October 4, 2011

Ms. Veva Deheza, CWCB
1313 Sherman Street, Room 721
Denver, CO 80203

RE: City of Dacono Water Conservation Plan

Dear Ms. Deheza:

The City of Dacono has completed the final Water Conservation Plan. This letter includes the Cover Letter Submittal Requirements for CWCB review and approval of our Water Conservation Plan.

Name and contact information for City of Dacono:

City of Dacono
Attn: Bill Efting, City Administrator
512 Cherry St
Dacono, CO 80514

List of organizations and individuals that assisted in plan development:

Clear Water Solutions, Inc.
Kim Frick & Steve Nguyen

Quantify retail water delivery and population for past five years:

Table 1 –Water Demand by Customer Category

	Commercial	City	Residential	Hydrants	Total
2006	68	22	359	16	466
2007	64	16	386	13	479
2008	80	21	388	13	502
2009	74	16	374	4	468
2010	72	20	386	5	483
Average	72	19	379	10	480

Table 2 – City of Dacono Population

Year	Population	Growth Rate
2005	3,680	-
2006	3,893	5.8%
2007	4,127	6.0%
2008	4,160	0.8%
2009	4,217	1.4%
2010	4,255	0.9%
2011	4,340	2.0%
2012	4,426	2.0%
2013	4,515	2.0%
2014	4,605	2.0%
2015	4,743	3.0%
2016	4,886	3.0%
2017	5,032	3.0%
2018	5,183	3.0%
2019	5,339	3.0%
2020	5,499	3.0%
2021	5,664	3.0%

Public review and comment information:

The City of Dacono held its public-review period from June 15 through August 14, 2011. Notification was posted in the Longmont Times Call and Carbon Valley Farmer and Miner newspapers on June 15, 2011 announcing the review period and that a draft plan would be available for the public to review at the City's office. The draft plan was also posted on the City of Dacono's website on June 15, 2011. During the public review period the City did not receive any public comment on the Water Conservation Plan.

The City of Dacono will commit the resources necessary for the implementation of the water conservation plan.

Please let me know if you have any further requirements.

Sincerely,

Bill Efting
City Manager

CITY OF DACONO
2011
WATER CONSERVATION PLAN

clearWATERsolutions
water rights • planning • engineering

8010 S. County Road 5, Ste. 105 Windsor, Colorado 80528
(T) 970.223.3706 (F) 970.223.3763
www.clearwatercolorado.com

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

LIST OF APPENDICES

EXECUTIVE SUMMARY

The City of Dacono ("City" or "Dacono") is a growing community along the Front Range in Weld County, Colorado approximately 30 miles north of Denver. Dacono's current population is 4,200 people but will experience significant growth with a predicted final build out of 56,600 people.

Dacono has developed a Water Conservation Plan in accordance with the Water Conservation Act of 2004 and to meet the provisions of Colorado Revised Statute section 37-60-126. As part of CRS 37-60-126, a State-approved Plan will qualify Dacono for funding from the Colorado Water Conservation Board (CWCB) and the Colorado Water Resources and Power Development Authority for water supply and delivery projects.

In 2010, Dacono's water customers used approximately 483 acre-feet (AF) or 158 million gallons (MG). By 2021, which is the end of the planning horizon for this Plan, it is projected that Dacono will need to provide approximately 643 AF (210 MG) annually. Water savings from this water conservation planning effort is estimated to save the City 50 AF (16 MG) per year and 604 AF (197 MG) over the planning period of 2012 to 2021.

For some of the selected water conservation measures and programs, estimated savings over planning period is calculated by compounding the estimated annual water savings per the total number of annual participants. The savings from this planning effort will make a considerable contribution toward the water supplies needed to serve the 2020 demand.

This report documents Dacono's water system, past and future water use, planned capital improvement projects, and the water conservation planning process used in accordance with CWCB's Water Conservation Plan guidelines and policies.

Water Conservation Goals

Dacono has considered water conservation in its planning for many years and has developed a number of measures to promote efficient water use. The City has implemented the following water conservation measures and programs:

- The billing software shows the usage from the previous year on the customer's water bill.
- Leak detection is performed on as needed basis. Electronic leak detection is done by an outside contractor.
- The City replaced approximately 85% of its water mains as part of its street management program from 2005 to 2008.

- The City recently upgraded the customer meters to a Badger metering system.
- Mobile home parks have a meter for each customer not just a master meter for the whole community.
- The City has voluntary water restrictions in Resolution 08-43.
- The City website provides a link for “Water Conservation” with tips on lawn watering and the voluntary water restrictions. The City also has a newsletter that can communicate water conservation tips.

The City is uncertain of the reduction in water use attributable to the existing water conservation efforts. However, over the ten-year planning period (2012 to 2021), tracking efforts will be implemented to quantify water savings and costs to operate this Water Conservation Plan.

Water savings goals were established for this Water Conservation Plan by completing the following steps:

- Establishing an initial water savings goal estimate
- Selecting water conservation measures or programs to meet those goals
- Comparing the expected water savings to the original goals

The goal for this Water Conservation Plan is to reduce the overall water use by 10 percent or 604 AF (197 MG) over a ten-year planning period. This savings will come from water use categories that were identified through the planning process for potential water savings:

- Residential
- Commercial
- Unaccounted-For Losses

The City’s water conservation goals are shown in **Table ES-1**.

Table ES-1 – Water Conservation Goals

Water Use Categories:	Total Projected Water Use (2012 to 2021)	Initial Reduction Goals for Planning Horizon		Adjusted Reduction Goals for Planning Horizon	
	(AF)	(%)	(AF)	(%)	(AF)
Residential	4,535	10%	454	7%	332
Commercial	850	5%	43	9%	80
City	227	8%	18	2%	5
Unaccounted-for Losses	567	2%	112	3%*	187
Total Water Production:	6,179				
Total Demand Reduction:			626		604
Total Percent Reduction:			10%	10%	

Evaluation and Selection of Conservation Measures and Programs

In order to select water conservation measures and programs to meet the water savings goals, a universal list of measures and programs were subject to an initial screening, cost-benefit analysis and final screening. This process pared the universal list down to the final selection of measures/programs that Dacono will implement. The screening criteria used consisted of the following:

1. Staff time to implement measures
2. Financial & Political implications
3. Staff and Council interest in measure/programs

Implementation Plan

All of the proposed water conservation measures and programs chosen will require staff and financial resources for implementation. This will require some strategy in implementing the most beneficial measures first. For illustrative purposes, a three year schedule has been proposed and should be interpreted that Year 1 is the City's first priority of projects followed by Year 2 and then Year 3 and will not be within three years exactly. The proposed implementation of this Water Conservation Plan will occur as the necessary resources become available.

Dacono is committed to implementing the selected water conservation programs and will budget money and pursue CWCB water-efficiency grant money to accomplish this goal. **Table ES-2** shows the implementation schedule of the selected measures/programs, the cost to implement and maintain each one, the percent each measure/program contributes to the overall water savings, and those that have been identified for grant money.

Monitoring of the Plan will be completed on an annual basis and a formal update is required by CWCB within seven years. Public feedback is an integral part of this Plan and comments were solicited and incorporated into the final Plan.

Table ES-2 – Implementation Plan for Dacono's Water Conservation Plan

Measure/Program	Cost to Implement (1st year annual cost)	Annual On-going Costs (programs in 2nd or 3rd year of implementation)	% of Total Water Savings	Implementation Considerations	Grant Request
YEAR 1					
Utility Maintenance Programs					
Billing Software Upgrades	$6,750		12.4%	Funding	Yes
Leak Detection & Repair	$6,291		12.4%	Staff Time & Funding	Yes
Meter Testing & Replacement	$10,260		12.4%	Staff Time & Funding	Yes
Regulatory Standards Program (Phase 1)					
Water Rate Structure Changes	$50,000		21.4%	Staff time, Funding and Governmental Action	Yes
Water Waste Ordinance	$500		5.4%		No
Water Restrictions	$2,396		6.9%		Yes
Education Programs (Phase 1)					
Water Conservation Website Upgrades	$5,000		10.7%	Staff Time & Funding	Yes
Billing Statements that Encourage Water Savings	$2,500		6.9%	Staff Time & Funding	Yes
Total Year 1 Cost	**$83,697**		**88.47%**		
YEAR 2					
Utility Maintenance Programs (on-going)					
Billing Software Upgrades		$1,650	See Year 1		
Leak Detection & Repair		$6,291			
Meter Testing & Replacement		$10,260			
Regulatory Standards Program (Phase 1&2)					
Evaluation of Policies to Encourage Water Savings	$750		1.24%		
Turf & Landscape Stnds for New Development	$500		0.19%		
Irrigation System Standards for New Development	$500		0.19%		
Soil Amendment Ordinance for New Development	$500		0.19%		
Requiring Wind/Rain Sensors for Commercial	$500		0.11%		
Turf Restrictions for Commercial Development	$500		0.11%		
Water Rate Structure Changes		$750	See Year 1		
Water Restrictions		$150			
Education Programs (Phase 1 & 2)					
Xeriscape Demonstration Garden	$5,000		1.44%	Staff Time & Funding	Yes
Water Conservation Website Upgrades	0	$500	See Year 1		
Billing Statements that Encourage Water Savings		$500			
Rebate and Incentive Programs (Phase 1)					
Water Upgrades at City Facilities- Indoor	$2,871	0	0.59%	Staff, Funding & Materials	Yes
Water Upgrades at City Facilities- Outdoor	$2,385	0	0.31%		
Audit Program (Phase 1)					
City Irrigation Audits	$3,000	0	0.03%	Staff Time & Funding	Yes
Total Year 2 Cost	**$16,506**	**$20,101**	**4.41%**		

Table ES-2 continued – Implementation Plan for Dacono's Water Conservation Plan

Measure/Program	Cost to Implement (1st year annual cost)	Annual On-going Costs (programs in 2nd or 3rd year of implementation)	% of Total Water Savings	Implementation Considerations	Grant Request
YEAR 3					
Utility Maintenance Programs (Phase 3)					
Billing Software Upgrades		$1,650	See Year 1		
Leak Detection & Repair		$6,291			
Meter Testing & Replacement		$10,260			
Regulatory Standards Program (Phase 2)					
Turf & Landscape Standards for New Development		$500	See Year 2		
Irrigation System Standards for New Development		$500			
Soil Amendment Ordinance for New Development		$500			
Requiring Wind/Rain Sensors for Commercial		$500			
Turf Restrictions for Commercial Development		$500			
Water Rate Structure Changes		$750	See Year 1		
Water Restrictions		$150			
Education Programs (Phase 1, 2 & 3)					
Property Manager/HOA Training	$5,000		3.4%	Staff Time & Funding	Yes
Xeriscape Demonstration Garden		$600	See Year 2		
Water Conservation Website Upgrades		$500	See Year 1		
Billing Statements that Encourage Water Savings		$500			
Rebate and Incentive Program (Phase 2)					
Residential Rebate for Low-Flow Toilets	$1,450	0	1.61%	Staff and Funding and Procurement of Materials	Yes
Rebate for High Efficiency Clothes Washer	$1,075	0	0.17%		
Rebate for High Efficiency Dish Washer	$1,350		0.08%		
Low Flow Faucet Rebate	$450	0	0.79%		
Low Flow Showerhead Rebate	$450	0	0.18%		
Irrigation System Efficiency Device Rebates	$950	0	0.30%		
Audit Program (Phase 1)					
Commercial Audits	$4,200		0.56%	Staff Time & Funding	Yes
Total Year 3 Cost	**$14,925**	**$23,201**	**7.12%**		
Total Combined 3-Year Cost (implementation and annual costs)	**$158,430**				
Total Implementation Costs	**$115,128**				
Estimated Annual Costs (for measures shown)	**$43,302**				

CHAPTER 1 – INTRODUCTION

The City of Dacono ("City" or "Dacono") is a growing community along the Front Range in Weld County, Colorado approximately 30 miles north of Denver. Dacono's current population is 4,200 people but will experience significant growth with an estimated final build out of 56,600 people.

The planning area for the City includes about 22 square miles or 14,080 acres. It is bounded by State Highway 52 on the north, Weld County Road 21 on the east, Weld County Road 6 on the south, and I-25 on the west. Dacono provides affordable housing with easy access to Denver, Denver International Airport and to other northern Colorado communities via I-25 and E-470. Further, Dacono is committed to economic development aimed at improving the community's quality of life. For these reasons, Dacono is slated for much growth.

The City's water supply consists solely of Colorado Big Thompson (CBT) water that is treated by Central Weld County Water District (CWCWD). The potable supply comes from a water treatment plant at the base of Carter Lake. Dacono and CWCWD have entered into an agreement to provide water to the City. Every year, Dacono transfers its units of CBT to CWCWD for treatment and delivery. CWCWD treats and delivers water to master meters located at various points surrounding City limits. CWCWD is responsible for delivering water through its infrastructure, which it owns, operates and maintains, up to the master meters. After the master meters, the City is responsible for operating and maintaining its distribution system to its customers. The current water distribution system was constructed prior to 1968 and has undergone waterline replacement since 2005.

In 2007, Clear Water Solutions completed a Raw Water Master Plan for the City with the purpose of providing a guide for future water acquisition. Since the City's water supply is currently one-dimensional with only CBT, recommendations were made to diversify the supply with growth. Dacono has not completed a Master Infrastructure Plan or a Drought Response Plan. However, CWCWD does have a Drought Mitigation Plan for their water district.

A Comprehensive Plan for the City of Dacono was completed in 2005 by Winston Associates. The goal of this plan is to provide a blueprint for its large anticipated growth to create a community that is healthy, diversified and balanced.

Since Dacono will experience significant growth, it is important for them to conserve as much water as possible today and set up a system for smart water use in the future. A thorough and feasible Water Conservation Plan for the City can assist this community to manage its water resources and provide added

stability for this utility. The purpose of this Water Conservation Plan is to guide Dacono in the process of water conservation planning and implementation. The planning horizon for this plan is ten years, from 2012 to 2021.

CHAPTER 2 – PROFILE EXISTING WATER SYSTEM

Characteristics of City of Dacono Water Supply System

Population and Service Area

The City is located 30 miles north of Denver in Weld County, Colorado (**Figure 2.1**). Dacono is part of a tri-town area that includes the Towns of Firestone and Frederick. This area is anticipated to grow significantly, as the planning area for the City alone covers 22 square miles.

The population data for Dacono was obtained from the State Demography office. This data was adjusted considering actual and estimated residential building permits from 2008 to 2010 and 2.5 people per household. This population trend is shown on **Table 2.1**. Within the planning period of 2012 to 2021, the population grows from 4,426 to 5,664.

Table 2.1 – City of Dacono Historical Population

Year	Population	Growth Rate
2005	3,680	-
2006	3,893	5.8%
2007	4,127	6.0%
2008	4,160	0.8%
2009	4,217	1.4%
2010	4,255	0.9%
2011	4,340	2.0%
2012	4,426	2.0%
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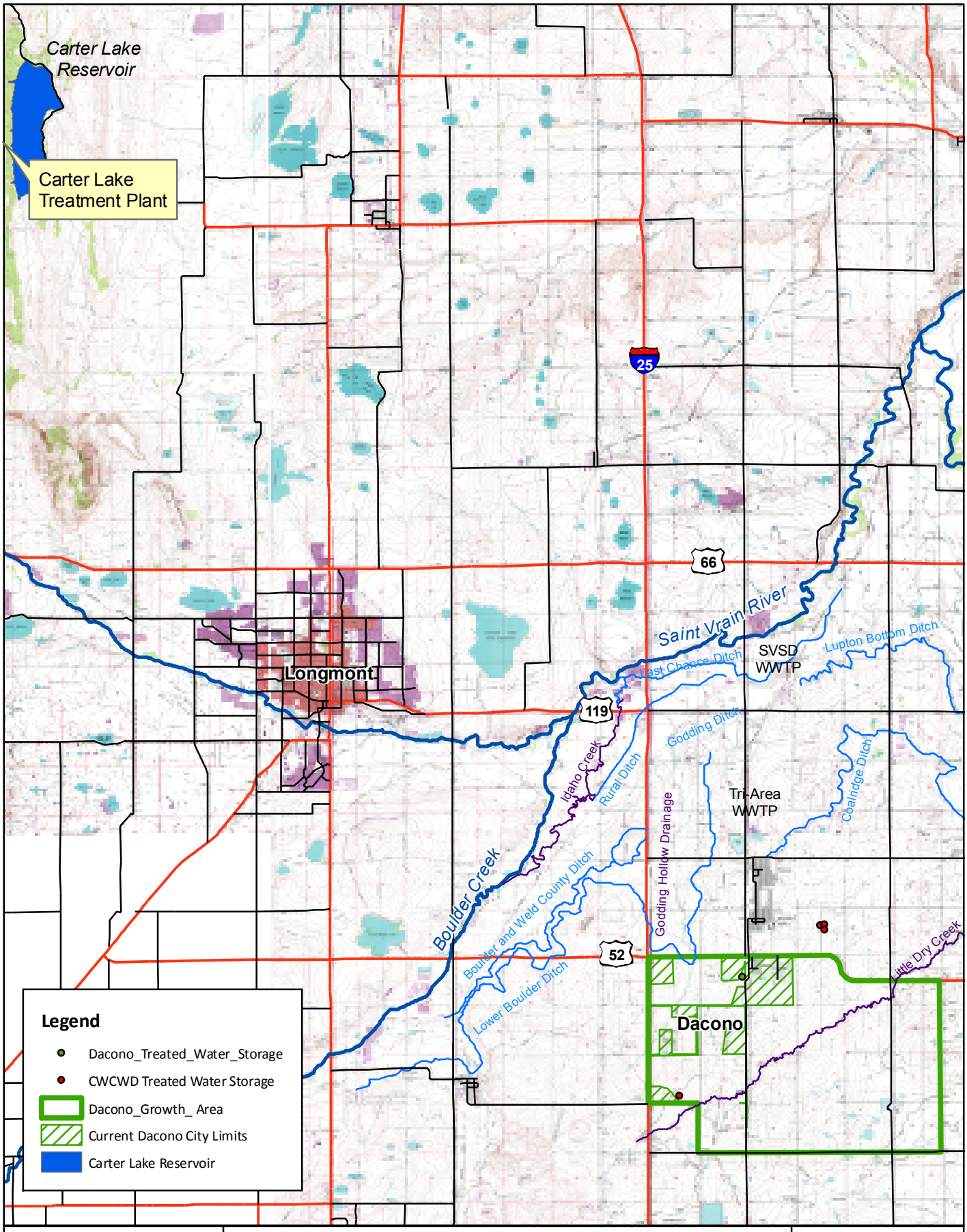

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Figure 2.1
City of Dacono
General Location Map

Date:	5-3-2011
Drawn By:	KKF
Scale:	1 inch = 2.68 miles
Job No:	10-130

Water Distribution System

Dacono receives its potable water supply from CWCWD's water treatment plant at the base of Carter Lake. CWCWD is responsible for delivering water through its infrastructure, which it owns, operates and maintains, up to the seven master meters for Dacono. After the master meters, the City is responsible for operating and maintaining its distribution system to its customers.

The distribution system includes over 30 miles of pipelines that range in size from 12-inch lines to 4-inch laterals as shown on **Table 2.2**. The PVC pipelines are relatively new since 2000 and are included within areas of new development and pipeline replacement. Older asbestos pipe is located within a 1973 subdivision and ductile iron pipes are from 1986 when the pump station was constructed.

Table 2.2 – Miles of Distribution System Pipeline for the City of Dacono

Diameter (in)	Total Length (miles)
4	1.9
6	15.4
8	8.3
10	2.8
12	2.1
Total	**30.5**

The City has storage facilities that consist of a one million gallon (MG) tank that was constructed in 1989 and services old town and the Sharpe Farms subdivision as necessary. CWCWD operates a 2-MG storage tank at the Sweetgrass Subdivision in Dacono and can also supply Dacono's 1-MG tank when its pump station is not operating.

Service Connections and Water Demand

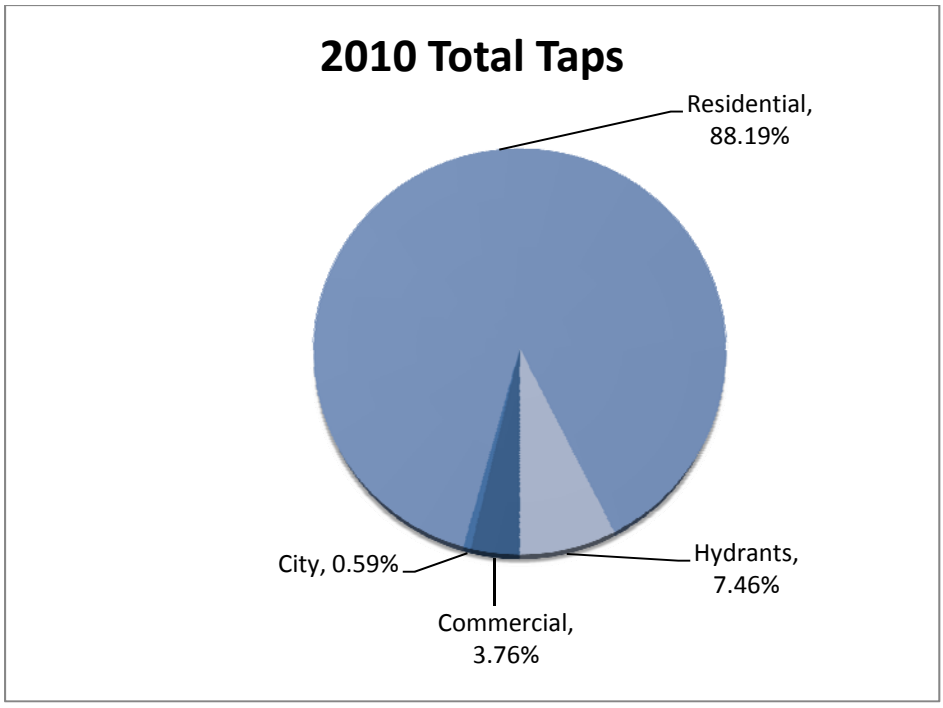
The City of Dacono has two main customer categories for billing its water deliveries: Commercial and Residential. The other categories of water use that are tracked in the City's billing system are: City, which is water used by the City and not billed and Hydrant, which consists of water used by both the City and outside contractors doing work for the City. Hydrant use is sometimes billed to the contractors, but the City's portion is not billed.

By the end of 2010, Dacono was serving 1,659 taps. The number of taps per customer category is as follows:

- Residential – 1,455 taps
- Commercial – 57 taps
- City – 10 taps
- Hydrant – 127 taps

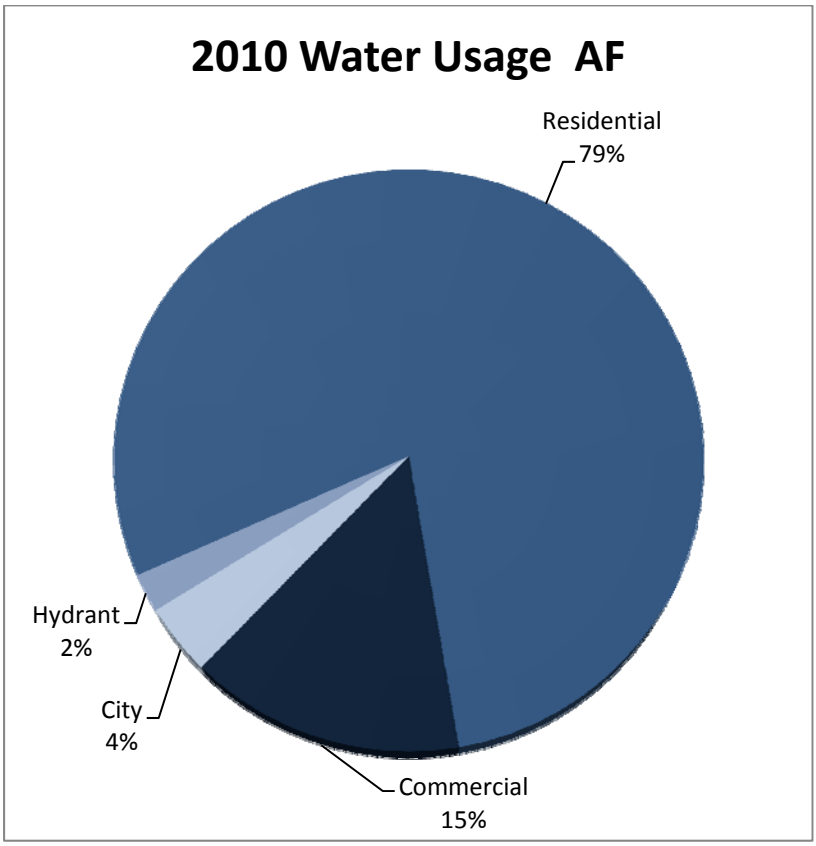
Each of the customer categories are shown in **Figure 2.2** below with the coinciding percentage of total taps.

Figure 2.2 – Percentage of Taps per Category



The tap distribution for the same customer categories looks different than the water use distribution as shown in **Figure 2.3**. The Commercial use category has less than four percent of the taps but uses 15 percent of the water due to high volume usage by some Commercial businesses. The City use category has a very small percentage of taps but has a higher overall water use due to the irrigation of City parks and greenbelts. This water usage information across the different customer categories is helpful to consider when selecting conservation measures to target.

Figure 2.3 – Percentage of Water Use per Category



Sources of Water Supply

The City's water supply currently consists solely of CBT water, which is summarized in **Table 2.3**.

Table 2.3 – City of Dacono Water Rights

Water Right	No. of Units Owned	Yield (AF/Unit)		Total Yield (AF)	
		Average Year Yield	Dry-Year	Average Year Yield	Firm or Dry Year Annual Yield
CBT	1,779	0.7	0.5	1,245	890
			TOTAL	**1,245**	**890**

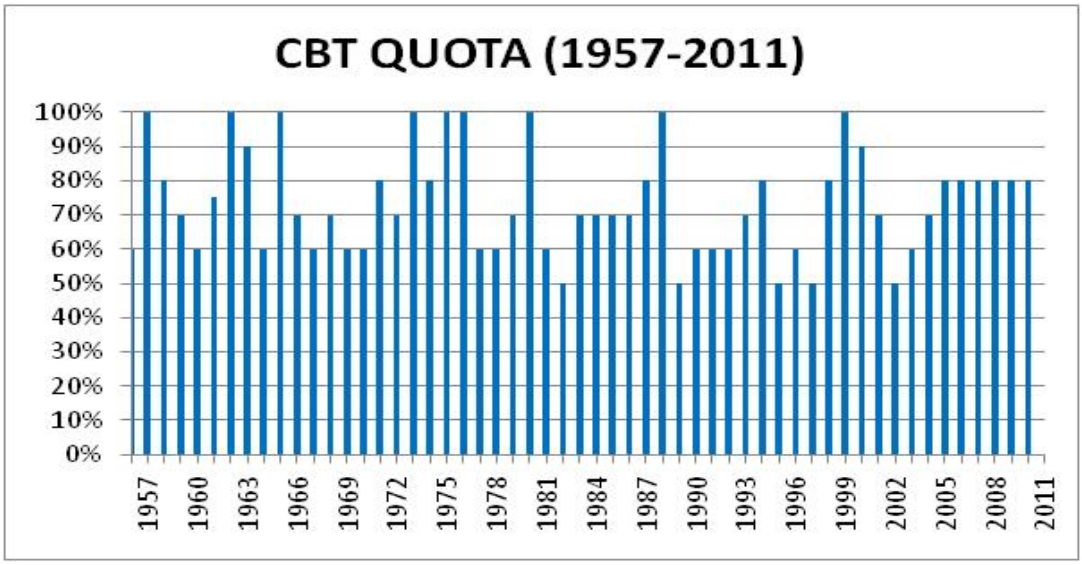
CBT Water

CBT facilities divert water from the western slope of Colorado to the Front Range to supplement the region's native water supplies. It is the largest trans-mountain water diversion project in Colorado. It was constructed by the Bureau of Reclamation between 1938 and 1957 and is maintained by the Northern Colorado Water Conservancy District (Northern Water). The Project imports an average of 213,000 AF (69 Billion Gallons) of water each year to many public and private water users along the northern Front Range and northeastern Colorado for agricultural, municipal and industrial uses.

The yield of CBT units is established each year by the Northern Water Board through what is known as the quota setting process. The basis for setting the quota is to attempt to make every year look like an average year. The Northern Water Board examines the region's native supplies and local storage before declaring a quota that meets the supplemental need of the region as a whole. As a result, the quota is typically lower in wet years because native supplies are plentiful and local reservoirs are full, so less CBT water is required to satisfy water demands. In dry years, the quota is typically higher to meet the higher demand for water. As CBT continues to transfer from agricultural to municipal use, the landscape of using the Project as a supplemental supply is changing.

In over fifty years of operation, the average yield has been 0.73 AF per unit (238,000 gallons per unit) and the commonly used average quota is 70 percent. The yield has never been less than 0.50 AF (163,000 gallons) per unit (50 percent quota) or more than 1.0 AF (325,851 gallons) per unit (100 percent quota). The annual quota established by the Northern Water Board over the years is shown in **Figure 2.4**.

Figure 2.4 – Annual CBT Quota History



Agreement with CWCWD

Dacono has an agreement with CWCWD that states CWCWD will be the exclusive water provider for the City. This agreement has a clause that limits Dacono's water deliveries to a 10% increase from the average minimum flow over the previous three years. This means if CWCWD would enforce this clause, the City will not be able to grow more than 10% per year. Dacono is also limited to water sources that can be treated within CWCWD's system such as CBT, Windy Gap and/or NISP water.

Native Water Supplies

Currently Dacono is not utilizing any of the native water supplies surrounding the City. There is a possibility of using some of the surrounding ditch systems for non-potable irrigation, such as the Lower Boulder Ditch, Coalridge Ditch and FRICO-Standley water. These supplies could be worked into Dacono's overall water portfolio on a case-by-case basis as it makes sense.

Water Costs and Pricing

Water Fund

The Water Fund for Dacono is used to finance the cost of service for current and future water delivery. The fund is made up of water development fees and monthly water sales. Monthly water sales cover the City's cost of water service. Fees and water rates are evaluated yearly to ensure that the cost of service is covered and the water supply is not jeopardized.

Table 2.4 shows the water tap fee that covers costs associated with connection to the City's system. The total tap fees range from $11,405 for a 5/8-inch tap, up to $180,000 for a 3-inch tap. This tap fee includes CWCWD's costs to treat and delivery water along with other fees for the City, parts and administration.

Table 2.4 – City of Dacono Water Tap Fees

Water Tap Rates	Basic Tap Fee	City	Parts	Admin	Total Tap Fee
5/8-in	$10,000.00	$1,000.00	$276.91	$127.70	$11,404.61
3/4-in	$13,000.00	$1,500.00	$308.18	$180.82	$14,989.00
1-in	$20,000.00	$1,500.00	$341.23	$184.13	$22,025.36
1.5-in	$36,500.00	$1,500.00	$613.13	$211.32	$38,824.45
2-in	$56,000.00	$1,500.00	$801.39	$230.14	$58,531.53
3-in	$180,000.00				$180,000.00

Charges for Water Service

All water users are charged a monthly base rate, which reflects the fixed costs associated with providing water services. **Table 2.5** shows the current rates and minimum usage charge for each size of meter based on Ordinance No. 653. Each meter size has three tiers of usage that is charged separate rates. For example, a 5/8-inch meter has a minimum charge of $28 for up to 7,000 gallons. For every thousand gallons after that up to 10,000, the user is charged $1.50 and $2.00 per thousand gallons for any usage above 10,000 gallons. There is also a maximum annual consumption for each meter size that shall not be surpassed for that customer. The largest meters are 3-inch and include a minimum charge of $1,001 and a maximum annual consumption of 12,000,000 gallons. Per Ordinance No. 653, annual consumption in excess of maximum amounts allowed for each meter size shall be charged $0.05 per gallon for each gallon that is exceeded.

Table 2.5 – City of Dacono Water Rates

Metered Customers	Tiered Gallon Usage		Minimum charge	$/additional thousand gallons	Maximum Annual Consumption (gallons)
5/8" meter	0	7,000	$28.00		300,000
	7,001	10,000		$1.50	
	10,001	or more		$2.00	
3/4" meter	0	17,500	$61.00		750,000
	17,501	25,000		$1.50	
	25,001	or more		$2.00	
1" meter	0	40,000	$134.00		1,500,000
	40,001	55,000		$1.50	
	55,001	or more		$2.00	
1.5" meter (commercial)	0	73,500	$265.00		3,250,000
	73,501	100,000		$1.50	
	100,001	or more		$2.00	
1.5" meter (residential)	0	73,500	$182.50		3,250,000
	73,501	100,000		$1.50	
	100,001	or more		$2.00	
2" meter	0	140,000	$502.00		6,000,000
	140,001	200,000		$1.50	
	200,000	or more		$2.00	
3" meter	0	280,000	$1,001.00		12,000,000
	280,001	360,000		$1.50	
	360,001	or more		$2.00	

Each customer is also charged a monthly capital improvement fee in addition to the monthly water service charge. This capital improvement fee is used for repayment of bonds for the water tower and other water bonds, line replacement and other capital costs. These capital improvement charges are shown on **Table 2.6**.

Table 2.6 – City of Dacono Capital Improvement Fees

Water Tap Rates	Charge per Month
5/8-in	$17.00
3/4-in	$42.50
1-in	$85.00
1.5-in	$177.50
2-in	$338.00
3-in	$676.00

Billing and Collections

Dacono water customers are billed for their water usage on a monthly basis. The water bills are mailed out by the 4th day of each month and payments are due on the 30th of each month. Per Ordinance No. 653, a delinquency fee of $4 for each month delinquent shall be charged and not imposed if paid in full within five days after the scheduled due date. A disconnect fee of $30 will be charged for owner requested discontinuation, $50 for the first disconnection due to delinquency, $75 for the second disconnection due to delinquency and $100 for the third and all subsequent disconnections due to delinquency for the duration of service to the owner. Any payment returned due to insufficient funds, will be charged a $20 fee.

Water charges reflected on monthly utility bills are a combination of a base service delivery charge and a metered consumption usage charge, if the base usage is surpassed.

Potable water sales in 2010 totaled $669,150 as shown on **Table 2.7**.

Table 2.7 – City of Dacono Water Revenue

Water Use Category	2006	2007	2008	2009	2010
Residential	$548,374	$559,511	$575,286	$567,064	$579,922
Commercial	$74,506	$71,315	$84,593	$86,584	$89,228
Total	$622,880	$630,826	$659,879	$653,648	$669,150

System Limitations

Along with areas of high water use, system limitations can provide insight into how and where to set water conservation goals. Discussions here will include both current and potential system limitations. Ideally, conservation can help mitigate a portion of the limitations and improve the reliability and efficiency of the system.

Future Water Supply

Dacono is a participant in Northern Integrated Supply Project (NISP) which is a regional water supply project coordinated by Northern Water to provide 40,000 AF of new water supply and storage to 15 different water providers along the Front Range. This project proposes two large reservoirs: Glade and Galeton. This project is currently undergoing permitting by the Army Corps of Engineers. The City has estimated a need of approximately 1000 AF from NISP.

Change of Use

Conversion of native water rights from agricultural to municipal use requires detailed engineering analyses and applications to Water Court. The engineering analyses required involves changing the use of agricultural water which quantifies the historical consumptive use of the crops grown with the water right and return flows resulting from irrigation of those crops. Additional applications will be necessary for any future native water acquired by Dacono.

Water Treatment

All of the City's CBT water is treated by CWCWD. As mentioned previously, Dacono can only buy water that CWCWD is able to use within its system. If the City wanted to purchase other water rights for potable use, such as agricultural rights mentioned above, it would have to be treated at a new water treatment plant in the area.

Growth and Augmentation Demand

Significant growth is expected to occur for Dacono and with future availability of CBT shares uncertain for municipalities, the City needs to expand its water portfolio to include other sources. Agricultural water could be acquired for immediate non-potable irrigation use and for future potable use if a local water treatment facility was constructed.

Unaccounted-for Water Use

There are two types of water losses that occur in cities, apparent losses and real losses. Apparent losses are paper losses that can be caused by customer meter inaccuracies,

billing system data errors or unauthorized consumptions. Real losses are those that are physically lost within the distribution system, including the water treatment process.

Dacono's water losses are estimated to be around ten percent. Although the City has completed meter upgrades and water line replacement to improve system losses, there are still areas with older pipe that can benefit from leak detection and water line replacement. The City recognizes the importance of improving system water loss and would like to actively pursue this in the Water Conservation Plan.

Statewide Water Supply Initiative

In 2003, the Colorado General Assembly authorized Colorado Water Conservation Board (CWCB) to implement the Statewide Water Supply Initiative (SWSI) as a result of growing pressure on water supplies in Colorado and the 2002 drought. The study identified current and future water demands, available water supplies, and existing and planned water supply projects in eight major river basins in the State. SWSI was recently updated to SWSI 2010 which projects demands to 2050 and includes passive water conservation savings. Passive savings includes such things as future development using more efficient water fixtures in their building process.

The City of Dacono is located in the South Platte River Basin where SWSI 2010 identified a 58% gap between water needs and water supplies in the Basin by 2050. Water conservation is one method the SWSI report identified for meeting this gap.

Policies and Planning Initiatives Affecting Water Use

Municipal Code

Currently the City does not have a "no water waste" ordinance, but they are looking forward to establishing one in this plan. They do have voluntary water restrictions in Resolution 08-43.

Current Water Conservation Activities

Dacono has considered water conservation in its planning and has developed a number of measures to promote efficient water use. The following is a list of water conservation measures and programs that the City has already started.

- The billing software provides customer water bills that show the previous 12-months of water usage.
- Leak detection is performed on as needed basis. Electronic leak detection is done by an outside contractor.
- The City replaced approximately 85% of its water mains as part of its street management program from 2005 to 2008.
- The City recently upgraded the customer meters to a Badger metering system.

- Mobile home parks have a meter for each customer not just a master meter for the whole community.
- The City has voluntary water restrictions in Resolution 08-43.
- The City website provides a link for “Water Conservation” with tips on lawn watering and the voluntary water restrictions. The City also has a newsletter that can communicate water conservation tips.

Use by Customer Category

In 2010, Dacono billed water demand across four customer categories which total 483 AF as shown in **Table 3.1**. These four categories encompass all of Dacono's potable water use.

Table 3.1 – 2010 Water Use by Customer Category

Water Use Category	2010 Billed Water Demand (AF)	Percent of Total
Residential	386	80%
City	20	4%
Commercial	72	15%
Hydrants	5	1%
Total	**483**	**100%**

Residential Water Use

Residential water use, which includes both indoor and outdoor uses, constitutes the largest water use in Dacono at 80 percent of the total water use. This equates to 386 AF per year of water consumption.

City Water Use

City water use includes both indoor and outdoor uses and composes four percent of the overall water use or 20 AF per year. The outdoor uses include irrigation of five city park/greenbelt areas.

Commercial Water Use

Commercial water users in the City include office buildings, retail, restaurants and other similar businesses. Water use for this category is 72 AF per year or 15 percent of the total water supplied by the City.

The largest Commercial water users in the City include Stericycle Inc., Formby Ford and Furniture Row in addition to HOA's such as Sweetgrass, Sharpe, and Amber Hill. Although within residential subdivisions, HOA irrigation only taps are included in the Commercial category.

Hydrant Water Use

This category includes use by both the City and outside contractors. The City sometimes bills the contractors for their use, but not all of the time. Hydrant use totals five AF or one percent of the total water use.

Taps and Water Use Summary

The total number of taps for each customer category for the last five years is shown in **Table 3.2.** The total water use per customer category is shown in **Table 3.3**.

Table 3.2 – City of Dacono Taps by Customer Category

	Commercial	City	Residential	Hydrants	Total
2006	52	9	1,418	127	1,606
2007	54	9	1,458	127	1,648
2008	58	10	1,466	127	1,661
2009	63	10	1,479	127	1,679
2010	64	10	1,501	127	1,702
Average	57	10	1,455	127	1,659

Table 3.3 – City of Dacono Historical Water Use

	Commercial	City	Residential	Hydrants	Total
2006	68	22	359	16	466
2007	64	16	386	13	479
2008	80	21	388	13	502
2009	74	16	374	4	468
2010	72	20	386	5	483
Average	72	19	379	10	480

Calculating the water use per tap illuminates the high water users as shown on **Table 3.4**. The Commercial and City users have the highest ratios at 1.26 and 1.99 AF per tap respectively. The average Residential use is much lower at 0.26 AF per tap.

Table 3.4– City of Dacono Historical Water Use per Tap (AF/tap)

	Commercial	City	Residential	Hydrants	Total
2006	1.32	2.44	0.25	0.13	4.14
2007	1.18	1.80	0.26	0.10	3.34
2008	1.37	2.11	0.26	0.10	3.85
2009	1.17	1.60	0.25	0.03	3.05
2010	1.13	1.95	0.26	0.04	3.38
Average	1.26	1.99	0.26	0.09	3.60

Per Capita Water Use

Per capita water use, both system-wide and residential only, is a commonly used way to gage an entity's water use habits. System-wide per capita use can vary significantly between entities depending on the type of non-residential customers within the system.

Dacono averages 104 gallons per capita per day (gpcd) system-wide with 82 gpcd for Residential users between 2006 through 2010 as shown in **Table 3.5**. These values are on the lower end of "typical" water use and suggest that Dacono residents do not use a lot of water.

Table 3.5 – City of Dacono per Capita Water Use

Year	Total Water Use (AF)	Residential Water Use (AF)	Population	System Wide GPCD	Residential GPCD
2006	466	359	3,893	107	82
2007	479	386	4,127	104	84
2008	502	388	4,160	108	83
2009	468	374	4,217	99	79
2010	483	386	4,255	101	81
Avg	**480**	**379**	**4,130**	**104**	**82**

NOTE: GPCD = Gallons per Capita per Day

Indoor vs. Outdoor Use

In Colorado, a significant portion of water use typically occurs outdoors for irrigation. To determine Dacono's average outdoor use, we examined the average water use during the winter months (November to April) and the average use during the summer months (May to October), for 2009 and 2010. Approximately 32 percent of total water use for Residential is estimated as outdoor water use.

Demand Forecast

Using a projected population growth rate of two percent from 2011 to 2014 and three percent thereafter, we calculated projected demands for Dacono as shown in **Table 3.6.** The total water use for 2012 is 503 AF with a projected increase to 643 AF by the end of planning period in 2021. The total projected demand was split between each customer category based on the percentage of total water use presented in **Table 3.1.**

Table 3.6 – City of Dacono Demand Projections

Year	TOTAL Water Use MG	TOTAL Water Use AF	Residential 80% AF	Commercial 15% AF	City 4% AF	Hydrant 1% AF
2010	158	483	387	73	19	5
2011	161	493	394	74	20	5
2012	164	503	402	75	20	5
2013	167	513	410	77	21	5
2014	170	523	419	78	21	5
2015	176	539	431	81	22	5
2016	181	555	444	83	22	6
2017	186	572	457	86	23	6
2018	192	589	471	88	24	6
2019	198	607	485	91	24	6
2020	204	625	500	94	25	6
2021	210	643	515	97	26	6

We also calculated the volume of “produced” water needed to meet the demand considering the average system loss from the last several years. For 2010, 532 AF was needed to meet the 483 AF of demand. In 2021, 708 AF will be needed to meet the estimated demand of 643 AF.

Table 3.7 – Total Projected Produced Water Demand

Year	Total Projected Water Use AF	System Losses 10% AF	Total Demand AF	Total Demand MG
2010	483	48	532	173
2011	493	49	542	177
2012	503	50	553	180
2013	513	51	564	184
2014	523	52	576	188
2015	539	54	593	193
2016	555	56	611	199
2017	572	57	629	205
2018	589	59	648	211
2019	607	61	667	217
2020	625	62	687	224
2021	643	64	708	231

CHAPTER 4 - PROPOSED FACILITIES

Supply Forecasting

The City's 2007 Raw Water Master Plan estimates a need for 4,623 AF of water by 2050. The 2005 Comprehensive Plan estimates the final build-out will have a population of 56,600 people. The Raw Water Master Plan estimated that Dacono would need 12,000 AF to meet the demand at build-out. This is a considerable increase from the 2010 demand of 483 AF.

Proposed Facilities

Potential Facility Needs

The City does not propose many facilities upgrades as they have just undergone major upgrades to their system with meter and water line replacement. **Table 4.1** outlines the cost of the remaining water lines that need to be replaced. The City plans to pursue this as the funds become available.

Table 4.1 – Summary of Capital Improvements

Water Line Replacement	Water	Street	Total
MacDonald Ct	$385,000	$180,000	$565,000
Mac Lean St.	$118,000	$170,000	$288,000
Glen Dale Cr.	$385,000	$900,000	$1,285,000
Glen Heather St & Cr	$118,000	$140,000	$258,000
Glen Dale St	$200,000	$875,000	$1,075,000
Glen Dale Pl.	$31,000	$300,000	$331,000
Glen Ayers St.	$400,000	$678,000	$1,078,000
TOTAL	**$1,637,000**	**$3,243,000**	**$4,880,000**

CHAPTER 5 - WATER CONSERVATION GOALS

Goal Development Process

The development of water-savings goals for Dacono was a collaborative process involving Clear Water Solutions and City staff. Information was gathered from billing records and existing planning documents to properly characterize the system, resources and water use. Development of this data showed the City's largest water use customer categories, seasonal usage, system limitations and losses, and outlined the City's existing conservation efforts and their estimated effectiveness.

Once the water use for each customer category was identified, we met with staff to discuss water-savings goals and the potential methods to reach those goals. Initial reduction percentages were established and a universal list of measures and programs were compiled for consideration. The goals focused on the water use areas that could be successfully impacted considering factors such as water savings potential, costs, control, and public acceptance.

Water Conservation Goals

Establishing water conservation goals is an iterative process that begins with quantifying the future demand for water based on current water-use habits and identifying areas water use can feasibly and effectively be reduced. Reduction of future water demand through water conservation can potentially delay planned water supply acquisition and delay the need for infrastructure improvements. Discussions with staff focused their desire to analyze the City's rate structure, implement education programs and supply side measures.

In setting initial water savings goals for the City, we looked at the current water use per customer category and the limitations of the water supply system. **Table 5.1** shows initial goals established for each customer category.

Table 5.1 – Dacono's Water Conservation Goals

Water Use Categories:	Total Projected Water Use (2011 to 2020)	Reduction Goals for Planning Horizon	
	(AF)	(%)	(AF)
Residential	4,535	10.0%	453
Commercial	850	5.0%	43
City	227	8.0%	18
Unaccounted-for Losses (currently 10%)	567	2.5%	140
Total Water Production:	6,179		
Total Demand Reduction:			654
Total Percent Reduction:			11%

Residential Goals

The per-capita Residential use is lower than other typical residential water users along the Front Range. However, we set the reduction goal at ten percent for this customer category.

Commercial Goals

The Commercial category includes but is not limited to restaurants, retail and office buildings. Little is known about the water use habits of these customers and until results from conservation measures have been monitored, the actual savings are difficult to predict. For now, the City will set a goal of five percent. Savings for the next water conservation plan will be easier to estimate.

City Goals

Dacono believes that it could reduce the water use within the City considerably if they are able to retrofit the indoor and outdoor fixtures with more water efficient devices. For this reason, we selected an eight percent savings for this category.

Unaccounted-for Losses

The average loss in the system due to leaks, record keeping errors, theft, or lack of measurement is approximately ten percent of the water production. The goal for the City is to reduce the system losses by 2.5 percent.

CHAPTER 6 – CONSERVATION MEASURES AND PROGRAMS

Water Conservation Measures and Programs

We developed a universal list of conservation measures and programs. The measures and programs were placed into five major categories: Utility Maintenance Programs, Regulatory Controls and Standards, Educational Programs, Rebates and Incentive Programs, and Audit Programs. The universal list is shown in **Table 6.1** with existing measures highlighted in green.

Screening Criteria

The following screening criteria were compiled based on discussions with staff. The criteria were chosen as a general screening to pare down the universal list to a list of measures and programs to evaluate further, including reviewing costs to implement, expected water savings, and loss of revenue from the water savings. Each measure and program in **Table 6.1** was screened with the following criteria.

- Financial implications
- Staff availability
- Staff and Council approval

Screening of Conservation Measures and Programs

The purpose of the initial screening was to create a list of measures and programs that would be evaluated further in the planning process via a cost-benefit analysis. A meeting was held with City staff to discuss each measure/program on the universal list and eliminate ones that were not feasible using the established screening criteria.

The list of measures was also evaluated to determine if the CWCB Minimum Required Water Conservation Plan Elements were addressed. The required elements that CWCB wants to see evaluated include:

- Water-efficient fixtures and appliances, including toilets, showerheads, and faucets
- Low water use landscapes, drought resistant vegetation, removal of phreatophytes (a deep rooted plant that obtains water from the water table or the layer of soil just above it. Includes cottonwoods, tamarisk, etc.), and efficient irrigation
- Water-efficient industrial and commercial water use processes
- Water reuse systems
- Distribution system leak identification and repair

- Dissemination of information regarding water use efficiency measures, including public education, customer water use audits, and water-saving demonstrations
- Water rate structures and billing systems designed to encourage water use efficiency in a fiscally responsible manner
- Regulatory measures designed to encourage water conservation
- Incentives to implement water conservation techniques, including rebates to customers

The screening was completed on February 2, 2011. The resulting decisions are noted on **Table 6.1.**

Table 6.1 – Universal List of Conservation Measures and Programs

Conservation Measure or Program		Existing	Further Evaluation	Comment
Supply side measures & programs	**Utility Maintenance Programs**			
	Billing Software Upgrades	X	Yes	Software is current but could do further updates to make a web-based version
	Water Reuse System		No	They don't have their own WTP and CBT cannot be reused.
	Leak Detection & Repair Program	X	Yes	Interest in electronic leak detection and on-going repair/detection
	Installation of Advance Metering Infrastructure (AMI)		No	This measure is cost-prohibitive at this time.
	Sub-Meter Master Meters/ Mobile Home Parks		No	All the mobile homes already have their own meters at each dwelling.
	Leak Detection for Master Meter Communities		No	Leak detection in these areas would not be any different than throughout the community.
	Meter Testing and Replacement Program	X	Yes	On-going calibration of meters. Badger program was installed in 2010.

Conservation Measure or Program		Existing	Further Evaluation	Comment
Demand side measures & programs	**Regulatory Controls and Standards**			
	Water Waste Ordinance		Yes	
	Removal of Phreatophytes e.g. Cottonwoods		Yes	They have a tree removal ordinance they can review with this in mind.
	Drought Mitigation Plan		Yes	
	Water Restrictions-Hours/Days	X		They did voluntary water restrictions in 2008. It is mentioned in one of their Resolutions.
	General Evaluation of Policies that Encourage Water Savings		Yes	
	Water Rate Structure Changes		Yes	Last rate increase was in 2005, so they are very interested in doing this.
	Turf and Landscape Restrictions/Standards for New Construction		Yes	Very interested in setting standards for future growth in Dacono since it will be signficant.
	Irrigation System Requirements/Standards for New Construction		Yes	Very interested in setting standards for future growth in Dacono since it will be signficant.
	Laudromat Requirements/Standards for New Construction		Yes	
	Soil Amendment Ordinance for New Landscapes		Yes	
	Requiring Wind and/or Rain Sensors for Commercial and Open Space Irrigation		Yes	Very interested in setting standards for future growth in Dacono since it will be signficant.
	Restrict High Water-Use Turf on Medians or 6:1 Slopes		Yes	Very interested in setting standards for future growth in Dacono since it will be signficant.
	Restrictive Covenants Ordinance		No	This is not an issue for Dacono.
	Educational Programs			
Demand side measures & programs	Billing Statements that Encourage Water Savings	X	Yes	Already have excellent billing statements but could do more with messaging.
	Children's Water Festival		No	Too time intensive for staff
	Water Education Wagon		No	Too time intensive for staff
	Xeriscape Garden Demonstration		Yes	Could do this at the trailhead or in Parks.

Conservation Measure or Program		Existing	Further Evaluation	Comment
Demand side measures & programs	**Rebates and Incentive Programs**			
	Xeriscape Gardening Classes		No	Too time intensive for staff
	Xeriscape Program for Commercial		No	Not many commercial users and too time intensive for staff
	Xeriscape Program for Open Space (HOAs)		Yes	Very interested in decreasing water use in HOA's - one of their largest users
	School Education Program (K-12 Education)		Yes	Interested in programs like Project WET
	Website Water Use Calculator		Yes	Interested in using their website to showcase conservation measures
	Post Commercial, Industrial, and Public BMPs on Website or as Bill Stuffers		No	
	Property Manager/HOA Education and Training		Yes	Very interested in decreasing water use in HOA's - one of their largest users
	Public Education - Newsletter & Website	X	Yes	
	Send ET Irrigation Scheduling in Water Bill		Yes	
	Commercial Toilet and Waterless Urinal Rebates		No	Too time intensive for staff
	Distribute Toilet Retrofit Devices		No	Too time intensive for staff
	Distribute Pre-rinse Spray Heads to Restaurants & Institutions		No	Not a big use for the City and too time intensive for staff
	Rebate Programs for Toilets, Clothes Washers, Dishwashers, Faucets and Showerheads		Yes	
	Rebates for ET (SMART) Sprinkler System Controllers		Yes	
	Turf Replacement Incentives		No	Too time intensive for staff also financially undesirable
	Zero Interest Loans for Washers		No	Not interested in providing this kind of funding.

Conservation Measure or Program		Existing	Further Evaluation	Comment
Demand side measures & programs	**Rebates and Incentive Programs**			
	Water Conservation Upgrades for City Facilities-Outdoor		Yes	
	Water Conservation Upgrades for City Facilities-Indoor		Yes	
	Xeriscape Incentives for all customer categories		No	Too time intensive for staff
	Irrigation System Efficiency Device Rebates		Yes	
	Wind and/or Rain Sensor Rebates for Residential or Commercial		Yes	
	Low Income Retrofit Program		No	Too time intensive for staff also financially undesirable
	Audit Programs			
	Commercial Water Audits		Yes	
	Residential Audit Kit		No	Too time intensive for staff
	Sprinkler System Audit Kit and Instructions		No	Too time intensvie for staff
	Irrigation Audit of City Parks and Properties		Yes	
* Shaded cells represent existing measures.				

CHAPTER 7 – EVALUATION AND SELECTION

The initial screening of the measures and programs with City staff resulted in eliminating 22 measures and selecting 30 measures for further evaluation. Eliminated measures will be evaluated with future planning efforts. Some of the measures have been combined as noted in **Table 6.1**. The benefits and costs of the selected measures and programs are shown in **Table 7.1**. The grouping of the measures enabled us to consider like measures and avoid double counting savings. Details about the cost-benefit evaluation and information about each measure can be found in the following section with further detail available in **Appendix A.**

Utility Maintenance Programs

- Billing Software Upgrades
  This is an existing measure that the City would like to expand to include online billing access for customers. Upgrades can also allow the City to quickly retrieve water usage data and relay that to customers.

- Leak Detection and Repair Program
  This measure would include on-going leak detection and repair for the City's water delivery system. The City program tests the entire system over a four to five year period or does about a quarter of the system every year. This measure would include hiring an outside consultant that uses sounding equipment to help pinpoint leaks within the system. City staff performs the repairs in-house.

- Meter Testing & Replacement
  This would be an on-going program to keep the meters calibrated appropriately and replaced when needed.

Regulatory Controls

- Water Waste Ordinance
  The City would develop an ordinance prohibiting the waste of water as a foundational measure for its Water Conservation Plan. This is an important regulatory "stick" when drought restrictions are put in place and enforcement is required to ensure water supplies are adequate.

- Removal of Phreatophytes
  The measure would require further evaluation of the City's tree removal policy with consideration to water conservation. Phreatophytes consume large amounts of water, so removal of them may aid in water availability,

although there typically is a negative public perception associated with this program.

- General Evaluation of Policies
  The City would complete a general evaluation of all current City policies, specifically those ordinances that could involve water conservation measures.

- Water Restrictions
  The City currently has voluntary water restrictions and would like to keep this measure in the place and evaluate the possibility of other restrictions as necessary.

- Water Rate Structure Changes
  The City currently does have a tiered rate structure but it has not been verified that it encourages water conservation. A rate study may be necessary to ensure maximum water conservation savings. The City has not evaluated its water rates since 2005.

- Turf and Landscape Standards for New Construction
  These standards are usually enforced in the Land Use Codes for municipalities. They can include the use of Xeriscape principles such as incorporation of low water-use plants, efficient irrigation systems, and grouping of similar water-use plants in irrigation zones. The turf and landscape standards may require a certain percentage of new landscapes to utilize low water use plantings. Certificates of Occupancy for new construction are given only after compliance with the standards has been met.

- Irrigation System Standards for New Construction
  These standards are usually enforced in the Land Use Codes for municipalities. Minimum standards for irrigation systems can be set as part of the building permit review process and Certificates of Occupancy for new construction are given only after compliance with the standards has been met.

- Soil Amendment Standards for New Landscapes
  Soil amendments include the addition of organic and inorganic matter to soil to improve its texture nutrient load, moisture-holding capacity and infiltration rate. The City can make soil amendments a requirement for the building permit process.

- Require Wind/Rain Sensors for Commercial Development
  Requiring wind and/or rain sensors prevents irrigation during times of rain or when it's too windy to effectively irrigate. Commercial developments could have large irrigated areas making this a desirable target for conservation.

- Turf Restrictions for Commercial Development
  Restricting areas for turf for commercial entities will help reduce the water demands in this category. This can be part of the permitting process within the City for new or existing business as they see fit.

- New Laundromat Standards
  This would involve developing standards to require low-flow washers for new construction.

Educational Programs

- Billing Statement that Encourage Water Savings
  Currently the City's water bills show the previous year's water usage. This could be expanded to distribute other information such as ET scheduling.

- School Education
  This program includes time for Project WET (Water Education and Training) to work with local educators to develop water conservation education programs within the school systems.

- Water Conservation Upgrades to Website
  The City already has a user friendly website. More water conservation information could be added such as water conservation tips, lawn watering guides, residential water use calculator, promotion of the EPA Water Sense program, and links to other water conservation websites. The website can also include customer surveys as well as other water conservation program information that the City is doing such as rebates and/or audits. The City also has a newsletter that could include periodic water conservation information as well.

- Xeriscape Garden Demonstration
  This would include the design and construction of a Xeriscape Garden that would be open to the public to learn about the Xeriscape process. Guided and self tours are offered with a specifically designed pamphlet covering plant types, mulches and sprinkler system fine-tuning.

- Property Manager/HOA Training & Education
  Home Owners Associations often have large lawn areas that require a considerable amount of water. Educating them on wise irrigation practices could help reduce water demands for these areas.

Rebates and Incentives

- Rebate Program for Toilets, Clothes Washers, Faucets, and Showerheads
  This program would provide rebates to residential users who purchase low-flow or high-efficiency toilets, clothes washers, faucets, and showerheads. These are the rebate programs with which surrounding entities have found the most success. Rebates for the selected fixtures would be in the range of those provided by surrounding water providers.

- Irrigation System Efficiency Device Rebate for Residential and Commercial
  Rebates could be offered for residential and commercial customers to install irrigation system efficiency devices. Irrigation system efficiency devices may include ET (SMART) sprinkler system controllers and/or wind and rain sensors. Smart controllers for sprinkler systems use real-time weather data or a soil moisture sensor to determine an irrigation schedule. These controllers can be programmed to accommodate different zones with varying landscapes. Smart controllers are the most efficient surface irrigation technology. Wind and rain sensors cost from $25 to $45, while automatic irrigation system controllers range from $50 to $250.

- Water Conservation Upgrades for City Facilities- Indoor
  This program would provide high efficiency fixture replacement for toilets, showerheads and faucet aerators within City buildings. This would provide a positive message to the citizens by showing that the City is committed to saving water.

- Water Conservation Upgrades for City Facilities- Outdoor
  This program would include the installation of irrigation efficiency devices such as ET (SMART) sprinkler system controllers and/or wind and rain sensor for areas owned by the City such as City parks and lawn areas around City buildings. Again this would be a positive message to the citizens and demonstrate that the City is committed to water conservation.

- Residential Audit Kits
  Self-guided residential audit kits can be designed to include items such as leak detection tablets, surveys and sprinkler testing cones. Instructions for conducting the audit and evaluating the results can give residential customers insight and direction on how they can save water and money. The guidance offered in the instructions could lead the customer to take part in other conservation programs offered, including rebates.

- Commercial Water Audits
  Commercial customers are often the highest water users and have been an area of increasing focus for water conservation. Most commercial customers will participate in a water audit if they know it could identify ways to reduce their

operating costs over the long term. Water audits can be performed by a third party consultant and is an effective way to educate businesses on how they can save water.

- City Landscape Audits
  This measure would include hiring an outside consultant to audit the City's irrigation systems and identify potential areas for upgrade or repair due to leakage.

Costs and Water Savings of Conservation Options

Prior to evaluating the potential cost effectiveness of the measures/programs, it is important to understand the magnitude of typical indoor and outdoor uses and the contribution of each to total demand. There is a wide range of use related to each indoor and outdoor measure that can affect the potential water savings and cost effectiveness accordingly. The assumptions for calculating water savings used for this analysis were on the conservative end of the ranges found in the available water conservation research to avoid overestimating savings.

Many resources were used to estimate water savings including Amy Vickers Handbook of Water Use and Conservation, studies and papers from California and Arizona, local studies available from the American Water Resources Association, the Environmental Protection Agency, Western Resource Advocates, information from other Colorado municipalities, and the CWCB website.

Table 7.1 provides a cost-benefit analysis for all of the measures and programs previously identified to be evaluated further. A planning horizon of ten years is used to quantify the full benefit of these measures and programs. The costs and water savings over the planning period are calculated assuming the measures/programs all start in year one. This provides an equitable ranking of the measures, so they can be compared on an apples-to-apples basis. In reality, the measures and programs will be implemented according to the implementation plan schedule developed in Chapter 9.

The first five columns (Columns A-E) of **Table 7.1** identify the conservation measure or program and quantify the costs to the City. These costs include unit or annual costs for materials, staff time, and one-time start up costs. The table then quantifies water savings annually and for the entire ten-year planning horizon. Annual water savings and projected lost revenue are based on full implementation. This gives the City an idea of the anticipated water savings and estimated revenue impacts after full implementation.

The cost per 1,000 gallons of water saved is found by dividing the total cost by the total water savings for the entire ten-year period. The measures and programs are then ranked by cost per 1,000 gallons saved. This ranking helps to determine which measures will be more effective and to suggest a useful order of implementation.

Table 7.1 - Cost Benefit Analysis for Selected Water Conservation Measures/Programs

City of Dacono

Conservation Measure or Program (A)	Total Cost to Water Provider: Rebate (B)	One time Labor and Material Cost (C)	Annual Labor (D)	Annual Materials (E)	# of Participants per Year (F)	Gallons Saved per Unit per Year (G)	Estimated Annual Water Savings (gallons) (H)	Estimated Total Water Savings over Planning Period (gallons) (I)	Annual Revenue Loss Related to Water Savings (J)	Estimated Annual Cost (K)	Estimated Total Cost over Planning Period including Set-up (L)	Cost per 1000 Gallons Saved (M)	Rank (N)
Utility Maintenance Programs (Supply Side Measures)													
Billing Software Upgrades	$0	$6,750	$1,650	$0	0	0	2,031,747	20,317,473		$1,650	$23,250	$1.14	4
Leak Detection & Repair Program	$0	$0	$6,291	$0	0	0	2,031,747	20,317,473		$6,291	$62,910	$3.10	12
Meter Testing & Replacement	$0	$0	$10,260	$0	0	0	2,031,747	20,317,473	$0	$10,260	$102,600	$5.05	15
Regulatory Controls and Standards													
Water Waste Ordinance	$0	$500	$0	$0	0	0	877,345	8,773,454	$562	$562	$6,115	$0.70	2
Removal of Phreatophytes	$0	$500	$0	$0			877,345	8,773,454	$562	$562	$6,115	$0.70	2
Water Restrictions		$0	$150	$0			1,123,002	11,230,021	$2,246	$2,396	$23,960	$2.13	6
Water Rate Structure Changes	$0	$50,000	$750	$0	0	0	3,509,382	35,093,816	$7,769	$7,769	$57,769	$1.65	5
Evaluation of Policies to Encourage Water Savings		$750	$0	$0	0	0	203,175	2,031,747		$0	$750	$0.37	1
Turf & Landscape Standards	$0	$500	$500	$0	13	0	31,230	1,717,626	$344	$844	$8,935	$5.20	17
Irrigation System Standards for New Development	$0	$500	$500	$0	13	0	31,230	1,717,626	$344	$844	$8,935	$5.20	17
Soil Amendment Ordinance for New Landscapes	$0	$500	$500		13	0	31,230	1,717,626	$344	$844	$8,935	$5.20	17
Requiring Wind/Rain Sensors for Commercial Development		$500	$500	$0	3		17,674	972,079	$194	$694	$7,444	$7.66	22
Turf Restrictions for Commercial Areas		$500	$500	$0	3		17,674	972,079	$194	$694	$7,444	$7.66	22
New Laundromat Standards		$500	$500	$0	0.10		1,841	101,258	$20	$520	$5,703	$56.32	28
Educational Programs													
Billing Statements that Encourage Water Savings	$0	$2,500	$500	$500		0	1,123,002	11,230,021	$2,246	$2,746	$29,960	$2.67	9
Water Conservation Website Upgrades/ Public Education	$0	$5,000	$500	$0	0	0	1,754,691	17,546,908	$3,509	$4,009	$45,094	$2.57	8
School Education Program (K-12)	$0	$3,000	$800	$500	0	0	738,817	7,388,172	$9,282	$10,582	$108,822	$14.73	26
Xeriscape Demonstration Garden		$5,000	$100	$500		0	236,421	2,364,215	$460	$1,060	$15,603	$6.60	20
Property Manager/HOA Training & Education		$5,000	$800	$125	5	0	561,501	5,615,011	$1,432	$2,357	$28,566	$5.09	16
Rebate and Incentive Programs													
Residential Rebate for Low-Flow Toilets	$50	$200	$250	$0	20	13,165	263,291	14,480,981	$2,896	$4,146	$41,662	$2.88	10
Rebate for High Efficiency Clothes Washer	$125	$200	$250	$0	5	5,596	27,982	1,539,030	$308	$1,183	$12,028	$7.82	24
Rebate for High Efficiency Dish Washer	$50	$100	$250	$0	20	617	12,337	678,535	$136	$1,386	$13,957	$20.57	27
Low Flow Faucet Rebate	$5	$100	$250	$0	20	6,428	128,568	7,071,218	$1,414	$1,764	$17,742	$2.51	7
Low Flow Showerhead Rebate	$5	$100	$250	$0	20	1,503	30,062	1,653,417	$331	$681	$6,907	$4.18	13
Irrigation System Efficiency Device Rebates	$25	$200	$250	$0	20	49,790	49,790	2,738,452	$1,078	$1,828	$18,479	$6.75	21
Water Conservation Upgrades at City Facilities - Indoor		$2,871	$0	$0			97,273	972,725		$0	$2,871	$2.95	11
Water Conservation Upgrades at City Facilities - Outdoor		$2,385	$0	$0			50,833	508,328		$0	$2,385	$4.69	14
Audit Programs													
Residential Water Audit Kits	$0	$2,200	$1,100	$0	30	0	42,361	2,329,835	$12,979	$14,079	$142,986	$61.37	30
Commercial Water Audits	$0	$1,000	$700	$0	12	18,411	92,053	5,062,910	$1,013	$4,213	$43,126	$8.52	25
City Irrigation Audits		$3,000	$0				5,083	50,833		$0	$3,000	$59.02	29

Column Explanations:

(A) Name of conservation measure or program
(B) A rebate provided upon approval of customer application
(C) One time labor and material costs involved in set up program or measure
(D) Labor involved each year for operation of measure or program
(E) Materials needed each year for each unit if listed or for the whole measure or program
(F) Number of participants expected to participate and resulting units or audits needed
(G) Gallons of water saved per unit as a result of participating in the program or measure
(H) Total water savings seen in a year from the measure or program
(I) Total water savings seen over entire ten year planning period; could be based on increasing water demand or a fixed use per account
(J) Revenue the water provider will not be paid if the water savings occur.
(K) Total annual cost to water provider plus the annual revenue loss.
(L) Total cost to implement and operate measure or program over entire planning period, including annual operation, one time set up costs and annual revenue lost due to water savings
(M) Cost per 1000 gallons saved = total cost over planning period divided by total water saved over planning period
(N) Ranks the measures and programs according to the price per 1000 gallons of water saved, lowest to highest

Comparison of Benefits and Costs

The resulting rank of measures by cost-benefit is shown in **Table 7.2**. The cost per 1,000 gallons saved ranges from $0.37 to $61.37. Some of the most cost-effective measures are evaluating policies, water rates and water restrictions, while some of the least cost effective measures include areas that don't have much savings, such as dishwasher rebates.

The rankings are a result of the ratio of cost, including lost revenue, to water savings. For instance, rebates for high efficiency clothes washers save a fair amount of water. However, the costs of these programs are high, so they rank lower than one might expect. This is only a cost per water saved ranking. There are other factors to consider, which will be accomplished in a second screening.

Table 7.2 – Cost-Benefit Ranking

Rank	Conservation Measures and Programs
1	Evaluation of Policies to Encourage Water Savings
2	Water Waste Ordinance
3	Removal of Phreatophytes
4	Billing Software Upgrades
5	Water Rate Structure Changes
6	Water Restrictions
7	Low Flow Faucet Rebate
8	Water Conservation Website Upgrades/ Public Education
9	Billing Statements that Encourage Water Savings
10	Residential Rebate for Low-Flow Toilets
11	Water Conservation Upgrades at City Facilities - Indoor
12	Leak Detection & Repair Program
13	Low Flow Showerhead Rebate
14	Water Conservation Upgrades at City Facilities - Outdoor
15	Meter Testing & Replacement
16	Property Manager/HOA Training & Education
17	Turf & Landscape Standards
18	Irrigation System Standards for New Development
19	Soil Amendment Ordinance for New Landscapes
20	Xeriscape Demonstration Garden
21	Irrigation System Efficiency Device Rebates
22	Requiring Wind/Rain Sensors for Commercial Development
23	Turf Restrictions
24	Rebate for High Efficiency Clothes Washer
25	Commercial Water Audits
26	School Education
27	Rebates for Dish Washer
28	New Laundromat standards
29	City Irrigation Audits
30	Residential Water Audits

Evaluation Criteria

After each of the conservation measures and programs were ranked by *cost per 1,000 gallons saved*, as shown in **Table 7.2**, the next step was to select conservation measures and programs for implementation. The criteria used for selection are as follows:

1. Staff availability to implement measure
2. Political and Financial implications
3. Staff and Council interest level in measures

Selected Conservation Measures and Programs

The second screening was accomplished by evaluating each measure/program based on the screening criteria and Dacono's overall goal for this Water Conservation Plan. The following four measures were eliminated in the second screening process:

- Removal of phreatophytes
- New laundromat standards
- School education
- Residential water audit kits

The City will re-evaluate these measures with future planning efforts.

In Chapter 5, conservation goals were established for the customer categories:

- Residential: 10% - 454 AF (148 MG)
- Commercial: 5% - 43 AF (14 MG)
- City: 8% - 18 AF (6 MG)
- Unaccounted-for Losses: 2% - 112 AF (37 MG)

The selected conservation measures/programs and associated water savings were arranged within the targeted customer categories to more easily compare the anticipated savings to the original goals. Some of the measures contribute savings to more than one category. **Table 7.3** shows the water savings for the selected measures, and is sub-totaled for each category.

Table 7.3 – Combined Water Savings of Selected Conservation Measures and Programs

Conservation Measures and Programs	Estimated Annual Water Savings after full Implementation (gallons)	Estimated Total Water Savings over Planning Period (gallons)
System Losses		
Billing Software Upgrades	2,031,747	20,317,473
Leak Detection & Repair Program	2,031,747	20,317,473
Meter Testing & Replacement	2,031,747	20,317,473
Subtotal - Gallons	6,095,242	60,952,418
Acre-Feet	19	187
Residential		
Water Waste Ordinance	738,817	7,388,172
Water Restrictions	945,686	9,456,860
Water Rate Structure Changes	2,955,269	29,552,687
Evaluation of Policies to Encourage Water Savings	171,095	1,710,945
Turf & Landscape Standards	13,555	745,547
Irrigation System Standards for New Development	13,555	745,547
Soil Amendment Ordinance for New Landscapes	13,555	745,547
Billing Statements that Encourage Water Savings	945,686	9,456,860
Water Conservation Website Upgrades/ Public Education	1,477,634	14,776,344
Xeriscape Demonstration Garden	236,421	2,364,215
Property Manager/HOA Training & Education	472,843	4,728,430
Residential Rebate for Low-Flow Toilets	263,291	14,480,981
Rebate for High Efficiency Clothes Washer	27,982	1,539,030
Rebate for High Efficiency Dish Washer	12,337	678,535
Low Flow Faucet Rebate	128,568	7,071,218
Low Flow Showerhead Rebate	30,062	1,653,417
Irrigation System Efficiency Device Rebates	20,333	1,118,321
Subtotal - Gallons	8,466,690	108,212,656
Acre-Feet	26	332
Commercial		
Water Waste Ordinance	138,528	1,385,282
Water Restrictions	177,316	1,773,161
Water Rate Structure Changes	554,113	5,541,129
Evaluation of Policies to Encourage Water Savings	32,080	320,802
Turf & Landscape Standards	17,674	972,079
Irrigation System Standards for New Development	17,674	972,079
Soil Amendment Ordinance for New Landscapes	17,674	972,079
Requiring Wind & Rain Sensors for Commercial	17,674	972,079
Turf Restrictions for Commercial Areas	17,674	972,079
Water Conservation Website Upgrades/ Public Education	277,056	2,770,564
Irrigation System Efficiency Device Rebates	29,457	1,620,131
Billing Statements that Encourage Water Savings	177,316	1,773,161
Property Manager/HOA Training & Education	88,658	886,581
Commercial Water Audits	92,053	5,062,910
Subtotal - Gallons	1,654,949	25,994,116
Acre-Feet	5	80
City		
Water Conservation Upgrades at City Facilities - Indoor	97,273	972,725
Water Conservation Upgrades at City Facilities - Outdoor	50,833	508,328
City Irrigation Audits	5,083	50,833
Subtotal - Gallons	153,189	1,531,885
Acre-Feet	0.47	5
Grand Total - (Gallons)	**16,370,069**	**196,691,075**
Acre-Feet	**50**	**604**

These savings were compared to the original goals set in Chapter 5. As mentioned earlier, water conservation goal setting is an iterative process; original goals are established, conservation measures are evaluated and selected based on appropriate criteria, and the resulting water savings are compared to the original goals. **Table 7.4** compares the anticipated water savings from the selected measures with the original goals and then adjusts the water saving goals for this plan.

Table 7.4 – Water Conservation Goals Comparison

		Initial Goals (Ch. 5)		Adjusted Goals			
Water Use Categories:	Total Projected Water Use (2012 to 2021)	Reduction Goals for Planning Horizon		Total Water Savings from Selected Programs	Resulting Reduction	Adjusted Reduction Goals for Planning Horizon	
	(AF)	(%)	(AF)	(AF)	(%)	(%)	(AF)
Residential	4,535	10.0%	454	332	7.3%	7%	332
Commercial	850	5.0%	43	80	9.4%	9%	80
City	227	8.0%	18	5	2.2%	2%	5
Unaccounted-for Losses	567	2.0%	112	187	3%	3%*	187
Total Water Production:	6,179						
Total Demand Reduction:			626	604			604
Total Percent Reduction:			10%		10%	10%	

** The goal is to reduce unaccounted losses from 10% to 7% or an overall 3% reduction.*

Over the ten-year planning period, the selected measures/programs provide an overall estimated water savings of 604 AF (197 MG). This is slightly lower than the initial water savings goals set in Chapter 5. The programs selected for the Residential and City goals were lower than the original goals while Commercial and Unaccounted for losses came in higher. The adjusted goals reflect what City staff believes to be obtainable.

After the goals were adjusted to better reflect the expected water savings, the estimated water use reduction is ten percent. Therefore, Dacono will target a reduction in its water use by ten percent over the next ten year as a result of implementation of this plan.

CHAPTER 8 – INTEGRATE RESOURCES AND MODIFY FORECASTS

Implementation Schedule

Water savings resulting from implementation of this Water Conservation Plan will occur gradually as the City has the resources to implement each selected measure and program and the water users respond to that implementation. Implementation grant availability will be crucial in the timing of implementation.

Table 8.1 proposes an implementation plan schedule that splits the effort over three years and allows time to apply for and possibly obtain grant money. A three-year implementation plan schedule is very ambitious and actual implementation of the Water Conservation Plan will likely occur over a longer period. The annual costs shown reflect the cost to implement the measure/program and maintain it. Any grant money obtained would reduce these yearly costs. The table also shows the percent of the total water saved over the planning period from each measure.

Table 8.1 – City of Dacono Water Conservation Plan Implementation Schedule

Measure/Program	Cost to Implement (1st year annual cost)	Annual On-going Costs (programs in 2nd or 3rd year of implementation)	% of Total Water Savings	Implementation Considerations	Grant Request
YEAR 1					
Utility Maintenance Programs					
Billing Software Upgrades	$6,750		12.4%	Funding	Yes
Leak Detection & Repair	$6,291		12.4%	Staff Time & Funding	Yes
Meter Testing & Replacement	$10,260		12.4%	Staff Time & Funding	Yes
Regulatory Standards Program (Phase 1)					
Water Rate Structure Changes	$50,000		21.4%	Staff time, Funding and Governmental Action	Yes
Water Waste Ordinance	$500		5.4%		No
Water Restrictions	$2,396		6.9%		Yes
Education Programs (Phase 1)					
Water Conservation Website Upgrades	$5,000		10.7%	Staff Time & Funding	Yes
Billing Statements that Encourage Water Savings	$2,500		6.9%	Staff Time & Funding	Yes
Total Year 1 Cost	**$83,697**		**88.47%**		
YEAR 2					
Utility Maintenance Programs (on-going)					
Billing Software Upgrades		$1,650	See Year 1		
Leak Detection & Repair		$6,291			
Meter Testing & Replacement		$10,260			
Regulatory Standards Program (Phase 1&2)					
Evaluation of Policies to Encourage Water Savings	$750		1.24%		
Turf & Landscape Stnds for New Development	$500		0.19%		
Irrigation System Standards for New Development	$500		0.19%		
Soil Amendment Ordinance for New Development	$500		0.19%		
Requiring Wind/Rain Sensors for Commercial	$500		0.11%		
Turf Restrictions for Commercial Development	$500		0.11%		
Water Rate Structure Changes		$750	See Year 1		
Water Restrictions		$150			
Education Programs (Phase 1 & 2)					
Xeriscape Demonstration Garden	$5,000		1.44%	Staff Time & Funding	Yes
Water Conservation Website Upgrades	0	$500	See Year 1		
Billing Statements that Encourage Water Savings		$500			
Rebate and Incentive Programs (Phase 1)					
Water Upgrades at City Facilities- Indoor	$2,871	0	0.59%	Staff, Funding & Materials	Yes
Water Upgrades at City Facilities- Outdoor	$2,385	0	0.31%		
Audit Program (Phase 1)					
City Irrigation Audits	$3,000	0	0.03%	Staff Time & Funding	Yes
Total Year 2 Cost	**$16,506**	**$20,101**	**4.41%**		

Table 8.1 cont. – City of Dacono Water Conservation Plan Implementation Schedule

Measure/Program	Cost to Implement (1st year annual cost)	Annual On-going Costs (programs in 2nd or 3rd year of implementation)	% of Total Water Savings	Implementation Considerations	Grant Request
YEAR 3					
Utility Maintenance Programs (Phase 3)					
Billing Software Upgrades		$1,650	See Year 1		
Leak Detection & Repair		$6,291			
Meter Testing & Replacement		$10,260			
Regulatory Standards Program (Phase 2)					
Turf & Landscape Standards for New Development		$500	See Year 2		
Irrigation System Standards for New Development		$500			
Soil Amendment Ordinance for New Development		$500			
Requiring Wind/Rain Sensors for Commercial		$500			
Turf Restrictions for Commercial Development		$500			
Water Rate Structure Changes		$750	See Year 1		
Water Restrictions		$150			
Education Programs (Phase 1, 2 & 3)					
Property Manager/HOA Training	$5,000		3.4%	Staff Time & Funding	Yes
Xeriscape Demonstration Garden		$600	See Year 2		
Water Conservation Website Upgrades		$500	See Year 1		
Billing Statements that Encourage Water Savings		$500			
Rebate and Incentive Program (Phase 2)					
Residential Rebate for Low-Flow Toilets	$1,450	0	1.61%	Staff and Funding and Procurement of Materials	Yes
Rebate for High Efficiency Clothes Washer	$1,075	0	0.17%		
Rebate for High Efficiency Dish Washer	$1,350		0.08%		
Low Flow Faucet Rebate	$450	0	0.79%		
Low Flow Showerhead Rebate	$450	0	0.18%		
Irrigation System Efficiency Device Rebates	$950	0	0.30%		
Audit Program (Phase 1)					
Commercial Audits	$4,200		0.56%	Staff Time & Funding	Yes
Total Year 3 Cost	**$14,925**	**$23,201**	**7.12%**		
Total Combined 3-Year Cost (implementation and annual costs)	**$158,430**				
Total Implementation Costs	**$115,128**				
Estimated Annual Costs (for measures shown)	**$43,302**				

The total cost to implement the conservation plan is $115,128. The cost to implement the plan including the annual costs for the first three years of on-going programs is $158,430. Annual on-going costs for the measures shown in **Table 8.1** total $43,302 per year. The implementation schedule will be most affected by available funding and staff time. While this schedule is optimistic, the goal is to allow time for researching and obtaining grants to develop sound programs for a higher probability of success.

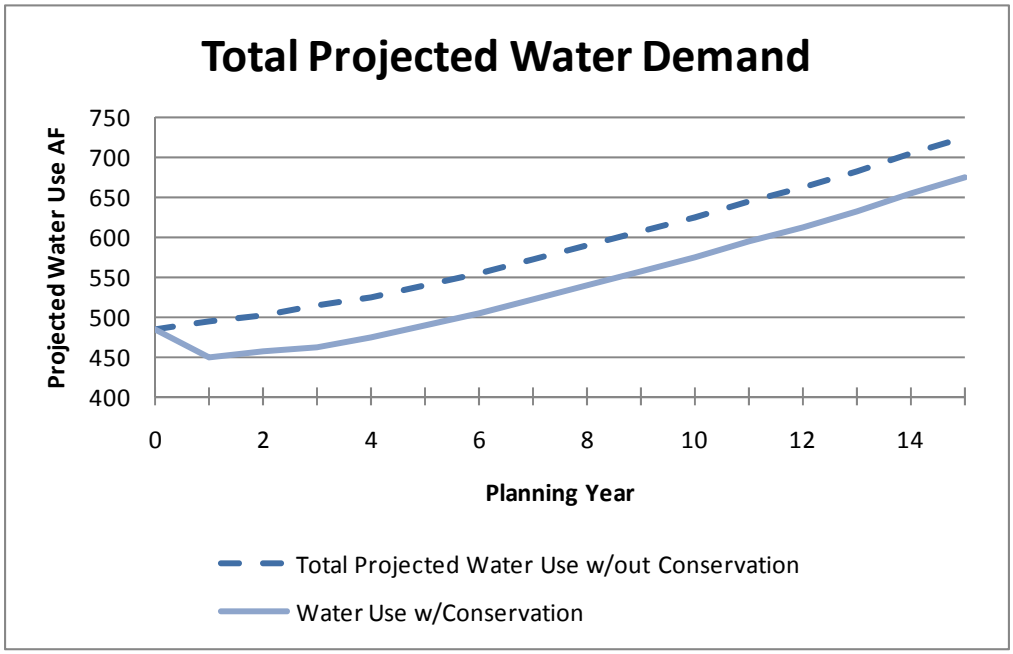
It should be noted that the implementation costs include both cost to implement the water conservation measure/program and staff time associated with the implementation and is not necessarily representative of the capital outlay requirement. Please refer to **Appendix A** for the detailed breakdown of costs for each measure/program.

Modified Demand Forecast

The total water demands for Dacono are shown in the following **Figure 8.1** with and without water conservation. The anticipated water savings follow the implementation schedule. The savings are compiled according to the assumptions used in the cost-benefit analysis and are carried through the end of the planning period. Effects of implementing the water conservation measures will last well beyond the planning horizon.

The annual savings after all of the measures/programs have been implemented is 50 AF (0.04 MG) per year without considering savings due to measures already in place, such as watering restrictions.

Figure 8.1 – Comparison of Demand Forecast with and without Conservation



Water Supply Forecast Modification

Along with lowering the overall demand for water, this water conservation plan could possibly help delay upgrades to capacity and infrastructure. Efforts in these areas may be modified and/or delayed, which could provide substantial financial savings to the conserving entity. While Dacono has planned infrastructure upgrades (Chapter 4), there are no planned capacity upgrades.

Table 8.2 shows the annual savings that will result as the plan is implemented. The savings are shown in MG per Day (MGD) and AF, so one can compare the savings to either capacity improvements or water purchases.

Table 8.2 – Estimated Water Savings and Water Supply Needs

Savings from Conservation	Cumulative Water Saved per Year MG	Cumulative Water Saved per Day MGD	Cumulative Water Saved per Year AF	Projected Increase in Demand AF	Cumulative Increase in Demand AF
Year 1	14.5	0.04	44	10	10
Year 2	15.2	0.04	47	10	20
Year 3	16.4	0.04	50	10	30

CHAPTER 9 – PLAN OF IMPLEMENTATION AND MONITORING

The schedule for implementation is presented in **Table 8.1** in Chapter 8. The process for implementing the plan and monitoring its success is outlined in this chapter.

Public Participation

One of CWCB's requirements for a State-approved Water Conservation Plan is to solicit public comments on the draft plan for not less than a 60-day period unless otherwise specified by City policy.

Through this water conservation planning process, the public was notified and given 60 days to comment. **Appendix B** includes affidavits from the local newspapers that legal notice was published. The plan was also available on Dacono's website and at City Hall for review.

Monitoring and Evaluation

Monitoring the success of this Water Conservation Plan includes measuring water use as well as money spent on the selected conservation measures and programs. Individual customer water use can be tracked for rebates, which will involve customer's water use prior to installation, verification of installation, and post installation water use. Customer class water use will be monitored for programs such as upgrading indoor and/or outdoor facilities with water efficient fixtures. **Table 9.1** presents the information that will be tracked for each measure proposed by the City. More specific monitoring information will be developed as each measure is implemented.

Many of the costs evaluated in the cost-benefit analysis include annual costs for follow up. This will allow staff to specifically set aside time to monitor and evaluate the success of the conservation measures and programs. Expenditures for conservation will be documented by staff and reported to City Council on a regular basis. This will be valuable information in evaluating the cost-benefit ratio and to validate the success of implementing the selected conservation measures and programs. Since the programs will be implemented in phases, there will be time to evaluate and establish the appropriate method to monitor success of each program and measure. The City will consider using data and results from their monitoring as part of the overall public education process.

The City will prepare an annual report summarizing the monitoring efforts for the water conservation measures that have been implemented and that are on-going. This will be presented to City Council annually, so they can evaluate the success of the program.

Plan Updates and Revisions

The required schedule for updating the Water Conservation Plan is seven years. The progress towards achieving the water savings goals will be monitored on an annual basis by Dacono. The City may choose to update this plan prior to seven years if implementation and actual water savings deviate too much from these projections. This deviation may be caused by several factors including higher or lower than expected growth, less than anticipated participation and the inability to implement the plan due to lack of funding.

Plan Adoption and Approval

Following the public comment period, the comments were considered and when appropriate incorporated into the plan. The Dacono City Council formally adopted the plan prior to submittal to CWCB for final approval. The resolution is attached as **Appendix C**. Implementation will begin after CWCB approval is received. It is only after final CWCB approval that Dacono will be eligible for a water-efficiency grant through CWCB for plan implementation.

Table 9.1 – Tracking Matrix for Monitoring Water Conservation Measures

Conservation Measures and Programs	Number of Rebates/ Giveaways	Individual Customer Water use	Customer Class Water Use	Per Capita water use	Unaccounted for Water	Peak & Annual Treated & Total Water Demand
	(A)	(B)	(C)	(D)	(E)	(F)
Billing Software Upgrades				X	X	X
Leak Detection & Repair Program				X	X	X
Meter Testing & Replacement		X		X	X	X
Develop Ordinance & Standards for New Development			X	X		X
Water Restrictions			X	X		X
Water Rate Structure Changes			X	X		X
Billing Statements that Encourage Water Savings				X		X
Water Conservation Website Upgrades/ Public Education				X		X
Xeriscape Demonstration Garden				X		X
Property Manager/HOA Training & Education			X	X		X
Indoor Rebates	X	X		X		X
Irrigation System Efficiency Device Rebates	X	X		X		X
Water Conservation Upgrades at City Facilities - Indoor			X	X		X
Water Conservation Upgrades at City Facilities - Outdoor			X	X		X
City Irrigation Audits			X	X		X

NOTES:

(A) The number of rebates and/or giveaways will be tracked for those installations that have been proven.

(B) Water use prior and post installation will be tracked to determine if a savings has occurred.

(C) These measures affect specific customer classes that can be tracked to determine savings.

(D) A reduction in the Gallons per Capita Water Use will show an overall savings

(E) These measures track uses that are not billed but are supply-side related.

(F) Reductions in peak and annual water use will show an overall savings

REFERENCES:

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

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APPENDIX A

Water Conservation Measures

Billing Software Upgrades

Software Upgrades will allow water providers to quickly and easily retrieve water usage data and relay that data to their customers, helping customers to monitor their water usage and conservation. The City is interested in upgrading to provide online billing access to its customers.

Planning Period	2012 to 2022
Years in Planning Period	10
Program Length	10

Estimated Water Savings

Annual Estimated Savings Rate	1%	
Annual Estimated Water Production without Savings	203,174,726	gallons/yr
Estimated Water Production over Planning Period without Savings	2,031,747,264	gallons
Estimated Annual Water Savings	**2,031,747**	gallons/yr
Estimated Savings over Planning Period	**20,317,473**	gallons

Notes:

Current system leakage/loss rate is estimated at 10%. Software upgrades are estimated to reduce apparent losses that occur due to billing system errors by 1 %.

The estimated production (without savings) equals the projected water usage plus 10%.

Costs

Total Cost to Water Provider

Labor Costs		
Staff Hours	15	/year
Hourly Cost	$50.00	/hour
Annual Staff Costs	$750.00	
Third Party Costs		/year
Evaluation and Follow-up Costs (Labor/Consultant)	$900.00	/year
Annual Labor	**$1,650.00**	/year
Materials Costs		
Unit Cost	$0.00	/participant
Number of Participants	0	/year
Gallons Saved per Unit per Year	0	gallons
Annual Materials	**$0.00**	/year
Rebates		
Rebate Cost	$0.00	
Number of Participants	0	/year
Annual Rebate Cost	**$0.00**	/year
One Time Labor and Material Costs		
One Time Materials Cost	$6,000.00	
One Time Staff Costs	$750.00	
One Time Labor/Material Cost	**$6,750.00**	

Notes:

Estimated one time staff costs to include transition to a web-based billing system. Estimate that Staff would spend approximately 15 hours at $50.00/hour to investigate current software capabilities to create a web-based version of billing system for customers.

Estimated cost for web-based software is $6000 with 15% annual updates & maintenance fees.

Estimated Annual Cost	**$1,650.00**	/year
Estimated Total Cost over Planning Period Including Set-up	**$23,250.00**	
Cost per 1000 Gallons Saved	**$1.14**	

Leak Detection and Repair Program

This measure would include electronic leak detection by a third party consultant every 5 years.

Planning Period	2012	2022
Years in Planning Period	10	
Program Length	10	

Estimated Water Savings

Annual Estimated Savings Rate	1%	
Annual Estimated Water Production without Savings	203,174,726	gallons/yr
Estimated Water Production over Planning Period without Savings	2,031,747,264	gallons
Estimated Annual Water Savings	**2,031,747**	gallons/yr
Estimated Savings over Planning Period	**20,317,473**	gallons

Notes:

Current system leakage/loss rate is estimated at 10%.

The estimated production (without savings) equals the projected water usage plus 10%.

Costs

Total Cost to Water Provider

Labor Costs		
Staff Hours	10	/year
Hourly Cost	$50.00	/hour
Annual Staff Costs	$500.00	
Third Party Costs (Leak Detection Consult)	$5,791.00	/year
Evaluation and Follow-up Costs (Labor/Consultant)	$0.00	/year
Annual Labor	**$6,291.00**	/year
Materials Costs		
Unit Cost	$0.00	/participant
Number of Participants	0	/year
Gallons Saved per Unit per Year	0	gallons
Annual Materials	**$0.00**	/year
Rebates		
Rebate Cost	$0.00	
Number of Participants	0	/year
Annual Rebate Cost	**$0.00**	/year
One Time Labor and Material Costs		
One Time Materials Cost	$0.00	
Third Party Costs (Mapping of System)	$0.00	
One Time Labor/Material Cost	**$0.00**	

Notes:

Third Party Costs include:
- A leak survey of the entire system is done every four to five years by a consultant with sounding equipment. A portion of the system is typically done every year. City staff performs the repairs.

Annual staff costs include coordination with consultant and monitoring annual water usage.

Estimated Annual Cost	**$6,291.00**	/year
Estimated Total Cost over Planning Period Including Set-up	**$62,910.00**	
Cost per 1000 Gallons Saved	**$3.10**	

Meter Testing and Replacement Program

This measure would include calibration of meters and replacement when necessary. Faulty meters account for apparent losses, or losses due to meter inaccuracies, and real losses also known as physical losses.

Planning Period	2012	2022
Years in Planning Period	10	
Program Length	10	

Estimated Water Savings

Annual Estimated Savings Rate	1%	
Annual Estimated Water Production without Savings	203,174,726	gallons/yr
Estimated Water Production over Planning Period without Savings	2,031,747,264	gallons
Estimated Annual Water Savings	**2,031,747**	gallons/yr
Estimated Savings over Planning Period	**20,317,473**	gallons

Notes:

Current system loss rate is estimated at 10%. A portion of these losses may be attributed to faulty meters. The City would like to reduce these losses by 1% over the planning period.

Costs

Total Cost to Water Provider

Labor Costs		
Staff Hours	10	/year
Hourly Cost	$50.00	/hour
Annual Staff Costs	$500.00	
Third Party Costs	$9,760.00	/year
Evaluation and Follow-up Costs (Labor/Consultant)	$0.00	/year
Annual Labor	**$10,260.00**	/year
Materials Costs		
Unit Cost	$210.00	/participant
Number of Participants	0	/year
Gallons Saved per Unit per Year	0	gallons
Annual Materials	**$0.00**	/year
Rebates		
Rebate Cost	$0.00	
Number of Participants	0	/year
Annual Rebate Cost	**$0.00**	/year
One Time Labor and Material Costs		
One Time Materials Cost	$0.00	
Program set up	$0.00	
One Time Labor/Material Cost	**$0.00**	

Notes:

Meter calibration – The meters have a 5 year warranty or 750,000 gallons whichever comes first. After the meter is calibrated for accuracy then it has an 15 year warranty or 2.5 million gallons of course whichever comes first. $59.00 to have 5/8" – 1" meter calibrated. Total cost of $97,586.00 . This cost was spread out over 10 years.

A new meter costs $210 and can be rebuilt for $75. However, these costs have not been included in the estimate.

Estimated Annual Cost	**$10,260.00**	/year
Estimated Total Cost over Planning Period Including Set-up	**$102,600.00**	
Cost per 1000 Gallons Saved	**$5.05**	

Watering Restrictions - Existing Measure

The City implemented voluntary water restrictions in Resolution No. 08-43, which discourages irrigation from 10 am to 6 pm etc.

Planning Period	2012	2022
Years in Planning Period	10	
Program Length	10	

Estimated Water Savings

Annual Estimated Savings Rate	2%

Notes:

Estimate that approximately 32% of total customer use is outdoor use.

Assume a conservative estimate of 2% savings of projected outdoor water usage .

Customer Category	Outdoor Water Use Per Tap gallons/tap	*Estimated Annual Water Savings gallons/yr*
Residential	47,284,300	945,686
Commercial	8,865,806	177,316

Estimated Annual Water Savings	**1,123,002**	gallons/yr
Estimated Savings over Planning Period	**11,230,021**	gallons

Costs

Total Cost to Water Provider

Labor Costs		
Staff Hours	2	/year
Hourly Cost	$50.00	/hour
Annual Staff Costs	$100.00	
Third Party Costs	$0.00	/year
Evaluation and Follow-up Costs	$50.00	/year
Annual Labor	**$150.00**	/year
Materials Costs		
Annual Materials Budget	$0	/year
Annual Materials	**$0.00**	/year
Rebates		
Rebate Cost	$0.00	
Number of Participants	0	/year
Annual Rebate Cost	**$0.00**	/year
One Time Labor and Material Costs		
One Time Labor Costs	$0.00	
One Time Material Costs	$0.00	
One Time Labor/Material Cost	**$0.00**	

Notes:

Costs include staff time for implementing voluntary water restrictions for existing measure.

Water Rates

Rate Category	Current Rates/Fees
Residential & Commercial *- Includes minimum base usage of 7,000 gallons+ $17 Capital Improvement Fee*	45.00
Excess Water Volume Charged from 7,001 to 10,000 gallons	*1.50*
Excess Water Volume Charged in excess of 10,000 gallons	2.00

Notes:

The annual revenue loss was estimated based on: Residential & Commercial rates for 5/8" meters. City charges monthly capital improvement fees in addition to the monthly use charges.

Estimated Revenue assumes that the current rates will not change over the planning period.

Estimated Average Annual Revenue without Water Savings	$159,359.13	/year
Estimated Average Annual Revenue with Water Savings	$157,113.12	/year
Annual Revenue Loss Related to Water Savings	**$2,246.00**	/year

Estimated Annual Cost	**$2,396.00**	/year
Estimated Cost over Planning Period not including Lost Revenue	**$1,500.00**	
Estimated Total Cost over Planning Period Including Set-up and Lost Revenue	**$23,960.04**	
Cost per 1000 Gallons Saved	**$2.13**	

Water Rate Structure Changes

Based on many water conservation studies, an inclining block water rate design most effectively encourages efficient water use. A rate study may be necessary to ensure maximum water conservation savings.

Planning Period	2011 to 2020
Years in Planning Period	10
Program Length	1

Estimated Water Savings

Annual Estimated Savings Rate	2%

Customer Category	Average Water Use (gallons)	*Estimated Annual Water Savings gallons/yr*
Residential	147,763,437	2,955,269
Commercial	27,705,645	554,113

Estimated Annual Water Savings	**3,509,382**	gallons/yr
Estimated Savings over Planning Period	**35,093,816**	gallons

Notes:

Assume a conservative reduction of 2% of projected total billed water. Rate change studies have shown a greater savings (Southwest Florida Water Management District study - 13%).

Costs

Total Cost to Water Provider

Labor Costs		
Staff Hours	15	/year
Hourly Cost	$50.00	/hour
Annual Staff Costs	$750.00	
Third Party Costs	$0.00	/year
Evaluation and Follow-up Costs (Labor/Consultant)	$0.00	/year
Annual Labor	**$750.00**	/year
Materials Costs		
Unit Cost	$0.00	/participant
Number of Participants	0	/year
Gallons Saved per Unit per Year	0	gallons
Annual Materials	**$0.00**	/year
Rebates		
Rebate Cost	$0.00	
Number of Participants	0	/year
Annual Rebate Cost	**$0.00**	/year
One Time Labor and Material Costs		
One Time City Staff Labor	$10,000.00	
Rate Study performed by Consultants	$40,000.00	
One Time Labor/Material Cost	**$50,000.00**	

Notes:

Labor costs include estimated staff time for researching water rate options and implementing those options (~200 hours at $50/hour).

Costs also include water rate study completed by a Consultant. Before a new rate structure is adopted, a rate study would need to be completed by an outside consulting firm.

Water Rate Structure Changes

Water Rates

Rate Category	Current Rates/Fees
Residential & Commercial - *Includes minimum base usage of 7,000 gallons+ $17 Capital Improvement Fee*	45.00
Excess Water Volume Charged from 7,001 to 10,000 gallons	*1.50*
Excess Water Volume Charged in excess of 10,000 gallons	2.00

Notes:

The annual revenue loss was estimated based on: Residential & Commercial rates for 5/8" meters. City charges monthly capital improvement fees in addition to the monthly use charges.

Estimated Revenue assumes that the current rates will not change over the planning period.

Estimated Average Annual Revenue without Water Savings	$397,997.08	/year
Estimated Average Annual Revenue with Water Savings	$390,978.32	/year
Estimated Annual Revenue Loss Related to Water Savings	**$7,018.76**	/year

Estimated Annual Cost	**$7,768.76**	/year
Estimated Cost over Planning Period not including Lost Revenue	**$50,750.00**	
Estimated Total Cost over Planning Period Including Set-up and Lost Revenue	**$57,768.76**	
Cost per 1000 Gallons Saved	**$1.65**	

Water Waste Ordinance

The City would like to develop an ordinance to prohibit water waste

Planning Period	2012	2022
Years in Planning Period	10	
Program Length	1	

Estimated Water Savings

Annual Estimated Savings Rate	0.50%

Customer Category	Average Annual Water Use (gallons/yr)	*Estimated Annual Water Savings gallons/yr*
Residential	147,763,437	738,817
Commercial	27,705,645	138,528

Estimated Annual Water Savings	**877,345**	gallons/yr
Estimated Savings over Planning Period	**8,773,454**	gallons

Notes:

Estimated savings is 1/2 % and will affect residential & commercial users.

Costs

Total Cost to Water Provider

Labor Costs		
Staff Hours	0	/year
Hourly Cost	$50.00	/hour
Annual Staff Costs	$0.00	
Third Party Costs	$0.00	/year
Evaluation and Follow-up Costs	$0.00	/year
Annual Labor	**$0.00**	/year
Materials Costs		
Annual Materials Budget	$0	/year
Annual Materials	**$0.00**	/year
Rebates		
Rebate Cost	$0.00	
Number of Participants	0	/year
Annual Rebate Cost	**$0.00**	/year
One Time Labor and Material Costs		
One Time Staff Labor Costs	$500.00	
One Time Material Costs	$0.00	
One Time Labor/Material Cost	**$500.00**	

Notes:

Labor costs include estimated staff time for researching and developing requirements and standards and receiving approval and implementing the ordinance.

Water Waste Ordinance

Water Rates

Residential *- Includes minimum base usage of 7,000 gallons+ $17 Capital Improvement Fee*	45.00
Excess Water Volume Charged from 7,001 to 10,000 gallons	*1.50*
Excess Water Volume Charged in excess of 10,000 gallons	2.00
Commercial *- Includes minimum base usage of 7,000 gallons+ $17 Capital Improvement Fee*	45.00
Excess Water Volume Charged from 7,001 to 10,000 gallons	*1.50*
Excess Water Volume Charged in excess of 10,000 gallons	2.00

Notes:

The annual revenue loss was estimated based on: Residential rates for 5/8" meters and commercial rates for 5/8" meters.

City charges monthly capital improvement fees in addition to the monthly use charges.

Estimated Revenue assumes that the current rates will not change over the planning period.

Estimated Average Annual Revenue without Water Savings	$159,359.13	/year
Estimated Average Annual Revenue with Water Savings	$158,797.63	/year
Estimated Annual Revenue Loss Related to Water Savings	**$561.50**	/year

Estimated Annual Cost	**$561.50**	/year
Est. Cost over Planning Period not including Lost Revenue	**$500.00**	
Est. Cost over Planning Period Including Set-up and Lost Revenue	**$6,115.01**	
Cost per 1000 Gallons Saved	**$0.70**	

Removal of Phreatophytes

The City has a tree removal policy that they could evaluate further considering water conservation impacts.

Planning Period	2011 to 2020
Years in Planning Period	10
Program Length	1

Estimated Water Savings

Annual Estimated Savings Rate*	0.50%

Customer Category	Average Annual Water Use (gallons/yr)	*Estimated Annual Water Savings gallons/yr*
Residential	147,763,437	738,817
Commercial	27,705,645	138,528

Estimated Annual Water Savings	**877,345**	gallons/yr
Estimated Savings over Planning Period	**8,773,454**	gallons

Notes:

Estimated savings is 1/2 %. This measure will only affect Residential, and Commercial water users.

Costs

Total Cost to Water Provider

Labor Costs		
Staff Hours	0	/year
Hourly Cost	$50.00	/hour
Annual Staff Costs	$0.00	
Third Party Costs	$0.00	/year
Evaluation and Follow-up Costs	$0.00	/year
Annual Labor	**$0.00**	/year
Materials Costs		
Annual Materials Budget	$0	/year
Annual Materials	**$0.00**	/year
Rebates		
Rebate Cost	$0.00	
Number of Participants	0	/year
Annual Rebate Cost	**$0.00**	/year
One Time Labor and Material Costs		
One Time Staff Labor Costs	$500.00	
One Time Material Costs	$0.00	
One Time Labor/Material Cost	**$500.00**	

Notes:

Labor costs include estimated staff time for researching and developing requirements and standards and receiving approval and implementing the ordinance.

Removal of Phreatophytes

Water Rates

Residential *- Includes minimum base usage of 7,000 gallons+ $17 Capital Improvement Fee*	45.00
Excess Water Volume Charged from 7,001 to 10,000 gallons	*1.50*
Excess Water Volume Charged in excess of 10,000 gallons	2.00
Commercial *- Includes minimum base usage of 7,000 gallons+ $17 Capital Improvement Fee*	45.00
Excess Water Volume Charged from 7,001 to 10,000 gallons	*1.50*
Excess Water Volume Charged in excess of 10,000 gallons	2.00

Notes:

The annual revenue loss was estimated based on: Residential rates for 5/8" meters and commercial rates for 5/8" meters.

City charges monthly capital improvement fees in addition to the monthly use charges.

Estimated Revenue assumes that the current rates will not change over the planning period.

Estimated Average Annual Revenue without Water Savings	$159,359.13	/year
Estimated Average Annual Revenue with Water Savings	$158,797.63	/year
Estimated Annual Revenue Loss Related to Water Savings	**$561.50**	/year

Estimated Annual Cost	**$561.50**	/year
Est. Cost over Planning Period not including Lost Revenue	**$500.00**	
Est. Cost over Planning Period Including Set-up and Lost Revenue	**$6,115.01**	
Cost per 1000 Gallons Saved	**$0.70**	

General Evaluation of Policies that Encourage Water Savings

The City would like to evaluate policies, City ordinances, etc. that would allow the City to encourage water savings.

Planning Period	2012	2022
Years in Planning Period	10	
Program Length	1	

Estimated Water Savings

Annual Estimated Savings Rate	0.10%	
Annual Estimated Water Production without Savings	203,174,726	gallons/yr
Estimated Water Production over Planning Period without Savings	2,031,747,264	gallons
Estimated Annual Water Savings	**203,175**	gallons/yr
Estimated Savings over Planning Period	**2,031,747**	gallons

Notes:

Most policies that encourage water savings are geared toward outdoor uses. This measure can affect the outdoor usage of customer categories shown. Assume a conservative reduction of 0.10% of projected total billed water each year.

Costs

Total Cost to Water Provider

Labor Costs		
Staff Hours	0	/year
Hourly Cost	$50.00	/hour
Annual Staff Costs	$0.00	
Third Party Costs		/year
Evaluation and Follow-up Costs		/year
Annual Labor	**$0.00**	/year
Materials Costs		
Unit Cost	$0.00	/participant
Number of Participants	0	/year
Gallons Saved per Unit per Year	0	gallons
Annual Materials	**$0.00**	/year
Rebates		
Rebate Cost	$0.00	
Number of Participants	0	/year
Annual Rebate Cost	**$0.00**	/year
One Time Labor and Material Costs		
One Time Materials Cost	$0.00	
One Time Staff Costs	$750.00	
One Time Labor/Material Cost	**$750.00**	

Notes:

Estimated one time staff costs for Staff to spend approximately 15 hours at $50.00/hour to evaluate current policies within the City.

Estimated Annual Cost	**$0.00**	/year
Estimated Total Cost over Planning Period Including Set-up	**$750.00**	
Cost per 1000 Gallons Saved	**$0.37**	

Turf and Landscape Standards for New Construction

Many water providers require restrictions on turf and low water use landscape standards for new construction within their building permit review process. The turf and landscape standards may require a certain percentage of new landscapes to be low water use.

Planning Period	2012	2022
Years in Planning Period	10	
Program Length	10	

Estimated Water Savings

Annual Estimated Savings Rate	5%

Customer Category	Outdoor Water Use Per Tap gallons/tap	Annual Program Participants	*Estimated Annual Water Savings gallons/yr*
Residential	27,111	10	13,555
Commercial	117,828	3	17,674

Estimated Annual Water Savings	**31,230**	gallons/yr
Estimated Savings over Planning Period	**1,717,626**	gallons

Notes:

An estimated number of building permits will be obtained in any year. Estimate that approximately 32% of total customer use is outdoor use.
Estimated Savings over Planning Period is calculated by compounding the estimated annual water savings per the total number of participants for each given year.

Costs

Total Cost to Water Provider

Labor Costs		
Staff Hours	10	/year
Hourly Cost	$50.00	/hour
Annual Staff Costs	$500.00	
Third Party Costs	$0.00	/year
Evaluation and Follow-up Costs (Labor/Consultant)	$0.00	/year
Annual Labor	**$500.00**	/year
Materials Costs		
Unit Cost	$0.00	/participant
Number of Participants	13	/year
Gallons Saved per Unit per Year	0	gallons
Annual Materials	**$0.00**	/year
Rebates		
Rebate Cost	$0.00	
		/year
Annual Rebate Cost	**$0.00**	/year
One Time Labor and Material Costs		
One Time City Staff Labor	$500.00	
Rate Study performed by Consultants	$0.00	
One Time Labor/Material Cost	**$500.00**	

Notes:

One time Labor costs include estimated staff time for researching and developing requirements and standards and receiving approval and implementing those options.

Turf and Landscape Standards for New Construction

Water Rates

Rate Category	Current Rates/Fees
Residential & Commercial *- Includes minimum base usage of 7,000 gallons+ $17 Capital Improvement Fee*	45.00
Excess Water Volume Charged from 7,001 to 10,000 gallons	*1.50*
Excess Water Volume Charged in excess of 10,000 gallons	2.00

Notes:

The annual revenue loss was estimated based on: Residential & Commercial rates for 5/8" meters. City charges monthly capital improvement fees in addition to the monthly use charges.

Estimated Revenue assumes that the current rates will not change over the planning period.

Estimated Average Annual Revenue without Water Savings	$8,979.75	/year
Estimated Average Annual Revenue with Water Savings	$8,636.23	/year
Estimated Annual Revenue Loss Related to Water Savings	**$343.53**	/year

Estimated Annual Cost	**$843.53**	/year
Estimated Cost over Planning Period not including Lost Revenue	**$5,500.00**	
Estimated Total Cost over Planning Period Including Set-up and Lost Revenue	**$8,935.25**	
Cost per 1000 Gallons Saved	**$5.20**	

Irrigation System Standards for New Construction

Many water providers encourage or require irrigation system standards within their building permit process. The irrigation system standards help to design irrigation systems that efficiently use water.

Planning Period	2012	2022
Years in Planning Period	10	
Program Length	10	

Estimated Water Savings

Annual Estimated Savings Rate	5%

Customer Category	Outdoor Water Use Per Tap gallons/tap	Annual Program Participants	*Estimated Annual Water Savings gallons/yr*
Residential	27,111	10	13,555
Commercial	117,828	3	17,674

Estimated Annual Water Savings	**31,230**	gallons/yr
Estimated Savings over Planning Period	**1,717,626**	gallons

Notes:

An estimated number of building permits will be obtained in any year. Estimate that approximately 32% of total customer use is outdoor use.
Estimated Savings over Planning Period is calculated by compounding the estimated annual water savings per the total number of participants for each given year.

Costs

Total Cost to Water Provider

Labor Costs		
Staff Hours	10	/year
Hourly Cost	$50.00	/hour
Annual Staff Costs	$500.00	
Third Party Costs	$0.00	/year
Evaluation and Follow-up Costs (Labor/Consultant)	$0.00	/year
Annual Labor	**$500.00**	/year
Materials Costs		
Unit Cost	$0.00	/participant
Number of Participants	13	/year
Gallons Saved per Unit per Year	0	gallons
Annual Materials	**$0.00**	/year
Rebates		
Rebate Cost	$0.00	
		/year
Annual Rebate Cost	**$0.00**	/year
One Time Labor and Material Costs		
One Time City Staff Labor	$500.00	
Rate Study performed by Consultants	$0.00	
One Time Labor/Material Cost	**$500.00**	

Notes:

Labor costs include estimated staff time for researching and developing requirements and standards and receiving approval and implementing those options.

Irrigation System Standards for New Construction

Water Rates

Rate Category	Current Rates/Fees
Residential & Commercial *- Includes minimum base usage of 7,000 gallons+ $17 Capital Improvement Fee*	45.00
Excess Water Volume Charged from 7,001 to 10,000 gallons	*1.50*
Excess Water Volume Charged in excess of 10,000 gallons	2.00

Notes:

The annual revenue loss was estimated based on: Residential & Commercial rates for 5/8" meters. City charges monthly capital improvement fees in addition to the monthly use charges.

Estimated Revenue assumes that the current rates will not change over the planning period.

Estimated Average Annual Revenue without Water Savings	$8,979.75	/year
Estimated Average Annual Revenue with Water Savings	$8,636.23	/year
Estimated Annual Revenue Loss Related to Water Savings	**$343.53**	/year

Estimated Annual Cost	**$843.53**	/year
Estimated Cost over Planning Period not including Lost Revenue	**$5,500.00**	
Estimated Total Cost over Planning Period Including Set-up and Lost Revenue	**$8,935.25**	
Cost per 1000 Gallons Saved	**$5.20**	

Soil Amendment Ordinance for New Landscapes

Soil amendments include the addition of organic and inorganic materials to soil to improve its texture nutrient load, moisture-holding capacity, and infiltration rate. The City may make soil amendment a requirement in order to pass building inspection.

Planning Period	2011 to 2020
Years in Planning Period	10
Program Length	10

Estimated Water Savings

Annual Estimated Savings Rate	5%

Customer Category	Outdoor Water Use Per Tap gallons/tap	Annual Program Participants	*Estimated Annual Water Savings gallons/yr*
Residential	27,111	10	13,555
Commercial	117,828	3	17,674

Estimated Annual Water Savings	**31,230**	gallons/yr
Estimated Savings over Planning Period	**1,717,626**	gallons

Notes:

An estimated number of building permits will be obtained in any year. Estimate that approximately 32% of total customer use is outdoor use.
Estimated Savings over Planning Period is calculated by compounding the estimated annual water savings per the total number of participants for each given year.

Costs

Total Cost to Water Provider

Labor Costs		
Staff Hours	10	/year
Hourly Cost	$50.00	/hour
Annual Staff Costs	$500.00	
Third Party Costs	$0.00	/year
Evaluation and Follow-up Costs (Labor/Consultant)	$0.00	/year
Annual Labor	**$500.00**	/year
Materials Costs		
Unit Cost	$0.00	/participant
Number of Participants	13	/year
Gallons Saved per Unit per Year	0	gallons
Annual Materials	**$0.00**	/year
Rebates		
Rebate Cost	$0.00	
		/year
Annual Rebate Cost	**$0.00**	/year
One Time Labor and Material Costs		
One Time City Staff Labor	$500.00	
Rate Study performed by Consultants	$0.00	
One Time Labor/Material Cost	**$500.00**	

Notes:

Labor costs include estimated staff time for researching and developing requirements and standards and receiving approval and implementing those options.

Soil Amendment Ordinance for New Landscapes

Water Rates

Rate Category	Current Rates/Fees
Residential & Commercial *- Includes minimum base usage of 7,000 gallons+ $17 Capital Improvement Fee*	45.00
Excess Water Volume Charged from 7,001 to 10,000 gallons	*1.50*
Excess Water Volume Charged in excess of 10,000 gallons	2.00

Notes:

The annual revenue loss was estimated based on: Residential rates for 3/4" & 1" meters and 1" commercial meter rates.

Revenue losses do not include outside City revenues lost.

Estimated Revenue assumes that the current rates will not change over the planning period.

Estimated Average Annual Revenue without Water Savings	$8,979.75	/year
Estimated Average Annual Revenue with Water Savings	$8,636.23	/year
Estimated Annual Revenue Loss Related to Water Savings	**$343.53**	/year

Estimated Annual Cost	**$843.53**	/year
Estimated Cost over Planning Period not including Lost Revenue	**$5,500.00**	
Estimated Total Cost over Planning Period Including Set-up and Lost Revenue	**$8,935.25**	
Cost per 1000 Gallons Saved	**$5.20**	

Requiring Wind and/or Rain Sensors for Commercial and Open Space Irrigation

Many water providers require wind or rain sensor as part of the irrigation system standards within the building permit process. These sensors prevent irrigation systems from running when its raining or too windy to operate effectively.

Planning Period	2012	2022
Years in Planning Period	10	
Program Length	10	

Estimated Water Savings

Annual Estimated Savings Rate	5%

Notes:

Estimate that 32% of use is outdoor.

Customer Category	Outdoor Water Use Gallons/tap	*Annual Program Participants*	*Estimated Annual Water Savings gallons/yr*
Commercial	117,828	3	17,674

Estimated Annual Water Savings	**17,674**	gallons/yr
Estimated Savings over Planning Period	**972,079**	gallons

Costs

Total Cost to Water Provider

Labor Costs		
Staff Hours	10	/year
Hourly Cost	$50.00	/hour
Annual Staff Costs	$500.00	
Third Party Costs		/year
Evaluation and Follow-up Costs (Labor/Consultant)	$0.00	/year
Annual Labor	**$500.00**	/year
Materials Costs		
Unit Cost	$0.00	/participant
Number of Participants	3	/year
Gallons Saved per Unit per Year	0	gallons
Annual Materials	**$0.00**	/year
Rebates		
Rebate Cost	$0.00	
Number of Participants	0	/year
Annual Rebate Cost	**$0.00**	/year
One Time Labor and Material Costs		
One Time City Staff Labor	$500.00	
Rate Study performed by Consultants	$0.00	
One Time Labor/Material Cost	**$500.00**	

Notes:

Labor costs include estimated staff time for researching and developing requirements and standards and receiving approval and implementing those options.

Water Rates

Rate Category	**Current Rates/Fees**
Residential & Commercial - *Includes minimum base usage of 7,000 gallons+ $17 Capital*	45.00
Excess Water Volume Charged from 7,001 to 10,000 gallons	*1.50*
Excess Water Volume Charged in excess of 10,000 gallons	2.00

Notes:

The annual revenue loss was estimated based on: Residential & Commercial rates for 5/8" meters. City charges monthly capital improvement fees in addition to the monthly use charges.

Estimated Revenue assumes that the current rates will not change over the planning period.

Requiring Wind and/or Rain Sensors for Commercial and Open Space Irrigation

Estimated Average Annual Revenue without Water Savings	$4,375.06	/year
Estimated Average Annual Revenue with Water Savings	$4,180.65	/year
Annual Revenue Loss Related to Water Savings	**$194.42**	/year

Estimated Annual Cost	**$694.42**	/year
Estimated Cost over Planning Period not including Lost Revenue	**$5,500.00**	
Estimated Total Cost over Planning Period Including Set-up and Lost Revenue	**$7,444.16**	
Cost per 1000 Gallons Saved	**$7.66**	

Turf Restrictions for High Water Use Commercial Areas

This would involve developing restrictions for placing turf within any commercial areas such as medians or parking lot areas.

Planning Period	2012	2022
Years in Planning Period	10	
Program Length	10	

Estimated Water Savings

Annual Estimated Savings Rate	5%

Notes:

Estimate that 32% of use is outdoor.

Customer Category	Outdoor Water Use Gallons/tap	*Annual Program Participants*	*Estimated Annual Water Savings gallons/yr*
Commercial	117,828	3	17,674

Estimated Annual Water Savings	**17,674**	gallons/yr
Estimated Savings over Planning Period	**972,079**	gallons

Costs

Total Cost to Water Provider

Labor Costs		
Staff Hours	10	/year
Hourly Cost	$50.00	/hour
Annual Staff Costs	$500.00	
Third Party Costs		/year
Evaluation and Follow-up Costs (Labor/Consultant)	$0.00	/year
Annual Labor	**$500.00**	/year
Materials Costs		
Unit Cost	$0.00	/participant
Number of Participants	3	/year
Gallons Saved per Unit per Year	0	gallons
Annual Materials	**$0.00**	/year
Rebates		
Rebate Cost	$0.00	
Number of Participants	0	/year
Annual Rebate Cost	**$0.00**	/year
One Time Labor and Material Costs		
One Time City Staff Labor	$500.00	
Rate Study performed by Consultants	$0.00	
One Time Labor/Material Cost	**$500.00**	

Notes:

Labor costs include estimated staff time for researching and developing requirements and standards and receiving approval and implementing those options.

Water Rates

Rate Category	Current Rates/Fees
Residential & Commercial *- Includes minimum base usage of 7,000 gallons+ $17 Capital*	45.00
Excess Water Volume Charged from 7,001 to 10,000 gallons	*1.50*
Excess Water Volume Charged in excess of 10,000 gallons	2.00

Notes:

The annual revenue loss was estimated based on: Residential & Commercial rates for 5/8" meters. City charges monthly capital improvement fees in addition to the monthly use charges.

Estimated Revenue assumes that the current rates will not change over the planning period.

Turf Restrictions for High Water Use Commercial Areas

Estimated Average Annual Revenue without Water Savings	$4,375.06	/year
Estimated Average Annual Revenue with Water Savings	$4,180.65	/year
Annual Revenue Loss Related to Water Savings	**$194.42**	/year

Estimated Annual Cost	**$694.42**	/year
Estimated Cost over Planning Period not including Lost Revenue	**$5,500.00**	
Estimated Total Cost over Planning Period Including Set-up and Lost Revenue	**$7,444.16**	
Cost per 1000 Gallons Saved	**$7.66**	

New Laundromat Standards for New Construction

This would involve developing standards for low flow equipment for new laundromats.

Planning Period	2012	2022
Years in Planning Period	10	
Program Length	10	

Estimated Water Savings

Notes:

Annual Estimated Savings Rate	5%

Customer Category	Water Use Gallons/tap	*Annual Program Participants*	*Estimated Annual Water Savings gallons/yr*
Commercial	368,212	0.10	1,841

Estimated Annual Water Savings	**1,841**	gallons/yr
Estimated Savings over Planning Period	**101,258**	gallons

Costs

Total Cost to Water Provider

Labor Costs		
Staff Hours	10	/year
Hourly Cost	$50.00	/hour
Annual Staff Costs	$500.00	
Third Party Costs		/year
Evaluation and Follow-up Costs	$0.00	/year
Annual Labor	**$500.00**	/year
Materials Costs		
Unit Cost	$0.00	/participant
Number of Participants	0	/year
Gallons Saved per Unit per Year	0	gallons
Annual Materials	**$0.00**	/year
Rebates		
Rebate Cost	$0.00	
Number of Participants	0	/year
Annual Rebate Cost	**$0.00**	/year
One Time Labor and Material Costs		
One Time City Staff Labor	$500.00	
Rate Study performed by Consultants	$0.00	
One Time Labor/Material Cost	**$500.00**	

Notes:

Labor costs include estimated staff time for researching and developing requirements and standards and receiving approval and implementing those options.

Water Rates

Rate Category	**Current Rates/Fees**
Residential & Commercial - *Includes minimum base usage of 7,000 gallons+ $17 Capital*	45.00
Excess Water Volume Charged from 7,001 to 10,000 gallons	*1.50*
Excess Water Volume Charged in excess of 10,000 gallons	2.00

Notes:

The annual revenue loss was estimated based on: Residential & Commercial rates for 5/8" meters. City charges monthly capital improvement fees in addition to the monthly use charges.

Estimated Revenue assumes that the current rates will not change over the planning period.

New Laundromat Standards for New Construction

Estimated Average Annual Revenue without Water Savings	$421.26	/year
Estimated Average Annual Revenue with Water Savings	$401.01	/year
Annual Revenue Loss Related to Water Savings	**$20.25**	/year

Estimated Annual Cost	**$520.25**	/year
Estimated Cost over Planning Period not including Lost Revenue	**$5,500.00**	
Estimated Total Cost over Planning Period Including Set-up and Lost Revenue	**$5,702.52**	
Cost per 1000 Gallons Saved	**$56.32**	

Billing Statements that Encourage Water Savings

The City of Dacono currently provides a billing statement that shows the past 12 months of water usage in graphical form. Future work could include adding ET scheduling to water bill.

Planning Period	2012	2022
Years in Planning Period	10	
Program Length	10	

Estimated Water Savings

Annual Estimated Savings Rate	2%

Notes:

Estimated savings equals 2%.

Customer Category	Average Outdoor Water Use gallons	*Estimated Annual Water Savings*
Residential	47,284,300	945,686
Commercial	8,865,806	177,316

Estimated Annual Water Savings	**1,123,002**	gallons/yr
Estimated Savings over Planning Period	**11,230,021**	gallons

Costs

Total Cost to Water Provider

Notes:

Staff hours are to expand billing statement messaging to include ET schedule and hours for maintaining existing measure.

Labor Costs		
Staff Hours	10	/year
Hourly Cost	$50.00	/hour
Annual Staff Costs	$500.00	
Third Party Costs	$0.00	/year
Evaluation and Follow-up Costs (Website updates, etc.)	$0.00	/year
Annual Labor	**$500.00**	/year
Materials Costs		
Unit Cost (cost of Bill Stuffers)	$0.00	/participant
Number of Participants		/year
Gallons Saved per Unit per Year	0	gallons
Annual Materials	**$0.00**	/year
Rebates		
Rebate Cost	$0.00	
Number of Participants	0	/year
Annual Rebate Cost	**$0.00**	/year
One Time Labor and Material Costs		
One Time Materials Cost	$2,500.00	
One Time Labor Costs	$0.00	
One Time Labor/Material Cost	**$2,500.00**	

Billing Statements that Encourage Water Savings

Water Rates (2008)

Rate Category	Current Rates/Fees
Residential & Commercial *- Includes minimum base usage of 7,000 gallons+ $17 Capital*	45.00
Excess Water Volume Charged from 7,001 to 10,000 gallons	*1.50*
Excess Water Volume Charged in excess of 10,000 gallons	2.00

Notes:

The annual revenue loss was estimated based on: Residential & Commercial rates for 5/8" meters. City charges monthly capital improvement fees in addition to the monthly use charges.

Estimated Revenue assumes that the current rates will not change over the planning period.

Estimated Average Annual Revenue without Water Savings	$159,359.13	/year
Estimated Average Annual Revenue with Water Savings	$157,113.12	/year
Estimated Annual Revenue Loss Related to Water Savings	**$2,246.00**	/year

Estimated Annual Cost	**$2,746.00**	/year
Estimated Cost over Planning Period not including Lost Revenue	**$7,500.00**	
Estimated Total Cost over Planning Period Including Set-up and Lost Revenue	**$29,960.04**	
Cost per 1000 Gallons Saved	**$2.67**	

Water Conservation Upgrades to Website

This measure includes the creation of a water conservation website that may include customer surveys, EPA WaterSense Program Promotion, water conservation tips, lawn watering guides, and installation of a residential water use calculator on a website.

Planning Period	2011 to 2020
Years in Planning Period	10
Program Length	10

Estimated Water Savings

Annual Estimated Savings Rate	1%

Customer Category	Average Water Use gallons	*Estimated Annual Water Savings gallons/yr*
Residential	147,763,437	1,477,634
Commercial	27,705,645	277,056

Estimated Annual Water Savings	**1,754,691**	gallons/yr
Estimated Savings over Planning Period	**17,546,908**	gallons

Notes:

This measure affects projected water usage for the residential & commercial users.

Costs

Total Cost to Water Provider

Labor Costs		
Staff Hours	10	/year
Hourly Cost	$50.00	/hour
Annual Staff Costs	$500.00	
Third Party Costs	$0.00	/year
Evaluation and Follow-up Costs (Website updates, etc.)	$0.00	/year
Annual Labor	**$500.00**	/year
Materials Costs		
Unit Cost	$0.00	/participant
Number of Participants	0	/year
Gallons Saved per Unit per Year	0	gallons
Annual Materials	**$0.00**	/year
Rebates		
Rebate Cost	$0.00	
Number of Participants	0	/year
Annual Rebate Cost	**$0.00**	/year
One Time Labor and Material Costs		
One Time Materials Cost	$0.00	
One Time Labor Costs (website update)	$5,000.00	
One Time Labor/Material Cost	**$5,000.00**	

Notes:

Annual staff hours include website promotion and annual maintenance.

For one time labor costs, we estimate cost to determine website content/information and estimated costs to establish website (may be completed by 3rd party).

Website content may include:
- customer survey
- EPA WaterSense program information http://www.epa.gov/WaterSense/
- General water conservation tips and information
- Lawn watering guides (ET scheduling)
- Water use calculators (example - www.H2OConserve.org)

Water Conservation Upgrades to Website

Water Rates

Rate Category	Current Rates/Fees
Residential & Commercial *- Includes minimum base usage of 7,000 gallons+ $17 Capital Improvement Fee*	45.00
Excess Water Volume Charged from 7,001 to 10,000 gallons	*1.50*
Excess Water Volume Charged in excess of 10,000 gallons	2.00

Notes:

The annual revenue loss was estimated based on: Residential & Commercial rates for 5/8" meters. City charges monthly capital improvement fees in addition to the monthly use charges.

Estimated Revenue assumes that the current rates will not change over the planning period.

Estimated Average Annual Revenue without Water Savings	$397,997.08	/year
Estimated Average Annual Revenue with Water Savings	$394,487.70	/year
Estimated Annual Revenue Loss Related to Water Savings	**$3,509.38**	/year

Estimated Annual Cost	**$4,009.38**	/year
Estimated Cost over Planning Period not including Lost Revenue	**$10,000.00**	
Estimated Total Cost over Planning Period Including Set-up and Lost Revenue	**$45,093.82**	
Cost per 1000 Gallons Saved	**$2.57**	

School Education Program

This includes time for educators to work with Project WET to develop water conservation education programs.

Planning Period	2012	2022
Years in Planning Period	10	
Program Length	10	

Estimated Water Savings

Annual Estimated Savings Rate	0.50%	
Annual Estimated Water Use without Savings	147,763,437	gallons/yr
Estimated Water Use over Planning Period without Savings	1,477,634,374	gallons
Estimated Annual Water Savings	**738,817**	gallons/yr
Estimated Savings over Planning Period	**7,388,172**	gallons

Notes:

This measure only affects Residential water usage.

Assume 0.5% savings of projected water usage.

Costs

Total Cost to Water Provider

Labor Costs		
Staff Hours	16	/year
Hourly Cost	$50.00	/hour
Annual Staff Costs	$800.00	
Third Party Costs	$0.00	/year
Evaluation and Follow-up Costs (Website updates, etc.)	$0.00	/year
Annual Labor	**$800.00**	/year
Materials Costs		
Annual Materials Budget	$500	/year
Annual Materials	**$500.00**	/year
Rebates		
Rebate Cost	$0.00	
Number of Participants	0	/year
Annual Rebate Cost	**$0.00**	/year
One Time Labor and Material Costs		
Project WET teacher scholarship	$3,000.00	
One Time Labor/Material Cost	**$3,000.00**	

Notes:

Staff hours include time working with local schools and educators to develop a water conservation education program (16 hours).

Material costs include an annual budget for education materials costs.

One time labor and material costs include a Project WET teacher scholarship. Project WET (Water Education & Training) has dedicated itself to the mission of reaching children, parents, teachers and community members of the world with water education. *A $3000 budget would allow for training 10-15 teachers and give them continuing education credit. More information is available at www.projectwet.org.*

School Education Program

Water Rates

Rate Category	Current Rates/Fees
Residential & Commercial *- Includes minimum base usage of 7,000 gallons+ $17 Capital Improvement Fee*	45.00
Excess Water Volume Charged from 7,001 to 10,000 gallons	*1.50*
Excess Water Volume Charged in excess of 10,000 gallons	2.00

Notes:

The annual revenue loss was estimated based on: Residential & Commercial rates for 5/8" meters. City charges monthly capital improvement fees in addition to the monthly use charges.

Estimated Revenue assumes that the current rates will not change over the planning period.

Estimated Average Annual Revenue without Water Savings	$340,367.38	/year
Estimated Average Annual Revenue with Water Savings	$331,085.14	/year
Annual Revenue Loss Related to Water Savings	**$9,282.24**	/year

Estimated Annual Cost	**$10,582.24**	/year
Estimated Cost over Planning Period not including Lost Revenue	**$16,000.00**	
Estimated Total Cost over Planning Period Including Set-up and Lost Revenue	**$108,822.41**	
Cost per 1000 Gallons Saved	**$14.73**	

Xeriscape Demonstration Garden

Creating a Xeriscape demonstration garden is an excellent way to educate the public to the water savings evident from xericscape.

Planning Period	2012	2022
Years in Planning Period	10	
Program Length	10	

Estimated Water Savings

Annual Estimated Savings Rate	0.5%	
Annual Estimated Water Use without Savings	47,284,300	gallons/yr
Estimated Water Use over Planning Period without Savings	472,843,000	gallons
Estimated Annual Water Savings	**236,421**	gallons/yr
Estimated Savings over Planning Period	**2,364,215**	gallons

Notes:

This measure affects projected water usage for Residential customers.

Estimate that approximately 32% of total customer use is outdoor use.

Costs

Total Cost to Water Provider

Labor Costs		
Staff Hours	2	/year
Hourly Cost	$50.00	/hour
Annual Staff Costs	$100.00	
Third Party Costs	$0.00	/year
Evaluation and Follow-up Costs	$0.00	/year
Annual Labor	**$100.00**	/year
Materials Costs		
Annual Materials Budget	$500	/year
Annual Materials	**$500.00**	/year
Rebates		
Rebate Cost	$0.00	
Number of Participants	0	/year
Annual Rebate Cost	**$0.00**	/year
One Time Labor and Material Costs		
One Time Design and Material Cost	$5,000.00	
Third Party Costs	$0.00	
One Time Labor/Material Cost	**$5,000.00**	

Notes:

Cost is for garden design (one time cost), installation, plants and planting materials and annual maintenance.

Xeriscape Demonstration Garden

Water Rates

Rate Category	Current Rates/Fees
Residential & Commercial - *Includes minimum base usage of 7,000 gallons+ $17 Capital Improvement Fee*	45.00
Excess Water Volume Charged from 7,001 to 10,000 gallons	*1.50*
Excess Water Volume Charged in excess of 10,000 gallons	2.00

Notes:

The annual revenue loss was estimated based on: Residential & Commercial rates for 5/8" meters. City charges monthly capital improvement fees in addition to the monthly use charges.

Estimated Revenue assumes that the current rates will not change over the planning period.

Estimated Average Annual Revenue without Water Savings	$136,899.08	/year
Estimated Average Annual Revenue with Water Savings	$136,438.78	/year
Annual Revenue Loss Related to Water Savings	**$460.29**	/year

Estimated Annual Cost	**$1,060.29**	/year
Estimated Cost over Planning Period not including Lost Revenue	**$11,000.00**	
Estimated Total Cost over Planning Period Including Set-up and Lost Revenue	**$15,602.93**	
Cost per 1000 Gallons Saved	**$6.60**	

Property Manager/HOA Education and Training

This measure includes a seminar style training provided to the professional irrigators and large property managers

Planning Period	2011 to 2020
Years in Planning Period	10
Program Length	10

Estimated Water Savings

Annual Estimated Savings Rate	1.00%

Customer Category	Average Water Use gallons	*Estimated Annual Water Savings gallons/yr*
Residential	47,284,300	472,843
Commercial	8,865,806	88,658

Estimated Annual Water Savings	**561,501**	gallons/yr
Estimated Savings over Planning Period	**5,615,011**	gallons

Notes:

This measure affects projected water usage for the residential & commercial users.

Costs

Total Cost to Water Provider

Labor Costs		
Staff Hours	16	/year
Hourly Cost	$50.00	/hour
Annual Staff Costs	$800.00	
Third Party Costs	$0.00	/year
Evaluation and Follow-up Costs	$0.00	/year
Annual Labor	**$800.00**	/year
Materials Costs		
Unit Cost	$25.00	/participant
Number of Participants	5	/year
Annual Materials	**$125.00**	/year
Rebates		
Rebate Cost	$0.00	
Number of Participants	0	/year
Annual Rebate Cost	**$0.00**	/year
One Time Labor and Material Costs		
One Time Materials Cost	$0.00	
One Time Labor Costs (seminar prep)	$5,000.00	
One Time Labor/Material Cost	**$5,000.00**	

Notes:

Cost includes seminar preparation and instruction.

Material budget is approximately $25 per class participant. With an estimated seminar attendance size of 5 participants.

Property Manager/HOA Education and Training

Water Rates

Rate Category	Current Rates/Fees
Residential & Commercial *- Includes minimum base usage of 7,000 gallons+ $17 Capital Improvement Fee*	45.00
Excess Water Volume Charged from 7,001 to 10,000 gallons	*1.50*
Excess Water Volume Charged in excess of 10,000 gallons	2.00

Notes:

The annual revenue loss was estimated based on: Residential & Commercial rates for 5/8" meters. City charges monthly capital improvement fees in addition to the monthly use charges.

Estimated Revenue assumes that the current rates will not change over the planning period.

Estimated Average Annual Revenue without Water Savings	$397,997.08	/year
Estimated Average Annual Revenue with Water Savings	$396,565.44	/year
Estimated Annual Revenue Loss Related to Water Savings	**$1,431.64**	/year

Estimated Annual Cost	**$2,356.64**	/year
Estimated Cost over Planning Period not including Lost Revenue	**$14,250.00**	
Estimated Total Cost over Planning Period Including Set-up and Lost Revenue	**$28,566.37**	
Cost per 1000 Gallons Saved	**$5.09**	

Residential Low-Flow Toilet Rebate

Planning Period	2012	2022
Years in Planning Period	10	
Program Length	10	

Estimated Water Savings

Annual Estimated Residential Water Use Per Tap without Savings

Customer Category	Water Use Per Tap gallons/tap	Annual Program Participants
Residential	84,721	20

Residential Annual Use	84,721	gallons/tap/yr
Total	84,721	gallons/tap/yr
People per Household	2.6	
Average Flushes per Household*	5.1	flushes
Saving Per Flush with a low flow toilet (1.28 gal/flush)	2.72	gallons/flush
Gallons Saved per Household per Year	13,165	gallons/yr
Annual Program Participants	20	/year
Maximum No. of Participants over Planning Period	200	
Estimated Annual Water Savings	**263,291**	gallons/yr
Estimated Savings over Planning Period	**14,480,981**	gallons

**Based on "Handbook of Water Use and Conservation" by Amy Vickers*

Notes:

Estimated Water Use is based on 2010 data*: Residential = 0.26 af/tap*

A rebate would be available for toilets using 1.28 gallons per flush or dual flush toilets.

*Savings based on 5.1 flushes per person per day *. Saving 2.72 gal per flush (4.0 gal ave flush rate - 1.28 gal conservation flush rate) and 2.6 people per household.*

Estimated Savings over Planning Period is calculated by compounding the estimated annual water savings per the total number of audit participants for each given year.

Costs

Total Cost to Water Provider

Labor Costs		
Staff Hours	5	/year
Hourly Cost	$50.00	/hour
Annual Staff Costs	$250.00	
Evaluation and Follow up Costs	$0.00	/year
Annual Labor	**$250.00**	/year
Materials Costs		
Unit Cost	$0.00	/participant
Number of Participants	20	/year
Gallons Saved per Unit per Year	13,165	gallons
Annual Materials	**$0.00**	/year
Rebates		
Rebate Cost	$50.00	
Number of Participants	20	/year
Annual Rebate Cost	**$1,000.00**	
One Time Labor and Material Costs		
One Time Materials Cost	$0.00	
One Time Labor Cost	$200.00	
One Time Labor/Material Cost	**$200.00**	

Notes:

Annual labor costs include water savings tracking for rebate program. Other one time costs are for intital set-up of rebate program.

The City may provide $50.00 per toliet replaced.

Residential Low-Flow Toilet Rebate

Water Rates

Rate Category	Current Rates/Fees
Residential & Commercial *- Includes minimum base usage of 7,000 gallons+ $17 Capital Improvement Fee*	45.00
Excess Water Volume Charged from 7,001 to 10,000 gallons	*1.50*
Excess Water Volume Charged in excess of 10,000 gallons	2.00

Notes:

The annual revenue loss was estimated based on: Residential & Commercial rates for 5/8" meters. City charges monthly capital improvement fees in addition to the monthly use charges.

Estimated Revenue assumes that the current rates will not change over the planning period.

Estimated Average Annual Revenue without Water Savings	$21,883.68	/year
Estimated Average Annual Revenue with Water Savings	$18,987.48	/year
Annual Revenue Loss Related to Water Savings	**$2,896.20**	/year

Estimated Annual Cost	**$4,146.20**	/year
Estimated Cost over Planning Period not including Lost Revenue	**$12,700.00**	
Estimated Total Cost over Planning Period Including Set-up and Lost Revenue	**$41,661.96**	
Cost per 1000 Gallons Saved	**$2.88**	

High Efficiency Clothes Washer Rebate

Planning Period	2012	2022
Years in Planning Period	10	
Program Length	10	

Estimated Water Savings

Annual Estimated Residential Water Use Per Tap without Savings

Customer Category	Water Use Per Tap gallons/tap	Annual Program Participants
Residential	84,721	5

Residential Annual Use	84,721	gallons/tap/yr
Total	84,721	gallons/tap/yr
People per Household	2.59	
Laundry loads per person per day*	0.37	
Saving per load with a high efficiency washer	16	gallons/load
Gallons Saved per Household per Year	5,596	gallons/yr
Annual Program Participants	5	/year
Maximum No. of Participants over Planning Period	50	
Estimated Annual Water Savings	**27,982**	gallons/yr
Estimated Savings over Planning Period	**1,539,030**	gallons

**Based on "Handbook of Water Use and Conservation" by Amy Vickers*

Notes:

Estimated Water Use is based on 2010 data*: Residential = 0.26 af/tap*

*Savings based on 0.37 loads per person per day *. Saving 16 gal per load (43 gal/load avg. rate - 27 gal/load conservation rate*) and 2.7 people per household.*

Estimated Savings over Planning Period is calculated by compounding the estimated annual water savings per the total number of audit participants for each given year.

Costs

Total Cost to Water Provider

Labor Costs		
Staff Hours	5	/year
Hourly Cost	$50.00	/hour
Annual Staff Costs	$250.00	
Evaluation and Follow up Costs	$0.00	/year
Annual Labor	**$250.00**	/year
Materials Costs		
Unit Cost	$0.00	/participant
Number of Participants	5	/year
Gallons Saved per Unit per Year	5,596	gallons
Annual Materials		/year
Rebates		
Rebate Cost	$125.00	
Number of Participants	5	/year
Annual Rebate Cost	**$625.00**	
One Time Labor and Material Costs		
One Time Materials Cost	$0.00	
One Time Labor Cost	$200.00	
One Time Labor/Material Cost	**$200.00**	

Notes:

Annual labor costs include water savings tracking for rebate program. Other one time costs are for intital set-up of rebate program.

The City may provide $125 per clothes washer replaced.

High Efficiency Clothes Washer Rebate

Water Rates

Rate Category	Current Rates/Fees
Residential & Commercial *- Includes minimum base usage of 7,000 gallons+ $17 Capital Improvement Fee*	45.00
Excess Water Volume Charged from 7,001 to 10,000 gallons	*1.50*
Excess Water Volume Charged in excess of 10,000 gallons	2.00

Notes:

The annual revenue loss was estimated based on: Residential & Commercial rates for 5/8" meters. City charges monthly capital improvement fees in addition to the monthly use charges.

Estimated Revenue assumes that the current rates will not change over the planning period.

Estimated Average Annual Revenue without Water Savings	$5,470.92	/year
Estimated Average Annual Revenue with Water Savings	$5,163.11	/year
Annual Revenue Loss Related to Water Savings	**$307.81**	/year

Estimated Annual Cost	**$1,182.81**	/year
Estimated Cost over Planning Period not including Lost Revenue	**$8,950.00**	
Estimated Total Cost over Planning Period Including Set-up and Lost Revenue	**$12,028.06**	
Cost per 1000 Gallons Saved	**$7.82**	

Low Flow Dishwasher Rebate

Planning Period	2012	2022
Years in Planning Period	10	
Program Length	10	

Estimated Water Savings

Annual Estimated Residential Water Use Per Tap without Savings

Customer Category	Water Use Per Tap gallons/tap	Annual Program Participants
Residential	84,721	20

Residential Annual Use	84,721	gallons/tap/yr
Total	84,721	gallons/tap/yr
People per Household	2.6	
Dishwasher loads per person per day*	0.1	
Savings per load with a high efficiency dishwasher	6.5	gallons/load
Gallons Saved per Household per Year	617	gallons/yr
Number of dishwasher replaced each year	20	/year
Maximum dishwasher replaced over planning period	200	
Estimated Annual Water Savings	**12,337**	gallons/yr
Estimated Savings over Planning Period	**678,535**	gallons

**Based on "Handbook of Water Use and Conservation" by Amy Vickers. Please refer to Table 2.11 on page 88.*

Notes:

Estimated Water Use is based on 2010 data*: Residential = 0.26 af/tap*

Annual Savings is based on a 4.5 gallon per load dishwasher vs a 10 to 12 gallon per load dishwasher, 0.1 loads per person per day.

Estimated Savings over Planning Period is calculated by compounding the estimated annual water savings per the total number of participants for each given year.

Costs

Total Cost to Water Provider

Labor Costs		
Staff Hours	5	/year
Hourly Cost	$50.00	/hour
Annual Staff Costs	$250.00	
Evaluation and Follow up Costs	$0.00	/year
Annual Labor	**$250.00**	/year
Materials Costs		
Unit Cost	$0.00	/participant
Number of Participants	20	/year
Gallons saved per year	617	gallons
Annual Materials	**$0.00**	/year
Rebates		
Rebate Cost	$50.00	
Number of Units	20	
Annual Rebate Cost	**$1,000.00**	/year
One Time Labor and Material Costs		
One Time Materials Cost	$0.00	
One Time Labor Cost	$100.00	
One Time Labor/Material Cost	**$100.00**	

Notes:

Annual labor costs include water savings tracking for rebate program. Other one time costs are for intital set-up of rebate program.

The City may provide $50 per dishwasher replaced.

Low Flow Dishwasher Rebate

Water Rates

Rate Category	Current Rates/Fees
Residential & Commercial - *Includes minimum base usage of 7,000 gallons+ $17 Capital Improvement Fee*	45.00
Excess Water Volume Charged from 7,001 to 10,000 gallons	*1.50*
Excess Water Volume Charged in excess of 10,000 gallons	2.00

Notes:

The annual revenue loss was estimated based on: Residential & Commercial rates for 5/8" meters. City charges monthly capital improvement fees in addition to the monthly use charges.

Estimated Revenue assumes that the current rates will not change over the planning period.

Estimated Average Annual Revenue without Water Savings	$21,883.68	/year
Estimated Average Annual Revenue with Water Savings	$21,747.97	/year
Annual Revenue Loss Related to Water Savings	**$135.71**	/year

Estimated Annual Cost	**$1,385.71**	/year
Estimated Cost over Planning Period not including Lost Revenue	**$12,600.00**	
Estimated Total Cost over Planning Period Including Set-up and Lost Revenue	**$13,957.07**	
Cost per 1000 Gallons Saved	**$20.57**	

Low-Flow Faucet Rebate

Planning Period	2012	2022
Years in Planning Period	10	
Program Length	10	

Estimated Water Savings

Annual Estimated Residential Water Use Per Tap without Savings

Customer Category	Water Use Per Tap gallons/tap	Annual Program Participants
Residential	84,721	20

Residential Annual Use	84,721	gallons/tap/yr
Total	84,721	gallons/tap/yr
People per Household	2.59	
Estimated Water Use for a 2.75 gpm rated faucet*	14.9	gpcd
Annual residential water use for a 2.75 gpm rated faucet*	14,086	gallons/yr
Estimated Water Use for a 1.5 gpm rated faucet*	8.1	gpcd
Annual residential water use for a 1.5 gpm rated faucet*	7,657	gallons/yr
Gallons Saved per Household per Year	6,428	gallons/yr
Number of low-flow faucets used each year	20	Households/year
Maximum low-flow faucets used over planning period	600	
Estimated Annual Water Savings	**128,568**	gallons/yr
Estimated Savings over Planning Period	**7,071,218**	gallons

**Based on "Handbook of Water Use and Conservation" by Amy Vickers. Please refer to Table 2.15 on page 103.*

Notes:

Estimated Water Use is based on 2010 data*: Residential = 0.26 af/tap*

Average water savings of 6,428 gal. per household per year for 1.5 gpm faucets (1.5gpm vs. 2.75gpm).*

Estimated Savings over Planning Period is calculated by compounding the estimated annual water savings per the total number of audit participants for each given year.

Costs

Total Cost to Water Provider

Labor Costs		
Staff Hours	5	/year
Hourly Cost	$50.00	/hour
Annual Staff Costs	$250.00	
Evaluation and Follow up Costs	$0.00	/year
Annual Labor	**$250.00**	/year
Materials Costs		
Unit Cost	$0.00	/participant
No. of participants per year	20	/year
Gallons Saved per Unit per Year	6,428	gallons
Annual Materials	**$0.00**	/year
Rebates		
Rebate Cost	$5.00	
Number of Units	20	/year
Annual Rebate Cost	**$100.00**	/year
One Time Labor and Material Costs		
One Time Materials Cost	$0.00	
One Time Labor Cost	$100.00	
One Time Labor/Material Cost	**$100.00**	

Notes:

Annual labor costs include water savings tracking for rebate program. Other one time costs are for intital set-up of rebate program.

The City may provide $5 per faucet replaced.

Low-Flow Faucet Rebate

Water Rates

Rate Category	Current Rates/Fees
Residential & Commercial *- Includes minimum base usage of 7,000 gallons+ $17 Capital Improvement Fee*	45.00
Excess Water Volume Charged from 7,001 to 10,000 gallons	*1.50*
Excess Water Volume Charged in excess of 10,000 gallons	2.00

Notes:

The annual revenue loss was estimated based on: Residential & Commercial rates for 5/8" meters. City charges monthly capital improvement fees in addition to the monthly use charges.

Estimated Revenue assumes that the current rates will not change over the planning period.

Estimated Average Annual Revenue without Water Savings	$21,883.68	/year
Estimated Average Annual Revenue with Water Savings	$20,469.43	/year
Annual Revenue Loss Related to Water Savings	**$1,414.24**	/year

Estimated Annual Cost	**$1,764.24**	/year
Estimated Cost over Planning Period not including Lost Revenue	**$3,600.00**	
Estimated Total Cost over Planning Period Including Set-up and Lost Revenue	**$17,742.44**	
Cost per 1000 Gallons Saved	**$2.51**	

Low-Flow Showerhead Rebate

Planning Period	2012	2022
Years in Planning Period	10	
Program Length	10	

Estimated Water Savings

Annual Estimated Residential Water Use Per Tap without Savings

Customer Category	Water Use Per Tap gallons/tap	Annual Program Participants
Residential	84,721	20

Residential Annual Use	84,721	gallons/tap/yr
Total	84,721	gallons/tap/yr
People per Household	2.59	
Annual residential water use for a 3 gpm rated showerhead*	10,021	gallons/yr
Estimated Water Use for a 2.5 gpm rated showerhead*	9.01	gpcd
Annual residential water use for a 2.5 gpm rated faucet*	8,518	gallons/yr
Gallons Saved per Household per Year	1,503	gallons/yr
Number of showerheads replaced each year	20	/year
Maximum showerheads replaced over planning period	200	
Estimated Annual Water Savings	**30,062**	gallons/yr
Estimated Savings over Planning Period	**1,653,417**	gallons

**Based on "Handbook of Water Use and Conservation" by Amy Vickers. Please refer to Table 2.11 on page 88.*

Notes:

Estimated Water Use is based on 2010 data*: Residential = 0.26 af/tap*

Average water savings of 1,602 gal. per household per year for 2.5 gpm faucets (2.5gpm vs. 3gpm).*

Estimated Savings over Planning Period is calculated by compounding the estimated annual water savings per the total number of audit participants for each given year.

Costs

Total Cost to Water Provider

Labor Costs		
Staff Hours	5	/year
Hourly Cost	$50.00	/hour
Annual Staff Costs	$250.00	
Evaluation and Follow up Costs	$0.00	/year
Annual Labor	**$250.00**	/year
Materials Costs		
Unit Cost	$0.00	/participant
Number of Participants	20	/year
		gallons
Annual Materials	**$0.00**	/year
Rebates		
Rebate Cost	$5.00	
Number of Units	20	
Annual Rebate Cost	**$100.00**	/year
One Time Labor and Material Costs		
One Time Materials Cost	$0.00	
One Time Labor Cost	$100.00	
One Time Labor/Material Cost	**$100.00**	

Notes:

Annual labor costs include water savings tracking for rebate program. Other one time costs are for intital set-up of rebate program.

The City may provide $5.00 per showerhead replaced.

Low-Flow Showerhead Rebate

Water Rates

Rate Category	Current Rates/Fees
Residential & Commercial - *Includes minimum base usage of 7,000 gallons+ $17 Capital Improvement Fee*	45.00
Excess Water Volume Charged from 7,001 to 10,000 gallons	*1.50*
Excess Water Volume Charged in excess of 10,000 gallons	2.00

Notes:

The annual revenue loss was estimated based on: Residential & Commercial rates for 5/8" meters. City charges monthly capital improvement fees in addition to the monthly use charges.

Estimated Revenue assumes that the current rates will not change over the planning period.

Estimated Average Annual Revenue without Water Savings	$21,883.68	/year
Estimated Average Annual Revenue with Water Savings	$21,552.99	/year
Annual Revenue Loss Related to Water Savings	**$330.68**	/year

Estimated Annual Cost	**$680.68**	/year
Estimated Cost over Planning Period not including Lost Revenue	**$3,600.00**	
Estimated Total Cost over Planning Period Including Set-up and Lost Revenue	**$6,906.83**	
Cost per 1000 Gallons Saved	**$4.18**	

Irrigation System Efficiency Device Rebates

Irrigation System Efficiency Devices may include ET (SMART) Sprinkler system controllers and/or Wind and Rain sensors.

Planning Period	2012	2022
Years in Planning Period	10	
Program Length	10	

Estimated Water Savings

Annual Estimated Savings Rate	5%

Customer Category	Outdoor Water Use Per Tap gallons/tap	Annual Program Participants	*Estimated Annual Water Savings for all Participants (gallons/yr)*
Residential	27,111	15	20,333
Commercial	117,828	5	29,457

Estimated Annual Water Savings	**49,790**	gallons/yr
Estimated Savings over Planning Period	**2,738,452**	gallons

Notes:

Outdoor usage for Residential and Commercial categories is estimated at 32%.

Wind and Rain Sensors can save an estimated 5% to 10% of water used outdoors and costs approximately $25 to $45. The amount of water that can be saved through improved programming of an irrigation system controller varies but is estimated to be at least 10% to 15%. The cost of automatic irrigation system controllers for residential use ranges from about $50 to $250, depending on the features provided. Commercial-use controllers and central controllers can cost up to several thousand dollars.*

Estimated Savings over Planning Period is calculated by compounding the estimated annual water savings per the total number of participants for each given year.

**Based on "Handbook of Water Use and Conservation" by Amy Vickers*

Costs

Labor Costs		
Staff Hours	5	/year
Hourly Cost	$50.00	/hour
Annual Staff Costs	$250.00	
Evaluation and Follow up Costs	$0.00	/year
Annual Labor	**$250.00**	/year
Materials Costs		
Unit Cost	$0.00	/participant
Number of Participants	20	/year
Gallons Saved per Unit per Year	Varies	gallons
Annual Materials	**$0.00**	/year
Rebate Cost	$25.00	
Number of Participants	20	/year
Annual Rebate Cost	**$500.00**	/year
One Time Labor and Material Costs		
One Time Materials Cost	$0.00	
One Time Labor Cost	$200.00	
One Time Labor/Material Cost	**$200.00**	

Notes:

Annual labor costs include water savings tracking for rebate program. Other one time costs are for intital set-up of rebate program.

The City may provide $25 per controller replaced.

Irrigation System Efficiency Device Rebates

Water Rates

Rate Category	Current Rates/Fees
Residential & Commercial *- Includes minimum base usage of 7,000 gallons+ $17 Capital Improvement Fee*	45.00
Excess Water Volume Charged from 7,001 to 10,000 gallons	*1.50*
Excess Water Volume Charged in excess of 10,000 gallons	2.00

Notes:

The annual revenue loss was estimated based on: Residential & Commercial rates for 5/8" meters. City charges monthly capital improvement fees in addition to the monthly use charges.

Estimated Revenue assumes that the current rates will not change over the planning period.

Estimated Average Annual Revenue without Water Savings	$26,130.80	/year
Estimated Average Annual Revenue with Water Savings	$25,052.89	/year
Annual Revenue Loss Related to Water Savings	**$1,077.92**	/year

Estimated Annual Cost	**$1,827.92**	/year
Estimated Cost over Planning Period not including Lost Revenue	**$7,700.00**	
Estimated Total Cost over Planning Period Including Set-up and Lost Revenue	**$18,479.15**	
Cost per 1000 Gallons Saved	**$6.75**	

Water Conservation Upgrades for City Facilities - Indoor

This would provide high efficiency fixture replacement for toilets, showerheads, and faucet aerators within City Buildings.

Planning Period	2012	2022
Years in Planning Period	10	
Program Length	1	

Estimated Water Savings

Annual Estimated City Water Use Per Tap without Savings

Customer Category	Water Use Per Tap gallons/tap
City	635,409

	Gallons per Day	Estimated No. of Units replaced	Estimated Gallons Saved per year
Gallons saved per day with High Effic. Toilet*	25.00	8	73,000
GPCD saved for 1.5 gpm showerhead	2.65	2	1,935
GPCD saved for 1 gpm Faucet Aerator	6.80	9	22,338

Estimated Annual Water Savings	**97,273**	gallons/yr
Estimated Savings over Planning Period	**972,725**	gallons

Notes:

Estimated Water Use is based on the City usage category - 1.95 ac-ft/tap

**Based on "Handbook of Water Use and Conservation" by Amy Vickers*

Costs

Total Cost to Water Provider

Labor Costs		
Staff Hours	0	/year
Hourly Cost	$50.00	/hour
Annual Staff Costs	$0.00	
Evaluation and Follow up Costs	$0.00	/year
Annual Labor	**$0.00**	/year
Materials Costs		
Unit Cost	$0.00	/participant
Number of Participants		/year
Gallons Saved per Unit per Year	varies	gallons
Annual Materials	$0.00	/year
Rebates		
Rebate Cost	$0.00	
Number of Participants	0	/year
Annual Rebate Cost	**$0.00**	/year
One Time Labor and Material Costs		
One Time Materials Cost	$870.50	
One Time Labor Cost	$2,000.00	
One Time Labor/Material Cost	**$2,870.50**	

Notes:

This is a retrofit program is not a rebate program.

Cost of Material assumes:
$100 -1.28 gpf HET Glacier Bay Toilet
$30 - 1.5 gpm showerhead
$1.50 - 0.5 gpm low flow dual-thread faucet aerator- kitchen and bathroom

Estimated Annual Cost	**$0.00**	/year
Estimated Total Cost over Planning Period Including Set-up	**$2,870.50**	
Cost per 1000 Gallons Saved	**$2.95**	

Water Conservation Upgrades for City Facilities - Outdoor

This would include the installation of Irrigation System Efficiency Devices may include ET (SMART) Sprinkler system controllers and/or Wind and Rain sensors for outdoor areas irrigated by the City such as City Parks etc.

Planning Period	2012	2022
Years in Planning Period	10	
Program Length	1	

Estimated Water Savings

Annual Estimated Savings Rate	5%

Customer Category	Outdoor Water Use Per Tap gallons/tap	No of Facilities	*Estimated Annual Water Savings (gallons/yr)*
City	203,331	5	50,833

Estimated Annual Water Savings	**50,833**	gallons/yr
Estimated Savings over Planning Period	**508,328**	gallons

Notes:

This measure is only for City water usuage which is estimated at 1.95 af/tap.

Wind and Rain Sensors can save an estimated 5% to 10% of water used outdoors and costs approximately $25 to $45. The amount of water that can be saved through improved programming of an irrigation system controller varies but is estimated to be at least 10% to 15%. The cost of automatic irrigation system controllers for residential use ranges from about $50 to $250, depending on the features provided. Commercial-use controllers and central controllers can cost up to several thousand dollars.*

**Based on "Handbook of Water Use and Conservation" by Amy Vickers*

Labor Costs		
Staff Hours	0	/year
Hourly Cost	$50.00	/hour
Annual Staff Costs	$0.00	
Evaluation and Follow up Costs	$0.00	/year
Annual Labor	**$0.00**	/year
Materials Costs		
Unit Cost	$0.00	/participant
Number of Participants	5	/year
Gallons Saved per Unit per Year	Varies	gallons
Annual Materials	**$0.00**	/year
Rebates		
Rebate Cost	$0.00	
Number of Participants	0	/year
Annual Rebate Cost	**$0.00**	/year
One Time Materials Cost	$1,385.00	
One Time Labor Cost	$1,000.00	
One Time Labor/Material Cost	**$2,385.00**	

Notes:

This is not a rebate program but a retrofit program for irrigation around City buildings.

The one time material cost is for the City to purchase 8 wind & rain sensors and upgrade 4 central controllers.

Estimated Annual Cost	**$0.00**	/year
Estimated Total Cost over Planning Period Including Set-up	**$2,385.00**	
Cost per 1000 Gallons Saved	**$4.69**	

Commercial Water Audits

Commercial customers are often the highest water users and have been an area of increasing focus for water conservation. Commercial customers who participate in a water audit could identify ways to reduce their operating costs over the long term. Water audits can be performed by a third party consultant and is an effective way to educate businesses on how they can save water.

Planning Period	2012	2022
Years in Planning Period	10	
Program Length	10	

Estimated Water Savings

Annual Estimated Savings Rate	5%

Customer Category	Water Use Per Tap gallons/tap	Annual Program Participants	*Estimated Annual Water Savings gallons/yr*
Commercial	368,212	5	92,053

Estimated Annual Water Savings	**92,053**	gallons/yr
Estimated Savings over Planning Period	**5,062,910**	gallons

Notes:

Estimated Water Use is based on a 1.13 AF/tap use for Commercial taps. This is the 2010 commercial water use.

Estimated Savings over Planning Period is calculated by compounding the estimated annual water savings per the total number of audit participants for each given year. For example, in the first year of the program, there are 10 participants. In the second year of the program, there are water savings from the 10 participants from last year's program, and new participants thereby compounding the savings.

Costs

Total Cost to Water Provider

Labor Costs		
Staff Hours	8	/year
Hourly Cost	$50.00	/hour
Annual Staff Costs	$400.00	
Evaluation and Follow up Costs	$300.00	/year
Annual Labor	**$700.00**	/year
Materials Costs		
Unit Cost	$500.00	/participant
Number of Participants	5	/year
Gallons Saved per Unit per Year	18,411	gallons
Annual Materials	**$2,500.00**	/year
Rebates		
Rebate Cost	$0.00	
Number of Participants	5.0	/year
Annual Rebate Costs		/year
One Time Labor and Material Costs		
One Time Labor Cost (program setup assistance through 3rd party)	$1,000.00	
One Time Labor/Material Cost	**$1,000.00**	

Notes:

Staff hours include time for coordination with third party consultants.

Consultants may be hired to perform audits at an estimated cost of approximately $500.00 per audit.

Commercial Water Audits

Water Rates

Rate Category	Current Rates/Fees
Residential & Commercial *- Includes minimum base usage of 7,000 gallons+ $17 Capital Improvement Fee*	45.00
Excess Water Volume Charged from 7,001 to 10,000 gallons	*1.50*
Excess Water Volume Charged in excess of 10,000 gallons	2.00

Notes:

The annual revenue loss was estimated based on: Residential & Commercial rates for 5/8" meters. City charges monthly capital improvement fees in addition to the monthly use charges.

Estimated Revenue assumes that the current rates will not change over the planning period.

Estimated Average Annual Revenue without Water Savings	$21,062.89	/year
Estimated Average Annual Revenue with Water Savings	$20,050.31	/year
Annual Revenue Loss Related to Water Savings	**$1,012.58**	/year

Estimated Annual Cost	**$4,212.58**	/year
Estimated Cost over Planning Period not including Lost Revenue	**$33,000.00**	
Estimated Total Cost over Planning Period Including Set-up and Lost Revenue	**$43,125.82**	
Cost per 1000 Gallons Saved	**$8.52**	

Residential Audit Kit

Self-guided residential audit kits can be designed to include items such as leak detection tablets, surveys, and sprinkler testing cones. Instructions for conducting the audit and evaluating the results can give residential customers insight and direction on how they can save water and money. The guidance offered in the instructions could lead the customer to take part in other conservation programs offered, including rebates.

Planning Period	2012	2022
Years in Planning Period	10	
Program Length	10	

Estimated Water Savings

Annual Estimated Residential Water Use Per Tap without Savings

	Water Use (gallons/tap)	Estimated Annual Water Savings (gallons/yr)
Residential	84,721	42,361

Annual Estimated Savings Rate	5%	
Annual Program Participants	30	/year
Max. No. of Participants over Planning Period	300	

Annual Estimated Residential Water Use Per Tap with Savings

Estimated Annual Water Savings	**42,361**	gallons/yr
Estimated Savings over Planning Period	**2,329,835**	gallons

Notes:

Estimated Water Use is based on the *2010 data: Residential = 0.26 af/tap*

Estimated Savings over Planning Period is calculated by compounding the estimated annual water savings per the total number of audit participants for each given year.

Costs

Total Cost to Water Provider

Labor Costs		
Staff Hours (Website updates, etc.)	16	/year
Hourly Cost	$50.00	/hour
Annual Staff Costs	$800.00	
Evaluation and Follow up Costs	$300.00	/year
Annual Labor	**$1,100.00**	/year
Materials Costs		
Unit Cost	$0.00	/participant
Number of Participants	30	/year
Gallons Saved per Unit per Year	0	gallons
Annual Materials	**$0.00**	/year
Rebate Cost	$0.00	
Number of Participants	30	/year
Annual Rebate Cost	**$0.00**	/year
One Time Labor and Material Costs		
One Time Materials Cost (Bulk Purchase of 2500 Audit Kits)	$1,800.00	
Water Audit Website Set Up	$400.00	
One Time Labor/Material Cost	**$2,200.00**	

Notes:

Online instruction can be set up on City Website.

Residential audit kits are available at wholesalers like AM Conservation Group, Inc. for $5.99 per unit for a bulk purchase of 1800 to 3000 units. Kits can be customized to include the City of Dacono's logo.

Residential Audit Kit

Water Rates

Rate Category	Current Rates/Fees
Residential & Commercial *- Includes minimum base usage of 7,000 gallons+ $17 Capital Improvement Fee*	45.00
Excess Water Volume Charged from 7,001 to 10,000 gallons	*1.50*
Excess Water Volume Charged in excess of 10,000 gallons	2.00

Notes:

The annual revenue loss was estimated based on: Residential & Commercial rates for 5/8" meters. City charges monthly capital improvement fees in addition to the monthly use charges.

Estimated Revenue assumes that the current rates will not change over the planning period.

Estimated Average Annual Revenue without Water Savings	$33,073.02	/year
Estimated Average Annual Revenue with Water Savings	$20,094.45	/year
Annual Revenue Loss Related to Water Savings	**$12,978.57**	/year

Estimated Annual Cost	**$14,078.57**	/year
Estimated Cost over Planning Period not including Lost Revenue	**$13,200.00**	
Estimated Total Cost over Planning Period Including Set-up and Lost Revenue	**$142,985.67**	
Cost per 1000 Gallons Saved	**$61.37**	

City Landscape Audit

Audit by an outside consultant to determine which areas could use improvement in the irrigation systems for the City parks and irrigated areas.

Planning Period	2012	2022
Years in Planning Period	10	
Program Length	1	

Estimated Water Savings

Annual Estimated Savings Rate	2.5%

Customer Category	Avg Annual Outdoor Water Use Per Tap (gallons/tap)	*Estimated Annual Water Savings gallons/yr*
City	203,331	5,083

Estimated Annual Water Savings	**5,083**	gallons/yr
Estimated Savings over Planning Period	**50,833**	gallons

Notes:

This measure affects outdoor use for Standard - Full and Standard - 3/4 customers. Estimate that approximately 50% of total customer use is outdoor use. Annual savings for audit participants is estimated to be 5% per year.

Costs

Total Cost to Water Provider

Labor Costs		
Staff Hours	0	/year
Hourly Cost	$50.00	/hour
Annual Staff Costs	$0.00	
Evaluation and Follow up Costs	$0.00	/year
Annual Labor	**$0.00**	/year
One Time Labor and Material Costs		
One time Cost for Staff to Set Up Program	$1,000.00	
One time Cost for Outside Consultant	$2,000.00	
One Time Labor/Material Cost	**$3,000.00**	/year

Notes:

Cost of outside consultant to audit city parks and landscape areas.

Estimated Annual Cost	**$0.00**	/year
Estimated Total Cost over Planning Period Including Set-up	**$3,000.00**	
Cost per 1000 Gallons Saved	**$59.02**	

APPENDIX B

Public-Review Notification

Billing Software Upgrades

Software Upgrades will allow water providers to quickly and easily retrieve water usage data and relay that data to their customers, helping customers to monitor their water usage and conservation. The City is interested in upgrading to provide online billing access to its customers.

Planning Period	2012 to 2022
Years in Planning Period	10
Program Length	10

Estimated Water Savings

Annual Estimated Savings Rate	1%	
Annual Estimated Water Production without Savings	203,174,726	gallons/yr
Estimated Water Production over Planning Period without Savings	2,031,747,264	gallons
Estimated Annual Water Savings	**2,031,747**	gallons/yr
Estimated Savings over Planning Period	**20,317,473**	gallons

Notes:

Current system leakage/loss rate is estimated at 10%. Software upgrades are estimated to reduce apparent losses that occur due to billing system errors by 1 %.

The estimated production (without savings) equals the projected water usage plus 10%.

Costs

Total Cost to Water Provider

Labor Costs		
Staff Hours	15	/year
Hourly Cost	$50.00	/hour
Annual Staff Costs	$750.00	
Third Party Costs		/year
Evaluation and Follow-up Costs (Labor/Consultant)	$900.00	/year
Annual Labor	**$1,650.00**	/year
Materials Costs		
Unit Cost	$0.00	/participant
Number of Participants	0	/year
Gallons Saved per Unit per Year	0	gallons
Annual Materials	**$0.00**	/year
Rebates		
Rebate Cost	$0.00	
Number of Participants	0	/year
Annual Rebate Cost	**$0.00**	/year
One Time Labor and Material Costs		
One Time Materials Cost	$6,000.00	
One Time Staff Costs	$750.00	
One Time Labor/Material Cost	**$6,750.00**	

Notes:

Estimated one time staff costs to include transition to a web-based billing system. Estimate that Staff would spend approximately 15 hours at $50.00/hour to investigate current software capabilities to create a web-based version of billing system for customers.

Estimated cost for web-based software is $6000 with 15% annual updates & maintenance fees.

Estimated Annual Cost	**$1,650.00**	/year
Estimated Total Cost over Planning Period Including Set-up	**$23,250.00**	
Cost per 1000 Gallons Saved	**$1.14**	

Leak Detection and Repair Program

This measure would include electronic leak detection by a third party consultant every 5 years.

Planning Period	2012	2022
Years in Planning Period	10	
Program Length	10	

Estimated Water Savings

Annual Estimated Savings Rate	1%	
Annual Estimated Water Production without Savings	203,174,726	gallons/yr
Estimated Water Production over Planning Period without Savings	2,031,747,264	gallons
Estimated Annual Water Savings	**2,031,747**	gallons/yr
Estimated Savings over Planning Period	**20,317,473**	gallons

Notes:

Current system leakage/loss rate is estimated at 10%.

The estimated production (without savings) equals the projected water usage plus 10%.

Costs

Total Cost to Water Provider

Labor Costs		
Staff Hours	10	/year
Hourly Cost	$50.00	/hour
Annual Staff Costs	$500.00	
Third Party Costs (Leak Detection Consult)	$5,791.00	/year
Evaluation and Follow-up Costs (Labor/Consultant)	$0.00	/year
Annual Labor	**$6,291.00**	/year
Materials Costs		
Unit Cost	$0.00	/participant
Number of Participants	0	/year
Gallons Saved per Unit per Year	0	gallons
Annual Materials	**$0.00**	/year
Rebates		
Rebate Cost	$0.00	
Number of Participants	0	/year
Annual Rebate Cost	**$0.00**	/year
One Time Labor and Material Costs		
One Time Materials Cost	$0.00	
Third Party Costs (Mapping of System)	$0.00	
One Time Labor/Material Cost	**$0.00**	

Notes:

Third Party Costs include:
- A leak survey of the entire system is done every four to five years by a consultant with sounding equipment. A portion of the system is typically done every year. City staff performs the repairs.

Annual staff costs include coordination with consultant and monitoring annual water usage.

Estimated Annual Cost	**$6,291.00**	/year
Estimated Total Cost over Planning Period Including Set-up	**$62,910.00**	
Cost per 1000 Gallons Saved	**$3.10**	

Meter Testing and Replacement Program

This measure would include calibration of meters and replacement when necessary. Faulty meters account for apparent losses, or losses due to meter inaccuracies, and real losses also known as physical losses.

Planning Period	2012	2022
Years in Planning Period	10	
Program Length	10	

Estimated Water Savings

Annual Estimated Savings Rate	1%	
Annual Estimated Water Production without Savings	203,174,726	gallons/yr
Estimated Water Production over Planning Period without Savings	2,031,747,264	gallons
Estimated Annual Water Savings	**2,031,747**	gallons/yr
Estimated Savings over Planning Period	**20,317,473**	gallons

Notes:

Current system loss rate is estimated at 10%. A portion of these losses may be attributed to faulty meters. The City would like to reduce these losses by 1% over the planning period.

Costs

Total Cost to Water Provider

Labor Costs		
Staff Hours	10	/year
Hourly Cost	$50.00	/hour
Annual Staff Costs	$500.00	
Third Party Costs	$9,760.00	/year
Evaluation and Follow-up Costs (Labor/Consultant)	$0.00	/year
Annual Labor	**$10,260.00**	/year
Materials Costs		
Unit Cost	$210.00	/participant
Number of Participants	0	/year
Gallons Saved per Unit per Year	0	gallons
Annual Materials	**$0.00**	/year
Rebates		
Rebate Cost	$0.00	
Number of Participants	0	/year
Annual Rebate Cost	**$0.00**	/year
One Time Labor and Material Costs		
One Time Materials Cost	$0.00	
Program set up	$0.00	
One Time Labor/Material Cost	**$0.00**	

Notes:

Meter calibration – The meters have a 5 year warranty or 750,000 gallons whichever comes first. After the meter is calibrated for accuracy then it has an 15 year warranty or 2.5 million gallons of course whichever comes first. $59.00 to have 5/8" – 1" meter calibrated. Total cost of $97,586.00 . This cost was spread out over 10 years.

A new meter costs $210 and can be rebuilt for $75. However, these costs have not been included in the estimate.

Estimated Annual Cost	**$10,260.00**	/year
Estimated Total Cost over Planning Period Including Set-up	**$102,600.00**	
Cost per 1000 Gallons Saved	**$5.05**	

Watering Restrictions - Existing Measure

The City implemented voluntary water restrictions in Resolution No. 08-43, which discourages irrigation from 10 am to 6 pm etc.

Planning Period	2012	2022
Years in Planning Period	10	
Program Length	10	

Estimated Water Savings

Annual Estimated Savings Rate	2%

Notes:

Estimate that approximately 32% of total customer use is outdoor use.

Assume a conservative estimate of 2% savings of projected outdoor water usage .

Customer Category	Outdoor Water Use Per Tap gallons/tap	*Estimated Annual Water Savings gallons/yr*
Residential	47,284,300	945,686
Commercial	8,865,806	177,316

Estimated Annual Water Savings	**1,123,002**	gallons/yr
Estimated Savings over Planning Period	**11,230,021**	gallons

Costs

Total Cost to Water Provider

Labor Costs		
Staff Hours	2	/year
Hourly Cost	$50.00	/hour
Annual Staff Costs	$100.00	
Third Party Costs	$0.00	/year
Evaluation and Follow-up Costs	$50.00	/year
Annual Labor	**$150.00**	/year
Materials Costs		
Annual Materials Budget	$0	/year
Annual Materials	**$0.00**	/year
Rebates		
Rebate Cost	$0.00	
Number of Participants	0	/year
Annual Rebate Cost	**$0.00**	/year
One Time Labor and Material Costs		
One Time Labor Costs	$0.00	
One Time Material Costs	$0.00	
One Time Labor/Material Cost	**$0.00**	

Notes:

Costs include staff time for implementing voluntary water restrictions for existing measure.

Water Rates

Rate Category	Current Rates/Fees
Residential & Commercial *- Includes minimum base usage of 7,000 gallons+ $17 Capital Improvement Fee*	45.00
Excess Water Volume Charged from 7,001 to 10,000 gallons	*1.50*
Excess Water Volume Charged in excess of 10,000 gallons	2.00

Notes:

The annual revenue loss was estimated based on: Residential & Commercial rates for 5/8" meters. City charges monthly capital improvement fees in addition to the monthly use charges.

Estimated Revenue assumes that the current rates will not change over the planning period.

Estimated Average Annual Revenue without Water Savings	$159,359.13	/year
Estimated Average Annual Revenue with Water Savings	$157,113.12	/year
Annual Revenue Loss Related to Water Savings	**$2,246.00**	/year

Estimated Annual Cost	**$2,396.00**	/year
Estimated Cost over Planning Period not including Lost Revenue	**$1,500.00**	
Estimated Total Cost over Planning Period Including Set-up and Lost Revenue	**$23,960.04**	
Cost per 1000 Gallons Saved	**$2.13**	

Water Rate Structure Changes

Based on many water conservation studies, an inclining block water rate design most effectively encourages efficient water use. A rate study may be necessary to ensure maximum water conservation savings.

Planning Period	2011 to 2020
Years in Planning Period	10
Program Length	1

Estimated Water Savings

Annual Estimated Savings Rate	2%

Customer Category	Average Water Use (gallons)	*Estimated Annual Water Savings gallons/yr*
Residential	147,763,437	2,955,269
Commercial	27,705,645	554,113

Estimated Annual Water Savings	**3,509,382**	gallons/yr
Estimated Savings over Planning Period	**35,093,816**	gallons

Notes:

Assume a conservative reduction of 2% of projected total billed water. Rate change studies have shown a greater savings (Southwest Florida Water Management District study - 13%).

Costs

Total Cost to Water Provider

Labor Costs		
Staff Hours	15	/year
Hourly Cost	$50.00	/hour
Annual Staff Costs	$750.00	
Third Party Costs	$0.00	/year
Evaluation and Follow-up Costs (Labor/Consultant)	$0.00	/year
Annual Labor	**$750.00**	/year
Materials Costs		
Unit Cost	$0.00	/participant
Number of Participants	0	/year
Gallons Saved per Unit per Year	0	gallons
Annual Materials	**$0.00**	/year
Rebates		
Rebate Cost	$0.00	
Number of Participants	0	/year
Annual Rebate Cost	**$0.00**	/year
One Time Labor and Material Costs		
One Time City Staff Labor	$10,000.00	
Rate Study performed by Consultants	$40,000.00	
One Time Labor/Material Cost	**$50,000.00**	

Notes:

Labor costs include estimated staff time for researching water rate options and implementing those options (~200 hours at $50/hour).

Costs also include water rate study completed by a Consultant. Before a new rate structure is adopted, a rate study would need to be completed by an outside consulting firm.

Water Rate Structure Changes

Water Rates

Rate Category	Current Rates/Fees
Residential & Commercial - *Includes minimum base usage of 7,000 gallons+ $17 Capital Improvement Fee*	45.00
Excess Water Volume Charged from 7,001 to 10,000 gallons	*1.50*
Excess Water Volume Charged in excess of 10,000 gallons	2.00

Notes:

The annual revenue loss was estimated based on: Residential & Commercial rates for 5/8" meters. City charges monthly capital improvement fees in addition to the monthly use charges.

Estimated Revenue assumes that the current rates will not change over the planning period.

Estimated Average Annual Revenue without Water Savings	$397,997.08	/year
Estimated Average Annual Revenue with Water Savings	$390,978.32	/year
Estimated Annual Revenue Loss Related to Water Savings	**$7,018.76**	/year

Estimated Annual Cost	**$7,768.76**	/year
Estimated Cost over Planning Period not including Lost Revenue	**$50,750.00**	
Estimated Total Cost over Planning Period Including Set-up and Lost Revenue	**$57,768.76**	
Cost per 1000 Gallons Saved	**$1.65**	

Water Waste Ordinance

The City would like to develop an ordinance to prohibit water waste

Planning Period	2012	2022
Years in Planning Period	10	
Program Length	1	

Estimated Water Savings

Annual Estimated Savings Rate	0.50%

Customer Category	Average Annual Water Use (gallons/yr)	*Estimated Annual Water Savings gallons/yr*
Residential	147,763,437	738,817
Commercial	27,705,645	138,528

Estimated Annual Water Savings	**877,345**	gallons/yr
Estimated Savings over Planning Period	**8,773,454**	gallons

Notes:

Estimated savings is 1/2 % and will affect residential & commercial users.

Costs

Total Cost to Water Provider

Labor Costs		
Staff Hours	0	/year
Hourly Cost	$50.00	/hour
Annual Staff Costs	$0.00	
Third Party Costs	$0.00	/year
Evaluation and Follow-up Costs	$0.00	/year
Annual Labor	**$0.00**	/year
Materials Costs		
Annual Materials Budget	$0	/year
Annual Materials	**$0.00**	/year
Rebates		
Rebate Cost	$0.00	
Number of Participants	0	/year
Annual Rebate Cost	**$0.00**	/year
One Time Labor and Material Costs		
One Time Staff Labor Costs	$500.00	
One Time Material Costs	$0.00	
One Time Labor/Material Cost	**$500.00**	

Notes:

Labor costs include estimated staff time for researching and developing requirements and standards and receiving approval and implementing the ordinance.

Water Waste Ordinance

Water Rates

Residential *- Includes minimum base usage of 7,000 gallons+ $17 Capital Improvement Fee*	45.00
Excess Water Volume Charged from 7,001 to 10,000 gallons	*1.50*
Excess Water Volume Charged in excess of 10,000 gallons	2.00
Commercial *- Includes minimum base usage of 7,000 gallons+ $17 Capital Improvement Fee*	45.00
Excess Water Volume Charged from 7,001 to 10,000 gallons	*1.50*
Excess Water Volume Charged in excess of 10,000 gallons	2.00

Notes:

The annual revenue loss was estimated based on: Residential rates for 5/8" meters and commercial rates for 5/8" meters.

City charges monthly capital improvement fees in addition to the monthly use charges.

Estimated Revenue assumes that the current rates will not change over the planning period.

Estimated Average Annual Revenue without Water Savings	$159,359.13	/year
Estimated Average Annual Revenue with Water Savings	$158,797.63	/year
Estimated Annual Revenue Loss Related to Water Savings	**$561.50**	/year

Estimated Annual Cost	**$561.50**	/year
Est. Cost over Planning Period not including Lost Revenue	**$500.00**	
Est. Cost over Planning Period Including Set-up and Lost Revenue	**$6,115.01**	
Cost per 1000 Gallons Saved	**$0.70**	

Removal of Phreatophytes

The City has a tree removal policy that they could evaluate further considering water conservation impacts.

Planning Period	2011 to 2020
Years in Planning Period	10
Program Length	1

Estimated Water Savings

Annual Estimated Savings Rate*	0.50%

Customer Category	Average Annual Water Use (gallons/yr)	*Estimated Annual Water Savings gallons/yr*
Residential	147,763,437	738,817
Commercial	27,705,645	138,528

Estimated Annual Water Savings	**877,345**	gallons/yr
Estimated Savings over Planning Period	**8,773,454**	gallons

Notes:

Estimated savings is 1/2 %. This measure will only affect Residential, and Commercial water users.

Costs

Total Cost to Water Provider

Labor Costs		
Staff Hours	0	/year
Hourly Cost	$50.00	/hour
Annual Staff Costs	$0.00	
Third Party Costs	$0.00	/year
Evaluation and Follow-up Costs	$0.00	/year
Annual Labor	**$0.00**	/year
Materials Costs		
Annual Materials Budget	$0	/year
Annual Materials	**$0.00**	/year
Rebates		
Rebate Cost	$0.00	
Number of Participants	0	/year
Annual Rebate Cost	**$0.00**	/year
One Time Labor and Material Costs		
One Time Staff Labor Costs	$500.00	
One Time Material Costs	$0.00	
One Time Labor/Material Cost	**$500.00**	

Notes:

Labor costs include estimated staff time for researching and developing requirements and standards and receiving approval and implementing the ordinance.

Removal of Phreatophytes

Water Rates

Residential *- Includes minimum base usage of 7,000 gallons+ $17 Capital Improvement Fee*	45.00
Excess Water Volume Charged from 7,001 to 10,000 gallons	*1.50*
Excess Water Volume Charged in excess of 10,000 gallons	2.00
Commercial *- Includes minimum base usage of 7,000 gallons+ $17 Capital Improvement Fee*	45.00
Excess Water Volume Charged from 7,001 to 10,000 gallons	*1.50*
Excess Water Volume Charged in excess of 10,000 gallons	2.00

Notes:

The annual revenue loss was estimated based on: Residential rates for 5/8" meters and commercial rates for 5/8" meters.

City charges monthly capital improvement fees in addition to the monthly use charges.

Estimated Revenue assumes that the current rates will not change over the planning period.

Estimated Average Annual Revenue without Water Savings	$159,359.13	/year
Estimated Average Annual Revenue with Water Savings	$158,797.63	/year
Estimated Annual Revenue Loss Related to Water Savings	**$561.50**	/year

Estimated Annual Cost	**$561.50**	/year
Est. Cost over Planning Period not including Lost Revenue	**$500.00**	
Est. Cost over Planning Period Including Set-up and Lost Revenue	**$6,115.01**	
Cost per 1000 Gallons Saved	**$0.70**	

General Evaluation of Policies that Encourage Water Savings

The City would like to evaluate policies, City ordinances, etc. that would allow the City to encourage water savings.

Planning Period	2012	2022
Years in Planning Period	10	
Program Length	1	

Estimated Water Savings

Annual Estimated Savings Rate	0.10%	
Annual Estimated Water Production without Savings	203,174,726	gallons/yr
Estimated Water Production over Planning Period without Savings	2,031,747,264	gallons
Estimated Annual Water Savings	**203,175**	gallons/yr
Estimated Savings over Planning Period	**2,031,747**	gallons

Notes:

Most policies that encourage water savings are geared toward outdoor uses. This measure can affect the outdoor usage of customer categories shown. Assume a conservative reduction of 0.10% of projected total billed water each year.

Costs

Total Cost to Water Provider

Labor Costs		
Staff Hours	0	/year
Hourly Cost	$50.00	/hour
Annual Staff Costs	$0.00	
Third Party Costs		/year
Evaluation and Follow-up Costs		/year
Annual Labor	**$0.00**	/year
Materials Costs		
Unit Cost	$0.00	/participant
Number of Participants	0	/year
Gallons Saved per Unit per Year	0	gallons
Annual Materials	**$0.00**	/year
Rebates		
Rebate Cost	$0.00	
Number of Participants	0	/year
Annual Rebate Cost	**$0.00**	/year
One Time Labor and Material Costs		
One Time Materials Cost	$0.00	
One Time Staff Costs	$750.00	
One Time Labor/Material Cost	**$750.00**	

Notes:

Estimated one time staff costs for Staff to spend approximately 15 hours at $50.00/hour to evaluate current policies within the City.

Estimated Annual Cost	**$0.00**	/year
Estimated Total Cost over Planning Period Including Set-up	**$750.00**	
Cost per 1000 Gallons Saved	**$0.37**	

Turf and Landscape Standards for New Construction

Many water providers require restrictions on turf and low water use landscape standards for new construction within their building permit review process. The turf and landscape standards may require a certain percentage of new landscapes to be low water use.

Planning Period	2012	2022
Years in Planning Period	10	
Program Length	10	

Estimated Water Savings

Annual Estimated Savings Rate	5%

Customer Category	Outdoor Water Use Per Tap gallons/tap	Annual Program Participants	*Estimated Annual Water Savings gallons/yr*
Residential	27,111	10	13,555
Commercial	117,828	3	17,674

Estimated Annual Water Savings	**31,230**	gallons/yr
Estimated Savings over Planning Period	**1,717,626**	gallons

Notes:

An estimated number of building permits will be obtained in any year. Estimate that approximately 32% of total customer use is outdoor use.
Estimated Savings over Planning Period is calculated by compounding the estimated annual water savings per the total number of participants for each given year.

Costs

Total Cost to Water Provider

Labor Costs		
Staff Hours	10	/year
Hourly Cost	$50.00	/hour
Annual Staff Costs	$500.00	
Third Party Costs	$0.00	/year
Evaluation and Follow-up Costs (Labor/Consultant)	$0.00	/year
Annual Labor	**$500.00**	/year
Materials Costs		
Unit Cost	$0.00	/participant
Number of Participants	13	/year
Gallons Saved per Unit per Year	0	gallons
Annual Materials	**$0.00**	/year
Rebates		
Rebate Cost	$0.00	
		/year
Annual Rebate Cost	**$0.00**	/year
One Time Labor and Material Costs		
One Time City Staff Labor	$500.00	
Rate Study performed by Consultants	$0.00	
One Time Labor/Material Cost	**$500.00**	

Notes:

One time Labor costs include estimated staff time for researching and developing requirements and standards and receiving approval and implementing those options.

Turf and Landscape Standards for New Construction

Water Rates

Rate Category	Current Rates/Fees
Residential & Commercial *- Includes minimum base usage of 7,000 gallons+ $17 Capital Improvement Fee*	45.00
Excess Water Volume Charged from 7,001 to 10,000 gallons	*1.50*
Excess Water Volume Charged in excess of 10,000 gallons	2.00

Notes:

The annual revenue loss was estimated based on: Residential & Commercial rates for 5/8" meters. City charges monthly capital improvement fees in addition to the monthly use charges.

Estimated Revenue assumes that the current rates will not change over the planning period.

Estimated Average Annual Revenue without Water Savings	$8,979.75	/year
Estimated Average Annual Revenue with Water Savings	$8,636.23	/year
Estimated Annual Revenue Loss Related to Water Savings	**$343.53**	/year

Estimated Annual Cost	**$843.53**	/year
Estimated Cost over Planning Period not including Lost Revenue	**$5,500.00**	
Estimated Total Cost over Planning Period Including Set-up and Lost Revenue	**$8,935.25**	
Cost per 1000 Gallons Saved	**$5.20**	

Irrigation System Standards for New Construction

Many water providers encourage or require irrigation system standards within their building permit process. The irrigation system standards help to design irrigation systems that efficiently use water.

Planning Period	2012	2022
Years in Planning Period	10	
Program Length	10	

Estimated Water Savings

Annual Estimated Savings Rate	5%

Customer Category	Outdoor Water Use Per Tap gallons/tap	Annual Program Participants	*Estimated Annual Water Savings gallons/yr*
Residential	27,111	10	13,555
Commercial	117,828	3	17,674

Estimated Annual Water Savings	**31,230**	gallons/yr
Estimated Savings over Planning Period	**1,717,626**	gallons

Notes:

An estimated number of building permits will be obtained in any year. Estimate that approximately 32% of total customer use is outdoor use.
Estimated Savings over Planning Period is calculated by compounding the estimated annual water savings per the total number of participants for each given year.

Costs

Total Cost to Water Provider

Labor Costs		
Staff Hours	10	/year
Hourly Cost	$50.00	/hour
Annual Staff Costs	$500.00	
Third Party Costs	$0.00	/year
Evaluation and Follow-up Costs (Labor/Consultant)	$0.00	/year
Annual Labor	**$500.00**	/year
Materials Costs		
Unit Cost	$0.00	/participant
Number of Participants	13	/year
Gallons Saved per Unit per Year	0	gallons
Annual Materials	**$0.00**	/year
Rebates		
Rebate Cost	$0.00	
		/year
Annual Rebate Cost	**$0.00**	/year
One Time Labor and Material Costs		
One Time City Staff Labor	$500.00	
Rate Study performed by Consultants	$0.00	
One Time Labor/Material Cost	**$500.00**	

Notes:

Labor costs include estimated staff time for researching and developing requirements and standards and receiving approval and implementing those options.

Irrigation System Standards for New Construction

Water Rates

Rate Category	Current Rates/Fees
Residential & Commercial *- Includes minimum base usage of 7,000 gallons+ $17 Capital Improvement Fee*	45.00
Excess Water Volume Charged from 7,001 to 10,000 gallons	*1.50*
Excess Water Volume Charged in excess of 10,000 gallons	2.00

Notes:

The annual revenue loss was estimated based on: Residential & Commercial rates for 5/8" meters. City charges monthly capital improvement fees in addition to the monthly use charges.

Estimated Revenue assumes that the current rates will not change over the planning period.

Estimated Average Annual Revenue without Water Savings	$8,979.75	/year
Estimated Average Annual Revenue with Water Savings	$8,636.23	/year
Estimated Annual Revenue Loss Related to Water Savings	**$343.53**	/year

Estimated Annual Cost	**$843.53**	/year
Estimated Cost over Planning Period not including Lost Revenue	**$5,500.00**	
Estimated Total Cost over Planning Period Including Set-up and Lost Revenue	**$8,935.25**	
Cost per 1000 Gallons Saved	**$5.20**	

Soil Amendment Ordinance for New Landscapes

Soil amendments include the addition of organic and inorganic materials to soil to improve its texture nutrient load, moisture-holding capacity, and infiltration rate. The City may make soil amendment a requirement in order to pass building inspection.

Planning Period	2011 to 2020
Years in Planning Period	10
Program Length	10

Estimated Water Savings

Annual Estimated Savings Rate	5%

Customer Category	Outdoor Water Use Per Tap gallons/tap	Annual Program Participants	*Estimated Annual Water Savings gallons/yr*
Residential	27,111	10	13,555
Commercial	117,828	3	17,674

Estimated Annual Water Savings	**31,230**	gallons/yr
Estimated Savings over Planning Period	**1,717,626**	gallons

Notes:

An estimated number of building permits will be obtained in any year. Estimate that approximately 32% of total customer use is outdoor use.
Estimated Savings over Planning Period is calculated by compounding the estimated annual water savings per the total number of participants for each given year.

Costs

Total Cost to Water Provider

Labor Costs		
Staff Hours	10	/year
Hourly Cost	$50.00	/hour
Annual Staff Costs	$500.00	
Third Party Costs	$0.00	/year
Evaluation and Follow-up Costs (Labor/Consultant)	$0.00	/year
Annual Labor	**$500.00**	/year
Materials Costs		
Unit Cost	$0.00	/participant
Number of Participants	13	/year
Gallons Saved per Unit per Year	0	gallons
Annual Materials	**$0.00**	/year
Rebates		
Rebate Cost	$0.00	
		/year
Annual Rebate Cost	**$0.00**	/year
One Time Labor and Material Costs		
One Time City Staff Labor	$500.00	
Rate Study performed by Consultants	$0.00	
One Time Labor/Material Cost	**$500.00**	

Notes:

Labor costs include estimated staff time for researching and developing requirements and standards and receiving approval and implementing those options.

Soil Amendment Ordinance for New Landscapes

Water Rates

Rate Category	Current Rates/Fees
Residential & Commercial *- Includes minimum base usage of 7,000 gallons+ $17 Capital Improvement Fee*	45.00
Excess Water Volume Charged from 7,001 to 10,000 gallons	*1.50*
Excess Water Volume Charged in excess of 10,000 gallons	2.00

Notes:

The annual revenue loss was estimated based on: Residential rates for 3/4" & 1" meters and 1" commercial meter rates.

Revenue losses do not include outside City revenues lost.

Estimated Revenue assumes that the current rates will not change over the planning period.

Estimated Average Annual Revenue without Water Savings	$8,979.75	/year
Estimated Average Annual Revenue with Water Savings	$8,636.23	/year
Estimated Annual Revenue Loss Related to Water Savings	**$343.53**	/year

Estimated Annual Cost	**$843.53**	/year
Estimated Cost over Planning Period not including Lost Revenue	**$5,500.00**	
Estimated Total Cost over Planning Period Including Set-up and Lost Revenue	**$8,935.25**	
Cost per 1000 Gallons Saved	**$5.20**	

Requiring Wind and/or Rain Sensors for Commercial and Open Space Irrigation

Many water providers require wind or rain sensor as part of the irrigation system standards within the building permit process. These sensors prevent irrigation systems from running when its raining or too windy to operate effectively.

Planning Period	2012	2022
Years in Planning Period	10	
Program Length	10	

Estimated Water Savings

Annual Estimated Savings Rate	5%

Notes:

Estimate that 32% of use is outdoor.

Customer Category	Outdoor Water Use Gallons/tap	*Annual Program Participants*	*Estimated Annual Water Savings gallons/yr*
Commercial	117,828	3	17,674

Estimated Annual Water Savings	**17,674**	gallons/yr
Estimated Savings over Planning Period	**972,079**	gallons

Costs

Total Cost to Water Provider

Labor Costs		
Staff Hours	10	/year
Hourly Cost	$50.00	/hour
Annual Staff Costs	$500.00	
Third Party Costs		/year
Evaluation and Follow-up Costs (Labor/Consultant)	$0.00	/year
Annual Labor	**$500.00**	/year
Materials Costs		
Unit Cost	$0.00	/participant
Number of Participants	3	/year
Gallons Saved per Unit per Year	0	gallons
Annual Materials	**$0.00**	/year
Rebates		
Rebate Cost	$0.00	
Number of Participants	0	/year
Annual Rebate Cost	**$0.00**	/year
One Time Labor and Material Costs		
One Time City Staff Labor	$500.00	
Rate Study performed by Consultants	$0.00	
One Time Labor/Material Cost	**$500.00**	

Notes:

Labor costs include estimated staff time for researching and developing requirements and standards and receiving approval and implementing those options.

Water Rates

Rate Category	**Current Rates/Fees**
Residential & Commercial - *Includes minimum base usage of 7,000 gallons+ $17 Capital*	45.00
Excess Water Volume Charged from 7,001 to 10,000 gallons	*1.50*
Excess Water Volume Charged in excess of 10,000 gallons	2.00

Notes:

The annual revenue loss was estimated based on: Residential & Commercial rates for 5/8" meters. City charges monthly capital improvement fees in addition to the monthly use charges.

Estimated Revenue assumes that the current rates will not change over the planning period.

Requiring Wind and/or Rain Sensors for Commercial and Open Space Irrigation

Estimated Average Annual Revenue without Water Savings	$4,375.06	/year
Estimated Average Annual Revenue with Water Savings	$4,180.65	/year
Annual Revenue Loss Related to Water Savings	**$194.42**	/year

Estimated Annual Cost	**$694.42**	/year
Estimated Cost over Planning Period not including Lost Revenue	**$5,500.00**	
Estimated Total Cost over Planning Period Including Set-up and Lost Revenue	**$7,444.16**	
Cost per 1000 Gallons Saved	**$7.66**	

Turf Restrictions for High Water Use Commercial Areas

This would involve developing restrictions for placing turf within any commercial areas such as medians or parking lot areas.

Planning Period	2012	2022
Years in Planning Period	10	
Program Length	10	

Estimated Water Savings

Annual Estimated Savings Rate	5%

Notes:

Estimate that 32% of use is outdoor.

Customer Category	Outdoor Water Use Gallons/tap	*Annual Program Participants*	*Estimated Annual Water Savings gallons/yr*
Commercial	117,828	3	17,674

Estimated Annual Water Savings	**17,674**	gallons/yr
Estimated Savings over Planning Period	**972,079**	gallons

Costs

Total Cost to Water Provider

Labor Costs		
Staff Hours	10	/year
Hourly Cost	$50.00	/hour
Annual Staff Costs	$500.00	
Third Party Costs		/year
Evaluation and Follow-up Costs (Labor/Consultant)	$0.00	/year
Annual Labor	**$500.00**	/year
Materials Costs		
Unit Cost	$0.00	/participant
Number of Participants	3	/year
Gallons Saved per Unit per Year	0	gallons
Annual Materials	**$0.00**	/year
Rebates		
Rebate Cost	$0.00	
Number of Participants	0	/year
Annual Rebate Cost	**$0.00**	/year
One Time Labor and Material Costs		
One Time City Staff Labor	$500.00	
Rate Study performed by Consultants	$0.00	
One Time Labor/Material Cost	**$500.00**	

Notes:

Labor costs include estimated staff time for researching and developing requirements and standards and receiving approval and implementing those options.

Water Rates

Rate Category	Current Rates/Fees
Residential & Commercial *- Includes minimum base usage of 7,000 gallons+ $17 Capital*	45.00
Excess Water Volume Charged from 7,001 to 10,000 gallons	*1.50*
Excess Water Volume Charged in excess of 10,000 gallons	2.00

Notes:

The annual revenue loss was estimated based on: Residential & Commercial rates for 5/8" meters. City charges monthly capital improvement fees in addition to the monthly use charges.

Estimated Revenue assumes that the current rates will not change over the planning period.

Turf Restrictions for High Water Use Commercial Areas

Estimated Average Annual Revenue without Water Savings	$4,375.06	/year
Estimated Average Annual Revenue with Water Savings	$4,180.65	/year
Annual Revenue Loss Related to Water Savings	**$194.42**	/year

Estimated Annual Cost	**$694.42**	/year
Estimated Cost over Planning Period not including Lost Revenue	**$5,500.00**	
Estimated Total Cost over Planning Period Including Set-up and Lost Revenue	**$7,444.16**	
Cost per 1000 Gallons Saved	**$7.66**	

New Laundromat Standards for New Construction

This would involve developing standards for low flow equipment for new laundromats.

Planning Period	2012	2022
Years in Planning Period	10	
Program Length	10	

Estimated Water Savings

Notes:

Annual Estimated Savings Rate	5%

Customer Category	Water Use Gallons/tap	*Annual Program Participants*	*Estimated Annual Water Savings gallons/yr*
Commercial	368,212	0.10	1,841

Estimated Annual Water Savings	**1,841**	gallons/yr
Estimated Savings over Planning Period	**101,258**	gallons

Costs

Total Cost to Water Provider

Labor Costs		
Staff Hours	10	/year
Hourly Cost	$50.00	/hour
Annual Staff Costs	$500.00	
Third Party Costs		/year
Evaluation and Follow-up Costs	$0.00	/year
Annual Labor	**$500.00**	/year
Materials Costs		
Unit Cost	$0.00	/participant
Number of Participants	0	/year
Gallons Saved per Unit per Year	0	gallons
Annual Materials	**$0.00**	/year
Rebates		
Rebate Cost	$0.00	
Number of Participants	0	/year
Annual Rebate Cost	**$0.00**	/year
One Time Labor and Material Costs		
One Time City Staff Labor	$500.00	
Rate Study performed by Consultants	$0.00	
One Time Labor/Material Cost	**$500.00**	

Notes:

Labor costs include estimated staff time for researching and developing requirements and standards and receiving approval and implementing those options.

Water Rates

Rate Category	**Current Rates/Fees**
Residential & Commercial - *Includes minimum base usage of 7,000 gallons+ $17 Capital*	45.00
Excess Water Volume Charged from 7,001 to 10,000 gallons	*1.50*
Excess Water Volume Charged in excess of 10,000 gallons	2.00

Notes:

The annual revenue loss was estimated based on: Residential & Commercial rates for 5/8" meters. City charges monthly capital improvement fees in addition to the monthly use charges.

Estimated Revenue assumes that the current rates will not change over the planning period.

New Laundromat Standards for New Construction

Estimated Average Annual Revenue without Water Savings	$421.26	/year
Estimated Average Annual Revenue with Water Savings	$401.01	/year
Annual Revenue Loss Related to Water Savings	**$20.25**	/year

Estimated Annual Cost	**$520.25**	/year
Estimated Cost over Planning Period not including Lost Revenue	**$5,500.00**	
Estimated Total Cost over Planning Period Including Set-up and Lost Revenue	**$5,702.52**	
Cost per 1000 Gallons Saved	**$56.32**	

Billing Statements that Encourage Water Savings

The City of Dacono currently provides a billing statement that shows the past 12 months of water usage in graphical form. Future work could include adding ET scheduling to water bill.

Planning Period	2012	2022
Years in Planning Period	10	
Program Length	10	

Estimated Water Savings

Annual Estimated Savings Rate	2%

Notes:

Estimated savings equals 2%.

Customer Category	Average Outdoor Water Use gallons	*Estimated Annual Water Savings*
Residential	47,284,300	945,686
Commercial	8,865,806	177,316

Estimated Annual Water Savings	**1,123,002**	gallons/yr
Estimated Savings over Planning Period	**11,230,021**	gallons

Costs

Total Cost to Water Provider

Notes:

Staff hours are to expand billing statement messaging to include ET schedule and hours for maintaining existing measure.

Labor Costs		
Staff Hours	10	/year
Hourly Cost	$50.00	/hour
Annual Staff Costs	$500.00	
Third Party Costs	$0.00	/year
Evaluation and Follow-up Costs (Website updates, etc.)	$0.00	/year
Annual Labor	**$500.00**	/year
Materials Costs		
Unit Cost (cost of Bill Stuffers)	$0.00	/participant
Number of Participants		/year
Gallons Saved per Unit per Year	0	gallons
Annual Materials	**$0.00**	/year
Rebates		
Rebate Cost	$0.00	
Number of Participants	0	/year
Annual Rebate Cost	**$0.00**	/year
One Time Labor and Material Costs		
One Time Materials Cost	$2,500.00	
One Time Labor Costs	$0.00	
One Time Labor/Material Cost	**$2,500.00**	

Billing Statements that Encourage Water Savings

Water Rates (2008)

Rate Category	Current Rates/Fees
Residential & Commercial *- Includes minimum base usage of 7,000 gallons+ $17 Capital*	45.00
Excess Water Volume Charged from 7,001 to 10,000 gallons	*1.50*
Excess Water Volume Charged in excess of 10,000 gallons	2.00

Notes:

The annual revenue loss was estimated based on: Residential & Commercial rates for 5/8" meters. City charges monthly capital improvement fees in addition to the monthly use charges.

Estimated Revenue assumes that the current rates will not change over the planning period.

Estimated Average Annual Revenue without Water Savings	$159,359.13	/year
Estimated Average Annual Revenue with Water Savings	$157,113.12	/year
Estimated Annual Revenue Loss Related to Water Savings	**$2,246.00**	/year

Estimated Annual Cost	**$2,746.00**	/year
Estimated Cost over Planning Period not including Lost Revenue	**$7,500.00**	
Estimated Total Cost over Planning Period Including Set-up and Lost Revenue	**$29,960.04**	
Cost per 1000 Gallons Saved	**$2.67**	

Water Conservation Upgrades to Website

This measure includes the creation of a water conservation website that may include customer surveys, EPA WaterSense Program Promotion, water conservation tips, lawn watering guides, and installation of a residential water use calculator on a website.

Planning Period	2011 to 2020
Years in Planning Period	10
Program Length	10

Estimated Water Savings

Annual Estimated Savings Rate	1%

Customer Category	Average Water Use gallons	*Estimated Annual Water Savings gallons/yr*
Residential	147,763,437	1,477,634
Commercial	27,705,645	277,056

Estimated Annual Water Savings	**1,754,691**	gallons/yr
Estimated Savings over Planning Period	**17,546,908**	gallons

Notes:

This measure affects projected water usage for the residential & commercial users.

Costs

Total Cost to Water Provider

Labor Costs		
Staff Hours	10	/year
Hourly Cost	$50.00	/hour
Annual Staff Costs	$500.00	
Third Party Costs	$0.00	/year
Evaluation and Follow-up Costs (Website updates, etc.)	$0.00	/year
Annual Labor	**$500.00**	/year
Materials Costs		
Unit Cost	$0.00	/participant
Number of Participants	0	/year
Gallons Saved per Unit per Year	0	gallons
Annual Materials	**$0.00**	/year
Rebates		
Rebate Cost	$0.00	
Number of Participants	0	/year
Annual Rebate Cost	**$0.00**	/year
One Time Labor and Material Costs		
One Time Materials Cost	$0.00	
One Time Labor Costs (website update)	$5,000.00	
One Time Labor/Material Cost	**$5,000.00**	

Notes:

Annual staff hours include website promotion and annual maintenance.

For one time labor costs, we estimate cost to determine website content/information and estimated costs to establish website (may be completed by 3rd party).

Website content may include:
- customer survey
- EPA WaterSense program information http://www.epa.gov/WaterSense/
- General water conservation tips and information
- Lawn watering guides (ET scheduling)
- Water use calculators (example - www.H2OConserve.org)

Water Conservation Upgrades to Website

Water Rates

Rate Category	Current Rates/Fees
Residential & Commercial *- Includes minimum base usage of 7,000 gallons+ $17 Capital Improvement Fee*	45.00
Excess Water Volume Charged from 7,001 to 10,000 gallons	*1.50*
Excess Water Volume Charged in excess of 10,000 gallons	2.00

Notes:

The annual revenue loss was estimated based on: Residential & Commercial rates for 5/8" meters. City charges monthly capital improvement fees in addition to the monthly use charges.

Estimated Revenue assumes that the current rates will not change over the planning period.

Estimated Average Annual Revenue without Water Savings	$397,997.08	/year
Estimated Average Annual Revenue with Water Savings	$394,487.70	/year
Estimated Annual Revenue Loss Related to Water Savings	**$3,509.38**	/year

Estimated Annual Cost	**$4,009.38**	/year
Estimated Cost over Planning Period not including Lost Revenue	**$10,000.00**	
Estimated Total Cost over Planning Period Including Set-up and Lost Revenue	**$45,093.82**	
Cost per 1000 Gallons Saved	**$2.57**	

School Education Program

This includes time for educators to work with Project WET to develop water conservation education programs.

Planning Period	2012	2022
Years in Planning Period	10	
Program Length	10	

Estimated Water Savings

Annual Estimated Savings Rate	0.50%	
Annual Estimated Water Use without Savings	147,763,437	gallons/yr
Estimated Water Use over Planning Period without Savings	1,477,634,374	gallons
Estimated Annual Water Savings	**738,817**	gallons/yr
Estimated Savings over Planning Period	**7,388,172**	gallons

Notes:

This measure only affects Residential water usage.

Assume 0.5% savings of projected water usage.

Costs

Total Cost to Water Provider

Labor Costs		
Staff Hours	16	/year
Hourly Cost	$50.00	/hour
Annual Staff Costs	$800.00	
Third Party Costs	$0.00	/year
Evaluation and Follow-up Costs (Website updates, etc.)	$0.00	/year
Annual Labor	**$800.00**	/year
Materials Costs		
Annual Materials Budget	$500	/year
Annual Materials	**$500.00**	/year
Rebates		
Rebate Cost	$0.00	
Number of Participants	0	/year
Annual Rebate Cost	**$0.00**	/year
One Time Labor and Material Costs		
Project WET teacher scholarship	$3,000.00	
One Time Labor/Material Cost	**$3,000.00**	

Notes:

Staff hours include time working with local schools and educators to develop a water conservation education program (16 hours).

Material costs include an annual budget for education materials costs.

One time labor and material costs include a Project WET teacher scholarship. Project WET (Water Education & Training) has dedicated itself to the mission of reaching children, parents, teachers and community members of the world with water education. *A $3000 budget would allow for training 10-15 teachers and give them continuing education credit. More information is available at www.projectwet.org.*

School Education Program

Water Rates

Rate Category	Current Rates/Fees
Residential & Commercial *- Includes minimum base usage of 7,000 gallons+ $17 Capital Improvement Fee*	45.00
Excess Water Volume Charged from 7,001 to 10,000 gallons	*1.50*
Excess Water Volume Charged in excess of 10,000 gallons	2.00

Notes:

The annual revenue loss was estimated based on: Residential & Commercial rates for 5/8" meters. City charges monthly capital improvement fees in addition to the monthly use charges.

Estimated Revenue assumes that the current rates will not change over the planning period.

Estimated Average Annual Revenue without Water Savings	$340,367.38	/year
Estimated Average Annual Revenue with Water Savings	$331,085.14	/year
Annual Revenue Loss Related to Water Savings	**$9,282.24**	/year

Estimated Annual Cost	**$10,582.24**	/year
Estimated Cost over Planning Period not including Lost Revenue	**$16,000.00**	
Estimated Total Cost over Planning Period Including Set-up and Lost Revenue	**$108,822.41**	
Cost per 1000 Gallons Saved	**$14.73**	

Xeriscape Demonstration Garden

Creating a Xeriscape demonstration garden is an excellent way to educate the public to the water savings evident from xericscape.

Planning Period	2012	2022
Years in Planning Period	10	
Program Length	10	

Estimated Water Savings

Annual Estimated Savings Rate	0.5%	
Annual Estimated Water Use without Savings	47,284,300	gallons/yr
Estimated Water Use over Planning Period without Savings	472,843,000	gallons
Estimated Annual Water Savings	**236,421**	gallons/yr
Estimated Savings over Planning Period	**2,364,215**	gallons

Notes:

This measure affects projected water usage for Residential customers.

Estimate that approximately 32% of total customer use is outdoor use.

Costs

Total Cost to Water Provider

Labor Costs		
Staff Hours	2	/year
Hourly Cost	$50.00	/hour
Annual Staff Costs	$100.00	
Third Party Costs	$0.00	/year
Evaluation and Follow-up Costs	$0.00	/year
Annual Labor	**$100.00**	/year
Materials Costs		
Annual Materials Budget	$500	/year
Annual Materials	**$500.00**	/year
Rebates		
Rebate Cost	$0.00	
Number of Participants	0	/year
Annual Rebate Cost	**$0.00**	/year
One Time Labor and Material Costs		
One Time Design and Material Cost	$5,000.00	
Third Party Costs	$0.00	
One Time Labor/Material Cost	**$5,000.00**	

Notes:

Cost is for garden design (one time cost), installation, plants and planting materials and annual maintenance.

Xeriscape Demonstration Garden

Water Rates

Rate Category	Current Rates/Fees
Residential & Commercial - *Includes minimum base usage of 7,000 gallons+ $17 Capital Improvement Fee*	45.00
Excess Water Volume Charged from 7,001 to 10,000 gallons	*1.50*
Excess Water Volume Charged in excess of 10,000 gallons	2.00

Notes:

The annual revenue loss was estimated based on: Residential & Commercial rates for 5/8" meters. City charges monthly capital improvement fees in addition to the monthly use charges.

Estimated Revenue assumes that the current rates will not change over the planning period.

Estimated Average Annual Revenue without Water Savings	$136,899.08	/year
Estimated Average Annual Revenue with Water Savings	$136,438.78	/year
Annual Revenue Loss Related to Water Savings	**$460.29**	/year

Estimated Annual Cost	**$1,060.29**	/year
Estimated Cost over Planning Period not including Lost Revenue	**$11,000.00**	
Estimated Total Cost over Planning Period Including Set-up and Lost Revenue	**$15,602.93**	
Cost per 1000 Gallons Saved	**$6.60**	

Property Manager/HOA Education and Training

This measure includes a seminar style training provided to the professional irrigators and large property managers

Planning Period	2011 to 2020
Years in Planning Period	10
Program Length	10

Estimated Water Savings

Annual Estimated Savings Rate	1.00%

Customer Category	Average Water Use gallons	*Estimated Annual Water Savings gallons/yr*
Residential	47,284,300	472,843
Commercial	8,865,806	88,658

Estimated Annual Water Savings	**561,501**	gallons/yr
Estimated Savings over Planning Period	**5,615,011**	gallons

Notes:

This measure affects projected water usage for the residential & commercial users.

Costs

Total Cost to Water Provider

Labor Costs		
Staff Hours	16	/year
Hourly Cost	$50.00	/hour
Annual Staff Costs	$800.00	
Third Party Costs	$0.00	/year
Evaluation and Follow-up Costs	$0.00	/year
Annual Labor	**$800.00**	/year
Materials Costs		
Unit Cost	$25.00	/participant
Number of Participants	5	/year
Annual Materials	**$125.00**	/year
Rebates		
Rebate Cost	$0.00	
Number of Participants	0	/year
Annual Rebate Cost	**$0.00**	/year
One Time Labor and Material Costs		
One Time Materials Cost	$0.00	
One Time Labor Costs (seminar prep)	$5,000.00	
One Time Labor/Material Cost	**$5,000.00**	

Notes:

Cost includes seminar preparation and instruction.

Material budget is approximately $25 per class participant. With an estimated seminar attendance size of 5 participants.

Property Manager/HOA Education and Training

Water Rates

Rate Category	Current Rates/Fees
Residential & Commercial *- Includes minimum base usage of 7,000 gallons+ $17 Capital Improvement Fee*	45.00
Excess Water Volume Charged from 7,001 to 10,000 gallons	*1.50*
Excess Water Volume Charged in excess of 10,000 gallons	2.00

Notes:

The annual revenue loss was estimated based on: Residential & Commercial rates for 5/8" meters. City charges monthly capital improvement fees in addition to the monthly use charges.

Estimated Revenue assumes that the current rates will not change over the planning period.

Estimated Average Annual Revenue without Water Savings	$397,997.08	/year
Estimated Average Annual Revenue with Water Savings	$396,565.44	/year
Estimated Annual Revenue Loss Related to Water Savings	**$1,431.64**	/year

Estimated Annual Cost	**$2,356.64**	/year
Estimated Cost over Planning Period not including Lost Revenue	**$14,250.00**	
Estimated Total Cost over Planning Period Including Set-up and Lost Revenue	**$28,566.37**	
Cost per 1000 Gallons Saved	**$5.09**	

Residential Low-Flow Toilet Rebate

Planning Period	2012	2022
Years in Planning Period	10	
Program Length	10	

Estimated Water Savings

Annual Estimated Residential Water Use Per Tap without Savings

Customer Category	Water Use Per Tap gallons/tap	Annual Program Participants
Residential	84,721	20

Residential Annual Use	84,721	gallons/tap/yr
Total	84,721	gallons/tap/yr
People per Household	2.6	
Average Flushes per Household*	5.1	flushes
Saving Per Flush with a low flow toilet (1.28 gal/flush)	2.72	gallons/flush
Gallons Saved per Household per Year	13,165	gallons/yr
Annual Program Participants	20	/year
Maximum No. of Participants over Planning Period	200	
Estimated Annual Water Savings	**263,291**	gallons/yr
Estimated Savings over Planning Period	**14,480,981**	gallons

**Based on "Handbook of Water Use and Conservation" by Amy Vickers*

Notes:

Estimated Water Use is based on 2010 data*: Residential = 0.26 af/tap*

A rebate would be available for toilets using 1.28 gallons per flush or dual flush toilets.

*Savings based on 5.1 flushes per person per day *. Saving 2.72 gal per flush (4.0 gal ave flush rate - 1.28 gal conservation flush rate) and 2.6 people per household.*

Estimated Savings over Planning Period is calculated by compounding the estimated annual water savings per the total number of audit participants for each given year.

Costs

Total Cost to Water Provider

Labor Costs		
Staff Hours	5	/year
Hourly Cost	$50.00	/hour
Annual Staff Costs	$250.00	
Evaluation and Follow up Costs	$0.00	/year
Annual Labor	**$250.00**	/year
Materials Costs		
Unit Cost	$0.00	/participant
Number of Participants	20	/year
Gallons Saved per Unit per Year	13,165	gallons
Annual Materials	**$0.00**	/year
Rebates		
Rebate Cost	$50.00	
Number of Participants	20	/year
Annual Rebate Cost	**$1,000.00**	
One Time Labor and Material Costs		
One Time Materials Cost	$0.00	
One Time Labor Cost	$200.00	
One Time Labor/Material Cost	**$200.00**	

Notes:

Annual labor costs include water savings tracking for rebate program. Other one time costs are for intital set-up of rebate program.

The City may provide $50.00 per toliet replaced.

Residential Low-Flow Toilet Rebate

Water Rates

Rate Category	Current Rates/Fees
Residential & Commercial *- Includes minimum base usage of 7,000 gallons+ $17 Capital Improvement Fee*	45.00
Excess Water Volume Charged from 7,001 to 10,000 gallons	*1.50*
Excess Water Volume Charged in excess of 10,000 gallons	2.00

Notes:

The annual revenue loss was estimated based on: Residential & Commercial rates for 5/8" meters. City charges monthly capital improvement fees in addition to the monthly use charges.

Estimated Revenue assumes that the current rates will not change over the planning period.

Estimated Average Annual Revenue without Water Savings	$21,883.68	/year
Estimated Average Annual Revenue with Water Savings	$18,987.48	/year
Annual Revenue Loss Related to Water Savings	**$2,896.20**	/year

Estimated Annual Cost	**$4,146.20**	/year
Estimated Cost over Planning Period not including Lost Revenue	**$12,700.00**	
Estimated Total Cost over Planning Period Including Set-up and Lost Revenue	**$41,661.96**	
Cost per 1000 Gallons Saved	**$2.88**	

High Efficiency Clothes Washer Rebate

Planning Period	2012	2022
Years in Planning Period	10	
Program Length	10	

Estimated Water Savings

Annual Estimated Residential Water Use Per Tap without Savings

Customer Category	Water Use Per Tap gallons/tap	Annual Program Participants
Residential	84,721	5

Residential Annual Use	84,721	gallons/tap/yr
Total	84,721	gallons/tap/yr
People per Household	2.59	
Laundry loads per person per day*	0.37	
Saving per load with a high efficiency washer	16	gallons/load
Gallons Saved per Household per Year	5,596	gallons/yr
Annual Program Participants	5	/year
Maximum No. of Participants over Planning Period	50	
Estimated Annual Water Savings	**27,982**	gallons/yr
Estimated Savings over Planning Period	**1,539,030**	gallons

**Based on "Handbook of Water Use and Conservation" by Amy Vickers*

Notes:

Estimated Water Use is based on 2010 data*: Residential = 0.26 af/tap*

*Savings based on 0.37 loads per person per day *. Saving 16 gal per load (43 gal/load avg. rate - 27 gal/load conservation rate*) and 2.7 people per household.*

Estimated Savings over Planning Period is calculated by compounding the estimated annual water savings per the total number of audit participants for each given year.

Costs

Total Cost to Water Provider

Labor Costs		
Staff Hours	5	/year
Hourly Cost	$50.00	/hour
Annual Staff Costs	$250.00	
Evaluation and Follow up Costs	$0.00	/year
Annual Labor	**$250.00**	/year
Materials Costs		
Unit Cost	$0.00	/participant
Number of Participants	5	/year
Gallons Saved per Unit per Year	5,596	gallons
Annual Materials		/year
Rebates		
Rebate Cost	$125.00	
Number of Participants	5	/year
Annual Rebate Cost	**$625.00**	
One Time Labor and Material Costs		
One Time Materials Cost	$0.00	
One Time Labor Cost	$200.00	
One Time Labor/Material Cost	**$200.00**	

Notes:

Annual labor costs include water savings tracking for rebate program. Other one time costs are for intital set-up of rebate program.

The City may provide $125 per clothes washer replaced.

High Efficiency Clothes Washer Rebate

Water Rates

Rate Category	Current Rates/Fees
Residential & Commercial *- Includes minimum base usage of 7,000 gallons+ $17 Capital Improvement Fee*	45.00
Excess Water Volume Charged from 7,001 to 10,000 gallons	*1.50*
Excess Water Volume Charged in excess of 10,000 gallons	2.00

Notes:

The annual revenue loss was estimated based on: Residential & Commercial rates for 5/8" meters. City charges monthly capital improvement fees in addition to the monthly use charges.

Estimated Revenue assumes that the current rates will not change over the planning period.

Estimated Average Annual Revenue without Water Savings	$5,470.92	/year
Estimated Average Annual Revenue with Water Savings	$5,163.11	/year
Annual Revenue Loss Related to Water Savings	**$307.81**	/year

Estimated Annual Cost	**$1,182.81**	/year
Estimated Cost over Planning Period not including Lost Revenue	**$8,950.00**	
Estimated Total Cost over Planning Period Including Set-up and Lost Revenue	**$12,028.06**	
Cost per 1000 Gallons Saved	**$7.82**	

Low Flow Dishwasher Rebate

Planning Period	2012	2022
Years in Planning Period	10	
Program Length	10	

Estimated Water Savings

Annual Estimated Residential Water Use Per Tap without Savings

Customer Category	Water Use Per Tap gallons/tap	Annual Program Participants
Residential	84,721	20

Residential Annual Use	84,721	gallons/tap/yr
Total	84,721	gallons/tap/yr
People per Household	2.6	
Dishwasher loads per person per day*	0.1	
Savings per load with a high efficiency dishwasher	6.5	gallons/load
Gallons Saved per Household per Year	617	gallons/yr
Number of dishwasher replaced each year	20	/year
Maximum dishwasher replaced over planning period	200	
Estimated Annual Water Savings	**12,337**	gallons/yr
Estimated Savings over Planning Period	**678,535**	gallons

**Based on "Handbook of Water Use and Conservation" by Amy Vickers. Please refer to Table 2.11 on page 88.*

Notes:

Estimated Water Use is based on 2010 data*: Residential = 0.26 af/tap*

Annual Savings is based on a 4.5 gallon per load dishwasher vs a 10 to 12 gallon per load dishwasher, 0.1 loads per person per day.

Estimated Savings over Planning Period is calculated by compounding the estimated annual water savings per the total number of participants for each given year.

Costs

Total Cost to Water Provider

Labor Costs		
Staff Hours	5	/year
Hourly Cost	$50.00	/hour
Annual Staff Costs	$250.00	
Evaluation and Follow up Costs	$0.00	/year
Annual Labor	**$250.00**	/year
Materials Costs		
Unit Cost	$0.00	/participant
Number of Participants	20	/year
Gallons saved per year	617	gallons
Annual Materials	**$0.00**	/year
Rebates		
Rebate Cost	$50.00	
Number of Units	20	
Annual Rebate Cost	**$1,000.00**	/year
One Time Labor and Material Costs		
One Time Materials Cost	$0.00	
One Time Labor Cost	$100.00	
One Time Labor/Material Cost	**$100.00**	

Notes:

Annual labor costs include water savings tracking for rebate program. Other one time costs are for intital set-up of rebate program.

The City may provide $50 per dishwasher replaced.

Low Flow Dishwasher Rebate

Water Rates

Rate Category	Current Rates/Fees
Residential & Commercial - *Includes minimum base usage of 7,000 gallons+ $17 Capital Improvement Fee*	45.00
Excess Water Volume Charged from 7,001 to 10,000 gallons	*1.50*
Excess Water Volume Charged in excess of 10,000 gallons	2.00

Notes:

The annual revenue loss was estimated based on: Residential & Commercial rates for 5/8" meters. City charges monthly capital improvement fees in addition to the monthly use charges.

Estimated Revenue assumes that the current rates will not change over the planning period.

Estimated Average Annual Revenue without Water Savings	$21,883.68	/year
Estimated Average Annual Revenue with Water Savings	$21,747.97	/year
Annual Revenue Loss Related to Water Savings	**$135.71**	/year

Estimated Annual Cost	**$1,385.71**	/year
Estimated Cost over Planning Period not including Lost Revenue	**$12,600.00**	
Estimated Total Cost over Planning Period Including Set-up and Lost Revenue	**$13,957.07**	
Cost per 1000 Gallons Saved	**$20.57**	

Low-Flow Faucet Rebate

Planning Period	2012	2022
Years in Planning Period	10	
Program Length	10	

Estimated Water Savings

Annual Estimated Residential Water Use Per Tap without Savings

Customer Category	Water Use Per Tap gallons/tap	Annual Program Participants
Residential	84,721	20

Residential Annual Use	84,721	gallons/tap/yr
Total	84,721	gallons/tap/yr
People per Household	2.59	
Estimated Water Use for a 2.75 gpm rated faucet*	14.9	gpcd
Annual residential water use for a 2.75 gpm rated faucet*	14,086	gallons/yr
Estimated Water Use for a 1.5 gpm rated faucet*	8.1	gpcd
Annual residential water use for a 1.5 gpm rated faucet*	7,657	gallons/yr
Gallons Saved per Household per Year	6,428	gallons/yr
Number of low-flow faucets used each year	20	Households/year
Maximum low-flow faucets used over planning period	600	
Estimated Annual Water Savings	**128,568**	gallons/yr
Estimated Savings over Planning Period	**7,071,218**	gallons

**Based on "Handbook of Water Use and Conservation" by Amy Vickers. Please refer to Table 2.15 on page 103.*

Notes:

Estimated Water Use is based on 2010 data*: Residential = 0.26 af/tap*

Average water savings of 6,428 gal. per household per year for 1.5 gpm faucets (1.5gpm vs. 2.75gpm).*

Estimated Savings over Planning Period is calculated by compounding the estimated annual water savings per the total number of audit participants for each given year.

Costs

Total Cost to Water Provider

Labor Costs		
Staff Hours	5	/year
Hourly Cost	$50.00	/hour
Annual Staff Costs	$250.00	
Evaluation and Follow up Costs	$0.00	/year
Annual Labor	**$250.00**	/year
Materials Costs		
Unit Cost	$0.00	/participant
No. of participants per year	20	/year
Gallons Saved per Unit per Year	6,428	gallons
Annual Materials	**$0.00**	/year
Rebates		
Rebate Cost	$5.00	
Number of Units	20	/year
Annual Rebate Cost	**$100.00**	/year
One Time Labor and Material Costs		
One Time Materials Cost	$0.00	
One Time Labor Cost	$100.00	
One Time Labor/Material Cost	**$100.00**	

Notes:

Annual labor costs include water savings tracking for rebate program. Other one time costs are for intital set-up of rebate program.

The City may provide $5 per faucet replaced.

Low-Flow Faucet Rebate

Water Rates

Rate Category	Current Rates/Fees
Residential & Commercial *- Includes minimum base usage of 7,000 gallons+ $17 Capital Improvement Fee*	45.00
Excess Water Volume Charged from 7,001 to 10,000 gallons	*1.50*
Excess Water Volume Charged in excess of 10,000 gallons	2.00

Notes:

The annual revenue loss was estimated based on: Residential & Commercial rates for 5/8" meters. City charges monthly capital improvement fees in addition to the monthly use charges.

Estimated Revenue assumes that the current rates will not change over the planning period.

Estimated Average Annual Revenue without Water Savings	$21,883.68	/year
Estimated Average Annual Revenue with Water Savings	$20,469.43	/year
Annual Revenue Loss Related to Water Savings	**$1,414.24**	/year

Estimated Annual Cost	**$1,764.24**	/year
Estimated Cost over Planning Period not including Lost Revenue	**$3,600.00**	
Estimated Total Cost over Planning Period Including Set-up and Lost Revenue	**$17,742.44**	
Cost per 1000 Gallons Saved	**$2.51**	

Low-Flow Showerhead Rebate

Planning Period	2012	2022
Years in Planning Period	10	
Program Length	10	

Estimated Water Savings

Annual Estimated Residential Water Use Per Tap without Savings

Customer Category	Water Use Per Tap gallons/tap	Annual Program Participants
Residential	84,721	20

Residential Annual Use	84,721	gallons/tap/yr
Total	84,721	gallons/tap/yr
People per Household	2.59	
Annual residential water use for a 3 gpm rated showerhead*	10,021	gallons/yr
Estimated Water Use for a 2.5 gpm rated showerhead*	9.01	gpcd
Annual residential water use for a 2.5 gpm rated faucet*	8,518	gallons/yr
Gallons Saved per Household per Year	1,503	gallons/yr
Number of showerheads replaced each year	20	/year
Maximum showerheads replaced over planning period	200	
Estimated Annual Water Savings	**30,062**	gallons/yr
Estimated Savings over Planning Period	**1,653,417**	gallons

**Based on "Handbook of Water Use and Conservation" by Amy Vickers. Please refer to Table 2.11 on page 88.*

Notes:

Estimated Water Use is based on 2010 data*: Residential = 0.26 af/tap*

Average water savings of 1,602 gal. per household per year for 2.5 gpm faucets (2.5gpm vs. 3gpm).*

Estimated Savings over Planning Period is calculated by compounding the estimated annual water savings per the total number of audit participants for each given year.

Costs

Total Cost to Water Provider

Labor Costs		
Staff Hours	5	/year
Hourly Cost	$50.00	/hour
Annual Staff Costs	$250.00	
Evaluation and Follow up Costs	$0.00	/year
Annual Labor	**$250.00**	/year
Materials Costs		
Unit Cost	$0.00	/participant
Number of Participants	20	/year
		gallons
Annual Materials	**$0.00**	/year
Rebates		
Rebate Cost	$5.00	
Number of Units	20	
Annual Rebate Cost	**$100.00**	/year
One Time Labor and Material Costs		
One Time Materials Cost	$0.00	
One Time Labor Cost	$100.00	
One Time Labor/Material Cost	**$100.00**	

Notes:

Annual labor costs include water savings tracking for rebate program. Other one time costs are for intital set-up of rebate program.

The City may provide $5.00 per showerhead replaced.

Low-Flow Showerhead Rebate

Water Rates

Rate Category	Current Rates/Fees
Residential & Commercial - *Includes minimum base usage of 7,000 gallons+ $17 Capital Improvement Fee*	45.00
Excess Water Volume Charged from 7,001 to 10,000 gallons	*1.50*
Excess Water Volume Charged in excess of 10,000 gallons	2.00

Notes:

The annual revenue loss was estimated based on: Residential & Commercial rates for 5/8" meters. City charges monthly capital improvement fees in addition to the monthly use charges.

Estimated Revenue assumes that the current rates will not change over the planning period.

Estimated Average Annual Revenue without Water Savings	$21,883.68	/year
Estimated Average Annual Revenue with Water Savings	$21,552.99	/year
Annual Revenue Loss Related to Water Savings	**$330.68**	/year

Estimated Annual Cost	**$680.68**	/year
Estimated Cost over Planning Period not including Lost Revenue	**$3,600.00**	
Estimated Total Cost over Planning Period Including Set-up and Lost Revenue	**$6,906.83**	
Cost per 1000 Gallons Saved	**$4.18**	

Irrigation System Efficiency Device Rebates

Irrigation System Efficiency Devices may include ET (SMART) Sprinkler system controllers and/or Wind and Rain sensors.

Planning Period	2012	2022
Years in Planning Period	10	
Program Length	10	

Estimated Water Savings

Annual Estimated Savings Rate	5%

Customer Category	Outdoor Water Use Per Tap gallons/tap	Annual Program Participants	*Estimated Annual Water Savings for all Participants (gallons/yr)*
Residential	27,111	15	20,333
Commercial	117,828	5	29,457

Estimated Annual Water Savings	**49,790**	gallons/yr
Estimated Savings over Planning Period	**2,738,452**	gallons

Notes:

Outdoor usage for Residential and Commercial categories is estimated at 32%.

Wind and Rain Sensors can save an estimated 5% to 10% of water used outdoors and costs approximately $25 to $45. The amount of water that can be saved through improved programming of an irrigation system controller varies but is estimated to be at least 10% to 15%. The cost of automatic irrigation system controllers for residential use ranges from about $50 to $250, depending on the features provided. Commercial-use controllers and central controllers can cost up to several thousand dollars.*

Estimated Savings over Planning Period is calculated by compounding the estimated annual water savings per the total number of participants for each given year.

**Based on "Handbook of Water Use and Conservation" by Amy Vickers*

Costs

Labor Costs		
Staff Hours	5	/year
Hourly Cost	$50.00	/hour
Annual Staff Costs	$250.00	
Evaluation and Follow up Costs	$0.00	/year
Annual Labor	**$250.00**	/year
Materials Costs		
Unit Cost	$0.00	/participant
Number of Participants	20	/year
Gallons Saved per Unit per Year	Varies	gallons
Annual Materials	**$0.00**	/year
Rebate Cost	$25.00	
Number of Participants	20	/year
Annual Rebate Cost	**$500.00**	/year
One Time Labor and Material Costs		
One Time Materials Cost	$0.00	
One Time Labor Cost	$200.00	
One Time Labor/Material Cost	**$200.00**	

Notes:

Annual labor costs include water savings tracking for rebate program. Other one time costs are for intital set-up of rebate program.

The City may provide $25 per controller replaced.

Irrigation System Efficiency Device Rebates

Water Rates

Rate Category	Current Rates/Fees
Residential & Commercial *- Includes minimum base usage of 7,000 gallons+ $17 Capital Improvement Fee*	45.00
Excess Water Volume Charged from 7,001 to 10,000 gallons	*1.50*
Excess Water Volume Charged in excess of 10,000 gallons	2.00

Notes:

The annual revenue loss was estimated based on: Residential & Commercial rates for 5/8" meters. City charges monthly capital improvement fees in addition to the monthly use charges.

Estimated Revenue assumes that the current rates will not change over the planning period.

Estimated Average Annual Revenue without Water Savings	$26,130.80	/year
Estimated Average Annual Revenue with Water Savings	$25,052.89	/year
Annual Revenue Loss Related to Water Savings	**$1,077.92**	/year

Estimated Annual Cost	**$1,827.92**	/year
Estimated Cost over Planning Period not including Lost Revenue	**$7,700.00**	
Estimated Total Cost over Planning Period Including Set-up and Lost Revenue	**$18,479.15**	
Cost per 1000 Gallons Saved	**$6.75**	

Water Conservation Upgrades for City Facilities - Indoor

This would provide high efficiency fixture replacement for toilets, showerheads, and faucet aerators within City Buildings.

Planning Period	2012	2022
Years in Planning Period	10	
Program Length	1	

Estimated Water Savings

Annual Estimated City Water Use Per Tap without Savings

Customer Category	Water Use Per Tap gallons/tap
City	635,409

	Gallons per Day	Estimated No. of Units replaced	Estimated Gallons Saved per year
Gallons saved per day with High Effic. Toilet*	25.00	8	73,000
GPCD saved for 1.5 gpm showerhead	2.65	2	1,935
GPCD saved for 1 gpm Faucet Aerator	6.80	9	22,338

Estimated Annual Water Savings	**97,273**	gallons/yr
Estimated Savings over Planning Period	**972,725**	gallons

Notes:

Estimated Water Use is based on the City usage category - 1.95 ac-ft/tap

**Based on "Handbook of Water Use and Conservation" by Amy Vickers*

Costs

Total Cost to Water Provider

Labor Costs		
Staff Hours	0	/year
Hourly Cost	$50.00	/hour
Annual Staff Costs	$0.00	
Evaluation and Follow up Costs	$0.00	/year
Annual Labor	**$0.00**	/year
Materials Costs		
Unit Cost	$0.00	/participant
Number of Participants		/year
Gallons Saved per Unit per Year	varies	gallons
Annual Materials	$0.00	/year
Rebates		
Rebate Cost	$0.00	
Number of Participants	0	/year
Annual Rebate Cost	**$0.00**	/year
One Time Labor and Material Costs		
One Time Materials Cost	$870.50	
One Time Labor Cost	$2,000.00	
One Time Labor/Material Cost	**$2,870.50**	

Notes:

This is a retrofit program is not a rebate program.

Cost of Material assumes:
$100 -1.28 gpf HET Glacier Bay Toilet
$30 - 1.5 gpm showerhead
$1.50 - 0.5 gpm low flow dual-thread faucet aerator- kitchen and bathroom

Estimated Annual Cost	**$0.00**	/year
Estimated Total Cost over Planning Period Including Set-up	**$2,870.50**	
Cost per 1000 Gallons Saved	**$2.95**	

Water Conservation Upgrades for City Facilities - Outdoor

This would include the installation of Irrigation System Efficiency Devices may include ET (SMART) Sprinkler system controllers and/or Wind and Rain sensors for outdoor areas irrigated by the City such as City Parks etc.

Planning Period	2012	2022
Years in Planning Period	10	
Program Length	1	

Estimated Water Savings

Annual Estimated Savings Rate	5%

Customer Category	Outdoor Water Use Per Tap gallons/tap	No of Facilities	*Estimated Annual Water Savings (gallons/yr)*
City	203,331	5	50,833

Estimated Annual Water Savings	**50,833**	gallons/yr
Estimated Savings over Planning Period	**508,328**	gallons

Notes:

This measure is only for City water usuage which is estimated at 1.95 af/tap.

Wind and Rain Sensors can save an estimated 5% to 10% of water used outdoors and costs approximately $25 to $45. The amount of water that can be saved through improved programming of an irrigation system controller varies but is estimated to be at least 10% to 15%. The cost of automatic irrigation system controllers for residential use ranges from about $50 to $250, depending on the features provided. Commercial-use controllers and central controllers can cost up to several thousand dollars.*

**Based on "Handbook of Water Use and Conservation" by Amy Vickers*

Labor Costs		
Staff Hours	0	/year
Hourly Cost	$50.00	/hour
Annual Staff Costs	$0.00	
Evaluation and Follow up Costs	$0.00	/year
Annual Labor	**$0.00**	/year
Materials Costs		
Unit Cost	$0.00	/participant
Number of Participants	5	/year
Gallons Saved per Unit per Year	Varies	gallons
Annual Materials	**$0.00**	/year
Rebates		
Rebate Cost	$0.00	
Number of Participants	0	/year
Annual Rebate Cost	**$0.00**	/year
One Time Materials Cost	$1,385.00	
One Time Labor Cost	$1,000.00	
One Time Labor/Material Cost	**$2,385.00**	

Notes:

This is not a rebate program but a retrofit program for irrigation around City buildings.

The one time material cost is for the City to purchase 8 wind & rain sensors and upgrade 4 central controllers.

Estimated Annual Cost	**$0.00**	/year
Estimated Total Cost over Planning Period Including Set-up	**$2,385.00**	
Cost per 1000 Gallons Saved	**$4.69**	

Commercial Water Audits

Commercial customers are often the highest water users and have been an area of increasing focus for water conservation. Commercial customers who participate in a water audit could identify ways to reduce their operating costs over the long term. Water audits can be performed by a third party consultant and is an effective way to educate businesses on how they can save water.

Planning Period	2012	2022
Years in Planning Period	10	
Program Length	10	

Estimated Water Savings

Annual Estimated Savings Rate	5%

Customer Category	Water Use Per Tap gallons/tap	Annual Program Participants	*Estimated Annual Water Savings gallons/yr*
Commercial	368,212	5	92,053

Estimated Annual Water Savings	**92,053**	gallons/yr
Estimated Savings over Planning Period	**5,062,910**	gallons

Notes:

Estimated Water Use is based on a 1.13 AF/tap use for Commercial taps. This is the 2010 commercial water use.

Estimated Savings over Planning Period is calculated by compounding the estimated annual water savings per the total number of audit participants for each given year. For example, in the first year of the program, there are 10 participants. In the second year of the program, there are water savings from the 10 participants from last year's program, and new participants thereby compounding the savings.

Costs

Total Cost to Water Provider

Labor Costs		
Staff Hours	8	/year
Hourly Cost	$50.00	/hour
Annual Staff Costs	$400.00	
Evaluation and Follow up Costs	$300.00	/year
Annual Labor	**$700.00**	/year
Materials Costs		
Unit Cost	$500.00	/participant
Number of Participants	5	/year
Gallons Saved per Unit per Year	18,411	gallons
Annual Materials	**$2,500.00**	/year
Rebates		
Rebate Cost	$0.00	
Number of Participants	5.0	/year
Annual Rebate Costs		/year
One Time Labor and Material Costs		
One Time Labor Cost (program setup assistance through 3rd party)	$1,000.00	
One Time Labor/Material Cost	**$1,000.00**	

Notes:

Staff hours include time for coordination with third party consultants.

Consultants may be hired to perform audits at an estimated cost of approximately $500.00 per audit.

Commercial Water Audits

Water Rates

Rate Category	Current Rates/Fees
Residential & Commercial *- Includes minimum base usage of 7,000 gallons+ $17 Capital Improvement Fee*	45.00
Excess Water Volume Charged from 7,001 to 10,000 gallons	*1.50*
Excess Water Volume Charged in excess of 10,000 gallons	2.00

Notes:

The annual revenue loss was estimated based on: Residential & Commercial rates for 5/8" meters. City charges monthly capital improvement fees in addition to the monthly use charges.

Estimated Revenue assumes that the current rates will not change over the planning period.

Estimated Average Annual Revenue without Water Savings	$21,062.89	/year
Estimated Average Annual Revenue with Water Savings	$20,050.31	/year
Annual Revenue Loss Related to Water Savings	**$1,012.58**	/year

Estimated Annual Cost	**$4,212.58**	/year
Estimated Cost over Planning Period not including Lost Revenue	**$33,000.00**	
Estimated Total Cost over Planning Period Including Set-up and Lost Revenue	**$43,125.82**	
Cost per 1000 Gallons Saved	**$8.52**	

Residential Audit Kit

Self-guided residential audit kits can be designed to include items such as leak detection tablets, surveys, and sprinkler testing cones. Instructions for conducting the audit and evaluating the results can give residential customers insight and direction on how they can save water and money. The guidance offered in the instructions could lead the customer to take part in other conservation programs offered, including rebates.

Planning Period	2012	2022
Years in Planning Period	10	
Program Length	10	

Estimated Water Savings

Annual Estimated Residential Water Use Per Tap without Savings

	Water Use (gallons/tap)	Estimated Annual Water Savings (gallons/yr)
Residential	84,721	42,361

Annual Estimated Savings Rate	5%	
Annual Program Participants	30	/year
Max. No. of Participants over Planning Period	300	

Annual Estimated Residential Water Use Per Tap with Savings

Estimated Annual Water Savings	**42,361**	gallons/yr
Estimated Savings over Planning Period	**2,329,835**	gallons

Notes:

Estimated Water Use is based on the *2010 data: Residential = 0.26 af/tap*

Estimated Savings over Planning Period is calculated by compounding the estimated annual water savings per the total number of audit participants for each given year.

Costs

Total Cost to Water Provider

Labor Costs		
Staff Hours (Website updates, etc.)	16	/year
Hourly Cost	$50.00	/hour
Annual Staff Costs	$800.00	
Evaluation and Follow up Costs	$300.00	/year
Annual Labor	**$1,100.00**	/year
Materials Costs		
Unit Cost	$0.00	/participant
Number of Participants	30	/year
Gallons Saved per Unit per Year	0	gallons
Annual Materials	**$0.00**	/year
Rebate Cost	$0.00	
Number of Participants	30	/year
Annual Rebate Cost	**$0.00**	/year
One Time Labor and Material Costs		
One Time Materials Cost (Bulk Purchase of 2500 Audit Kits)	$1,800.00	
Water Audit Website Set Up	$400.00	
One Time Labor/Material Cost	**$2,200.00**	

Notes:

Online instruction can be set up on City Website.

Residential audit kits are available at wholesalers like AM Conservation Group, Inc. for $5.99 per unit for a bulk purchase of 1800 to 3000 units. Kits can be customized to include the City of Dacono's logo.

Residential Audit Kit

Water Rates

Rate Category	Current Rates/Fees
Residential & Commercial *- Includes minimum base usage of 7,000 gallons+ $17 Capital Improvement Fee*	45.00
Excess Water Volume Charged from 7,001 to 10,000 gallons	*1.50*
Excess Water Volume Charged in excess of 10,000 gallons	2.00

Notes:

The annual revenue loss was estimated based on: Residential & Commercial rates for 5/8" meters. City charges monthly capital improvement fees in addition to the monthly use charges.

Estimated Revenue assumes that the current rates will not change over the planning period.

Estimated Average Annual Revenue without Water Savings	$33,073.02	/year
Estimated Average Annual Revenue with Water Savings	$20,094.45	/year
Annual Revenue Loss Related to Water Savings	**$12,978.57**	/year

Estimated Annual Cost	**$14,078.57**	/year
Estimated Cost over Planning Period not including Lost Revenue	**$13,200.00**	
Estimated Total Cost over Planning Period Including Set-up and Lost Revenue	**$142,985.67**	
Cost per 1000 Gallons Saved	**$61.37**	

City Landscape Audit

Audit by an outside consultant to determine which areas could use improvement in the irrigation systems for the City parks and irrigated areas.

Planning Period	2012	2022
Years in Planning Period	10	
Program Length	1	

Estimated Water Savings

Annual Estimated Savings Rate	2.5%

Customer Category	Avg Annual Outdoor Water Use Per Tap (gallons/tap)	*Estimated Annual Water Savings gallons/yr*
City	203,331	5,083

Estimated Annual Water Savings	**5,083**	gallons/yr
Estimated Savings over Planning Period	**50,833**	gallons

Notes:

This measure affects outdoor use for Standard - Full and Standard - 3/4 customers. Estimate that approximately 50% of total customer use is outdoor use. Annual savings for audit participants is estimated to be 5% per year.

Costs

Total Cost to Water Provider

Labor Costs		
Staff Hours	0	/year
Hourly Cost	$50.00	/hour
Annual Staff Costs	$0.00	
Evaluation and Follow up Costs	$0.00	/year
Annual Labor	**$0.00**	/year
One Time Labor and Material Costs		
One time Cost for Staff to Set Up Program	$1,000.00	
One time Cost for Outside Consultant	$2,000.00	
One Time Labor/Material Cost	**$3,000.00**	/year

Notes:

Cost of outside consultant to audit city parks and landscape areas.

Estimated Annual Cost	**$0.00**	/year
Estimated Total Cost over Planning Period Including Set-up	**$3,000.00**	
Cost per 1000 Gallons Saved	**$59.02**	

APPENDIX B

Public-Review Notification

Public Review Process

The City of Dacono held its public review process from June 15, 2011 through August 14, 2011. Notification was posted in the Longmont Times-Call and the Carbon Valley Farmer and Miner newspaper on June 15, 2011 announcing the review period and that a draft plan would be available for the public to review at the City's office. The draft plan was also posted on the City of Dacono's website on June 15, 2011.

No public comments were received by the City during the public review process.

PROOF OF PUBLICATION
CARBON VALLEY FARMER AND MINER
STATE OF COLORADO
COUNTY OF WELD SS.

I, Allen Messick, do solemnly swear that I am the Publisher of the **Carbon Valley Farmer and Miner** that the same is a weekly newspaper printed and published in the County of Weld, State of Colorado, and has a general circulation therein; that said newspaper has been published continuously and uninterruptedly in said county of Weld for a period of more than fifty-two consecutive weeks prior to the first publication of the annexed legal notice or advertisement; that said newspaper has been admitted to the United States mails as second-class matter under the provisions of the act of March 3, 1879, or any amendments thereof, and that said newspaper is a weekly newspaper duly qualified for publishing legal notices and advertisements within the meaning of the laws of the State of Colorado. That the annexed legal notice or advertisement was published in the regular and entire issue of every number of said weekly newspaper for the **period of ONE consecutive insertion(s);** and that the first publication of said notice was in the issue of newspaper, dated **15th day of JUNE 2011**, and the last on the **15th day of JUNE 2011**

Publisher, Subscribed and sworn before me, this **15th day** of, **JUNE, 2011**.

Notary Public.

BOBI LOPEZ NOTARY PUBLIC STATE OF COLORADO My Commission Expires 05/02/2014

The City of Dacono has completed a Draft Water Conservation Plan. The goal of the plan is to develop programs for efficient and sustainable water use. Before finalizing the Water Conservation Plan, Dacono welcomes input from its customers and will conduct a 60-day public review period from June 15, 2011 through August 14, 2011. A complete copy of the draft will be available for review at City Hall located at 512 Cherry St. Dacono, CO 80514 and posted on the City's website at http://www.ci.dacono.co.us/.

All written comments are due at the front desk of City Hall prior to August 14, 2011 and can be dropped off or mailed to 512 Cherry St. Dacono, CO 80514 - Attn: Kelly Stroh

AFFIDAVIT OF PUBLICATION

TIMES-CALL

State of Colorado
County of Boulder

I, the undersigned agent, do solemnly swear that the LONGMONT TIMES-CALL is a daily newspaper printed, in whole or in part, and published in the City of Longmont, County of Boulder, State of Colorado, and which has general circulation therein and in parts of Boulder and Weld counties; that said newspaper has been continuously and uninterruptedly published for a period of more than six months next prior to the first publication of the annexed legal notice of advertisement, that said newspaper has been admitted to the United States mails as second-class matter under the provisions of the Act of March 3, 1879, or any, amendments thereof, and that said newspaper is a daily newspaper duly qualified for publishing legal notices and advertisements within the meaning of the laws of the State of Colorado; that a copy of each number of said newspaper, in which said notice of advertisement was published, was transmitted by mail or carrier to each of the subscribers of said newspaper, according to the accustomed mode of business in this office.

The annexed legal notice or advertisement was published in the regular and entire edition of said daily newspaper once; and that one publication of said notice was in the issue of said newspaper dated **June 15, 2011**.

Sue Sadar
Agent

Subscribed and sworn to before me this **16th** day of **June, 2011** in the County of Boulder, State of Colorado.

Roxanne Hagerman
Notary Public

My commission expires: 12/04/2014

FEE $11.44

ROXANNE HAGERMAN
Notary Public
State of Colorado

NOTICE

The City of Dacono has completed a Draft Water Conservation Plan. The goal of the plan is to develop programs for efficient and sustainable water use. Before finalizing the Water Conservation Plan, Dacono welcomes input from its customers and will conduct a 60-day public review period from June 15, 2011 through August 14, 2011. A complete copy of the draft will be available for review at City Hall located at 512 Cherry St. Dacono, CO 80514 and posted on the City's website at http://www.ci.dacono.co.us/. All written comments are due at the front desk of City Hall prior to August 14, 2011 and can be dropped off or mailed to 512 Cherry St. Dacono, CO 80514 - Attn: Kelly Stroh

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APPENDIX C

Dacono City Council Adoption

CITY OF DACONO

RESOLUTION NO. 11-43

A RESOLUTION ADOPTING A WATER CONSERVATION PLAN

WHEREAS, on June 14, 2011, the City Council was presented the results of a Water Conservation Plan performed by Clear Water Solutions; and

WHEREAS, the City is committed to water resource sustainability and water conservation; and

WHEREAS, the City of Dacono understands the needs and benefits of long term water conservation measures and is committed to implementation of a Water Conservation Plan; and

WHEREAS, a Water Conservation Plan is a valuable tool to implement water conservation measures; and

WHEREAS, the City Council of the City of Dacono desires to approve a Water Conservation Plan and submit said Plan to the Colorado Water Conservation Board for approval.

IT IS HEREBY RESOLVED BY THE CITY COUNCIL OF THE CITY OF DACONO, COLORADO, THAT THE WATER CONSERVATION PLAN DEVELOPED BY CLEARWATER SOLUTIONS FOR USE BY THE CITY BE ADOPTED AND UTILIZED AS THE PRIMARY RESOURCE FOR WATER CONSERVATION IN THE CITY OF DACONO.

PASSED AND ADOPTED this 12th day of September, 2011.

CITY OF DACONO, COLORADO

By _____
Charles Sigman, Mayor

ATTEST:

_____
Valerie Taylor, City Clerk