Final Report

Water Conservation Plan

February, 2010

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1.0 Introduction

Purpose

The Pinery Water and Wastewater District (hereafter "the District") provides safe, reliable, potable and non-potable water to its residential, commercial, and institutional customers. The District has practiced water conservation for many years. However, with the advent of an improved state-of-the-science regarding the cost and benefit of water conservation and the increasing need for better water resources management, the District is developing and implementing a Water Conservation Plan that incorporates the State of Colorado requirements. The plan also provides a definition of water conservation goals, and those measures and programs that will be used to meet chosen goals for implementation. By preparing this Water Conservation Plan, the District will be able to support decision making regarding costs and benefits of water conservation and will be able to track water savings allowing for water conservation to support the long term needs of its customers.

This Water Conservation Plan (hereafter "Plan"), therefore, defines future water conservation measures and programs that will help manage the future water supply needs of the growing residential, commercial, and institutional water users served by the District.

Acknowledgements

This Plan has been prepared through the cooperative efforts of the District Staff and the District's Board of Directors.

2.0 Existing Water System Profile

Water Supply and Existing Sources

The Pinery Water and Sanitation District provides water and wastewater services to approximately 8,500 acres of unincorporated, but urbanized development in northeastern Douglas County. The current service area is located approximately six miles east of I-25 and 25 miles south of Denver along Cherry Creek and State Highway 83 (see Figure 1). The District presently serves about 4,000 single-family units (SFUs) and has projected a total build out of 5,782 SFUs. A total of 3,602 SFUs are planned for east of Parker Road, and 2,180 SFUs are proposed for construction west of Parker Road. The development plan for the area west of Parker Road is still in the revision and approval stage and is subject to change.

The District's water supply comes from two sources: Denver Basin aquifer wells and Cherry Creek Alluvial wells. The majority of the District's water supply (more than 75%) comes from surface water rights that the District owns on Cherry Creek and reusable return flows that are exchanged to the alluvial wells. This is a renewable water supply that is withdrawn through wells along Cherry Creek. The District's rights to this water date back to the 1870's and with the exception of 2002, these rights produce adequate supply in nearly all years. During the drought of 2002, these rights were unavailable for much of the summer because of the needs of more senior rights downstream on the Platte River. A futile call was made upon these water rights, but it took several months of documentation before the Water Commissioner was able to determine that this was a futile call. In the interim, the demand was met during that period by relying more heavily on Denver Basin groundwater.

The District utilizes seven alluvial wells (tributary groundwater from the Cherry Creek Alluvium) and 12 deep wells (non-tributary groundwater from the Denver Basin aquifers). Water from the wells is treated for corrosivity and chlorinated, and pumped through the distribution system that consists of seven pump stations and ten underground storage tanks amounting to approximately 8.0 million gallons of storage.

The District's water usage for 2007 was about 3,150 acre-feet. Of this amount, 2,518 acre-feet came from tributary wells and 632 acre-feet from non-tributary wells. Table 1 summarizes the 2007 water use for the District.

With the ultimate build out of 5,782 (SFUs), some time post 2020, the water requirement is estimated at about 4,200 acre-feet (annually). Although the District is entitled to nearly twice the build out demand from the Denver Basin aquifer, most of the water will come from tributary groundwater. Pumping from the deeper Denver Basin groundwater source is expected to increase in cost overtime, therefore it is envisioned that this use will be managed very closely to keep water costs for the District's customers reasonable. The Denver Basin aquifer is expected to provide the District's customers with reliable water supply in times of drought.

FIGURE 1
Map of the District Service Area

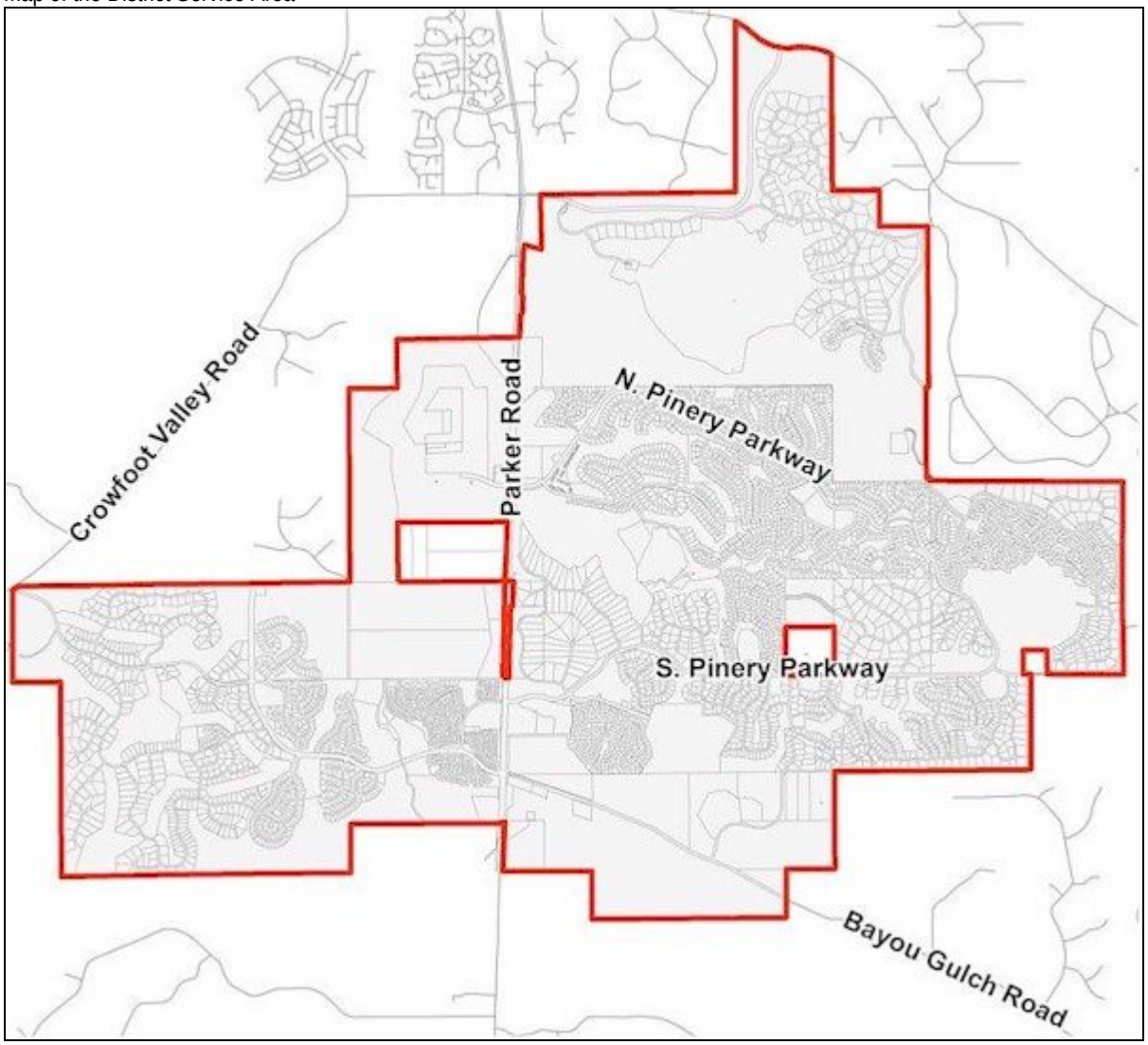


TABLE 1
Summary of Water Deliveries in 2007

Annual Water Supply	Annual Volume (acre-feet)	Percent Metered
Total Annual Water Delivered	3,150	100%
Non-tributary Groundwater	632	100%
Tributary Groundwater	2,518	100%
Reuse Water	0*	
Estimated Population Served	10,319	

* Reuse water is exchanged with tributary groundwater and is included in that figure.

Water Demand and Per Capita Water Use

A summary of the water use supported by the District, differentiated by water user type is presented in Table 2. This table also indicates the population served, and estimated water used per household in the District over the period 1997 to 2007. An overview of each of the water use types is presented below:

Residential – The District provides water to single family residences within its service area. This water is used for both indoor and outdoor uses.

Commercial – The District provides water to commercial establishments located along the Parker Road corridor, local churches, home owners associations and four schools for indoor and outdoor use.

Irrigation – The District supports the irrigation of various parks and green spaces owned and maintained by various home owner associations and Douglas County. These are separate taps from the commercial water users and are only used seasonally.

Golf Course – The District provides water to three local golf courses (Pinery, Pradera, and Colorado Golf) through both dedicated Denver Basin wells and treated water from all sources. The golf course provided water is contained in a series of small lakes and ponds, such that the amount of water used by the golf courses in any particular year may not be the same as the water pumped to the small lakes and ponds given the storage capacity of these lakes and ponds.

Other Uses – The District provides construction water on a temporary basis for dust control, make-up water and other uses to developers on an as-needed basis. The District also periodically flushes its water distribution system discharging limited amounts of water through its hydrants. These uses have been tracked since 2002.

Non-revenue water – Each year, the District estimates the amount of non-revenue water (i.e., water associated with real and apparent system losses) that is lost each year. This estimate will be refined as the water conservation plan is implemented. Currently, it is estimated that about 3% of treated water demand is related to the combination of real and apparent system losses.

TABLE 2
Summary of District Water Use by Customer Type - 1997 to 2007

							Customer Type Water Usage							
Year	Total Water Demand (1,000 gal)	Total Water Demand Ac.Ft.	SFU	Estimated Population	Total Per Capita Water Use (gpcd)	Residential Per Capita Water Use (gpcd)	Irrigation Ac.Ft.	Pumped to Golf Courses Ac.Ft.	Commercial Ac.Ft.	Residential Ac.Ft.	Other[1]	Estimated Non-Revenue Water Ac.Ft.	Annual Ac.Ft. per Home	Annual Precipitation inches
1997	535,954	1,645	2,143	5,637	260	184	79	311	44	1,161	0	49	0.77	41.58
1998	634,790	1,948	2,259	5,941	293	226	89	249	48	1,503	0	58	0.86	22.64
1999	681,501	2,091	2,388	6,281	297	235	107	222	44	1,655	0	63	0.88	16.30
2000	804,376	2,468	2,582	6,790	325	249	117	334	52	1,891	0	74	0.96	16.70
2001	858,903	2,635	2,950	7,758	303	224	150	405	53	1,948	0	79	0.89	15.26
2002	916,807	2,813	3,098	8,149	308	222	152	404	51	2,030	92	84	0.91	13.49
2003	814,840	2,500	3,202	8,422	265	194	147	374	39	1,826	39	75	0.78	21.17
2004	779,815	2,393	3,355	8,824	242	166	166	364	53	1,638	100	72	0.71	22.68
2005	950,599	2,917	3,584	9,427	276	194	183	460	69	2,050	67	88	0.81	12.58
2006	1,198,482	3,677	3,795	9,982	329	170	490	1,047	75	1,896	59	110	0.97	19.10
2007	1,026,474	3,150	3,923	10,319	273	179	187	700	75	2,063	30	94	0.80	20.75

Ac Ft – acre-feet; SFU – single family units; gpcd – gallons per capita per day
[1] Includes temporary construction water and hydrants.

Wastewater Treatment and Reuse

After distribution system water has been used (primarily from the commercial and residential customers), it is collected and treated at the District's wastewater reclamation facility and discharged into Cherry Creek. This treatment facility is able to treat two million gallons of wastewater per day. The District has an approved augmentation plan on file with the State Engineer's Office on Cherry Creek. The augmentation plan allows the District to pump out of priority on Cherry Creek and return the water at a later date, which is calculated on an annual basis. The total water right for Cherry Creek water is 500 acre-feet annually, and the total water right for Denver Basin groundwater is 12,829 acre-feet. The total usage from Cherry Creek minus the return flows from all water sources must not exceed the rights on the creek (500 acre-feet) on an annual basis. The plan allows the District to reuse all of its return flows by exchange. Put simply, as the District discharges treated Denver Basin aquifer water (non-tributary water) from its wastewater reclamation facility, it then has the right to withdraw more water from Cherry Creek using the tributary wells located along Cherry Creek.

As an example, from October 26, 2004 to October 31, 2005 a total of 2,088 acre-feet of water was withdrawn from the Cherry Creek alluvial aquifer, while 652 acre-feet of Denver Basin groundwater was used. The District was able to use this amount of creek water by using the entire Cherry Creek water right of 500 acre-feet, which can be used to extinction, and then accounting for municipal return flows to the creek. The District relies on the Denver Basin aquifer water, which also can be used to extinction, to provide return flows to Cherry Creek. During this water accounting year, Cherry Creek water accounted for 76 percent of the water supply. Of the total annual water used (2,740 acre-feet) the amount used from exchange was 1,588 acre-feet (or 58 percent).

3.0 Summary of Past and Current Water Conservation Activities

Current and Ongoing Water Conservation Measures and Programs

To support and manage water conservation activities performed by the District, it developed a Water Conservation Plan in 2001. Vital to this Plan was the use of education and information provided to the District's customers regarding water conservation and water use efficiency. Since 2001, the District has implemented a number of water conservation measures and programs, as summarized in Table 3.

TABLE 3
Summary of Past and Ongoing Water Conservation Measures

Measures and Programs	Years Implemented
Residential	
Plumbing Code	1994 to present
Water Conservation Kits	2002 to present
Voluntary Watering Schedule	2006 to present
Irrigated Turf Restrictions	2001 to present
Commercial /Institutional	
Separate Irrigation Taps	1998 to present
Voluntary Watering Schedule	2002 to present
Large Customer Watering Restrictions	1995 to present
Customer Education	
Xeriscape Demonstration Garden	1999 to present
New Resident Welcome Packets	2002 to present
High Water Use Customer Tracking and Contact	2003 to present
Newsletters	1998 to present
K-12 Education	2007 to present
Other	
Wastewater Augmentation and Reuse Program	1977 to present
Customer Leak Monitoring and Repair Program	1990 to present
Main Line Monitoring and Repair Program with System Wide Assessments	2004 to present
Inclining Water Rate Structures	2001 to present
Water Waste Ordinance	1998 to present

Current water conservation measures and programs practiced by the District include the following:

Water-Efficient Fixtures

The District falls under the Douglas County Plumbing Codes, which mandates low-flow toilets. The District also maintains a list of certified water saving plumbing fixtures on file at the District's office.

Voluntary Watering Schedule

A voluntary outdoor watering schedule was developed and approved by the District Board in 2006 for all residents based on an every other day watering by address, with Friday being a no watering day for the entire residential community. No watering is recommended from 10 am to 6 pm any day of the week, and hand watering is allowed at any time.

Customer Education

The District maintains and produces bi-monthly newsletters, which are mailed to all its customers discussing water conservation, and other water related issues, regularly promoting wise water use, improved outdoor watering practices, Xeriscaping, and other water conservation practices. Water conservation kits (with low-flow shower head, toilet displacement bag, 1.5 gpm bathroom faucet aerator, kitchen faucet aerator, home water audit booklet, flow gauge bag, two toilet leak detection dye tablets) are available to all homeowners, and welcome package mailings are provided to all new residences.

The District supports K-12 education through its membership with the Douglas County Water Resources Authority and Project WET. Project WET is an international program that provides water education training for teachers.

The District also owns and maintains a Xeriscape demonstration garden at its administrative offices on Old Schoolhouse Road. The District also maintains two ET measurement stations to assist customers in using and operating ET controllers.

Finally, the District maintains a program of tracking and contacting high water users on a monthly basis to help educate individual homeowners regarding their water use.

Low-water Use Landscapes

The District encourages the use of low-water landscapes (Xeriscapes) in all landscaping projects. The typical residential lot size lends itself to encourage the homeowner to xeriscape. The District has constructed a xeriscape demonstration garden located at the District Office.

The District also maintains a landscape rebate which allows homeowners relief from the highest block rate for one two month billing period to allow new landscape to be installed and established, lessening the need for irrigation in subsequent months.

Commercial and Industrial Processing

A separate, interruptible, metered service may be obtained by a commercial or industrial facility for irrigation. To obtain this service the area to be irrigated must be greater than 30,000 square

feet and be approved by the District. These separate taps helps the District to better track irrigation water and its impact on summer-time water demand.

Irrigation must be done between the hours of 10:00 p.m. and 6:00 a.m. in accordance with the conservation measures established by the District.

Distribution System Water Losses

Staff monitor the difference between the water pumped from District wells and the amount of water actually delivered to the end user. The District currently has a rate for unaccounted water of 3 percent. Very strict construction standards are in place, which are rigidly administered through a full-time inspector and enforcement activities to maintain the highest integrity of the distribution system. Much of the distribution system has been installed in the last 15 years under these strict construction standards.

A leak survey was completed in the older part of the distribution system by an outside contractor approximately 15 years ago. At the time the noise correlation equipment could not detect leakage due to the pipe material, and more recently contractors have experienced the same detection problems with these pipes. The District relies on other methods to identify potential leaks in these problem areas including customer reporting and monitoring for high usage (or changes in usage) through the billing system.

All repairs are documented in the GIS database system. The District uses this information to identify problem areas that can then be evaluated for replacement or repair.

The District also mandates, in its Rules and Regulations, that any leak in a service line or lawn irrigation system, on the homeowner side of the meter, must be repaired within a 72-hour period from notification of such condition.

Water Reuse

Through the District's augmentation plan, all wastewater flows and lawn irrigation return flows associated with Denver Basin Aquifer pumping are reused by exchange with alluvial wells located along Cherry Creek. See the above section on Wastewater Treatment and Reuse for more detail on the augmentation plan.

Inclining Block Water Rate Structure

The District uses a tiered rate structure for residential and commercial use specifically designed to encourage water conservation. Currently the structure is the same for both classes.

Inclining Block Rate Structure for residential water use (bimonthly billing):

0 – 6,000 gallons $50.00 (Base Rate) + $2.00/1,000 gallons
6,000 – 40,000 gallons $62.00 + $2.90/1,000 gallons
40,000 – 60,000 gallons $160.60 + $3.65/1,000 gallons
60,000 – 100,000 gallons $233.60 + $4.75/1,000 gallons
100,000 – 120,000 gallons $423.60 + $6.50/1,000 gallons
Over 120,000 gallons $553.60 + $13.00/1,000 gallons

Large irrigation accounts with a separate interruptible meter are billed monthly at a rate of $2.42/1000 gallons with a $25.00 bimonthly base rate. Large irrigator accounts include, among

others, Douglas County Schools and Douglas County Parks. These large irrigators have turf managers and are on an informal water budget program, which involves direct communication between the District and the turf managers on water use. There are also three golf course irrigation accounts. The rate structure provides for an increase in the block rate if these users exceed 150 acre-feet per nine holes in one year.

Regulatory Measures

Irrigation by the District's large irrigation customers, in accordance with the water conservation measures established by the District, must water between the hours of 10:00 p.m. and 6:00 a.m. If irrigation is carried on at other hours without prior approval the customer will be subject to a penalty and increased charges as determined by the District's Board of Directors.

If a homeowner leak is not fixed within the prescribed 72 hour period from time of notification the District has the right either to repair it or to have it repaired, in which case the customer shall be assessed 110% of the actual cost accrued by the District. The Pinery Homeowner Association's covenants state that; irrigation of more than 6,000 square feet of grass is prohibited. This covenant relates to about ½ of the homes in the District. Other subdivisions within the District have similar covenants.

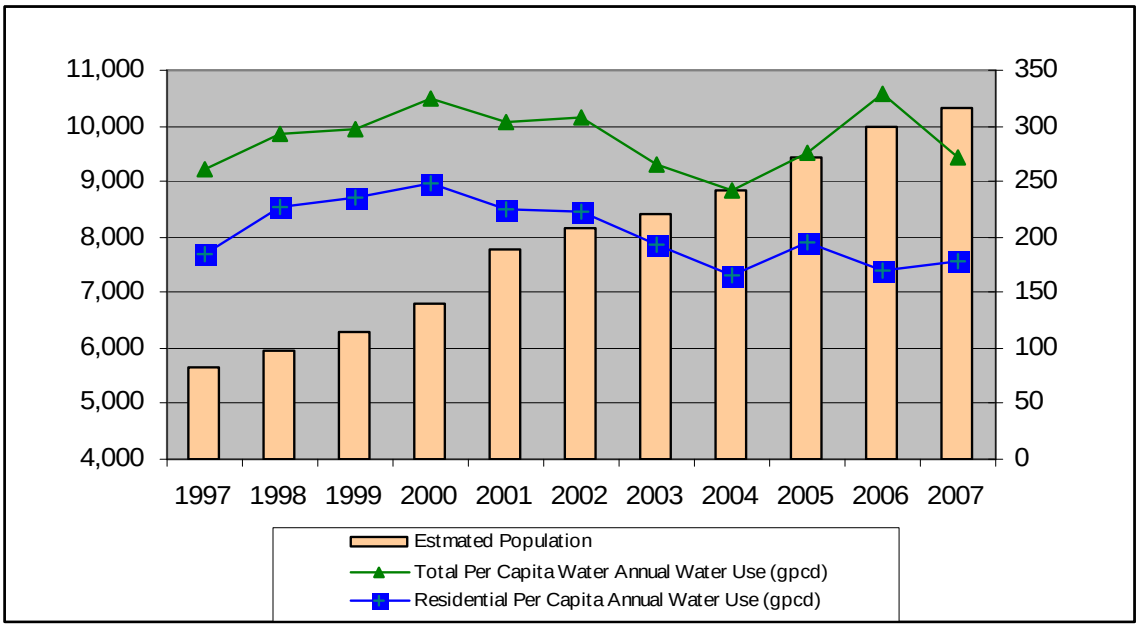
It is prohibited by the District's Rules and Regulations for any entity to waste water supplied by the District. Runoff of water from landscaped and irrigated properties and over-spray from irrigation systems to impervious surfaces is prohibited.

Past Water Savings through Water Conservation

Residential per capita water use in the District, as shown in Figure 2, has been dropping steadily since 1998, from a level of about 225 gallons per capita per day (gpcd) (for the period from 1997 to 2002) to about 180 gpcd (for the period from 2003 to 2007), or a drop of about 20 percent. On the other hand, total average per capita use, also shown in Figure 2, has not experienced a similar reduction, in part due to the construction and subsequent irrigation of new turf at local golf facilities in 2004 and 2006. Excluding 2006, total per capita water use in the District has dropped about 11 percent since 2002.

Active water conservation programs that the District has implemented such as landscape rebates and high water use customer tracking and contact have made some impact on the overall area water use. However, it is likely that the 2002 to 2003 drought, and the extensive media coverage, also contributed to the reductions in water use.

FIGURE 2
Total and Residential Per Capita Water Use and Population Served



The District has been implementing water conservation measures including public meetings, newsletters, increasing block rate water structures, water conservation kits, water schedules, etc., which have had a positive impact on water use during this same period of time.

The downward trend in residential per capita water use is likely related to past and ongoing water conservation measures and programs supported by the District. It is also possible that a portion of the 20 percent reduction relates to local water customers and builders continuing to respond to drought conditions due to local and regional messaging that occurred in 2002 and 2003. Therefore, future water conservation efforts to be supported by the District will be selected to help maintain ongoing drought-influenced behaviors as local memories fade and customers revert to pre-drought behaviors.

4.0 Forecast of Future Water Demands

Forecasting water use (or water demand) is a critical part of the planning process. Forecasts can help to frame the need for water conservation based on identifying system limitations and/or future water supply needs. For the District, limitations related to future water supply needs, especially during times of drought when the Cherry Creek alluvial wells may have future limited use do to calls, whether futile or not, will likely influence the development of water conservation goals and the selection of water conservation measures and programs.

This section of the Plan therefore presents the future water demands predicted for the District service area assuming that the potential effects of new water conservation efforts selected during this planning process have not been implemented. Demand forecasting at this point therefore only has been developed to predict future water demand based on the continuation of the current and ongoing water conservation efforts and "passive conservation" as older fixtures and appliances wear out and are replaced with models that meet current efficiency standards. A revision to the demand forecast based on implementing the selected conservation measures and programs is made later during the planning process, and is presented in Section 8.

Forecasting Methods and Results

To begin with, the forecasting methods that were utilized in this planning effort were based on past water use and expected future housing starts in the District. Total water demand was therefore developed based on the following assumptions:

- Annual residential growth rate was developed assuming 65 new single family units (SFU) in 2008 and 65 new SFU each year thereafter for all other years in the planning horizon (i.e., until 2018).
- Estimated permanent population is based on 2.63 persons per SFU.
- Residential water demand was estimated based on expected residential per capita water use of about 192 gpcd from 2008 to 2018 (noting that average residential per capita water use is about 187 gpcd since 2002).
- Commercial water demand was estimated to increase in the next ten years due to the construction of two new schools, a new entry way, and the build-out of a commercial development in Pinery West. To account for these new water demands, commercial demand was assumed to increase 5% (over the average of the last four years of measured commercial demand) on average over each of the next ten years.
- Large irrigator water demand associated with irrigation of the three golf courses (i.e., Pinery Golf Club, Pradera and Colorado Golf) is estimated to average about 75 million gallons a year per golf course.
- Non-revenue water, including real and apparent losses, is assumed to be about 3% of total water demand.

Table 4 summarizes the forecasted raw water demands.

TABLE 4
Estimated District Future Raw Water Demand (in acre-feet except as otherwise noted)

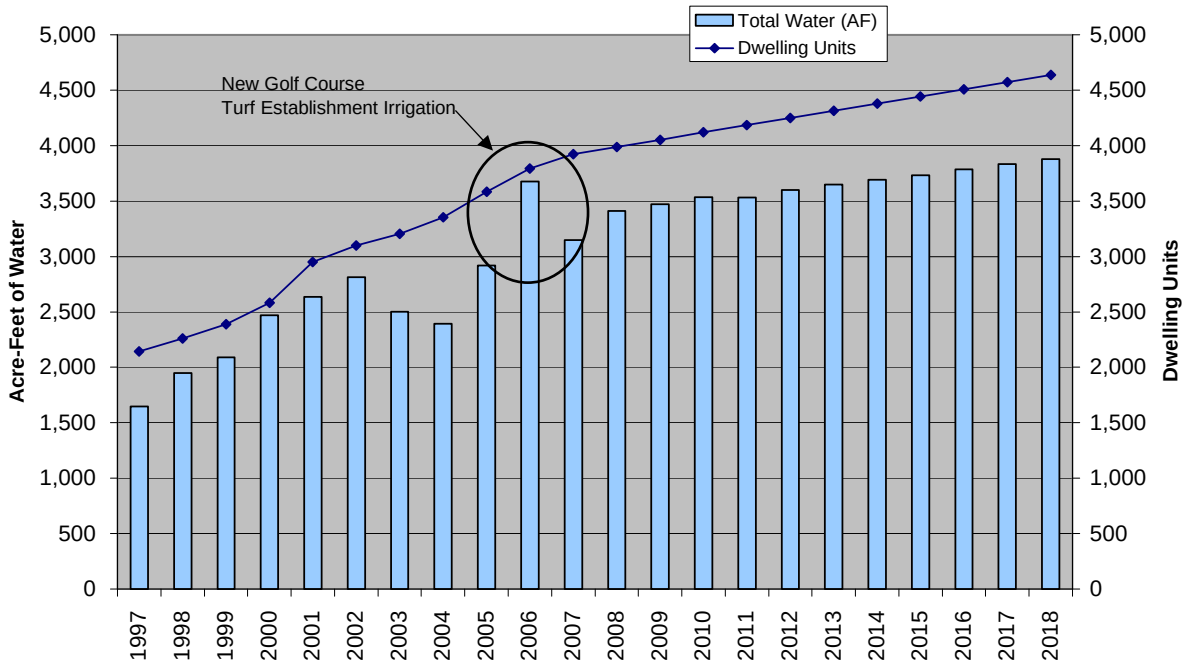
	Residential	Irrigation	Commercial	Pumped to Golf Courses	Other[1]	Non-Revenue Water	Total Demand	Total Demand (1000 gal)	Dwelling Units
2002	2,030	152	51	404	92	84	2,813	916,807	3,098
2003	1,826	147	39	374	39	75	2,500	814,840	3,202
2004	1,638	166	53	364	100	72	2,393	779,815	3,355
2005	2,050	183	69	460	67	88	2,917	950,599	3,584
2006	1,896	490	75	1,047	59	110	3,677	1,198,482	3,795
2007	2,063	187	75	700	30	94	3,150	1,026,474	3,923
2008	2,201	269	71	700	67	99	3,408	1,110,736	3,988
2009	2,237	296	76	700	59	101	3,469	1,130,612	4,053
2010	2,273	326	78	700	56	103	3,537	1,152,546	4,118
2011	2,309	283	79	700	56	103	3,529	1,150,201	4,183
2012	2,345	309	80	700	62	105	3,600	1,173,334	4,248
2013	2,380	319	82	700	61	106	3,649	1,189,164	4,313
2014	2,416	325	84	700	62	108	3,694	1,203,931	4,378
2015	2,452	324	85	700	63	109	3,734	1,216,818	4,443
2016	2,488	335	87	700	65	110	3,786	1,233,703	4,508
2017	2,524	342	89	700	66	112	3,832	1,248,948	4,573
2018	2,560	348	91	700	67	113	3,879	1,264,039	4,638
Build Out	3,066	506	114	700	85	134	4,605	1,500,615	5,782

[1] Includes temporary construction water and hydrants.

Current developed raw water supplies available to the District on an annual basis are about 4,300 acre-feet. Therefore, the current water supply appears to reach its limit at or around 2025. However, declining water levels in the Denver Basin aquifers and declining well productivity make developing new water supplies an important focus of the District. Figure 3 presents both the forecasted total water demand and dwelling units for each of the next 10 years.

Given that numerous customer types and accounts contribute to overall expected increases in future water use, proposed water conservation measures and programs will need to address most, if not all of these different account types, to create meaningful water savings.

FIGURE 3
Total Forecasted Annual Water Demand and Dwelling Units for the District



Peak Water Demand

The District's peak water production capacity is designed based upon providing potable water at a rate of about 1,900 gallons per day per single family unit (SFU) or dwelling unit. Highest peak demands to date have ranged from 1,300 to 1,400 gallons per day per SFU. It is expected that an additional Arapahoe Formation production well will be needed to support future peak demands, as well as total annual water demand, within the next 2 to 5 years, with a second well needed by about 2018.

5.0 Identification of Future Water and Capital Improvement Needs

Forecasting future total water demands helped characterize some of the limitations that exist regarding the District's future water supply needs. It appears that infrastructure limitations exist for the District with regard to peak daily production capacity, as well as total annual water supply sometime in the next decade.

Appropriate, measurable new water conservation activities may be able to extend the time before new facilities and/or water supplies are needed by reducing demand, especially in the summer months, through a reduction in outdoor irrigation. Decisions therefore need to be made regarding how and when new facilities will need to be planned and constructed. Specifically, the District will need:

- Additional water supplies, and;
- Related storage vessels.

The District is in the planning process to construct new storage tanks to serve the Pinery West and Choke Cherry areas, providing 800,000 to 1,000,000 gallons of new storage in each location.

The District is also looking to install one or two new Arapahoe Formation production wells in the next several years. The cost for new Arapahoe production wells is estimated to be about $1.5 to 2 million per well, depending on location and finished well depth. Delaying construction of these wells would provide the District with interest revenue of about $5,000 to 8,000 per month. Water conservation efforts implemented as a result of this plan can be effective in helping the District retain these interest savings. For example, an overall reduction of current water demand by 10% in the next ten years would postpone the need for these various capital projects by two to five years, which in turn would provide the District with perhaps as much as $480,000 in interest income over this period of time.

6.0 Goals and Objectives for Future Water Conservation Activities

Role of Water Conservation in Ongoing Water Supply Planning

For many Colorado water providers, including the District, water conservation is an important component of overall water supply planning. Programs to reduce water demand, decrease system losses, and increase operating efficiencies would benefit the District and its customers, through the following:

- Reduction of operation and maintenance costs associated with increased water demand, such as pumping and chemical costs.
- Reduction of long-term water needs and thus reducing or delaying the need for new water supply, transmission, storage and treatment facilities.
- Reduction of residential, institutional, and commercial water consumption, which reduces wastewater flows and costs associated with the operation and maintenance of the wastewater treatment plants.
- Lower individual customer water and sewer bills, and lower energy costs due to pumping and transporting water.

Although the District maintains a reliable water supply, continued development in its service area is expected to occur. As increased development occurs, increased water demands are expected, both on a permanent and seasonal basis, since the population reliant on the District's services will only increase in the foreseeable future. Therefore, water conservation efforts will need to expand and respond to the needs of the community to help reduce the impact of water supply and water treatment infrastructure limitations.

Specific Goals and Objectives

Goals and objectives for future water conservation measures and programs will be set by the District and its Board to help address future challenges that exist with regard to water supplies and water supply infrastructure. The key drivers that influence setting goals for this water conservation plan are as follows:

- Postpone capital projects related to new production well construction and operation;
- Improve future water supply reliability by reducing customer demand during peak summertime pumping and year round water use; and
- Prepare for future growth by creating a tradition and culture of wise water use.

The numerical measures that have been developed based on these goals are as follows:

- Reduce water use by those residential customers in highest tier of inclining block rate, such that no residential customer is using more than 120,000 gallons of water in two months by providing both incentives and disincentives;
- Reduce number of residential customers in next highest tier of inclining block rate, such that less than 10 percent of residential customers use over 60,000 gallons of water in any adjoining two months in a given year;
- Reduce outdoor, summertime use of water for irrigation at commercial and residential facilities by 6 to 8 percent during this planning period;
- Reduce overall water demand by about 8 to 10 percent over the next ten years, thereby reducing total water demand by approximately 310 to 388 acre-feet by 2018 (which would be a reduction from the current predicted usage of about 3,879 acre-feet).

The water savings expected from the water conservation program identified in this plan has an estimated value of about $8 to $10 million in 2009 dollars, based on a treated water development cost of about $25,000 per acre-foot.

7.0 Identification, Screening, and Selection of Water Conservation Measures and Programs

This section presents the identification, screening and selection of those water conservation measures and programs that are relevant and appropriate to the needs of the District and its water customers.

It is important to understand the meaning of measures and programs within the framework of the District's water conservation plan. Based on the prevailing literature[1], measures include both hardware devices and practices that actually reduce demand, whereas programs are strategic combinations of activities and measures (e.g., education and incentives with measures, etc.) that will bring about reduced water use demands. To this point, hardware measures are typically more reliable in achieving long-term water savings because they typically need to be installed only once and require little or no ongoing effort to maintain. Therefore, hardware devices such as low flow toilets create water savings without the need for changes in customer behavior.

In contrast, educating water users to adopt low-water-use or native landscaping and irrigation practices can require considerable time and effort since ongoing reminders are needed if water-efficient landscape and irrigation practices are to be consistently maintained and utilized. The best water conservation programs link hardware installations with practices that support behavioral changes such that end user water demands are measurably reduced to levels that can be maintained.

The water conservation measures and programs presented herein are focused on those activities that will occur over the next ten years, or until 2018. Any planning horizon beyond this time period, albeit valuable for long range and strategic planning, is wrought with extrapolations and estimates that do not necessarily support the short and midrange planning that is needed to develop the tactics which must be included in the water conservation plan. Therefore, the identification and selection of water conservation measures and programs will be limited to describing only those activities planned for implementation in the next ten years.

Focusing this plan on defining the future water conservation activities that will be implemented within the next ten year period serves two key functions for the District:

- It allows the District to collect information that it currently lacks regarding customer water use, and develop specific measures and programs to address customer water conservation needs to improve their water use efficiency; and
- It allows the District to respond as its customers embrace and engage the various measures and programs being promoted and provided to reduce demand and permanently save water.

[1] Based on Vicker (2001), Handbook of Water Use and Conservation, Waterplow Press.

As indicted above, behavioral changes, which occur as a result of institutional, business, association, and/or individual customer response to key water conservation measures and programs, are important components of any water conservation effort. Meaningful water conservation requires that end users respond to education, request and utilize rebates, conduct audits and/or adhere to ordinances for water demand to be reduced. Given that behavioral changes strongly influence the acceptance and effectiveness of any water conservation measure or program, it is imperative that continuous and deliberate monitoring of the proposed activities occur, and that the information collected is used to refine and alter the ongoing programs as they are implemented in response to customer behavior. Therefore, the District will link the water conservation measures and programs that are selected for implementation with appropriate monitoring and verification activities.

Implementing water conservation measures and programs that include means to monitor customer acceptance and adherence, allowing for the measurement of "saved water", is important to the overall success of the water conservation program. Monitoring customer water use increases in importance as water conservation programs mature, such as those measures and programs that the District has implemented in the past and is looking to implement in the future. Key components of this water conservation plan include individual customer water use tracking for existing customers, education for new customers (including both residential and commercial water users), and the use of deliberate customer feedback mechanisms such as surveys and focus groups (which will be linked to customer water audits and training programs) to track perceptions and behaviors.

Identification and Initial Screening of Measures and Programs

To develop a water conservation program that will satisfy the needs of the District and its customers, the universe of water conservation measures and programs available to the District was developed and screened based on the following criteria:

- Are additional data and information needed to complete an evaluation of water savings and cost benefit associated with any specific measure or program?
- Does implementation of any specific measure or program allow for the tracking of future water savings?
- Are there other considerations that dictate whether or not an identified measure or program could not be implemented by the District (e.g., some ordinances would not meet with public acceptance, some measures and programs are not allowed by State regulation, etc.)?

Appendix A contains a summary of those measures and programs that were identified by the District for initial screening. Appendix A also contains the results of the initial screening effort, presenting those measures and programs that were selected to be carried forward for further, detailed evaluation.

Please note that many of the unselected measures and programs listed in Appendix A may be implemented in the future by the District; however, adequate information does not currently exist to support a thorough cost benefit analysis at this time. Also note that educational efforts will be an important component of future water conservation activities conducted by the District. The direct measurement of water savings created by effective educational practices is

not easily quantifiable; however, it is clear that without ongoing, appropriate education of the District's customers regarding water resources and its water conservation efforts, meaningful water conservation will be difficult to implement. In addition, the literature indicates that meaningful water conservation associated with rebates and incentives, as well as water rate increases, are more effective in conjunction with educational programs. Therefore, educational activities will be included in the District's overall water conservation efforts.

Detailed Description of Retained Measures and Programs

A description of the water conservation measures and programs that passed the initial screening effort is provided below, with a brief explanation of each as it relates to the District.

The screened measures and programs include both supply side and demand side activities. On the supply side, the District will evaluate the relative benefits of improved metering and leak detection, system wide transmission losses, and in general improved water delivery efficiency. On the demand side, the District will evaluate measures and programs that reduce water waste, improve water use efficiency, and provide incentives for wise water use.

The water conservation measures and programs that the District will consider for implementation, based on the initial screening presented in Appendix A, includes:

Residential – Residential water use currently constitutes approximately 2/3 of the total water demand for the District. It is envisioned that this is the largest potential area for water conservation measures and programs to have the biggest pay back. It should be noted that residential lot sizes in the District vary in size with a significant number over ½ acre, making for some of the largest lot sizes in the Front Range. Therefore, outdoor irrigation measures and programs are expected to have substantial value with respect to reducing future water demand. The measures and programs that were selected for detailed evaluations include those that can be used to reduce indoor and outdoor water demand for existing residences. The breadth of measures and programs to be identified include, but are not limited to, rebates and incentives, ordinances, and water meter upgrades and enhancements.

Commercial, Industrial and Institutional (CII) – The District has relatively few CII customers (less than 100 taps); however, these customers utilize significant amounts of water for outdoor irrigation purposes, since over 50 percent of taps in this customer class exist for irrigation use only - noting that each irrigation tap uses about 4 acre-feet of water per year. Therefore, CII measures and programs that passed the initial screening were selected to reduce both indoor and outdoor water demand, but with a focus on outdoor water use reduction. The breadth of measures and programs to be identified include, but are not limited to, rebates and incentives, ordinances, and water meter upgrades.

New Construction – The District will continue to experience steady residential and commercial growth throughout the planning horizon. Therefore, measures and programs, which are chiefly comprised of regulations and standards, can be utilized to control landscape and irrigation associated with new construction. New irrigation-only taps may also be included in this category. Note that regulation and standards developed for new construction will not be applicable to existing construction. For

example, soil amendment and/or irrigation system requirements that would be developed for new construction would not apply to any existing facilities and/or buildings. No point of sale ordinances and regulations were considered at this time.

Education – The District is an active member of the Douglas County Water Resources Authority (DCWRA). This authority collects dues from its members to support local educational efforts, including K-12 and HOA education. The District will continue to leverage this membership to the benefit of its customers. Therefore, the District will evaluate those measures and programs that would be developed to educate, inform, train, and when appropriate, certify water customers, including homeowners, property managers, landscapers, developers and commercial and industrial water users. Educational efforts will also be evaluated for K-12 student and teacher education. Public relations, outreach, and messaging efforts also fall under this category of measures and programs.

Other – This category includes those measures and programs that do not necessarily fit into any of the above listings. For example, increasing water rates falls into this category, as does large-scale wastewater reuse, system wide leak detection, raw water conversions, high water use account tracking, District-wide tree programs, and other large scale multi-user programs. Other measures and programs typically include those efforts that will impact demand side water management for most, if not all, of the District's water customers.

A summary of water conservation measures and programs that were considered in this Plan are summarized in Table 5 to align with the requirements specified in CRS 37-60-126 (4)(a). Appendix B contains a copy of CRS 37-60-126.

TABLE 5
Summary of the District's Ongoing and Proposed Water Conservation Measures and Programs

Requirement [a]	Current Program	Proposed Program
Water efficient fixtures and appliances (e.g., toilets, urinals, etc.)	The District currently benefits from the federal plumbing code for new construction and remodels.	The District will consider creating a rebate program for indoor appliances.
Low water use landscapes, drought-resistant vegetation, efficient irrigation	The District provides educational material to residents regarding the benefits of xeriscape landscaping practices. The District also has a xeriscape demonstration garden that is open to the public.	The District will consider initiating an irrigation equipment rebate program for commercial, residential and irrigation-only customers. The District is also considering providing outdoor audit programs to its customers.
Water-efficient industrial and commercial processes	The District has no industrial customers. The District has conducted reviews of commercial and irrigation accounts to identify high water users.	The District is considering initiating commercial customer audits that will evaluate both indoor and outdoor use, and initiate commercial indoor appliance rebate and other programs as appropriate.
Water reuse systems	The District currently utilizes substantial wastewater return flows for reuse purposes. The District continually evaluates additional opportunities for wastewater reuse to the extent allowable by law.	The District will continually evaluate additional opportunities for wastewater reuse to the extent allowable by law.
Distribution system leak identification and repair	The District maintains a leak detection and repair program, identifying and repairing leaking water transmission and distribution mains on an as-needed basis and tracking repair information in a GIS database.	The District will evaluate the cost and benefit of installing new meters for high water use customers. The District will also evaluate the benefits of installing AMR on existing and new meters. The new meters coupled with AMR will be used to improve the measurement of apparent and real system losses, which in turn will help to track non-revenue water balances.
Public education, customer audits	The District currently utilizes its website, newsletters, roadside signage and its membership with DCWRA to educate and engage its customers regarding water conservation and water resources management.	The District will continue these efforts and consider adding indoor and outdoor residential audits, outdoor commercial and irrigation account audits and customer water use training workshops. The District will also consider expanding current K-12 water education efforts. The District will consider adding relevant customer data access ports to its website (e.g., customer water use, ET data, etc.).

TABLE 5
Summary of the District's Ongoing and Proposed Water Conservation Measures and Programs

Requirement [a]	Current Program	Proposed Program
Water rates structure and billing systems that encourage water efficiency	The District currently utilizes inclining block rates for its residential customer accounts. It bills its customers every other month and includes billing inserts discussing water conservation.	The District plans to conduct water rate studies every three to five years in the future to support water rate increases. The District has challenges collecting water meter readings on a monthly basis and is working on an implementation plan to achieve monthly meter reading in the next few years.
Regulatory measures	The District has the authority to assess penalties for noncompliance with watering restrictions during different levels of water conservation and drought response. The District also maintains a water waste ordinance and has irrigated turf restrictions for new construction.	The District will, in partnership with the County, evaluate landscape and irrigation system ordinances that will control soil amendments, plant materials, and irrigation system installation for new construction.
Incentives including rebates	The District does not currently have any rebate or incentive programs.	The District will evaluate creating rebate programs for indoor appliances and outdoor irrigation equipment for all customer classes.

[a] As Compared to the Requirements of CRS 37-60-126 (4)(a).

Residential Possibilities

The list of residential measures and programs that will be evaluated in the next step includes both indoor and outdoor management practices. The key measures and programs the District is evaluating for implementation include rebates for low water use appliances and fixtures, and whole house audits, which will be considered for those customers that request them.

The District will also evaluate the cost and benefit of:

- Adding irrigation equipment rebates for those that undergo at least an outdoor irrigation audit;
- Providing customer incentives for installing hot water on demand equipment in existing kitchens and bathrooms;
- Installing new automated meter reading devices (AMR) on residential meters to improving water billing frequency and track customer leaks; and
- Installing Smart House metering devices to allow individual homeowners to monitor their water use in real time.

As indicated earlier, the District's residential customers maintain on average some of the largest lots in the area. Therefore, outdoor irrigation efficiencies are expected to provide substantial water demand reductions for the District. However, indoor water savings can be less complicated to implement and easier to track. Therefore, both indoor and outdoor residential programs are evaluated.

Commercial, Industrial and Institutional Possibilities

Measures and programs that could be implemented to address commercial, industrial and institutional water use reduction include both indoor and outdoor management practices. The key measures and programs the District is evaluating for this customer group include:

- Incentives and rebates for low water use fixtures;
- Installation of new automated meter reading devices (AMR) on CII meters to improve water billing frequency and track customer leaks
- Outdoor irrigation audits and related irrigation equipment rebates; and
- Facility metering improvements (akin to the Smart House metering for residential customers).

New Construction

Regulating and controlling new construction offers the District the unique chance to influence water use by residential and commercial customers before they begin living and operating in the area. For this reason, new construction regulations and standards are enticing.

However, the District does not have the direct authority to implement any kind of building or land development ordinance (Douglas County has authority over land use classifications). However, the District may be able to develop and manage certain types of landscaping and irrigation system requirements as a condition for builders and developers to obtain water taps.

The District may chose to study further mechanisms for implementing controls on new residential and commercial construction, recognizing that any new ordinances may require a partnership with other institutional organizations (e.g., Douglas County). Notwithstanding any potential limitations on what the District can and cannot implement, specific construction related ordinances and/or regulations to be evaluated by the District, in conjunction with the County in the future, may include:

- High efficiency appliance and fixture standards;
- New lawn and landscaping standards;
- Soil amendment requirements and standards;
- Turf and landscaping restrictions;
- Irrigation system requirements and standards; and
- Top soil and wood products stockpiling and reuse standards.

In the future the District may choose to evaluate the cost and benefit of implementing a landscaper training and certification program for those practicing professionals in the District's service area. This program would likely be developed in partnership with Green Industries of Colorado (GreenCo) who is doing the landscaper training for other municipalities in the state. Under this type of program, landscapers would be trained to properly install all aspects of water efficient landscaping, including soil amendments and preparation, appropriate irrigation systems, selected planting materials and mulching and maintenance requirements. As an alternative, the District will work with the neighboring water providers (Town of Castle Rock and Parker Water and Sanitation District) to join their efforts for training and certification.

Education

Educational efforts are the foundation of most effective water conservation programs, since most other water conservation measures and programs are only effective if customers understand, embrace, and promote their implementation. The District will, therefore, evaluate the value and benefit of various educational programs within its Plan, including the following:

- Water Fairs
- K-12 Education (for children)
- K-12 Education (for teachers)
- Messaging Campaigns and Public Relations
- Customer Surveys and Focus Groups
- Web Based Newsletter
- Homeowner Education and Training
- Commercial Business/Irrigator Education and Training
- Homebuilder/Developer Education and Training
- Landscaper Education, Training and Certification
- Xeriscape Demonstration Garden Upgrade
- Web Site Update and Expansion
- EPA WaterSense Program Promotion

These educational efforts will be evaluated with regard to the potential to reach key customers and influence customer behaviors, as well as track individual customer water use. Bill stuffers typically have been shown to not have substantial reach, since they are not well read and therefore do not influence behaviors. The District's educational efforts will therefore be focused

on influencing water user behavior, leveraging the efforts and resources both within the District and within the larger Douglas County and South Metro community.

Other Measures and Programs

The other measures and programs that the District will be evaluating include those that typically impact most, if not all its customers (such as water rate changes) or require coordination of system wide efforts (such as system wide leak detection; high water use audits, etc.). The District will be evaluating water rate increases as one of its water savings measures; however, the District is aware that water rate increases are substantially more effective when coupled with strong education and incentive programs for its customers. Therefore, the District will implement water rate increases in conjunction with other measures and programs to help conserve water.

The District will evaluate the benefits of continuing to track its largest customers' water use. This effort will be coupled with the residential and commercial audit programs to help identify high water users and provide support to their efforts to reduce water use and more efficiently use water.

The District will also consider installing Automated Meter Reading (AMR) devices to assist with efforts to reduce the water billing interval from every other month to monthly. The District will also evaluate the benefit of installing new meters on selected residential and commercial taps to improve the accuracy of determining actual water demand. Combining AMR with new meters will also help the District track and quantify non-revenue water through the detection of leaks and more accurate measurement of apparent system losses.

Final Screening and Selection of Measures and Programs

As with any Colorado water provider, the District has limited resources to implement its water conservation program. Therefore, efforts of the District will focus its resources on those programs that provide the most cost-effective water savings. The detailed cost-benefit analysis of water conservation programs considered is provided in Appendix C. A summary of the cost-benefit analysis and selected programs for implementation is provided in Table 6. Measures and programs selected will be implemented based on the availability of funding and the priorities indicated in Section 9.

TABLE 6
Summary of Costs for Water Saved for Measures and Programs Selected

Measure and/or Program	Cost of Saved Water ($ spent/ acre-foot saved)	Source of Information
Residential		
Residential HE Toilet Rebates	3,125	Appendix C
Residential HE Washing Machine Rebates	4,820	Appendix C
Residential Rainfall Sensor Rebate	1,375	Appendix C
Residential ET Controller Rebate	1,660	Appendix C
Residential Whole House Audit	3,060	Appendix C

TABLE 6
Summary of Costs for Water Saved for Measures and Programs Selected

Residential Outdoor Irrigation Audits	2,710	Appendix C
Commercial/Irrigation/Municipal		
Commercial/Irrigation Outdoor Audits	1,340	Appendix C
Commercial LF Urinal Rebate	2,230	Appendix C
Commercial Rainfall Sensor Rebate	165	Appendix C
Commercial ET Controller Rebate	280	Appendix C
Education & Outreach		
Commercial and Residential Education	4,500	Estimated from Colorado Springs Water Conservation Plan
Other		
Leak Detection and Repair	4,500	Appendix C
Replacement Metering with AMR	40,000-50,000	See Footnote [b]
Water Rate Increases	460	Appendix C
Measures Evaluated and Not Selected for Implementation		
Waterless Urinal Pilot	10,560	Appendix C
Hot Water on Demand	20,000-40,000	See Footnote [a]
Smart In-House Water Meters	30,900	Appendix C

[a] Hot water on demand was shown to save warm up water costs in the bath and kitchen. Energy savings not included in calculation. Cost of unit $300-400 for 3,500-8,000 gallons of water saved per year.

[b] Replacement meters save water through the better characterization of apparent versus real losses and the more sensitive detection of leaks. New meters typically increase water sales revenue, since old meters tend to under estimate water use, especially for larger diameter taps. Water savings are estimated to be 3 gpcd for each customer metered and equipped with AMR technology. Buy in for AMR, plus meter costs are expected to be in the range of $1.5 to 2 million.

Residential Water Conservation Programs

Residential water use constitutes about 2/3 of the District's total water demand. In addition, the residents in the District service area have, on average, some of the largest lot sizes in the Front Range Area. It is therefore no surprise that potential water savings from the District's residential customers could be substantial. For this reason, the District may also chose to focus the majority of its water conservation efforts on promoting and performing residential measures and programs.

Although outdoor water savings are expected to be the largest area of potential water savings from this customer class, it is understood that outdoor water savings are more difficult to implement. For example, outdoor irrigation equipment rebates must be preceded by an outdoor irrigation audit, such that the condition and effectiveness of an individual homeowner's automated irrigation system can be ascertained before that homeowner can be eligible for irrigation equipment rebates. The District will, therefore, promote indoor water savings, as well

as outdoor water savings, through the combination of indoor fixture and appliance rebates, whole house audits, and outdoor irrigation audits, and equipment rebates.

A whole house residential audit program for the District's residential customers would be developed in the future to help individual homeowners identify and repair leaks, remedy irrigation system problems, and understand alternative landscaping options. During the whole house audit, shower, toilet and faucet flow rates could be measured, and where appropriate shower and/or faucets replaced (with homeowner consent) with low flow fittings. Individual customer water use would then be tracked to determine to efficacy of this program. If proven successful, whole house audits would continue throughout the planning horizon.

The outdoor irrigation audit program for the District's residential customers would begin at the same time of the irrigation equipment rebate program begins. The audit program is vital to the effectiveness of the irrigation equipment rebate program since the District would only provide rainfall sensors and/or ET controller rebates to those residences that have had an outdoor audit and have made the requisite repairs to their irrigation system. The rebate program, which will begin in two to three years, will be developed for those residences that have had either an irrigation audit or a whole house audit. Note that the District already maintains two ET measurement stations to assist customers in using and operating ET controllers.

The District will also further investigate if conducting residential customer workshops beginning in the next three to four years is beneficial, continuing throughout the planning horizon as needed. These workshops, if developed, would be for single family customers, and would focus on general education on water wise practices and water use efficiency, promote the rebate and audit programs, and collect feedback on the efficacy of the District's water conservation measures and programs. The District may choose to track individual customer water use before and after the workshops to help characterize the value and effectiveness of this particular educational tool. Other educational programs that the District will be implementing are discussed below.

Commercial and Irrigator Only Water Conservation Programs

The vast majority of the water savings that are expected from this customer class are associated with improved outdoor irrigation efficiencies due in part to the large number of irrigation only customers that the District serves. The District will therefore focus its commercial efforts on implementing water conservation measures and programs for irrigation only and commercial customers with outdoor water usage. Commercial customers will also have access to the high efficiency toilet rebate program, but savings related to this program are not expected to be substantial.

An outdoor irrigation audit program would be developed for the District's commercial and irrigation-only customers beginning at the same time that the irrigation equipment rebates begin. The outdoor irrigation audit program is vital to the effectiveness of the irrigation equipment rebate program since the District will only provide rainfall sensor and/or ET controller rebates to those customers that have had an outdoor audit and have made the requisite repairs to their irrigation system. The rebate program, which would begin in one to two years, will be developed for those customers that have had an irrigation audit.

The District may conduct commercial and irrigation-only customer workshops beginning in the next three to four years, continuing throughout the planning horizon, as funding allows. These

workshops would be used to provide general education on water wise practices and water use efficiency, promote the rebate and audit programs, and collect feedback on the efficacy of the District's water conservation measures and programs. The District may chose to track individual customer water use before and after the workshops to help characterize the value and effectiveness of this particular educational tool. Other educational programs that the District will be implementing are discussed below.

New Construction Ordinances and Requirements

As previously discussed, the District is limited in what it can develop and implement regarding standards and ordinances that would control and/or regulate new construction. For this reason, the District will partner with the County to evaluate the usefulness and value of developing and implementing building ordinances that regulate future development and construction.

Education and Outreach Efforts

The District will continue its efforts to provide educational materials and hands-on learning opportunities to all its customers regarding water and water conservation. These efforts would be diverse and depend on available funding over the next ten years.

The District will continue its support of the regional water conservation education performed in conjunction with the Douglas County Water Resources Authority (DCWRA). The District, through its membership with DCWRA, will conduct K-12 teacher water education in partnership with Project WET. DCWRA and its membership will also conduct occasional workshops and water conservation forums with large irrigators, including HOAs.

K-12 educational efforts will be increased, with the District working to conduct more in-class presentations and field trips to engage local students. The District will also evaluate the possibility of conducting a local water fair to help increase water awareness in its schools and with its teachers.

The District has been successful in using roadside signage to reach its customers regarding water use and water conservation. The District also maintains a newsletter that may be accessed online. The District will look to enhance the water conservation messaging program as the proposed measures and programs are implemented. It is expected that the messaging and public relations effort would focus on channel messaging and management, radio programs and advertisement, printed media, and bumper stickers, etc.

As part of future water conservation plan revisions and updates, the District may convene and leverage customer surveys and/or focus groups to test the effectiveness of ongoing water conservation measures and programs, and identify areas of potential improvement. To this end, it is anticipated that the District will conduct a customer survey and/or focus group prior to updating this plan (approximately 5 years from now).

Other Measures and Programs

Water Rate Increases – A rate study is currently being performed for the District. Rate studies will continue about every three to five years to determine and set new water rates based on capital needs, infrastructure repair and maintenance, new water development costs and water conservation impacts on water sales. The rate increases are not only a means to ensure the water

can be provided sustainably; they will also be applied in a manner to encourage customer recognition of the value of the resource.

To this end, the District will need to constantly be adjusting and re-adjusting water rates by revising some and/or all of the following:

- Water base rate
- Cost per tier of water use
- Adding new higher rate water use tiers for high water users
- Adding new lower rate water use tiers for low water users
- Developing alternative water rate structures for temporary water use (e.g., to establish new landscapes)
- Capital investment fees

The District may also need to develop other water rate strategies depending on customer and business response.

For the purpose of estimating future water savings from water rate increases, it was assumed that all rates would increase by 3 percent at each of two future water rate increases expected over the next ten years. Actual future water rate increases may or may not include an increase in all water rate tiers. Actual water rate increases will be determined based on in-depth water use and revenue projections at some time in the future.

2010 residential water rates are provided in Table 7.

TABLE 7
District Water Service Charge Rates

Effective January 1, 2010	
Residential water rates billed bimonthly are:	
0 - 6,000 gallons	$50 (Base Rate) + $2.00/1000 gallons
6,000 - 40,000 gallons	$62 plus $2.90/1000 gallons over 6,000
40,000 - 60,000 gallons	$160.00 plus $3.65/1000 gallons over 40,000
60,000 - 100,000 gallons	$233.60 plus $4.75/1000 gallons over 60,000
100,000 - 120,000 gallons	$423.60 plus $6.50/1000 gallons over 100,000
Over 120,000 gallons	$553.60 plus $13.00/1000 gallons over 120,000

Leak Detection – Leak detection and repair will continue to be conducted as it has been performed in the past. Water main leaks are identified through inspections, tracking of system pressures and water use, and customer reporting, and those leaks that are identified are repaired. These practices will continue in the future.

The District will over the next four to five years evaluate the cost and benefit for two major capital projects that would add in the tracking and accounting of leaks and non-revenue water. First, the District will consider installing new meters for at least its highest volume water users. Second, the District will consider installing AMR devices on all new and existing meters to reduce the effort needed to collect water use data and implement a monthly billing interval.

Installing AMR devices will not only reduce the man-power required to collect water use data, but will aid the District in tracking individual water user leaks, and characterizing system-wide non-revenue water.

Monitoring and Verification

The District will step up its efforts to monitor and verify that the various water conservation measures and programs are cost-effective and efficient in saving water. For this to occur, the District will begin to track overall, as well as selected individual customer, water use over the planning horizon, especially at those homes and businesses that take advantage of the District's audits, rebate programs, and other educational efforts. Details regarding monitoring and verification efforts are provided in Section 9.

8.0 Impacts of Proposed Water Conservation

The District is considering the implementation of water conservation measures and programs as discussed in the prior section for purposes of reducing the amount of new water supplies that will be needed to support expected future customer water demand. It is understood that water conservation efforts will not eliminate the need for new water supply development and infrastructure in the future; however, water conservation will be useful in helping to reduce or delay the costs of new water development efforts and improve the overall reliability of the water delivery system.

The estimated water savings that the District expects to realize through the implementation of the proposed water conservation efforts over the next ten years are summarized in Table 8 and presented in Figure 4. The estimated water savings have been developed using those assumptions and analyses presented in Appendix C.

It should be noted that the estimate of water savings shown in Table 8 assumes that all proposed measures and programs create permanent water savings that extend from the time they are implemented into the future. This assumption is based on the expectation that all measures and programs will create more aware customers, and that the behavior changes in the customers will allow for the water savings to be sustained into the future. Of course, any water saving fixture and/or appliance installed may fail in the future. However, this Plan has assumed that future repairs and upgrades to water efficient fixtures and appliances will continue to save water at rates equal to or better than those that will occur through the programs that the District proposes herein.

TABLE 8
Estimated Water Conservation Plan Water Savings

Year	Annual Water Savings (acre-feet)	Cumulative Water Savings (acre-feet)
2009	6.5	6.5
2010*	32	38
2011	28	68
2012	32	100
2013	28	127
2014	26	153
2015*	52	205
2016	46	251
2017	41	292
2018	35	328

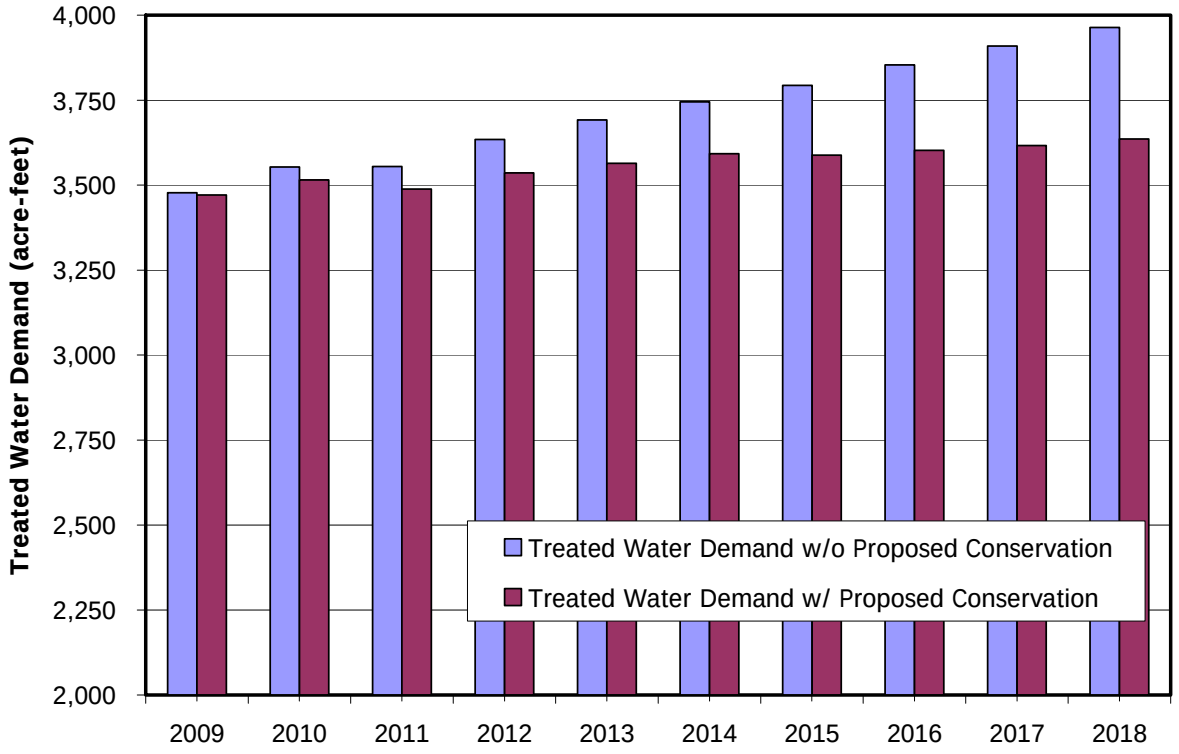
* Estimated timing for future water rate studies.

The estimated savings from water conservation efforts through 2018 is 328 acre-feet, which is within the District's goal of saving 8 to 10 percent of the total forecasted water demand of approximately 3,879 acre-feet.

Actual water savings will be dependent upon numerous internal and external forces influencing customer water use. Therefore, the District will continuously monitor the progress of its proposed water conservation programs, such that the actual water savings are tracked and reported on a regular basis to the District Board and the public, as appropriate.

The overall cost to implement this plan is estimated to be about $1.3 million (including staffing costs) over the next ten years. It would cost approximately $8.2 million for the District to obtain a similar amount of replacement water to meet the reduced supply (i.e., 328 acre-feet).

FIGURE 4
Predicted Total Annual Water Demand With and Without Proposed Water Conservation Program



The District will need to install new production wells in the future at an estimated cost of $1.5 to 2 million per well. Water conservation efforts may delay the construction of these wells and provide the District with interest revenue of about $5,000 to 8,000 per month. For example, an overall reduction of current water demand by 10 percent in the next ten years would postpone the need for these various capital projects by two to five years, which in turn would provide the District with perhaps as much as $480,000 in interest income over this period of time.

9.0 Implementation Plan

The implementation of this water conservation plan involves multiple steps including:

- Public review and comment period
- Final Plan preparation and submittal
- State grant applications
- Implementation of measures and programs
- Program monitoring and verification
- Reporting and Plan updates

Each of these steps is addressed in the subsections provided below.

Public Review and Comment

The District provided copies of the Final Draft Water Conservation Plan to the District Board and the public for review and comment from January 29 to April 8, 2009, in accordance with CRS 37-60-126. The public review period and process was presented to the public in a public notice published in the Douglas County News Press on January 29, 2009. An additional notice of the Draft Plan were placed on the District website at And notices of the public review period and copies of the plan were provided at the District administrative offices.

Finally, a public meeting was held on April 8th concurrent with the District Board meeting. The meeting was intended to give the public a chance to comment and ask questions about the Draft Plan and its content. All public comments have been documented and included in the Final Plan submitted to the State.

Final Plan Preparation and Submittal

Once the public comment period was completed and comments were obtained from both the District Board and the public, a Final Plan was prepared incorporating comments as appropriate into the document. A comment response was developed for each comment received. It is included in Appendix D.

The Final Plan was forwarded to the Office of Water Conservation and Drought Planning for review and approval in May 2009.

Funding

Currently, the District's funding for water conservation activities is provided from different categories: newsletters are included in the administrative budget, monitoring high water users and providing customer assistance is included in the water operations budget, and involvement in regional education programs is included in membership dues. It is anticipated that these activities will continue to be funded from their existing budget sources. New conservation programs will be funded from a separate water conservation budget.

In the near term the District will also apply for CWCB Water Efficiency Grant funding to supplement available funding and potentially implement measures and programs on a faster schedule.

Implementation of Measures and Programs

The measures and programs summarized in Table 6 will be implemented based on the availability of funding from the District and adjusted based on available funding from the CWCB through its Water Efficiency Grant Program. Since funding can fluctuate the District has developed schedule ranges for planned implementation. During implementation the District will continue to collect data vital to the evaluation of effectiveness of conservation efforts.

Residential Measures and Programs

Within 2 to 3 years – Develop whole house audit program which will include: determining individual customer indoor and outdoor water use; training customers to identify and repair leaks, manage irrigation systems, and plan for and implement alternative landscaping options.

Within 3 to 5 years - Begin indoor rebates for high-efficiency toilets and washing machines. Develop outdoor irrigation audit program to support future irrigation rebates.

Beyond 5 years – Develop outdoor irrigation equipment rebate program for ET controllers and rainfall sensors. Develop homeowner/residential customer educational and feedback workshops.

The District will focus its funding to address these priorities over the next several years. The District will also implement data collection efforts that will be used to characterize individual water use patterns and behaviors tracking those customers that utilize the measures and programs funded through the District.

Commercial and Irrigation Customer Measures and Programs

Within 2 to 3 years – Develop commercial and irrigation outdoor audit programs which will include: determining outdoor and where appropriate indoor water use; training customers to identify and repair leaks, manage irrigation systems, and plan for and implement alternative landscaping options; and providing customers with guidance and recommendations regarding operation of their irrigation systems, as appropriate. Develop rebate programs for outdoor irrigation equipment.

Within 3 to 5 years – Develop commercial and irrigator educational workshops.

Beyond 5 years – Begin indoor rebates for ultra low flow urinals.

The District will also implement data collections efforts that will be used to characterize individual water use patterns and behaviors tracking those customers that utilize the measures and programs funded through the District.

New Construction Measures and Programs

Within 3 to 5 years – The District will partner with the County to evaluate ordinances that would control and/or regulate wise water use and water use efficiency in new construction both indoors and outdoors.

Educational Measures and Programs

Within 2 to 3 years –

- Contribute to DCWRA to support local and/or regional K-12 teacher water education through Project WET.
- Enhance messaging campaign to expand current reach into residential and commercial/irrigation customers.

Within 3 to 5 years –

- Large irrigator and commercial water use workshops
- Conduct customer-based survey and/or focus group to determine efficacy of the water conservation measures and programs and identify areas of improvement.

Other Measures and Programs

Ongoing – Leak detection and repair as needed, and meter replacements

Within 1 to 2 years –

- Conduct water rate study.
- Evaluate monthly billing cycles.

Within 2 to 3 years – Evaluate AMR based water use data collection to support real versus apparent system losses

Every 3 to 5 years –

- Conduct water rate studies to adjust water rates and the related tier structure.
- Evaluate lot-specific water budgets for outdoor irrigation.

The proposed schedule for implementation of the various selected measures and programs is provided in the summary sheet (last page) of Appendix C.

Monitoring and Verification of Program Effectiveness

Monitoring and verification of program effectiveness will be conducted through a combination of tracking techniques and methods to measure the value of the various individual measures and programs being implemented by the District. Of course, some of the proposed water conservation measures and programs such as general customer education and increased water rates cannot be measured directly but will instead be characterized by observed changes in average annual and peak monthly water use. However, for some of the measures and programs

such as the commercial and irrigation account audits, tracking individual customer water use can be performed to monitor water efficiency.

The monitoring and verification efforts that the District proposes to initiate for each selected measure and/or program is presented in Table 9.

Reporting and Plan Updates

The District will summarize the findings of the monitoring and verification efforts conducted by the District and its subcontractors and provide a briefing to the District Board once a year. These briefings will be documented in a white paper which can be updated and revised as information and data are collected and analyzed.

The District will use these data, along with community and customer input as the basis for formally updating the Water Conservation Plan once every five years.

TABLE 9
Summary of Monitoring and Verification Activities for Tracking Water Savings

Measures and/or Programs	Tracking Methods and Metrics					
	Number of rebates and/or audits [a]	**Individual customer water use [b]**	**Customer class water use**	**Per SFU water use**	**Non-Revenue Water**	**Peak and Annual Treated and Total Water Demand**
Residential Customers						
Audits	x	x	x	x	x	x
ET Controller/Rain Sensor Rebates	x	x	x	x		x
Indoor Appliance Rebates	x	x	x	x		x
Customer Workshops		x				
Commercial/Irrigation Customers						
Audits	x	x	x		x	x
ET Controller/Rain Sensor Rebates	x	x				x
Indoor Appliance Rebates	x	x				x
Customer Workshops		x				
Education/Other						
Water Rate Increases		x	x	x		x
Leak Detection and Repair		x		x	x	x
AMR Installations and Meter Replacement		x		x	x	x
General Customer Education			x	x	x	x

[a] – only rebates with observed and/or proven installations will be counted

[b] – will include tracking of outdoor water use for pre- and post- installation periods compared to estimated ET calculated for each year of interest

APPENDIX A

Summary of Identified and Screened Water Conservation Measures and Programs

Appendix A
Summary of Identified and Screened Conservation Measures and Programs for Pinery

	Screening Criteria			
Water Conservation Measures and Programs	**Additional Effort/Data Needed Prior to Implementation**	**Measureable Outcomes**	**Other Considerations**	**Measure and Program Carried to Final Evaluation**
RESIDENTIAL (single and mulit-family)				
Indoor				
Bath				
Tooth Brush BMP	No	No	Organic efforts are effective; tie to K-12 Education - no other action needed	No
Warm Up Water Capture and Reuse	No	No	Organic efforts are effective; tie to K-12 and Homeowner Education - no other action needed	No
Low Flow Showerhead and Faucet Aerator Giveaways	No	Yes	Will be linked to K-12 education and Whole House Audits (to ensure installations)	**Yes**
Dual Flush Toilet Rebate	No	Yes	Pinery will favor low flow toilets over dual flush	No
Low Flow Toilets Rebate	No	Yes	Effective in other locations	**Yes**
Waterless Toilets Rebate	No	Yes	Challenges building codes and customer sensitivities	No
Hot Water on Demand (for bath and sink)	No	Yes	Can be effective for low water use homes	**Yes**
In Shower Warm-up Water Storage	Yes	Yes	Technology that is cost prohibitive for retrofits; best for new construction	No
Kitchen/Laundry				
Low Flow Faucet Aerator Giveways	No	Yes	Will be linked to K-12 education and Whole House Audits (to ensure installations)	**Yes**
High Efficiency Dishwashing Machine	No	Yes	Costs are too high for saved water when compared to washing machines, toilets, etc.	No
High Efficiency Clothes Washer	No	Yes	Effective in other locations	**Yes**
Warm Up Water Capture and Reuse	No	No	Organic efforts are effective; tie to K-12 and Homeowner Eduction - no other action needed	No
Hot Water on Demand (in kitchen)	No	Yes	Can be effective for low water use homes	**Yes**
Other				
Whole House Audits	No	Yes	Will focus on highest water users; volunteers; and those with detected leaks	**Yes**
Individualized Leak Detection and Repair	Yes	Yes	Follows whole house audits; Homeowner training workshops	No
Swamp Cooler Improvements	Yes	Yes	Follows whole house audits, as needed	No
AMR Water Meters	No	Yes	Would allow for monthly billing	**Yes**
Point of Sale Water Efficiency Ordinance	Yes	Yes	Needs better definition of institutional barriers; structural requirements; and funding for inspections/verification	No
On Property Display of Water Use (Smart House Monitoring)	Yes	Yes	Linked to new installations of AMR and website tools	**Yes**
Greywater Reuse	No	Yes	State regulations (Division of Water Resources and Department Public Health and Environment) restrict greywater use in home; may be feasible for fill station customers only	No
Outdoor				
Irrigation				
Irrigation Audits	No	Yes	Method to educate customer and collect information on individual water use but will require training of PineryStaff or contractor	**Yes**
Soil Moisture Probes Rebate/Incentives	No	No	Corrosion of probes limits useful life	No
Rainfall/Moisture Sensors Rebate/Incentives	No	Yes	Technology improving but requires irrigation audit to implement	**Yes**

Appendix A
Summary of Identified and Screened Conservation Measures and Programs for Pinery

Water Conservation Measures and Programs	Additional Effort/Data Needed Prior to Implementation	Measureable Outcomes	Other Considerations	Measure and Program Carried to Final Evaluation
ET Controllers Rebate/Incentives	No	Yes	Technology improving but requires irrigation audit to implement	**Yes**
Installation of Alternative Irrigation (subsurface, drip, etc.)	No	Yes	Costs generally prohibitive for retrofits at this time; organic efforts only with link to Homeowner education	**Yes**
Raw Water Metering (for those adjacent to lakes)	Yes	Yes	Requires new infrastructure and tracking of additional individual customer practices; need better quantitification of number of customers and use before consideration	No
Rainwater Harvesting	Yes	No	State regulations (Division of Water Resources) restrict rainwater harvesting	No
Water Waste Ordinance	No	Yes	Would require new ordinance; additional staff for inspections and verification	No
Watering Restrictions - Hours	No	Yes	Would require new ordinance; additional staff for inspections and verification	No
Watering Restrictions - Days	No	Yes	Daily restrictions best saved for drought response	No
Greywater Reuse	Yes	Yes	State regulations (Division of Water Resources and Department Public Health and Environment) restrict greywater applications outdoors, must be 18 to 24 inches below grade	No
Landscape Options				
Soil Management Requirements	Yes	Yes	Requires new ordinance and additional staff for inspections and verification	No
Low Water Grass Seed Rebate/Incentives	Yes	Yes	Costs generally prohibitive for retrofits at this time; organic efforts only with link to Homeowner education	**Yes**
Soil Amendment Rebate/Incentives	Yes	Yes	Costs generally prohibitive for retrofits at this time; organic efforts only with link to Homeowner education	**Yes**
Turf Replacement Rebate/Incentives	Yes	Yes	Costs generally prohibitive for retrofits at this time; organic efforts only with link to Homeowner education	**Yes**
Xeriscape Rebate/Incentives	Yes	Yes	Costs generally prohibitive for retrofits at this time; organic efforts only with link to Homeowner education	**Yes**
COMMERCIAL/INDUSTRIAL/INSTITUTIONAL				
Indoor				
Dual Flush Toilets Rebates/Incentives	No	Yes	Pinery will favor low flow toilets over dual flush	No
Low Flow Toilets Rebates/Incentives	No	Yes	Effective in other locations	**Yes**
Waterless Toilets Rebates/Incentives	No	Yes	Pinery prefers low flow toilets at this time; will evaluate demostration project for institutional setting	**Yes**
Ultra Low Flow Urinals Rebates/Incentives	No	Yes	Effective in other locations	**Yes**
Waterless Urinals Rebates/Incentives	No	Yes	Pinery prefers ultra low flow urinals at this time; will evaluate demostration project for municipal setting	**Yes**
Pre-Rinse Spray Nozzle Giveaway	No	Yes	Excellent way to reduce restaurant kitchen water use, requires staff to verify installation	**Yes**
Cooling Water Tower Improvements	Yes	Yes	Follows audits	No
Process Water Improvements	Yes	Yes	Follows audits	No
Swimming Pool Improvements	Yes	Yes	Follows audits	No
Car Wash Efficiency Assessements and Improvements	Yes	Yes	Follows audits	No
Cleaning and Sanitation Improvements	Yes	Yes	Follows audits	No
Commerical Kitchens and Restaurant Improvements	Yes	Yes	Follows audits	No
Laundries and Laundromats	Yes	Yes	Follows audits	No

Appendix A
Summary of Identified and Screened Conservation Measures and Programs for Pinery

Water Conservation Measures and Programs	Additional Effort/Data Needed Prior to Implementation	Measureable Outcomes	Other Considerations	Measure and Program Carried to Final Evaluation
Swamp Cooler Improvements	Yes	Yes	Follows audits	No
Boiler and Heating System Improvements	Yes	Yes	Follows audits	No
Outdoor				
Irrigation Audits	No	Yes	Method to educate customer and collect information on individual water use but will require training of Pinery Staff or contractor	**Yes**
Soil Moisture Probes Rebate/Incentives	No	No	Corrosion of probes limits useful life	No
Rainfall/Moisture Sensors Rebate/Incentives	No	Yes	Technology improving but requires irrigation audit to implement	**Yes**
ET Controllers Rebate/Incentives	No	Yes	Technology improving but requires irrigation audit to implement	**Yes**
Flow Meter (w/ auto shut-off)/Incentives	No	Yes	Technology improving but requires irrigation audit to implement	**Yes**
Installation of Alternative Irrigation (subsurface, drip, etc.)	No	Yes	Costs generally prohibitive for retrofits at this time; organic efforts only with link to Homeowner education	**Yes**
Soil Amendment Rebate/Incentives	Yes	Yes	Costs generally prohibitive for retrofits at this time; organic efforts only with link to Homeowner education	**Yes**
Turf Replacement Rebate/Incentives	Yes	Yes	Costs generally prohibitive for retrofits at this time; organic efforts only with link to Homeowner education	**Yes**
Xeriscape Rebate/Incentives	Yes	Yes	Costs generally prohibitive for retrofits at this time; organic efforts only with link to Homeowner education	**Yes**
Rainwater Harvesting	Yes	Yes	State regulations (Division of Water Resources) restrict rainwater harvesting	No
Water Waste Ordinance	Yes	Yes	Would require new ordinance; additional staff for inspections and verification	No
Watering Restrictions - Hours	No	Yes	Would require new ordinance; additional staff for inspections and verification	No
Watering Restrictions - Days	No	Yes	Daily restrictions best saved for drought response	No
Greywater Reuse	Yes	Yes	State regulations (Division of Water Resources and Department Public Health and Environment) do not allow for greywater reuse in business settings	No
Raw Water Conversions	Yes	Yes	Ongoing program, needs additional evaluations	**Yes**
Other				
Commerical/Industrial/Institutional (CII) Audits	No	Yes	Method to educate customers and collect information on individual water use but will require training of Pinery Staff or contractor	**Yes**
Restaurant Audits, Education and Cerification Program	No	Yes	No Customers of this type currently in Pinery service area	No
AMR Metering and Submetering	Yes	Yes	Would help with understanding use in strip malls; would allow for monthly billing	**Yes**
Leak Detection and Repair	Yes	Yes	Part of ongoing program	**Yes**
Point of Sale Water Efficiency Ordinance	Yes	Yes	Needs better definition of institutional barriers; structural requirements; and funding for inspections/verification	No
On Property Display of Water Use (Smart House Monitoring)	Yes	Yes	Linked to new installations of AMR and website tools	**Yes**
Wise Water Use Certifications and Publicity	No	Yes	Most CII water use is by irrigation only taps	No
Urinal Ordinance (for all commerical men's bathrooms)	Yes	Yes	Includes inspections and cerification by staff	No
NEW CONSTRUCTION (Residential and/or Commercial)				
Indoor				

Appendix A
Summary of Identified and Screened Conservation Measures and Programs for Pinery

Water Conservation Measures and Programs	Additional Effort/Data Needed Prior to Implementation	Measureable Outcomes	Other Considerations	Measure and Program Carried to Final Evaluation
High Efficiency Appliance Requirements/Standards	Yes	Yes	Requires new ordinance developed in close partnership with County and Builders includes inspections and follow-up	**Yes**
Single Pass Cooling System Prohibitions	Yes	Yes	Requires new ordinance with inspections and follow-up; Follows CII Audits	No
Boiler/Heating Systems Requirements/Standards	Yes	Yes	Requires new ordinance with inspections and follow-up; Follows CII Audits	No
Laundry and Laundromat Requirements/Standards	Yes	Yes	Requires new ordinance with inspections and follow-up; Follows CII Audits	No
Car Wash Efficiency Requirements/Standards	Yes	Yes	Requires new ordinance with inspections and follow-up; Follows CII Audits	No
Cleaning and Sanitation Requirements/Standards	Yes	Yes	Requires new ordinance with inspections and follow-up; Follows CII Audits	No
Low Water Use and Appliance Builder Incentives and Codes	Yes	Yes	Requires new ordinance with inspections and follow-up	No
Outdoor				
Landscape Irrigator Certification	Yes	Yes	Requires new ordinance developed in close partnership with County and Builders includes inspections and follow-up	No
New Landscape/Lawn Permits	No	Yes	Requires new ordinance developed in close partnership with County and Builders includes inspections and follow-up	**Yes**
Decorative Water Feature Requirements/Standards	Yes	Yes	Requires new ordinance developed in close partnership with County and Builders includes inspections and follow-up	No
Soil Amendment Requirements/Standards	No	Yes	Requires new ordinance developed in close partnership with County and Builders includes inspections and follow-up	**Yes**
Turf and Landscape Restrictions/Standards	Yes	Yes	Requires new ordinance developed in close partnership with County and Builders includes inspections and follow-up	**Yes**
Irrigation System Requirements/Standards	Yes	Yes	Requires new ordinance developed in close partnership with County and Builders includes inspections and follow-up	**Yes**
Low Water Grass Seed Rebate/Incentives	Yes	Yes	Costs generally prohibitive for retrofits at this time; organic efforts only with link to Homeowner education	No
Soil Amendment Rebate/Incentives	Yes	Yes	Costs generally prohibitive for retrofits at this time; organic efforts only with link to Homeowner education	No
Turf Replacement Rebate/Incentives	Yes	Yes	Costs generally prohibitive for retrofits at this time; organic efforts only with link to Homeowner education	No
Xeriscape Rebate/Incentives	Yes	Yes	Costs generally prohibitive for retrofits at this time; organic efforts only with link to Homeowner education	No
Soil and Wood Product Management Requirements	Yes	Yes	Requires new ordinance developed in close partnership with the Builders and County for builders to stock pile and use top soil and mulch wood products for site use; includes inspections and follow-up	**Yes**
EDUCATION				
Water Fairs		n/a	Best when coordinated with K-12 education	**Yes**
Water Use Awareness (e.g., CSU's CoCorans)		n/a	K-12 education will occur as a result of Teacher Training; other hands on training; etc.	No
K-12 Education		n/a	K-12 education will occur as a result of Teacher Training; other hands on training; etc.	**Yes**
K-12 Teacher Education and Training		n/a	Teacher Training available in Colorado through Project WET	**Yes**
Messaging Campaigns/Public Relations (multi-media)		n/a	Needed to coordinate messaging and focus outreach efforts	**Yes**
Customer Surveys and Focus Groups		n/a	To be developed as part of Public Relations Campaign Development	**Yes**
Bill Stuffers		n/a	Typically expensive with limited readership	No

Appendix A
Summary of Identified and Screened Conservation Measures and Programs for Pinery

Water Conservation Measures and Programs	Additional Effort/Data Needed Prior to Implementation	Measureable Outcomes	Other Considerations	Measure and Program Carried to Final Evaluation
Newletters		n/a	Typically expensive with limited readership if mailed; place on website	**Yes**
Homeowner Education and Training		n/a	Will be used with volunteer and high water use groups	**Yes**
Commercial/Irrigator Education and Training		n/a	Will be used with volunteer and high water use groups; coordinate with water fair activities	**Yes**
Property Manager/HOA Education and Training		n/a	Will be used with volunteer and high water use groups; coordinate with water fair activities	**Yes**
Homebuilder/Developer Education and Training		n/a	Will be used with volunteer and high water use groups; coordinate with water fair activities	**Yes**
Landscaper Education/Training/Certification		n/a	Will need program developed, along with certification and testing procedures (conducted with GreenCo Colorado)	**Yes**
Xeriscape Demostration Gardens Improvements		n/a	Ongoing program that needs upgrades	**Yes**
EPA WaterSense Program Promotion		n/a	National program can be promoted by Pinery for little to no cost	**Yes**
Educational Kits (e.g., Garden in a Box)		n/a	Not available in Pinery	No
Web-Site Tools and Postings (e.g., ET Rates, Customer Water Use, Program Water Savings, Customer Self Audits, etc.)		n/a	Need to have website updated to be more water user friendly and current	**Yes**
OTHER PROGRAMS				
Water Rate Increases (residential)	Yes	Yes	Ongoing program, needs additional evaluations	**Yes**
Water Rate Increases (CII)	Yes	Yes	Ongoing program, needs additional evaluations	**Yes**
Water Budgets	Yes	Yes	Pinery does not have the data needed to implement; will maintain inclining block rate	No
Seasonal Water Pricing	Yes	Yes	Pinery will maintain inclining block rate structure	No
High Water Use Accounts Notification/Audits	Yes	Yes	Ongoing program, needs additional evaluations	**Yes**
System Wide Leak Detection	Yes	Yes	Ongoing program, needs additional evaluations	**Yes**
Wastewater Reuse	Yes	Yes	Substantial reuse is ongoing; will look for more opportunities in the future	**Yes**
Removal of Phreatophytes	No	No	Some opportunities exist for limited phreatophyte removal; needs engineering to explore and evaluate	No
Water Waste Hotline	No	Yes	Needs dedicated phone line and specific response defined; coordinate with leak detection	**Yes**
Grass Tax	Yes	Yes	Needs better definition of institutional barriers; structural requirements; and funding for inspections/verification	No
Lake Dredging to Increase Available Storage	Yes	No	Need to have engineering conduct assessment	No

Note : most measureable outcomes related to verifying that water savings are occuring will require tracking of individual customer water use over multiple months and/or years

APPENDIX B

Colorado Revised Statute 37-60-126

37-60-126. Water conservation and drought mitigation planning - programs - relationship to state assistance for water facilities - guidelines - water efficiency grant program - repeal.

(1) As used in this section and section 37-60-126.5, unless the context otherwise requires:

(a) "Agency" means a public or private entity whose primary purpose includes the promotion of water resource conservation.

(b) "Covered entity" means each municipality, agency, utility, including any privately owned utility, or other publicly owned entity with a legal obligation to supply, distribute, or otherwise provide water at retail to domestic, commercial, industrial, or public facility customers, and that has a total demand for such customers of two thousand acre-feet or more.

(c) "Grant program" means the water efficiency grant program established pursuant to subsection (12) of this section.

(d) "Office" means the office of water conservation and drought planning created in section 37-60-124.

(e) "Plan elements" means those components of water conservation plans that address water-saving measures and programs, implementation review, water-saving goals, and the actions a covered entity shall take to develop, implement, monitor, review, and revise its water conservation plan.

(f) "Public facility" means any facility operated by an instrument of government for the benefit of the public, including, but not limited to, a government building; park or other recreational facility; school, college, university, or other educational institution; highway; hospital; or stadium.

(g) "Water conservation" means water use efficiency, wise water use, water transmission and distribution system efficiency, and supply substitution. The objective of water conservation is a long-term increase in the productive use of water supply in order to satisfy water supply needs without compromising desired water services.

(h) "Water conservation plan", "water use efficiency plan", or "plan" means a plan adopted in accordance with this section.

(i) "Water-saving measures and programs" includes a device, a practice, hardware, or equipment that reduces water demands and a program that uses a combination of measures and incentives that allow for an increase in the productive use of a local water supply.

(2) (a) Each covered entity shall, subject to section 37-60-127, develop, adopt, make publicly available, and implement a plan pursuant to which such covered entity shall encourage its domestic, commercial, industrial, and public facility customers to use water more efficiently. Any state or local governmental entity that is not a covered entity may develop, adopt, make publicly available, and implement such a plan.

(b) The office shall review previously submitted conservation plans to evaluate their consistency with the provisions of this section and the guidelines established pursuant to paragraph (a) of

subsection (7) of this section.

(c) On and after July 1, 2006, a covered entity that seeks financial assistance from either the board or the Colorado water resources and power development authority shall submit to the board a new or revised plan to meet water conservation goals adopted by the covered entity, in accordance with this section, for the board's approval prior to the release of new loan proceeds.

(3) The manner in which the covered entity develops, adopts, makes publicly available, and implements a plan established pursuant to subsection (2) of this section shall be determined by the covered entity in accordance with this section. The plan shall be accompanied by a schedule for its implementation. The plans and schedules shall be provided to the office within ninety days after their adoption. For those entities seeking financial assistance, the office shall then notify the covered entity and the appropriate financing authority that the plan has been reviewed and whether the plan has been approved in accordance with this section.

(4) A plan developed by a covered entity pursuant to subsection (2) of this section shall, at a minimum, include a full evaluation of the following plan elements:

(a) The water-saving measures and programs to be used by the covered entity for water conservation. In developing these measures and programs, each covered entity shall, at a minimum, consider the following:

(I) Water-efficient fixtures and appliances, including toilets, urinals, showerheads, and faucets;

(II) Low water use landscapes, drought-resistant vegetation, removal of phreatophytes, and efficient irrigation;

(III) Water-efficient industrial and commercial water-using processes;

(IV) Water reuse systems;

(V) Distribution system leak identification and repair;

(VI) Dissemination of information regarding water use efficiency measures, including by public education, customer water use audits, and water-saving demonstrations;

(VII) Water rate structures and billing systems designed to encourage water use efficiency in a fiscally responsible manner;

(VIII) The department of local affairs may provide technical assistance to covered entities that are local governments to implement water billing systems that show customer water usage and that implement tiered billing systems;

(IX) Regulatory measures designed to encourage water conservation;

(X) Incentives to implement water conservation techniques, including rebates to customers to encourage the installation of water conservation measures;

(b) A section stating the covered entity's best judgment of the role of water conservation plans in the covered entity's water supply planning;

(c) The steps the covered entity used to develop, and will use to implement, monitor, review, and revise, its water conservation plan;

(d) The time period, not to exceed seven years, after which the covered entity will review and update its adopted plan; and

(e) Either as a percentage or in acre-foot increments, an estimate of the amount of water that has been saved through a previously implemented conservation plan and an estimate of the amount of water that will be saved through conservation when the plan is implemented.

(5) Each covered entity and other state or local governmental entity that adopts a plan shall follow the entity's rules, codes, or ordinances to make the draft plan available for public review and comment. If there are no rules, codes, or ordinances governing the entity's public planning process, then each entity shall publish a draft plan, give public notice of the plan, make such plan publicly available, and solicit comments from the public for a period of not less than sixty days after the date on which the draft plan is made publicly available. Reference shall be made in the public notice to the elements of a plan that have already been implemented.

(6) The board is hereby authorized to recommend the appropriation and expenditure of such revenues as are necessary from the unobligated balance of the five percent share of the operational account of the severance tax trust fund designated for use by the board for the purpose of the office providing assistance to covered entities to develop water conservation plans that meet the provisions of this section.

(7) (a) The board shall adopt guidelines for the office to review water conservation plans submitted by covered entities and other state or local governmental entities. The guidelines shall define the method for submitting plans to the office, the methods for office review and approval of the plans, and the interest rate surcharge provided for in paragraph (a) of subsection (9) of this section.

(b) If no other applicable guidelines exist as of June 1, 2007, the board shall adopt guidelines by July 31, 2007, for the office to use in reviewing applications submitted by covered entities, other state or local governmental entities, and agencies for grants from the grant program and from the grant program established in section 37-60-126.5 (3). The guidelines shall establish deadlines and procedures for covered entities, other state or local governmental entities, and agencies to follow in applying for grants and the criteria to be used by the office and the board in prioritizing and awarding grants.

(8) A covered entity may at any time adopt changes to an approved plan in accordance with this section after notifying and receiving concurrence from the office. If the proposed changes are major, the covered entity shall give public notice of the changes, make the changes available in draft form, and provide the public an opportunity to comment on such changes before adopting them in accordance with subsection (5) of this section.

(9) (a) Neither the board nor the Colorado water resources and power development authority shall release loan proceeds to a covered entity unless such covered entity provides a copy of the water conservation plan adopted pursuant to this section; except that the board or the authority may release such loan proceeds if the board or the authority, as applicable, determines that an unforseen emergency exists in relation to the covered entity's loan application, in which case the

board or the authority, as applicable, may impose a loan surcharge upon the covered entity that may be rebated or reduced if the covered entity submits and adopts a plan in compliance with this section in a timely manner as determined by the board or the authority, as applicable.

(b) The board and the Colorado water resources and power development authority, to which any covered entity has applied for financial assistance for the construction of a water diversion, storage, conveyance, water treatment, or wastewater treatment facility, shall consider any water conservation plan filed pursuant to this section in determining whether to render financial assistance to such entity. Such consideration shall be carried out within the discretion accorded the board and the Colorado water resources and power development authority pursuant to which such board and authority render such financial assistance to such covered entity.

(c) The board and the Colorado water resources and power development authority may enter into a memorandum of understanding with each other for the purposes of avoiding delay in the processing of applications for financial assistance covered by this section and avoiding duplication in the consideration required by this subsection (9).

(10) Repealed.

(11) (a) Any section of a restrictive covenant that prohibits or limits xeriscape, prohibits or limits the installation or use of drought-tolerant vegetative landscapes, or requires cultivated vegetation to consist exclusively or primarily of turf grass is hereby declared contrary to public policy and, on that basis, that section of the covenant shall be unenforceable.

(b) As used in this subsection (11):

(I) "Executive board policy or practice" includes any additional procedural step or burden, financial or otherwise, placed on a unit owner who seeks approval for a landscaping change by the executive board of a unit owners' association, as defined in section 38-33.3-103, C.R.S., and not included in the existing declaration or bylaws of the association. An "executive board policy or practice" includes, without limitation, the requirement of:

(A) An architect's stamp;

(B) Preapproval by an architect or landscape architect retained by the executive board;

(C) An analysis of water usage under the proposed new landscape plan or a history of water usage under the unit owner's existing landscape plan; and

(D) The adoption of a landscaping change fee.

(II) "Restrictive covenant" means any covenant, restriction, bylaw, executive board policy or practice, or condition applicable to real property for the purpose of controlling land use, but does not include any covenant, restriction, or condition imposed on such real property by any governmental entity.

(III) "Turf grass" means continuous plant coverage consisting of hybridized grasses that, when regularly mowed, form a dense growth of leaf blades and roots.

(IV) "Xeriscape" means the application of the principles of landscape planning and design, soil

analysis and improvement, appropriate plant selection, limitation of turf area, use of mulches, irrigation efficiency, and appropriate maintenance that results in water use efficiency and water-saving practices.

(c) Nothing in this subsection (11) shall preclude the executive board of a common interest community from taking enforcement action against a unit owner who allows his or her existing landscaping to die; except that:

(I) Such enforcement action shall be suspended during a period of water use restrictions declared by the jurisdiction in which the common interest community is located, in which case the unit owner shall comply with any watering restrictions imposed by the water provider for the common interest community;

(II) Enforcement shall be consistent within the community and not arbitrary or capricious; and

(III) Once the drought emergency is lifted, the unit owner shall be allowed a reasonable and practical opportunity, as defined by the association's executive board, with consideration of applicable local growing seasons or practical limitations, to reseed and revive turf grass before being required to replace it with new sod.

(12) (a) There is hereby created the water efficiency grant program for purposes of providing state funding to aid in the planning and implementation of water conservation plans developed in accordance with the requirements of this section and to promote the benefits of water efficiency. The board is authorized to distribute grants to covered entities, other state or local governmental entities, and agencies in accordance with its guidelines from the moneys transferred to and appropriated from the water efficiency grant program cash fund, which is hereby created in the state treasury. For the 2005-06 through 2010-11 fiscal years, the general assembly shall appropriate from the fund to the board up to five hundred thousand dollars annually for the purpose of providing grants to covered entities, other state and local governmental entities, and agencies in accordance with this subsection (12). Commencing July 1, 2008, the general assembly shall also appropriate from the fund to the board fifty thousand dollars each fiscal year through 2011-12 to cover the costs associated with the administration of the grant program and the requirements of section 37-60-124. However, if less than five hundred thousand dollars is appropriated or expended in any such fiscal year, an amount equal to the difference between five hundred thousand dollars and the amount actually appropriated or expended in that fiscal year shall be available for appropriation and expenditure to the grant program in the next fiscal year in addition to the five hundred thousand dollars available for appropriation in that fiscal year. Any moneys remaining in the fund on June 30, 2012, shall be transferred to the reserve in the operational account of the severance tax trust fund described in section 39-29-109.3 (3), C.R.S.

(b) Any covered entity or state or local governmental entity that has adopted a water conservation plan and that supplies, distributes, or otherwise provides water at retail to customers may apply for a grant to aid in the implementation of the water efficiency goals of the plan. Any agency may apply for a grant to fund outreach or education programs aimed at demonstrating the benefits of water efficiency. The office shall review the applications and make recommendations to the board regarding the awarding and distribution of grants to applicants who satisfy the criteria outlined in this subsection (12) and the guidelines developed pursuant to subsection (7) of this section.

(c) This subsection (12) is repealed, effective July 1, 2012.

Source: L. 91: Entire section added, p. 2023, § 4, effective June 4. **L. 99:** (10) repealed, p. 25, § 3, effective March 5. **L. 2003:** (4)(g) amended and (11) added, p. 1368, § 4, effective April 25. **L. 2004:** Entire section amended, p. 1779, § 3, effective August 4. **L. 2005:** (1), (2)(b), and (7) amended and (12) added, p. 1481, § 1, effective June 7; (11) amended, p. 1372, § 1, effective June 6. **L. 2007:** (1)(a), (2)(a), (5), (7), and (12) amended, p. 1890, § 1, effective June 1. **L. 2008:** IP(4) amended, p. 1575, § 30, effective May 29; (12)(a) amended, p. 1873, § 14, effective June 2.

Editor's note: Subsection (12) was originally enacted as (13) in House Bill 05-1254 but has been renumbered on revision for ease of location.

Cross references: (1) In 1991, this entire section was added by the "Water Conservation Act of 1991". For the short title and the legislative declaration, see sections 1 and 2 of chapter 328, Session Laws of Colorado 1991.

(2) For the legislative declaration contained in the 2004 act amending this section, see section 1 of chapter 373, Session Laws of Colorado 2004.

APPENDIX C

Cost Benefit Analyses and Summary of Selected Water Conservation Measures and Programs

PWWD Water Conservation Plan Cost-Benefit Analysis Summary and Schedule

Measures and Programs Cost-Benefit Summary & Schedule

			2009		2010		2011		2012		2013	
				Saved Water		Saved Water		Saved Water		Saved Water		Saved Water
Residential	cost/af saved		Cost	AF	Cost	AF	Cost	AF	Cost	AF	Cost	AF
Homeowner Education	$	4,500	$ 14,260	3.2	$ 5,940	1.3	$ 9,110	2.0	$ 14,020	3.1	$ 9,800	2.2
HE Toilet Rebate	$	3,126	$ -	-	$ -	-	$ -	-	$ 1,500	0.5	$ 2,500	0.8
HE Washing Machine Rebates	$	4,818	$ -	-	$ -	-	$ -	-	$ 1,875	0.4	$ 2,500	0.5
Rainfall Sensor Rebates	$	1,376	$ -	-	$ -	-	$ -	-	$ -	-	$ -	-
ET Controller Rebates	$	1,659	$ -	-	$ -	-	$ -	-	$ -	-	$ -	-
Whole House Audit	$	3,060	$ 3,375	1.1	$ 5,625	1.8	$ 5,625	1.8	$ 5,625	1.8	$ 5,625	1.8
Outdoor Irrigation Audits	$	2,711	$ -	-	$ -	-	$ -	-	$ 3,125	1.2	$ 8,750	3.2
Monitoring and Verification Costs			$ 2,500		$ 3,500		$ 3,500		$ 3,500		$ 3,500	
sum			$ 20,135	4.3	$ 15,065	3.2	$ 18,235	3.9	$ 29,645	7.0	$ 32,675	8.6
cummulative water savings				4.3		7.4		11.3		18.3		26.8
average cost per acre foot saved	$	3,545										
Commercial/Irrigation/Municipal												
Commerical Customer Education	$	4,500	$ -	-	$ -	-	$ 2,910	0.6	$ 2,910	0.6	$ 2,120	0.5
Commercial/Irrigation Outdoor Audits	$	1,337	$ 2,500	1.9	$ 2,500	1.9	$ 2,500	1.9	$ 2,500	1.9	$ 2,500	1.9
Ultra Low Flow Urinal Rebates	$	2,232	$ -	-	$ -	-	$ -	-	$ -	-	$ -	-
Rainfall Sensor Rebates	$	165	$ -	-	$ -	-	$ -	-	$ 250	1.5	$ 250	1.5
ET Controller Rebates	$	278	$ -	-	$ -	-	$ 500	1.8	$ 1,000	3.6	$ 1,000	3.6
Monitoring and Verification Costs			$ 1,000		$ 2,000		$ 2,000		$ 2,000		$ 2,000	
sum			$ 3,500	1.9	$ 4,500	1.9	$ 7,910	4.3	$ 8,660	7.6	$ 7,870	7.4
cummulative water savings				1.9		3.7		8.1		15.7		23.1
average cost per acre foot saved	$	1,169										
Subtotal WC Costs			$ 23,635		$ 19,565		$ 26,145		$ 38,305		$ 40,545	
CWCB Grant			$ -		$ -		$ -		$ -		$ -	
total Water Conservation costs			$ 23,640		$ 19,565		$ 26,145		$ 38,305		$ 40,545	
WC Budget												
Water Conservation budget $			**$ 23,640**		**$ 19,565**		**$ 26,145**		**$ 38,305**		**$ 40,545**	
FTEs			**0.15**		**0.25**		**0.35**		**0.35**		**0.35**	
saved water				6.14		5.03		8.18		14.60		16.01
cummulative water savings	$	2,582		6.14		11.17		19.34		33.95		49.96
Other Municipal Activitites and Budgets												
Leak Detection Services (0.25 % per yr of unaccounted for water per $10,000 spent)												
$			$ 4,000		$ 4,000		$ 4,000		$ 4,000		$ 4,000	
FTE			0.01		0.01		0.01		0.01		0.01	
saved water				0.30		0.31		0.31		0.32		0.32
cummulative water savings	$	12,369		0.30		0.62		0.93		1.24		1.57
Meter Replacement and AMR Installation (increasing billing accuracy, augmentation requirements and leak detection,10 % per year of unaccounted for water for each of 500 replacement meters per year)												
$			$ -		$ -		$ -		$ -		$ -	
FTE			1		1		1		1		1	
saved water				-		-		-		-		-
cummulative water savings				-		-		-		-		-
Water Rate Assessment (5 % rate increase every fifth year)												
$					$ 35,000		$ -		$ -		$ -	
FTE			0.05		0.15		0.05		0.05		0.15	
saved water						26.7		21.3		16.4		11.1
cummulative water savings	$	463		-		26.7		48.0		64.3		75.4

TOTAL	Year	2009	2010	2011	2012	2013
$		$ 27,640	$ 58,565	$ 30,145	$ 42,305	$ 44,545
FTE		1.21	1.41	1.41	1.41	1.51
saved water		6.45	31.99	29.82	31.27	27.41
cummulative water savings		6.45	38.44	68.25	99.53	126.93
Total Annual Cost to PWWD Including FTE Cost		**$ 90,560**	**$ 131,885**	**$ 103,465**	**$ 115,625**	**$ 123,065**
Total Cumulative Cost to PWWD Including FTE Cost		$ 90,560	$ 222,445	$ 325,910	$ 441,535	$ 564,600
Total Annual Cost to PWWD NOT Including FTE Cost		$ 27,640	$ 58,565	$ 30,145	$ 42,305	$ 44,545
Total Cumulative Cost to PWWD NOT Including FTE Cost		$ 27,640	$ 86,205	$ 116,350	$ 158,655	$ 203,200

PWWD Water Conservation Plan Cost-Benefit Analysis Summary and Schedule

Measures and Programs Cost-Benefit Su

Residential	2014 Cost	2014 Saved Water AF	2015 Cost	2015 Saved Water AF	2016 Cost	2016 Saved Water AF	2017 Cost	2017 Saved Water AF	2018 Cost	2018 Saved Water AF
Homeowner Education	$ 14,880	3.3	$ 19,040	4.2	$ 9,710	2.2	$ 10,590	2.4	$ 10,500	2.3
HE Toilet Rebate	$ 3,500	1.1	$ 3,500	1.1	$ 5,000	1.6	$ 5,000	1.6	$ 5,000	1.6
HE Washing Machine Rebates	$ 3,750	0.8	$ 4,375	0.9	$ 4,375	0.9	$ 4,375	0.9	$ 4,375	0.9
Rainfall Sensor Rebates	$ 525	0.4	$ 1,050	0.8	$ 1,400	1.0	$ 1,750	1.3	$ 1,750	1.3
ET Controller Rebates	$ 2,250	1.4	$ 5,250	3.2	$ 5,250	3.2	$ 5,250	3.2	$ 5,250	3.2
Whole House Audit	$ 5,625	1.8	$ 5,625	1.8	$ 5,625	1.8	$ 5,625	1.8	$ 5,625	1.8
Outdoor Irrigation Audits	$ 8,750	3.2	$ 8,750	3.2	$ 8,750	3.2	$ 8,750	3.2	$ 8,750	3.2
Monitoring and Verification Costs	$ 3,500		$ 3,500		$ 3,500		$ 3,500		$ 3,500	
sum	$ 42,780	12.0	$ 51,090	15.3	$ 43,610	13.9	$ 44,840	14.4	$ 44,750	14.3
cummulative water savings		38.8		54.1		68.0		82.4		96.7
average cost per acre foot saved										

Commercial/Irrigation/Municipal

Commerical Customer Education	$ -	-	$ 2,120	0.5	$ 3,450	0.8	$ 4,240	0.9	$ 4,240	0.9
Commercial/Irrigation Outdoor Audits	$ 2,500	1.9	$ 2,500	1.9	$ 2,500	1.9	$ 2,500	1.9	$ 2,500	1.9
Ultra Low Flow Urinal Rebates	$ 100	0.04	$ 100	0.0	$ 100	0.0	$ 100	0.0	$ 100	0.0
Rainfall Sensor Rebates	$ 250	1.5	$ 250	1.5	$ 250	1.5	$ 250	1.5	$ 250	1.5
ET Controller Rebates	$ 1,250	4.5	$ 1,250	4.5	$ 1,250	4.5	$ 1,250	4.5	$ 1,250	4.5
Monitoring and Verification Costs	$ 2,000		$ 2,000		$ 2,000		$ 2,000		$ 2,000	
sum	$ 6,100	7.9	$ 8,220	8.4	$ 9,550	8.7	$ 10,340	8.9	$ 10,340	8.9
cummulative water savings		31.0		39.4		48.1		57.0		65.9
average cost per acre foot saved										

Subtotal WC Costs	$ 48,880		$ 59,310		$ 53,160		$ 55,180		$ 55,090	
CWCB Grant										
total Water Conservation costs	$ 48,880		$ 59,310		$ 53,160		$ 55,180		$ 55,090	

WC Budget

Water Conservation budget $	**$ 48,880**		**$ 59,310**		**$ 53,160**		**$ 55,180**		**$ 55,090**	
FTEs	**0.5**		**0.5**		**0.5**		**0.5**		**0.5**	
saved water		19.93		23.64		22.60		23.23		23.21
cummulative water savings		69.89		93.53		116.13		139.36		162.56

Other Municipal Activitites and Budgets

Leak Detection Services (0.25 % per yr of unacc										
$	$ 4,000		$ 4,000		$ 4,000		$ 4,000		$ 4,000	
FTE	0.01		0.01		0.01		0.01		0.01	
saved water		0.33		0.33		0.33		0.34		0.34
cummulative water savings		1.90		2.22		2.55		2.89		3.23
Meter Replacement and AMR Installation (increa										
$	$ -		$ -		$ -		$ -		$ -	
FTE	1		1		1		1		1	
saved water		-		-		-		-		-
cummulative water savings		-		-		-		-		-
Water Rate Assessment (5 % rate increase every										
$	$ -		$ 40,000		$ -		$ -		$ -	
FTE	0.05		0.05		0.15		0.05		0.05	
saved water		5.6		28.5		23.1		17.6		11.9
cummulative water savings		81.0		109.5		132.6		150.2		162.1

TOTAL	2014		2015		2016		2017		2018	
$	$ 52,880		$ 103,310		$ 57,160		$ 59,180		$ 59,090	
FTE	1.56		1.56		1.66		1.56		1.56	
saved water		25.88		52.42		46.06		41.15		35.44
cummulative water savings		152.81		205.23		251.29		292.44		327.88
Total Annual Cost to PWWD Including FTE Co	**$ 134,000**		**$ 184,430**		**$ 143,480**		**$ 140,300**		**$ 140,210**	
Total Cumulative Cost to PWWD Including FT	$ 698,600		$ 883,030		$ 1,026,510		$ 1,166,810		$ 1,307,020	
Total Annual Cost to PWWD NOT Including FT	$ 52,880		$ 103,310		$ 57,160		$ 59,180		$ 59,090	
Total Cumulative Cost to PWWD NOT Includin	$ 256,080		$ 359,390		$ 416,550		$ 475,730		$ 534,820	

APPENDIX D

Public Notice, Public Comment and Record of District Board Adoption

Susan StVincent

From: Lynette Colson [lcolson@ccnewspapers.com]
Sent: Friday, January 23, 2009 8:25 AM
To: Susan StVincent
Subject: W08-1373RR
Follow Up Flag: Follow up
Flag Status: Red

Susan
Here is a corrected proof. Thanks for your understanding with the paper. Let me know if any dates need to be changed.
Lynette

TO: Susan StVincent
EMAIL: sstvincent@pinerywater.com
RE: Legal Notice No. W08-1373

PLEASE PROOF & FOR ANY CORRECTIONS LET ME KNOW OR RETURN "OK" ASAP

FROM: LYNETTE COLSON THANKS SO MUCH!
Douglas County Legal's (dclegals@ccnewspapers.com)
****
CALL: 303-663-7193 FAX: 303-663-2282
****
PUBLIC NOTICE

NOTICE AS TO PROPOSED WATER CONSERVATION PLAN
NOTICE IS HEREBY GIVEN that the Board of Directors of the Denver Southeast Suburban Water and Sanitation District (d.b.a. The Pinery Water and Wastewater District) will hold a Public Hearing on Wednesday, April 8, 2009, 6:00PM at the District office located at 5242 Old Schoolhouse Road, Parker, CO.
The purpose of such meeting is to gather citizen comment for the proposed Denver Southeast Suburban Water and Sanitation District Water Conservation Plan. A copy of such Plan is available for public inspection at the address listed above or on the District website, www.pinerywater.com. Written comments will be accepted at the District office and/or via email to information@pinerywater.com from the time of notice until the Public Hearing on April 8, 2009.
Dated: January 22, 2009
By: /s/Charles J. Krogh, District Manager
DENVER SOUTHEAST SUBURBAN WATER AND SANITATION DISTRICT

Legal Notice No: W08-1373
First Publication: January 29, 2009
Last Publication: January 29, 2009
Publisher: Douglas County News-Press

PublicNotices

CPAXLI

PUBLIC NOTICE

International Bank, County of Las Animas, City of Trinidad, intends to apply to the Federal Deposit Insurance Corporation for authorization to establish a branch at 24450 East Smoky Hill Road, Aurora, CO 80016, County of Arapahoe Colorado.
Any person wishing to comment, protest or request a hearing in connection with this application may file his or her observations in writing with the Regional Director of the Federal Deposit Insurance Corporation at its Regional Office, Suite 1500, 1910 Pacific Avenue, Dallas, Texas, 75201 before processing of the application has been completed.
Processing will be completed no earlier than the fifteenth day following either the date of this publication or the date of receipt of the application by the FDIC, whichever is later. The period for comment may be extended by the Regional Director for good cause. The non-confidential portion of the application file is available for inspection within one day following the request for such files. It may be inspected at the Corporation's Regional Office during regular business hours. Photo copies of information in the non-confidential portion of the application file will be made available upon request. A schedule of charges for such copies can be obtained from the Regional Office.

Legal Notice No: W08-1389
First Publication: January 29, 2009
Last Publication: January 29, 2009
Publisher: Douglas County News-Press

PUBLIC NOTICE

NOTICE TO CREDITORS
Estate of George E. Winkler, Deceased
Case Number 09PR3
All persons having claims against the above-named estate are required to present them to the personal representative or to the District Court of Douglas County, Colorado, on or before May 29, 2009, or the claims may be forever barred.
Patty J. Hasty
102 Birch Street
Castle Rock, CO 80104
(303) 688-3651
Personal Representative

Legal Notice No: W08-1362
First Publication: January 29, 2009
Last Publication: February 12, 2009
Publisher: Douglas County News-Press

PUBLIC NOTICE

Sedalia
COMBINED NOTICE OF SALE, RIGHT TO CURE, AND RIGHT TO REDEEM
Public Trustee Sale No. 2008-1856
To Whom It May Concern: On 11/10/2008 3:30:00 PM the undersigned Public Trustee caused the Notice of Election and Demand relating to the Deed of Trust described below to be recorded in Douglas County:
Original Grantor: LARRY STEFFENS
Original Beneficiary: MORTGAGE ELECTRONIC REGISTRATION SYSTEMS, INC. ACTING SOLELY AS NOMINEE FOR NEW FREEDOM MORTGAGE CORPORATION
Current Owner of Evidence of Debt: CITIMORTGAGE, INC.
Date of Deed of Trust (DOT): 7/23/2002
Recording Date of DOT: 8/2/2002
Reception No. of DOT: 2002075657
DOT Recorded in Douglas County.
Original Principal Amount of Evidence of Debt: $161,871.00
Outstanding Principal Amount as of the date hereof: $152,939.65
Pursuant to C.R.S. §38-38-101 (4) (i), you are hereby notified that the covenants of the deed of trust have been violated as follows: Failure to pay monthly installments due Note Holder.
THE LIEN FORECLOSED MAY NOT BE A FIRST LIEN.
THE PROPERTY DESCRIBED HEREIN IS ALL OF THE PROPERTY ENCUMBERED BY THE LIEN OF THE DEED OF TRUST.
Legal Description of Real Property: LOT 2, PINE HILLS FILING NO. 2, COUNTY OF DOUGLAS, STATE OF COLORADO.
Which has the address of: 1186 South Highway 67, Sedalia, CO 80135
NOTICE OF SALE
The current owner of the Evidence of Debt secured by the Deed of Trust described herein, has filed written election and demand for sale as provided by law and in said Deed of Trust.
THEREFORE, Notice Is Hereby Given that on the first possible sale date (unless the sale is continued) at 10:00 a.m. Wednesday, March 4, 2009, at the Douglas County Wilcox Building, 301 Wilcox Street, Castle Rock, Colorado, I will sell at public auction to the highest and best bidder for cash, the said real property and all interest of said Grantor(s), Grantor(s)' heirs and assigns therein, for the purpose of paying the indebtedness provided in said Evidence of Debt secured by the Deed of Trust, plus attorneys' fees, the expenses of sale and other items allowed by law, and will deliver to the purchaser a Certificate of Purchase, all as provided by law.
First Publication: 1/8/2009
Last Publication: 2/5/2009

PUBLIC NOTICE

NOTICE OF FINAL SETTLEMENT
Town of Castle Rock, Colorado
Date: January 13, 2009
Project Title: Town of Castle Rock 2008 Slurry Seal Project
Contractor: Quality Paving Company
9700 Alton Way
Henderson, CO 80640
Notice is hereby given that the Town of Castle Rock intends to start processing the Final Payment to the above-named contractor on February 9, 2009, provided no claims are received.
Any person or firm having debts against the Contractor must file a proper written notice with the Public Works Director, Town of Castle Rock, 4175 North Castleton Court, Castle Rock, CO 80109, on or before February 9, 2009.
TOWN OF CASTLE ROCK
By: /s/ Cari Armijo, Construction Manager

Legal Notice No: W08-1365
First Publication: January 29, 2009
Last Publication: February 5, 2009
Publisher: Douglas County News-Press

PUBLIC NOTICE

NOTICE AS TO PROPOSED WATER CONSERVATION PLAN
NOTICE IS HEREBY GIVEN that the Board of Directors of the Denver Southeast Suburban Water and Sanitation District (d.b.a. The Pinery Water and Wastewater District) will hold a Public Hearing on Wednesday, April 8, 2009, 6:00PM at the District office located at 5242 Old Schoolhouse Road, Parker, CO.
The purpose of such meeting is to gather citizen comment for the proposed Denver Southeast Suburban Water and Sanitation District Water Conservation Plan. A copy of such Plan is available for public inspection at the address listed above or on the District website, www.pinerywater.com. Written comments will be accepted at the District office and/or via email to information@pinerywater.com from the time of notice until the Public Hearing on April 8, 2009.
Dated: January 22, 2009
By: /s/Charles D. Krogh, District Manager
DENVER SOUTHEAST SUBURBAN WATER AND SANITATION DISTRICT

Legal Notice No: W08-1373
First Publication: January 29, 2009
Last Publication: January 29, 2009
Publisher: Douglas County News-Press

PUBLIC NOTICE

Highlands Ranch
COMBINED NOTICE OF SALE, RIGHT TO CURE, AND RIGHT TO REDEEM
Public Trustee Sale No. 2008-1866
To Whom It May Concern: On 11/13/2008 10:06:00 AM the undersigned Public Trustee caused the Notice of Election and Demand relating to the Deed of Trust described below to be recorded in Douglas County:
Original Grantor: JAMES L. LOCASCIO JR AND VALERIE A. KENNY-LOCASCIO
Original Beneficiary: MORTGAGE ELECTRONIC REGISTRATION SYSTEMS, INC. AS NOMINEE FOR LEND AMERICA, INC.
Current Owner of Evidence of Debt: CITIMORTGAGE, INC.
Date of Deed of Trust (DOT): 2/21/2003
Recording Date of DOT: 2/27/2003
Reception No. of DOT: 2003025615
DOT Recorded in Douglas County.
Original Principal Amount of Evidence of Debt: $237,500.00
Outstanding Principal Amount as of the date hereof: $220,007.35
Pursuant to C.R.S. §38-38-101 (4) (i), you are hereby notified that the covenants of the deed of trust have been violated as follows: Failure to pay monthly installments due Note Holder.
THE LIEN FORECLOSED MAY NOT BE A FIRST LIEN.
THE PROPERTY DESCRIBED HEREIN IS ALL OF THE PROPERTY ENCUMBERED BY THE LIEN OF THE DEED OF TRUST.
Legal Description of Real Property: LOT 171, HIGHLANDS RANCH FILING NO. 120-A, COUNTY OF DOUGLAS, STATE OF COLORADO
Which has the address of: 9656 South Crossmoor Drive, Highlands Ranch, CO 80130
NOTICE OF SALE
The current owner of the Evidence of Debt secured by the Deed of Trust described herein, has filed written election and demand for sale as provided by law and in said Deed of Trust.
THEREFORE, Notice Is Hereby Given that on the first possible sale date (unless the sale is continued) at 10:00 a.m. Wednesday, March 4, 2009, at the Douglas County Wilcox Building, 301 Wilcox Street, Castle Rock, Colorado, I will sell at public auction to the highest and best bidder for cash, the said real property and all interest of said Grantor(s), Grantor(s)' heirs and assigns therein, for the purpose of paying the indebtedness provided in said Evidence of Debt secured by the Deed of Trust, plus attorneys' fees, the expenses of sale and other items allowed by law, and will deliver to the purchaser a Certificate of Purchase, all as provided by law.
First Publication: 1/8/2009

PUBLIC NOTICE

Highlands Ranch
COMBINED NOTICE OF SALE, RIGHT TO CURE, AND RIGHT TO REDEEM
Public Trustee Sale No. 2008-1831
To Whom It May Concern: On 11/4/2008 4:40:00 PM the undersigned Public Trustee caused the Notice of Election and Demand relating to the Deed of Trust described below to be recorded in Douglas County:
Original Grantor: HYUN S CHIN AND MI H CHIN
Original Beneficiary: COMMUNITY FIRST NATIONAL BANK
Current Owner of Evidence of Debt: JPMORGAN CHASE BANK, NATIONAL ASSOCIATION
Date of Deed of Trust (DOT): 3/19/2001
Recording Date of DOT: 3/27/2001
Reception No. of DOT: 01024366
DOT Recorded in Douglas County.
Original Principal Amount of Evidence of Debt: $205,600.00
Outstanding Principal Amount as of the date hereof: $187,124.62
Pursuant to C.R.S. §38-38-101 (4) (i), you are hereby notified that the covenants of the deed of trust have been violated as follows: Failure to pay monthly installments due Note Holder.
THE LIEN FORECLOSED MAY NOT BE A FIRST LIEN.
THE PROPERTY DESCRIBED HEREIN IS ALL OF THE PROPERTY ENCUMBERED BY THE LIEN OF THE DEED OF TRUST.
Legal Description of Real Property: LOT 194, HIGHLANDS RANCH FILING NO. 100-K COUNTY OF DOUGLAS, STATE OF COLORADO
Which has the address of: 8830 South Miners Place, Highlands Ranch, CO 80126
NOTICE OF SALE
The current owner of the Evidence of Debt secured by the Deed of Trust described herein, has filed written election and demand for sale as provided by law and in said Deed of Trust.
THEREFORE, Notice Is Hereby Given that on the first possible sale date (unless the sale is continued) at 10:00 a.m. Wednesday, February 25, 2009, at the Douglas County Wilcox Building, 301 Wilcox Street, Castle Rock, Colorado, I will sell at public auction to the highest and best bidder for cash, the said real property and all interest of said Grantor(s), Grantor(s)' heirs and assigns therein, for the purpose of paying the indebtedness provided in said Evidence of Debt secured by the Deed of Trust, plus attorneys' fees, the expenses of sale and other items allowed by law, and will deliver to the purchaser a Certificate of Purchase, all as provided by law.
First Publication: 1/1/2009
Last Publication: 1/29/2009

PUBLIC NOTICE

Highlands Ranch
COMBINED NOTICE OF SALE, RIGHT TO CURE, AND RIGHT TO REDEEM
Public Trustee Sale No. 2008-1896
To Whom It May Concern: On 11/18/2008 11:05:00 AM the undersigned Public Trustee caused the Notice of Election and Demand relating to the Deed of Trust described below to be recorded in Douglas County:
Original Grantor: ROBERT E VAGTS AND SUZANN M VAGTS
Original Beneficiary: WELLS FARGO BANK, N.A.
Current Owner of Evidence of Debt: WELLS FARGO BANK, N.A.
Date of Deed of Trust (DOT): 1/20/200
Recording Date of DOT: 1/26/2006
Reception No. of DOT: 2006007337
DOT Recorded in Douglas County.
Original Principal Amount of Evidence of Debt: $336,000.00
Outstanding Principal Amount as of the date hereof: $327,347.95
Pursuant to C.R.S. §38-38-101 (4) (i), you are hereby notified that the covenants of the deed of trust have been violated as follows: Failure to pay monthly installments due Note Holder.
THE LIEN FORECLOSED MAY NOT BE A FIRST LIEN.
THE PROPERTY DESCRIBED HEREIN IS ALL OF THE PROPERTY ENCUMBERED BY THE LIEN OF THE DEED OF TRUST.
Legal Description of Real Property: LOT 9, HIGHLANDS RANCH FILING NO. 117-D, COUNTY OF DOUGLAS, STATE OF COLORADO.
Which has the address of: 9865 Keans Street, Highlands Ranch, CO 80130
NOTICE OF SALE
The current owner of the Evidence of Debt secured by the Deed of Trust described herein, has filed written election and demand for sale as provided by law and in said Deed of Trust.
THEREFORE, Notice Is Hereby Given that on the first possible sale date (unless the sale is continued) at 10:00 a.m. Wednesday, March 11, 2009, at the Douglas County Wilcox Building, 301 Wilcox Street, Castle Rock, Colorado, I will sell at public auction to the highest and best bidder for cash, the said real property and all interest of said Grantor(s), Grantor(s)' heirs and assigns therein, for the purpose of paying the indebtedness provided in said Evidence of Debt secured by the Deed of Trust, plus attorneys' fees, the expenses of sale and other items allowed by law, and will deliver to the purchaser a Certificate of Purchase, all as provided by law.
First Publication: 1/15/2009
Last Publication: 2/12/2009
Published in: Douglas County News Press

RESOLUTION 2009 - 9

RESOLUTION OF THE BOARD OF DIRECTORS OF DENVER SOUTHEAST SUBURBAN WATER AND SANITATION DISTRICT, D/B/A/ PINERY WATER AND WASTEWATER DISTRICT, ADOPTING DISTRICT WATER CONSERVATION PLAN

WHEREAS, the District previously approved a water conservation plan in conformance with the Water Conservation Act of 1991, and now desires to come into compliance with the Water Conservation Act of 2004; and

WHEREAS, the District recognizes that water is a scarce commodity and acknowledges that conservation efforts are the most economical way to maintain water resources by reducing the need to acquire costly future water supplies and the consequent cost of such acquisition to the District's customers, and

WHEREAS, goals and objectives for future conservation measures and programs have been established by the District through the Pinery Water and Wastewater District's Water Conservation Plan dated April 8, 2009 (the "Water Conservation Plan") to help address anticipated challenges that exist with regard to water supplies and related infrastructure including reduction of water use by those residential customers in the highest rate tiers, in addition to reduction of overall summertime water use for irrigation at commercial and residential facilities, and

WHEREAS, the District has provided public notice and provided the opportunity for public comment with regard to the proposed Water Conservation Plan; and

WHEREAS, upon adoption of the Water Conservation Plan, it will be submitted to the Colorado Water Conservation Board (the "State Conservation Board") as a draft for review and that revisions made by the State Conservation Board may be submitted to the District to be reviewed by the District at a future date.

NOW THEREFORE BE IT RESOLVED that the Board of Directors of the District hereby adopts the Water Conservation Plan for submittal to the State Conservation Board.

BE IT FURTHER RESOLVED that the District is committed to providing financial resources as necessary in order to achieve the goals of the Water Conservation Plan subject to an annual appropriation by the Board of Directors of the District.

APPROVED AND ADOPTED, this 13th day of May, 2009.

DENVER SOUTHEAST SUBURBAN WATER AND SANITATION DISTRICT, D/B/A PINERY WATER AND WASTEWATER DISTRICT, a quasi-municipal corporation and political subdivision of the State of Colorado.

By: _____
Robert Chapman, President

ATTEST:

By: _____
Roderick Yoakam, Secretary