



**Water Conservation Efforts in the Headwaters
Communities in the
Northwest Colorado Council of Governments
Water Quality/Quantity Region**

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Introduction

This document highlights water conservation efforts on the west slope, mainly in headwater communities in the Northwest Colorado Council of Governments Water Quality & Quantity Committee (“QQ”) region. To further discussions regarding the use of Colorado River water it’s important to have an understanding of how west slope water usage and conservation differs from that of the Front Range.

Headwater and Front Range Differences in Water Demand

The issues associated with water conservation in the headwaters vary from those on the Front Range. Most water used by headwater communities is directly diverted from streams, alluvial aquifers, and in rare cases, reservoir storage. Wastewater return flows are typically close to the point of diversion. Unlike transmountain diversions that permanently remove water from the basin of origin, most of the original water diverted for use in headwater communities is returned to streams in the same basin, near the point of diversion. .

Additionally, the region's high elevation creates lower water demand. This is partly because of an extremely short growing season and the limitations on viable types of vegetation. Natural non-irrigated yards are the norm not the exception. The Front Range, on the other hand, has a better climate for landscaping that creates more of a demand on outdoor water use. Because of this, about half of Denver Water’s residential demand is for outside irrigation.

Water conserved on the Front Range reduces the amount of water diverted from the Colorado River headwaters. Headwater communities’ water supply becomes more vulnerable when stream flows have been reduced by out-of-basin diversions and when there are reductions in stream flow due to low snow pack. These communities experience the direct impacts to the streams on which they rely. As demands on the streams increase and stream flows are reduced there is a loss of dilution for municipal wastewater discharges. In addition reduced flows affect such things as stream temperatures, which in turn damages aquatic life and reduce water quality. Because they are closely tied to these in-stream conditions, many headwater water providers like the Town of Frisco and the Eagle River Water and Sanitation District base their water restrictions directly on stream flow levels. In contrast Front Range water restrictions are based on “drought” conditions.

When looking at differences in demand and how water is diverted differently on either side of the divide, you can begin to see the need for unique conservation approaches to reduce overall water usage.

Calculating Water Usage on the West Slope

One way to measure actual water use is to calculate per capita water use. However, there are a host of challenging factors involved when attempting to calculate water use in the headwater communities. One such challenge is that resort communities experience significant fluctuations in population, partly because 60 to 80 percent of homes in many of these areas are second homes largely occupied part time. The estimated year-round population in Summit

County, for example, is around 29,000 but during peak visitor times, such as weekends or holidays, that number balloons to approximately 160,000. Communities must construct and operate water supply systems sized to accommodate the large number of people visiting during these peak times, although much of the time only a portion of production capacity is actually used. These fluctuating populations and changing demands on the systems have led to the misperceptions of water usage in the headwater areas.

The Statewide Water Supply Initiative

The 2004 Statewide Water Supply Initiative (SWSI) was a project by the State of Colorado that attempted to understand existing and future water needs and identify potential shortages. SWSI raised questions about how much water western Colorado communities actually uses. The usage numbers for most of the headwaters communities in the SWSI study are unjustifiably high because the SWSI study did not take into consideration the water demand pattern of resort communities in headwater areas.

For example, SWSI estimates that Summit County residents use 327.1 gallons per person per day (“GPCD”). This conclusion was based on an assessment of water diverted for municipal use divided by a countywide population of 25,725 (DOLA, 2000). Similarly, using the same method, SWSI estimates use in Denver County at 224.5 GPCD, based on a population of 555,782 (DOLA, 2000). These populations’ figures completely miss the ballooning population that occurs on weekends and during tourist season.

Calculating GPCD - Analysis Method

To address this mischaracterization of water use in the headwaters, QQ has attempted to factor in the resort communities’ fluctuations in population. To accomplish this, we used the following methodology to more accurately estimate the daily population and attendant water usage for these resort communities [than the DOLA year round population number used by SWSI].

QQ estimated the actual population served by using the biochemical oxygen demand (BOD) measured at the wastewater plants. BOD loads are relatively constant per person in domestic wastewater¹. BOD loads are calculated by multiplying the BOD concentration by the daily wastewater influent flow to the plant. However, the BOD laboratory procedure is a five-day test, which means there may not be actual measured BOD results for every day of the year; most notably there may not be results for weekends when resort populations are bigger. This problem is alleviated somewhat in the calculation by using daily influent flows, which are available.

While still an estimate of population, we believe this approach provides a more realistic reflection of the population than the census- based approach used by DOLA. For example, using the approach described above we calculated the total amount of water produced in 2005 by entities providing drinking water where the return flows were received at the Silverthorne Joint Sewer Authority (“JSA”). The JSA provided an estimation of the 2005 annual BOD load based on their bi-weekly BOD testing and their daily influent flows. Using this approach we

¹ 0.17 pounds BOD/capita/day, from Clark, Viessman, Hammer, 1977

calculate a more realistic 113 GPCD for this portion of Summit County rather than 327 GPCD found by SWSI.

County Regulations

The following information focuses specifically on municipalities, but it's worth noting efforts to reduce water usage occur at the county government level as well. Many counties in the QQ region have master plans goal or land use ordinances focused on water saving. For instance, Summit County's 1st policy under its water resources goal is "Reduce water consumption and manage water resources in a more sustainable way." This goal is implemented in portions of their land use code. For example Summit County limits lawn areas to 10 percent of the total open space area on the site, and restricts the maximum irrigated area to not exceed 20 percent. Additionally they have irrigation codes that specifically pertain to water conservation, including xeriscaping requirements.

Another example is Eagle County which requires conservation measures to be included in 1041 permits for major new extensions of domestic water treatment systems, requiring such things as limited irrigated areas and indigenous plants that require little irrigation. Eagle County also requires golf course developers to install differential relative humidity and temperature sensitive control systems.

Municipal Water Supplier Snapshots

The following summaries of a few municipalities present a picture of the level and range of water use and conservation approaches in the headwaters. Most of the municipalities described below were selected because drinking water and wastewater is provided to roughly the same population which simplifies the estimation of per capita water use. The selected municipalities also represent a range of resort communities, bedroom communities and rural towns.

Included in each snapshot is a summary of the approaches used to conserve water in these communities. Although many headwaters communities may lack formal water conservation plans they utilize stringent conservation techniques. The techniques include incentives, ordinances, education, leaks detection, and metering. A table for each municipality indicates if such measures are implemented.

The community population numbers stated in this document are mainly from the 2004 Department of Local Affairs estimates and represents year round population. Water use and BOD numbers are from 2005 and are used in this document to calculate GPCD.

While GPCD provides a standardized way of comparing water use among municipal water providers, it's also important to recognize the various measures water providers use conserve water.

Towns of Fraser and Winter Park Grand County

Conservation Elements	Yes	No
Incentives	X	
Ordinances	X	
Education	X	
Leaks Detection	X	
Meters	X	

Elevation: 8,574 to 9,100

Population: Winter Park 827; Fraser 1,039

GPCD: 66

In addition to the Towns of Winter Park and Fraser, this area also includes subdivisions of unincorporated Grand County which are provided central water and sewer service by Winter Park Ranch Water and Sanitation District (“Winter Park Ranch WSD”). This area is an example of a resort community with a highly variable population. Although there are a significant number of single family homes with year round residents, the community largely comprises condominiums and vacation homes so lawn and landscape irrigation is minimal.

Residents and business in this area are provided water by three separate entities. Grand County Water and Sanitation District #1 (“Grand County WSD#1”) provides to downtown Winter Park area utilizing Vasquez Creek and Little Vasquez Creek as a source of water supply. The Town of Fraser and Winter Park Ranch Water and Sanitation District obtain their water supply from the Fraser River and its alluvium. Unconsumed water from all these sources is returned to the Fraser River near the Town of Fraser. Actual consumptive use accounts for approximately 5 percent of the water diverted.

Water Rates

GRAND COUNTY WSD #1:

\$14.00/month minimum charge for up to 4,000 gallons/SFE plus

\$0.85 per 1,000 gallons for the first 4,000 gallons/SFE/month

\$1.35 per 1,000 gallons/SFE/month for 4,000 – 8,000 gallons

\$2.75 per 1,000 gallons SFE/month for amounts over 8,000 gallons

WINTER PARK RANCH WSD:

\$19.25/month, per tap

TOWN OF FRASER:

\$38.50/month, per tap

Incentives

The Town of Winter Park employs a tiered water rate structure as outlined above. Voluntary water restriction measures are posted in the newspaper and on official board postings around town. Most restrictions apply to outside watering. A typical example of watering restrictions would be to restrict outside watering during the day [7am – 7pm], and to encourage citizens to make sure irrigation systems are in good repair. However, when Denver Water posts their water restrictions, local water providers match those.

Additionally, now that the Town of Fraser has water meters in place, they are working on developing a tiered water rate structure.

Ordinances

The Town of Winter Park and the local water/sewer districts have become more aggressive in managing water demand and resources. This includes a collaborative effort between the Town and the Grand County WSD#1 to set growth limits that intend to keep water flowing in Vasquez Creek and the Fraser River. The Town’s master plan limits the ability to fully develop the water rights owned by Grand County WSD#1 with residential or commercial development. The Town’s master plan was completed in 2006, and the restrictions on development were a direct response to the drought of 2001-2002. It is believed that Town of Winter Park is one of, if not the only municipality in the state to directly limit development in order to protect streamflows.

The Town limits lawn size to “accent site development only”. They require that landscaping minimize water consumption through proper grass selection, soil preparation and irrigation design. The Grand County WSD #1 has outdoor watering system design criteria, including limiting outdoor watering systems to be designed to allow for only 8 gallons per minute per watering zone. Winter Park Ranch WSD will only provide water for 125 ft² of irrigated landscaping per SFE.

Education

Voluntary water restrictions listed in the newspaper and official board postings around town. Winter Park Ranch WSD provides a quarterly newsletter to its customers that includes water conservation information. The Town of Fraser posts water conservation on their website and in newsletters.

Leaks Detection

The Town of Winter Park surveys for water line leaks every year. All water is metered, so it’s easy to identify discrepancies. Winter Park Ranch WSD contracts for leak detection services annually, but also uses telemetry in its storage tanks to evaluate unusual water use within its system. The Town of Fraser contracts out leak detection services. Many leaks in the system have been addressed over the last few years.

Meters

The Town of Winter Park installed water meters in the early 1980s. The Town of Fraser started the process of installing meters approximately 12 years ago, and after several failed attempts, implemented a program in 2005. All meters were fully installed by the end of 2006.

Winter Park Resort Grand County

Conservation Elements	Yes	No
Incentives	X	
Ordinances	X	
Education	X	
Leaks Detection	X	
Meters	X	

Elevation: 9,100

Population: Winter Park 827

GPCD: 132

The area described here includes the base area of Winter Park Ski Resort and the largely residential area north to the Town of Winter Park. The area is largely composed of condominiums, so lawn and landscape irrigation is minimal. In addition, a small portion of water diverted for municipal use by Winter Park Water and Sanitation District (“WPWSD”) is used for snow-making.

Residents and business in the Winter Park area are provided water by two separate water and sanitation districts. WPWSD provides water primarily to the resort area while the Grand County Water and Sanitation District #1 provides to the old town area. This summary focuses on WPWSD’s service area. WPWSD obtains its water supply from the Fraser and return flows from unconsumed water discharged to the Fraser River upstream of the Town of Winter Park.

The Town of Winter Park and the Winter Park WSD have worked collaboratively to monitor water demand and development as part of the Town’s master plan. The plan, completed in 2006, identifies the physical availability of water in the area’s creeks and rivers as crucial to our community’s sustainability, and future increases in development will be reviewed to ensure that proper water supplies are available.

Water Rates

Residential: \$33.50/ESFU/month minimum charge for up to 4,000 gallons

Commercial: \$16.75/ESFU/month minimum charge for up to 2,000 gallons

Charge for additional water used over the minimum: \$3.00/1,000 gallons

(ESFU = Equivalent Single Family Unit)

Incentives

WPWSD employs a tiered water rate structure as outlined above, although because water is delivered to the ski area for snowmaking, it’s challenging to use a rate structure model to encourage less water usage. Voluntary water restriction measures are posted in the newspaper and on official board postings around town. Most restrictions apply to outside watering. A typical example of watering restrictions would be to restrict outside watering during the day [7am – 7pm], and to encourage citizens to make sure irrigation systems are in good repair.

However, when Denver Water posts their water restrictions, local water providers match those.

Ordinances

The Town of Winter Park limits lawn size to “accent site development only”. They require that landscaping minimize water consumption through proper grass selection, soil preparation and irrigation design. The two water and sanitation districts have outdoor watering system design criteria, including limiting outdoor watering systems to be designed to allow for only 8 gallons per minute per watering zone. The Town and these water sewer districts have become more aggressive in demand management including adopting a master plan which limits future growth based on maintaining desired flows in the Fraser River, prohibiting any residential lawn watering, and limiting new landscape irrigation to a two year period in order to restore native species.

Education

Voluntary water restrictions listed in the newspaper and official board postings around town.

Leaks Detection

Through the Town’s leaks detection program, leaks are surveyed every year. All water is metered, so it’s easy to identify discrepancies.

Meters

Meters were installed in the early 1980s.

Town of Granby
Grand County

Conservation Elements	Yes	No
Incentives	X	
Ordinances	X	
Education	X	
Leaks Detection		X
Meters	X	

Elevation: 7,935
Population: 1,746
GPCD: 94

Granby is the most populous town in Grand County. It has recently undergone a dramatic growth spurt influenced by the nearby resort development in Winter Park, with a large amount of growing stemming from second homes. Significant annexations have made Granby one of the communities with the fastest growing growth potential in the U.S.

Water Rates

North Service Area (old)

Monthly Rate: \$8.00 + \$4.00 per 1,000 gallons

South Service Area

Monthly Rate: \$13.25 (Town) + \$12.04 (Authority)

Incentives

North Service Area increases monthly fees with water usage. Voluntary water restriction measures are posted in the newspaper or on the radio. Following voluntary water restriction postings, Granby sees a decrease in water use without the need for mandatory water restrictions.

Ordinances

Irrigation conservation is addressed in the developer’s annexation agreements and the Metro District’s development agreement.

Education

Granby provides education in the schools and other outlets, such as the newspaper and public outreach methods on water conservation.

Meters

Originally installed in 1983 and required of new construction since then.

Town of Kremmling
Grand County

Conservation Elements	Yes	No
Incentives	X	
Ordinances	X	
Education		X
Leaks Detection	X	
Meters	X	

Elevation: 7,364

Population: 1,641

GPCD: 230 (based on a different approach than other snapshots)

Unlike most of the municipalities in this report, Kremmling is not a resort town and so housing is more single family in nature and the population is more stable. Kremmling has a small economic base and a 60 – 80 year old water system that is in need of maintenance. During winter months there is sometimes a 60% loss of water. However, the old water system has become the Town Council’s primary focus and for the past three years they have annually spent approximately 1 million dollars upgrading the system. Kremmling also modified their sources of supply to include direct diversions from the Colorado River flows which lessens their impact on the smaller Sheep Creek, Kremmling’s historical drinking source watershed.

As part of updating an old water system, Kremmling is one of the first communities on the West Slope to develop a true reuse program. The construction was completed, and once they receive the necessary permits from the state, they will be able to use up to 150,000 gallons of treated effluent per day to irrigate parks, ball fields and other public greenways. This will substantially reduce Kremmling’s demand.

Water Rates

Monthly <i>Residential</i> rate for 6,000 gallons:	\$46.85
Over 6,000 gallons:	\$1.70 per 1,000 gallons
Monthly <i>Commercial</i> rate for 10,000 gallons:	\$54.10
Over 10,000 gallons:	\$1.90 per 1,000 gallons

Incentives

Voluntary water restriction measures are posted in the newspaper and locations around town. The restrictions usually entail a rotating schedule for outdoor watering.

Ordinances

During extreme water shortages, the Town does have mandatory restrictions. The Town itself cuts back on their irrigation in greenbelt areas. The town also requires low flow fixtures for new development.

Leaks Detection

The Town has financial commitments to upgrade an old water supply system that has experienced a 60% water loss in winter months. Kremmling feels this is the best way they can contribute to water conservation at this time.

Meters

Meters were installed about 10 years ago, and have recently been upgraded.

Town of Frisco
Summit County

Conservation Elements	Yes	No
Incentives	X	
Ordinances	X	
Education	X	
Supply-Side	X	
Meters	X	

Elevation: 9,100
Population: 2,697
GPCD: 89

The Town of Frisco is within 15 minutes of four world class ski resorts, including Copper Mountain, Breckenridge, Keystone and A-Basin so its population is largely affected by these resorts. Most of the housing stock is seasonal or second-home in nature.

Drinking water is diverted directly from North Ten Mile Creek and Meadow Creek alluvial wells and returned to Dillon Reservoir. Their water restrictions are directly related to stream flows in Ten Mile and average yield of the Town’s water wells. The Town also posts water conservation measures, as well as home plumbing measures to prevent pipes bursting/leaks during the winter months on their website. Frisco has adopted specific policies and principals relating water conservation that also includes addressing non-native plant issues and xeriscaping.

Water Rates

<i>Monthly rate:</i>	Up to 18,000 gallons per SFE:	\$10.30
	18,001 – 35,000 gallons:	\$2.58 per 1,000 gallons
	Over 35,000 gallons:	\$3.61 per 1,000 gallons

Incentives

Tiered water rate structure, outlined above.

Ordinances

Water Conservation Ordinance - water restrictions are posted in the paper and on quarterly water bills. Restrictions are phased based on stream flows in North Ten Mile Creek. Restrictions start out as voluntary, but when stream flows in Ten Mile are less than .75 cfs above the bypass flow mandated by the State, mandatory restrictions go into effect. As stream flows decrease, or the average yield of all Town-owned wells in production reach a certain percentage, mandatory restrictions become more stringent, which include enforced penalties. The biggest challenge the Town has with the restrictions is getting information to second home owners. Otherwise there is great response from the year-round citizens.

Landscaping Ordinance – requiring that all landscape plans for new development be designed to incorporate water conservation materials and techniques through xeriscape principles.

Lawn areas cannot exceed 10% of the undeveloped area of the site. Plants must be native to this area, or have demonstrated ability to survive in the harsh alpine climate with minimal water.

Policy as related to water conservation – The Town created “Principals, Policies and Action Items” to “*Protect Frisco’s environmental resources through use of sustainable practices*”. These policies specifically include water conservation measures which include action items to address the water consumption of non-native plants, policy statements that reflect the Town’s dedication to reduce water consumption and manage water resources in a sustainable manner, to implement appropriate and effective water conservation practices in all aspects of Town duties, and to explore ways to use recycled water for Town operations.

Education

Frisco provides extensive water conservation information on their website and invests staff time to teach youth at the local schools about water conservation. They also allow for staff time to be used for other opportunities to educate the general public. Their policies are intended to provide for a community informed about water conservation. As well, the Town posts information on their website regarding leaks prevention, and taking care of plumbing during cold weather.

Leaks Detection

The Town checks for leaks every three years.

Meters

Meters were installed between 1992 and 1995.

Town of Silverthorne
Summit County

Conservation Elements	Yes	No
Incentives	X	
Ordinances	X	
Education	X	
Supply-Side	X	
Meters	X	

Elevation: 8,751
Population: 3,806
GPCD: 113

The Town of Silverthorne is surrounded by four ski resorts resulting in a population that fluctuates significantly throughout the year with a considerable amount of second homes and rental units. Silverthorne’s water supply is all from alluvial wells in the Blue River below Dillon Dam.

The Blue River flowing through Silverthorne is designated as Gold Medal fishing waters, and the Town is working to build a kayaking park below Dillon Dam to expand the recreational use of the Blue River in Town. The Town also has plans to develop a formal water conservation plan in the next couple of years.

Water Rates

Monthly flat rate:	\$15.00 +
0 – 15,000 gallons:	\$1.00 per 1,000 gallons
15,001 – 30,000 gallons:	\$2.00 per 1,000 gallons
30,001 – 50,000 gallons:	\$3.00 per 1,000 gallons
50,001 and higher	\$4.00 per 1,000 gallons

Incentives

The Town has a tiered water rate structure as outlined above. Voluntary water restriction measures are listed on the Town’s website, in the newspaper and in the Town Newsletter. Voluntary measures include not watering between 9:00 a.m. and 6:00 p.m. and avoiding watering on hard surfaces. Silverthorne has documented a decrease in water use by merely implementing voluntary measures. The Town feels there has been a general increase in public awareness regarding water conservation that has been very effective in reducing demand. Water use has not increase since restrictions were implemented in 2002.

Ordinances

The Town Code gives the Public Works director express authority to implement voluntary or mandatory water conservation measure and water restrictions.

Education

Silverthorne participates financially by offering staff time to the Summit County Water Festival that teaches fourth graders about water conservation. They also list water conservation tips on their website. Dillon also posts water conservation tips on their website, but they also have a water usage calculator so that an individual can calculate their “water footprint”.

Leaks Detection

Silverthorne tracks water billed, compares it to water diverted and then calculates water lost quarterly. They also do leak detection annually and monitor the system continuously for breaks.

Meters

Silverthorne originally installed meters in the ‘70s and then completed an upgrade in 1997. In 2008 they began replacing old meters with newer ones that can transmit an alarm alerting the Town of unusual usage.

Town of Dillon Summit County

Conservation Elements	Yes	No
Incentives	X	
Ordinances	X	
Education	X	
Supply-Side	X	
Meters	X	

Elevation: 9,065
Population: 811
GPCD: 113

The Town of Dillon was created when Denver Water constructed Dillon Reservoir on top of the historic Town of Dillon in the 1960's. It too is surrounded by four ski resorts resulting in a population that fluctuates significantly throughout the year with a considerable amount of second homes and rental units. The primary source of water is surface water from Straight Creek which parallels I-70.

Water Rates

Monthly flat rate:	\$16.00
1,000 – 15,000 gallons:	\$3.00 per 1,000 gallons
Over 15,000 gallons:	\$4.50 per 1,000 gallons

Incentives

The town has a tiered water rate structure as outlined above.

Ordinances

The Town Code prohibits water waste, such as leaving water running to keep pipes from freezing. It also provides the authority for limitations in use such as frequency or time of day for outside watering. Significant restrictions, including a ban on outdoor water can be imposed when flows in Straight Creek fall below 2.0 cfs; certain non-essential indoor use may also be banned when this flow gets to 1.0 cfs. In addition, the Town code allows for a conservation fee for usage over 6,000 gallons per EQR in emergency situations.

Education

Dillon's website contains links to water saving methods. Dillon also posts voluntary water restrictions on their website. Implementation of water restrictions are required to be printed in the newspaper. The Towns has an on-going request to eliminate outdoor irrigation use between 9 a.m. and 6 p.m. everyday. Other education materials are made available from time to time and include printed material and video CD or DVD's.

Leaks Detection

The Town audits unaccounted for water each month. The goal is to be less than 5% unaccounted for water, being that the national recommended standard is 10%. When the percentage approaches 10% for 4 months or 20% for two months a leak detection survey is usually scheduled. The annual average for 2008 was less than 4%. The last leak survey was done in 2007.

Meters

The Town code requires all water usage to be metered. Unmetered water usage is aggressively pursued. Most of the Town's meters were installed about 10 years ago.

Town of Eagle
Eagle County

Conservation Elements	Yes	No
Incentives	X	
Ordinances	X	
Education		X
Supply-Side	X	
Meters	X	

Elevation: 6,600 ft.

Population: 3,816

GPCD: 215

Eagle is about 30 miles from the resorts of Vail and Beaver Creek, is somewhat of a bedroom community to the resorts and has a more stable population. It is also lower in elevation with more year-round residents and so is more conducive to lawns and irrigation.

Water Rates

6,000 gallons or less:	\$19.70
Over 6,000 gallons, up to 28,000 gallons:	\$3.65 per 1,000 gallons
Over 28,000 gallons:	\$4.75 per 1,000 gallons

Incentives

A tiered water rate structure as outlined above. Eagle has implemented voluntary watering restrictions that include an odd and even day watering schedule.

Ordinances

Eagle utilizes the Universal Building and Plumbing Codes that requires low flow fixtures. The Town is currently working on a water plan that will address water conservation and water restrictions. The plan should be complete some time after the first of year 2009. The plan would incorporate water conservation efforts, and outline water restrictions for drought years.

Leaks Detection

The Town checks for leaks once a year.

Meters

Meters have been installed for at least 30 years.

Basalt Eagle/Pitkin County

Conservation Elements	Yes	No
Incentives	X	
Ordinances	X	
Education	X	
Supply-Side	X	
Meters	X	

Elevation: 6,620 ft.

Population: 3,051

GPCD: 71

The Town of Basalt is, located in both Eagle and Pitkin Counties. The main water supply for the Basalt system comes from a spring on Basalt Mountain, and they have three wells that supplement during periods of high demand.

Water Rates

Monthly base rate for residential (with commercial based on Equivalent Residential Unit (EQR): \$51.00

Up to 31,500 gallons:	\$1.60 added to the base rate
31,501 – 80,325 gallons:	\$2.20 added to the base rate
80,326 – 111,600:	\$4.50 added to the base rate
111,601 +	\$5.50 added to the base rate

Incentives

The Town has a tiered water rate structure as outlined above.

Ordinances

Water restrictions are enforced from April 1st to October 31st. The Town has staged restrictions based on the amount of water available for diversion, storage and distribution in the Town’s municipal supply. Restrictions are based on addresses ending in odd and even numbers, rotating days that watering can occur outdoors. No outdoor watering is allowed on Mondays at all. Part of their code states that water shall at all times prevent unnecessary waste of water and keep all water outlets closed when they are not in actual use, and makes it considered a waste of water for such things as operating any sprinkler or irrigation system which applies water directly to driveways, sidewalks, etc. There are penalties to such actions set in the Town Code. Restrictions are posted on their website.

Education

Basalt participates in water awareness through the Roaring Fork Conservancy, a nonprofit organization located in Basalt that was started in 1996 as a public and private partnership. In their Goals and Objectives (4.8.5) they state that they will support entities like the Roaring Fork Conservancy and the Colorado Department of Wildlife “that establish public education

programs that foster the value of the river and wildlife lands.” Another section states that they will support “those entities that manage the Fryingpan River to meet optimum flow requirements for safety, ecological health and angler satisfaction.”

Additionally, the Town posts water conservation information on their website, and offers personalized assistance to their customers who are further interested in water conservation.

Leaks Detection

The town started a leaks detection program in 1997. They hire a leak detection company annually, typically in the spring, to test their distribution system and make repairs as needed.

Meters

Basalt installed meters in the early 80’s.

Aspen Pitkin County

Conservation Elements	Yes	No
Incentives	X	
Ordinances	X	
Education	X	
Supply-Side	X	
Meters	X	

Elevation: 7,908 ft.

Population: 3,368

GPCD: 153

Aspen is internationally known both as a winter and summer resort. Like many ski towns in Colorado, Aspen was first a mining town, and then in 1946 Aspen Skiing Corporation was founded. Like Winter Park WSD, Aspen supplies water to the ski area for snow making. However, due to aggressive water conservation measures the City uses less water overall than it did in 1976 even though their population has increased significantly.

Water Rates

Aspen has 7 different billing areas. Depending on the area, monthly base rates range from \$4.35 per ECU to \$8.71.

Additional Charges

0 - 5,000 gallons	\$1.61 per thousand gallons
5,001 – 15,000	\$2.09 per thousand gallons
15,001 – 20,000	\$2.97 per thousand gallons
Excess of 20,000	\$4.46 per thousand gallons

There are additional charges related to pumping and fire protection. For unmetered water service a flat rate is charged based on estimated gallons used, with an additional monthly surcharge of \$23.00 per ECU. Pumping and fire protection is also charged monthly for unmetered water users. There is a separate structure for snowmaking purposes.

Incentives

Aspen has a tiered water rate structure.

Ordinances

The City requires that all new residential, commercial or industrial structures, or for indoor or outdoor remodeling of an existing residential, commercial or industrial structures incorporate high-efficiency plumbing fixtures. They also require that landscaping utilize grasses which have the effect of minimizing the consumptive use of water; and, to the extent practicable, have irrigation system designed using water-conserving equipment.

Education

The City participates in a Water Wise program at the schools. A new public works website (currently under construction) will include information and links to organizations that promote water conservation. They also promote water conservation with inserts in their utility bills and informational spots on grassroots television and utilize press releases to inform the public of new programs.

Leaks Detection

The City of Aspen has been doing annual leak surveys using a consultant for many years. In 2002, it purchased its own leak detection equipment and performs annual leak surveys. The City also uses the equipment at times in emergency situations to determine a more precise location of main failures. Aspen has an employee bonus that is tied to the goal of demonstrating unaccounted for water percentage (metered sales verses water production) is less than 15%. Every year since 1997, this goal has been met.

Meters

Aspen has an aggressive metering program with individually metered units in multi-unit buildings.

Additional Water Conservation Efforts

Aspen has a variety of water conservation efforts that are worth taking note. An example of those efforts include: a golf course irrigation efficiency program that saves 100 million gallons of water per year; an appliance rebate program; free low flow shower heads, kitchen aerators and low flow spray nozzles provided at such events as the Community Picnic, Farmers Markets, Aspen Renewable Energy Day, and Earth Day; high usage reports to customers via billing; and in 2002 they offered Water Conservation Awards to customers who met target reductions, issuing \$100,000 in checks to customers (Aspen achieved a 10% overall reduction in water use through the award program).

Conclusion

Domestic water use in the headwaters is complicated and difficult to characterize and compare with Front Range use largely because of the unique characteristics of the communities. Fluctuating resort-based populations, limited landscaping and use in snow making all have confounding effects on consumption and usage numbers.

The information in this document is an attempt to provide some clarity regarding the actual amount of water used by municipalities in the headwaters. Though these communities use less water than often portrayed, they continue to pursue efforts to manage their demand.

It's important to recognize that much of the water supply and populations served are the same. Front Range water supplies depend on West Slope headwaters, and headwater second home owners are largely Front Range primary residents. Those who choose to live in the metropolitan areas of our state also choose to recreate and enjoy the mountains. Conversely, those who live in the mountains still partake in city amenities. Essentially we all share equally this precious resource. As such, we also share the responsibility to protect it.