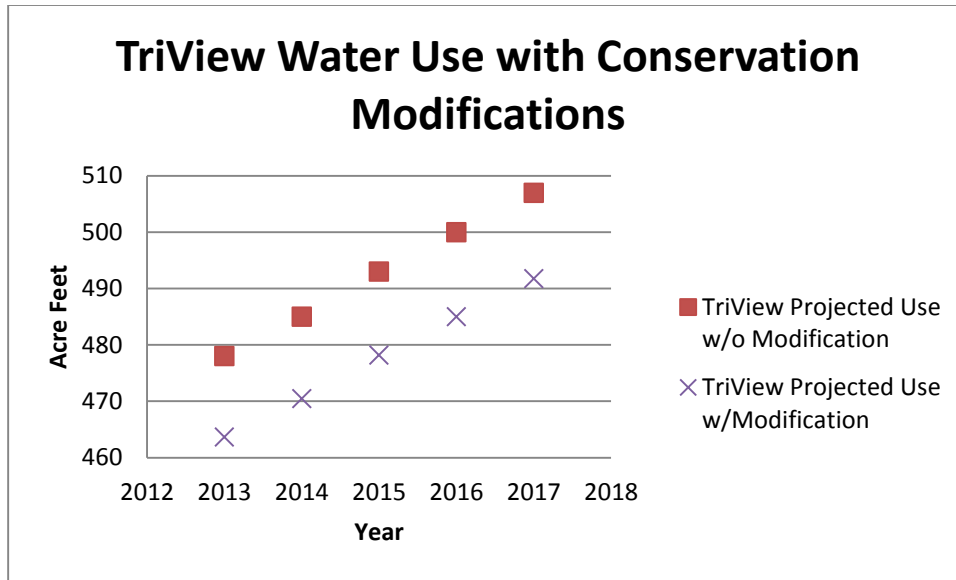


Figure 10 – TriView Water Use with Conservation Modifications





The Entities will implement the Plan over five years, starting in 2014. Implementation will begin following public review and incorporation of public comment as appropriate, Adoption by the three Boards, and approval by Colorado Water Conservation Board.

## 5.0 Implementation Plan

### Year One

#### Palmer Lake

- Ensure that all ordinances match in all Entities. Ordinances will include water waste, watering restrictions, landscape requirements, soil amendments, and residential landscapes.
- Contribute \$100 to adult education re: conservation – homeowners and small businesses
- Offer, through bill inserts, webpage and postings technical assistance to large commercial/industrial accounts re: conservation
- Offer, through bill inserts, webpage and postings technical assistance to small businesses re: conservation
- Begin auditing non-revenue water following AWWA’s M36 protocol for small water providers

#### Monument

- Ensure that all ordinances match in all Entities. Ordinances will include water waste, watering restrictions, landscape requirements, soil amendments, and residential landscapes.
- Contribute \$100 to adult education re: conservation – homeowners and small businesses
- Offer, through bill inserts, webpage and postings technical assistance to large commercial/industrial accounts re: conservation
- Offer, through bill inserts, webpage and postings technical assistance to small businesses re: conservation
- Begin auditing non-revenue water following AWWA’s M36 protocol for small water providers

## **TriView**

- Ensure that all ordinances match in all Entities. Ordinances will include water waste, watering restrictions, landscape requirements, soil amendments, and residential landscapes.
- Contribute \$100 to adult education re: conservation – homeowners and small businesses
- Offer, through bill inserts, webpage and postings technical assistance to large commercial/industrial accounts re: conservation
- Offer, through bill inserts, webpage and postings technical assistance to small businesses re: conservation
- Begin auditing non-revenue water following AWWA’s M36 protocol for small water providers

## **Year Two**

### **Palmer Lake**

- Contribute \$100 to adult education re: conservation – homeowners and small businesses
- Offer, through bill inserts, webpage and postings technical assistance to large commercial/industrial accounts re: conservation
- Offer, through bill inserts, webpage and postings technical assistance to small businesses re: conservation
- Continue auditing non-revenue water following AWWA’s M36 protocol for small water providers
- Participate in a community night out program with other Entities, offering training for homeowners in water conserving landscapes
- Inspect municipal facilities to identify water conserving opportunities, such as ULF toilets, LF faucets, urinals, controllers. Publish this effort on website.

### **Monument**

- Contribute \$100 to adult education re: conservation – homeowners and small businesses
- Offer, through bill inserts, webpage and postings technical assistance to large commercial/industrial accounts re: conservation
- Offer, through bill inserts, webpage and postings technical assistance to small businesses re: conservation
- Continue auditing non-revenue water following AWWA’s M36 protocol for small water providers
- Participate in a community night out program with other Entities, offering training for homeowners in water conserving landscapes
- Inspect municipal facilities to identify water conserving opportunities, such as ULF toilets, LF faucets, urinals, controllers. Publish this effort on website.

### **Tri View**

- Contribute \$100 to adult education re: conservation – homeowners and small businesses
- Offer, through bill inserts, webpage and postings technical assistance to large commercial/industrial accounts re: conservation
- Offer, through bill inserts, webpage and postings technical assistance to small businesses re: conservation
- Continue auditing non-revenue water following AWWA’s M36 protocol for small water providers
- Participate in a community night out program with other Entities, offering training for homeowners in water conserving landscapes
- Inspect municipal facilities to identify water conserving opportunities, such as ULF toilets, LF faucets, urinals, controllers. Publish this effort on website.

## **Year Three**

### **Palmer Lake**

- Contribute \$100 to adult education re: conservation – homeowners and small businesses
- Offer, through bill inserts, webpage and postings technical assistance to large commercial/industrial accounts re: conservation
- Offer, through bill inserts, webpage and postings technical assistance to small businesses re: conservation
- Continue auditing non-revenue water following AWWA’s M36 protocol for small water providers
- Participate in a community night out program with other Entities, offering training for homeowners in water conserving landscapes
- Fund first third of municipal facilities’ conservation improvements such as ULF toilets, LF faucets, urinals, controllers. Publish this effort on website.
- Offer twenty \$25.00 rebates on rain sensors. Track savings.
- Offer two residential water evaluations. Track savings.

### **Monument**

- Contribute \$100 to adult education re: conservation – homeowners and small businesses
- Offer, through bill inserts, webpage and postings technical assistance to large commercial/industrial accounts re: conservation
- Offer, through bill inserts, webpage and postings technical assistance to small businesses re: conservation
- Continue auditing non-revenue water following AWWA’s M36 protocol for small water providers
- Participate in a community night out program with other Entities, offering training for homeowners in water conserving landscapes
- Fund first third of municipal facilities’ conservation improvements such as ULF toilets, LF faucets, urinals, controllers. Publish this effort on website.
- Offer twenty \$25.00 rebates on rain sensors. Track savings
- Offer two residential water evaluations. Track savings.

### **Tri View**

- Contribute \$100 to adult education re: conservation – homeowners and small businesses
- Offer, through bill inserts, webpage and postings technical assistance to large commercial/industrial accounts re: conservation
- Offer, through bill inserts, webpage and postings technical assistance to small businesses re: conservation
- Continue auditing non-revenue water following AWWA’s M36 protocol for small water providers
- Participate in a community night out program with other Entities, offering training for homeowners in water conserving landscapes
- Fund first third of municipal facilities’ conservation improvements such as ULF toilets, LF faucets, urinals, controllers. Publish this effort on website.
- Offer twenty \$25.00 rebates on rain sensors. Track savings
- Offer two residential water evaluations. Track savings.

## **Year Four**

## **Palmer Lake**

- Contribute \$100 to adult education re: conservation – homeowners and small businesses
- Offer, through bill inserts, webpage and postings technical assistance to large commercial/industrial accounts re: conservation
- Offer, through bill inserts, webpage and postings technical assistance to small businesses re: conservation
- Continue auditing non-revenue water following AWWA’s M36 protocol for small water providers
- Participate in a community night out program with other Entities, offering training for homeowners in water conserving landscapes
- Fund second third of municipal facilities’ conservation improvements such as ULF toilets, LF faucets, urinals, controllers. Publish this effort on website.
- Offer twenty \$25.00 rebates on rain sensors. Track savings.
- Offer two residential water use evaluations. Track savings.

## **Monument**

- Contribute \$100 to adult education re: conservation – homeowners and small businesses
- Offer, through bill inserts, webpage and postings technical assistance to large commercial/industrial accounts re: conservation
- Offer, through bill inserts, webpage and postings technical assistance to small businesses re: conservation
- Continue auditing non-revenue water following AWWA’s M36 protocol for small water providers
- Participate in a community night out program with other Entities, offering training for homeowners in water conserving landscapes
- Fund second third of municipal facilities’ conservation improvements such as ULF toilets, LF faucets, urinals, controllers. Publish this effort on website.
- Offer twenty \$25.00 rebates on rain sensors. Track savings.
- Offer two residential water use evaluations. Track savings.

## **TriVlew**

- Contribute \$100 to adult education re: conservation – homeowners and small businesses
- Offer, through bill inserts, webpage and postings technical assistance to large commercial/industrial accounts re: conservation
- Offer, through bill inserts, webpage and postings technical assistance to small businesses re: conservation
- Continue auditing non-revenue water following AWWA’s M36 protocol for small water providers
- Participate in a community night out program with other Entities, offering training for homeowners in water conserving landscapes
- Fund second third of municipal facilities’ conservation improvements such as ULF toilets, LF faucets, urinals, controllers. Publish this effort on website.
- Offer twenty \$25.00 rebates on rain sensors. Track savings.
- Offer four residential water use evaluations. Track savings.

## **Year Five**

## **Palmer Lake**

- Contribute \$100 to adult education re: conservation – homeowners and small businesses
- Offer, through bill inserts, webpage and postings technical assistance to large commercial/industrial accounts re: conservation
- Offer, through bill inserts, webpage and postings technical assistance to small businesses re: conservation
- Continue auditing non-revenue water following AWWA’s M36 protocol for small water providers
- Participate in a community night out program with other Entities, offering training for homeowners in water conserving landscapes
- Fund last third of municipal facilities’ conservation improvements such as ULF toilets, LF faucets, urinals, controllers. Publish this effort on website.
- Offer twenty \$25.00 rebates on rain sensors. Track savings.
- Offer two residential water use evaluations. Track savings.
- Contribute \$400 to a Kids’ Water Festival

## **Monument**

- Contribute \$100 to adult education re: conservation – homeowners and small businesses
- Offer, through bill inserts, webpage and postings technical assistance to large commercial/industrial accounts re: conservation
- Offer, through bill inserts, webpage and postings technical assistance to small businesses re: conservation
- Continue auditing non-revenue water following AWWA’s M36 protocol for small water providers
- Participate in a community night out program with other Entities, offering training for homeowners in water conserving landscapes
- Fund last third of municipal facilities’ conservation improvements such as ULF toilets, LF faucets, urinals, controllers. Publish this effort on website.
- Offer twenty \$25.00 rebates on rain sensors. Track savings.
- Offer two residential water use evaluations. Track savings.
- Contribute \$400 to a Kids’ Water Festival

## **TriView**

- Contribute \$100 to adult education re: conservation – homeowners and small businesses
- Offer, through bill inserts, webpage and postings technical assistance to large commercial/industrial accounts re: conservation
- Offer, through bill inserts, webpage and postings technical assistance to small businesses re: conservation
- Continue auditing non-revenue water following AWWA’s M36 protocol for small water providers
- Participate in a community night out program with other Entities, offering training for homeowners in water conserving landscapes
- Fund last third of municipal facilities’ conservation improvements such as ULF toilets, LF faucets, urinals, controllers. Publish this effort on website.
- Offer twenty \$25.00 rebates on rain sensors. Track savings.
- Offer four residential water use evaluations. Track savings.
- Contribute \$400 to a Kids’ Water Festival

## **6.0 PUBLIC PARTICIPATION and PLAN ADOPTION**

The public review period (sixty days) will begin as soon as the Plan has been approved by the Board and tentative approval has been given by the Colorado Water Conservation Board. Legal notice of the availability of the Plan for public review will be given in the TriLakes Tribune. The Plan will then be made available at the Monument-**Palmer Lake** Branch of the Pikes Peak Library, on each Entity's webpage, and at the offices of each Entity. Comments will be taken throughout the review period, and at the Board meetings of each entity at the end of the review period.

When public comments and Colorado Water Conservation Board comments have been incorporated into the Plan, it will be officially adopted by each Entity. (Public comments, legal notice and adoption resolution are included at Appendix D).

The Plan will be updated five years from implementation.

## **7.0 MONITORING AND EVALUATION PROCESSES**

Monitoring the success of the Water Conservation Plan includes measuring water use as well as money spent on the selected conservation activities. Individual customer water use can be tracked for rebates, which involves noting customers' water use prior to installation, verification of installation, and post installation water use. Customer class water use will be monitored for effects of ordinances and public education, although these activities will show a combined effect since their impact cannot be confined to a single customer class or homeowner. Technical assistance can be tracked because it will be advertised, then requested by individual homeowners or businesses. Customer class monitoring will be used also to inform upcoming rate increases or changes in rate structure. Monitoring information will also inform future public education efforts.

The Entities will monitor and evaluate the Plan according to the CWCB requirements and tools to be released next month. All elements listed in Table 14 will be monitored separately, with the exception of the combined effect of education and ordinances.

Plan Updates and Revisions – The required timing for updating the Plan is seven years. The Entities will update their Plan in five years, because, as discussed earlier in the Plan, their water supply environment is expected to change significantly during that time. Whether a new firm supply has been located, or whether this has not occurred –conservation planning will change in the next five years.

### References:

American Water Works Association. Water Conservation Programs – A Planning Manual, Manual of Water Supply Practices M52 2006

**Monument** Code of Ordinances, 13.08.010, 13.08.020, 13.08.040,13.08.060, 13.04.110, 13.04.120, 17052.040, 17.52.050, 17.52.080

Palmer Lake Code of Ordinances, 13.02.010, 13.02.020, 13.02.060,

Pikes Peak Regional Water Authority. Water Infrastructure Planning Study. February 2008

Town of **Monument** Comprehensive Plan 2003

Vickers, Amy, 2001. Handbook of Water Use and Conservation WaterPlow Press, Amherst, MA

Western Resource Advocates, 2006. Water in the Urban Southwest

## Appendix E

### About the artist

Born in Connecticut and raised in Colorado, I have been studying photography for five years. I went through Lewis Palmer School District #38 and graduated from Palmer Ridge High School in 2012. I attended Salve Regina University in Newport, RI for my first year of college and transferred back to UC Denver for a BFA in Photography with a minor in communications. I think of photography as a way to express a unique point of view and I was happy to capture some of the things that make this area so beautiful and irreplaceable. To view more of my work, please visit [www.behance.net/dtharnish](http://www.behance.net/dtharnish)

