CITY OF BRIGHTON

Water Efficiency Grant Report

The City of Brighton

March 2011

GREAT WESTERN INSTITUTE
Littleton, Colorado 80126

Introduction

This Report summarizes the implementation of the Water Efficiency Grant provided to the City of Brighton (hereafter the "City") by the Office of Water Conservation and Drought Planning (hereafter the "Office") of the Colorado Water Conservation Board (CWCB) in 2010. The Grant was provided to the City for the specific purpose of supporting local efforts to implement the City's Water Conservation Plan, updated in 2008 and reviewed and approved by the Office in early 2009. For this particular project, the Grant funding was used to support the following local efforts:

- Focused Community Outreach
- Selected Commercial and Residential Facility Audits
- Replacement of Inefficient Fixtures in City and Commercial Facilities
- Data Collection and Reporting

Each of these specific activities is discussed in the report; as is a presentation of key findings and recommendations.

Please note that it is the intention of both the City and the CWCB to support the implementation of meaningful water conservation in the City of Brighton service area. To this point, the project was focused on creating sustainable water demand reductions in those City and commercial facilities targeted by the project. Fixture replacements and data collection tasks were therefore executed to achieve and verify permanent water savings in the five facilities that were targeted for retrofits. Audits were conducted for the targeted commercial, residential and irrigation customers to collect data that will be used to identify potential water demand reductions in future retrofit and/or rebate programs that the City may pursue.

Given that the conditions for some portion of the City's customer base changed between the time that the grant application was submitted to the Office for consideration and the time that grant funding was awarded to the City, some modifications to the scope of work were needed to complete implementation efforts. All modifications to the scope that occurred as a result of changing conditions in the City are identified and discussed in the report. Noteworthy is that none of the changes in the conditions encountered during execution of the grant funded project compromised the ability of the City to stimulate improved water use efficiency within the City facilities and its targeted customer base.

Acknowledgements

The City and the project team wish to acknowledge the contributions of the owners and staff of all the businesses and institutions that allowed the audit and fixture replacement teams to visit, collect data and install new fixtures in each of the targeted buildings. Without the support and cooperation of these individuals, none of the permanent water savings associated with this project could be realized. Those organizations and institutions that supported this project include the following:

- City of Brighton – City Hall, Police Station, Recreation Center, Senior Center

- Commercial Facility- Inglenook Senior Living Facility, Brighton Care Center, Brighton Terrace, Colorado Cinema, Cottonwood Care Center, Eastgate, VFW, Walmart
- Restaurants - Billie's Café, Brighton Bar, Bubba Chino's, Chili's, Jerry's Bar and Restaurant, Jordinalli's Bar, La Estrellita's, Lone Star, Mojo's, Taco Bell
- Home Owner Associations (with irrigation only uses)- Brighton Crossing, Crescent Village, Indigo Trails, Platte River Ranch
- Residential Customers - Gossert, Morales, and Hansen Families

Specific Tasks Performed

Each of the tasks identified in the grant application are discussed below. The tasks include:

- Community Outreach
- Conducting Audits
- Implementing Retrofits
- Reporting

Community Outreach

The community outreach efforts conducted as a portion of this project utilized about 6.5% of the total grant funding; however this task was vital in communicating with the actions of the City to the City's customers. Funding from the grant, supplemented by matching funds from the City, was utilized to do the following:

- Upgrade and expand the scope of the District's website;
- Prepare and publish two different service announcements publicizing and promoting the project;
- Develop public television content to promote business and residential requests for audits; and
- Design, print and install signage (for those locations that received retrofit fixtures) providing information regarding the benefits of the City's implementation efforts supported by the CWCB.

In the performance of the project, the following metrics were achieved.

Table 1 – Summary of Community Outreach Efforts

Task	Metric	Number
Update and Expand Website	Number of Visits	Positive trend*
Public service announcements		
Water Schedule KBRI- 8 Boards	2010 Run-time (hours)	128
Residential Audits KBRI- 8 Boards	2010 Run-time (hours)	152
Print and install signage		
Tent Cards	Number	50
Saving Water and Energy	Number	18

*The City of Brighton does not currently have the statistical reporting capabilities required to track the number of visits to each page on the City's main website; however, an analysis of the total number of visits to the entire site shows an upward trend in the number of City webpage visits indicative of an increased interest in the City's website as more content. It can be inferred that the expansion of the water conservation page contributed to the increasing interest in the City's website in 2010 (Appendix A).

The City's website was expanded to include the new water conservation efforts resulting from the Grant. This website is used to promote local water conservation measures and programs, provide information regarding other City conservation programs (e.g., rebates), and generally provide information to interested individuals. The City tracks the number of unique visitors, the total number of

site visits per month, the number of pages and total number of hits per month for the entire City website (Appendix A).

Two public service announcements were televised on the City's Public, Educational and Government access (PEG) television channel providing information on Brighton's watering calendar, toilet and washing machine rebates and the commercial and residential audits that were made available through the Grant.

Another printed messaging campaign that was funded by or in association with this project included creating, producing, distributing and installing signage in every room in each facility that received replacement fixtures. These signs (which are provided in Appendix B) were developed to educate and inform facility users about the water-saving fixtures and their benefits in reducing water use and creating energy savings, specific to each facility.

Audits

The City conducted a commercial, residential and home owner association (HOA) water audit program from March to August 2010 in an effort to further support customer wise water use and water use efficiency. Included in this audit program were ten local restaurants, four large HOAs (with irrigation use only), three volunteer residences, and eight other commercial businesses. These audits were used to characterize both indoor and outdoor water uses, when appropriate, to identify cost-beneficial water saving opportunities within each facility/location.

These audits were combined with the audits conducted prior to the grant funded project, to identify potential water and related energy savings for each location. Table 2 summarizes the audits conducted prior to and during execution of this project.

The audit involved reviewing past and current water use data for each audited facility, and collecting site-specific data characterizing facility-specific water use. Data that was collected during the audits included:

- Number, use and flow rate from each sink faucet
- Number and flow rate from each showerhead
- Number and estimated flush volume for each toilet and urinal
- Number and serial number of all kitchen and laundry facility appliances that use water (e.g., washing machines, laundry extractors, ice machines, steam tables, dish washing machines, etc.)
- Swimming pool, hot tub and Jacuzzi use and water replacement rates
- Outdoor irrigation uses (e.g., irrigated area, sprinkler system timing)
- Other water uses

For indoor water uses, data collected from each facility was compared and contrasted with monthly, seasonal and annual water rates to configure and calibrate a facility-specific water model which was used to estimate water use for each subject fixture that may be a candidate for replacement. In this way, an estimate of water savings and costs for each candidate fixture could be developed to support decision-making by the City in the allocation of potential future Grant supported replacement fixtures.

Table 2 – Summary of Water Audits Conducted by the City

Prior to the Grant	**Town Facilities** • City Hall • Inglenook • Police Station • Recreation Center • Senior Center	
During Execution of the Grant	**Restaurants** • Billie's Café • Brighton Bar • Bubba Chino's • Chili's • Jerry's Bar and Restaurant • Jordinalli's Bar • La Estrellita's • Lone Star • Mojo's • Taco Bell **Residence** • Gossert • Hansen • Morales	**HOAs** • Brighton Crossing • Crescent Village • Indigo Trails • Platte River Ranch **Other** • Brighton Care Center • Brighton Terrace • Bromley Lane Car Wash • Colorado Cinema • Cottonwood Care Center • Eastgate • VFW • Walmart

For the commercial facilities with outdoor water uses and the HOAs, monthly irrigation use was compared and contrasted with expected summertime evapotranspiration (ET) to determine if seasonal irrigation occurred at an appropriate level. The summertime ET for each facility was estimated using the Northern Colorado Water Conservancy District's Turf Irrigation Management (TIM) Program and site specific data that characterized the irrigation area.

Appendix C contains the results of the individual residential, commercial facility and HOA audits conducted as part of the grant funding, including the location, the data collected, and the water model developed to evaluate site-specific water use and identify candidates for fixture replacement.

Fixture Replacements

Based on the observed need, facility manager participation, the availability of fixtures, and the coordination of facility needs with local installation teams, replacement fixtures were installed in a total of five City facilities. A summary of the installed fixtures by facility is provided in Table 3.

The specific fixtures that were used to replace the inefficient old fixtures are as follows:

- Showerheads- A total of 46 Caroma 1.5 gallons per minute (gpm) stainless steel, vacuum assisted low-flow showerhead fixtures were installed. An extra 15 showerheads were provided to the facility manager at Inglenook for additional replacement efforts.

- Shower timers- a total of 3 EDU/ FAC Model Shower Managers were installed. This model runs for seven minutes in full-flow mode, which delivers up to 2.2 gpm, before switching to a 60-second reset interval which restricts flow to 0.7 gpm.
- Faucet aerators- A total of 131 USA Landlords dual-threaded 0.5 gallon per minute (gpm) stainless steel, low-flow faucet aerator were installed in bathroom and kitchen hand-wash sinks. These faucet aerators were not deemed suitable for other applications (e.g., pot and pan sinks, kitchen gallery sinks, etc.). An extra 30 aerators were provided to the facility manager at Inglenook for additional replacement efforts.
- Toilets- A total of 55 Caroma SyndeySmart dual-flush, EPA WaterSense approved 1.28/0.7 gallon per flush (gpf) toilets were installed. It is estimated from experience that these toilets would average about 0.9 gpf accounting for the mixture of 0.7 and 1.28 flushes.

Table 3 - Water Fixture Retrofits per Facility

Location	Fixture Type	Installed Retrofits
City Hall	Sink Faucet Aerator	13
	Toilet	14
	Urinal	0
Inglenook	Sink Faucet Aerator	87
	Showerhead	30
	Toilet	36
Police Station	Sink Faucet Aerator	15
	Showerhead	2
	Urinal	0
Recreation Center	Sink Faucet Aerator	13
	Showerhead	14
	Shower Timer	3*
	Urinal	0
Senior Center	Sink Faucet Aerator	3
	Toilet	5
	Urinal	0

* The showertimers which were installed in the Recreation Center were vandalized and were therefore removed after three months

Water Savings

The installation of the high-efficiency fixtures in the five City facilities listed in Table 3 have unquestionably reduced current water use demand for those uses impacted by the retrofitting. In other words, every new dual-flush toilet uses less water per flush than its predecessor. Similarly, all new showerheads allow less water to flow in a minute than the older, less efficient showerhead. Therefore, real savings are occurring assuming that the same water use behaviors are taking place.

Unfortunately, measuring the actual water use reduction is not as simple as might otherwise be expected, for at each facility the replacement fixtures represent only a fraction of current water use. In addition, there may be other water uses at each facility that were not reported or captured within the audit framework. In addition, water use behaviors may not be truly constant, therefore, a comparison

of expected water saved (based on the facility-specific water models developed) and the actual measured water savings is not necessarily congruent. Nonetheless, it is clear that water use reductions have occurred at every facility with installed retrofits. It is also clear that the water savings are generally consistent with those predicted.

Table 4 presents the water-model based estimated water savings for each of the facilities that received replacement fixtures and the actual change in monthly water use prior to and after the fixtures were replaced (based on the water model presented in Appendix C). The estimated water savings for the Recreation Center and Inglenook are based on winter month water uses for 2008; and the estimated water savings for all other audited City facilities are based on winter month water uses for 2009. The actual water savings realized in the Recreation Center is based on a comparison of monthly indoor water use for the years 2008 and 2010; all other actual water savings calculations are based on a comparison of monthly indoor water use for the years 2009 and 2010. The data used to calculate the estimated and actual water savings is presented in Appendix D.

Table 4 - Estimated and Measured Average Monthly Water Savings per Facility

Facility	Estimated Average Indoor Monthly Water Savings (gallons)	Observed Average Indoor Monthly Water Savings (gallons)
City Hall	10,179	13,000
Inglenook	25,346	24,250
Police Station	3,376	4,952
Recreation Center	52,158	52,280
Senior Center	1,641	1,875

The expected water savings, based on the results of the audits and the related water models, were about 3.41 acre-feet; whereas the actual savings measured were about 3.55 acre-feet[1].

The reasons for the differences between the estimated and measured water savings may be influenced by many different factors including:

- Differences in the number of facility users.
- Differences in the normal uses of water within a facility.[2]

[1] The replacement value of 3.55 acre-feet of water for the City of Brighton is about $106,500 (at $30,000 per acre-foot). The cost of the water demand reduction was about $13,000 per acre-foot using the combination of the Water Efficiency Grant and City funds and resources. See conclusions section for more information regarding the cost and benefit of the project on reducing water demand.

[2] Based on the monthly wintertime water use data provided for 2008 (about 633,000 gallons per month), one or multiple water leaks were suspected at the Recreation Center. No work was done to remedy the leak(s) during the audit; however, based on the monthly wintertime water use data provided by the City for 2010 (about 152,000 gallons per month), it appears that some work was done to fix the suspected the leak (or leaks). The water demand model for the Recreation Center assumes an initial leak of approximately 10.6 gpm. It is estimated that this leak (or leaks) was reduced to about 0.75 gpm in 2010, which in conjunction with the water savings produced as a result of the fixture retrofits, produce a total water demand reduction of about 480,000 gallons per month.

- Differences in the estimated and actual number of uses and/or length of use of each replaced fixture in the facility.

The City does not maintain records regarding facility visits for most of its buildings (with the exception of the Recreation Center). It is not anticipated that this data can be easily collected by the City in the future, except at the Recreation Center, where site visitors check in when they visit the facility. Conversely, occupancy rates at the Inglenook Senior Living Facility can be readily obtained.

Modifications to the Scope

As previously indicated, the scope of work contained in the grant application included estimates on the number of audits, and the number of replacement fixtures that would be installed. However, conditions predicted at the time of the application were not entirely consistent with the conditions found during project execution. For these reasons, some of the original scope was revised to account for conditions encountered during execution of the project.

The key differences between the proposed scope and the executed scope are listed below:

- The original scope called for a total of 35 audits, including 15 residential and 10 each for commercial and HOA water users. Due to the lack of interest in the local community for audits, the number of residential and HOA audits was less than expected; however the number and complexity of the commercial audits was greater than expected. Therefore, the cost of doing the additional commercial audits offset any cost savings associated with doing fewer residential and HOA audits. For this reason, there are no budget implications associated with the revised number of audits. A total of 25 audits resulted from the Grant; including 10 restaurants, three residential, four HOA and eight other commercial customers.
- Changes also occurred with regard to the number of fixtures that were replaced due to site access and customer interest (as described below). Table 5 summarizes the changes to the number of retrofit fixtures.

Table 5 – Summary of Modifications to the Number of Replacement Fixtures Installed

Fixture	Original Scope	Modified Due to Field Conditions
Showerhead	129	46
Showertimers	4	3
Sink Faucet Aerators	160	131
Toilets	51	55
Urinals	15	0

There were a number of issues that arose during the installation phase of the project that hampered efforts to install the number of fixtures envisioned during preparation of the grant application.

The issues encountered during project execution included:

- A majority of the showers in Inglenook were found to contain hand held showerheads, which were not allow for retrofitting using the Caroma showerhead. Surplus showerheads are being used by the City in other programs.
- The showertimers which were installed in the Recreation Center were vandalized and as such were removed after three months of use. Water savings after this time were only associated with the low flow showerheads.
- A number of bathroom sinks in Inglenook did not have detachable faucet aerators, such that only a percentage of the sinks could be retrofit. Surplus faucet aerators are being used by the City in other programs.
- At City Hall, two toilets were not replaced given that the existing toilets are connected directly to lateral metal pipes, creating plumbing challenges that were cost prohibitive to remedy during the retrofit process. The surplus toilets were moved to Inglenook.
- At all the facilities, the waterless urinals were found to be cost prohibitive to install due to the location of the existing drain pipe (which was typically too low to be accommodated by the new waterless urinal porcelain configuration). Four additional toilets were purchased and installed at Inglenook using the funding that was original earmarked for the urinals.

Conclusions and Recommendations

The Water Efficiency Grant awarded to The City of Brighton was put to use to implement components of the City's approved Water Conservation Plan. As a result of the grant funded project, the City was able to increase outreach to the community that it serves and measurably decrease water use in various City facilities and open senior living facility.

Total measured water savings over a single year associated with the installed replacement fixtures are expected to be about 3.55 acre-feet, with a replacement value of about $106,500 to the City (based on a replacement water cost of $30,000 per acre foot including water acquisition, transportation, treatment and distribution).

The cost of the water savings varied in each retrofit facility dependant on a number of factors, including the number and type of fixtures replaced, the number of times each fixture was used, and the number of facility visits. In particular, those facilities that received showerhead and faucet aerators were typically the most cost effective retrofits, especially in those facilities with shared use showers and sinks (i.e., the Rec Center and Police Station). Toilets, which save significant amounts of water, are the least cost effective because of the capital cost and, for the Inglenook facility, the limited use per toilet.

Table 6 – Estimated Cost per Acre-Foot to Replace Inefficient Fixtures by Facility

Location	Cost per AF
City Hall	$ 14,310
Inglenook	16,539
Police Station	1,489
Recreation Center	358
Senior Center	31,527

Based on the results of this project, there are a number of possible improvements that may be valuable to other organizations working to install water efficient fixtures into public and/or commercial facilities. In general, those facilities with high use, shared shower facilities achieve the most cost-effective benefits as illustrated by the cost per AF observed at the Recreation Center and the Police Station. Conversely, the costs of replacing personal use toilets such as in the Senior Center are the most expensive water use reductions. For this reason, future retrofits conducted by the City (and for that matter by the State) should focus on high-use, shared bathroom facilities such as those found in bars, restaurants, institutional facilities, etc.

The audits conducted as part of this project were found to be useful in helping to identify City-based customers that would benefit from future retrofits in a cost-effective manner.

Based on the cost-benefit analyses conducted for each individual facility, recommended retrofits and upgrades have been identified for nearly all of the audited commercial facilities – with the exception of the Bromley Lane Car Wash (where upgrades and improvements require a substantial cost without the

desired rate of return related to water savings).[3] As can be seen in Table 7, the majority of the recommendations relate to retrofitting faucet aerators in restaurants and other commercial facility bathrooms.

Toilets and urinal replacements were found to be cost-effective for high water use bars and restaurants (e.g., Billie's Café, Jerry's, Lonestar, Taco Bell, and Walmart). Replacement of toilets and urinals in other locations would reduce customer water demand; however the water savings did not justify the expense of the installation. Also note that at some of the facilities toilets are configured as flushing values and not tank toilets. Toilets configured as flushing values are more expensive to replace and therefore were not found to be cost effective.

Table 7: Summary of Recommendations by Fixture/Appliance Type

Fixture Type	Number	Annual Water Savings (AF)	Cost to Implement ($)	Cost of Water Savings to the City ($/AF)
Faucet Aerators	214	5.6	1,500	250
Toilets and Urinals	17	1.0	6,600	6,600
Showerheads	36	1.0	1,550	1,550
Washing Machines	5	0.4	4,625	11,500
Leaks	2	0.9	1,600	1,850

Table 7 also indicates that the following improvement may be worth considering:

- Washing machines which are located in high use areas (Brighton Terrace Apartments and the Beauty Shop at Walmart) are worth replacing with high-efficiency Energy Star appliances since these machines are used multiple times on a daily basis.
- Leaks at the VFW Hall and Walmart should be evaluated, located, and where possible, repaired.

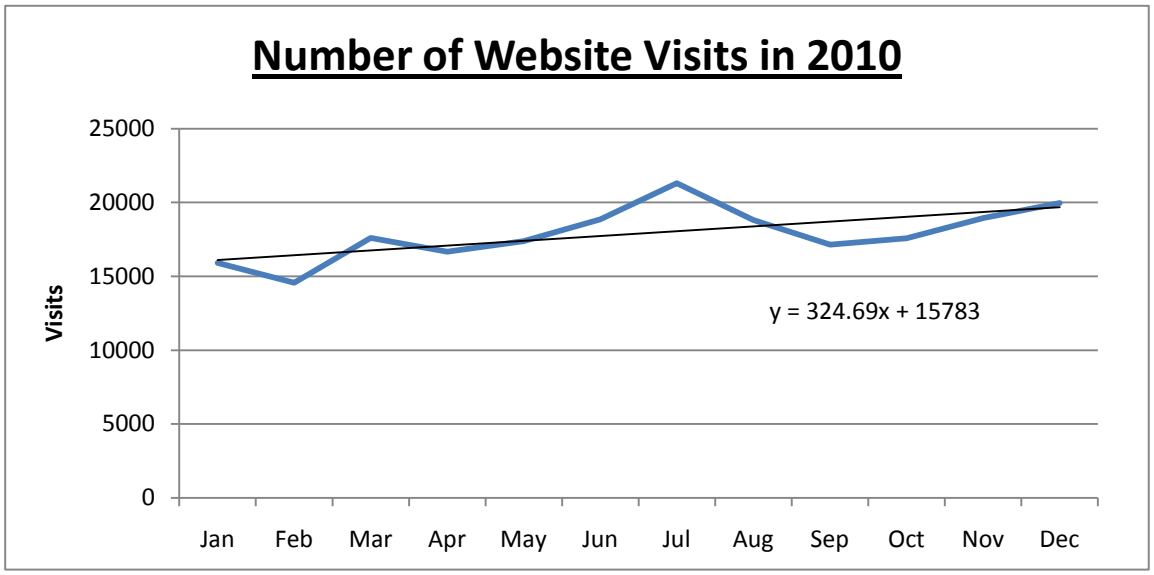
Implementation of these recommendations could be completed for about $5,000 for the showerheads and faucet aerators (including data collection and reporting) saving up to 7 AF. Toilet replacements at a cost of about $8,000 (including data collection and reporting) would save an additional 1 AF.

[3] Additional details regarding the recommendations for individual facilities can be found in Appendix C.

Appendix A

City of Brighton Website Traffic Information

Month	Unique visitors	Number of visits	Pages	Hits	Bandwidth
Jan 2010	9780	15917	98740	192038	11.94 GB
Feb 2010	9048	14573	89566	166076	10.45 GB
Mar 2010	10588	17594	123199	214658	13.56 GB
Apr 2010	10149	16662	138467	229381	12.50 GB
May 2010	10799	17383	133248	218207	12.55 GB
Jun 2010	11683	18851	136367	235619	13.69 GB
Jul 2010	13526	21301	146985	252093	17.43 GB
Aug 2010	11260	18805	139581	228410	18.25 GB
Sep 2010	10252	17152	129420	205980	15.65 GB
Oct 2010	9806	17571	121726	196123	14.06 GB
Nov 2010	10126	18938	131402	213284	15.02 GB
Dec 2010	10723	19969	128669	210139	15.01 GB
Total	127740	214716	1517370	2562008	170.11 GB



Appendix B

Example Signage Used to Highlight Fixture Replacements

Saving Water and Energy in our Home Town.

BY USING THE HIGH-EFFICIENCY WATER FIXTURES IN THIS FACILITY, TOGETHER WE ARE HELPING OUR COMMUNITY.

Helping to Save 110,000 GALLONS OF WATER *(Per Month)*

And to reduce Carbon Emissions associated with reduced hot water use by 10 TONS OF CO_2 *(Per Month)*

– Thank You!

Brought to this facility through a partnership between the City of Brighton and the Colorado Water Conservation Board

CITY OF BRIGHTON

Saving Water and Energy in our Home Town.

BY USING THE HIGH-EFFICIENCY WATER FIXTURES IN THIS FACILITY, TOGETHER WE ARE HELPING OUR COMMUNITY.

Helping to Save 80,000 GALLONS OF WATER *(Per Month)*

And to reduce Carbon Emissions associated with reduced hot water use by 9 TONS OF CO_2 *(Per Month)*

– Thank You!

Brought to this facility through a partnership between the City of Brighton and the Colorado Water Conservation Board

CITY OF BRIGHTON

Saving Water and Energy in our Home Town.

BY USING THE HIGH-EFFICIENCY WATER FIXTURES IN THIS FACILITY, TOGETHER WE ARE HELPING OUR COMMUNITY.

Helping to Save 6,000 GALLONS OF WATER *(Per Month)*

And to reduce Carbon Emissions associated with reduced hot water use by 1.2 TONS OF CO_2 *(Per Month)*

– Thank You!

Brought to this facility through a partnership between the City of Brighton and the Colorado Water Conservation Board

CITY OF BRIGHTON

Saving Water and Energy in our Home Town.

BY USING THE HIGH-EFFICIENCY WATER FIXTURES IN THIS FACILITY, TOGETHER WE ARE HELPING OUR COMMUNITY.

Helping to Save 4,000 GALLONS OF WATER *(Per Month)*

And to reduce Carbon Emissions associated with reduced hot water use by 1/3 TONS OF CO_2 *(Per Month)*

– Thank You!

Brought to this facility through a partnership between the City of Brighton and the Colorado Water Conservation Board

CITY OF BRIGHTON

Saving Water and Energy in our Home Town.

BY USING THE HIGH-EFFICIENCY WATER FIXTURES IN THIS FACILITY, TOGETHER WE ARE HELPING OUR COMMUNITY.

Helping to Save 50,000 GALLONS OF WATER *(Per Year)*

And to reduce Carbon Emissions associated with reduced hot water use by 1 TON OF CO_2 *(Per Year)*

– Thank You!

Brought to this facility through a partnership between the City of Brighton and the Colorado Water Conservation Board

CITY OF BRIGHTON

Appendix C

Commercial and Residential Water Audit Program

CITY OF BRIGHTON

Commercial and Residential Water Audit Program

September 2010

GREAT WESTERN INSTITUTE

look for WaterSense Meets EPA Criteria

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Introduction

Great Western Institute was retained by The City of Brighton to conduct SMART WATER Audits in order to help local businesses and residential customers better understand their water use, and to support evaluations that will be used to improve customer water use efficiency, as appropriate. The audits, conducted from March to August 2010, were performed as part of the grant awarded by the Colorado Water Conservation Board (CWCB) to the City and focused on characterizing water use for individual customers within the following three categories of customer type:

- Residential;
- Commercial; and
- Irrigators (i.e., Home Owner Associations (HOAs) that manage the irrigation of outdoor turf areas in residential developments).

Note that the water audits were conducted as part of the implementation of the City's recently updated, and CWCB approved, Water Conservation Plan. The water conservation measures and programs selected by the City to implement in its Water Conservation Plan include a wide range of technical and educational activities – one of which includes the water audits.

Audits were conducted at those facilities listed in Tables 1, 2 and 3. Specifically water audits were performed at ten restaurants and eight other commercial facilities, five HOAs and three residences. A brief "SMART WATER Audit Report" for each of the audited customers is attached to this report for distribution to each customer.

This report contains an overview of the methodology used to conduct the audits and a summary of the overall findings. Recommendations related to future implementation efforts on the City's part are also included.

Methodology

The SMART WATER Audit Program was initiated in February 2010. The locations for these audits were selected based on a review of water use data for the period January 2008 to December 2009. Locations were selected based on three key criteria: observed high water use, age of the facility (audits were preferentially conducted in the City's oldest restaurants and bars), and customer interest in having the audits performed. Once the list of customers was developed using these criteria, contact was made to characterize customer interest and, when possible, the site visit for the audit was scheduled.

A summary of the customers that were audited, the date of the audit and other relevant information related to the audit is provided in Tables 1, 2 and 3, for commercial facilities, HOAs and residences, respectively. The methodology for auditing each of these facility types is provided below.

Table 1: Commercial Facility Audits

Facility Name	Address	Account Number	Date Audited	Average Winter Time Water Use (gallons)	Outdoor Irrigation Y or N
Restaurants					
Billie's Cafe	1830 E. Bridge St.	31.0150.0.2	3/17/2010	31,267	N
Brighton Bar	245 S. Main St.	26.0440.0.2, 26.0435.0.4	3/17/2010	6,714	N
Bubba Chinos	201 S. Main St.	26.0410.0.2	3/172010	7,087	N
Chili's	2211 Prairie Ctr. Pkwy	15.5002.0.1	2/24/2010	127,500	N
Jerry's Bar and Restaurant	130 N. Main St.	47.515.0.2	3/17/2010	15,400	N
Jordinalli's Bar	25 N. Main St.	47.0395.0.1, 47.0400.0.1	3/17/2010	30, 875	N
La Estrellita's	45 N. Main St.	47.0370.0.1	3/17/2010	76,250	N
Lone Star	305 Pavilion Pl.	26.0538.0.1	2/24/2010	90,571	N
Mojo's	174 S. Main St.	47.0591.0.1	3/17/2010	45,909	N
Taco Bell	2121 Prairie Center Pkwy	18.2001.3.1	4/2/2010	44,571	Y
Other					
Brighton Care Center	2025 Egbert St.	51.0260.0.1	4/2/2010	386,636	Y
Brighton Terrace	101 W. Egbert St.	27.0015.0.5*.4.3; 27.0020.0.5*.4.3; 27.0025.0.5*.4.3	4/2/2010	180,000	N
Colorado Cinema	250 Pavilion Pl.	26.0536.0.1	2/24/2010	65,929	N
Cottonwood Care Center	2311 E. Bridge St.	33.0065.1.1	4/2/2010	380,071	N
Eastgate	3030 E. Bridge St.	31.0005.1.1	2/24/2010	2,053,773	Y
VFW	161 N. Main St.	47.0285.0.1, 47.0280.0.1	3/17/2010	16,667	Y
Walmart	60 W. Bromley Ln.	26.0010.0.1	2/24/2010	221,250	N

Commercial Facilities

Commercial facilities that exhibit high water use in the City include:

- Selected restaurants and bars;
- A Car wash;
- A big-box retail store;
- Two extended care facilities (for handicapped and/or elderly citizens);
- A movie house;
- The VFW facility;
- An apartment building; and
- A mobile home park.

Site visits were used to collect relevant information regarding water use practices and characteristics at each individual facility. For example, at restaurants, information regarding the number and flush volumes of all toilets and urinals were collected, along with the flow rates of all sinks in both the bathroom and kitchen. Information characterizing water use in the dishwashing and food preparation area were also collected. For those facilities with a single tap that provides water for both indoor and outdoor use, data was collect to evaluate outdoor irrigation efficiency, as well (i.e., irrigated area in square feet). Similar data was collected at each of the other commercial facilities to characterize both indoor and outdoor water use.

Indoor Water Use

An inventory of water using fixtures and appliances was developed for each audited facility and is included in the brief report for each facility provided as attachments to this report. The inventories included any special water uses that each facility had including, but not limited to, hot tubs and pools, laundry facilitates, air cooling devices, etc.

Once the water use data was collected, a water use "model" was developed for each of the subject facilities. The water use model was utilized to estimate facility-specific water use based on the observed average and maximum monthly wintertime water use for the period January 2008 to December 2009. The model was developed using the water use inventory and was calibrated to reproduce observed average and maximum daily water use based on the number of uses for each fixture and appliance, as well as the typical owner-reported water use for items such as hot tubs, pools, etc. Ice machine water use was estimated using the certified product directory maintained by the Air-Conditioning, Heating and Refrigeration Institute (AHRA). Water use for the laundry facilities was estimated using the manufacturers' specification sheets available based on internet research and/or information available from the EPA Energy Star program. Other water uses (e.g., kitchen sinks, in-line dishwashers, etc.) were estimated based on engineering experience and/or discussions with facility staff. Both hot and cold water use was also estimated for each facility using the water model.

Once the water use model was calibrated to the average and maximum day wintertime water use, it was used to estimate potential future water savings associated with installing the following water saving fixtures and/or appliances, customized based on facility type and water use:

High Efficiency Toilet – 1.28 gallons per flush
High Efficiency Urinal – 0 gallons per flush
Low Flow Showerhead – 1.5 gallons per minutes
Low Flow Sink Aerator – 0.5 gallons per minute
High Efficiency Washing Machine (to replace top loading machines) – 18 gallons per load

No estimates were made to upgrade commercial washing machines or commercial car wash facilities.

The calibrated water use model with the appropriate number and type of water saving fixtures and appliances was then employed to estimate future water and energy savings for each audited facility. Total water and energy savings per facility were then calculated, along with an estimate of the average payback period for each type of water saving device. The cost of the replacement water and the avoided treatment and distribution costs to the City (based on the water saved for each facility) were also calculated.

The calibrated water use model and the cost benefit analysis developed for each audited facility is included in each of the Commercial Facility SMART WATER Audit Reports attached to this report.

Outdoor Water Use

For those commercial facilities that had outdoor water use, an evaluation was performed to determine if seasonal irrigation occurred at an appropriate level based on a comparison of applied irrigation to estimated evapotranspiration (ET) over an irrigated area. Irrigated area for each facility that performed outdoor irrigation was collected during the audit process by measuring the turf area and verifying irrigated area using aerial photography. Actual summertime ET was estimated using the Northern Colorado Water Conservancy District's Turf Irrigation Management (TIM) Program, which utilizes the 1985 Hargreaves equation for a given location and weather condition (i.e., based on daily temperature and precipitation data). Daily weather data for the summers of 2008 and 2009 were obtained from the National Oceanic and Atmospheric Administration (NOAA).

The comparison of outdoor irrigation to estimated ET is included in each of the Commercial Facility SMART WATER Audit Reports attached to this report, as appropriate.

Table 2: Summary of HOA Audits

HOA Name	Address of Tap	Account Number	2009 Total Summertime Water Use (gallons)	Irrigated Acres (sq. ft.)
Brighton Crossing-Water Tower Park	145S 45th Avenue	37.2039.6.1	58,000	76,962.5
	4502 E. Bridge St.	37.2039.4.1	3,159,000	76,962.5
Total			**3,217,000**	**153,925**
Brighton Crossing-Fountain Park	21 N. Prairie Falcon Parkway	37.0012.0.1	1,817,000	193,200
	5225 Longs Peak St.	37.0509.0.1	2,079,000	193,200
Total			**3,896,000**	**386,400**
Crescent Village	2608-2610 Egbert St.	31.0031.0.1	192,000	27,250
	2502-2506 Egbert St.	31.0038.0.1	522,000	27,250
	2518-2520 Egbert St.	31.0039.0.1	877,000	27,250
	2521-2523 Egbert St.	31.0044.0.1	463,000	27,250
Total			**2,054,000**	**109,000**
Indigo Trails	1411 Red Poppy Way	29.4811.0.1	582,000	126,669
	1529 Wildflower Dr.	29.4575.0.1	1,260,000	126,669
Total			**1,842,000**	**253,338**
Platte River Ranch	863 Mockingbird St.	29.0187.0.1	90,000	35,333
	986 Canary Ct.	29.2248.0.1	360,000	35,333
	901 Mockingbird St.	29.0547.0.1	608,000	35,333
Total			**1,058,000**	**106,000**

HOAs

Audits for the five HOAs were conducted to determine whether or not irrigation was applied at a rate consistent with estimated ET for the 2008 and 2009 summer seasons. Irrigated area for each HOA was estimated based on conversations with the HOA property managers, maps and other information that was provided by the property managers; which was then verified using aerial photography. Actual summertime ET was estimated using the Northern Colorado Water Conservancy District's Turf Irrigation Management (TIM) Program, which utilizes the 1985 Hargreaves equation for a given location and weather condition (i.e., based on daily temperature and precipitation data). Daily weather data for the summers of 2008 and 2009 were obtained from the National Oceanic and Atmospheric Administration (NOAA).

The comparison of outdoor irrigation to estimated ET is included in each of the HOA SMART WATER Audit Reports attached to this report.

Table 3: Summary of Residential Audits

Residential Property	Address	Account Number	Date Audited	Average Monthly Wintertime Use (gallons)	Peak Summertime Monthly Use (gallons)*
Gossert	279 Birch Ave	27.0745.0.1	4/2/2010	5,167	28,000
Morales	209 S. 13th Ave	13.0525.0.3	8/25/2010	4,909	88,000
Hansen	283 N. 9th Ave	45.0430.0.4	8/25/2010	1,308	16,000

*Based on water use in the summertime of 2008

Residential

Residential audits were conducted to characterize both indoor and outdoor water use. During the site visit, information was collected to characterize residential water use, including the number and flush volume of all toilets, flow rate of all showers and faucets, make and model of all washing machines and dishwashers, and a listing of any other water uses on the premises (e.g., swamp cooler, etc.).

Outdoor watering practices were also characterized, including the make and model of the irrigation controller, the number of zones, and the duration and timing of set irrigation intervals, if available. The data collected during the site visit was organized into a water use inventory for each home.

Indoor Water Use

As with the commercial audits, a water use model was configured and calibrated against observed average and maximum wintertime use to identify how and where water uses occur in each residence. The calibrated model was then adjusted to incorporate potential water saving fixtures and appliances in a manner consistent with the commercial audit discussion. The calibrated water use model with the appropriate number and type of water saving fixtures and appliances was then employed to estimate future water and energy savings for each audited home. Total water and energy savings per home were then calculated, along with an estimate of the average payback period for each type of water saving device. The cost of the replacement water and the avoided treatment and distribution costs to the City (based on the water saved for each facility) were also calculated.

The calibrated water use model and the cost benefit analysis developed for each audited residence is included in each of the Residential SMART WATER Audit Reports attached to this report.

Outdoor Water Use

Outdoor water use at each residence was performed to determine if seasonal irrigation occurred at an appropriate level based on a comparison of applied irrigation to estimated evapotranspiration (ET) over an irrigated area. Irrigated area for each home was collected during the audit process by measuring the turf area and verifying irrigated area using aerial photography. Actual summertime ET was estimated using the Northern Colorado Water Conservancy District's Turf Irrigation Management (TIM) Program, which utilizes the 1985 Hargreaves equation for a given location and weather condition (i.e., based on daily temperature and precipitation data). Daily weather data for the summers of 2008 and 2009 were obtained from the National Oceanic and Atmospheric Administration (NOAA).

The comparison of outdoor irrigation to estimated ET for each audited home is included in each of the Residential SMART WATER Audit Reports attached to this report.

Reporting

A SMART WATER Report was developed for each audited property presenting the following:

- An inventory of facility/residence water uses;
- The site specific indoor water use model;
- Cost/benefit analysis for potential future water savings;
- Time history of customer monthly water use in 2008 and 2009; and
- For those properties with outdoor water use, a comparison of irrigation water application rate to estimated summertime ET for 2008 and 2009.

A SMART WATER Report for each audited property is attached. Each report is suitable for delivery to each individual property owner or manager for their consideration and use.

Summary of Results and Recommendations

Based on the SMART WATER audit data collection and subsequent analyses, various types of fixture and appliance retrofits and replacement opportunities were identified that would improve customer water use efficiency. The facility-specific improvements are detailed in the reports prepared for each individual customer that was audited (see attachments). The facility-specific improvements included a wide range of fixture and appliance upgrades such as:

- Installing high-efficiency toilets and urinals;
- Replacing faucet aerators and showerheads with low flow equivalents; and
- Replacing clothes washing machines with Energy Star washing machines.

In addition, numerous ongoing leaks and outdoor irrigation inefficiencies were identified that may require additional characterization and repair.

Noteworthy is that not all the identified upgrades and repair opportunities are worthy of implementing, depending on facility-specific water use characteristics, and the nature and quality of the existing fixtures. For this reason, the water models that were developed to characterize individual customer water use practices included cost-benefit assessments that were used to estimate the rate of future water savings, and whenever appropriate, energy savings, such that cost benefit analyses could be prepared from the perspective of both the customer (through reduced operating costs) and the City (through reduced replacement water costs, and treatment and delivery costs).

The resulting cost benefit analyses were used to identify the most cost-effective retrofit and replacement opportunities associated with the audited commercial facilities, as presented in Table 4. The listings of recommendations include any retrofit or replacement that would have a payback period of less than 6 years for the customer. Leaks that were identified during performance of the audits are also included in the recommendations.

Note that the audits did not identify any specific upgrades or improvements for the residential customers beyond the replacement of showerheads and faucet aerators in homes (which was known before the audits were conducted). This was due the fact that for residential settings, the replacement of toilets and/or washing machines are not as cost-effective as in commercial settings where fixture and appliance use is substantially higher.

With respect to outdoor irrigation practices at the audited commercial facilities, homes and HOAs, it appear that irrigation is occurring at an application rate that is consistent with the estimated ET for each of the years evaluated (i.e., 2008 and 2009).[1]

[1] The exception is the irrigation at the Gossert's home, which appears to be high, but since they self-adjust their irrigation controller clock, the over application of irrigation water can be adjusted by the homeowner without cost to either the customer or the City.

Table 4: Summary of Recommended Retrofits and Replacements in Commercial Facilities

Location	Improvements	# of Fixtures	Estimated Cost of Improvements	Estimated Water Savings (gpy)	Cost of Water Savings Per Acre-Foot
Restaurants					
Billie Cafe	Toilets	3	1,131	32,940	
	Urinal	1	396	21,600	
	Bathroom Faucets	2	13	9,180	
	Kitchen/ Bar Faucets	2	13	5,400	
			$ 1,553	**69,120**	**$ 7,300**
Brighton Bar	Bathroom Faucets	3	20	4,320	
	Kitchen/ Bar Faucets	5	33	5,850	
			$ 53	**10,170**	**$ 1,700**
Bubba Chino's	Bathroom Faucets	2	13	17,424	
	Kitchen/ Bar Faucets	2	13	2,178	
			$ 26	**19,602**	**$ 400**
Chili's	Urinals	2	792	43,800	
	Bathroom Faucets	2	13	63,291	
	Kitchen/ Bar Faucets	6	40	167,170	
			$ 845	**274,261**	**$ 1,000**
Jerry's	Toilets	3	1,131	32,688	
	Urinal	1	396	9,000	
	Bathroom Faucets	2	13	21,060	
	Kitchen/ Bar Faucets	1	7	5,400	
			$ 547	**68,148**	**$ 7,400**
Jordinalli's	Bathroom Faucets	5	32	50,808	
	Kitchen/ Bar Faucets	2	13	4,015	
			$ 45	**54,823**	**$ 250**
La Estrellita's	Bathroom Faucets	2	13	17,820	
	Kitchen/ Bar Faucets	3	20	12,600	
			$ 33	**30,420**	**$ 350**
Lonestar	Urinals	2	792	25,200	
	Kitchen/ Bar Faucets	5	33	15,480	
			$ 825	**40,680**	**$ 6,600**
Mojo's	Bathroom Faucets	6	40	25,272	
	Kitchen/ Bar Faucets	5	33	10,260	
			$ 73	**35,532**	**$ 700**
Taco Bell	Urinal	1	396	25,550	
	Bathroom Faucets	4	26	129,600	
			$ 422	**155,150**	**$ 2,300**

Table 4 (continued): Summary of Recommended Retrofits and Replacements in Commercial Facilities

Location	Improvements	# of Fixtures	Estimated Cost of Improvements	Estimated Water Savings (gpy)	Cost of Water Savings Per Acre-Foot
Other					
Brighton Care Center	Bathroom Faucets	34	225	466,000	
	Kitchen Faucets	1	7	7,000	
	Other Faucets	1	7	6,000	
			$ 239	**479,000**	**$ 163**
Brighton Terrace	Bathroom Faucets	36	238	378,000	
	Showerheads	36	1,548	328,500	
	Washing Machines	4	3,700	87,600	
			$ 5,486	**794,100**	**$ 2,250**
Bromley Lane Car Wash	None recommended				
Colorado Cinema	Kitchen Faucets	2	13	3,650	
			$ 13	**3650**	**$ 1,160**
Cottonwood Care Center	Bathroom Faucets	58	380	327,000	
	Kitchen Faucets	3	20	13,700	
			$ 400	**340,700**	**$ 390**
Eastgate	Bathroom Faucets	646	4,200	4,398,000	
	Showerheads	428	18,400	2,343,000	
			$ 22,600	**6,741,000**	**$ 1,100**
VFW	Bathroom Faucets	8	53	10,000	
	Kitchen Faucets	2	13	2,000	
	Leak	1	800	105,000	
			$ 866	**117,000**	**$ 2,400**
Walmart	Urinals	4	1,600	132,000	
	Bathroom Faucets	1	7	11,500	
	Kitchen Faucets	6	40	21,900	
	Other Faucets	3	20	5,700	
	Washing Machine	1	925	35,000	
	Leak	1	800	180,000	
			$ 3,400	**386,100**	**$ 2,800**

Recommendations

Based on the cost-benefit analyses conducted for each individual facility, recommended retrofits and upgrades have been identified for nearly all of the audited commercial facilities – with the exception of the Bromley Lane Car Wash (where upgrades and improvements require a substantial cost without the desired rate of return related to water savings). As can be seen in Table 5, the majority of the recommendations relate to retrofitting faucet aerators in restaurants and other commercial facility bathrooms.

Toilets and urinal replacements were found to be cost-effective for high water use bars and restaurants (e.g., Billie's Café, Jerry's, Lonestar, Taco Bell, and Walmart). Replacement of toilets and urinals in other locations would reduce customer water demand; however the water savings did not justify the expense of the installation. Also note that at some of the facilities toilets are configured as flushing values and not tank toilets. Toilets configured as flushing values are more expensive to replace and therefore were not found to be cost effective.

Table 5: Summary of Recommendations by Fixture/Appliance Type

Fixture Type	Number	Annual Water Savings (AF)	Cost to Implement ($)	Cost of Water Savings to the City ($/AF)
Faucet Aerators	214	5.6	1,500	250
Toilets and Urinals	17	1.0	6,600	6,600
Showerheads	36	1.0	1,550	1,550
Washing Machines	5	0.4	4,625	11,500
Leaks	2	0.9	1,600	1,850

There are a few other noteworthy recommendations, as follows:

- Washing machines which are located in high use areas (Brighton Terrace Apartments and the Beauty Shop at Walmart) are worth replacing with high-efficiency Energy Star appliances.
- Leaks at the VFW Hall and Walmart should be evaluated, located, and where possible, repaired.

There are a number of key observations that should be highlighted:

- The water savings potential at the Eastgate Mobile Home Park are substantial since this location houses over 400 individual homes. Estimates indicate that perhaps 6.7 million gallons of water could be saved a year at this location. This represents the single largest potential water savings in the City, based on the audits conducted.

- Potential water savings are possible for less than $1,000 per acre-feet at numerous locations in the City including restaurants (Bubba Chino's, Jordinalli's, La Estrellita's, and Mojo's) and elder care facilities (Brighton Care and Cottonwood Care). These savings are associated entirely with the replacement of faucet aerators in bathrooms and in kitchen and bar hand wash areas.
- If all the **faucet aerators** listed in the recommendations (Table 5) are replaced, the City would potentially save around 5.5 acre-feet of water per year at a cost of about $1,500 or at about $250 per acre-foot of reduced annual water demand (not including the potential savings at Eastgate). This recommendation can be implemented using faucet aerators that are currently on hand at the City (although funding for tracking the water savings associated with this retrofit, and reporting to the State are not currently available).

It should also be noted that the City has at least one other important opportunity to reduce **future** customer water demand. Current City requirements for new developments do not promote Xeriscape and native plantings in conjunction with green spaces (parks, storm water detention facilities, etc.). Changes to planning and land use polices at the City could substantially reduce future water demand. Some of the HOAs audited were less than 5 years old. More HOAs will be developed in the coming years. Having ordinances that require native plantings and no turf areas, especially in areas without foot traffic or within storm water quality facilitates could substantially reduce future water demand expected by the City. Noteworthy is the many commercial customers within the City's service area are installing native plants and xeric landscapes to reduce outdoor watering requirements. It is expected that more xeric landscapes will be constructed in the City as landscapes mature and water rates increase.

SMART WATER Audit Reports

Commercial Facilities

Restaurants

SMART WATER Audit Report

Billie's Café

Overview

The City working with Great Western Institute, conducted a SMART WATER Audit of your restaurant at 1830 E. Bridge Street in Brighton on March 17, 2010. The SMART WATER Audit was conducted as part of the City's audit project, whereby a select group of local businesses volunteered to help The City complete a commercial audit program intended to assist local businesses improve water use efficiency and in doing so, reduce water and energy operational costs.

The inventory of Billie's Café water using fixtures and appliances is provided in Table 1. Figure 1 presents the monthly water use at Billie's Café in 2008 and 2009.

Water Use Summary

Billie's Café was built in the 1970's. Similar to many restaurants built before 1994, Billie's Café has plumbing fixtures that should be updated to improve water use efficiency, thus saving water and energy costs. The sink faucets in the men's and women's bathrooms use about 1 gallon per minute. Changing these aerators would cost about $6 per sink and could result in a water and energy savings of approximately $76 dollars per year per sink.

The three toilets at Billie's Café use about 2.5 gallons per flush. By installing new Water Sense approved high efficiency toilets which use 1.28 gallons per flush, the restaurant would spend $1,131 with a total water savings of approximately $270 per year resulting in a payback period of about 4 years. In addition, replacing the current 1 gallon per flush urinal with a Water Sense approved high efficiency waterless urinal, with an initial cost of about $396; the restaurant could see a cost savings of approximately $177 per year, resulting in a payback period of about 2 years.

Billie's Café does utilize a pre-rinse spray nozzle that helps to reduce kitchen water use. They also utilize air cooled ice makers which also help to reduce water use. Billie's Café has two kitchen hand wash sinks that use approximately 2 gallons per minute. Replacing the aerators in these sinks with 0.5 gallon per minute faucet aerators would cost about $6 per sink and could save a combined water and energy savings of about $45 per sink per year.

Billie's Café indicated that they do not have any outdoor irrigation therefore no evaluation was performed to characterize outdoor water use for this property.

The water saving measures described above are listed at the bottom of attached Table 2. If all the recommended water saving fixtures were to be implemented, it would cost approximately $1,553 and may bring a reduction of about $690 in annual water and energy costs.

Table 1 - Inventory of Billie's Cafe Water Using Fixtures and Appliances

Location	**Billie's Café**							
Address	1830 E. Bridge St							
Contact	Lisa/Liz; Spoke with Ling							
Date	3/17/2010							
Type of Business	Restaurant							
Account Number	31.0150.0.2							
Notes								
Built Date	1970's							
# of Employees	Approximately 12							
# of Customers	Weekends 350; weekdays 180							
Toilets	1.28 gpf	1.6 gpf	2.5 gpf	3.5 gpf				Comment
Mens			1					
Womens			2					
Urinals	0.5 gpf	1 gpf	1.5 gpf					
Mens			1					Old fixture
Sinks	0.5 gpm	1 gpm	2 gpm	2.5 gpm	3 gpm	5 gpm	6 gpm	
Pots and Pans						3		1 - never used, 1 - used to soak
Kitchen Handwash			2					
Bathroom Mens		1						
Bathroom Womens		1						
Mop Sink						1		used 2-4 times per day
Pre Risnse Spray						1		
Other Uses	Use	Make		Model		Capacity		
Ice machines								
		Manitowac						air cooled, smaller size
Steam Table								
						2'x10'		
Hot Water Heater								
		Rhem Rudd Universal		G91-200		91 gallons		
Dish Washer								
		Energy Mizer		CB-2		Ser: 143640		Busy; runs 7am-2pm
Refrigeration								
								Walk in - large
Freezer								
								Walk in - large
Cooling Towers								
								Make up unit; swamp cooler
Outdoor Irrigation	None							

Table 2 - Summary of Current Water Use and Potential Water Savings
Billie's Cafe Audit Summary

Maximum Use Calculation

Weekends 350; weekdays 180, 12 employees

		number	per use hot	per use cold	per use total		uses/day		subtotal gpd hot	subtotal gpd cold	subtotal gpd total	
Toilets												
	Mens	1		2.5	2.5	gpf	25	flushes	-	63	63	
	Womens	2		2.5	2.5	gpf	40	flushes	-	200	200	
Urinals												
	Mens	1		1.5	1.5	gpf	55	flushes	-	83	83	
Bathroom Sinks												
	Mens	1	0.5	0.5	1	gpm	12	minutes	24	24	48	
	Womens	1	0.5	0.5	1	gpm	6	minutes	12	12	24	
Kitchen Sinks: Pots and Pans		3	4	1	5	gpm	50	minutes	600	150	750	
Kitchen Handwash Sink		2	1	1	2	gpm	8	minutes	16	16	32	
Mop Sink		1	0	5	5	gpm	3	uses	-	15	15	
Other												
Ice Machine (Manitowac) Air Cooled		1		17.8	17.8	gp100#	3	100# Ice	-	53	53	
Dishwasher (Energy Mizer)		1	0	1.2	1.2	gpcycle	75	cycles	-	90	90	
Steam Table		1		12.47	12.47	gpuse	1	daily	-	12	12	
									652	**718**	**1,370**	**max day**
									observed		41,000	max month
											30	days at max
									observed		1,366.67	max day

Average Use Calculation

		number	per use hot	per use cold	per use total		uses/day		subtotal gpd hot	subtotal gpd cold	subtotal gpd total	
Toilets												
	Mens	1		2.5	2.5	gpf	15	flushes	-	38	38	
	Womens	2		2.5	2.5	gpf	30	flushes	-	150	150	
Urinals												
	Mens	1		1.5	1.5	gpf	40	flushes	-	60	60	
Bathroom Sinks												
	Mens	1	0.5	0.5	1	gpm	8.25	minutes	17	17	33	
	Womens	1	0.5	0.5	1	gpm	4.5	minutes	9	9	18	
Kitchen Sinks: Pots and Pans		3	4	1	5	gpm	40	minutes	480	120	600	
Kitchen Handwash Sink		2	1	1	2	gpm	5	minutes	10	10	20	
Mop Sink		1	0	5	5	gpm	2	uses	-	10	10	
Other												
Ice Machine (Manitowac) Air Cooled		1		17.8	17.8	gp100#	2	100# Ice	-	36	36	
Dishwasher (Energy Mizer)		1	0	1.2	1.2	gpcycle	60	cycles	-	72	72	
Steam Table		1		12.47	12.47	gpuse	1	daily	-	12	12	
									516	**533**	**1,049**	**aver day**
									observed		31,267	aver month
											30	days at avg
									observed		1,042.22	aver day

Table 2 - Summary of Current Water Use and Potential Water Savings
Billie's Cafe Audit Summary

Maximum Use Water Savings

	number	per use hot	per use cold	per use total		uses/day		subtotal gpd hot	subtotal gpd cold	subtotal gpd total		savings hot	savings cold	savings total
Toilets														
Mens	1		1.28	1.28	gpf	25	flushes	-	32	32		-	31	31
Womens	2		1.28	1.28	gpf	40	flushes	-	102	102		-	98	98
												-	-	-
Urinals												-	-	-
Mens	1		0	0	gpf	55	flushes	-	-	-		-	83	83
												-	-	-
Bathroom Sinks												-	-	-
Mens	1	0.25	0.25	0.5	gpm	12	minutes	12	12	24		12	12	24
Womens	1	0.25	0.25	0.5	gpm	6	minutes	6	6	12		6	6	12
												-	-	-
												-	-	-
Kitchen Sinks: Pots and Pans	3	4	1	5	gpm	50	minutes	600	150	750		-	-	-
												-	-	-
Kitchen Handwash Sink	2	0.25	0.25	0.5	gpm	8	minutes	4	4	8		12	12	24
												-	-	-
Mop Sink	1	0	5	5	gpm	3	uses	-	15	15		-	-	-
												-	-	-
Other												-	-	-
Ice Machine (Manitowac) Air Cooled	1		17.8	17.8	gp100#	3	100# Ice	-	53	53		-	-	-
Dishwasher (Energy Mizer)	1	0	1.2	1.2	gpcycle	75	cycles	-	90	90		-	-	-
Steam Table	1		12.47	12.47	gpuse	1	daily	-	12	12		-	-	-
								622	**477**	**1,099**	**max day**			
								observed		41,000	max month			
										37	days at max			
								observed		1,366.67	max day			

Average Use Water Savings

	number	per use hot	per use cold	per use total		uses/day		subtotal gpd hot	subtotal gpd cold	subtotal gpd total		savings hot	savings cold	savings total
Toilets														
Mens	1		1.28	1.28	gpf	15	flushes	-	19	19		-	18	18
Womens	2		1.28	1.28	gpf	30	flushes	-	77	77		-	73	73
												-	-	-
Urinals												-	-	-
Mens	1		0	0	gpf	40	flushes	-	-	-		-	60	60
												-	-	-
Bathroom Sinks												-	-	-
Mens	1	0.25	0.25	0.5	gpm	8.25	minutes	8	8	17		8	8	17
Womens	1	0.25	0.25	0.5	gpm	4.5	minutes	5	5	9		5	5	9
												-	-	-
												-	-	-
Kitchen Sinks: Pots and Pans	3	4	1	5	gpm	40	minutes	480	120	600		-	-	-
												-	-	-
Kitchen Handwash Sink	2	0.25	0.25	0.5	gpm	5	minutes	3	3	5		8	8	15
												-	-	-
Mop Sink	1	0	5	5	gpm	2	uses	-	10	10		-	-	-
												-	-	-
Other												-	-	-
Ice Machine (Manitowac) Air Cooled	1		17.8	17.8	gp100#	2	100# Ice	-	36	36		-	-	-
Dishwasher (Energy Mizer)	1	0	1.2	1.2	gpcycle	60	cycles	-	72	72		-	-	-
Steam Table	1		12.47	12.47	gpuse	1	daily	-	12	12		-	-	-
								495	**361**	**857**	**aver day**			
								observed		31,267	aver month			
										37	days at avg			
								observed		1,042.22	aver day			

Costs to Implement

	number	Hardware	Installation	Total	Pay Back	Water Savings (gpy)	Energy Savings (kWhr)	Total Cost Savings/yr	Total Cost Savings/yr/fixture
Toilet	3	$ 282	$ 95	$ 1,131	4.19 yrs	32,940	-	$ 270	$ 90
Urinal	1	$ 311	$ 85	$ 396	2.24 yrs	21,600	-	$ 177	$ 177
Bathroom Sink	2	$ 1.61	$ 5	$ 13	0.09 yrs	9,180	1,192	$ 153	$ 76
Kitchen Handwash Sinks	2	$ 1.61	$ 5	$ 13	0.15 yrs	5,400	701	$ 90	$ 45
				$ 1,553				$ 690	

AF Savings: 0.21 $/AF: $ 7,323

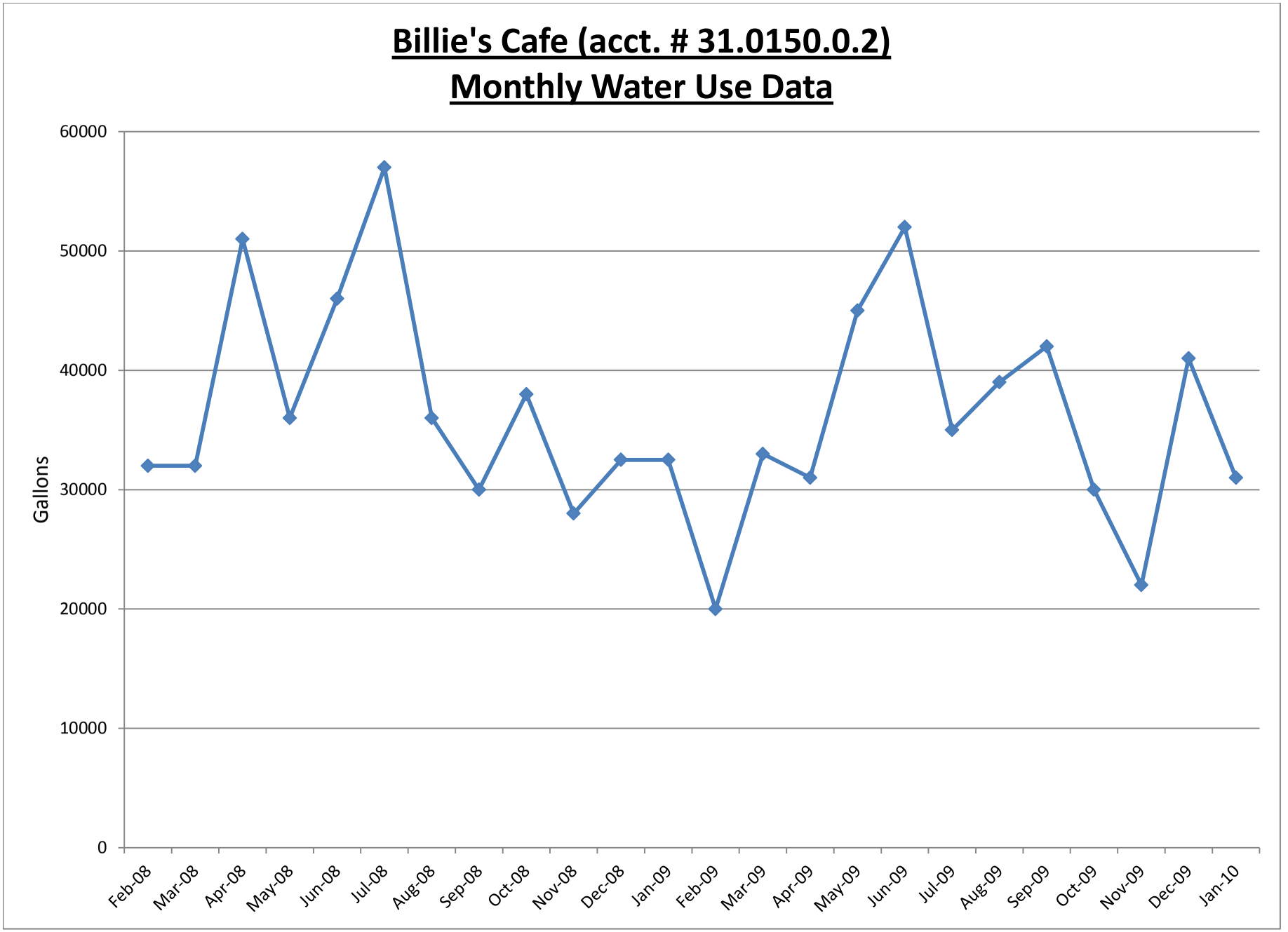
Replacement Water Cost* : $ 6,364

Avoided Cost** : $ 657

* Calculation based on $30,000 per AF

** Calculation based on $9.50/ 1000 gal

Cost Savings Assumptions: $8.50/1000 gal - cost of water and sewer, $0.065/kwh cost of energy


Billie's Cafe (acct. # 31.0150.0.2)
Monthly Water Use Data
Gallons
60000
50000
40000
30000
20000
10000
0
Feb-08
Mar-08
Apr-08
May-08
Jun-08
Jul-08
Aug-08
Sep-08
Oct-08
Nov-08
Dec-08
Jan-09
Feb-09
Mar-09
Apr-09
May-09
Jun-09
Jul-09
Aug-09
Sep-09
Oct-09
Nov-09
Dec-09
Jan-10

SMART WATER Audit Report

Brighton Bar

Overview

The City working with Great Western Institute, conducted a SMART WATER Audit of your bar and restaurant at 245 S Main St. in Brighton on March 17, 2010. The SMART WATER Audit was conducted as part of the City's audit project, whereby a select group of local businesses volunteered to help The City complete a commercial audit program intended to assist local businesses improve water use efficiency and in doing so, reduce water and energy operational costs.

The inventory of Brighton Bar water using fixtures and appliances is provided in Table 1. Figure 1 presents the monthly water use at Brighton Bar in 2008 and 2009.

Water Use Summary

Brighton Bar was built in the 1960's. Similar to many restaurants built before 1994, Brighton Bar has plumbing fixtures that should be updated to improve water use efficiency, thus saving water and energy costs. The sink faucets in the men's and women's bathrooms use about 2 gallons per minute. Changing these aerators would cost approximately $6 per sink and could result in a water and energy savings of approximately $72 per year.

The six toilets at Brighton Bar are 1.6 gallon per flush toilets. However, these toilets are flushing at approximately 2 gallons per flush, noting that customers report having to flush the toilets multiple times for each use. By installing new Water Sense approved high efficiency toilets which use 1.28 gallons per flush, the restaurant would spend $2,262 saving about $25 per year.

By replacing the three current 1 gallon per flush urinals with the Water Sense approved high efficiency waterless urinals, the initial cost would be $1,188. Brighton Bar could see a cost savings of approximately $9 per year per fixture resulting in a payback period of 77 years.

Brighton Bar does utilize a pre-rinse spray nozzle that helps to reduce kitchen water use. In addition, Brighton Bar utilizes air cooled ice makers which also help to reduce water use. Brighton Bar has five kitchen and bar hand wash sinks that use between 3 and 5 gallons per minute. Replacing the aerators in these sinks with 0.5 gallon per minute faucet aerators would cost about $6 per sink and could have a combined water and energy savings of about $20 per sink per year.

Brighton Bar indicated that they do not have any outdoor irrigation therefore no evaluation was performed to characterize outdoor water use for this property.

These water saving measures are listed at the bottom of attached Table 2. If all the recommended water saving fixtures were to be implemented, it would cost approximately $3,503 and may bring a reduction of about $222 in annual water and energy costs.

Table 1 - Inventory of Brighton Bar's Water Using Fixtures and Appliances

Location	**Brighton Bar**							
Address	245 S. main St.							
Contact	Donna							
Date	3/17/2010							
Type of Business	Restaurant							
Account Number	26.0440.0.2; 26.0435.0.4							
Notes								
Built Date	1960's							
# of Employees	4							
# of Customers	Weekdays 75/day; weekends 100 +							
Toilets	1.28 gpf	1.6 gpf	2.0 gpf	3.5 gpf				Comment
Mens		1						
Womens			5					Do not flush well, have to flush twice
Urinals	0.5 gpf	1 gpf	1.5 gpf					
Mens		3						
Sinks	0.5 gpm	1 gpm	2 gpm	2.5 gpm	3 gpm	5 gpm	6 gpm	
Pots and Pans						2		
Kitchen Handwash					3			
Bathroom Mens				1				
Bathroom Womens			2					
Bar Dish Sink							1	
Bar Handwash Sink					2			
Mop Sink					1			
Pre Risnse Spray						1		
Other Uses	Use	Make		Model		Capacity		
Ice machines								
		Scotsman		167529-26B				Water dripping from white pipe
Steam Table								
						3'x1'		doesn't work
Hot Water Heater								
						150 degrees		In basement, couldn't reach
Dish Washer								
		Energy Mizer		A2 SR: 0038				
Refrigeration								
		Kenmore Elite						
Cooling Towers								
								Air conditioner/ Swamp cooler
Outdoor Irrigation								
	None							

Table 2 - Summary of Current Water Use and Potential Water Savings
Brighton Bar Audit Summary

Maximum Use Calculation

Weekdays 75/day; weekends 100+, 4 employees

	number	per use hot	per use cold	per use total		uses/day	subtotal gpd hot	subtotal gpd cold	subtotal gpd total	
Toilets										
Mens	1		1.6	1.6	gpf	6 flushes	-	10	10	
Womens	5		2	2	gpf	6 flushes	-	60	60	
Urinals										
Mens	3		1	1	gpf	6 flushes	-	18	18	
Bathroom Sinks										
Mens	1	1.25	1.25	2.5	gpm	1.8 minutes	9	9	18	
Womens	2	1	1	2	gpm	0.9 minutes	7	7	14	
Kitchen Sinks: Pots and Pans	2	4	1	5	gpm	15 minutes	120	30	150	
Kitchen Handwash Sink	3	1.5	1.5	3	gpm	2 minutes	9	9	18	
Mop Sink	1	0	3	3	gpm	2 uses	-	6	6	
Bar Sink	1	3	3	6	gpm	10 minutes	30	30	60	
Bar Hand Sink	2	1.5	1.5	3	gpm	2 minutes	6	6	12	
Other										
Ice Machine (Scotsman) Air Cooled	2		17.8	17.8	gp100#	3 100# Ice	-	107	107	
Dishwasher (Energy Mizer)	1	0	1.2	1.2	gpcycle	20 cycles	-	24	24	
							181	**316**	**497**	**max day**
							observed		15,000	max month
									30	days at max
							observed		500.00	max day

Average Use Calculation

	number	per use hot	per use cold	per use total		uses/day	subtotal gpd hot	subtotal gpd cold	subtotal gpd total	
Toilets										
Mens	1		1.6	1.6	gpf	4 flushes	-	6	6	
Womens	5		2	2	gpf	2 flushes	-	20	20	
Urinals										
Mens	3		1	1	gpf	3 flushes	-	9	9	
Bathroom Sinks										
Mens	1	1.25	1.25	2.5	gpm	1.05 minutes	5	5	11	
Womens	2	1	1	2	gpm	0.3 minutes	2	2	5	
Kitchen Sinks: Pots and Pans	2	4	1	5	gpm	7.5 minutes	60	15	75	
Kitchen Handwash Sink	3	1.5	1.5	3	gpm	1.5 minutes	7	7	14	
Mop Sink	1	0	5	5	gpm	2 uses	-	10	10	
Bar Sink	1	3	3	6	gpm	5 minutes	15	15	30	
Bar Hand Sink	2	1.5	1.5	3	gpm	1 minutes	3	3	6	
Other										
Ice Machine (Scotsman) Air Cooled	2		17.8	17.8	gp100#	1 100# Ice	-	36	36	
Dishwasher (Energy Mizer)	1	0	1.2	1.2	gpcycle	10 cycles	-	12	12	
							92	**140**	**233**	**avg day**
							observed		6,714	avg month
									29	days at avg
							observed		223.81	avg day

Table 2 - Summary of Current Water Use and Potential Water Savings
Brighton Bar Audit Summary

Maximum Use Water Savings

	number	per use hot	per use cold	per use total		uses/day	subtotal gpd hot	subtotal gpd cold	subtotal gpd total		Savings hot	Savings cold	Savings total
Toilets													
Mens	1		1.28	1.28	gpf	6 flushes	-	8	8		-	2	2
Womens	5		1.28	1.28	gpf	6 flushes	-	38	38		-	22	22
											-	-	-
Urinals											-	-	-
Mens	3		0	0	gpf	6 flushes	-	-	-		-	18	18
											-	-	-
Bathroom Sinks											-	-	-
Mens	1	0.25	0.25	0.5	gpm	1.8 minutes	2	2	4		7	7	14
Womens	2	0.25	0.25	0.5	gpm	0.9 minutes	2	2	4		5	5	11
											-	-	-
											-	-	-
Kitchen Sinks: Pots and Pans	2	4	1	5	gpm	15 minutes	120	30	150		-	-	-
											-	-	-
Kitchen Handwash Sink	3	0.25	0.25	0.5	gpm	2 minutes	2	2	3		8	8	15
											-	-	-
Mop Sink	1	0	5	5	gpm	2 uses	-	10	10		-	(4)	(4)
											-	-	-
Bar Sink	1	3	3	6	gpm	10 minutes	30	30	60		-	-	-
											-	-	-
Bar Hand Sink	2	0.25	0.25	0.5	gpm	2 minutes	1	1	2		5	5	10
											-	-	-
Other											-	-	-
Ice Machine (Scotsman) Air Cooled	2		17.8	17.8	gp100#	3 100# Ice	-	107	107		-	-	-
Dishwasher (Energy Mizer)	1	0	1.2	1.2	gpcycle	20 cycles	-	24	24		-	-	-
							156	**253**	**409**	**max day**			
							observed		15,000	max month			
									37	days at max			
							observed		500	max day			

Average Use Water Savings

	number	per use hot	per use cold	per use total		uses/day	subtotal gpd hot	subtotal gpd cold	subtotal gpd total		Savings hot	Savings cold	Savings total
Toilets													
Mens	1		1.28	1.28	gpf	4 flushes	-	5	5		-	1	1
Womens	5		1.28	1.28	gpf	2 flushes	-	13	13		-	7	7
											-	-	-
Urinals											-	-	-
Mens	3		0	0	gpf	3 flushes	-	-	-		-	9	9
											-	-	-
Bathroom Sinks											-	-	-
Mens	1	0.25	0.25	0.5	gpm	1.05 minutes	1	1	2		4	4	8
Womens	2	0.25	0.25	0.5	gpm	0.3 minutes	1	1	1		2	2	4
											-	-	-
											-	-	-
Kitchen Sinks: Pots and Pans	2	4	1	5	gpm	7.5 minutes	60	15	75		-	-	-
											-	-	-
Kitchen Handwash Sink	3	0.25	0.25	0.5	gpm	1.5 minutes	1	1	2		6	6	11
											-	-	-
Mop Sink	1	0	5	5	gpm	2 uses	-	10	10		-	-	-
											-	-	-
Bar Sink	1	3	3	6	gpm	5 minutes	15	15	30		-	-	-
											-	-	-
Bar Hand Sink	2	0.25	0.25	0.5	gpm	1 minutes	1	1	1		3	3	5
											-	-	-
Other											-	-	-
Ice Machine (Scotsman) Air Cooled	2		17.8	17.8	gp100#	1 100# Ice	-	36	36		-	-	-
Dishwasher (Energy Mizer)	1	0	1.2	1.2	gpcycle	10 cycles	-	12	12		-	-	-
							78	**109**	**187**	**avg day**			
							observed		6,714	avg month			
									36	days at avg			
							observed		223.81	avg day			

Table 2 - Summary of Current Water Use and Potential Water Savings
Brighton Bar Audit Summary

Costs to Implement

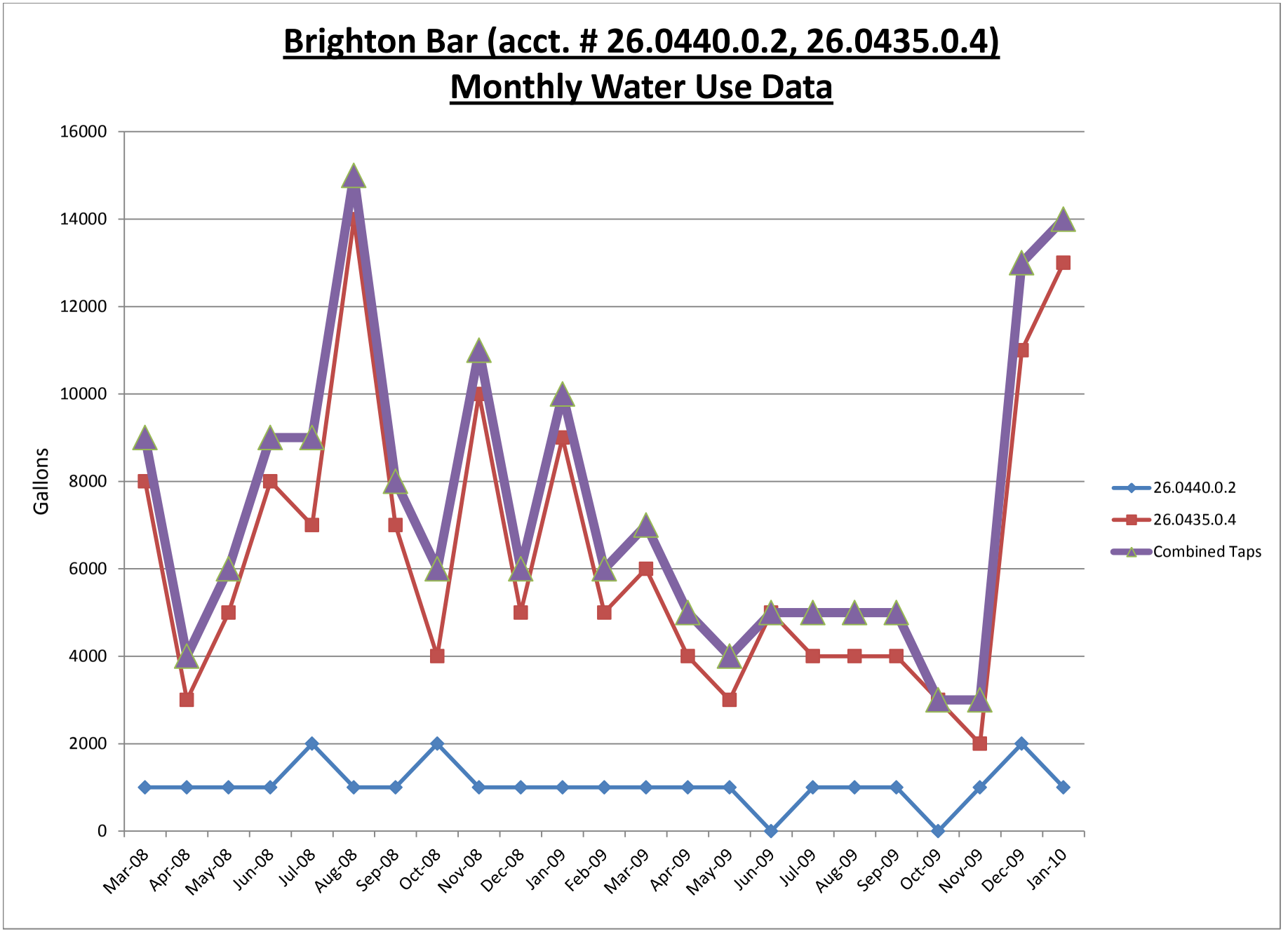
	number	Hardware	Installation	Total	Pay Back	Water Savings (gpy)	Energy Savings (kWhr)	Total Cost Savings/yr	Total Cost Savings/yr/fixture
Toilet	6	$ 282	$ 95	$ 2,262	153.16 yrs	3,053	-	$ 25	$ 4
Urinal	3	$ 311	$ 85	$ 1,188	77.30 yrs	3,240	-	$ 27	$ 9
Bathroom Sink	3	$ 1.61	$ 5	$ 20	0.27 yrs	4,320	569	$ 72	$ 24
Kitchen/ Bar Handwash Sinks	5	$ 1.61	$ 5	$ 33	0.34 yrs	5,850	770	$ 98	$ 20
				$ 3,503				$ 222.02	

AF Savings: 0.05 $/ AF: $ 69,333 Replacement Water Cost* : $ 1,235 Avoided Cost** : $ 127

* Calculation based on $30,000 per AF

** Calculation based on $9.50/ 1000 gal

Cost Savings Assumptions: $8.50/1000 gal - cost of water and sewer, $0.065/kwh cost of energy



GREAT WESTERN INSTITUTE

SMART WATER Audit Report

Bubba Chino's

Overview

The City working with Great Western Institute, conducted a SMART WATER Audit of your restaurant at 201 S Main St. in Brighton on March 17, 2010. The SMART WATER Audit was conducted as part of the City's audit project, whereby a select group of local businesses volunteered to help The City complete a commercial audit program intended to assist local businesses improve water use efficiency and in doing so, reduce water and energy operational costs.

The inventory of Bubba Chino's water using fixtures and appliances is provided in Table 1. Figure 1 presents the monthly water use at Bubba Chino's in 2008 and 2009.

Water Use Summary

Bubba Chino's was built in the 1970's. Similar to many restaurants built before 1994, Bubba Chino's has plumbing fixtures that should be updated to improve water use efficiency, thus saving water and energy costs. The sink faucets in both the upstairs and downstairs bathrooms use about 2.5 gallon per minute. Changing these aerators would cost approximately $6 per sink and may result in a water and energy savings of approximately $145 dollars per year per sink.

The upstairs toilet at Bubba Chino's uses about 1.6 gallons per flush and is used most often by customers. The downstairs toilet, used mostly by employees uses 3 gallons per flush. By installing new Water Sense approved high efficiency toilets which use 1.28 gallons per flush, the restaurant would spend about $754 with a potential total savings of approximately $61 per year.

Bubba Chino's does utilize a pre-rinse spray nozzle in the kitchen that helps to reduce water use. In addition, Bubba Chino's utilizes air cooled ice makers which help to reduce water use. Bubba Chino's has two kitchen hand wash sinks that use approximately 2.5 gallons per minute; however one is not in use. Replacing the aerators in these sinks with 0.5 gallon per minute faucet aerators would cost about $6 per sink and may save a combined water and energy savings of about $18 per sink per year.

Bubba Chino's indicated that they do not have any outdoor irrigation therefore no evaluation was performed to characterize outdoor water use for this property.

These water saving measures are listed at the bottom of attached Table 2. If all the recommended water saving fixtures were to be implemented, it would cost approximately $780 and may bring a reduction of about $387 in annual water and energy costs.

Table 1 - Inventory of Bubba Chino's Water Using Fixtures and Appliances

Location	**Bubba Chinos**							
Address	201 S. Main St							
Contact	Junior							
Date	3/17/2010							
Type of Business	Restaurant							
Account Number	26.0410.0.2							
Notes								
Built Date								
# of Employees	3							
# of Customers								
Toilets	1.28 gpf	1.6 gpf	2.0 gpf	3 gpf				Comment
Mens/Womens		1		1				
Sinks	0.5 gpm	1 gpm	2 gpm	2.5 gpm	3 gpm	5 gpm	6 gpm	
Pots and Pans						1		2 but only one is ever used
Kitchen Handwash				2				
Mens/Womens				2				
Pre Risnse Spray						1		
Other Uses	Use	Make		Model		Capacity		
Ice machines								
		Scotsman						Soda ice machine
Steam Table								
						2'x4'		
Refrigeration								
x2		Kenmore						
Freezer								
x2								
Cooling Towers								
								Swamp cooler
Outdoor Irrigation								
	Hose to rinse off deck							

Table 2 - Summary of Current Water Use and Potential Water Savings
Bubba Chino's Audit Summary

Maximum Use Calculation

40-50/day **2 employees**

	number	per use hot	per use cold	per use total		uses/day	subtotal gpd hot	subtotal gpd cold	subtotal gpd total	
Toilets										
Upstairs Unisex	1		1.6	1.6	gpf	15 flushes	-	24	24	
Downstairs Unisex	1		3	3	gpf	15 flushes	-	45	45	
Bathroom Sinks										
Unisex	2	1.25	1.25	2.5	gpm	4.5 minutes	45	45	90	
Kitchen Sinks: Pots and Pans	1	4	1	5	gpm	40 minutes	160	40	200	
Kitchen Handwash Sink	2	1.25	1.25	2.5	gpm	2 minutes	5	5	10	
							210	**159**	**369**	**max day**
							observed		11,000	max month
									30	days at max
							observed		367	max day

Average Use Calculation

	number	per use hot	per use cold	per use total		uses/day	subtotal gpd hot	subtotal gpd cold	subtotal gpd total	
Toilets										
Upstairs Unisex	1		1.6	1.6	gpf	10 flushes	-	16	16	
Downstairs Unisex	1		3	3	gpf	10 flushes	-	30	30	
Bathroom Sinks										
Unisex	2	1.25	1.25	2.5	gpm	3 minutes	30	30	60	
Kitchen Sinks: Pots and Pans	1	4	1	5	gpm	25 minutes	100	25	125	
Kitchen Handwash Sink	2	1.25	1.25	2.5	gpm	1.5 minutes	4	4	8	
							134	**105**	**239**	**avg day**
							observed		7,087	avg month
									30	days at avg
							observed		236	aver day

Table 2 - Summary of Current Water Use and Potential Water Savings
Bubba Chino's Audit Summary

Maximum Use Water Savings

	number	per use hot	per use cold	per use total		uses/day	subtotal gpd hot	subtotal gpd cold	subtotal gpd total		Savings hot	Savings cold	Savings total
Toilets													
Upstairs Unisex	1		1.28	1.28	gpf	15 flushes	-	19	19		-	5	5
Downstairs Unisex	1		1.28	1.28	gpf	15 flushes	-	19	19		-	26	26
											-	-	-
Bathroom Sinks											-	-	-
Unisex	2	0.25	0.25	0.5	gpm	4.5 minutes	9	9	18		36	36	72
											-	-	-
											-	-	-
Kitchen Sinks: Pots and Pans	1	4	1	5	gpm	40 minutes	160	40	200		-	-	-
											-	-	-
Kitchen Handwash Sink	2	0.25	0.25	0.5	gpm	2 minutes	1	1	2		4	4	8
							170	**88**	**258**	**max day**			
							observed		11,000	max month			
									43	days at max			
							observed		367	aver day			
							observed						

Average Use Water Savings

	number	per use hot	per use cold	per use total		uses/day	subtotal gpd hot	subtotal gpd cold	subtotal gpd total		Savings hot	Savings cold	Savings total
Toilets													
Upstairs Unisex	1		1.28	1.28	gpf	10 flushes	-	13	13		-	3	3
Downstairs Unisex	1		1.28	1.28	gpf	10 flushes	-	13	13		-	17	17
											-	-	-
Bathroom Sinks											-	-	-
Unisex	2	0.25	0.25	0.5	gpm	3 minutes	6	6	12		24	24	48
											-	-	-
											-	-	-
Kitchen Sinks: Pots and Pans	1	4	1	5	gpm	25 minutes	100	25	125		-	-	-
											-	-	-
Kitchen Handwash Sink	2	0.25	0.25	0.5	gpm	1.5 minutes	1	1	2		3	3	6
							107	**57**	**164**	**avg day**			
							observed		7,087	avg month			
									43	days at avg			
							observed		236	aver day			

Costs to Implement

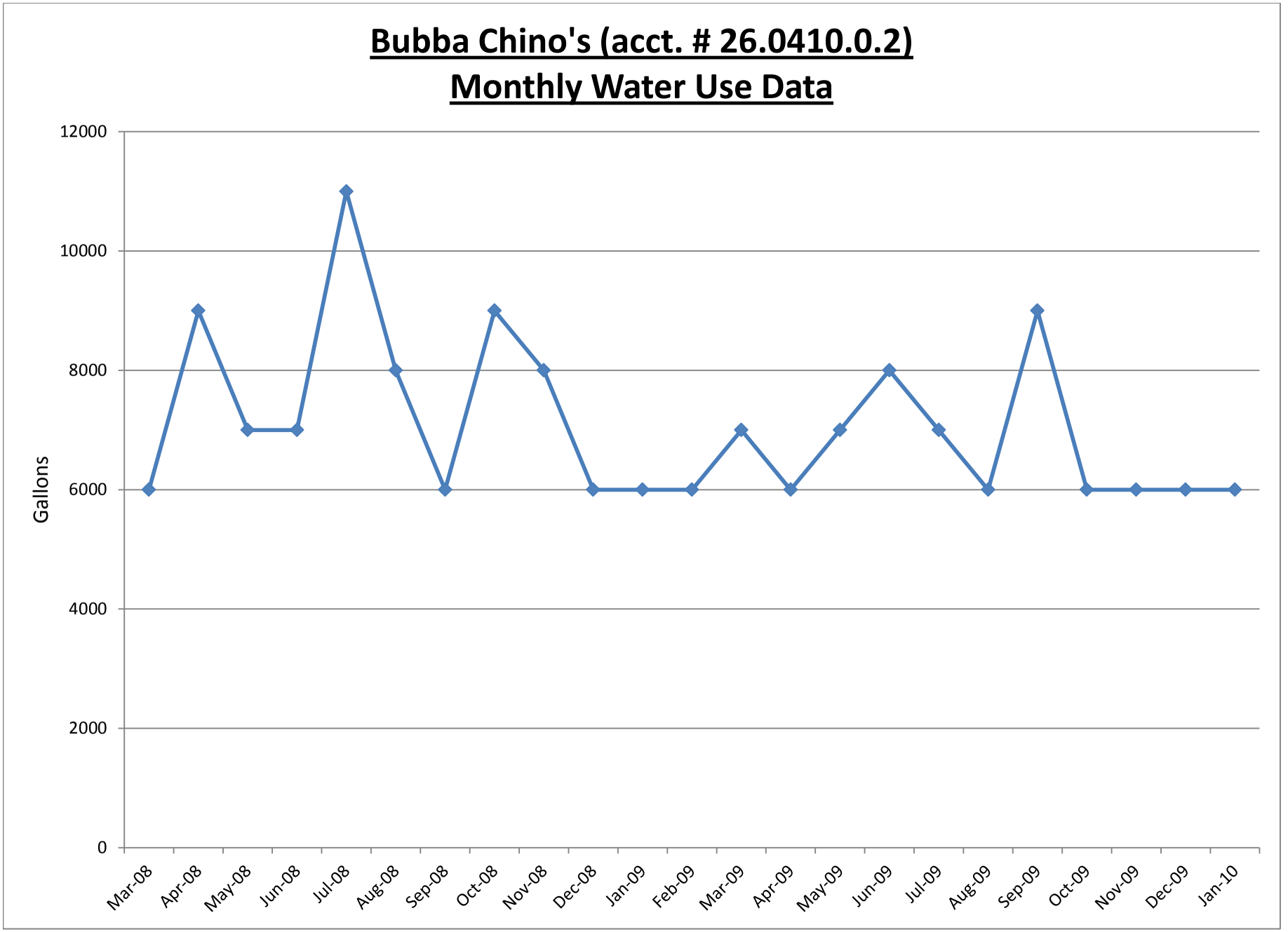
	number	Hardware	Installation	Total	Pay Back		Water Savings (gpy)	Energy Savings (kWhr)	Total Cost Savings/yr	Total Cost Savings/yr/fixture
Toilet	2	$ 282	$ 95	$ 754	12.42	yrs	7,405	-	$ 61	$ 30
Bathroom Sink	2	$ 1.61	$ 5	$ 13	0.05	yrs	17,424	2,262	$ 290	$ 145
Kitchen Handwash Sinks	2	$ 1.61	$ 5	$ 13	0.36	yrs	2,178	283	$ 36	$ 18
				$ 780					$ 387	
							0.08	AF Saved		

AF Savings: 0.08 $/ AF: $ 9,416 Replacement Water Cost* : $ 2,486 Avoided Cost** : $ 257

* Calculation based on $30,000 per AF

** Calculation based on $9.50/ 1000 gal

Cost Savings Assumptions: $8.50/1000 gal - cost of water and sewer, $0.065/kwh cost of energy



GREAT WESTERN INSTITUTE

SMART WATER Audit Report

Chili's Restaurant

Overview

The City working with Great Western Institute, conducted a SMART WATER Audit of your facility at 2211 Prairie Ctr. Pkwy in Brighton on February 23, 2010. The SMART WATER Audit was conducted as part of the City's audit project, whereby a select group of local businesses volunteered to help The City complete a commercial audit program intended to assist local businesses improve water use efficiency and in doing so, reduce water and energy operational costs.

The inventory of Chili's water using fixtures and appliances is provided in Table 1. Figure 1 presents the monthly water use at Chili's in 2008 and 2009.

Water Use Summary

Chili's Restaurant uses water in a manner consistent with newly constructed restaurants throughout Colorado. Similar to many restaurants built after 1994, Chili's has sinks and toilets that have been outfitted with water efficient fixtures which are currently available in the marketplace. For this reason, limited water and energy savings can be realized by Chili's.

Chili's Restaurant does utilize a pre-rinse spray nozzle that helps to reduce kitchen water use. In addition, Chili's utilizes air cooled ice makers which help to reduce water use. The bathroom sink faucet aerators in the women's bathroom already use the 0.5 gallon per minute aerators. Water use efficiency improvements in the men's bathroom sinks could reduce water and energy costs if the 2.2 gallons per minute aerators were replaced with the 0.5 gallons per minute faucet aerators. Changing these aerators would cost approximately $6 per sink including labor and could save about $250 per year in water and energy costs.

Chili's has six kitchen and bar hand wash sinks that use between 2 and 5 gallons per minute. Replacing the faucet aerators on these sinks with 0.5 gallon per minute faucet aerators would cost about $6 per sink and may have a combined water and energy savings of about $228 per sink per year.

The water modeling effort indicates that Chili's appears to have an ongoing leak of about 0.5 gallons of water per minute that has consistently occurred over the last 2 years. It would be of benefit for the facility to try and identify where this water waste is occurring (leaking flushing valve, leaking kitchen spigot, etc.) such that the leak could be repaired. This ongoing leak appears to waste over 250,000 gallons of water per year.

Chili's eliminated outdoor irrigation in 2009; therefore no evaluation was performed to characterize outdoor water use for this property.

Overall, there are only a few potential water saving measures that could be implemented at Chili's. These measures are listed at the bottom of attached Table 2. In addition to fixing the suspected leak, if all the recommended water saving fixtures were implemented, it would cost approximately $1,995 and may create total water and energy cost savings of about $2,249 annually.

Table 1 - Inventory of Chili's Water Using Fixtures and Appliances

Location	**Chili's**							
Address	2211 Prairie Ctr. Pkwy							
Contact	Rebecca							
Date	2/24/2010							
Type of Business	Restaurant							
Account Number	15.5002.0.1							
Toilets	1.28 gpf	1.6 gpf	2.5 gpf	3.5 gpf				**Comment**
Mens		2						Flushvalves
Womens		3						Flushvalves
Urinals	0.5 gpf	1 gpf	1.5 gpf					
Mens		2						
Sinks	0.5 gpm	1.5 gpm	2.2 gpm	2.5 gpm	3 gpm	5 gpm	6 gpm	
Pots and Pans							1	
Food Processor						1		Pre Rinse Spray w/ Spigot (1-5 gpm)
Bathroom Mens			2					
Bathroom Womens	2							
Bar Handwash			2					Not used
Bar Dish Sink					2			
Kitchen Handwash						4		
Mop Sink						1		
Other Uses	Make	Model		Capacity				
Ice machines								
2x	Manitowoc							Air cooled, Two of these
Dishwasher								
	Stero	ET-44B						
Hot Water Heater								
	American	DCG31100T1996N		100bgal				
Steam Table								
				5'x1'				
Outdoor Irrigation								
	Some irrigation in 2008; turned off irrigation in 2009 and later.							

Table 2 - Summary of Current Water Use and Potential Water Savings
Chili's Audit Summary

Maximum Use Calculation

4200/month 140

		number	per use hot	per use cold	per use total		uses/day	subtotal gpd hot	subtotal gpd cold	subtotal gpd total	
Toilets - Flushing Values											
	Mens	2		1.6	1.6	gpf	35 flushes	-	112	112	
	Womens	3		1.6	1.6	gpf	65 flushes	-	312	312	
Urinals											
	Mens	2		1	1	gpf	70 flushes	-	140	140	
Bathroom Sinks											
	Mens	2	1.1	1.1	2.2	gpm	15.75 minutes	139	139	277	
	Womens	2	0.25	0.25	0.5	gpm	9.75 minutes	20	20	39	
Kitchen Sinks: Pots and Pans		1	4.8	1.2	6	gpm	220 minutes	1,056	264	1,320	
Kitchen Sinks: Food Processor w/ pre rinse spray		1	4	1	5	gpm	120 minutes	480	120	600	
Kitchen Handwash Sink		4	2.5	2.5	5	gpm	30 minutes	300	300	600	
Mop Sink		1	0	5	5	gpm	3 uses	-	15	15	
Bar Sink		2	1.5	1.5	3	gpm	60 minutes	180	180	360	
Bar Hand Sink (Not used often)		2	1.1	1.1	2.2	gpm	2 minutes	4	4	9	
Other											
Ice Machine (Manitowoc) Air Cooled		2		17.8	17.8	gp100#	8 100# Ice	-	285	285	
Dishwasher (Stero) ET- 44B		1	0	1.2	1.2	gpcycle	250 cycles	-	300	300	
Steam Table		1		3.12	3.12	gpuse	2 daily	-	6	6	
Leak		1	0	0.50	0.5	gpm	1440 minutes	-	720	720	
								2,179	**2,917**	**5,095**	**max day**
								observed		147,000	max month
										29	days at max
								observed		4,900	max day

Average Use Calculation

		number	per use hot	per use cold	per use total		uses/day	subtotal gpd hot	subtotal gpd cold	subtotal gpd total	
Toilets											
	Mens	2		1.6	1.6	gpf	25 flushes	-	80	80	
	Womens	3		1.6	1.6	gpf	50 flushes	-	240	240	
Urinals											
	Mens	2		1	1	gpf	60 flushes	-	120	120	
Bathroom Sinks											
	Mens	2	1.1	1.1	2.2	gpm	12.75 minutes	112	112	224	
	Womens	2	0.25	0.25	0.5	gpm	7.5 minutes	15	15	30	
Kitchen Sinks: Pots and Pans		1	4.8	1.2	6	gpm	180 minutes	864	216	1,080	
Kitchen Sinks: Food Processor w/ pre rinse spray		1	4	1	5	gpm	110 minutes	440	110	550	
Kitchen Handwash Sink		4	2.5	2.5	5	gpm	25 minutes	250	250	500	
Mop Sink		1	0	5	5	gpm	2 uses	-	10	10	
Bar Sink		2	1.5	1.5	3	gpm	50 minutes	150	150	300	
Bar Hand Sink (Not used often)		2	1.25	1.25	2.5	gpm	2 minutes	5	5	10	
Other											
Ice Machine (Manitowoc) Air Cooled		2		17.8	17.8	gp100#	5 100# Ice	-	178	178	
Dishwasher (Stero) ET- 44B		1	0	1.2	1.2	gpcycle	230 cycles	-	276	276	
Steam Table		1		3.12	3.12	gpuse	2 daily	-	6	6	
Leak		1	0	0.50	0.5	gpm	1440 minutes	-	720	720	
								1,836	**2,488**	**4,325**	**avg day**
								observed		127,500	avg month
										29	days at avg
								observed		4,250	avg day

Table 2 - Summary of Current Water Use and Potential Water Savings
Chili's Audit Summary

Maximum Use Water Savings

	number	per use hot	per use cold	per use total		uses/day	subtotal gpd hot	subtotal gpd cold	subtotal gpd total		Savings hot	Savings cold	Savings total
Toilets													
Mens	2		1.6	1.6	gpf	35 flushes	-	112	112		-	-	-
Womens	3		1.6	1.6	gpf	65 flushes	-	312	312		-	-	-
											-	-	-
Urinals											-	-	-
Mens	2		0	0	gpf	70 flushes	-	-	-		-	140	140
											-	-	-
Bathroom Sinks											-	-	-
Mens	2	0.25	0.25	0.5	gpm	15.75 minutes	32	32	63		107	107	214
Womens	2	0.25	0.25	0.5	gpm	9.75 minutes	20	20	39		-	-	-
											-	-	-
											-	-	-
Kitchen Sinks: Pots and Pans	1	4.8	1.2	6	gpm	220 minutes	1,056	264	1,320		-	-	-
											-	-	-
Kitchen Sinks: Food Processor w/ pre rinse spray	1	4	1	5	gpm	120 minutes	480	120	600		-	-	-
											-	-	-
Kitchen Handwash Sink	4	0.25	0.25	0.5	gpm	30 minutes	30	30	60		270	270	540
											-	-	-
Mop Sink	1	0	5	5	gpm	3 uses	-	15	15		-	-	-
											-	-	-
Bar Sink	2	1.5	1.5	3	gpm	60 minutes	180	180	360		-	-	-
											-	-	-
Bar Hand Sink (Not used often)	2	0.25	0.25	0.5	gpm	2 minutes	1	1	2		3	3	7
											-	-	-
Other											-	-	-
Ice Machine (Manitowoc) Air Cooled	2		17.8	17.8	gp100#	8 100# Ice	-	285	285		-	-	-
Dishwasher (Stero) ET- 44B	1	0	1.2	1.2	gpcycle	250 cycles	-	300	300		-	-	-
Steam Table	1		3.12	3.12	gpuse	2 daily	-	6	6		-	-	-
Leak Fixed	1	0	0.50	0.5	gpm	1440 minutes	-	720	720		-	-	-
							1,798	**1,676**	**3,474**	**max day**	**381**	**521**	**901**
							observed		147,000	max month			
									42	days at max			
							observed		4,900	max day			

Average Use Water Savings

	number	per use hot	per use cold	per use total		uses/day	subtotal gpd hot	subtotal gpd cold	subtotal gpd total		Savings hot	Savings cold	Savings total
Toilets													
Mens	2		1.6	1.6	gpf	25 flushes	-	80	80		-	-	-
Womens	3		1.6	1.6	gpf	50 flushes	-	240	240		-	-	-
											-	-	-
Urinals											-	-	-
Mens	2		0	0	gpf	60 flushes	-	-	-		-	120	120
											-	-	-
Bathroom Sinks											-	-	-
Mens	2	0.25	0.25	0.5	gpm	12.75 minutes	26	26	51		87	87	173
Womens	2	0.25	0.25	0.5	gpm	7.5 minutes	15	15	30		-	-	-
											-	-	-
											-	-	-
Kitchen Sinks: Pots and Pans	1	4.8	1.2	6	gpm	180 minutes	864	216	1,080		-	-	-
											-	-	-
Kitchen Sinks: Food Processor w/ pre rinse spray	1	4	1	5	gpm	110 minutes	440	110	550		-	-	-
											-	-	-
Kitchen Handwash Sink	4	0.25	0.25	0.5	gpm	25 minutes	25	25	50		225	225	450
											-	-	-
Mop Sink	1	0	5	5	gpm	2 uses	-	10	10		-	-	-
											-	-	-
Bar Sink	2	1.5	1.5	3	gpm	50 minutes	150	150	300		-	-	-
											-	-	-
Bar Hand Sink (Not used often)	2	0.25	0.25	0.5	gpm	2 minutes	1	1	2		4	4	8
											-	-	-
Other											-	-	-
Ice Machine (Manitowoc) Air Cooled	2		17.8	17.8	gp100#	5 100# Ice	-	178	178		-	-	-
Dishwasher (Stero) ET- 44B	1	0	1.2	1.2	gpcycle	230 cycles	-	276	276		-	-	-
Steam Table	1		3.12	3.12	gpuse	2 daily	-	6	6		-	-	-
Leak Fixed	1	0	0.50	0.5	gpm	1440 minutes	-	720	720		-	-	-
							1,521	**1,333**	**2,853**	**avg day**	**316**	**436**	**751**
							observed		127,500	avg month			
									45	days at avg			
							observed		4,250	avg day			

Table 2 - Summary of Current Water Use and Potential Water Savings
Chili's Audit Summary

Costs to Implement

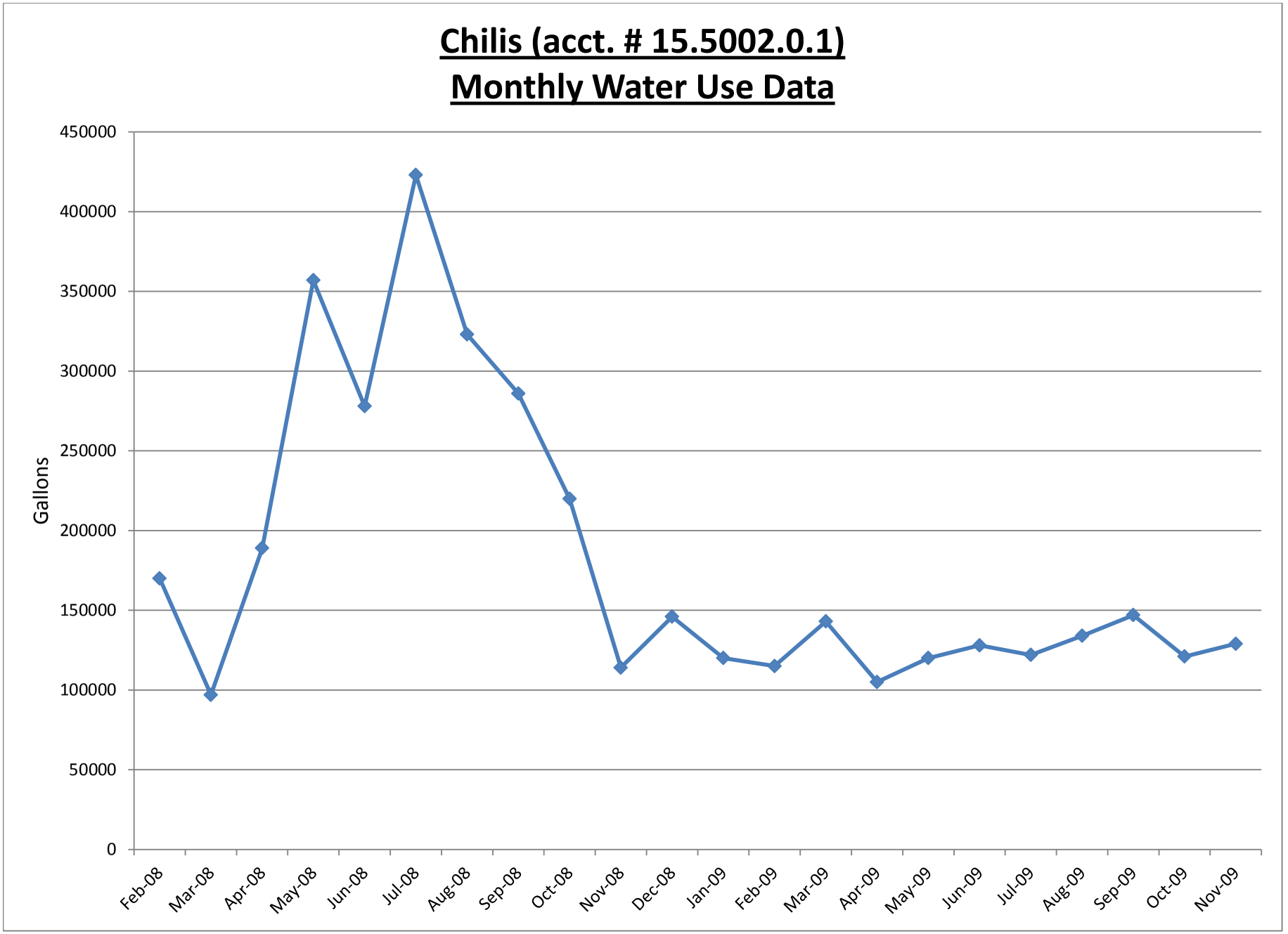
	number	Hardware	Installation	Total	Pay Back	Water Savings (gpy)	Energy Savings (kWhr)	Total Cost Savings/yr	Total Cost Savings/yr/fixture
Urinal	2	$ 311	$ 85	$ 792	2.21 yrs	43,800	-	$ 359	$ 180
Men's Bathroom Sink	2	$ 1.61	$ 5	$ 13	0.03 yrs	63,291	8,218	$ 519	$ 259
Kitchen/ Bar Handwash Sinks	6	$ 1.61	$ 5	$ 40	0.03 yrs	167,170	21,706	$ 1,371	$ 228
Fix Leak	1	$ 300	$ 850	$ 1,150	1.37 yrs	262,800	-	$ 841	$ 841
				$ 1,995				$ 2,249	

AF Savings: 1.65 $/ AF: $ 1,210 Replacement Water Cost* : $ 49,445 Avoided Cost** : $ 5,102

* Calculation based on $30,000 per AF

** Calculation based on $9.50/ 1000 gal

Cost Savings Assumptions: $8.50/1000 gal - cost of water and sewer, $0.065/kwh cost of energy


Chilis (acct. # 15.5002.0.1)
Monthly Water Use Data
Gallons
450000
400000
350000
300000
250000
200000
150000
100000
50000
0
Feb-08
Mar-08
Apr-08
May-08
Jun-08
Jul-08
Aug-08
Sep-08
Oct-08
Nov-08
Dec-08
Jan-09
Feb-09
Mar-09
Apr-09
May-09
Jun-09
Jul-09
Aug-09
Sep-09
Oct-09
Nov-09

SMART WATER Audit Report

Jerry's Bar and Grill

Overview

The City working with Great Western Institute, conducted a SMART WATER Audit of your restaurant at 130 N. Main St. in Brighton on March 17, 2010. The SMART WATER Audit was conducted as part of the City's audit project, whereby a select group of local businesses volunteered to help The City complete a commercial audit program intended to assist local businesses improve water use efficiency and in doing so, reduce water and energy operational costs.

The inventory of Jerry's Bar and Grill water using fixtures and appliances is provided in Table 1. Figure 1 presents the monthly water use at Jerry's Bar and Grill in 2008 and 2009.

Water Use Summary

Jerry's Bar and Grill was built in the 1970's. Similar to many restaurants built before 1994, Jerry's Bar and Grill has plumbing fixtures that should be updated to improve water use efficiency, thus saving water and energy costs. The two sink faucets in both the men's and women's bathrooms use about 2 gallons per minute. Changing these aerators would cost approximately $6 per sink and could result in a water and energy savings of approximately $170 dollars per year per sink.

The three toilets at Jerry's Bar and Grill use between 1.6 and 3 gallons per flush. The toilets are 1.6 gallon per flush units, however most likely due to the age of the toilets; they flush at a higher rate. One of the toilets in the women's bathroom was cracked. By installing new Water Sense approved high efficiency toilets which use 1.28 gallons per flush, the restaurant would spend $1,131 with a total savings of approximately $268 per year resulting in a payback period of approximately 4 years. In addition, by replacing the current 1 gallon per flush urinal with the Water Sense approved high efficiency waterless urinal, the initial cost would be $396. Jerry's could see a cost savings of approximately $74 per year per fixture resulting in a payback period of about 5 years.

Jerry's Bar and Grill has one kitchen/bar hand wash sink that use approximately 2 gallons per minute. Replacing the aerator in this sink with a new 0.5 gallon per minute faucet aerator would cost about $6 per sink and may save a combined water and energy savings of on average about $87 per sink per year.

Jerry's indicated that they do not have any outdoor irrigation therefore no evaluation was performed to characterize outdoor water use for this property.

These water saving measures are listed at the bottom of attached Table 2. If all the recommended water saving fixtures were to be implemented, it would cost approximately $1,547 and may bring a reduction of about $769 in annual water and energy costs.

Table 1 - Inventory of Jerry's Bar and Grill Water Using Fixtures and Appliances

Location	**Jerry's Bar and Grill**							
Address	130 N. Main St							
Contact	Linden Morris							
Date	3/17/2010							
Type of Business	Restaurant							
Account Number	47.515.0.2							
Notes								
Built Date								
# of Employees	2/shift							
# of Customers	40-50/day							
Toilets	1.28 gpf	1.6 gpf	3.0 gpf	3.5 gpf				Comment
Mens		1						
Womens			2					1 was broken
Urinals	0.5 gpf	1 gpf	1.5 gpf					
Mens		1						
Sinks	0.5 gpm	1 gpm	2 gpm	2.5 gpm	3 gpm	5 gpm	6 gpm	
Pots and Pans						3		used 1 or 2 nights/wk - steak night
Kitchen Handwash			1					
Bathroom Mens			1					
Bathroom Womens			1					
Mop Sink						1		once/day
Other Uses	Use	Make		Model		Capacity		
Cooling Towers								
								air conditioner/swamp cooler
Outdoor Irrigation	None							

Table 2 - Summary of Current Water Use and Potential Water Savings
Jerry's Audit Summary

Maximum Use Calculation

40-50/day **2 employees**

	number	per use hot	per use cold	per use total		uses/day		subtotal gpd hot	subtotal gpd cold	subtotal gpd total	
Toilets											
	Mens	1		1.6	1.6 gpf	20	flushes	-	32	32	
	Womens	2		3	3 gpf	40	flushes	-	240	240	
Urinals											
	Mens	1		1	1 gpf	30	flushes	-	30	30	
Bathroom Sinks											
	Mens	1	1	1	2 gpm	7.5	minutes	30	30	60	
	Womens	1	1	1	2 gpm	6	minutes	24	24	48	
Kitchen Sinks: Pots and Pans		1	4	1	5 gpm	110	minutes	440	110	550	
Kitchen Handwash Sink		1	1	1	2 gpm	15	minutes	15	15	30	
Mop Sink		1	0	5	5 gpm	1	uses	-	5	5	
								509	**486**	**995**	**max day**
								observed		31,000	max month
										31	days at max
								observed		1,033	max day

Average Use Calculation

	number	per use hot	per use cold	per use total		uses/day		subtotal gpd hot	subtotal gpd cold	subtotal gpd total	
Toilets											
	Mens	1		1.6	1.6 gpf	15	flushes	-	24	24	
	Womens	2		3	3 gpf	25	flushes	-	150	150	
Urinals											
	Mens	1		1	1 gpf	25	flushes	-	25	25	
Bathroom Sinks											
	Mens	1	1	1	2 gpm	6	minutes	24	24	48	
	Womens	1	1	1	2 gpm	3.75	minutes	15	15	30	
Kitchen Sinks: Pots and Pans		1	4	1	5 gpm	40	minutes	160	40	200	
Kitchen Handwash Sink		1	1	1	2 gpm	10	minutes	10	10	20	
Mop Sink		1	0	5	5 gpm	1	uses	-	5	5	
								209	**293**	**502**	**avg day**
								observed		15,400	avg month
										31	days at avg
								observed		513	avg day

Table 2 - Summary of Current Water Use and Potential Water Savings
Jerry's Audit Summary

Maximum Use Water Savings

			per use					subtotal gpd				Savings		
	number	hot	cold	total		uses/day		hot	cold	total		hot	cold	total
Toilets														
Mens	1		1.28	1.28	gpf	20	flushes	-	26	26		-	6	6
Womens	2		1.28	1.28	gpf	40	flushes	-	102	102		-	138	138
												-	-	-
Urinals												-	-	-
Mens	1		0	0	gpf	30	flushes	-	-	-		-	30	30
												-	-	-
Bathroom Sinks												-	-	-
Mens	2	0.25	0.25	0.5	gpm	7.5	minutes	15	15	30		15	15	30
Womens	2	0.25	0.25	0.5	gpm	6	minutes	12	12	24		12	12	24
												-	-	-
												-	-	-
Kitchen Sinks: Pots and Pans	1	4	1	5	gpm	110	minutes	440	110	550		-	-	-
												-	-	-
Kitchen Handwash Sink	1	0.25	0.25	0.5	gpm	15	minutes	4	4	8		11	11	23
												-	-	-
Mop Sink	1	0	5	5	gpm	1	uses	-	5	5		-	-	-
								471	**274**	**745**	**max day**			
								observed		31,000	max month			
										42	days at max			
								observed		659	max day			

Average Use Water Savings

			per use					subtotal gpd				Savings		
	number	hot	cold	total		uses/day		hot	cold	total		hot	cold	total
Toilets														
Mens	1		1.28	1.28	gpf	15	flushes	-	19	19		-	5	5
Womens	2		1.28	1.28	gpf	25	flushes	-	64	64		-	86	86
Urinals														
Mens	1		0	0	gpf	25	flushes	-	-	-		-	25	25
Bathroom Sinks														
Mens	1	0.25	0.25	0.5	gpm	6	minutes	6	6	12		18	18	36
Womens	1	0.25	0.25	0.5	gpm	3.75	minutes	4	4	8		11	11	23
Kitchen Sinks: Pots and Pans	1	4	1	5	gpm	40	minutes	160	40	200		-	-	-
Kitchen Handwash Sink	1	0.25	0.25	0.5	gpm	10	minutes	3	3	5		8	8	15
Mop Sink	1	0	5	5	gpm	1	uses	-	5	5		-	-	-
								172	**140**	**313**	**avg day**			
								observed		15,400	avg month			
										49	days at avg			
								observed		513	avg day			

Table 2 - Summary of Current Water Use and Potential Water Savings
Jerry's Audit Summary

Costs to Implement

	number	Hardware	Installation	Total	Pay Back		Water Savings (gpy)	Energy Savings (kWhr)	Total Cost Savings/yr	Total Cost Savings/yr/fixture
Toilet	3	$ 282	$ 95	$ 1,131	4.22	yrs	32,688	-	$ 268	$ 89
Urinal	1	$ 311	$ 85	$ 396	5.37	yrs	9,000	-	$ 74	$ 74
Bathroom Sink	2	$ 1.61	$ 5	$ 13	0.04	yrs	21,060	2,574	$ 340	$ 170
Kitchen/ Bar Handwash Sinks	1	$ 1.61	$ 5	$ 7	0.08	yrs	5,400	660	$ 87	$ 87
				$ 1,547					$ 769	

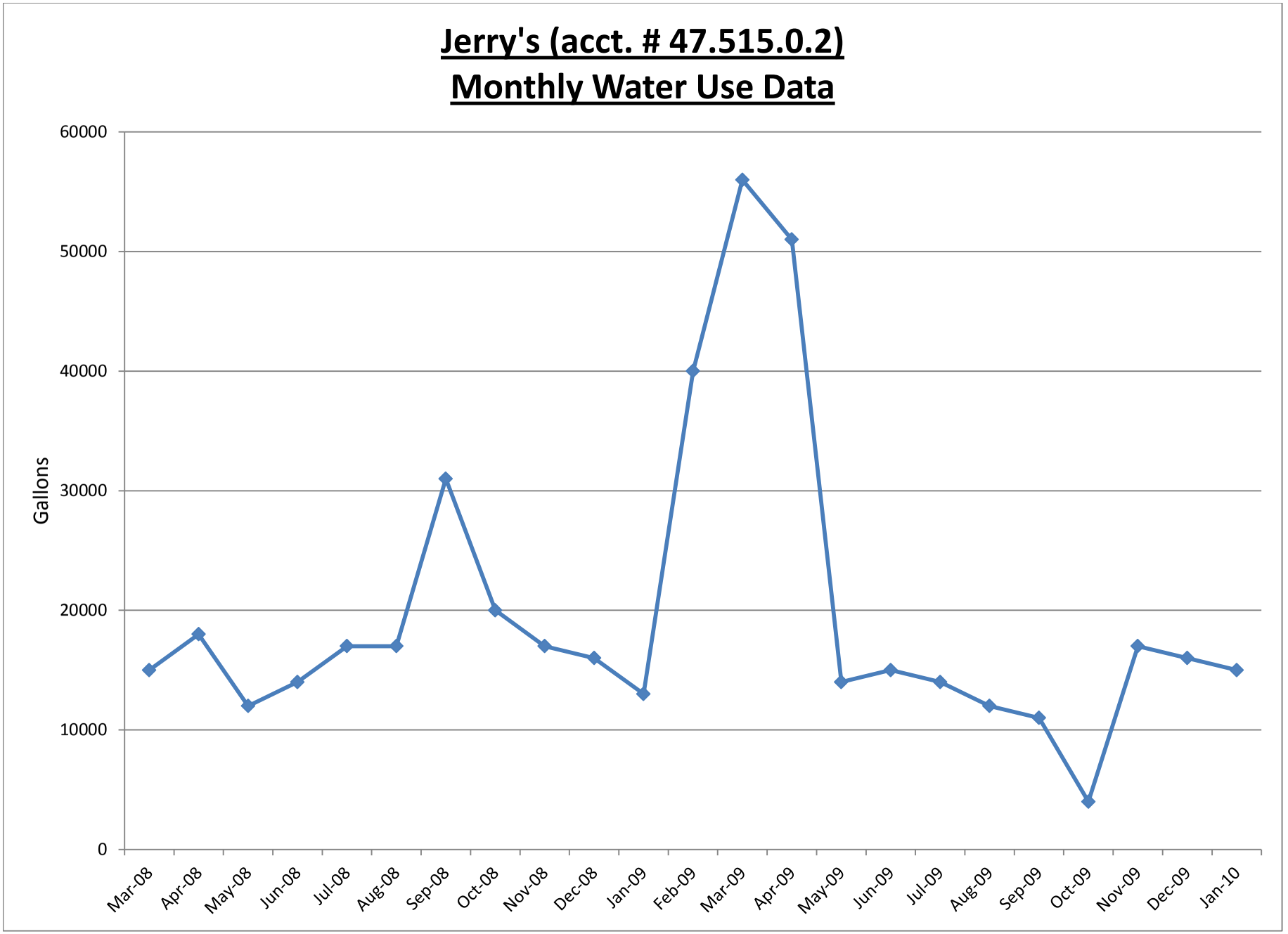
AF Savings: 0.21 $/ AF: $ 7,396

Replacement Water Cost* : $ 6,274 Avoided Cost** : $ 647

* Calculation based on $30,000 per AF

** Calculation based on $9.50/ 1000 gal

Cost Savings Assumptions: $8.50/1000 gal - cost of water and sewer, $0.065/kwh cost of energy



GREAT WESTERN INSTITUTE

SMART WATER Audit Report

Jordinalli's

Overview

The City working with Great Western Institute, conducted a SMART WATER Audit of your restaurant at 25 N. Main St. in Brighton on March 17, 2010. The SMART WATER Audit was conducted as part of the City's audit project, whereby a select group of local businesses volunteered to help The City complete a commercial audit program intended to assist local businesses improve water use efficiency and in doing so, reduce water and energy operational costs.

The inventory of Jordinalli's water using fixtures and appliances is provided in Table 1. Figure 1 presents the monthly water use at Jordinalli's in 2008 and 2009.

Water Use Summary

Jordinalli's is housed in a building that was built in the 1930's. Similar to many restaurants built before 1994, Jordinalli's has plumbing fixtures that should be updated to improve water use efficiency, thus saving water and energy costs. The five sink faucet aerators in both the men's and women's bathrooms use about 2.5 gallon per minute. Changing these aerators would cost approximately $6 per sink and could result in a water and energy savings of approximately $169 dollars per year per sink.

The six toilets at Jordinalli's were found to use between 2 gallons and 3.5 gallons per flush. The toilets are 1.6 gallon per flush fixtures; however it was noted during the audit that customers report having to flush the toilets multiple times per use. By installing new Water Sense approved high efficiency toilets which use 1.28 gallons per flush, the restaurant would spend $2,262 with a total savings of approximately $207 per year. By replacing the two current 1 gallon per flush urinals with Water Sense approved high efficiency waterless urinals, the initial cost would be $792. Jordinalli's could see a cost savings of approximately $60 per year per fixture resulting in payback period of 15 years.

Jordinalli's does utilize a pre-rinse spray nozzle as well as air cooled ice makers which help to reduce kitchen water use. Jordinalli's has two kitchen/bar hand wash sinks that use between 2 and 3 gallons per minute. Replacing the aerators in these sinks with new 0.5 gallon per minute faucet aerators would cost about $6 per sink and could have a combined water and energy savings of about $33 per sink per year.

Jordinalli's indicated that they do not have any outdoor irrigation therefore no evaluation was performed to characterize outdoor water use for this property.

These water saving measures are listed at the bottom of attached Table 2. If all the recommended water saving fixtures were to be implemented, it would cost approximately $3,098 and may bring a reduction of about $1,239 in annual water and energy costs.

Table 1 - Inventory of Jordinalli's Water Using Fixtures and Appliances

Location	**Jordinalli's**							
Address	25 N. Main St.							
Contact	Dan							
Date	3/17/2010							
Type of Business	Restaurant							
Account Number	47.0395.0.1; 47.0400.0.1							
Notes								
Built Date	1934							
# of Employees	5							
# of Customers	30-250 (weekend)							
Toilets	1.28 gpf	1.6 gpf	2.0 gpf	3.5 gpf				Comment
Mens			2					Runs, very old; Glacier Bay
Womens		1	2	1				Customer said doesn't work properly
Urinals	0.5 gpf	1 gpf	1.5 gpf					
Mens		2						
Sinks	0.5 gpm	1 gpm	2 gpm	2.5 gpm	3 gpm	5 gpm	6 gpm	
Pots and Pans						2		
Kitchen Handwash				1				
Bathroom Mens				2				
Bathroom Womens				3				
Bar Dish Sink					2			
Bar Handwash Sink				1				
Mop Sink						1		
Pre Risnse Spray						1		
Other Uses	Use	Make		Model		Capacity		
Ice machines								
		Scottsman		CM3				air cooled, no dripping
Hot Water Heater								
x2		Rheem Rhud		G100-200		100gal/20 gal		
Dish Washer								
		Eco Lab		ES2000CS				5 x day
Refrigeration								
		Traulsen						walk in cooler
Freezer								
x3		Estate Whirlpool						Arctic Air Commercial Freezer
Cooling Towers								
x2		Trane						5 ton air conditioners
Outdoor Irrigation								
	None							

Table 2 - Summary of Current Water Use and Potential Water Savings
Jordinallis Audit Summary

Maximum Use Calculation 30-250 (weekend), 5 employees

		number	per use hot	per use cold	per use total		uses/day		subtotal gpd hot	subtotal gpd cold	subtotal gpd total	
Toilets												
	Mens	2		2	2	gpf	12	flushes	-	48	48	
	Womens	4		2	2	gpf	25	flushes	-	200	200	
Urinals												
	Mens	2		1	1	gpf	25	flushes	-	50	50	
Bathroom Sinks												
	Mens	2	1.25	1.25	2.5	gpm	5.55	minutes	56	56	111	
	Womens	3	1.25	1.25	2.5	gpm	3.75	minutes	56	56	113	
Kitchen Sinks: Pots and Pans		2	4	1	5	gpm	35	minutes	280	70	350	
Kitchen Handwash Sink		1	1.25	1.25	2.5	gpm	5	minutes	6	6	13	
Mop Sink		1	0	5	5	gpm	2	uses	-	10	10	
Bar Sink		2	1.5	1.5	3	gpm	40	minutes	120	120	240	
Bar Hand Sink		1	1.5	1.5	3	gpm	2	minutes	3	3	6	
Other												
Ice Machine (Scotsman CM3) Air Cooled		2		17.8	17.8	gp100#	2	100# Ice	-	71	71	
Dishwasher (Eco Lab)		1	0	1.2	1.2	gpcycle	45	cycles	-	54	54	
									521	**744**	**1,265**	**max day**
									observed		37,000	max month
											29	days at max
									observed		1,233	max day

Table 2 - Summary of Current Water Use and Potential Water Savings
Jordinallis Audit Summary

Average Use Calculation

	number	per use hot	per use cold	per use total		uses/day	subtotal gpd hot	subtotal gpd cold	subtotal gpd total	
Toilets										
	Mens	2		2	2 gpf	8 flushes	-	32	32	
	Womens	4		2	2 gpf	20 flushes	-	160	160	
Urinals										
	Mens	2		1	1 gpf	20 flushes	-	40	40	
Bathroom Sinks										
	Mens	2	1.25	1.25	2.5 gpm	4.2 minutes	42	42	84	
	Womens	3	1.25	1.25	2.5 gpm	3 minutes	45	45	90	
Kitchen Sinks: Pots and Pans		2	4	1	5 gpm	35 minutes	280	70	350	
Kitchen Handwash Sink		1	1.25	1.25	2.5 gpm	3 minutes	4	4	8	
Mop Sink		1	0	5	5 gpm	2 uses	-	10	10	
Bar Sink		2	1.5	1.5	3 gpm	35 minutes	105	105	210	
Bar Hand Sink		1	1.5	1.5	3 gpm	2 minutes	3	3	6	
Other										
Ice Machine (Scotsman CM3) Air Cooled		2		17.8	17.8 gp100#	1 100# Ice	-	36	36	
Dishwasher (Eco Lab)		1	0	1.2	1.2 gpcycle	25 cycles	-	30	30	
							479	**576**	**1,055**	**avg day**
							observed		30,875	avg month
									29	days at avg
							observed		1,029	avg day

Maximum Use Water Savings

	number	per use hot	per use cold	per use total		uses/day	subtotal gpd hot	subtotal gpd cold	subtotal gpd total		Savings hot	Savings cold	Savings total
Toilets													
	Mens	2		1.28	1.28 gpf	12 flushes	-	31	31		-	17	17
	Womens	4		1.28	1.28 gpf	25 flushes	-	128	128		-	72	72
											-	-	-
Urinals											-	-	-
	Mens	2		0	0 gpf	25 flushes	-	-	-		-	50	50
											-	-	-
Bathroom Sinks											-	-	-
	Mens	2	0.25	0.25	0.5 gpm	5.55 minutes	11	11	22		44	44	89
	Womens	3	0.25	0.25	0.5 gpm	3.75 minutes	11	11	23		45	45	90
											-	-	-
											-	-	-
Kitchen Sinks: Pots and Pans		2	4	1	5 gpm	35 minutes	280	70	350		-	-	-
											-	-	-
Kitchen Handwash Sink		1	0.25	0.25	0.5 gpm	5 minutes	1	1	3		5	5	10
											-	-	-
Mop Sink		1	0	5	5 gpm	2 uses	-	10	10		-	-	-
											-	-	-
Bar Sink		2	1.5	1.5	3 gpm	40 minutes	120	120	240		-	-	-
											-	-	-
Bar Hand Sink		1	0.25	0.25	0.5 gpm	2 minutes	1	1	1		3	3	5
											-	-	-
Other											-	-	-
Ice Machine (Scotsman CM3) Air Cooled		2		17.8	17.8 gp100#	2 100# Ice	-	71	71		-	-	-
Dishwasher (Eco Lab)		1	0	1.2	1.2 gpcycle	45 cycles	-	54	54		-	-	-
							424	**508**	**932**	**max day**			
							observed		37,000	max month			
									40	days at max			
							observed		1,233	max day			

Table 2 - Summary of Current Water Use and Potential Water Savings
Jordinallis Audit Summary

Average Use Water Savings

	number	per use hot	per use cold	per use total		uses/day		subtotal gpd hot	subtotal gpd cold	subtotal gpd total		Savings hot	Savings cold	Savings total
Toilets														
Mens	2		1.28	1.28	gpf	8	flushes	-	20	20		-	12	12
Womens	4		1.28	1.28	gpf	20	flushes	-	102	102		-	58	58
												-	-	-
Urinals												-	-	-
Mens	2		0	0	gpf	20	flushes	-	-	-		-	40	40
												-	-	-
Bathroom Sinks												-	-	-
Mens	2	0.25	0.25	0.5	gpm	4.2	minutes	8	8	17		34	34	67
Womens	3	0.25	0.25	0.5	gpm	3	minutes	9	9	18		36	36	72
												-	-	-
												-	-	-
Kitchen Sinks: Pots and Pans	2	4	1	5	gpm	35	minutes	280	70	350		-	-	-
												-	-	-
Kitchen Handwash Sink	1	0.25	0.25	0.5	gpm	3	minutes	1	1	2		3	3	6
												-	-	-
Mop Sink	1	0	5	5	gpm	2	uses	-	10	10		-	-	-
												-	-	-
Bar Sink	2	1.5	1.5	3	gpm	35	minutes	105	105	210		-	-	-
												-	-	-
Bar Hand Sink	1	0.25	0.25	0.5	gpm	2	minutes	1	1	1		3	3	5
												-	-	-
Other												-	-	-
Ice Machine (Scotsman CM3) Air Cooled	2		17.8	17.8	gp100#	1	100# Ice	-	36	36		-	-	-
Dishwasher (Eco Lab)	1	0	1.2	1.2	gpcycle	25	cycles	-	30	30		-	-	-
								404	**392**	**796**	**avg day**			
									observed	30,875	avg month			
										39	days at avg			
									observed	1,029	avg day			

Costs to Implement

	number	Hardware	Installation	Total	Pay Back		Water Savings (gpy)	Energy Savings (kWhr)	Total Cost Savings/yr	Total Cost Savings/yr/fixture
Toilet	6	$ 282	$ 95	$ 2,262	26.38	yrs	25,229	-	$ 207	$ 34
Urinal	2	$ 311	$ 85	$ 792	15.31	yrs	14,600	-	$ 120	$ 60
Bathroom Sink	5	$ 1.35	$ 5	$ 32	0.04	yrs	50,808	6,597	$ 845	$ 169
Kitchen/ Bar Handwash Sinks	2	$ 1.35	$ 5	$ 13	0.19	yrs	4,015	521	$ 67	$ 33
				$ 3,098					$ 1,239	

AF Savings: 0.29 $ /AF: $ 10,667

Replacement Water Cost* : $ 8,714

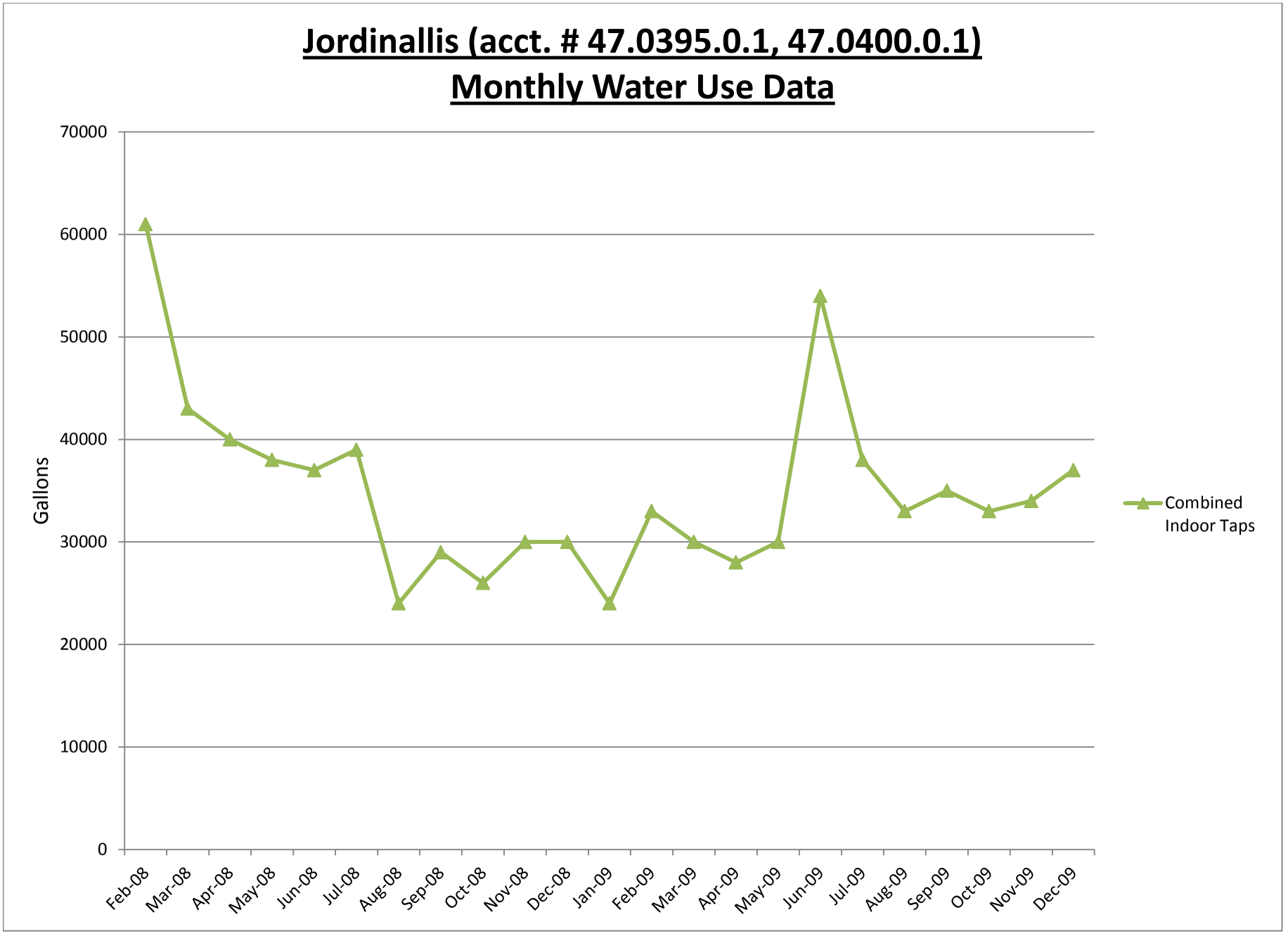
Avoided Cost** : $ 899

*Calculation based on $30,000 per AF

** Calculation based on $9.50/ 1000 gal

Cost Savings Assumptions: $8.50/1000 gal - cost of water and sewer, $0.065/kwh cost of energy

Jordinallis (acct. # 47.0395.0.1, 47.0400.0.1)
Monthly Water Use Data



GREAT WESTERN INSTITUTE

SMART WATER Audit Report

La Estrellita's

Overview

The City working with Great Western Institute, conducted a SMART WATER Audit of your restaurant at 45 N. Main St. in Brighton on March 17, 2010. The SMART WATER Audit was conducted as part of the City's audit project, whereby a select group of local businesses volunteered to help The City complete a commercial audit program intended to assist local businesses improve water use efficiency and in doing so, reduce water and energy operational costs.

The inventory of La Estrellita's water using fixtures and appliances is provided in Table 1. Figure 1 presents the monthly water use at La Estrellita's in 2008 and 2009.

Water Use Summary

La Estrellita's is housed in a building that was built in the late 1800's. Similar to many restaurants built before 1994, La Estrellita's has plumbing fixtures that should be updated to improve water use efficiency, thus saving water and energy costs. The sink faucets in both the men's and women's bathrooms use about 2 gallon per minute. Changing these sink faucet aerators would cost approximately $6 per sink and could result in a water and energy savings of approximately $148 per year per sink.

The three toilets at La Estrellita's use about 2 gallons per flush and are estimated to have been installed in 1985. All three toilets continue to run for approximately 20 seconds after being flushed. By installing new Water Sense approved high efficiency toilets which use 1.28 gallons per flush, the restaurant would spend $1,131 with a total savings of approximately $138 per year resulting in an 8 year payback period. By replacing the two current 1 gallon per flush urinals with the Water Sense approved high efficiency waterless urinals, the initial cost would be $792. The restaurant could see a cost savings of approximately $89 per year per resulting in a payback period of approximately 9 years.

La Estrellita's does utilize two pre-rinse spray nozzles that help to reduce kitchen water use. In addition, La Estrellita's utilizes air cooled ice makers which help to reduce water use. La Estrellita's has three kitchen/bar hand wash sinks that use between 2 and 5 gallons per minute. Replacing these sink aerators with 0.5 gallon per minute faucet aerators would cost about $6 per sink and could have a combined water and energy savings of about $70 per sink per year.

La Estrellita's indicated that they do not have any outdoor irrigation therefore no evaluation was performed to characterize outdoor water use for this property.

The water modeling effort indicates that La Estrellita's appears to have an ongoing leak of about 1 gallon per minute of water that has consistently occurred over the past 2 years. It would be of benefit for the owner to try to find and fix this suspected water waste such that over ½ million gallons of water could be saved per year.

These water saving measures are listed at the bottom of attached Table 2. If all the recommended water saving fixtures were to be implemented, it would cost approximately $2,756 and may bring a reduction of about $733 in annual water and energy costs.

Table 1 - Inventory for La Estrellita's Water Using Fixtures and Appliances

Location	**La Estrellita's**							
Address	45 N. Main St.							
Contact	Angelita; Gina							
Date	3/17/2010							
Type of Business	Restaurant							
Account Number	47.0370.0.1							
Notes								
Built Date	Late 1800's							
# of Employees	20 in the summer, 15 per shift							
# of Customers	200							
Toilets	1.28 gpf	1.6 gpf	2.0 gpf	3.5 gpf				Comment
Mens			1					Could be as old as 1985
Womens			2					Both run 20 seconds after flushing
Urinals	0.5 gpf	1 gpf	1.5 gpf					
Mens		2						
Sinks	0.5 gpm	1 gpm	2 gpm	2.5 gpm	3 gpm	5 gpm	6 gpm	
Pots and Pans						4		1 sink is a lot smaller
Kitchen Handwash			2					
Bathroom Mens			1					
Bathroom Womens			1					
Bar Dish Sink					1			
Bar Handwash Sink					1			
Mop Sink						1		
Pre Risnse Spray						2		
Other Uses	Use	Make		Model		Capacity		
Ice machines								
		Scotsman CM3		B9485; SR:				air cooled
Steam Table								
x2						2'x6'		
Hot Water Heater								
						100 gal		Back of storage closet, 150 degrees
Dish Washer								
		ES 2000		Ser: ES11343				Runs all day long
Refrigeration								
								No name; old
Cooling Towers								
								Swamp cooler
Outdoor Irrigation								
	Hose used to clean patio in summer							

Table 2 - Summary of Current Water Use and Potential Water Savings
La Estrellitas Audit Summary

Maximum Use Calculation	**200 customers/day**					**15 employees/shift**		**200 customers/day**				
		per use						subtotal gpd				
	number	hot	cold	total		uses/day		hot	cold	total		
Toilets												
Mens	1		2	2	gpf	30	flushes	-	60	60		
Womens	2		2	2	gpf	40	flushes	-	160	160		
Urinals												
Mens	2		1	1	gpf	25	flushes	-	50	50		
Bathroom Sinks												
Mens	1	1	1	2	gpm	8.25	minutes	33	33	66		
Womens	1	1	1	2	gpm	6	minutes	24	24	48		
Kitchen Sinks: Pots and Pans	4	4	1	5	gpm	60	minutes	960	240	1,200		
Kitchen Handwash Sink	2	1	1	2	gpm	20	minutes	40	40	80		
Mop Sink	1	0	5	5	gpm	3	uses	-	15	15		
Bar Sink	1	1.5	1.5	3	gpm	45	minutes	68	68	135		
Bar Hand Sink (Not used often)	1	1.5	1.5	3	gpm	2	minutes	3	3	6		
Other												
Scotsman Air Cooled	1		17.8	17.8	gp100#	3	100# Ice	-	53	53		
Dishwasher ES2000	1	0	1.2	1.2	gpcycle	75	cycles	-	90	90		
Steam Table	2		7.48	7.48	gpuse	2	daily	-	30	30		
Hose to clean patio	1	0	5	5	gpm	5	minutes	-	25	25		
Leak	1	0	1.075	1.075	gpm	1440	minutes	-	1,548	1,548		
								1,128	**2,439**	**3,566**	**max day**	
									observed	107,000	max month	
										30	days at max	
									observed	3,566.67	max day	

Table 2 - Summary of Current Water Use and Potential Water Savings
La Estrellitas Audit Summary

Average Use Calculation

	number	per use hot	per use cold	per use total		uses/day		subtotal gpd hot	subtotal gpd cold	subtotal gpd total	
Toilets											
	Mens	1		2	2 gpf	15	flushes	-	30	30	
	Womens	2		2	2 gpf	25	flushes	-	100	100	
Urinals											
	Mens	2		1	1 gpf	15	flushes	-	30	30	
Bathroom Sinks											
	Mens	1	1	1	2 gpm	4.5	minutes	18	18	36	
	Womens	1	1	1	2 gpm	3.75	minutes	15	15	30	
Kitchen Sinks: Pots and Pans		4	4	1	5 gpm	25	minutes	400	100	500	
Kitchen Handwash Sink		2	1	1	2 gpm	10	minutes	20	20	40	
Mop Sink		1	0	5	5 gpm	2	uses	-	10	10	
Bar Sink		1	1.5	1.5	3 gpm	20	minutes	30	30	60	
Bar Hand Sink (Not used often)		1	1.5	1.5	3 gpm	2	minutes	3	3	6	
Other											
Scotsman Air Cooled		1		17.8	17.8 gp100#	2	100# Ice	-	36	36	
Dishwasher ES2000		1	0	1.2	1.2 gpcycle	50	cycles	-	60	60	
Steam Table		2		7.48	7.48 gpuse	2	daily	-	30	30	
Hose to clean patio		1	0	5	5 gpm	5	minutes	-	25	25	
Leak		1	0	1.075	1.075 gpm	1440	minutes	-	1,548	1,548	
								486	**2,055**	**2,541**	**avg day**
									observed	76,250	avg month
										30	days at avg
									observed	2,541.67	aver day

Table 2 - Summary of Current Water Use and Potential Water Savings
La Estrellitas Audit Summary

Maximum Use Water Savings

	number	per use hot	per use cold	per use total		uses/day	subtotal gpd hot	subtotal gpd cold	subtotal gpd total		Savings hot	Savings cold	Savings total
Toilets													
	Mens	1		1.28	1.28 gpf	30 flushes	-	38	38		-	22	22
	Womens	2		1.28	1.28 gpf	40 flushes	-	102	102		-	58	58
											-	-	-
Urinals											-	-	-
	Mens	2		0	0 gpf	25 flushes	-	-	-		-	50	50
											-	-	-
Bathroom Sinks											-	-	-
	Mens	1	0.25	0.25	0.5 gpm	8.25 minutes	8	8	17		25	25	50
	Womens	1	0.25	0.25	0.5 gpm	6 minutes	6	6	12		18	18	36
											-	-	-
											-	-	-
Kitchen Sinks: Pots and Pans		4	4	1	5 gpm	60 minutes	960	240	1,200		-	-	-
											-	-	-
Kitchen Handwash Sink		2	0.25	0.25	0.5 gpm	20 minutes	10	10	20		30	30	60
											-	-	-
Mop Sink		1	0	5	5 gpm	3 uses	-	15	15		-	-	-
											-	-	-
Bar Sink		1	1.5	1.5	3 gpm	45 minutes	68	68	135		-	-	-
											-	-	-
Bar Hand Sink (Not used often)		1	0.25	0.25	0.5 gpm	2 minutes	1	1	1		3	3	5
											-	-	-
Other											-	-	-
Scotsman Air Cooled		1		17.8	17.8 gp100#	3 100# Ice	-	53	53		-	-	-
Dishwasher ES2000		1	0	1.2	1.2 gpcycle	75 cycles	-	90	90		-	-	-
Steam Table		2		7.48	7.48 gpuse	2 daily	-	30	30		-	-	-
Hose to clean patio		1	0	5	5 gpm	5 minutes	-	25	25		-	-	-
Leak fixed											-	1,548	1,548
							1,052	**686**	**1,739**	**max day**			
								observed	107,000	max month			
									62	days at max			
								observed	3,566.67	max day			

Table 2 - Summary of Current Water Use and Potential Water Savings
La Estrellitas Audit Summary

Average Use Water Savings

	number	per use hot	per use cold	per use total		uses/day	subtotal gpd hot	subtotal gpd cold	subtotal gpd total		Savings hot	Savings cold	Savings total
Toilets													
	Mens	1		1.28	1.28 gpf	15 flushes	-	19	19		-	11	11
	Womens	2		1.28	1.28 gpf	25 flushes	-	64	64		-	36	36
											-	-	-
Urinals											-	-	-
	Mens	2		0	0 gpf	15 flushes	-	-	-		-	30	30
											-	-	-
Bathroom Sinks											-	-	-
	Mens	1	0.25	0.25	0.5 gpm	4.5 minutes	5	5	9		14	14	27
	Womens	1	0.25	0.25	0.5 gpm	3.75 minutes	4	4	8		11	11	23
											-	-	-
											-	-	-
Kitchen Sinks: Pots and Pans		4	4	1	5 gpm	25 minutes	400	100	500		-	-	-
											-	-	-
Kitchen Handwash Sink		2	0.25	0.25	0.5 gpm	10 minutes	5	5	10		15	15	30
											-	-	-
Mop Sink		1	0	5	5 gpm	2 uses	-	10	10		-	-	-
											-	-	-
Bar Sink		1	1.5	1.5	3 gpm	20 minutes	30	30	60		-	-	-
											-	-	-
Bar Hand Sink (Not used often)		1	0.25	0.25	0.5 gpm	2 minutes	1	1	1		3	3	5
											-	-	-
Other											-	-	-
Scotsman Air Cooled		1		17.8	17.8 gp100#	2 100# Ice	-	36	36		-	-	-
Dishwasher ES2000		1	0	1.2	1.2 gpcycle	50 cycles	-	60	60		-	-	-
Steam Table		2		7.48	7.48 gpuse	2 daily	-	30	30		-	-	-
Hose to clean patio		1	0	5	5 gpm	5 minutes	-	25	25		-	-	-
Leak Fixed											-	1,548	1,548
							444	**387**	**831**	**avg day**			
								observed	76,250	avg month			
									92	days at avg			
								observed	2,541.67	aver day			

Costs to Implement

	number	Hardware	Installation	Total	Pay Back	Water Savings (gpy)	Energy Savings (kWhr)	Total Cost Savings/yr	Total Cost Savings/yr/fixture
Toilet	3	$ 282	$ 95	$ 1,131	8.19 yrs	16,848	-	$ 138	$ 46
Urinal	2	$ 311	$ 85	$ 792	8.94 yrs	10,800	-	$ 89	$ 44
Bathroom Sink	2	$ 1.61	$ 5	$ 13	0.04 yrs	17,820	2,314	$ 297	$ 148
Kitchen/ Bar Handwash Sinks	3	$ 1.61	$ 5	$ 20	0.09 yrs	12,600	1,636	$ 210	$ 70
Fix Leak	1	$ 300	$ 500	$ 800	0.44 yrs	565,020		$ 1,808	$ 1,808
				$ 2,756				$ 733	

AF Savings: 1.91 $/ AF: $ 1,441

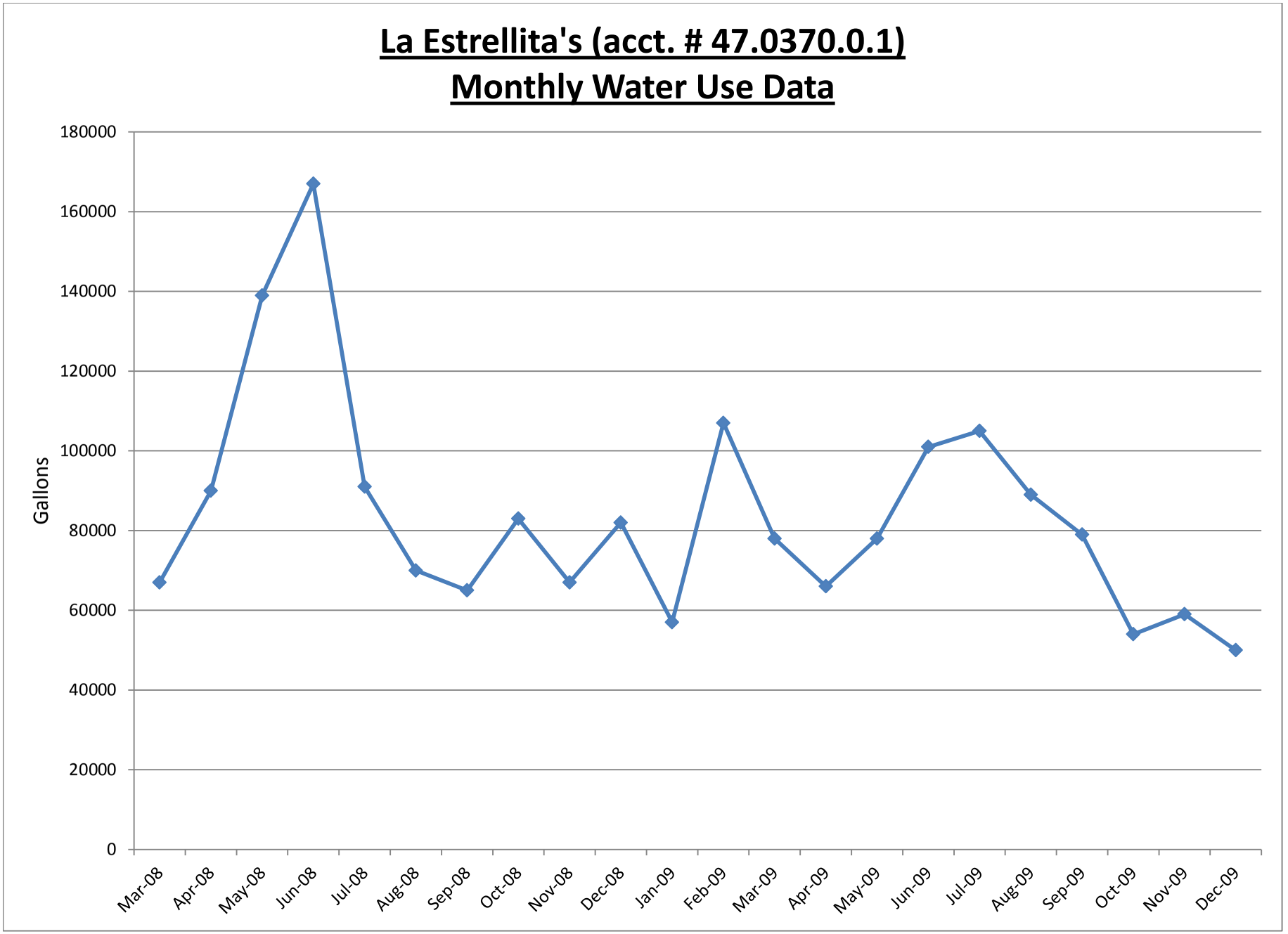
Replacement Water Cost* : $ 57,366

Avoided Cost** : $ 5,919

* Calculation based on $30,000 per AF

** Calculation based on $9.50/ 1000 gal

Cost Savings Assumptions: $8.50/1000 gal - cost of water and sewer, $0.065/kwh cost of energy



GREAT WESTERN INSTITUTE

SMART WATER Audit Report

Lone Star Restaurant

Overview

The City working with Great Western Institute, conducted a SMART WATER Audit of your facility at 305 Pavilion Place in Brighton on February 23, 2010. The SMART WATER Audit was conducted as part of the City's audit project, whereby a select group of local businesses volunteered to help The City complete a commercial audit program intended to assist local businesses improve water use efficiency and in doing so, reduce water and energy operational costs.

The inventory of Lone Star's water using fixtures and appliances is provided in Table 1. Figure 1 presents the monthly water use at Lone Star in 2008 and 2009.

Water Use Summary

Lone Star Restaurant uses water in a manner consistent with newly constructed restaurants throughout Colorado. Similar to many restaurants built after 1994, Lone Star has sinks and toilets that have been outfitted with water efficient fixtures which are currently available in the marketplace. For this reason, limited water and energy savings can be realized by Lone Star.

Lone Star Restaurant does utilize a pre-rinse spray nozzle that reduces water use in the kitchen. In addition, Lone Star utilizes air cooled ice makers which help to reduce water use. The bathroom sink faucet aerators at Lone Star already use the 0.5 gallon per minute aerators.

Lone Star has five kitchen and bar hand wash sinks that use 2.5 gallons per minute. Replacing the aerators in these sinks with new 0.5 gallon per minute faucet aerators would cost about $6 per aerator and save a combined water and energy savings of about $52 per sink per year.

By replacing the two current 1 gallon per flush urinals with the Water Sense approved high efficiency waterless urinals, the initial cost would be $792. Lone Star would see a cost savings of approximately $100 per year per fixture resulting in payback period of about 4 years.

Lone Star indicated that they do not have any outdoor irrigation therefore no evaluation was performed to characterize outdoor water use for this property.

Overall, there are only a few potential water saving measures that could be implemented at Lone Star. These measures are listed at the bottom of attached Table 2. If all the recommended water savings fixtures are implemented, it would cost approximately $825 and may bring a reduction of about $466 in annual water and energy costs to this business.

Table 1 - Inventory of Lonestar's Water Using Fixtures and Appliances

Location	**Lonestar**							
Address	305 Pavillion Pl							
Contact	Marney							
Date	2/23/2010							
Type of Business	Restaurant							
Account Number	26.0538.0.1							
Notes								
# of Employees								
# of Customers	500 customers/day							
Toilets	1.28 gpf	1.8 gpf	2.5 gpf	3.5 gpf				Comment
Mens			2					Flushvalve
Womens		3						Flushvalve
Urinals	0.5 gpf	1 gpf	1.5 gpf					
Mens		2						
Sinks	0.5 gpm	2.2 gpm	2.5 gpm	2.7 gpm	3.5 gpm	5 gpm	6 gpm	
Pots and Pans						4		
Kitchen Handwash		2		2				2.7 gpm sinks are used most often
Bathroom Mens	2							
Bathroom Womens	2							
Bar Handwash			1					
Bar Dish Wash					2			
Mop Sink						1		
Other Uses	Make	Model		Capacity				
Ice machines								
	Hoshizaki							Air cooled
Dishwasher								
	Hobart	C44A Serial: 85-10120						w/ Ecolab System
Steam Table								
				2x (2.5'x2.5')				
Outdoor Irrigation								
	None							

Table 2 - Summary of Current Water Use and Potential Water Savings
Lonestar Audit Summary

Maximum Use Calculation	**500/day**	**350**											
		per use						subtotal gpd					
	number	hot	cold	total		uses/day		hot	cold	total			
Toilets Flushing values													
Mens	2		2.5	2.5	gpf	25	flushes	-	125	125			
Womens	3		1.8	1.8	gpf	55	flushes	-	297	297			
Urinals													
Mens	2		1	1	gpf	55	flushes	-	110	110			
Bathroom Sinks													
Mens	2	0.25	0.25	0.5	gpm	12	minutes	24	24	48			
Womens	2	0.25	0.25	0.5	gpm	8.25	minutes	17	17	33			
Kitchen Sinks: Pots and Pans	4	4	1	5	gpm	120	minutes	1,920	480	2,400			
Kitchen Handwash Sink	4	1.225	1.225	2.45	gpm	10	minutes	49	49	98			
Mop Sink	1	0	5	5	gpm	3	uses	-	15	15			
Bar Sink	2	1.75	1.75	3.5	gpm	180	minutes	630	630	1,260			
Bar Hand Sink	1	1.25	1.25	2.5	gpm	5	minutes	6	6	13			
Other													
Ice Machine (Hoshizaki) Air Cooled	1		17.8	17.8	gp100#	6	100# Ice	-	107	107			
Dishwasher (Hobart) Ser# 1.85-1012074 C44A	1	0	1.2	1.2	gpcycle	350	cycles	-	420	420			
Steam Table	2		7.79	7.79	gpuse	3	daily	-	47	47			
								2,646	**2,326**	**4,972**	**max day**		
									observed	149,000	max month		
										30	days at max		
									observed	4,966.67	max day		

Table 2 - Summary of Current Water Use and Potential Water Savings
Lonestar Audit Summary

Average Use Calculation

	number	per use hot	per use cold	per use total		uses/day		subtotal gpd hot	subtotal gpd cold	subtotal gpd total	
Toilets											
	Mens	2		2.5	2.5 gpf	15	flushes	-	75	75	
	Womens	3		1.8	1.8 gpf	37	flushes	-	200	200	
Urinals											
	Mens	2		1	1 gpf	35	flushes	-	70	70	
Bathroom Sinks											
	Mens	2	0.25	0.25	0.5 gpm	7.5	minutes	15	15	30	
	Womens	2	0.25	0.25	0.5 gpm	5.55	minutes	11	11	22	
Kitchen Sinks: Pots and Pans		4	4	1	5 gpm	70	minutes	1,120	280	1,400	
Kitchen Handwash Sink		4	1.225	1.225	2.45 gpm	5	minutes	25	25	49	
Mop Sink		1	0	5	5 gpm	2	uses	-	10	10	
Bar Sink		2	1.75	1.75	3.5 gpm	110	minutes	385	385	770	
Bar Hand Sink		1	1.25	1.25	2.5 gpm	2	minutes	3	3	5	
Other											
Ice Machine (Hoshizaki) Air Cooled		1		17.8	17.8 gp100#	4	100# Ice	-	71	71	
Dishwasher (Hobart) Ser# 1.85-1012074 C44A		1	0	1.2	1.2 gpcycle	250	cycles	-	300	300	
Steam Table		1		7.79	7.79 gpuse	3	daily	-	23	23	
								1,558	**1,467**	**3,026**	**avg day**
									observed	90,571	avg month
										30	days at avg
									observed	3,019.05	aver day

Maximum Use Water Savings

	number	per use hot	per use cold	per use total		uses/day		subtotal gpd hot	subtotal gpd cold	subtotal gpd total		Savings hot	Savings cold	Savings total
Toilets														
	Mens	2		1.28	1.28 gpf	25	flushes	-	64	64		-	61	61
	Womens	3		1.28	1.28 gpf	55	flushes	-	211	211		-	86	86
												-	-	-
Urinals												-	-	-
	Mens	2		0	0 gpf	55	flushes	-	-	-		-	110	110
												-	-	-
Bathroom Sinks												-	-	-
	Mens	2	0.25	0.25	0.5 gpm	12	minutes	24	24	48		-	-	-
	Womens	2	0.25	0.25	0.5 gpm	8.25	minutes	17	17	33		-	-	-
												-	-	-
												-	-	-
Kitchen Sinks: Pots and Pans		4	4	1	5 gpm	120	minutes	1,920	480	2,400		-	-	-
												-	-	-
Kitchen Handwash Sink		4	0.25	0.25	0.5 gpm	10	minutes	10	10	20		39	39	78
												-	-	-
Mop Sink		1	0	5	5 gpm	3	uses	-	15	15		-	-	-
												-	-	-
Bar Sink		2	1.75	1.75	3.5 gpm	180	minutes	630	630	1,260		-	-	-
												-	-	-
Bar Hand Sink		1	0.25	0.25	0.5 gpm	5	minutes	1	1	3		5	5	10
												-	-	-
Other												-	-	-
Ice Machine (Hoshizaki) Air Cooled		1		17.8	17.8 gp100#	6	100# Ice	-	107	107		-	-	-
Dishwasher (Hobart) Ser# 1.85-1012074 C44A		1	0	1.2	1.2 gpcycle	350	cycles	-	420	420		-	-	-
Steam Table		1		7.79	7.79 gpuse	3	daily	-	23	23		-	23	23
								2,602	**2,002**	**4,604**	**max day**	**44**	**324**	**368**
									observed	149,000	max month			
										32	days at max			
									observed	4,966.67	max day			

Table 2 - Summary of Current Water Use and Potential Water Savings
Lonestar Audit Summary

Average Use Water Savings

		per use					subtotal gpd				Savings		
	number	hot	cold	total		uses/day	hot	cold	total		hot	cold	total
Toilets													
Mens	2		1.28	1.28	gpf	15 flushes	-	38	38		-	37	37
Womens	3		1.28	1.28	gpf	37 flushes	-	142	142		-	58	58
											-	-	-
Urinals											-	-	-
Mens	2		0	0	gpf	35 flushes	-	-	-		-	70	70
											-	-	-
Bathroom Sinks											-	-	-
Mens	2	0.25	0.25	0.5	gpm	7.5 minutes	15	15	30		-	-	-
Womens	2	0.25	0.25	0.5	gpm	5.55 minutes	11	11	22		-	-	-
											-	-	-
											-	-	-
Kitchen Sinks: Pots and Pans	4	4	1	5	gpm	70 minutes	1,120	280	1,400		-	-	-
											-	-	-
Kitchen Handwash Sink	4	0.25	0.25	0.5	gpm	5 minutes	5	5	10		20	20	39
											-	-	-
Mop Sink	1	0	5	5	gpm	2 uses	-	10	10		-	-	-
											-	-	-
Bar Sink	2	1.75	1.75	3.5	gpm	110 minutes	385	385	770		-	-	-
											-	-	-
Bar Hand Sink	1	0.25	0.25	0.5	gpm	2 minutes	1	1	1		2	2	4
											-	-	-
Other											-	-	-
Ice Machine (Hoshizaki) Air Cooled	1		17.8	17.8	gp100#	4 100# Ice	-	71	71		-	-	-
Dishwasher (Hobart) Ser# 1.85-1012074 C44A	1	0	1.2	1.2	gpcycle	250 cycles	-	300	300		-	-	-
Steam Table	1		7.79	7.79	gpuse	3 daily	-	23	23		-	-	-
							1,537	**1,282**	**2,818**	**avg day**	**22**	**186**	**207**
								observed	90,571	avg month			
									32	days at avg			
								observed	3,019.05	aver day			

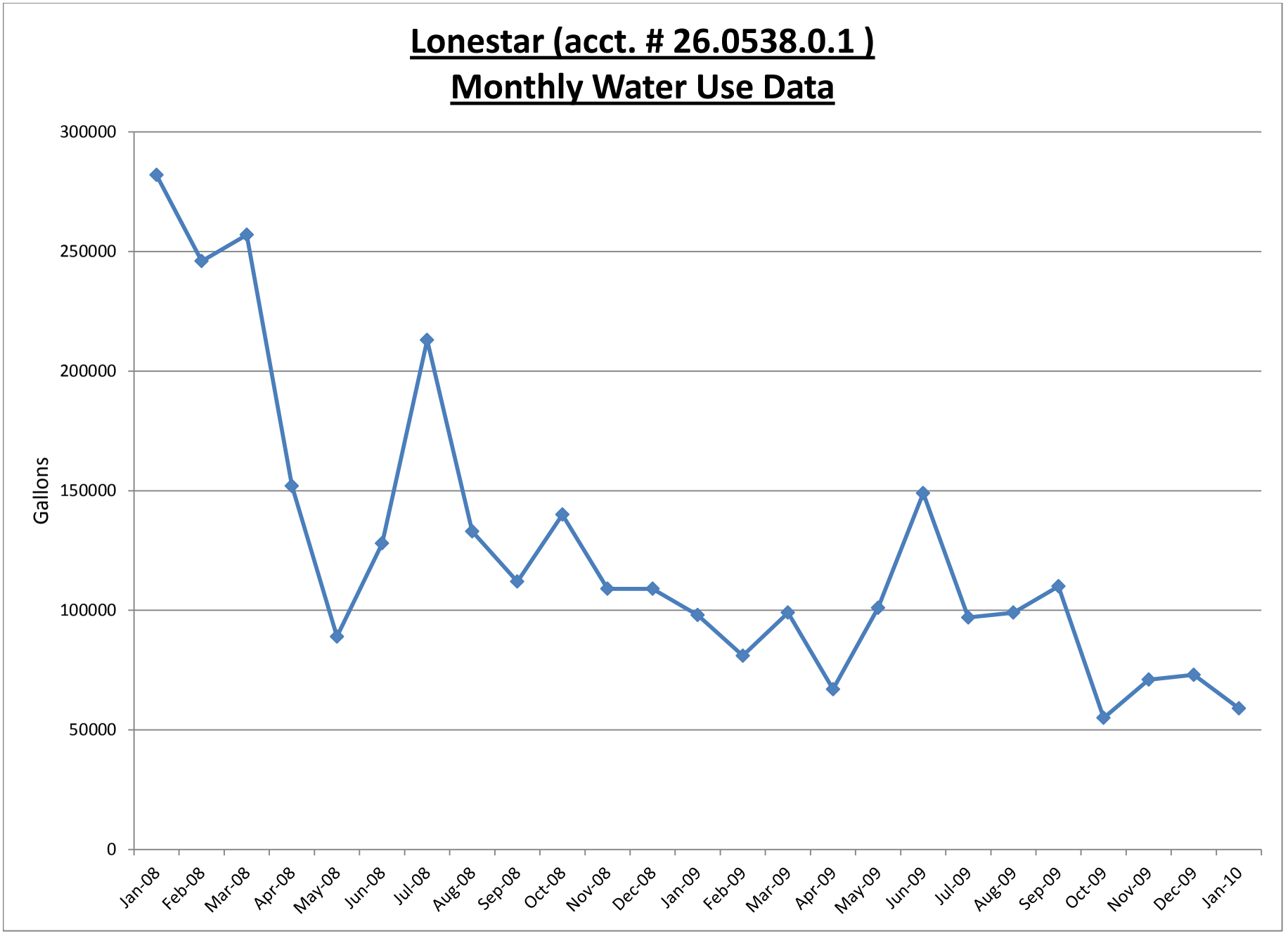
Costs to Implement

	number	Hardware	Installation	Total	Pay Back		Water Savings (gpy)	Energy Savings (kWhr)	Total Cost Savings/yr	Total Cost Savings/yr/fixture
Urinal	2	$ 311	$ 85	$ 792	3.83	yrs	25,200	-	$ 207	$ 103
Kitchen/ Bar Handwash Sinks	5	$ 1.61	$ 5	$ 33	0.13	yrs	15,480	2,038	$ 259	$ 52
				$ 825					$ 466	
	AF Savings:	0.12		$/ AF:	$ 6,609		Replacement Water Cost* :	$ 3,745	Avoided Cost** :	$ 386

* Calculation based on $30,000 per AF

** Calculation based on $9.50/ 1000 gal

Cost Savings Assumptions: $8.50/1000 gal - cost of water and sewer, $0.065/kwh cost of energy



GREAT WESTERN INSTITUTE

SMART WATER Audit Report

Mojo's

Overview

The City working with Great Western Institute, conducted a SMART WATER Audit of your restaurant at 174 S. Main St. in Brighton on March 17, 2010. The SMART WATER Audit was conducted as part of the City's audit project, whereby a select group of local businesses volunteered to help The City complete a commercial audit program intended to assist local businesses improve water use efficiency and in doing so, reduce water and energy operational costs.

The inventory of Mojo's water using fixtures and appliances is provided in Table 1. Figure 1 presents the monthly water use at Mojo's in 2008 and 2009.

Water Use Summary

Mojo's was built in the 1970's. Similar to many restaurants built before 1994, Mojo's has plumbing fixtures that should be updated to improve water use efficiency, thus saving water and energy costs. The six sink faucets in both the men's and women's bathrooms use about 2 gallon per minute. Changing these faucet aerators would cost approximately $6 per sink and would result in a water and energy savings of approximately $70 dollars per year per sink.

The seven toilets at Mojo's use approximately 1.6 gallons per flush. By installing new Water Sense approved high efficiency toilets which use 1.28 gallons per flush and work correctly, the restaurant would spend $2,639 with and could have a total savings of approximately $70 per year. By replacing the five current 1 gallon per flush urinals with the Water Sense approved high efficiency waterless urinals, the initial cost would be $1,980. The restaurant could see a cost savings of approximately $21 per year per fixture resulting in a payback period of about 20 years.

Mojo's does utilize a pre-rinse spray nozzle as well as air cooled ice makers which help to reduce kitchen water use. Mojo's has five kitchen/bar hand wash sinks that use approximately 2 gallons per minute. Replacing the aerators in these sink aerators with 0.5 gallon per minute faucet aerators would cost about $6 per sink and may save a combined total water and energy savings of about $171 per year.

Mojo's indicated that they do not have any outdoor irrigation therefore no evaluation was performed to characterize outdoor water use for this property.

These water saving measures are listed at the bottom of attached Table 2. If all the recommended water saving fixtures were to be implemented, it would cost approximately $4,692 and may bring a reduction of about $764 in annual water and energy costs.

Table 1 - Inventory of Mojo's Water Using Fixtures and Appliances

Location	**Mojo's**							
Address	174 S. Main St.							
Contact	Roger/Edwardo spoke with							
Date	3/17/2010							
Type of Business	Restaurant							
Account Number	47.0591.0.1							
Notes								
Built Date	Approximately 1970's							
# of Employees	6 average at a time							
# of Customers	200							
Toilets	1.28 gpf	1.6 gpf	2.0 gpf	3.5 gpf				Comment
Mens		2						
Womens		5						
Urinals	0.5 gpf	1 gpf	1.5 gpf					
Mens		5						
Sinks	0.5 gpm	1 gpm	2 gpm	2.5 gpm	3 gpm	5 gpm	6 gpm	
Pots and Pans						2		
Kitchen Handwash			3					1 drips
Bathroom Mens			3					
Bathroom Womens			3					
Bar Dish Sink					1			1 sink, 2 faucets
Bar Handwash Sink			2					
Mop Sink					1			
Pre Risnse Spray						1		
Other Uses	Use	Make		Model		Capacity		
Ice machines								
		Scotsman CM3		AquaArmor				water dripping from white pipe
Steam Table								
						3'x2'		
Hot Water Heater								
								Locked in Bathroom
Refrigeration								
x2		Harford, Delfield						
Cooling Towers								
								Air conditioning with temp control
Outdoor Irrigation	None							

Table 2 - Summary of Current Water Use and Potential Water Savings
Mojo's Audit Summary

Maximum Use Calculation **200 customer** **140** **6 employees/shift**

		number	per use hot	per use cold	per use total		uses/day		subtotal gpd hot	subtotal gpd cold	subtotal gpd total	
Toilets												
	Mens	2		1.6	1.6	gpf	10	flushes	-	32	32	
	Womens	5		1.6	1.6	gpf	15	flushes	-	120	120	
Urinals												
	Mens	5		1	1	gpf	10	flushes	-	50	50	
Bathroom Sinks												
	Mens	3	1	1	2	gpm	3	minutes	36	36	72	
	Womens	3	1	1	2	gpm	2.25	minutes	27	27	54	
Kitchen Sinks: Pots and Pans		2	4	1	5	gpm	135	minutes	1,080	270	1,350	
Kitchen Handwash Sink		3	1	1	2	gpm	10	minutes	30	30	60	
Mop Sink		1	0	3	3	gpm	2	uses	-	6	6	
Bar Sink		1	1.5	1.5	3	gpm	40	minutes	60	60	120	
Bar Hand Sink		2	1	1	2	gpm	2	minutes	4	4	8	
Other												
Ice Machine (Scotsman CM3) Air Cooled		1		17.8	17.8	gp100#	3	100# Ice	-	53	53	
Dishwasher		0	0	1.2	1.2	gpcycle		cycles	-	-	-	
Steam Table		1		3.74	3.74	gpuse	2	daily	-	7	7	
									1,237	**696**	**1,933**	**max day**
										observed	58,000	max month
											30	days at max
										observed	1,933.33	max day

Table 2 - Summary of Current Water Use and Potential Water Savings
Mojo's Audit Summary

Average Use Calculation

		number	per use hot	per use cold	per use total		uses/day		subtotal gpd hot	subtotal gpd cold	subtotal gpd total	
Toilets												
	Mens	2		1.6	1.6	gpf	7	flushes	-	22	22	
	Womens	5		1.6	1.6	gpf	12	flushes	-	96	96	
Urinals												
	Mens	5		1	1	gpf	7	flushes	-	35	35	
Bathroom Sinks												
	Mens	3	1	1	2	gpm	2.1	minutes	25	25	50	
	Womens	3	1	1	2	gpm	1.8	minutes	22	22	43	
Kitchen Sinks: Pots and Pans		2	4	1	5	gpm	110	minutes	880	220	1,100	
Kitchen Handwash Sink		3	1	1	2	gpm	5	minutes	15	15	30	
Mop Sink		1	0	5	5	gpm	2	uses	-	10	10	
Bar Sink		1	1.5	1.5	3	gpm	30	minutes	45	45	90	
Bar Hand Sink		2	1	1	2	gpm	2	minutes	4	4	8	
Other												
Ice Machine (Scotsman CM3) Air Cooled		1		17.8	17.8	gp100#	2	100# Ice	-	36	36	
Dishwasher		0	0	1.2	1.2	gpcycle		cycles	-	-	-	
Steam Table		1		3.74	3.74	gpuse	2	daily	-	7	7	
									991	**537**	**1,528**	**avg day**
										observed	45,909	avg month
											30	days at avg
										observed	1,530.30	aver day

Table 2 - Summary of Current Water Use and Potential Water Savings
Mojo's Audit Summary

Maximum Use Water Savings

		per use					subtotal gpd				savings		
	number	hot	cold	total		uses/day	hot	cold	total		hot	cold	total
Toilets													
Mens	2			1.28	1.28 gpf	10 flushes	-	26	26		-	6	6
Womens	5			1.28	1.28 gpf	15 flushes	-	96	96		-	24	24
											-	-	-
Urinals											-	-	-
Mens	5			0	0 gpf	10 flushes	-	-	-		-	50	50
											-	-	-
Bathroom Sinks											-	-	-
Mens	3	0.25	0.25	0.5	gpm	3 minutes	9	9	18		27	27	54
Womens	3	0.25	0.25	0.5	gpm	2.25 minutes	7	7	14		20	20	41
											-	-	-
											-	-	-
Kitchen Sinks: Pots and Pans	2	4	1	5	gpm	135 minutes	1,080	270	1,350		-	-	-
											-	-	-
Kitchen Handwash Sink	3	0.25	0.25	0.5	gpm	10 minutes	8	8	15		23	23	45
											-	-	-
Mop Sink	1	0	5	5	gpm	2 uses	-	10	10		-	(4)	(4)
											-	-	-
Bar Sink	1	1.5	1.5	3	gpm	40 minutes	60	60	120		-	-	-
											-	-	-
Bar Hand Sink	2	0.25	0.25	0.5	gpm	2 minutes	1	1	2		3	3	6
											-	-	-
Other											-	-	-
Ice Machine (Scotsman CM3) Air Cooled	1			17.8	17.8 gp100#	3 100# Ice	-	53	53		-	-	-
Dishwasher	0	0	1.2	1.2	gpcycle	0 cycles	-	-	-		-	-	-
Steam Table	1		3.74	3.74	gpuse	2 daily	-	7	7		-	-	-
							1,164	**547**	**1,711**	**max day**			
								observed	58,000	max month			
									34	days at max			
								observed	1,933.33	max day			

Average Use Water Savings

		per use					subtotal gpd				savings		
	number	hot	cold	total		uses/day	hot	cold	total		hot	cold	total
Toilets													
Mens	2			1.28	1.28 gpf	7 flushes	-	18	18		-	4	4
Womens	5			1.28	1.28 gpf	12 flushes	-	77	77		-	19	19
											-	-	-
Urinals											-	-	-
Mens	5			0	0 gpf	7 flushes	-	-	-		-	35	35
											-	-	-
Bathroom Sinks											-	-	-
Mens	3	0.25	0.25	0.5	gpm	2.1 minutes	6	6	13		19	19	38
Womens	3	0.25	0.25	0.5	gpm	1.8 minutes	5	5	11		16	16	32
											-	-	-
											-	-	-
Kitchen Sinks: Pots and Pans	2	4	1	5	gpm	110 minutes	880	220	1,100		-	-	-
											-	-	-
Kitchen Handwash Sink	3	0.25	0.25	0.5	gpm	5 minutes	4	4	8		11	11	23
											-	-	-
Mop Sink	1	0	5	5	gpm	2 uses	-	10	10		-	-	-
											-	-	-
Bar Sink	1	1.5	1.5	3	gpm	30 minutes	45	45	90		-	-	-
											-	-	-
Bar Hand Sink	2	0.25	0.25	0.5	gpm	2 minutes	1	1	2		3	3	6
											-	-	-
Other											-	-	-
Ice Machine (Scotsman CM3) Air Cooled	1			17.8	17.8 gp100#	2 100# Ice	-	36	36		-	-	-
Dishwasher	0	0	1.2	1.2	gpcycle	0 cycles	-	-	-		-	-	-
Steam Table	1		3.74	3.74	gpuse	2 daily	-	7	7		-	-	-
							941	**429**	**1,371**	**avg day**			
								observed	45,909	avg month			
									33	days at avg			
								observed	1,530.30	aver day			

Table 2 - Summary of Current Water Use and Potential Water Savings
Mojo's Audit Summary

Costs to Implement

	number	Hardware	Installation	Total	Pay Back		Water Savings (gpy)	Energy Savings (kWhr)	Total Cost Savings/yr	Total Cost Savings/yr/fixture
Toilet	7	$ 282	$ 95	$ 2,639	37.75	yrs	8,525	-	$ 70	$ 10
Urinal	5	$ 311	$ 85	$ 1,980	19.16	yrs	12,600	-	$ 103	$ 21
Bathroom Sink	6	$ 1.61	$ 5	$ 40	0.09	yrs	25,272	3,281	$ 421	$ 70
Kitchen/ Bar Handwash Sinks	5	$ 1.61	$ 5	$ 33	0.19	yrs	10,260	1,332	$ 171	$ 34
				$ 4,692					$ 764	

AF Savings: 0.17 $/ AF: $ 26,983

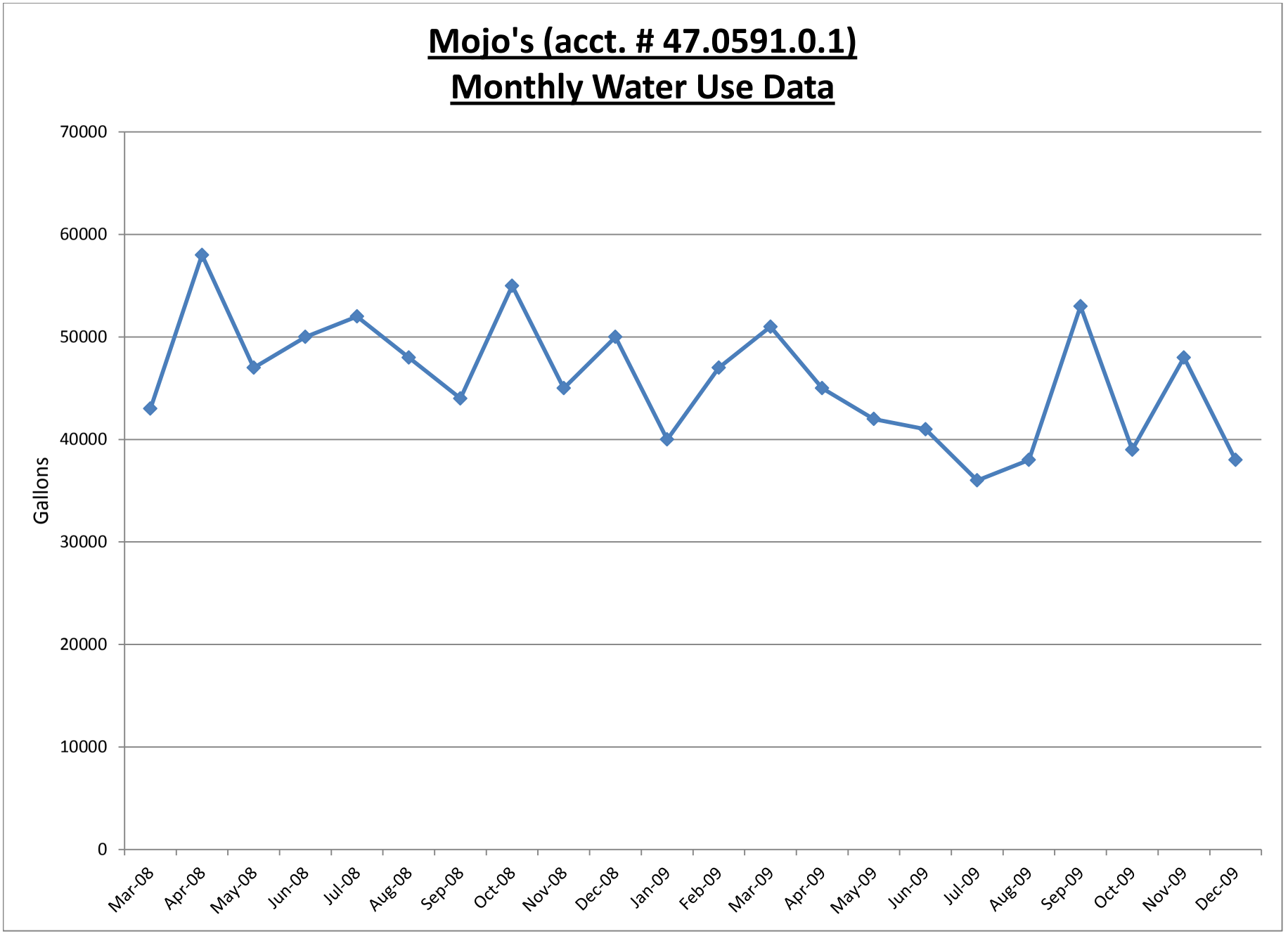
Replacement Water Cost* : $ 5,216

Avoided Cost** : $ 538

* Calculation based on $30,000 per AF

** Calculation based on $9.50/ 1000 gal

Cost Savings Assumptions: $8.50/1000 gal - cost of water and sewer, $0.065/kwh cost of energy



GREAT WESTERN INSTITUTE

SMART WATER Audit Report

Taco Bell

Overview

The City working with Great Western Institute, conducted a SMART WATER Audit of your restaurant at 2121 Prairie Center in Brighton on April 2, 2010. The SMART WATER Audit was conducted as part of the City's audit project, whereby a select group of local businesses volunteered to help The City complete a commercial audit program intended to assist local businesses improve water use efficiency and in doing so, reduce water and energy operational costs.

The inventory of Taco Bell's water using fixtures and appliances is provided in Table 1. Figure 1 presents the monthly water use at Taco Bell in 2008 and 2009.

Water Use Summary

The Taco Bell Restaurant uses water in a manner consistent with newly constructed restaurants throughout Colorado. The toilets at Taco Bell are flush valves which only use 1 gallon per flush. These toilets are as water efficient as can be expected given the current available market and technology. However, the current 1 gallon per flush urinals could be improved with Water Sense high efficiency waterless urinals, at an initial cost of about $396. Taco Bell could see a cost savings of approximately $209 per year associated with the improvement resulting in a payback period of about 2 years.

Taco Bell also utilizes a pre-rinse spray nozzle as well as air cooled ice makers which help to reduce water use. However, the bathroom sink faucets at Taco Bell use 2 gallon per minute aerators. By changing the aerators to 0.5 gallon per minute water efficient aerators, Taco Bell will incur an initial cost of approximately $6 per fixture and will potentially save $539 per year per fixture.

Taco Bell has three kitchen hand wash sinks that use 3 gallons per minute. However, these sinks are not able to be retrofitted with new aerators due to their foot pedal design.

Overall, there are only a few potential indoor water saving measures that could be implemented at Taco Bell. These water saving measures are listed at the bottom of attached Table 2. If all the recommended indoor water saving fixtures were to be installed, it would cost approximately $422 and it may create a reduction of about $2,366 in annual water and energy costs.

Changes to the irrigation system, on the other hand, could create substantial savings since Taco Bell is currently over irrigating its turf and landscape areas. An outdoor water audit which will evaluate the sprinkler system clock settings, system pressure, and other irrigation system efficiencies is recommended. Water savings associated with a more efficient operation of its automated irrigation system could be as much as 80,000 gallons of water per month.

Table 1 - Inventory of Taco Bell's Water Using Fixtues and Appliances

Location	**Taco Bell**							
Address	2121 Prairie Center							
Contact	Kelly S.							
Date	4/2/2010							
Type of Business	Restaurant							
Account Number	18.2001.3.1							
Notes								
Built Date	2007							
# of Employees								
# of Customers								
Toilets	1.0 gpf	1.6 gpf	2.0 gpf	3.5 gpf				Comment
Mens	1							Flushvalve 2007; Crane
Womens	2							Flushvalve 2007
Urinals	0.5 gpf	1 gpf	1.5 gpf					
Mens		1						
Sinks	0.5 gpm	1 gpm	2 gpm	2.5 gpm	3 gpm	5 gpm	6 gpm	
Pots and Pans						2		
Kitchen Handwash					3			Foot pump
Bathroom Mens			2					
Bathroom Womens			2					
Mop Sink						1		
Pre Risnse Spray						1		
Other Uses	Use	Make		Model		Capacity		
Ice machines								
		Manitowac						Air Cooled
Steam Table								
						4'x4'		
Hot Water Heater								
		State Ultra HE		SUF100199NF		100 gal		2007; 180 degrees
Outdoor Irrigation	Sprinklers; 24 zones; RainBird Controller							
	7 @ 25 min; 17 @10 min							

Table 2 - Summary of Current Water Use and Potential Water Savings
Taco Bell Audit Summary

Maximum Use Calculation

	number	per use hot	per use cold	per use total		uses/day		subtotal gpd hot	subtotal gpd cold	subtotal gpd total	
Toilets											
	Womens	2		1	1 gpf	70	flushes	-	140	140	
	Mens	1		1	1 gpf	45	flushes	-	45	45	
	Urinal	1		1	1 gpf	85	flushes	-	85	85	
Bathroom Sinks											
	Womens	2	1	1	2 gpm	10.5	minutes	84	84	168	
	Mens	2	1	1	2 gpm	19.5	minutes	156	156	312	
Kitchen Sinks: Pots and Pans		2	4	1	5 gpm	75	minutes	600	150	750	
Kitchen Handwash Sink w foot pump		3	1.5	1.5	3 gpm	5	minutes	23	23	45	
Mop Sink		1	2.5	2.5	5 gpm	3	uses	8	8	15	
Steam Table		1		9.97	9.97 gpuse	1	daily	-	10	10	
Ice Machine Air Cooled		1		17.8	17.8 gp100#	5	100# Ice	-	89	89	
								870	**789**	**1,659**	**max day**
								observed		50,000	max month
										30	days at max
								observed		1,666.67	max day

Average Use Calculation

	number	per use hot	per use cold	per use total		uses/day		subtotal gpd hot	subtotal gpd cold	subtotal gpd total	
Toilets											
	Womens	2		1	1 gpf	60	flushes	-	120	120	
	Mens	1		1	1 gpf	35	flushes	-	35	35	
	Urinal	1		1	1 gpf	70	flushes	-	70	70	
Bathroom Sinks											
	Womens	2	1	1	2 gpm	14.25	minutes	114	114	228	
	Mens	2	1	1	2 gpm	15.75	minutes	126	126	252	
Kitchen Sinks: Pots and Pans		2	4	1	5 gpm	65	minutes	520	130	650	
Kitchen Handwash Sink w foot pump		3	1.5	1.5	3 gpm	4	minutes	18	18	36	
Mop Sink		1	2.5	2.5	5 gpm	2	uses	5	5	10	
Steam Table		1		9.97	9.97 gpuse	1	daily	-	10	10	
Ice Machine Air Cooled		1		17.8	17.8 gp100#	4	100# Ice	-	71	71	
								783	**699**	**1,482**	**avg day**
								observed		44,571	avg month
										30	days at avg
								observed		1,485.71	aver day

Table 2 - Summary of Current Water Use and Potential Water Savings
Taco Bell Audit Summary

Maximum Use Water Savings

		number	per use hot	per use cold	per use total		uses/day	subtotal gpd hot	subtotal gpd cold	subtotal gpd total	Savings hot	Savings cold	Savings total
Toilets													
	Womens	2		1	1	gpf	70 flushes	-	140	140	-	-	-
	Mens	1		1	1	gpf	45 flushes	-	45	45	-	-	-
	Urinal	1		1	1	gpf	85 flushes	-	85	85	-	-	-
											-	-	-
Bathroom Sinks											-	-	-
	Womens	2	0.25	0.25	0.5	gpm	10.5 minutes	21	21	42	63	63	126
	Mens	2	0.25	0.25	0.5	gpm	19.5 minutes	39	39	78	117	117	234
											-	-	-
Kitchen Sinks: Pots and Pans		2	4	1	5	gpm	75 minutes	600	150	750	-	-	-
											-	-	-
Kitchen Handwash Sink w foot pump		3	1.5	1.5	3	gpm	5 minutes	23	23	45	-	-	-
Mop Sink		1	2.5	2.5	5	gpm	3 uses	8	8	15	-	-	-
Steam Table		1		9.97	9.97	gpuse	1 daily	-	10	10	-	-	-
Ice Machine Air Cooled		1		17.8	17.8	gp100#	3 100# Ice	-	53	53	-	36	36
											-	-	-
											-	-	-
								690	**573**	**1,263**	**max day**		
								observed		50,000	max month		
										40	days at max		
								observed		1,666.67	aver day		

Average Use Water Savings

		number	per use hot	per use cold	per use total		uses/day	subtotal gpd hot	subtotal gpd cold	subtotal gpd total	savings hot	savings cold	savings total
Toilets													
	Womens	2		1	1	gpf	60 flushes	-	120	120	-	-	-
	Mens	1		1	1	gpf	35 flushes	-	35	35	-	-	-
	Urinal	1		0	0	gpf	70 flushes	-	-	-	-	70	70
											-	-	-
Bathroom Sinks											-	-	-
	Womens	2	0.25	0.25	0.5	gpm	14.25 minutes	29	29	57	86	86	171
	Mens	2	0.25	0.25	0.5	gpm	15.75 minutes	32	32	63	95	95	189
											-	-	-
Kitchen Sinks: Pots and Pans		2	4	1	5	gpm	65 minutes	520	130	650	-	-	-
											-	-	-
Kitchen Handwash Sink w foot pump		3	1.5	1.5	3	gpm	4 minutes	18	18	36	-	-	-
Mop Sink		1	2.5	2.5	5	gpm	2 uses	5	5	10	-	-	-
Steam Table		1		9.97	9.97	gpuse	1 daily	-	10	10	-	-	-
Ice Machine Air Cooled		1		17.8	17.8	gp100#	3 100# Ice	-	53	53	-	18	18
											-	-	-
								603	**431**	**1,034**	**avg day**		
								observed		44,571	avg month		
										43	days at avg		
								observed		1,485.71	aver day		

Costs to Implement

	number	Hardware	Installation	Total	Pay Back	Water Savings (gpy)	Energy Savings (kWhr)	Total Cost Savings/yr	Total Cost Savings/yr/fixture
urinal	1	$ 311	$ 85	$ 396	1.89	25,550		$ 210	$ 209.51
Bathroom Sink	4	$ 1.61	$ 5	$ 26	0.01 yrs	129,600	16,828	$ 2,157	$ 539
				$ 422				$ 2,366	

AF Savings: 0.48 $/ AF: $ 887

Replacement Water Cost* : $ 11,932

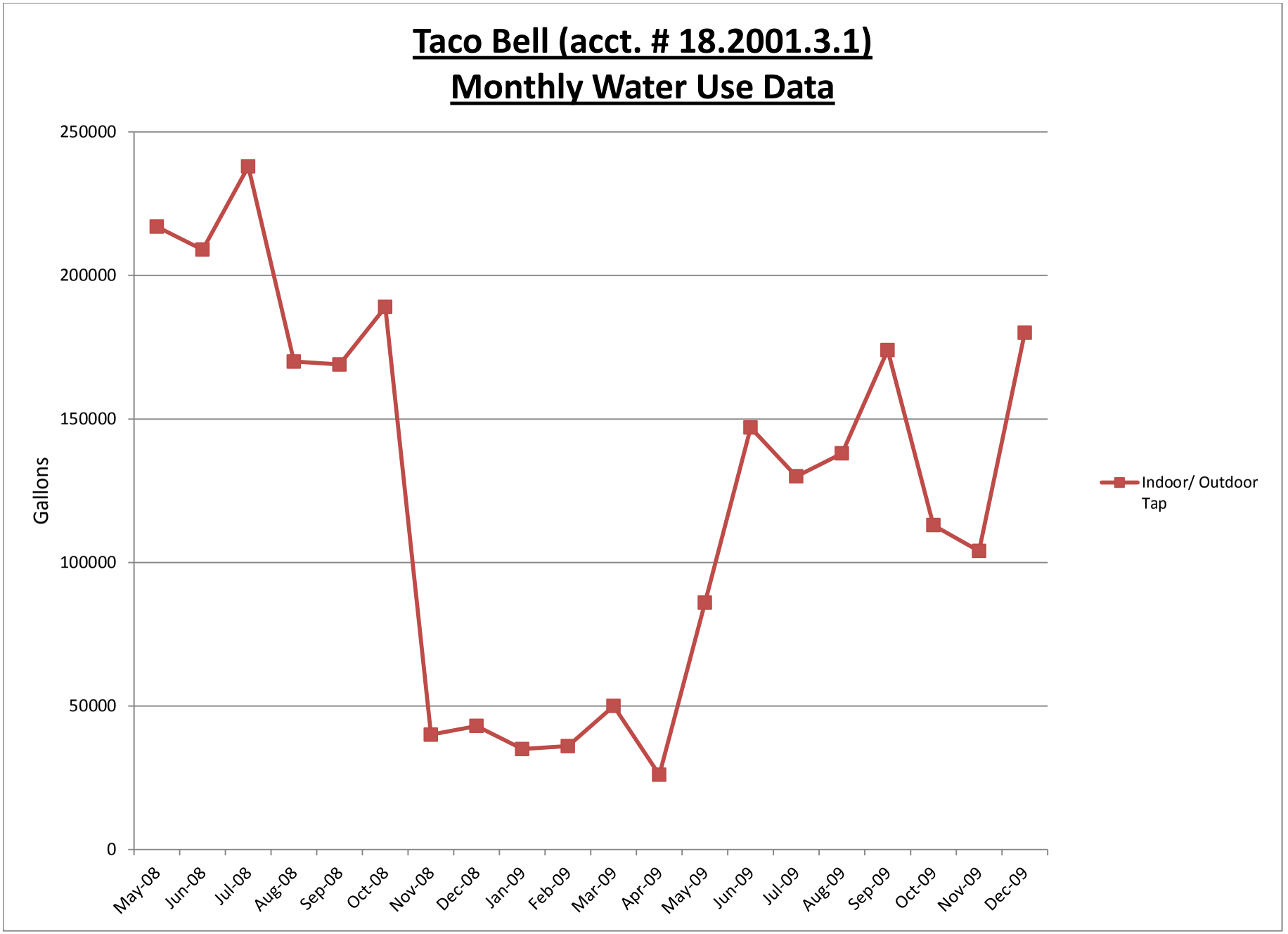
Avoided Cost** : $ 1,231

* Calculation based on $30,000 per AF

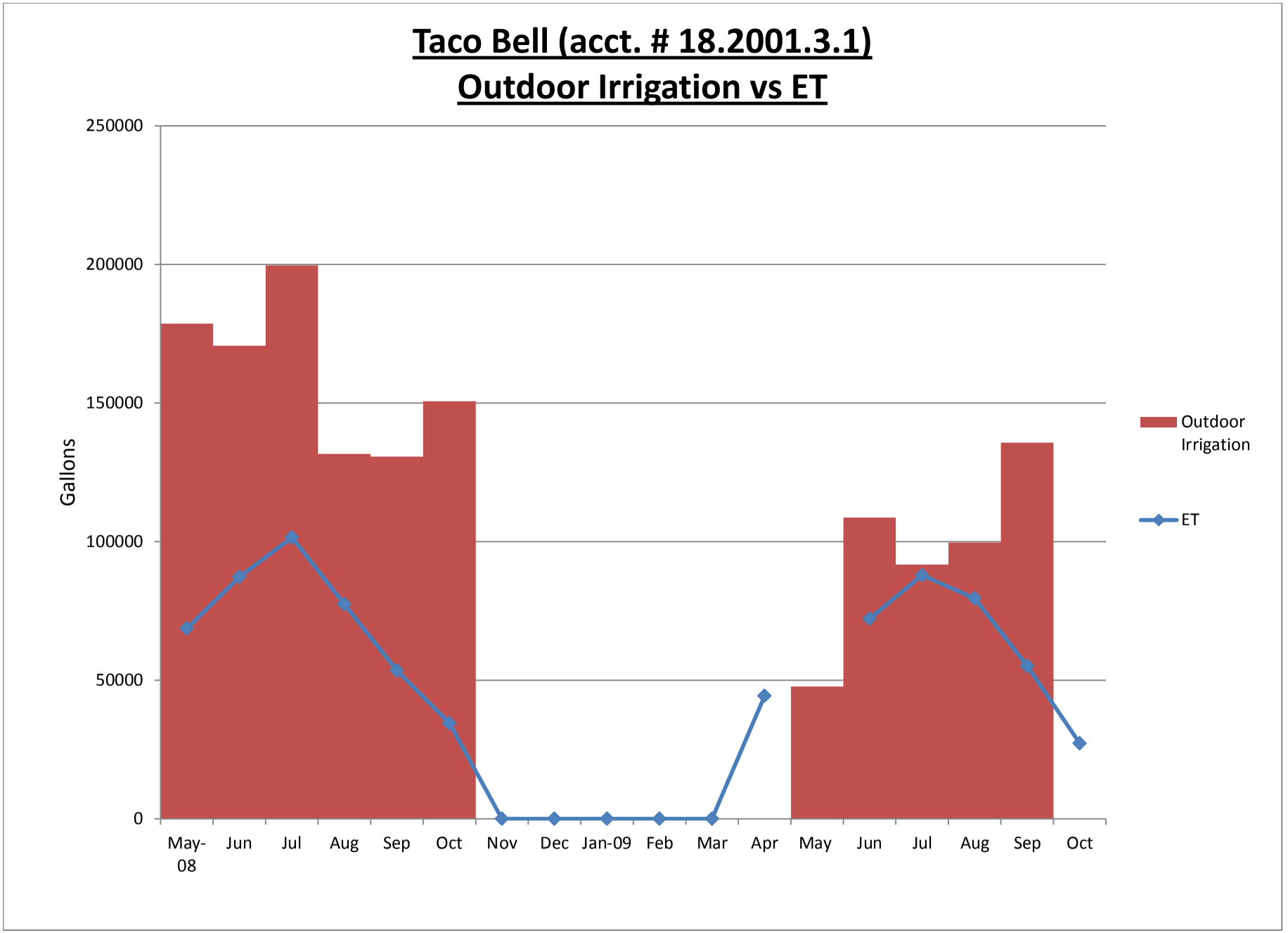
** Calculation based on $9.50/ 1000 gal

Cost Savings Assumptions: $8.50/1000 gal - cost of water and sewer, $0.065/kwh cost of energy

Taco Bell (acct. # 18.2001.3.1)
Monthly Water Use Data



GREAT WESTERN INSTITUTE


Taco Bell (acct. # 18.2001.3.1)
Outdoor Irrigation vs ET
250000
200000
150000
100000
50000
0
Gallons
May-08
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Jan-09
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Outdoor Irrigation
ET

SMART WATER Audit Reports

Commercial

Other

SMART WATER Audit Report

Brighton Care Center

Overview

The City working with Great Western Institute, conducted a SMART WATER Audit of your facility at 2025 Egbert St. in Brighton on April 2, 2010. The SMART WATER Audit was conducted as part of the City's audit project, whereby a select group of local businesses volunteered to help The City complete a commercial audit program intended to assist local businesses improve water use efficiency and in doing so, reduce water and energy operational costs.

The inventory of Brighton Care Center's water using fixtures and appliances is provided in Table 1. Figure 1 presents the monthly water use at Brighton Care Center in 2008 and 2009.

Water Use Summary

Brighton Care Center is an assisted living facility in Brighton with 56 individual rooms. There is an average of 88 residences living at the facility with a maximum capacity of 108 residences.

Substantial water and energy savings can be realized by Brighton Care Center by changing out the bathroom sink faucet aerators from the existing 3.5 gallon per minute flow rate to 0.5 gallons per minute devices. The cost will be about $6 per sink, and will result in a combined water and energy savings of about $228 per sink per year or $7,750 total cost savings per year for the facility. . In addition, Brighton Care Center could save an additional $218 in water costs per year by replacing the two kitchen hand wash sink faucet aerators.

The toilets at the facility use 1.6 gallons per flush. They could be replaced with the new Water Sense approved high efficiency toilets which use 1.28 gallons per flush. The initial cost for this change would be $12,818 with a total cost savings of $40 per year per fixture for a total of $1,363 per year for the facility.

These water saving measures are listed at the bottom of attached Table 2. If all the recommended water saving fixtures are implemented, it would cost approximately $13,056 and it would expect to bring a reduction of about $9,332 in annual water and energy costs.

Brighton Care Center has an outdoor irrigation system. With respect to outdoor use, a comparison was made between applied irrigation water and seasonal evapotranspiration (ET). Applied irrigation water was determined using the monthly water billings for 2008 and 2009. Seasonal ET was estimated based on irrigated acreage and ET. Irrigated acreage was estimated using aerial photography, whereas ET rates were estimated using the Northern Colorado Water Conservancy District's Turf Irrigation Management (TIM) Program, which utilizes the 1985 Hargreaves equation to calculate for a given location and weather condition (i.e., average daily temperature and precipitation). Daily weather data for Brighton in 2008 and 2009 was obtained from the NOAA National Data Center. Figure 2 presents a comparison of the irrigation rate and the monthly ET for the Brighton Care Center.

Based on this comparison, the property as a whole irrigates at a rate approximately equivalent to the estimated ET (for the 82,000 square feet of irrigated turf). This evaluation does not preclude the chance that individual irrigation practices at some locations within the subject property may be higher than the ET rate, but on average all irrigation combined is about 85% of observed ET.

Table 1 - Inventory of Brighton Care Center's Water Using Fixtures and Appliances

Location	**Brighton Care Center**								
Address	2025 Egbert St.								
Contact	Paul								
Date	2-Apr								
Type of Business	Care Center/Nursing Home								
Account Number	51.0260.0.1								
Notes									
Built Date	1965								
# of Employees	45/ day; 3 shifts								
# of residents	88 Residents, usually 77-91; max 108								
# or rooms	56								
Toilets	1.28 gpf	1.6 gpf	2.5 gpf	3.5 gpf					Comments
Typical Room Bathroom		28							I per two rooms; Western 2001
Public/Staff 1		1							American Standard 2008
Public/Staff (Kitchen) 2				1					Bemis
Shower Room Toilet		4							Elger, 1997
Showers	1 gpm	1.5 gpm	2 gpm	2.5 gpm	3 gpm				
Shower Room				4					Hand held
Sinks	0.5 gpm	1.5 gpm	2 gpm	2.2 gpm	2.5 gpm	3.5 gpm	5 gpm	6 gpm	
Typical Room Bathroom						28			
Public/Staff 1		1							
Public/Staff (Kitchen) 2			1						
Shower Room Sink		4							
Kitchen Pots and Pans								3	
Breakroom Sink					1				
Kitchen Handwash		2							Not used often
Laundry wash sink							1		Not used often
Mop Closet							1		
Grinder							1		InSinkerator; automatic on and off
Other Uses	Use	Make		Model			Capacity		
Hot Water Heater									
x2		Bradford White		D80T1993N; D80T1993N			80 gal		140 degrees
		AeoSmith		BTR365A118			80 gal		158 degrees
Boilers									
		RayPak							5 yrs old, recirculated water
Coffee Maker									Located in Dining Room
Ice Maker									
x2		Scotsman		CME 1056RS					Air Cooled
Dishwasher									
		Eco Lab ES 4000							
		Accutemp							
Clothes Washer									
x2		UniMac		0304M72658			85 pounds		
Steamtable									
x2							2'x6'		
Cooling Towers									
									Swamp Coolers
Outdoor Irrigation	Sprinklers								
	82,000 square feet								

Table 2 - Summary of Current Water Use and Potential Water Savings
Brighton Care Audit Summary

Maximum Use Calculation **56 rooms** **88 residents 45 employees/day**

			per use						subtotal			
Typical Room		number	hot	cold	total		uses/ day		hot	cold	total	
	Toilet	28		1.6	1.6	gpf	38	flushes	-	1,690	1,690	
	Sink	28	1.75	1.75	3.5	gpm	15.7	minutes	767	767	1,534	
Shower Room												
	Toilet	4		1.6	1.6	gpf	29	flushes	-	188	188	
	Shower (hand held)	4	2	0.5	2.5	gpm	377	minutes	3,017	754	3,771	
	Sink	4	0.75	0.75	1.5	gpm	4	minutes	13	13	26	
Public Bathroom												
	Public Toilet 1	1		3.5	3.5	gpf	84	flushes	-	295	295	
	Public Toilet 2	1		1.6	1.6	gpf	84	flushes	-	135	135	
	Sink	2	1	1	2	gpm	13	minutes	25	25	51	
Kitchen												
	Pots and Pans	3	3.0	3.0	6.0	gpm	160	minutes	1,440	1,440	2,880	
	Breakroom Sink	1	1.3	1.3	2.5	gpm	25	minutes	31	31	63	
	Kitchen Handwash Sink	2	1.0	1.0	2.0	gpm	12	minutes	24	24	48	
	Dish Washing Machine	1	0.5	0.5	0.9	g/rack	210	racks	95	95	189	
	Grinder w/ water	1	2.5	2.5	5.0	gpm	150	minutes	375	375	750	
	Coffee Maker	1	-	1.0	1.0	g/use	15	daily	-	15	15	
	Steam Table	2	-	7.5	7.5	gpuse	1	daily	-	15	15	
	Ice Machine Air Cooled	2	-	17.8	17.8	gp100#	4	100# Ice	-	142	142	
	Mop Sink	1	-	5.0	5.0	gpm	8	uses	-	40	40	
Laundry												
	Laundry Handwash Sink	1	2.5	2.5	5	gpm	4	minutes	10	10	20	
	Clothes Washing Machine	1	30	30	60	g/use	32	use	960	960	1,920	
	Clothes Washing Machine	1	30	30	60	g/use	32	use	960	960	1,920	
Leak		1	0	0.65	0.65	gpm	1,440	minutes	-	936	936	
									7,718	**8,911**	**16,628**	**max day**
									observed		505,900	max month
											30	days at max
									observed		16,863	max day

Table 2 - Summary of Current Water Use and Potential Water Savings
Brighton Care Audit Summary

Average Use Calculation

			per use						subtotal				
Typical Room		number	hot	cold	total		uses/ day		hot	cold	total		
	Toilet	28		1.6	1.6	gpf	31	flushes	-	1,408	1,408		
	Sink	28	1.75	1.75	3.5	gpm	14.7	minutes	721	721	1,442		
Shower Room													
	Toilet	4		1.6	1.6	gpf	25	flushes	-	161	161		
	Shower (hand held)	4	2	0.5	2.5	gpm	251	minutes	2,011	503	2,514		
	Sink	4	0.75	0.75	1.5	gpm	4	minutes	11	11	23		
Public Bathroom													
	Public Toilet 1	1		3.5	3.5	gpf	56	flushes	-	195	195		
	Public Toilet 2	1		1.6	1.6	gpf	56	flushes	-	89	89		
	Sink	2	1	1	2	gpm	8	minutes	17	17	33		
Kitchen													
	Pots and Pans	3	3.0	3.0	6.0	gpm	120	minutes	1,080	1,080	2,160		
	Breakroom Sink	1	1.3	1.3	2.5	gpm	25	minutes	31	31	63		
	Kitchen Handwash Sink	2	1.0	1.0	2.0	gpm	12	minutes	24	24	48		
	Dish Washing Machine	1	0.5	0.5	0.9	g/rack	160	racks	72	72	144		
	Grinder w/ water	1	2.5	2.5	5.0	gpm	100	minutes	250	250	500		
	Coffee Maker	1	-	1.0	1.0	g/use	10	daily	-	10	10		
	Steam Table	2	-	7.5	7.5	gpuse	1	daily	-	15	15		
	Ice Machine Air Cooled	2	-	17.8	17.8	gp100#	2	100# Ice	-	71	71		
	Mop Sink	1	-	5.0	5.0	gpm	5	uses	-	25	25		
Laundry													
	Laundry Handwash Sink	1	2.5	2.5	5	gpm	4	minutes	10	10	20		
	Clothes Washing Machine	1	30	30	60	g/use	25	use	750	750	1,500		
	Clothes Washing Machine	1	30	30	60	g/use	25	use	750	750	1,500		
Leak		1	0	0.5	0.5	gpm	1,440	minutes	-	720	720		
									5,728	**6,913**	**12,641**	**avg day**	
										observed	386,636	avg month	
											31	days at avg	
										observed	12,888	avg day	

Table 2 - Summary of Current Water Use and Potential Water Savings
Brighton Care Audit Summary

Maximum Use Water Savings

Typical Room		number	per use hot	per use cold	per use total		uses/ day		subtotal hot	subtotal cold	subtotal total		Savings hot	Savings cold	Savings total
	Toilet	28		1.28	1.28	gpf	38	flushes	-	1,352	1,352		-	338	338
	Sink	28	0.25	0.25	0.5	gpm	15.7	minutes	110	110	219		658	658	1,315
Shower Room															
	Toilet	4		1.28	1.28	gpf	29	flushes	-	150	150		-	38	38
	Shower (hand held)	4	2	0.5	2.5	gpm	377	minutes	3,017	754	3,771		-	-	-
	Sink	4	0.25	0.25	0.5	gpm	4	minutes	4	4	9		9	9	18
Public Bathroom															
	Public Toilet 1	1		1.28	1.28	gpf	84	flushes	-	108	108		-	187	187
	Public Toilet 2	1		1.28	1.28	gpf	84	flushes	-	108	108		-	27	27
	Sink	2	0.25	0.25	0.5	gpm	13	minutes	6	6	13		19	19	38
Kitchen															
	Pots and Pans	3	3.0	3.0	6.0	gpm	160	minutes	1,440	1,440	2,880		-	-	-
	Breakroom Sink	1	1.3	1.3	2.5	gpm	25	minutes	31	31	63		-	-	-
	Kitchen Handwash Sink	2	0.3	0.3	0.5	gpm	12	minutes	6	6	12		18	18	36
	Dish Washing Machine	1	0.5	0.5	0.9	g/rack	210	racks	95	95	189		-	-	-
	Grinder w/ water	1	2.5	2.5	5.0	gpm	150	minutes	375	375	750		-	-	-
	Coffee Maker	1	-	1.0	1.0	g/use	15	daily	-	15	15		-	-	-
	Steam Table	2	-	7.5	7.5	gpuse	1	daily	-	15	15		-	-	-
	Ice Machine Air Cooled	2	-	17.8	17.8	gp100#	4	100# Ice	-	142	142		-	-	-
	Mop Sink	1	-	5.0	5.0	gpm	8	uses	-	40	40		-	-	-
Laundry															
	Laundry Handwash Sink	1	2.5	2.5	5	gpm	4	minutes	10	10	20		-	-	-
	Clothes Washing Machine	1	30	30	60	g/use	32	use	960	960	1,920		-	-	-
	Clothes Washing Machine	1	30	30	60	g/use	32	use	960	960	1,920		-	-	-
Leak		1	0	0.65	0.65	gpm	1,440	minutes	-	936	936		-	-	-
									7,014	**7,618**	**14,632**	**max day**			
										observed	505,900	max month			
											35	days at max			
										observed	16,863	max day			

Average Use Water Savings

Typical Room		number	per use hot	per use cold	per use total		uses/ day		subtotal hot	subtotal cold	subtotal total		Savings hot	Savings cold	Savings total
	Toilet	28		1.28	1.28	gpf	31	flushes	-	1,126	1,126		-	282	282
	Sink	28	0.25	0.25	0.5	gpm	14.7	minutes	103	103	206		618	618	1,236
Shower Room															
	Toilet	4		1.28	1.28	gpf	25	flushes	-	129	129		-	32	32
	Shower (hand held)	4	2	0.5	2.5	gpm	251	minutes	2,011	503	2,514		-	-	-
	Sink	4	0.25	0.25	0.5	gpm	4	minutes	4	4	8		8	8	15
Public Bathroom															
	Public Toilet 1	1		1.28	1.28	gpf	56	flushes	-	71	71		-	124	124
	Public Toilet 2	1		1.28	1.28	gpf	56	flushes	-	71	71		-	18	18
	Sink	2	0.25	0.25	0.5	gpm	8	minutes	4	4	8		13	13	25
Kitchen															
	Pots and Pans	3	3.0	3.0	6.0	gpm	120	minutes	1,080	1,080	2,160		-	-	-
	Breakroom Sink	1	1.3	1.3	2.5	gpm	25	minutes	31	31	63		-	-	-
	Kitchen Handwash Sink	2	0.3	0.3	0.5	gpm	12	minutes	6	6	12		18	18	36
	Dish Washing Machine	1	0.5	0.5	0.9	g/rack	160	racks	72	72	144		-	-	-
	Grinder w/ water	1	2.5	2.5	5.0	gpm	100	minutes	250	250	500		-	-	-
	Coffee Maker	1	-	1.0	1.0	g/use	10	daily	-	10	10		-	-	-
	Steam Table	2	-	7.5	7.5	gpuse	1	daily	-	15	15		-	-	-
	Ice Machine Air Cooled	2	-	17.8	17.8	gp100#	2	100# Ice	-	71	71		-	-	-
	Mop Sink	1	-	5.0	5.0	gpm	5	uses	-	25	25		-	-	-
Laundry															
	Laundry Handwash Sink	1	2.5	2.5	5	gpm	4	minutes	10	10	20		-	-	-
	Clothes Washing Machine	1	30	30	60	g/use	25	use	750	750	1,500		-	-	-
	Clothes Washing Machine	1	30	30	60	g/use	25	use	750	750	1,500		-	-	-
Leak		1	0	0.5	0.5	gpm	1,440	minutes	-	720	720		-	-	-
									5,072	**5,802**	**10,874**	**avg day**			
										observed	386,636	avg month			
											36	days at avg			
										observed	12,888	avg day			

Table 2 - Summary of Current Water Use and Potential Water Savings
Brighton Care Audit Summary

Costs to Implement

	number	Hardware	Installation	Total	Pay Back	Water Savings (gpy)	Energy Savings (kWhr)	Total Cost Savings/yr	Total Cost Savings/yr/fixture
Toilet	34	$ 282	$ 95	$ 12,818	23.88 yrs	166,159	-	$ 1,362.50	$ 40.07
Bathroom Sink	34	$ 1.61	$ 5	$ 225	0.03 yrs	465,793	60,481	$ 7,750.79	$ 227.96
Kitchen/Laundry Handwash Sinks	2	$ 1.61	$ 5	$ 13	0.06 yrs	13,140	1,706	$ 218.65	$ 109.32
				$ 13,056				$ 9,332	

AF Savings: 1.98 $/ AF: $ 6,595

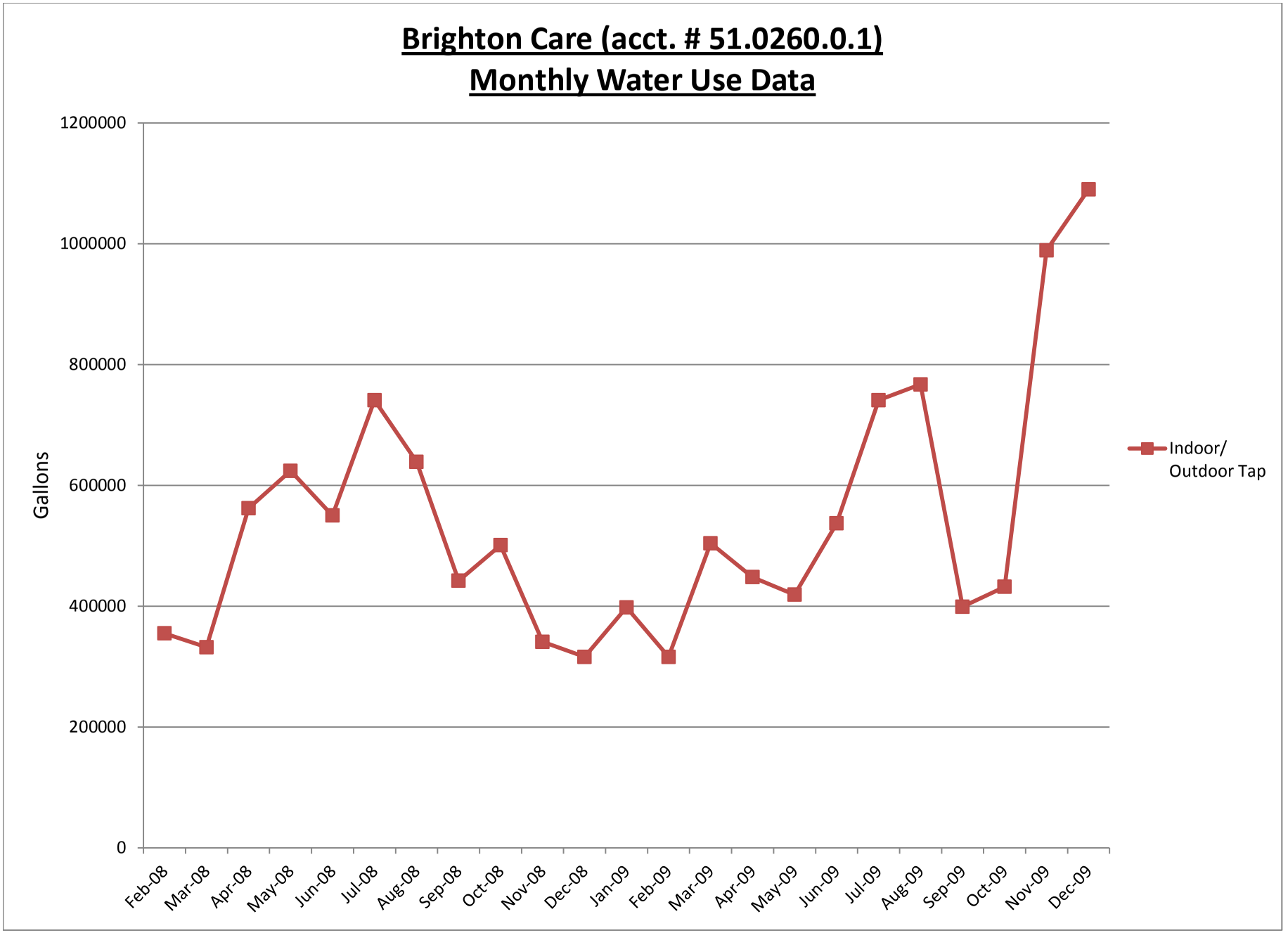
Replacement Water Cost* : $ 59,391

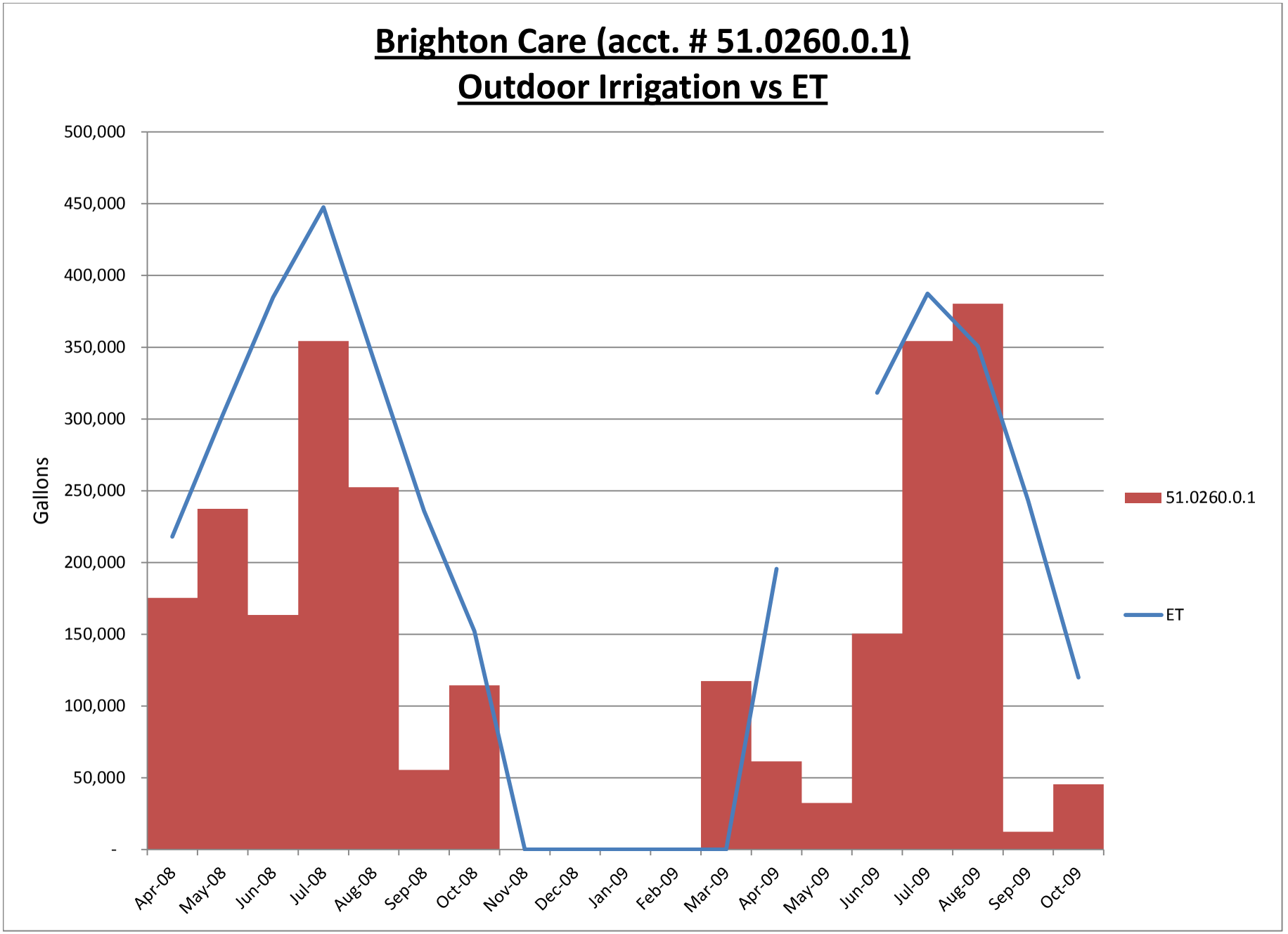
Avoided Cost** : $ 6,128

* Calculation based on $30,000 per AF

** Calculation based on $9.50/ 1000 gal

Cost Savings Assumptions: $8.50/1000 gal - cost of water and sewer, $0.065/kwh cost of energy


Brighton Care (acct. # 51.0260.0.1)
Monthly Water Use Data
Gallons
1200000
1000000
800000
600000
400000
200000
0
Feb-08
Mar-08
Apr-08
May-08
Jun-08
Jul-08
Aug-08
Sep-08
Oct-08
Nov-08
Dec-08
Jan-09
Feb-09
Mar-09
Apr-09
May-09
Jun-09
Jul-09
Aug-09
Sep-09
Oct-09
Nov-09
Dec-09
Indoor/
Outdoor Tap



GREAT WESTERN INSTITUTE

SMART WATER Audit Report

Brighton Terrace Apartments

Overview

The City working with Great Western Institute, conducted a SMART WATER Audit of your apartment complex at 101 Egbert St. in Brighton on April 2, 2010. The SMART WATER Audit was conducted as part of the City's audit project, whereby a select group of local businesses volunteered to help The City complete a residential and commercial audit program intended to assist in improving water use efficiency and in doing so, reduce water and energy operational costs.

The inventory of Brighton Terrace Apartment's water using fixtures and appliances is provided in Table 1. Figure 1 presents the monthly water use at Brighton Terrace Apartments in 2008 and 2009.

Water Use Summary

Brighton Terrace Apartments was built in 1962 and it contains 36 separate apartments in three different buildings. There is an estimate of 3 to 4 people per unit.

Substantial water and energy savings can be realized by Brighton Terrace Apartments by changing out the bathroom sink faucet aerators from the existing 2.5 gallon per minute flow rate to 0.5 gallons per minute devices. The cost will be about $6 per sink, and may result in a combined water and energy savings of about $175 per sink per year or $6,294 total cost savings per year for the complex. This is the most substantial and cost effective method for reducing water use at the complex. It has a payback period of about two weeks.

Another substantial water reduction could be realized by installing water efficient shower heads. New shower heads with a 1.5 gallon per minute flow rate could result in a $198 savings per fixture which translates into a total cost savings of $7,130 per year for the complex. The payback period for the showerhead replacements is estimated to be approximately 3 months.

The toilets in the complex use 1.6 gallons per flush. They could be replaced with the new Water Sense approved high efficiency toilets which use 1.28 gallons per flush. The initial cost for this change would be $13,572 with a total cost savings of $46 per year per fixture for a total of $1,660 per year for the entire complex.

In addition, the washing machines at the Brighton Terrace Apartments use approximately 42 gallons per load. By replacing these washing machines with new Water Sense approved high efficiency washing machines, there could be a savings of $364 per machine or $1,458 for the complex. The initial investment would be approximately $3,700 with a payback period of about two and a half years.

These water saving measures are listed at the bottom of attached Table 2. If all the recommended water saving fixtures are implemented, it would cost approximately $18,558 and it would expect to bring a reduction of about $16,724 in annual water and energy costs.

Table 1 - Inventory for Brighton Terrace Apartments Water Using Fixtures and Appliances

Location	**Brighton Terrace**								
Address	101 W. Egbert St.								
Contact	Jeff Young, Derek								
Date	2-Apr								
Type of Business	Apartment Complex								
Account Number	27.0015.0.5*.4.3; 27.0020.0.5*.4.3; 27.0025.0.5*.4.3								
Notes	1 tap/building								
Built Date	1962								
# of residents	average 4 people/room; varies month to month								
# or apartments	36								
Toilets	1.28 gpf	1.6 gpf	2.5 gpf	3.5 gpf					Comments
Typical Room Bathroom		36							Possibly 4-5 gpm due to leaks
Showers	1 gpm	1.5 gpm	2 gpm	2.5 gpm	3 gpm				
Typical Shower				36					
Sinks	0.5 gpm	1.5 gpm	2 gpm	2.2 gpm	2.5 gpm	3.0 gpm	5 gpm	6 gpm	
Typical Room Bathroom					36				Several have been changed to 1.5 aerators
Kitchen						36			
Other Uses	Use	Make		Model			Capacity		
Clothes Washer									
x4		Speed Queen		SWTT20WN Commercial					MacGray.com; contract
Outdoor Irrigation	None; some hose watering								

Table 2 - Summary of Current Water Use and Potential Water Savings
Brighton Terrace Audit Summary

Maximum Use Calculation

36 Apts **4people/apt**

	number	per use hot	per use cold	per use total		uses/day		subtotal gpd hot	subtotal gpd cold	subtotal gpd total	
1 Bathroom Apartment											
Toilet	36		2.5	2.5	gpf	15	flushes	-	1,364	1,364	
Shower	36	2	0.5	2.5	gpm	30	minutes	2,160	540	2,700	
Bathroom Sink	36	1.25	1.25	2.5	gpm	17	minutes	777	777	1,555	
Kitchen Sink	36	1.25	1.25	2.5	gpm	15	minutes	675	675	1,350	
Clothes Washing Machine	4	21	21	42	g/use	4	use	336	336	672	
								3,948	**3,692**	**7,640**	**max day**
									observed	229,000	max month
										30	days at max
									observed	7,633	max day

Average Use Calculation

	number	per use hot	per use cold	per use total		uses/day		subtotal gpd hot	subtotal gpd cold	subtotal gpd total	
1 Bathroom Apartment											
Toilet	36		2.5	2.5	gpf	13	flushes	-	1,136	1,136	
Shower	36	2	0.5	2.5	gpm	25	minutes	1,800	450	2,250	
Bathroom Sink	36	1.25	1.25	2.5	gpm	14	minutes	648	648	1,295	
Kitchen Sink	36	1.25	1.25	2.5	gpm	10	minutes	450	450	900	
Clothes Washing Machine	4	21	21	42	g/use	2.5	use	210	210	420	
								3,108	**2,894**	**6,002**	**avg day**
									observed	180,000	avg month
										30	days at avg
									observed	6,000	avg day
										167	g/apt
										66.67	gpcd

Table 2 - Summary of Current Water Use and Potential Water Savings
Brighton Terrace Audit Summary

Maximum Use Water Savings

		per use					subtotal gpd				Savings		
	number	hot	cold	total		uses/day	hot	cold	total		hot	cold	total
1 Bathroom Apartment													
Toilet	36		1.28	1.28	gpf	15 flushes	-	698	698		-	665	665
Shower	36	1.2	0.3	1.5	gpm	30 minutes	1,296	324	1,620		864	216	1,080
Bathroom Sink	36	0.25	0.25	0.5	gpm	17 minutes	155	155	311		622	622	1,244
Kitchen Sink	36	1.25	1.25	2.5	gpm	15 minutes	675	675	1,350		-	-	-
Clothes Washing Machine	4	9	9	18	g/use	4 use	144	144	288		192	192	384
							2,270	**1,997**	**4,267**	**max day**			
								observed	229,000	max month			
									54	days at max			
								observed	7,633	max day			

Average Use Water Savings

		per use					subtotal gpd				Savings		
	number	hot	cold	total		uses/day	hot	cold	total		hot	cold	total
1 Bathroom Apartment													
Toilet	36		1.28	1.28	gpf	13 flushes	-	582	582		-	554	554
Shower	36	1.2	0.3	1.5	gpm	25 minutes	1,080	270	1,350		720	180	900
Bathroom Sink	36	0.25	0.25	0.5	gpm	14 minutes	130	130	259		518	518	1,036
Kitchen Sink	36	1.25	1.25	2.5	gpm	10 minutes	450	450	900		-	-	-
Clothes Washing Machine	4	9	9	18	g/use	2.5 use	90	90	180		120	120	240
							1,750	**1,521**	**3,271**	**avg day**			
								observed	180,000	avg month			
									55	days at avg			
								observed	6,000	avg day			

Costs to Implement

	number	Hardware	Installation	Total	Pay Back		Water Savings (gpy)	Energy Savings (kWhr)	Total Cost Savings/yr	Total Cost Savings/yr/fixture
Toilet	36	$ 282	$ 95	$ 13,572	20.80	yrs	202,389	-	$ 1,660	$ 46
Bathroom Sink	36	$ 1.61	$ 5	$ 238	0.04	yrs	378,268	49,117	$ 6,294	$ 175
Showerheads	36	$ 33.00	$ 10	$ 1,548	0.22	yrs	328,500	68,247	$ 7,130	$ 198
Clothes Washing Machines [1]	4	$ 850.00	$ 75	$ 3,700	2.54	yrs	87,600	11,375	$ 1,458	$ 364
				$ 19,058					$ 16,541	

AF Savings: 3.06 $/ AF; $ 6,230

Replacement Water Cost* : $ 91,768

Avoided Cost** : $ 9,469

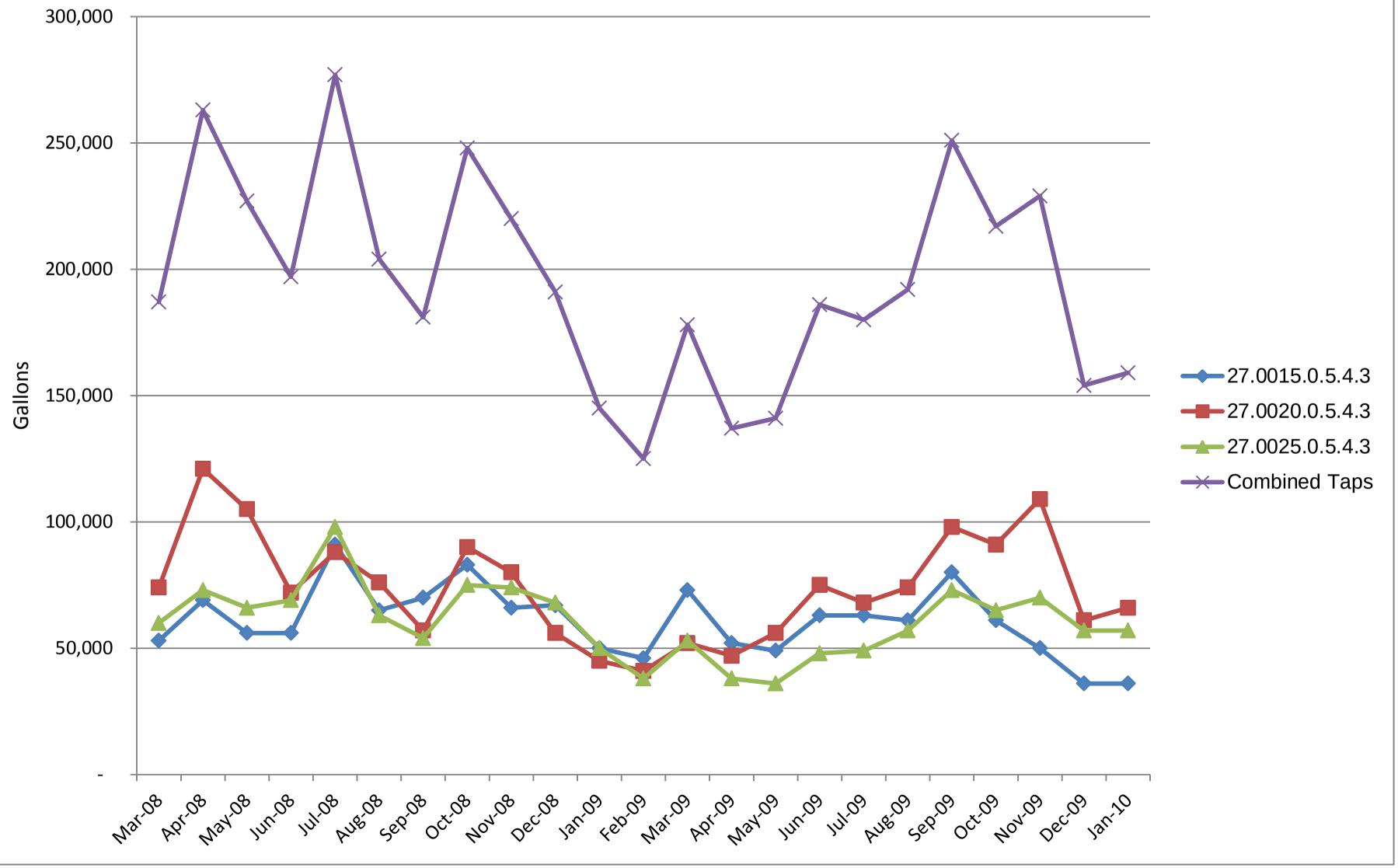
[1] Average hardware and installation pricing for front loading, high-efficiency washing machine from Sears

* Calculation based on $30,000 per AF

** Calculation based on $9.50/ 1000 gal

Cost Savings Assumptions: $8.50/1000 gal - cost of water and sewer, $0.065/kwh cost of energy

Brighton Terrace
(acct. # 27.0015.0.5.4.3, 27.0020.0.5.4.3, 27.0025.0.5.4.3)
Monthly Water Use Data



SMART WATER Audit Report

Bromley Lane Car Wash

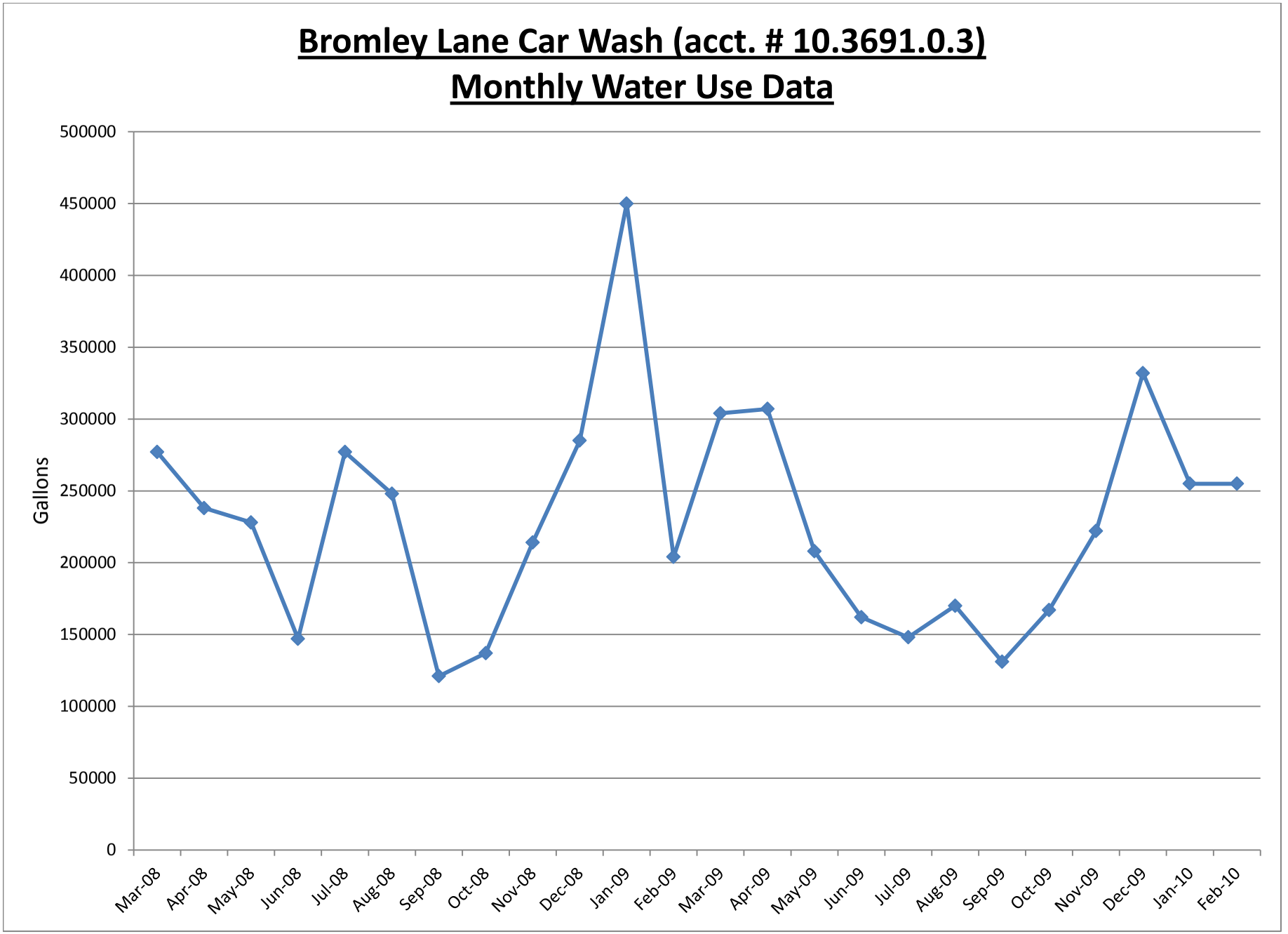
Overview

The City working with Great Western Institute, conducted a SMART WATER Audit of your facility at 4112 Bromley Lane in Brighton on February 24, 2010. The SMART WATER Audit was conducted as part of the City's audit project, whereby a select group of local businesses volunteered to help The City complete a commercial audit program intended to assist local businesses improve water use efficiency and in doing so, reduce water and energy operational costs. Figure 1 presents the monthly water use at the Bromley Lane Car Wash in 2008 and 2009.

Water Use Summary

The Bromley Lane Car Wash is one of the largest water use customers in the City. The facility operates two automated and four manual wash bays year-round, with peak use typically in the winter months. Based on the available literature, it is estimated that the car wash uses about 25 gallons per vehicle in the manual wash bays, and 35 and 70 gallons per vehicle in the automated brush and touch free bays, respectively. It is estimated that the number of uses one the car wash facility varies from about 4,000 to 14,000 individual trips per month, with the manual wash bays receiving about 70% of total uses.

Given these estimates, the Car Wash could reduce water use by converting the automatic brush wash to a touch free wash, saving about ½ of the water used for this type of car wash service, saving about 60,000 gallons of water per month ($210 per month or about $2,500 per year). The cost of a touch free car wash retrofit can vary from $85,000 to $120,000.



GREAT WESTERN INSTITUTE

SMART WATER Audit Report

Colorado Cinema

Overview

The City working with Great Western Institute, conducted a SMART WATER Audit of your facility at 250 Pavilion Place in Brighton on February 24, 2010. The SMART WATER Audit was conducted as part of the City's audit project, whereby a select group of local businesses volunteered to help The City complete a commercial audit program intended to assist local businesses improve water use efficiency and in doing so, reduce water and energy operational costs.

The inventory of Colorado Cinema's water using fixtures and appliances is provided in Table 1. Figure 1 presents the monthly water use at Colorado Cinema in 2008 and 2009.

Water Use Summary

Built in 2004, Colorado Cinema uses water in a manner consistent with commercial buildings built throughout Colorado in areas of new construction. Colorado Cinema has sinks and toilets that have been equipped with water efficient fixtures that are currently readily available in the marketplace. Colorado Cinema also uses air cooled ice makers which help to reduce water use.

Additional water and energy savings can be realized by Colorado Cinema simply by changing out the kitchen sink faucet aerators (in those sinks not used for pots and pans) from the existing 1-2 gallon per minute flow rate to 0.5 gallons per minute. The initial cost will be about $6 per sink and will result on average in a combined water and energy savings of about $30 per sink per year. The bathroom sink faucet aerators at Colorado Cinema already use the 0.5 gallon per minute aerators. Colorado Cinema also already has in place water efficient toilets which use only 1.6 gallons per flush. The toilet in the family bathroom uses about 2 gallons per flush and could be replaced with a more efficient 1.6 gallon per flush for an initial cost of $377. The Colorado Cinema would see a cost savings of $54 per year with this replacement.

By replacing the 11 current 1 gallon per flush urinals with the Water Sense approved high efficiency waterless urinals, the initial cost would be $4,356. The cinema would see a cost savings of approximately $24 per year per fixture for a total of $263 per year.

Colorado Cinema indicated that they do not have any outdoor irrigation therefore no evaluation was performed to characterize outdoor water use for this property.

Overall, Colorado Cinema is doing well with their water saving fixtures and appliances. There are only a few potential water saving measures that could be implemented. These measures are listed at the bottom of attached Table 2. If all the recommended water saving fixtures are implemented, it would cost approximately $4,746 and may bring a reduction of about $378 in annual water and energy costs.

Table 1 - Inventory of Colorado Cinema's Water Using Fixtures and Appliances

Location	**Colorado Cinema**							
Address	250 Pavillion Pl							
Contact	Sean							
Date	2/24/2010							
Type of Business	Entertainment							
Account Number	26.0536.0.1							
Notes								
Built Date	2004							
# of Customers	775,000 customers/yr							
# of Employees	6 employees wkday; 10-17 employees wkend							
Toilets	1.28 gpf	1.6 gpf	2.0 gpf	3.5 gpf				Comment
Mens		4						Flushvalves, Crane w/ Sloan
Womens		16						Flushvalves
Family			1					
Urinals	0.5 gpf	1 gpf	1.5 gpf					
Mens		11						Automatic
Sinks	0.5 gpm	1 gpm	2 gpm	2.5 gpm	4 gpm	5 gpm	6 gpm	
Pots and Pans							2	
Kitchen Handwash		1	1					
Bathroom Mens	6							Automatic
Bathroom Womens	6							Automatic
Family Bathroom	1							Automatic
Mop Sink						2		
Other Uses	Make	Model		Capacity				
Water Fountains								
x4	Oasis							
Ice machines								
	Hoshizzki			8"x18"x15"x6 for 1				Filled 2-10 times daily (for 3 each)
Hot Water Heater								
x2	AO Smith	DEN40110		40gal				140 degrees
		DEN52110		50gal				
Outdoor Irrigation								
	None							

Table 2 - Summary of Current Water Use and Potential Water Savings
Colorado Cinema Audit Summary

Maximum Use Calculation

275,000/yr **753.424658** **~10 employees/day** **376.7123**

	number	per use hot	per use cold	per use total		uses/day		subtotal gpd hot	subtotal gpd cold	subtotal gpd total	
Toilets - Flushing Values											
Mens	4		1.6	1.6	gpf	20	flushes	-	128	128	
Womens	16		1.6	1.6	gpf	15	flushes	-	384	384	
Family - Tank	1		2	2	gpf	35	flushes	-	70	70	
Urinals											
Mens	11		1	1	gpf	10	flushes	-	110	110	
Bathroom Sinks											
Mens	6	0.25	0.25	0.5	gpm	9	minutes	54	54	108	
Womens	6	0.25	0.25	0.5	gpm	4.5	minutes	27	27	54	
Family	1	0.25	0.25	0.5	gpm	5.25	minutes	5	5	11	
Water Fountain (Oasis)	4	0	5	5	g/day	20	g/day	-	1,600	1,600	
Kitchen Sinks: Pots and Pans	2	4.8	1.2	6	gpm	30	minutes	288	72	360	
Kitchen Handwash Sink	2	0.75	0.75	1.5	gpm	10	minutes	15	15	30	
Mop Sink	2	0	5	5	gpm	2	uses	-	20	20	
Other											
Ice Machine (Hoshizzki) 8"x18"x15"x6 for 1	2		17.8	17.8	gp100#	10	100# Ice	-	356	356	
								389	**2,841**	**3,231**	**max day**
								observed		97,000	max month
										30	days at max
								observed		3,233.33	max day

Average Use Calculation

	number	per use hot	per use cold	per use total		uses/day		subtotal gpd hot	subtotal gpd cold	subtotal gpd total	
Toilets											
Mens	4		1.6	1.6	gpf	15	flushes	-	96	96	
Womens	16		1.6	1.6	gpf	11	flushes	-	282	282	
Family	1		2	2	gpf	25	flushes	-	50	50	
Urinals											
Mens	11		1	1	gpf	8	flushes	-	88	88	
Bathroom Sinks											
Mens	6	0.25	0.25	0.5	gpm	6.9	minutes	41	41	83	
Womens	6	0.25	0.25	0.5	gpm	3.3	minutes	20	20	40	
Family	1	0.25	0.25	0.5	gpm	3.75	minutes	4	4	8	
Water Fountain (Oasis)	4	0	4	4	g/day	16	g/day	-	1,024	1,024	
Kitchen Sinks: Pots and Pans	2	4.8	1.2	6	gpm	20	minutes	192	48	240	
Kitchen Handwash Sink	2	0.75	0.75	1.5	gpm	5	minutes	8	8	15	
Mop Sink	2	0	5	5	gpm	2	uses	-	20	20	
Other											
Ice Machine (Hoshizzki) 8"x18"x15"x6 for 1	2		17.8	17.8	gp100#	7	100# Ice	-	249	249	
								264	**1,929**	**2,194**	**avg day**
								observed		65,929	avg month
										30	days at avg
								observed		2,197.62	aver day

Table 2 - Summary of Current Water Use and Potential Water Savings
Colorado Cinema Audit Summary

Maximum Use Water Savings

	number	per use hot	per use cold	per use total		uses/day		subtotal gpd hot	subtotal gpd cold	subtotal gpd total		Savings hot	Savings cold	Savings total
Toilets														
Mens	4		1.28	1.28	gpf	20	flushes	-	102	102		-	26	26
Womens	16		1.28	1.28	gpf	15	flushes	-	307	307		-	77	77
Family	1		1.28	1.28	gpf	35	flushes	-	45	45		-	25	25
												-	-	-
Urinals												-	-	-
Mens	11		0	0	gpf	10	flushes	-	-	-		-	110	110
												-	-	-
Bathroom Sinks												-	-	-
Mens	6	0.25	0.25	0.5	gpm	9	minutes	54	54	108		-	-	-
Womens	6	0.25	0.25	0.5	gpm	4.5	minutes	27	27	54		-	-	-
Family	1	0.25	0.25	0.5	gpm	5.25	minutes	5	5	11		-	-	-
												-	-	-
Water Fountain (Oasis)	4	0	5	5	g/day	20	g/day	-	1,600	1,600		-	-	-
												-	-	-
Kitchen Sinks: Pots and Pans	2	4.8	1.2	6	gpm	30	minutes	288	72	360		-	-	-
												-	-	-
Kitchen Handwash Sink	2	0.25	0.25	0.5	gpm	10	minutes	5	5	10		10	10	20
												-	-	-
Mop Sink	2	0	5	5	gpm	2	uses	-	20	20		-	-	-
												-	-	-
Other												-	-	-
Ice Machine (Hoshizzki) 8"x18"x15"x6 for 1	2		17.8	17.8	gp100#	10	100# Ice	-	356	356		-	-	-
								379	**2,594**	**2,973**	**max day**	**10**	**248**	**258**
									observed	97,000	max month			
										33	days at max			
									observed	3,233.33	max day			

Average Use Water Savings

	number	per use hot	per use cold	per use total		uses/day		subtotal gpd hot	subtotal gpd cold	subtotal gpd total		Savings hot	Savings cold	Savings total
Toilets														
Mens	4		1.6	1.6	gpf	15	flushes	-	96	96		-	-	-
Womens	16		1.6	1.6	gpf	11	flushes	-	282	282		-	-	-
Family	1		1.28	1.28	gpf	25	flushes	-	32	32		-	18	18
												-	-	-
Urinals												-	-	-
Mens	11		0	0	gpf	8	flushes	-	-	-		-	88	88
												-	-	-
Bathroom Sinks												-	-	-
Mens	6	0.25	0.25	0.5	gpm	6.9	minutes	41	41	83		-	-	-
Womens	6	0.25	0.25	0.5	gpm	3.3	minutes	20	20	40		-	-	-
Family	1	0.25	0.25	0.5	gpm	3.75	minutes	4	4	8		-	-	-
												-	-	-
Water Fountain (Oasis)	4	0	4	4	g/day	16	g/day	-	1,024	1,024		-	-	-
												-	-	-
Kitchen Sinks: Pots and Pans	2	4.8	1.2	6	gpm	20	minutes	192	48	240		-	-	-
												-	-	-
Kitchen Handwash Sink	2	0.25	0.25	0.5	gpm	5	minutes	3	3	5		5	5	10
												-	-	-
Mop Sink	2	0	5	5	gpm	2	uses	-	20	20		-	-	-
												-	-	-
Other												-	-	-
Ice Machine (Hoshizzki) 8"x18"x15"x6 for 1	2		17.8	17.8	gp100#	7	100# Ice	-	249	249		-	-	-
								259	**1,818**	**2,078**	**avg day**	**5**	**111**	**116**
									observed	65,929	avg month			
										32	days at avg			
									observed	2,197.62	aver day			

Table 2 - Summary of Current Water Use and Potential Water Savings
Colorado Cinema Audit Summary

Costs to Implement

	number	Hardware	Installation	Total	Pay Back		Water Savings (gpy)	Energy Savings (kWhr)	Total Cost Savings/yr	Total Cost Savings/yr/fixture
Toilet	1	$ 282	$ 95	$ 377	7.00	yrs	6,570	-	$ 54	$ 54
Urinal	11	$ 311	$ 85	$ 4,356	16.54	yrs	32,120	-	$ 263	$ 24
Kitchen Handwash Sinks	2	$ 1.61	$ 5	$ 13	0.22	yrs	3,650	474	$ 61	$ 30
				$ 4,746					$ 378	

AF Savings: 0.13 $/ AF: $ 36,527

Replacement Water Cost* : $ 3,898

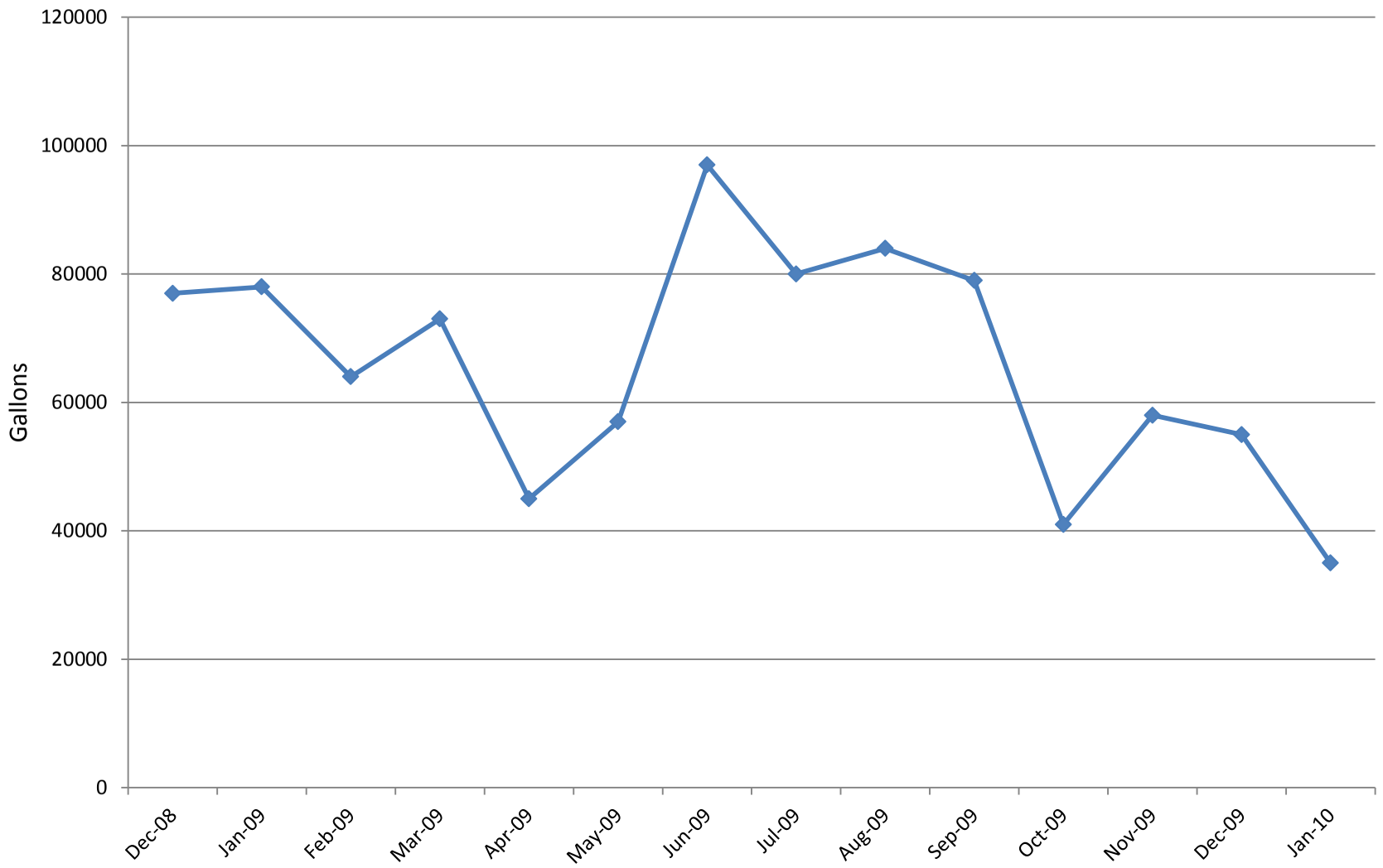
Avoided Cost** : $ 402

* Calculation based on $30,000 per AF

** Calculation based on $9.50/ 1000 gal

Cost Savings Assumptions: $8.50/1000 gal - cost of water and sewer, $0.065/kwh cost of energy

Colorado Cinema (acct. # 26.0536.0.1)
Monthly Water Use Data



SMART WATER Audit Report

Cottonwood Care Center

Overview

The City working with Great Western Institute, conducted a SMART WATER Audit of your facility at 2311 East Bridge St. in Brighton on April 2, 2010. The SMART WATER Audit was conducted as part of the City's audit project, whereby a select group of local businesses volunteered to help The City complete a commercial audit program intended to assist local businesses improve water use efficiency and in doing so, reduce water and energy operational costs.

The inventory of Cottonwood Care Center's water using fixtures and appliances is provided in Table 1. Figure 1 presents the monthly water use at Cottonwood Care Center in 2008 and 2009.

Water Use Summary

Cottonwood Care Center is an assisted living facility in Brighton with 54 individual rooms and 4 quad rooms. There is an average of 107 residences living at the facility with a maximum capacity of 114 residences.

Substantial water and energy savings can be realized by Cottonwood Care Center by changing out the bathroom sink faucet aerators from the existing 1.5 gallon per minute flow rate to 0.5 gallons per minute devices. The cost will be about $6 per sink, and may result in a combined water and energy savings of about $94 per sink per year or $5,449 total cost savings per year for the facility. In addition, Cottonwood Care Center could save an additional $228 in water costs per year by replacing the four kitchen hand wash sink faucet aerators.

The toilets at Cottonwood use 1.6 gallons per flush. They could be replaced with the new Water Sense approved high efficiency toilets which use 1.28 gallons per flush. The initial cost for this change would be $21,866 with a total cost savings of $27 per year per fixture for a total of $5,449 per year for the facility.

These water saving measures are listed at the bottom of attached Table 2. If all the recommended water saving fixtures are implemented, it would cost approximately $22,269 and it would expect to bring a reduction of about $7,267 in annual water and energy costs.

Cottonwood Care Center has used limited outdoor irrigation in the past. The facility is in the process of installing an automated sprinkler system; however, the efficiency of the new installation could not be evaluated at this time, since data do not exist to characterize the new irrigation practices at this time.

Table 1 - Cottonwood Care Center's Water Using Fixtures and Appliances

Location	**Cottonwood Care Center**								
Address	2311 E. Bridge St.								
Contact	Keith								
Date	2-Apr								
Type of Business	Care Center/Nursing Home								
Account Number	33.0065.1.1								
Notes									
Built Date	1965								
# of Employees	45/ day; 20-30 day shift; 15-20 night shift								
# of residents	107; max 114								
# or rooms	54; 4 quads								
Toilets	1.28 gpf	1.6 gpf	2.5 gpf	3.5 gpf					Comments
Typical Room Bathroom		54							1 in each room
Public 1				1					Replaced last few years
Public 2		1							
Shower Room Toilet		2							
Showers	1 gpm	1.5 gpm	2 gpm	2.5 gpm	3 gpm				
Shower Room		2		2					2 shower rooms, 2 shower faucets/shower
									Handheld
Sinks	0.5 gpm	1.5 gpm	2 gpm	2.2 gpm	3 gpm	3.5 gpm	5 gpm		
Typical Room Bathroom		54							
Shower Room Sink				2					
Public - 1				1					
Public - 2				1					
Kitchen Pots and Pans							1		
Kitchen Handwash			2						
Laundry Handwash			1						
Mop Closet							1		
Grinder w/ Water table							1		
Other Uses	Use	Make		Model			Capacity		
Hot Water Heater									
x2		Bradford Water		D80T1993N; D100L1993N-823			90 gal; 100 gal		110-120 degrees
		Ray Pak		RSS80A			80 gal		119 degrees, 2005
Boilers									Baseboard heating
x2		WEILMcLain							
Coffee Maker									
Ice Maker									
		Manitowac; Scotsman Cl					18 gal/100lbs ice		Air Cooled
Dishwasher									
		AH2							
Clothes Washer									
	30 loads/day	Wascomat Selecta 28		S28/185					65 pounds
	30 loads/day	Wascomat Selecta 28		EXSM 230					50 pounds; 20 years old
Steamtable									
x2		2'x4'							
Cooling Towers									
									Swamp Coolers
Outdoor Irrigation	Sprinklers just recently hooked up but not used 2008-2009								
	Last year hand watered								
	200x100; 85% irrigated, front turf area								

Table 2 - Summary of Current Water Use and Potential Water Savings
Cottonwood Audit Summary

Maximum Use Calculation **54 rooms** **2 people/room 4 quads**

Typical Room		number	per use hot	per use cold	per use total		uses/day		subtotal gpd hot	subtotal gpd cold	subtotal gpd total	
	Toilet	54		1.6	1.6	gpf	29	flushes	-	2,508	2,508	
	Sink	54	0.75	0.75	1.5	gpm	16	minutes	662	662	1,325	
Shower Room												
	Toilet	2		1.6	1.6	gpf	41	flushes	-	132	132	
	Shower 1	2	2	0.5	2.5	gpm	275	minutes	1,100	275	1,375	
	Shower 2	2	1.2	0.3	1.5	gpm	275	minutes	660	165	825	
	Sink	2	1.1	1.1	2.2	gpm	6	minutes	14	14	27	
Public Bathroom												
	Public Toilet 1	1		3.5	3.5	gpf	51	flushes	-	177	177	
	Public Toilet 2	1		1.6	1.6	gpf	51	flushes	-	81	81	
	Sink	2	1.1	1.1	2.2	gpm	8	minutes	17	17	33	
Kitchen												
	Pots and Pans	1	2.5	2.5	5	gpm	240	minutes	600	600	1,200	
	Handwash Sink	2	1	1	2	gpm	10	minutes	20	20	40	
	Dish Washing Machine	1	0.45	0.45	0.9	g/rack	240	racks	108	108	216	
	Grinder w/ water	1		5.00	5.00	gpm	160	minutes	-	800	800	
	Coffee Maker	1		1.00	1.00	gpuse	15	daily	-	15	15	
	Steam Table	2		4.99	4.99	gpuse	1	daily	-	10	10	
	Ice Machine Air Cooled	2		17.8	17.8	gp100#	4	100# Ice	-	142	142	
	Mop Sink	1	0	5	5	gpm	2	uses	-	10	10	
Laundry												
	Laundry Handwash Sink	1	1	1	2	gpm	5	minutes	5	5	10	
	Clothes Washing Machine	1	30	30	60	g/use	30	use	900	900	1,800	
	Clothes Washing Machine	1	30	30	60	g/use	30	use	900	900	1,800	
	Leak	1	0	2.2	2.2	gpm	1,440	minutes	-	3,168	3,168	
									4,986	**10,709**	**15,695**	**max day**
									observed		474,000	max month
											30	days at max
									observed		15,800	max day

Table 2 - Summary of Current Water Use and Potential Water Savings
Cottonwood Audit Summary

Average Use Calculation

Typical Room		number	per use hot	per use cold	per use total		uses/day		subtotal gpd hot	subtotal gpd cold	subtotal gpd total	
	Toilet	54		1.6	1.6	gpf	22	flushes	-	1,901	1,901	
	Sink	54	0.75	0.75	1.5	gpm	16	minutes	640	640	1,280	
Shower Room												
	Toilet	2		1.6	1.6	gpf	35	flushes	-	114	114	
	Shower	2	2	0.5	2.5	gpm	206	minutes	825	206	1,031	
	Shower 2	2	1.2	0.3	1.5	gpm	206	minutes	495	124	619	
	Sink	2	1.1	1.1	2.2	gpm	5	minutes	12	12	23	
Public Bathroom												
	Public Toilet 1	1		3.5	3.5	gpf	51	flushes	-	177	177	
	Public Toilet 2	1		1.6	1.6	gpf	51	flushes	-	81	81	
	Sink	2	1.1	1.1	2.2	gpm	8	minutes	17	17	33	
Kitchen												
	Pots and Pans	1	2.5	2.5	5	gpm	180	minutes	450	450	900	
	Handwash Sink	2	1	1	2	gpm	10	minutes	20	20	40	
	Dish Washing Machine	1	0.85	0.85	1.7	g/use	200	use	170	170	340	
	Grinder w/ water	1	0	5.00	5.00	gpm	120	minutes	-	600	600	
	Coffee Maker	1	0	1.00	1.00	gpuse	10	daily	-	10	10	
	Steam Table	2	0	4.99	4.99	gpuse	1	daily	-	10	10	
	Ice Machine Air Cooled	2	0	17.8	17.8	gp100#	4	100# Ice	-	142	142	
	Mop Sink	1	0	5	5	gpm	2	uses	-	10	10	
Laundry												
	Laundry Handwash Sink	1	1	1	2	gpm	5	minutes	5	5	10	
	Clothes Washing Machine	1	30	30	60	g/use	25	use	750	750	1,500	
	Clothes Washing Machine	1	30	30	60	g/use	25	use	750	750	1,500	
	Leak	1	0	2	2	gpm	1,440	minutes	-	2,880	2,880	
									4,133	**9,068**	**13,202**	**aver day**
									observed		380,071	aver month
											29	days at avg
									observed		13,319	aver day

Table 2 - Summary of Current Water Use and Potential Water Savings
Cottonwood Audit Summary

Maximum Use Water Savings

Typical Room		number	per use hot	per use cold	per use total		uses/day		subtotal gpd hot	subtotal gpd cold	subtotal gpd total		Savings hot	Savings cold	Savings total
	Toilet	54		1.28	1.28	gpf	29	flushes	-	2,006	2,006		-	502	502
	Sink	54	0.25	0.25	0.5	gpm	16	minutes	221	221	442		442	442	883
Shower Room															
	Toilet	2		1.28	1.28	gpf	41	flushes	-	106	106		-	26	26
	Shower 1	2	2	0.5	2.5	gpm	275	minutes	1,100	275	1,375		-	-	-
	Shower 2	2	1.2	0.3	1.5	gpm	275	minutes	660	165	825		-	-	-
	Sink	2	0.25	0.25	0.5	gpm	6	minutes	3	3	6		11	11	21
Public Bathroom															
	Public Toilet 1	1		1.28	1.28	gpf	51	flushes	-	65	65		-	112	112
	Public Toilet 2	1		1.28	1.28	gpf	51	flushes	-	65	65		-	16	16
	Sink	2	0.25	0.25	0.5	gpm	8	minutes	4	4	8		13	13	26
Kitchen															
	Pots and Pans	1	2.5	2.5	5	gpm	240	minutes	600	600	1,200		-	-	-
	Handwash Sink	2	1	1	2	gpm	10	minutes	20	20	40		-	-	-
	Dish Washing Machine	1	0.45	0.45	0.9	g/rack	240	racks	108	108	216		-	-	-
	Grinder w/ water	1		5.00	5.00	gpm	160	minutes	-	800	800		-	-	-
	Coffee Maker	1		1.00	1.00	gpuse	15	daily	-	15	15		-	-	-
	Steam Table	2		4.99	4.99	gpuse	1	daily	-	10	10		-	-	-
	Ice Machine Air Cooled	2		17.8	17.8	gp100#	4	100# Ice	-	142	142		-	-	-
	Mop Sink	1	0	5	5	gpm	2	uses	-	10	10		-	-	-
Laundry															
	Laundry Handwash Sink	1	1	1	2	gpm	5	minutes	5	5	10		-	-	-
	Clothes Washing Machine	1	30	30	60	g/use	30	use	900	900	1,800		-	-	-
	Clothes Washing Machine	1	30	30	60	g/use	30	use	900	900	1,800		-	-	-
	Leak	1	0	2.2	2.2	gpm	1,440	minutes	-	3,168	3,168		-	-	-
									4,521	**9,588**	**14,109**	**max day**			
									observed		474,000	max month			
											34	days at max			
									observed		15,800	max day			

Table 2 - Summary of Current Water Use and Potential Water Savings
Cottonwood Audit Summary

Average Use Water Savings

Typical Room		number	per use hot	per use cold	per use total		uses/day		subtotal gpd hot	subtotal gpd cold	subtotal gpd total		Savings hot	Savings cold	Savings total
	Toilet	54		1.28	1.28	gpf	22	flushes	-	1,521	1,521		-	380	380
	Sink	54	0.25	0.25	0.5	gpm	16	minutes	213	213	427		427	427	853
Shower Room															
	Toilet	2		1.28	1.28	gpf	35	flushes	-	91	91		-	23	23
	Shower	2	2	0.5	2.5	gpm	206	minutes	825	206	1,031		-	-	-
	Shower 2	2	1.2	0.3	1.5	gpm	206	minutes	495	124	619		-	-	-
	Sink	2	0.25	0.25	0.5	gpm	5	minutes	3	3	5		9	9	18
Public Bathroom															
	Public Toilet 1	1		1.28	1.28	gpf	51	flushes	-	65	65		-	112	112
	Public Toilet 2	1		1.28	1.28	gpf	51	flushes	-	65	65		-	16	16
	Sink	2	0.25	0.25	0.5	gpm	8	minutes	4	4	8		13	13	26
Kitchen															
	Pots and Pans	1	2.5	2.5	5	gpm	180	minutes	450	450	900		-	-	-
	Handwash Sink	2	0.25	0.25	0.5	gpm	10	minutes	5	5	10		15	15	30
	Dish Washing Machine	1	0.85	0.85	1.7	g/use	200	use	170	170	340		-	-	-
	Grinder w/ water	1	0	5.00	5.00	gpm	120	minutes	-	600	600		-	-	-
	Coffee Maker	1	0	1.00	1.00	gpuse	10	daily	-	10	10		-	-	-
	Steam Table	2	0	4.99	4.99	gpuse	1	daily	-	10	10		-	-	-
	Ice Machine Air Cooled	2	0	17.8	17.8	gp100#	4	100# Ice	-	142	142		-	-	-
	Mop Sink	1	0	5	5	gpm	2	uses	-	10	10		-	-	-
Laundry															
	Laundry Handwash Sink	1	0.25	0.25	0.5	gpm	5	minutes	1	1	3		4	4	8
	Clothes Washing Machine	1	30	30	60	g/use	25	use	750	750	1,500		-	-	-
	Clothes Washing Machine	1	30	30	60	g/use	25	use	750	750	1,500		-	-	-
	Leak	1	0	2	2	gpm	1,440	minutes	-	2,880	2,880		-	-	-
									3,666	**8,069**	**11,735**	**aver day**			
									observed		380,071	aver month			
											32	days at avg			
									observed		12,669	aver day			

Costs to Implement

	number	Hardware	Installation	Total	Pay Back		Water Savings (gpy)	Energy Savings (kWhr)	Total Cost Savings/yr	Total Cost Savings/yr/fixture
Toilet	58	$ 282	$ 95	$ 21,866	34.94	yrs	193,982	-	$ 1,591	$ 27
Bathroom Sinks	58	$ 1.61	$ 5	$ 383	0.07	yrs	327,448	42,518	$ 5,449	$ 94
Handwash Sinks	3	$ 1.61	$ 5	$ 20	0.09	yrs	13,688	1,777	$ 228	$ 76
				$ 22,269					$ 7,267	

AF Savings: 1.64 $/ AF: $ 13,560

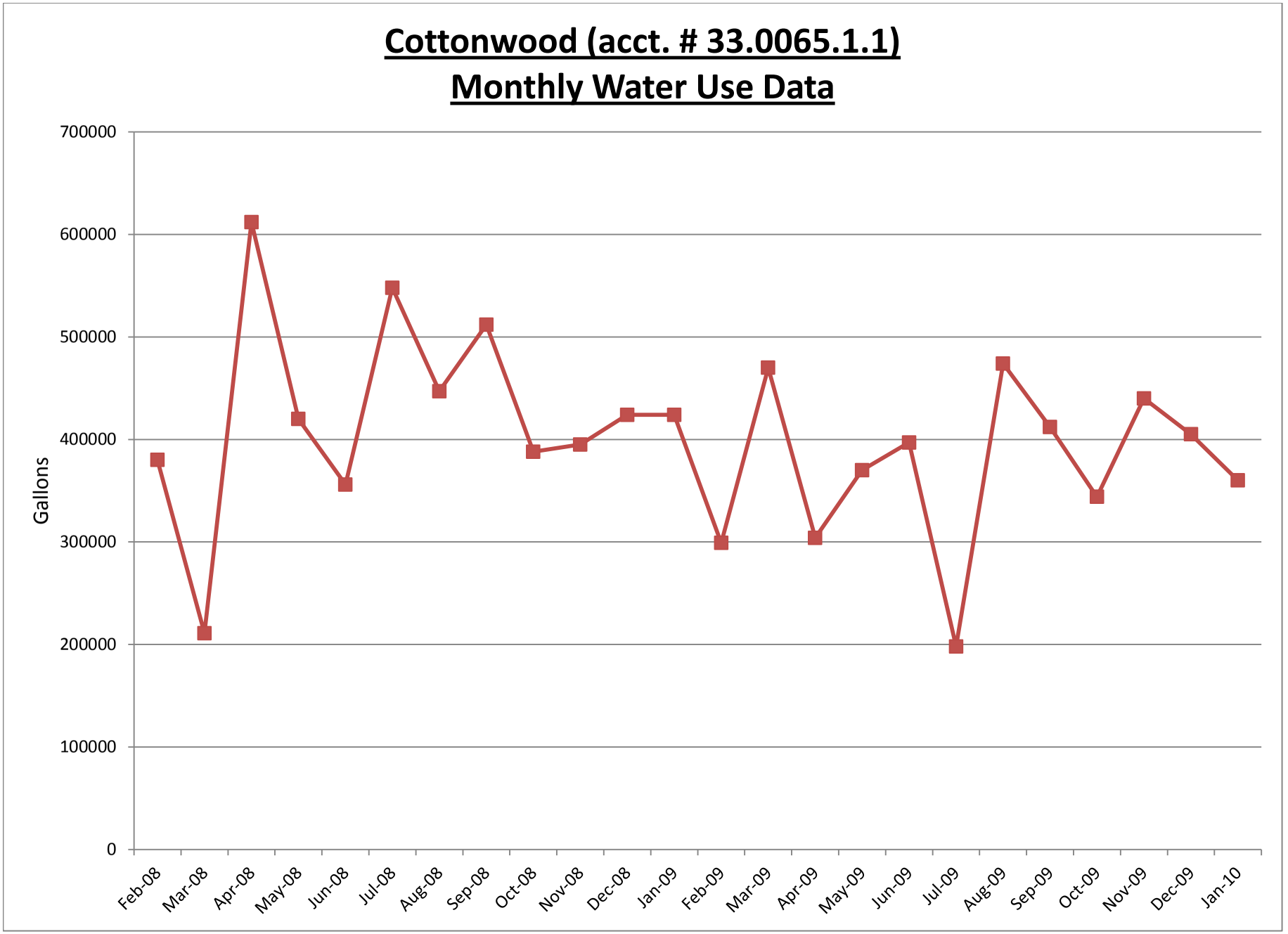
Replacement Water Cost* : $ 49,267

Avoided Cost** : $ 5,084

* Calculation based on $30,000 per AF

** Calculation based on $9.50/ 1000 gal

Cost Savings Assumptions: $8.50/1000 gal - cost of water and sewer, $0.065/kwh cost of energy



GREAT WESTERN INSTITUTE

SMART WATER Audit Report

Eastgate Mobile Home Park

Overview

The City working with Great Western Institute, conducted a SMART WATER Audit of your facility at 3060 East Bridge St. in Brighton on February 24, 2010. The SMART WATER Audit was conducted as part of the City's audit project, whereby a select group of local businesses and facilities volunteered to help The City complete a commercial and residential audit program intended to assist in improving water use efficiency and in doing so, reduce water and energy operational costs.

The inventory of Eastage's water using fixtures and appliances is provided in Table 1. Figure 1 presents the monthly water use at Eastgate in 2008 and 2009.

Water Use Summary

Eastgate Mobile Home Park is one of the largest water users in the City. The mobile home park contains 453 home sites with an average of three to four people per home, of which 428 are currently occupied. All homes are equipped with in-home laundry and 1 or 2 bathrooms. Each individual site is sub metered by the owner; however this data was not made available to the audit team. Estimates on the number of fixtures and types of appliances were made in order to determine the water use from individual mobile homes so that the best recommendations for water savings could be determined.

Overall, the mobile home park utilizes City water for both indoor and outdoor, seasonal uses. The indoor use of water at the mobile home park was estimated to be about 70,000 gallons per day for an average winter day, or about 160 gallons per home (which is about 45 gallons per person assuming 3.5 persons per home). Total water use at the mobile home park averages about 240 gallons per home year round or about 70 gallons per person (assuming 3.5 persons per home).

Substantial water and energy savings can be realized by Eastgate Mobile Home Park by changing out the bathroom faucet aerators from the existing 2 gallon per minute flow rate to 0.5 gallons per minute. The cost will be about $6 per sink, and could result in a combined water and energy savings of about $56 per sink per year or $36,060 total cost savings per year for the community. This is the most substantial and cost effective method for reducing water use at Eastgate. Another substantial water reduction could be realized with the installation of water efficient shower heads. New shower heads with a 1.5 gallon per minute flow rate would result in a $45 savings per fixture per home. Thus, there would be a total cost savings of $19,215 per year for the community.

The toilets in the Clubhouse at Eastgate Apartments use 1.6 gallons per flush. They could be replaced with the new Water Sense approved high efficiency toilets which use 1.28 gallons per flush. The initial cost for this change would be $1,131 with a potential water savings of about $24 per year or about 2,920 gallons per year.

These indoor water saving measures are listed at the bottom of attached Table 2. If all the recommended indoor water saving fixtures are installed, it would cost approximately $23,805 and may bring a reduction of about $55,409 in annual water and energy costs to the mobile home residents.

With respect to outdoor use, a comparison was made between applied irrigation water and seasonal evapotranspiration (ET). Applied irrigation water was determined using the monthly water billings for 2008 and 2009. Seasonal ET was estimated based on irrigated acreage and ET. Irrigated acreage was estimated using aerial photography, whereas ET rates were estimated using the Northern Colorado Water Conservancy District's Turf Irrigation Management (TIM) Program, which utilizes the 1985 Hargreaves equation to calculate for a given location and weather condition (i.e., average daily temperature and precipitation). Daily weather data for Brighton in 2008 and 2009 was obtained from the NOAA National Data Center. Figure 2 presents a comparison of the irrigation rate and the monthly ET for Eastgate.

Based on this comparison, the property as a whole irrigates well below the estimated ET (for the 1,000,000 square feet of irrigated turf). This evaluation does not preclude the chance that individual irrigation practices at some locations within the subject property may be higher than the ET rate, but on average all irrigation combined is about 50% of observed ET. If suspicions of localized overwatering exist in the mobile home park, more rigorous testing of the existing irrigation system should be implemented in order to evaluate individual irrigation practices.

Table 1 - Inventory of Eastgate's Water Using Fixtures and Appliances

Location	**Eastgate**							
Address	3030 E. Bridge St.							
Contact	Mac							
Date	2/24/2010							
Type of Business	Community							
Account Number	31.0005.1.1							
Notes	2 meters for entire facility; all submetered for residents							
	452 Sites; 24 are empty; average 4 persons/home; most have 1 or 2 bathrooms; all in home laundry							
Toilets	1.28 gpf	1.6 gpf	2.5 gpf	3.5 gpf				
Clubhouse								
Mens		1						
Womens		2						
Individual Homes								
1 Bathroom Home				214				
2 Bathroom Home				428				
Urinals	0.5 gpf	1 gpf	1.5 gpf					
Mens		1						
Sinks	0.5 gpm	1.5 gpm	2 gpm	2.5 gpm	4 gpm	5 gpm	6 gpm	
Kitchen Clubhouse			1					
Bathroom Mens			2					
Bathroom Womens			2					
1 Bathroom Home				214				
2 Bathroom Home				428				
Kitchen Sink				428				
Showers								
1 Bathroom Home				214				
2 Bathroom Home				428				
Other Uses	Make	Model		Capacity		Use		
Ice machine Clubhouse								
	Sears	253.7481340J				1		
Dishwasher Clubhouse								
	Kenmore	5B715103801				1		
Clothes Washing Machine								
						428		
Pool								
				44'x30'x4.5'		44,000gal		Fill pool in May
Outdoor Irrigation								
17 Zones	4 controllers; have rain sensors in place; rotator and popups							

Table 2 - Summary of Current Water Use and Potential Water Savings
Eastgate Apartments Audit Summary

Maximum Use Calculation **452 sites** **24 empty** **4people/home**

	number	per use hot	per use cold	per use total		uses/day		subtotal gpd hot	subtotal gpd cold	subtotal gpd total
1 Bathroom Home	214									
Toilet	214			3	3 gpf	9	flushes	-	5,836	5,836
Shower	214	2	0.5	2.5	gpm	14	minutes	6,163	1,541	7,704
Sink	214	1.25	1.25	2.5	gpm	10	minutes	2,772	2,772	5,544
Kitchen Sink	214	2.25	2.25	4.5	gpm	10	minutes	4,815	4,815	9,630
Clothes Washing Machine	214	17.5	17.5	35	g/use	0.25	use	936	936	1,873
Dish Washing Machine	214	5.5	5.5	11	g/use	0.25	use	294	294	589
2 Bathroom Home	214									
Toilet	428			3	3 gpf	9	flushes	-	11,347	11,347
Shower	214	2	0.5	2.5	gpm	28	minutes	11,984	2,996	14,980
Sink	428	1.25	1.25	2.5	gpm	9	minutes	5,036	5,036	10,072
Kitchen Sink	214	2.25	2.25	4.5	gpm	12	minutes	5,778	5,778	11,556
Clothes Washing Machine	214	17.5	17.5	35	g/use	0.50	use	1,873	1,873	3,745
Dish Washing Machine	214	5.5	5.5	11	g/use	0.50	use	589	589	1,177
Public Bathroom/ Club House										
Mens	1		1.6	1.6	gpf	5	flushes	-	8	8
Womens	2		1.6	1.6	gpf	10	flushes	-	32	32
Urinal	1		1	1	gpf	5	flushes	-	5	5
Sink	4	1	1	2	gpm	3	minutes	12	12	24
Kitchen										
Dish Washing Machine (Kenmore 5B715103801)	1	10	10	20	g/use	1	use	10	10	20
Sink	1	1	1	2	gpm	5	minutes	5	5	10
Ice Maker (Sears 253.7481340J)	1	0	15	15	gal/100#	0	100#	-	2	2
								40,267	**43,886**	**84,153** **max day**
									observed	2,500,000 max month
										30 days at max
									observed	83,333 max day

Table 2 - Summary of Current Water Use and Potential Water Savings
Eastgate Apartments Audit Summary

Average Use Calculation

	number	per use hot	per use cold	per use total		uses/day		subtotal gpd hot	subtotal gpd cold	subtotal gpd total
1 Bathroom Home	214									
Toilet	214			3	gpf	5	flushes	-	3,210	3,210
Shower	214	2	0.5	2.5	gpm	10	minutes	4,280	1,070	5,350
Sink	214	1.25	1.25	2.5	gpm	10	minutes	2,608	2,608	5,216
Kitchen Sink	214	2.25	2.25	4.5	gpm	10	minutes	4,815	4,815	9,630
Clothes Washing Machine	214	17.5	17.5	35	g/use	0.15	use	562	562	1,124
Dish Washing Machine	214	5.5	5.5	11	g/use	0.15	use	177	177	353
2 Bathroom Home	214									
Toilet	428			3	gpf	6	flushes	-	7,704	7,704
Shower	214	2	0.5	2.5	gpm	20	minutes	8,560	2,140	10,700
Sink	428	1.25	1.25	2.5	gpm	9	minutes	4,922	4,922	9,844
Kitchen Sink	214	2.25	2.25	4.5	gpm	12	minutes	5,778	5,778	11,556
Clothes Washing Machine	214	17.5	17.5	35	g/use	0.35	use	1,311	1,311	2,622
Dish Washing Machine	214	5.5	5.5	11	g/use	0.50	use	589	589	1,177
Public Bathroom/ Club House										
Mens	1		1.6	1.6	gpf	5	flushes	-	8	8
Womens	2		1.6	1.6	gpf	10	flushes	-	32	32
Urinal	1		1	1	gpf	5	flushes	-	5	5
Sink	4	1	1	2	gpm	3	minutes	12	12	24
Kitchen										
Dish Washing Machine (Kenmore 5B715103801)	1	10	10	20	g/use	1	use	10	10	20
Sink	1	1	1	2	gpm	5	minutes	5	5	10
Ice Maker (Sears 253.7481340J)	1	0	15	15	gal/100#	0	100#	-	2	2

33,628	**34,958**	**68,586**	**avg day**
	observed	2,053,773	avg month
		30	days at avg
	observed	68,459	avg day
		160	g/home
		53	gpcd

Table 2 - Summary of Current Water Use and Potential Water Savings
Eastgate Apartments Audit Summary

Maximum Use Savings

	number	per use hot	per use cold	per use total		uses/day		subtotal gpd hot	subtotal gpd cold	subtotal gpd total		Savings hot	Savings cold	Savings total
1 Bathroom Home	214													
Toilet	214		3	3	gpf	9	flushes	-	5,836	5,836		-	-	-
Shower	214	1.2	0.3	1.5	gpm	14	minutes	3,698	924	4,622		2,465	616	3,082
Sink	214	0.25	0.25	0.5	gpm	10	minutes	554	554	1,109		2,218	2,218	4,436
Kitchen Sink	214	2.25	2.25	4.5	gpm	10	minutes	4,815	4,815	9,630		-	-	-
Clothes Washing Machine	214	17.5	17.5	35	g/use	0.25	use	936	936	1,873		-	-	-
Dish Washing Machine	214	5.5	5.5	11	g/use	0.25	use	294	294	589		-	-	-
2 Bathroom Home	214													
Toilet	428		3	3	gpf	9	flushes	-	11,347	11,347		-	-	-
Shower	214	1.2	0.3	1.5	gpm	28	minutes	7,190	1,798	8,988		4,794	1,198	5,992
Sink	428	0.25	0.25	0.5	gpm	9	minutes	1,007	1,007	2,014		4,029	4,029	8,057
Kitchen Sink	214	2.25	2.25	4.5	gpm	12	minutes	5,778	5,778	11,556		-	-	-
Clothes Washing Machine	214	17.5	17.5	35	g/use	0.50	use	1,873	1,873	3,745		-	-	-
Dish Washing Machine	214	5.5	5.5	11	g/use	0.50	use	589	589	1,177		-	-	-
Public Bathroom/ Club House														
Mens	1		1.28	1.28	gpf	5	flushes	-	6	6		-	2	2
Womens	2		1.28	1.28	gpf	10	flushes	-	26	26		-	6	6
Urinal	1		1	1	gpf	5	flushes	-	5	5		-	-	-
Sink	4	0.25	0.25	0.5	gpm	3	minutes	3	3	6		9	9	18
Kitchen														
Dish Washing Machine (Kenmore 5B715103801)	1	10	10	20	g/use	1	use	10	10	20		-	-	-
Sink	1	1	1	2	gpm	5	minutes	5	5	10		-	-	-
Ice Maker (Sears 253.7481340J)	1	0	15	15	gal/100#	0	100#	-	2	2		-	-	-
								26,752	**35,808**	**62,560**	**max day**			
									observed	2,500,000	max month			
										40	days at max			
									observed	83,333	max day			

Average Use Savings

	number	per use hot	per use cold	per use total		uses/day		subtotal gpd hot	subtotal gpd cold	subtotal gpd total				
1 Bathroom Home	214													
Toilet	214		3	3	gpf	5	flushes	-	3,210	3,210		-	-	-
Shower	214	1.2	0.3	1.5	gpm	10	minutes	2,568	642	3,210		1,712	428	2,140
Sink	214	0.25	0.25	0.5	gpm	10	minutes	522	522	1,043		2,087	2,087	4,173
Kitchen Sink	214	2.25	2.25	4.5	gpm	10	minutes	4,815	4,815	9,630		-	-	-
Clothes Washing Machine	214	17.5	17.5	35	g/use	0.15	use	562	562	1,124		-	-	-
Dish Washing Machine	214	5.5	5.5	11	g/use	0.15	use	177	177	353		-	-	-
2 Bathroom Home	214													
Toilet	428		3	3	gpf	6	flushes	-	7,704	7,704		-	-	-
Shower	214	1.2	0.3	1.5	gpm	20	minutes	5,136	1,284	6,420		3,424	856	4,280
Sink	428	0.25	0.25	0.5	gpm	9	minutes	984	984	1,969		3,938	3,938	7,875
Kitchen Sink	214	2.25	2.25	4.5	gpm	12	minutes	5,778	5,778	11,556		-	-	-
Clothes Washing Machine	214	17.5	17.5	35	g/use	0.35	use	1,311	1,311	2,622		-	-	-
Dish Washing Machine	214	5.5	5.5	11	g/use	0.50	use	589	589	1,177		-	-	-
Public Bathroom/ Club House														
Mens	1		1.28	1.28	gpf	5	flushes	-	6	6		-	2	2
Womens	2		1.28	1.28	gpf	10	flushes	-	26	26		-	6	6
Urinal	1		1	1	gpf	5	flushes	-	5	5		-	-	-
Sink	4	0.25	0.25	0.5	gpm	3	minutes	3	3	6		9	9	18
Kitchen														
Dish Washing Machine (Kenmore 5B715103801)	1	10	10	20	g/use	1	use	10	10	20		-	-	-
Sink	1	1	1	2	gpm	5	minutes	5	5	10		-	-	-
Ice Maker (Sears 253.7481340J)	1	0	15	15	gal/100#	0	100#	-	2	2		-	-	-
								22,459	**27,633**	**50,092**	**avg day**			
									observed	2,053,773	avg month			
										41	days at avg			
									observed	68,459.09	avg day			

Table 2 - Summary of Current Water Use and Potential Water Savings
Eastgate Apartments Audit Summary

Costs to Implement

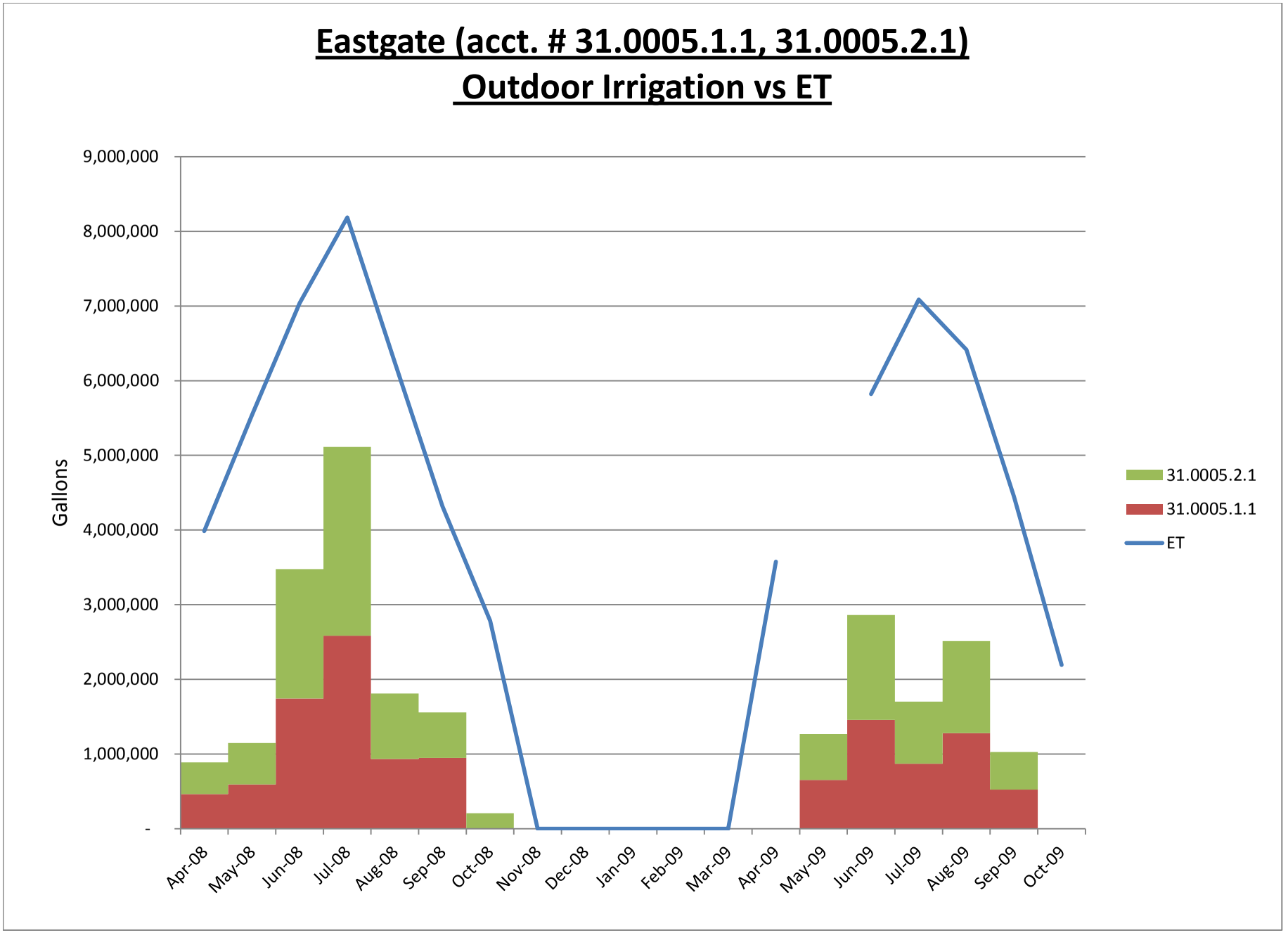
	number	Hardware	Installation	Total	Pay Back		Water Savings (gpy)	Energy Savings (kWhr)	Total Cost Savings/yr	Total Cost Savings/yr/fixture
Bathroom Sink	642	$ 1.61	$ 5	$ 4,244	0.30	yrs	4,397,593	571,010	$ 36,060	$ 56
Showers	428	$ 33	$ 10	$ 18,404	2.45	yrs	2,343,300	486,829	$ 19,215	$ 45
Clubhouse Toilet	3	$ 282	$ 95	$ 1,131	47.24	yrs	2,920	-	$ 24	$ 8
Clubhouse Sinks	4	$ 1.61	$ 5	$ 26	0.24	yrs	6,570	853	$ 109	$ 27
				$ 23,805					$ 55,409	

AF Savings: 20.72 $/ AF: $ 1,149 Replacement Water Cost* : $ 621,486 Avoided Cost** $ 64,129

* Calculation based on $30,000 per AF

** Calculation based on $9.50/ 1000 gal

Cost Savings Assumptions: $8.50/1000 gal - cost of water and sewer, $0.065/kwh cost of energy


Eastgate (acct. # 31.0005.1.1, 31.0005.2.1)
Outdoor Irrigation vs ET
Gallons
9,000,000
8,000,000
7,000,000
6,000,000
5,000,000
4,000,000
3,000,000
2,000,000
1,000,000
-
Apr-08
May-08
Jun-08
Jul-08
Aug-08
Sep-08
Oct-08
Nov-08
Dec-08
Jan-09
Feb-09
Mar-09
Apr-09
May-09
Jun-09
Jul-09
Aug-09
Sep-09
Oct-09
31.0005.2.1
31.0005.1.1
ET

SMART WATER Audit Report

VFW

Overview

The City working with Great Western Institute, conducted a SMART WATER Audit of your facility at 161 N. Main St. in Brighton on March 17, 2010. The SMART WATER Audit was conducted as part of the City's audit project, whereby a select group of local businesses volunteered to help The City complete a commercial audit program intended to assist local businesses improve water use efficiency and in doing so, reduce water and energy operational costs.

The inventory of VFW's water using fixtures and appliances is provided in Table 1. Figure 1 presents the monthly water use at VFW in 2008 and 2009.

Water Use Summary

VFW is housed in a building built in the early 1900's. As indicated in attached Table 1, similar to many restaurants and bars built during this time period, VFW has aged plumbing and fixtures. The sink faucets in both the men's and women's bathrooms use between 1-2 gallons per minute. Changing these aerators would cost approximately $6 per sink and would result in a water and energy savings of approximately $21 dollars per year per sink.

The eight toilets at VFW use between 1.6 and 2 gallons per flush. The toilets are 1.6 gallon per flush units, however due to the age of the toilets and plumbing, they flush at a higher flow rate. By installing new Water Sense approved high efficiency toilets which use 1.28 gallons per flush and work correctly, VFW would spend $3,016 with a total savings of approximately $35 per year. In addition, by replacing the two current 1 gallon per flush urinal with the Water Sense approved high efficiency waterless urinal, the initial cost would be $792. VFW would see a cost savings of approximately $15 per year per fixture.

VFW has two kitchen/bar hand wash sinks that use approximately 1-2 gallons per minute. Replacing these sink aerators with new 0.5 gallon per minute faucet aerators would cost $6 per sink and save a combined water and energy savings of on average of about $17 per sink per year.

Noteworthy is that the VFW facility appears to have an ongoing leak of between 0.2 and 0.5 gallons per minute, or about 100,000 to 250,000 gallons per year. It would be of benefit for the owner to try to find and fix this suspected water waste.

These water saving measures are listed at the bottom of attached Table 2. If all the recommended water saving fixtures were to be implemented, it would cost approximately $4,700 and it would expect to bring a reduction of about $602 in annual water and energy costs.

The VFW Hall has a new outdoor irrigation system. With respect to outdoor use, a comparison was made between applied irrigation water and seasonal evapotranspiration (ET). Applied irrigation water was determined using the monthly water billings for 2008 and 2009. Seasonal ET was estimated based on irrigated acreage and ET. Irrigated acreage was estimated using aerial photography, whereas ET rates were estimated using the Northern Colorado Water Conservancy District's Turf Irrigation Management (TIM) Program, which utilizes the 1985 Hargreaves equation to calculate for a given location and weather condition (i.e., average daily temperature and precipitation). Daily weather data for Brighton in 2008 and

2009 was obtained from the NOAA National Data Center. Figure 2 presents a comparison of the irrigation rate and the monthly ET for the VFW Hall.

Based on this comparison, the property as a whole irrigates at a rate approximately twice the estimated ET (for the 6,000 square feet of irrigated turf). The VFW Hall should have a more detailed irrigation audit performed to evaluate the settings on the irrigation clock, the pressure of the system, and the overall efficiency of the irrigation system.

Table 1 - Inventory of VFW's Water Using Fixtures and Appliances

Location	**VFW - Veterans of Foreign Wars, Non profit**							
Address	161 N. Main St.							
Contact	Sharon							
Date	3/17/2010							
Type of Business	Restaurant							
Account Number	47.0285.0.1; 47.0280.0.1							
Notes								
Built Date	Bar 1990's, Building early 1900's							
# of Employees	4; 2 per shift							
# of Customers	Slow - 10-12; Busy - 60							
	Dinner on Friday nights, breakfast on Sunday, occasional big events							
Toilets	1.28 gpf	1.6 gpf	2.0 gpf	3.5 gpf				**Comment**
Mens		1	2					
Womens		3	2					Back - 2 yrs old, Front - 11 yrs old
Urinals	0.5 gpf	1 gpf	1.5 gpf					
Mens		2						
Sinks	0.5 gpm	1 gpm	2 gpm	2.5 gpm	3 gpm	5 gpm	6 gpm	
Pots and Pans						1		
Kitchen Handwash			1					
Bathroom Mens			4					
Bathroom Womens		4						
Bar Dish Sink				1				
Bar Handwash Sink		1						
Mop Sink						2		1 is used once per day
Other Uses	Use	Make		Model		Capacity		
Ice machines								
		Scotsman		Size 200				air cooled
Hot Water Heater								
x2		Rheemglas		21v50-60N Ser:		50 gal		140 degrees
Dish Washer	None							
Refrigeration								
x2		Superior						
Cooling Towers								
								air conditioning/ swamp cooler
Outdoor Irrigation	Sprinklers; 100'x60'; Irrigates in summer							

Table 2 - Summary of Current Water Use and Potential Water Savings
VFW Audit Summary

Maximum Use Calculation 30-250 (weekend), 5 employees

			per use					subtotal gpd			
	number	hot	cold	total		uses/day		hot	cold	total	
Toilets											
Mens	3			2	2 gpf	6	flushes	-	36	36	
Womens	5			2	2 gpf	6	flushes	-	60	60	
Urinals											
Mens	2			1	1 gpf	10	flushes	-	20	20	
Bathroom Sinks											
Mens	4	1		1	2 gpm	2.4	minutes	38	38	77	
Womens	4	0.5		0.5	1 gpm	0.9	minutes	7	7	14	
Kitchen Sinks: Pots and Pans	1	4		1	5 gpm	25	minutes	100	25	125	
Kitchen Handwash Sink	1	1		1	2 gpm	5	minutes	5	5	10	
Mop Sink (Only 1 is used)	2	0		5	5 gpm	2	uses	-	20	20	
Bar Sink	1	1.25		1.25	2.5 gpm	30	minutes	38	38	75	
Bar Hand Sink	1	0.5		0.5	1 gpm	5	minutes	3	3	5	
Other											
Ice Machine (Scotsman) Air Cooled	1			17.8	17.8 gp100#	1.5	100# Ice	-	27	27	
Leak	1	0		0.5	0.5 gpm	1440	minutes	-	720	720	
								191	**998**	**1,189**	**max day**
								observed		36,000	max month
										30	days at max
								observed		1,200.00	aver day

Table 2 - Summary of Current Water Use and Potential Water Savings
VFW Audit Summary

Average Use Calculation

	number	per use hot	per use cold	per use total		uses/day		subtotal gpd hot	subtotal gpd cold	subtotal gpd total	
Toilets											
	Mens	3		2	2 gpf	2	flushes	-	12	12	
	Womens	5		2	2 gpf	2	flushes	-	20	20	
Urinals											
	Mens	2		1	1 gpf	5	flushes	-	10	10	
Bathroom Sinks											
	Mens	4	1	1	2 gpm	1.05	minutes	17	17	34	
	Womens	4	0.5	0.5	1 gpm	0.3	minutes	2	2	5	
Kitchen Sinks: Pots and Pans		1	4	1	5 gpm	20	minutes	80	20	100	
Kitchen Handwash Sink		1	1	1	2 gpm	2	minutes	2	2	4	
Mop Sink (Only 1 is used)		2	0	5	5 gpm	1	uses	-	10	10	
Bar Sink		1	1.25	1.25	2.5 gpm	15	minutes	19	19	38	
Bar Hand Sink		1	0.5	0.5	1 gpm	5	minutes	3	3	5	
Other											
Ice Machine (Scotsman) Air Cooled		1		17.8	17.8 gp100#	1	100# Ice	-	18	18	
Leak		1	0	0.2	0.2 gpm	1440	minutes	-	288	288	
								122	**420**	**543**	**avg day**
								observed		16,667	avg month
										31	days at avg
								observed		556	avg day

Table 2 - Summary of Current Water Use and Potential Water Savings
VFW Audit Summary

Maximum Use Water Savings

		per use					subtotal gpd				Savings		
	number	hot	cold	total		uses/day	hot	cold	total		hot	cold	total
Toilets													
Mens	3		1.28	1.28	gpf	6 flushes	-	23	23		-	13	13
Womens	5		1.28	1.28	gpf	6 flushes	-	38	38		-	22	22
Urinals													
Mens	2		0	0	gpf	10 flushes	-	-	-		-	20	20
Bathroom Sinks													
Mens	4	0.25	0.25	0.5	gpm	2.4 minutes	10	10	19		29	29	58
Womens	4	0.25	0.25	0.5	gpm	0.9 minutes	4	4	7		4	4	7
Kitchen Sinks: Pots and Pans	1	4	1	5	gpm	25 minutes	100	25	125		-	-	-
Kitchen Handwash Sink	1	0.25	0.25	0.5	gpm	5 minutes	1	1	3		4	4	8
Mop Sink (Only 1 is used)	2	0	5	5	gpm	2 uses	-	20	20		-	-	-
Bar Sink	1	1.25	1.25	2.5	gpm	30 minutes	38	38	75		-	-	-
Bar Hand Sink	1	0.25	0.25	0.5	gpm	5 minutes	1	1	3		1	1	3
Other													
Ice Machine (Scotsman) Air Cooled	1		17.8	17.8	gp100#	1.5 100# Ice	-	27	27		-	-	-
Leak	1	0	0	0	gpm	1440 minutes	-	-	-		-	720	720
							153	**186**	**340**	**max day**			
							observed		36,000	max month			
									106	days at max			
							observed		1,200	aver day			

Table 2 - Summary of Current Water Use and Potential Water Savings
VFW Audit Summary

Average Use Water Savings

		per use					subtotal gpd				Savings		
	number	hot	cold	total		uses/day	hot	cold	total		hot	cold	total
Toilets													
Mens	3		1.28	1.28	gpf	2 flushes	-	8	8		-	4	4
Womens	5		1.28	1.28	gpf	2 flushes	-	13	13		-	7	7
Urinals													
Mens	2		0	0	gpf	5 flushes	-	-	-		-	10	10
Bathroom Sinks													
Mens	4	0.25	0.25	0.5	gpm	1.05 minutes	4	4	8		13	13	25
Womens	4	0.25	0.25	0.5	gpm	0.3 minutes	1	1	2		1	1	2
Kitchen Sinks: Pots and Pans	1	4	1	5	gpm	20 minutes	80	20	100		-	-	-
Kitchen Handwash Sink	1	0.25	0.25	0.5	gpm	2 minutes	1	1	1		2	2	3
Mop Sink (Only 1 is used)	2	0	5	5	gpm	1 uses	-	10	10		-	-	-
Bar Sink	1	1.25	1.25	2.5	gpm	15 minutes	19	19	38		-	-	-
Bar Hand Sink	1	0.25	0.25	0.5	gpm	5 minutes	1	1	3		1	1	3
Other													
Ice Machine (Scotsman) Air Cooled	1		17.8	17.8	gp100#	1 100# Ice	-	18	18		-	-	-
Leak	1	0	0	0	gpm	1440 minutes	-	-	-		-	288	288
							106	**94**	**200**	**avg day**			
							observed		16,667	avg month			
									83	days at avg			
							observed		556	avg day			

Costs to Implement

	number	Hardware	Installation	Total	Pay Back		Water Savings (gpy)	Energy Savings (kWhr)	Total Cost Savings/yr	Total Cost Savings/yr/fixture
Toilet	8	$ 282	$ 95	$ 3,016	163.42	yrs	4,205	-	$ 34	$ 4
Urinal	2	$ 311	$ 85	$ 792	47.48	yrs	3,650	-	$ 30	$ 15
Bathroom Sink	8	$ 1.61	$ 5	$ 53	0.32	yrs	10,074	1,308	$ 168	$ 21
Kitchen/ Bar Handwash Sinks	2	$ 1.61	$ 5	$ 13	0.40	yrs	2,008	261	$ 33	$ 17
Fix Leak	1	$ 300	$ 500	$ 800			105,120		$ 336	$ 336
				$ 4,674					$ 602	

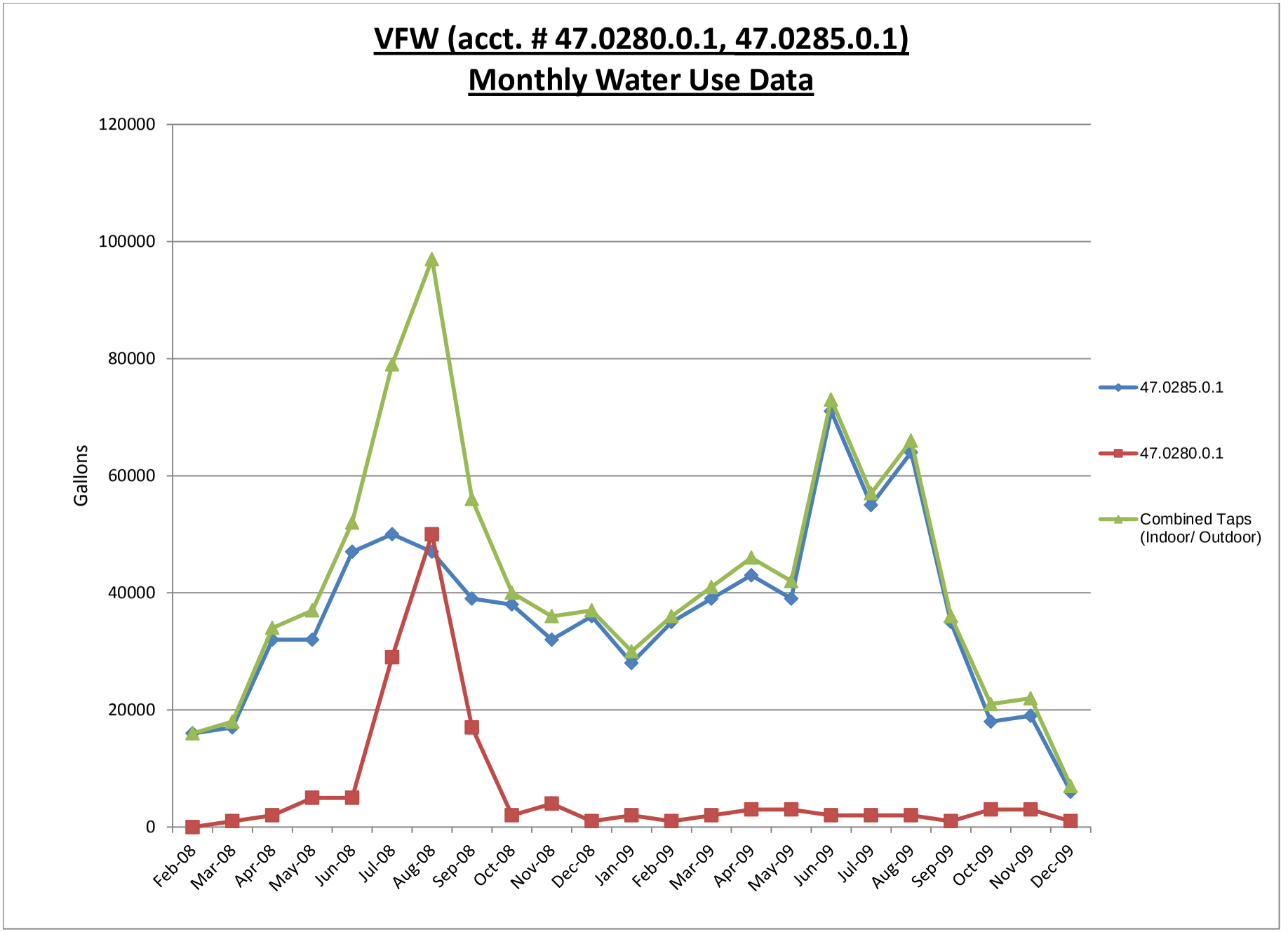
AF Savings: 0.38 $/ AF: $ 12,179

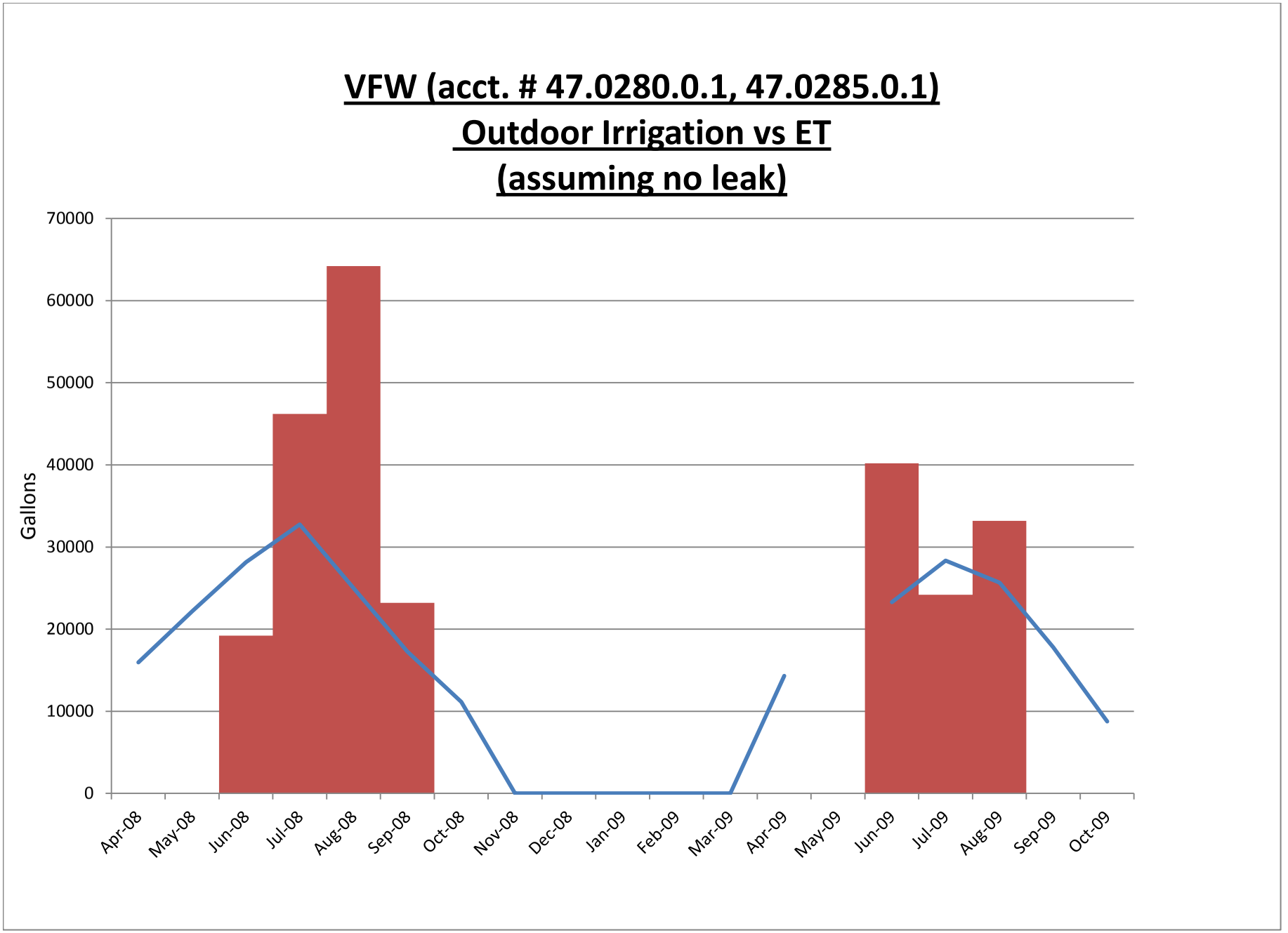
Replacement Water Cost* : $ 11,514 Avoided Cost** : $ 1,188

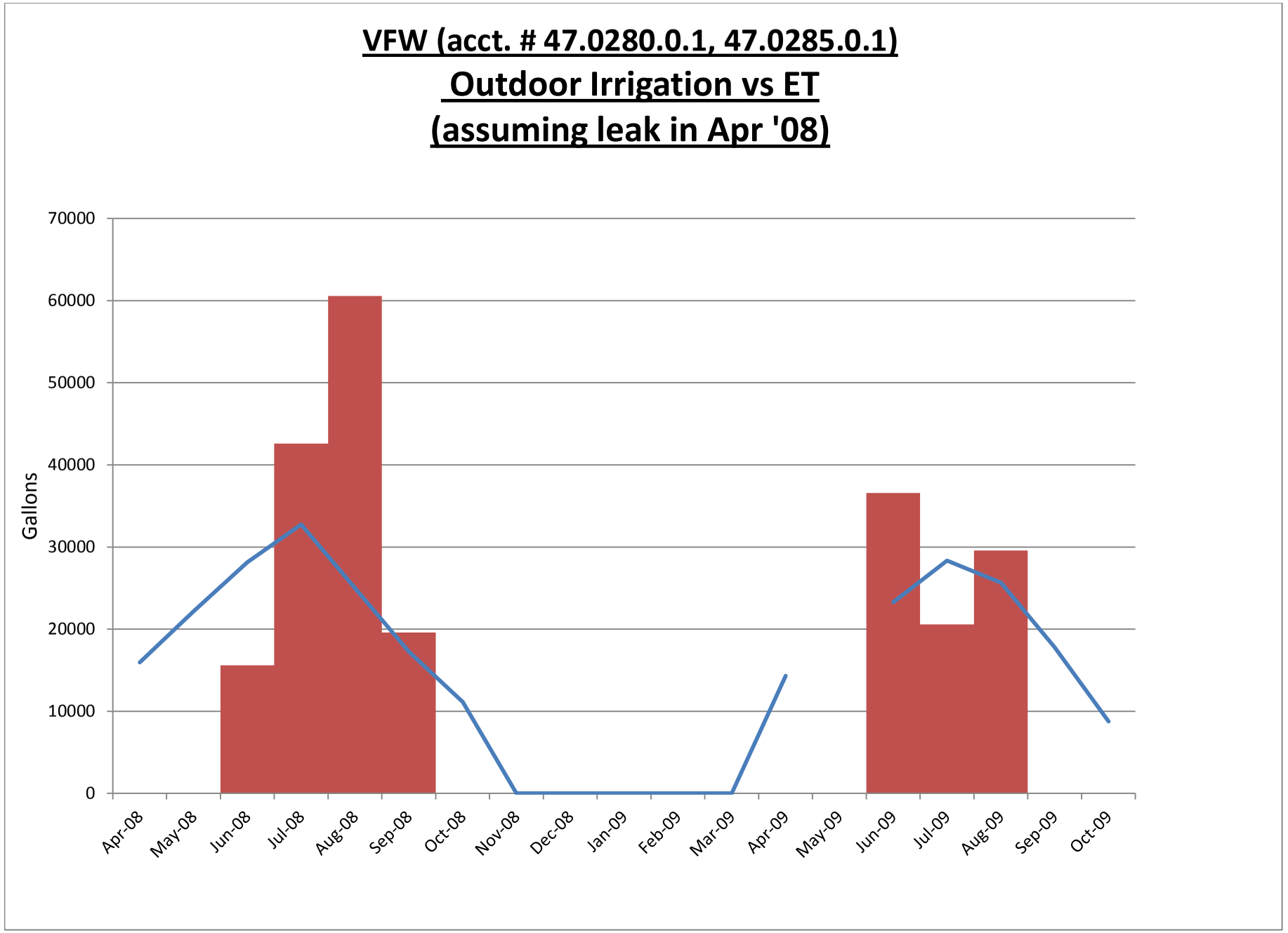
* Calculation based on $30,000 per AF

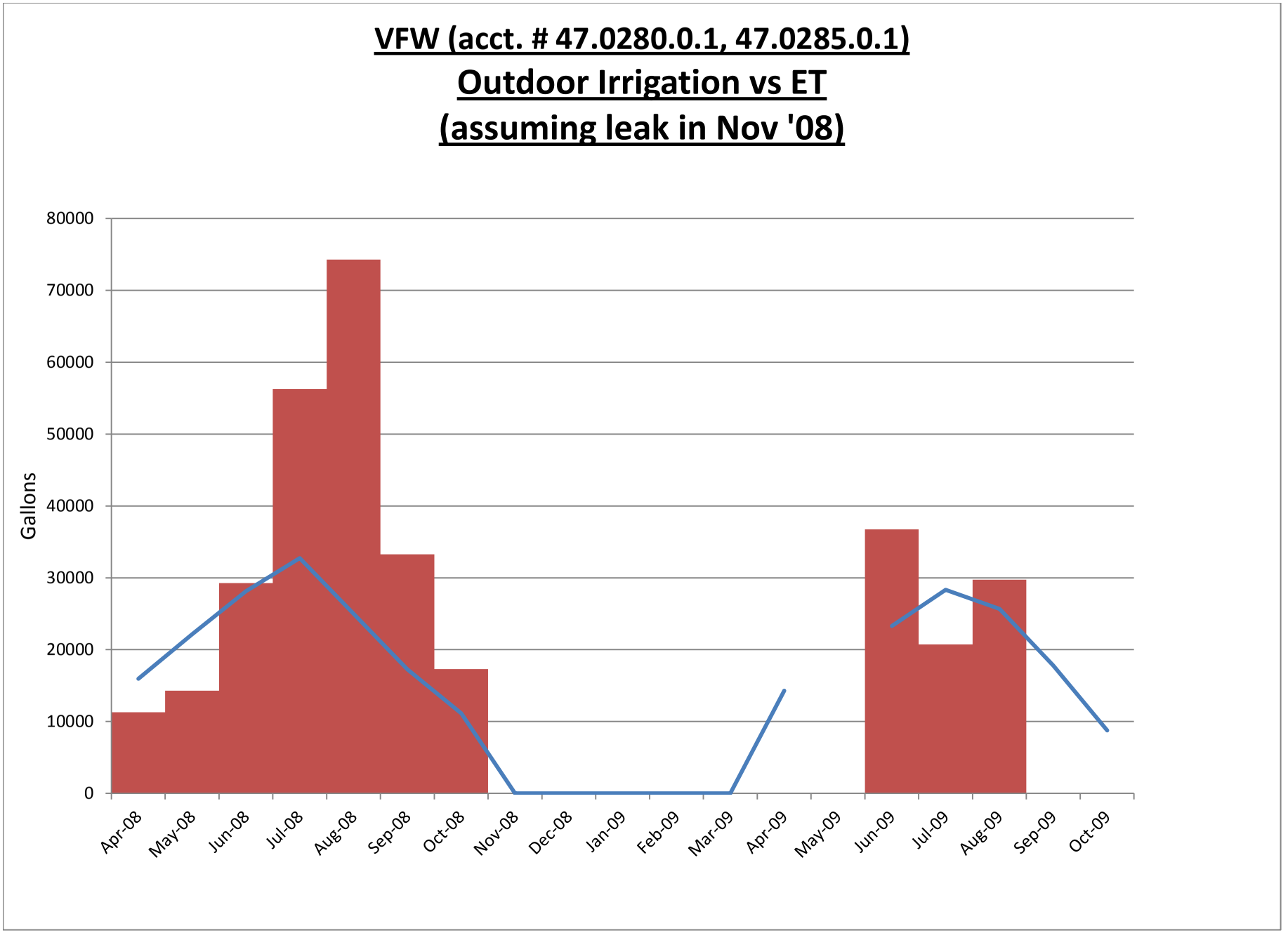
** Calculation based on $9.50/ 1000 gal

Cost Savings Assumptions: $8.50/1000 gal - cost of water and sewer, $0.065/kwh cost of energy


VFW (acct. # 47.0280.0.1, 47.0285.0.1)
Monthly Water Use Data
Gallons
120000
100000
80000
60000
40000
20000
0
Feb-08
Mar-08
Apr-08
May-08
Jun-08
Jul-08
Aug-08
Sep-08
Oct-08
Nov-08
Dec-08
Jan-09
Feb-09
Mar-09
Apr-09
May-09
Jun-09
Jul-09
Aug-09
Sep-09
Oct-09
Nov-09
Dec-09
47.0285.0.1
47.0280.0.1
Combined Taps
(Indoor/ Outdoor)


VFW (acct. # 47.0280.0.1, 47.0285.0.1)
Outdoor Irrigation vs ET
(assuming no leak)
Gallons
70000
60000
50000
40000
30000
20000
10000
0
Apr-08
May-08
Jun-08
Jul-08
Aug-08
Sep-08
Oct-08
Nov-08
Dec-08
Jan-09
Feb-09
Mar-09
Apr-09
May-09
Jun-09
Jul-09
Aug-09
Sep-09
Oct-09


VFW (acct. # 47.0280.0.1, 47.0285.0.1)
Outdoor Irrigation vs ET
(assuming leak in Apr '08)
Gallons
70000
60000
50000
40000
30000
20000
10000
0
Apr-08
May-08
Jun-08
Jul-08
Aug-08
Sep-08
Oct-08
Nov-08
Dec-08
Jan-09
Feb-09
Mar-09
Apr-09
May-09
Jun-09
Jul-09
Aug-09
Sep-09
Oct-09


VFW (acct. # 47.0280.0.1, 47.0285.0.1)
Outdoor Irrigation vs ET
(assuming leak in Nov '08)
Gallons
80000
70000
60000
50000
40000
30000
20000
10000
0
Apr-08
May-08
Jun-08
Jul-08
Aug-08
Sep-08
Oct-08
Nov-08
Dec-08
Jan-09
Feb-09
Mar-09
Apr-09
May-09
Jun-09
Jul-09
Aug-09
Sep-09
Oct-09

SMART WATER Audit Report

Walmart

Overview

The City working with Great Western Institute, conducted a SMART WATER Audit of your facility at 60 W. Bromley Lane in Brighton on February 23, 2010. The SMART WATER Audit was conducted as part of the City's audit project, whereby a select group of local businesses volunteered to help The City complete a commercial audit program intended to assist local businesses improve water use efficiency and in doing so, reduce water and energy operational costs.

The inventory of Walmart's water using fixtures and appliances is provided in Table 1. Figure 1 presents the monthly water use at Walmart in 2008 and 2009.

Water Use Summary

Walmart is one of the biggest users of water in the City of Brighton. Walmart has bathroom sinks and toilets that have been equipped with water efficient fixtures that are currently readily available in the marketplace. Walmart does utilize pre-rinse spray nozzles in their food prep kitchens. In addition, Walmart and the store's Subway utilize air cooled ice makers. Both of these features help to reduce facility wide water use.

Substantial water and energy savings can be realized by Walmart by changing out the kitchen sink faucet aerators (in those sinks not used for pots and pans) from the existing 2 to 2.5 gallon per minute flow rate to 0.5 gallons per minute. This will cost about $6 a piece, and will result on average in a combined water and energy savings of about $61 per sink per year. The bathroom sink faucet aerators at Walmart already use the 0.5 gallon per minute aerators. Other water efficient faucet aerators could be installed at the Beauty Center and the Eye Care Center. With an initial cost of about $6 per sink, the Beauty Center could see a cost savings of $46 per sink per year and the Eye Care Center could see a savings of $24 per sink per year. The hand wash sinks located in the Subway use a foot pedal system that does not allow for the changing of faucet aerators.

Additionally, Walmart could see significant water savings by replacing the four 1 gallon per flush urinals with Water Sense approved high efficiency waterless urinals. The initial cost would be about $1,584. Walmart would see a cost savings of approximately $269 per year per fixture resulting in payback period of about 4 years.

The in store Beauty Care Center would see a substantial water savings by replacing the top load, heavy duty Maytag washing machine. By replacing the current model with a new Water Sense approved high efficiency washing machine, the Beauty Care Center could see a combined water and energy savings of about $287 per year with an initial cost of approximately $925 resulting in a payback period of about 2 months.

The water modeling effort indicates that Walmart may have an ongoing leak of about 0.3 to 0.5 gallons per minute of water that has consistently occurred over the past two years. It would be of benefit for the owner to try to find and fix this suspected water waste such that over 180,000 to 250,000 gallons of water could be saved per year.

These potential indoor water saving measures are listed at the bottom of attached Table 2. If all the recommended indoor water saving fixtures are implemented, it would cost approximately $3,375 and may bring a reduction of about $3,500 in annual water and energy costs.

Walmart also uses substantial water for outdoor, seasonal uses which include irrigation of turf and landscape in the parking lot and the irrigation of plant materials in the nursery. Given that the distribution of water use is mixed between the outdoor irrigation and the nursery, no attempt was made to evaluate the efficiency of this use since information on the quantity and type of planting materials irrigated during the summer in the nursery have not been available.

Table 1 - Inventory of Walmart's Water Using Fixtures and Appliances

Location	**Walmart**								
Address	60 W. Bromley Lane								
Contact	Bill								
Date	2/23/2010								
Type of Business	Store/Grocery Store								
Account Number	26.0010.0.1								
Notes									
# of Employees	500 employees/day								
# of Customers	5000 customers/wkday; 6800 customers/wkend								
Toilets	1.28 gpf	1.6 gpf	2.0 gpf	3.0 gpf					
Public Mens		4							Flushvalve
Public Womens		8		1					Flushvalve
Family			1						
Urinals	0.5 gpf	1 gpf	1.5 gpf						
Mens		4							Flushmate
Sinks	0.5 gpm	1.5 gpm	2 gpm	2.5 gpm	3.5 gpm	4 gpm	5 gpm	6 gpm	
Walmart Store									
Breakroom Sink		1							
Bathroom Mens	6								Automatic
Bathroom Womens	6								
Family Bathroom						1			
Bakery/Food prep/Meat									
Pots and Pans								6	1 runs nearly all day for power soak; 4 w/ pre rinse spray
Kitchen Handwash		1	2	2	1				
Subway									
Pots and Pans			1	1					1 pre rinse spray
Subway Handwash Sink				2					w/ foot pedal
Mop Sink							1		
Eye Care									
Handwash				4					only 2 are used often
Beauty Center									
Handwash			1						
Hairwash Sink			2						
Other Uses	Make	Model		Capacity					
Water Fountains									
x4	Elkay								
Subway Ice machines									
	Manitowoc			18g/100#					
Pure Water Filtration									
									Drinking Water
AC									
	Rohn-Whisperkool Heat Craft	WK1000AC							
Water Softenting Unit									
Beauty Center Washing Machine									
	Maytag	DRE 80917		2-3 loads/day; 80 gal					Topload/heavy duty
Produce spray nozzles				10'					
Outdoor Irrigation									
	Includes: Corral, garden center, outdoor irrigation, grass islands								

Table 2 - Summary of Current Water Use and Potential Water Savings
Walmart Audit Summary

Maximum Use Calculation **5000 custom 6800 customers/wkend 500 employees/day 1700**

		per use					subtotal gpd			
	Customer Bathrooms number	hot	cold	total		uses/day	hot	cold	total	
Toilets: Flushing Valve										
	Mens 2		1.6	1.6	gpf	150 flushes	-	480	480	
	Womens 4		1.6	1.6	gpf	250 flushes	-	1,600	1,600	
Urinals										
	Mens 2		1	1	gpf	250 flushes	-	500	500	
Bathroom Sinks										
	Mens 3	0.25	0.25	0.5	gpm	60 minutes	180	180	360	
	Womens 3	0.25	0.25	0.5	gpm	37.5 minutes	113	113	225	
	Break Room Bathrroms									
Toilets										
	Mens 2		1.6	1.6	gpf	35 flushes	-	112	112	
	Womens 4		1.6	1.6	gpf	35 flushes	-	224	224	
	Family 1		2	2	gpf	15 flushes	-	30	30	
Urinals										
	Mens 2		1	1	gpf	40 flushes	-	80	80	
Bathroom Sinks										
	Mens 3	0.25	0.25	0.5	gpm	11.25 minutes	34	34	68	
	Womens 3	0.25	0.25	0.5	gpm	5.25 minutes	16	16	32	
	Family 1	2	2	4	gpm	2.25 minutes	18	18	36	
	Bakery/Food Prep/Meat									
Kitchen Sinks: Pots and Pans (4 pre rinse spray)	5	2	0.5	2.5	gpm	120 minutes	1,200	300	1,500	
Kitchen Sinks: Pots and Pans all day for power soak	1	400	100	500	batch	6 batches	2,400	600	3,000	
Kitchen Handwash Sink	6	1.25	1.25	2.5	gpm	5 minutes	38	38	75	
Water Fountain	2	0	4	4	g/day	8 g/day	-	8	8	
	Break Room/Employee Area									
Water Fountain	2	0	5	5	g/day	10 g/day	-	10	10	
Pure Water Filtration Unit for Drinking water	1	0	10	10	g/day	10 g/day	-	10	10	
Kitchen Sink	1	0.75	0.75	1.5	gpm	60 minutes	45	45	90	
	Subway									
Kitchen Sinks: Pots and Pans (1 pre rinse spray)	2	1.25	1.25	2.5	gpm	100 minutes	250	250	500	
Hand Sink (w/foot pedal)	2	1.25	1.25	2.5	gpm	4 minutes	10	10	20	
Mop Sink	1	0	5	5	gpm	2 uses	-	10	10	
Ice Machine (Manitowoc) Air Cooled	2		17.8	17.8	gp100#	8 100# Ice	-	285	285	
	Eye Care (4 employees)									
Hand Sink (4 but only 2 are used)	2	1.25	1.25	2.5	gpm	2 minutes	5	5	10	
	Beauty Center									
Hand Sink	1	1	1	2	gpm	5 minutes	5	5	10	
Hair Wash Sink	2	1.1	1.1	2.2	gpm	240 minutes	528	528	1,056	
Washing machine (Maytag, topload, heavy duty)	1	0	42	42	gpcycle	8 loads/day	-	336	336	
Leak	1	0	0.6	0.6	gpm	1440 minutes	-	864	864	
							4,841	**6,689**	**11,530**	**max day**
							observed		346,000	max month
									30	days at max
							observed		11,533.33	max day

Table 2 - Summary of Current Water Use and Potential Water Savings
Walmart Audit Summary

Average Use Calculation

Customer Bathrooms	number	per use hot	per use cold	per use total		uses/day	subtotal gpd hot	subtotal gpd cold	subtotal gpd total	
Toilets: Flushing Valve										
Mens	2		1.6	1.6	gpf	85 flushes	-	272	272	
Womens	4		1.6	1.6	gpf	125 flushes	-	800	800	
Urinals										
Mens	2		1	1	gpf	150 flushes	-	300	300	
Bathroom Sinks										
Mens	3	0.25	0.25	0.5	gpm	35.25 minutes	106	106	212	
Womens	3	0.25	0.25	0.5	gpm	18.75 minutes	56	56	113	
Break Room Bathrroms										
Toilets										
Mens	2		1.6	1.6	gpf	20 flushes	-	64	64	
Womens	4		1.6	1.6	gpf	30 flushes	-	192	192	
Family	1		2	2	gpf	15 flushes	-	30	30	
Urinals										
Mens	2		1	1	gpf	30 flushes	-	60	60	
Bathroom Sinks										
Mens	3	0.25	0.25	0.5	gpm	7.5 minutes	23	23	45	
Womens	3	0.25	0.25	0.5	gpm	4.5 minutes	14	14	27	
Family	1	2	2	4	gpm	2.25 minutes	18	18	36	
Bakery/Food Prep/Meat										
Kitchen Sinks: Pots and Pans (4 pre rinse spray)	5	2	0.5	2.5	gpm	100 minutes	1,000	250	1,250	
Kitchen Sinks: Pots and Pans all day for power soak	1	400	100	500	batch	4 batches	1,600	400	2,000	
Kitchen Handwash Sink	6	1.25	1.25	2.5	gpm	5 minutes	38	38	75	
Water Fountain	2	0	4	4	g/day	8 g/day	-	8	8	
Break Room/Employee Area										
Water Fountain	2	0	5	5	g/day	10 g/day	-	10	10	
Pure Water Filtration Unit for Drinking water	1	0	10	10	g/day	10 g/day	-	10	10	
Kitchen Sink	1	0.75	0.75	1.5	gpm	60 minutes	45	45	90	
Subway										
Kitchen Sinks: Pots and Pans (1 pre rinse spray)	2	1.25	1.25	2.5	gpm	60 minutes	150	150	300	
Hand Sink (w/foot pedal)	2	1.25	1.25	2.5	gpm	4 minutes	10	10	20	
Mop Sink	1	0	5	5	gpm	2 uses	-	10	10	
Ice Machine (Manitowoc) Air Cooled	2		17.8	17.8	gp100#	4 100# Ice	-	142	142	
Eye Care (4 employees)										
Hand Sink (4 but only 2 are used)	2	1.25	1.25	2.5	gpm	2 minutes	5	5	10	
Beauty Center										
Hand Sink	1	1	1	2	gpm	5 minutes	5	5	10	
Hair Wash Sink	2	1.1	1.1	2.2	gpm	135 minutes	297	297	594	
Washing machine (Maytag, topload, heavy duty)	1	0	42	42	gpcycle	4 loads/day	-	168	168	
Leak	1	0	0.35	0.35	gpm	1440 minutes	-	504	504	
							3,366	**3,986**	**7,351**	**avg day**
							observed		221,250	avg month
									30	days at avg
							observed		7,375	avg day

Table 2 - Summary of Current Water Use and Potential Water Savings
Walmart Audit Summary

Maximum Use Water Savings

Customer Bathrooms	number	per use hot	per use cold	per use total		uses/day	subtotal gpd hot	subtotal gpd cold	subtotal gpd total	Savings hot	Savings cold	Savings total
Toilets: Flushing Valve												
Mens	2		1.6	1.6	gpf	150 flushes	-	480	480	-	-	-
Womens	4		1.6	1.6	gpf	250 flushes	-	1,600	1,600	-	-	-
Urinals												
Mens	2		1	1	gpf	250 flushes	-	500	500	-	-	-
Bathroom Sinks												
Mens	3	0.25	0.25	0.5	gpm	60 minutes	180	180	360	-	-	-
Womens	3	0.25	0.25	0.5	gpm	37.5 minutes	113	113	225	-	-	-
Break Room Bathrroms												
Toilets												
Mens	2		1.6	1.6	gpf	35 flushes	-	112	112	-	-	-
Womens	4		1.6	1.6	gpf	35 flushes	-	224	224	-	-	-
Family	1		2	2	gpf	15 flushes	-	30	30	-	-	-
Urinals												
Mens	2		1	1	gpf	40 flushes	-	80	80	-	-	-
Bathroom Sinks												
Mens	3	0.25	0.25	0.5	gpm	11.25 minutes	34	34	68	-	-	-
Womens	3	0.25	0.25	0.5	gpm	5.25 minutes	16	16	32	-	-	-
Family	1	2	2	4	gpm	2.25 minutes	18	18	36	-	-	-
Bakery/Food Prep/Meat												
Kitchen Sinks: Pots and Pans (4 pre rinse spray)	5	2	0.5	2.5	gpm	120 minutes	1,200	300	1,500	-	-	-
Kitchen Sinks: Pots and Pans all day for power soak	1	400	100	500	batch	6 batches	2,400	600	3,000	-	-	-
Kitchen Handwash Sink	6	1.25	1.25	2.5	gpm	5 minutes	38	38	75	-	-	-
Water Fountain	2	0	4	4	g/day	8 g/day	-	8	8	-	-	-
Break Room/Employee Area												
Water Fountain	2	0	5	5	g/day	10 g/day	-	10	10	-	-	-
Pure Water Filtration Unit for Drinking water	1	0	10	10	g/day	10 g/day	-	10	10	-	-	-
Kitchen Sink	1	0.75	0.75	1.5	gpm	60 minutes	45	45	90	-	-	-
Subway												
Kitchen Sinks: Pots and Pans (1 pre rinse spray)	2	1.25	1.25	2.5	gpm	100 minutes	250	250	500	-	-	-
Hand Sink (w/foot pedal)	2	1.25	1.25	2.5	gpm	4 minutes	10	10	20	-	-	-
Mop Sink	1	0	5	5	gpm	2 uses	-	10	10	-	-	-
Ice Machine (Manitowoc) Air Cooled	2		17.8	17.8	gp100#	8 100# Ice	-	285	285	-	-	-
Eye Care (4 employees)												
Hand Sink (4 but only 2 are used)	2	1.25	1.25	2.5	gpm	2 minutes	5	5	10	-	-	-
Beauty Center												
Hand Sink	1	1	1	2	gpm	5 minutes	5	5	10	-	-	-
Hair Wash Sink	2	1.1	1.1	2.2	gpm	240 minutes	528	528	1,056	-	-	-
Washing machine (high efficiency)	1	0	18	18	gpcycle	8 loads/day	-	144	144	-	192	192
Leak	1	0	0	0	gpm	1440 minutes	-	-	-	-	864	864
							4,841	**5,633**	**10,474**	**max day**		
							observed		346,000	max month		
									33	days at max		
							observed		11,533.33	max day		

Table 2 - Summary of Current Water Use and Potential Water Savings
Walmart Audit Summary

Average Use Water Savings

Customer Bathrooms	number	per use hot	per use cold	per use total		uses/day	subtotal gpd hot	subtotal gpd cold	subtotal gpd total		Savings hot	Savings cold	Savings total
Toilets: Flushing Valve													
Mens	2		1.6	1.6	gpf	85 flushes	-	272	272		-	-	-
Womens	4		1.6	1.6	gpf	125 flushes	-	800	800		-	-	-
Urinals											-	-	-
Mens	2		0	0	gpf	150 flushes	-	-	-		-	300	300
Bathroom Sinks													
Mens	3	0.25	0.25	0.5	gpm	35.25 minutes	106	106	212		-	-	-
Womens	3	0.25	0.25	0.5	gpm	18.75 minutes	56	56	113		-	-	-
Break Room Bathrroms													
Toilets													
Mens	2		1.6	1.6	gpf	20 flushes	-	64	64		-	-	-
Womens	4		1.6	1.6	gpf	30 flushes	-	192	192		-	-	-
Family	1		2	2	gpf	15 flushes	-	30	30		-	-	-
Urinals													
Mens	2		0	0	gpf	30 flushes	-	-	-		-	60	60
Bathroom Sinks													
Mens	3	0.25	0.25	0.5	gpm	7.5 minutes	23	23	45		-	-	-
Womens	3	0.25	0.25	0.5	gpm	4.5 minutes	14	14	27		-	-	-
Family	1	0.25	0.25	0.5	gpm	2.25 minutes	2	2	5		16	16	32
Bakery/Food Prep/Meat													
Kitchen Sinks: Pots and Pans (4 pre rinse spray)	5	2	0.5	2.5	gpm	100 minutes	1,000	250	1,250		-	-	-
Kitchen Sinks: Pots and Pans all day for power soak	1	400	100	500	batch	4 batches	1,600	400	2,000		-	-	-
Kitchen Handwash Sink	6	0.25	0.25	0.5	gpm	5 minutes	8	8	15		30	30	60
Water Fountain	2	0	4	4	g/day	8 g/day	-	8	8		-	-	-
Break Room/Employee Area													
Water Fountain	2	0	5	5	g/day	10 g/day	-	10	10		-	-	-
Pure Water Filtration Unit for Drinking water	1	0	10	10	g/day	10 g/day	-	10	10		-	-	-
Kitchen Sink	1	0.75	0.75	1.5	gpm	60 minutes	45	45	90		-	-	-
Subway													
Kitchen Sinks: Pots and Pans (1 pre rinse spray)	2	1.25	1.25	2.5	gpm	60 minutes	150	150	300		-	-	-
Hand Sink (w/foot pedal)	2	1.25	1.25	2.5	gpm	4 minutes	10	10	20		-	-	-
Mop Sink	1	0	5	5	gpm	2 uses	-	10	10		-	-	-
Ice Machine (Manitowoc) Air Cooled	2		17.8	17.8	gp100#	4 100# Ice	-	142	142		-	-	-
Eye Care (4 employees)													
Hand Sink (4 but only 2 are used)	2	0.25	0.25	0.5	gpm	2 minutes	1	1	2		4	4	8
Beauty Center													
Hand Sink	1	0.25	0.25	0.5	gpm	5 minutes	1	1	3		4	4	8
Hair Wash Sink	2	1.1	1.1	2.2	gpm	135 minutes	297	297	594		-	-	-
Washing machine (high efficiency)	1	0	18	18	gpcycle	4 loads/day	-	72	72		-	96	96
Leak	1	0	0	0	gpm	1440 minutes	-	-	-		-	504	504
							3,312	**2,972**	**6,284**	**avg day**			
							observed		221,250	avg month			
									35	days at avg			
							observed		7,375	avg day			

Table 2 - Summary of Current Water Use and Potential Water Savings
Walmart Audit Summary

Costs to Implement

	number	Hardware	Installation	Total	Pay Back		Water Savings (gpy)	Energy Savings (kWhr)	Total Cost Savings/yr	Total Cost Savings/yr/fixture
Urinals	4	$ 311.00	$ 85	$ 1,584	3.72	yrs	131,400	-	$ 1,077	$ 269
Bathroom Sinks	1	$ 1.61	$ 5	$ 7	0.16	yrs	11,497.50	1,493	$ 191	$ 191
Walmart Kitchen Handwash Sinks	6	$ 1.61	$ 5	$ 40	0.53	yrs	21,900	2,844	$ 364	$ 61
Beauty Center Handwash Sinks	1	$ 1.61	$ 5	$ 7	0.15	yrs	2,737.50	355	$ 46	$ 46
Washing Machine	1	$ 850	$ 75	$ 925	3.22	yrs	35,040.00	-	$ 287	$ 287.33
Eye Care Handwash Sinks	2	$ 1.61	$ 5	$ 13	0.27	yrs	2,920	379	$ 49	$ 24.29
Leak	1	$ 750.00	$ 50	$ 800	0.53	yrs	183,960	-	$ 1,508	$ 1,508
				$ 3,375					3,523	

AF Savings: 1.20 $/ AF: $ 2,824

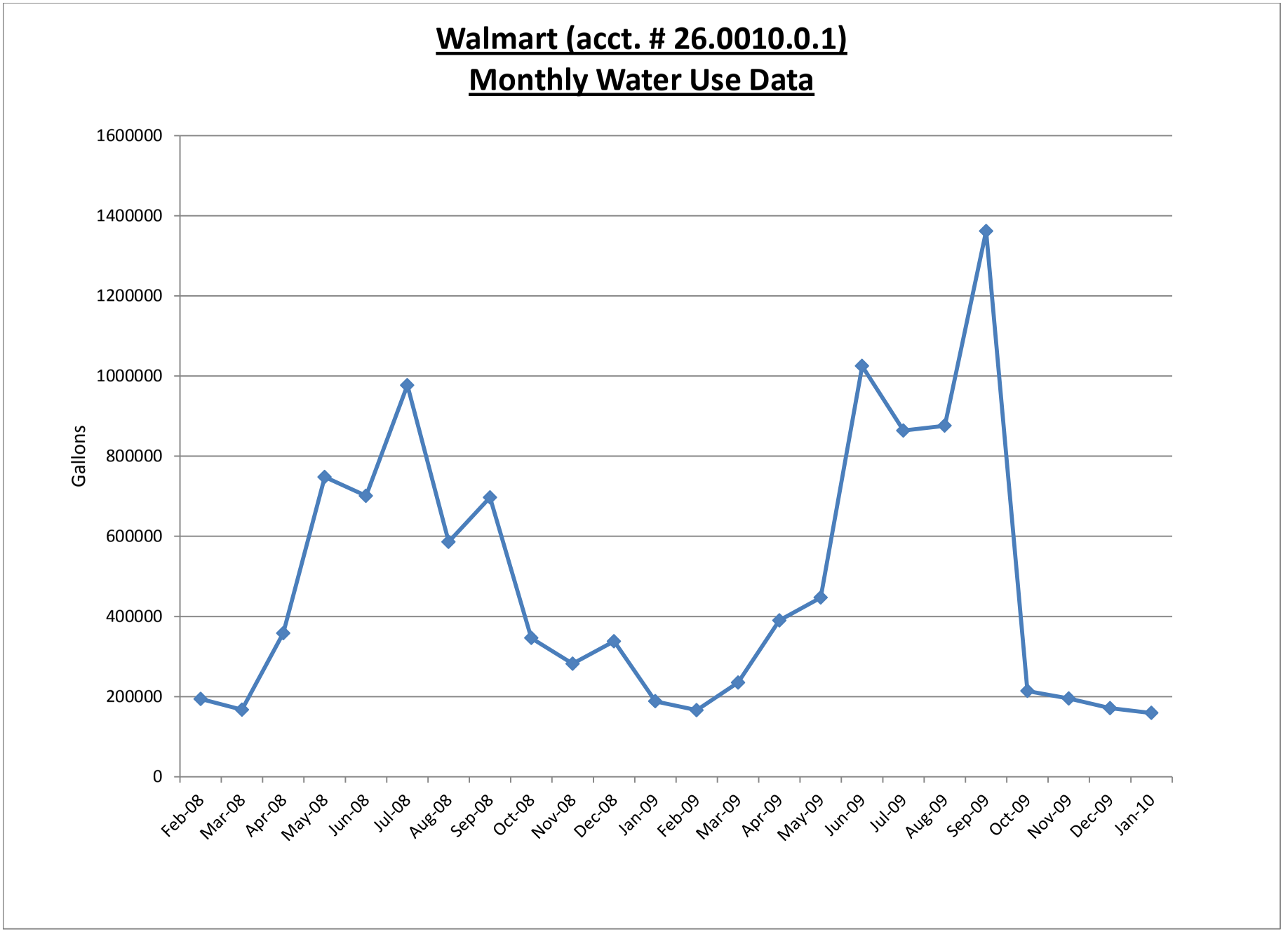
Replacement Water Cost* : $ 23,758

Avoided Cost** : $ 3,700

* Calculation based on $30,000 per AF

** Calculation based on $9.50/ 1000 gal

Cost Savings Assumptions: $8.50/1000 gal - cost of water and sewer, $0.065/kwh cost of energy



GREAT WESTERN INSTITUTE

SMART WATER Audit Reports

Residential

SMART WATER Audit Report

The Gossert's Home

Overview

The City working with Great Western Institute, conducted a SMART WATER Audit of your home at 279 Birch Ave on April 2, 2010. The SMART WATER Audit was conducted as part of the City's audit project, whereby a select group of residences volunteered to help The City complete a residential audit program intended to assist in improving water use efficiency and in doing so, reduce water and energy operational costs.

The inventory of the Gossert's water using fixtures and appliances is provided in Table 1. Figure 1 presents the monthly water use at the Gossert's in 2008 and 2009.

Water Use Summary

In an effort to determine the reason for high water bills, the house was visited to evaluate current and past water use. An inventory of water using fixtures and appliances was prepared and leaks and other water wasting behaviors were evaluated.

Based on the site visit, it appears that the Gossert have done a good job retrofitting their home with water efficient appliances; however their indoor wintertime water use (ignoring the leak found) is somewhat higher than average at about 86 gallons per person per day. The two toilets in the home were recently replaced as of 2007. These toilets use roughly 1.6 gallons per flush. However, the downstairs toilet did run slightly longer than expected, using about 2 gallons per flush. By installing new Water Sense approved high efficiency toilets which use only 1.28 gallons per flush and work correctly, the Gossert's would spend $750 with a total savings of approximately $8 per year.

The Gossert's have already installed low flow shower heads which uses between 2.2 and 2.5 gallons per minute. They also have a new Water Sense clothes washer which uses only 24 gallons per load.

The bathroom hand wash sinks use between 2.5 and 2.7 gallons per minute. Replacing these sinks with new 0.5 gallon per minute faucet aerators would cost about $6 per sink and may allow for a combined water and energy savings of on average about $6 per sink per year.

A summary of the water use at the Gossert's home is presented in Table 2. Based on the analyses conducted, it appears that the Gossert's have a leak of about 0.1 to 0.15 gallons per minute on their side of the water meter. At a later visit by the City, upon recommendations of GWI, it was determined that there was a leak at the irrigation system connection on the Gossert's side of the meter resulting in the large water bills. The leak has since been fixed.

Finally, Figure 2 presents a comparison between applied irrigation water and seasonal evapotranspiration (ET). Applied irrigation water was determined using the monthly water billings for 2008 and 2009. Seasonal ET was estimated based on irrigated acreage and ET. Based on this comparison, the Gossert's appear to over water during some months by about 50% (especially late in the season), whereas they irrigate at a rate consistent or below ET early in the season. Given that the irrigation practices indicate that the irrigation clock is adjusted on a monthly basis, it would appear that the Gossert's could improve their irrigation practices by self-adjusting their irrigation controller. A more detailed irrigation system may also be warranted.

Table 1 - Inventory for Gossert Residence Water Using Fixtures and Appliances

Location	**Gossert**								
Address	279 Birch Ave								
Contact	Glen and Sherry								
Date	4/2/2010								
Type of Business	Residential								
Account Number	27.0745.0.1								
Notes									
Built Date	1970								
# of People	2								
Toilets	1.28 gpf	1.6 gpf	2.0 gpf	2.5 gpf	3 gpf	5 gpf			Comment
Bathroom 1 (downstairs)			1						Bemis 2007 - Ran a little long
Bathroom 2 (upstairs)		1							Jacuzzi 2009
Showerhead	1.28 gpm	1.6 gpm	2.2 gpm	2.5 gpm	3 gpm	5 gpm			
Bathroom 1			1						
Bathroom 2				1					
Sinks	0.5 gpm	1 gpm	2 gpm	2.5 gpm	2.7 gpm	5 gpm	6 gpm		
Kitchen					1				
Bathroom 1					1				
Bathroom 2				1					
Other Uses	Use	Make		Model		Capacity			
Hot Water Heater									
		GE Energy Star		SG40T12AVG00		40 gal			120 degrees, 2009
Dish Washer									
		Maytag		MDB4010AWB					
Clothes Washer									
		Tromm LG		WM2277HW		24 gal/load			2006
Refrigeration									
		Maytag							w/ ice maker
Cooling Towers									
									swamp cooler - May - September
Outdoor Irrigation	Sprinklers; 40'x52' backyard; 0.16 acre lot								
	Pressure read - 90								
	5 zones in back - 3 zones in front; 8-12 popups (1/2 are RainBird); 25 min in summer; 3-5 min in spring								
	5 AM watering, manual shut off during rain								

Table 2 - Summary of Current Water Use and Potential Water Savings
Gossert Residence Audit Summary

Maximum Use Calculation

2 people

	number	per use hot	per use cold	per use total		uses/day		subtotal gpd hot	subtotal gpd cold	subtotal gpd total	
Bathroom Downstairs											
Toilet	1			2	2 gpf	4	flushes	-	8	8	
Shower	1	1.76	0.44	2.2	gpm	15	minutes	26	7	33	
Sink	1	1.35	1.35	2.7	gpm	0.6	minutes	1	1	2	
Bathroom Upstairs											
Toilet	1		1.6	1.6	gpf	6	flushes	-	10	10	
Shower	1	2	0.5	2.5	gpm	20	minutes	40	10	50	
Sink	1	1.25	1.25	2.5	gpm	0.9	minutes	1	1	2	
Kitchen Sink	1	1.35	1.35	2.7	gpm	15	minutes	20	20	41	
Clothes Washing Machine	1	12	12	24	g/use	0.6	use	7	7	14	
Dish Washing Machine	1	10	10	20	g/use	0.5	use	5	5	10	
LEAK	1		0.12	0.12	qpm	1,440	minutes	-	173	173	
								101	**241**	**342**	**max day**
								observed		10,000	max month
										29	days at max
								observed		333.33	max day

Average Use Calculation

	number	per use hot	per use cold	per use total		uses/day		subtotal gpd hot	subtotal gpd cold	subtotal gpd total	
Bathroom Downstairs											
Toilet	1			2	2 gpf	4	flushes	-	8	8	
Shower	1	1.76	0.44	2.2	gpm	15	minutes	26	7	33	
Sink	1	1.35	1.35	2.7	gpm	0.6	minutes	1	1	2	
Bathroom Upstairs											
Toilet	1		1.6	1.6	gpf	6	flushes	-	10	10	
Shower	1	2	0.5	2.5	gpm	20	minutes	40	10	50	
Sink	1	1.25	1.25	2.5	gpm	0.9	minutes	1	1	2	
Kitchen Sink	1	1.35	1.35	2.7	gpm	15	minutes	20	20	41	
Clothes Washing Machine	1	12	12	24	g/use	0.3	use	4	4	7	
Dish Washing Machine	1	10	10	20	g/use	1.0	use	10	10	20	
								102	**70**	**172**	**avg day**
								observed		5,167	avg month
										30	days at avg
								observed		172	avg day

Table 2 - Summary of Current Water Use and Potential Water Savings
Gossert Residence Audit Summary

Maximum Use Water Savings

	number	per use hot	per use cold	per use total		uses/day		subtotal gpd hot	subtotal gpd cold	subtotal gpd total		Savings hot	Savings cold	Savings total
Bathroom Downstairs														
Toilet	1		1.28	1.28	gpf	4	flushes	-	5	5		-	3	3
Shower	1	1.76	0.44	2.2	gpm	15	minutes	26	7	33		-	-	-
Sink	1	0.25	0.25	0.5	gpm	0.6	minutes	0	0	0		1	1	1
												-	-	-
Bathroom Upstairs												-	-	-
Toilet	1		1.28	1.28	gpf	6	flushes	-	8	8		-	2	2
Shower	1	2	0.5	2.5	gpm	20	minutes	40	10	50		-	-	-
Sink	1	0.25	0.25	0.5	gpm	0.9	minutes	0	0	0		1	1	2
Kitchen Sink	1	1.35	1.35	2.7	gpm	15	minutes	20	20	41		-	-	-
Clothes Washing Machine	1	12	12	24	g/use	0.6	use	7	7	14		-	-	-
Dish Washing Machine	1	3	3	6	g/use	0.5	use	2	2	3		4	4	7
												-	-	-
												-	-	-
Fix Leak	1		0	0	gpm	1,440	minutes	-	-	-		-	173	173
								96	**59**	**154**	**max day**			
								observed		10,000	max month			
										65	days at max			
								observed		381	max day			

Average Use Water Savings

	number	per use hot	per use cold	per use total		uses/day		subtotal gpd hot	subtotal gpd cold	subtotal gpd total		Savings hot	Savings cold	Savings total
Bathroom Downstairs														
Toilet	1		1.28	1.28	gpf	4	flushes	-	5	5		-	3	3
Shower	1	1.76	0.44	2.2	gpm	15	minutes	26	7	33		-	-	-
Sink	1	0.25	0.25	0.5	gpm	1	minutes	0	0	0		1	1	1
												-	-	-
Bathroom Upstairs												-	-	-
Toilet	1		1.28	1.28	gpf	6	flushes	-	8	8		-	2	2
Shower	1	2	0.5	2.5	gpm	20	minutes	40	10	50		-	-	-
Sink	1	0.25	0.25	0.5	gpm	1	minutes	0	0	0		1	1	2
Kitchen Sink	1	1.35	1.35	2.7	gpm	15	minutes	20	20	41		-	-	-
Clothes Washing Machine	1	12	12	24	g/use	0	use	4	4	7		-	-	-
Dish Washing Machine	1	3	3	6	g/use	1	use	3	3	6		7	7	14
												-	-	-
												-	-	-
								94	**57**	**150**	**avg day**			
								observed		5,167	avg month			
										34	days at avg			
								observed		381	avg day			

Costs to Implement

	number	Hardware	Installation	Total	Pay Back		Water Savings (gpy)	Energy Savings (kWhr)	Total Cost Savings/yr	Total Cost Savings/yr/fixture
Toilet	2	$ 282	$ 95	$ 754	52	yrs	1,752	-	$ 14.37	$ 7.18
Bathroom Sink	2	$ 1.61	$ 5	$ 13	0.89	yrs	1,139	85	$ 14.88	$ 7.44
				$ 767					$ 29	

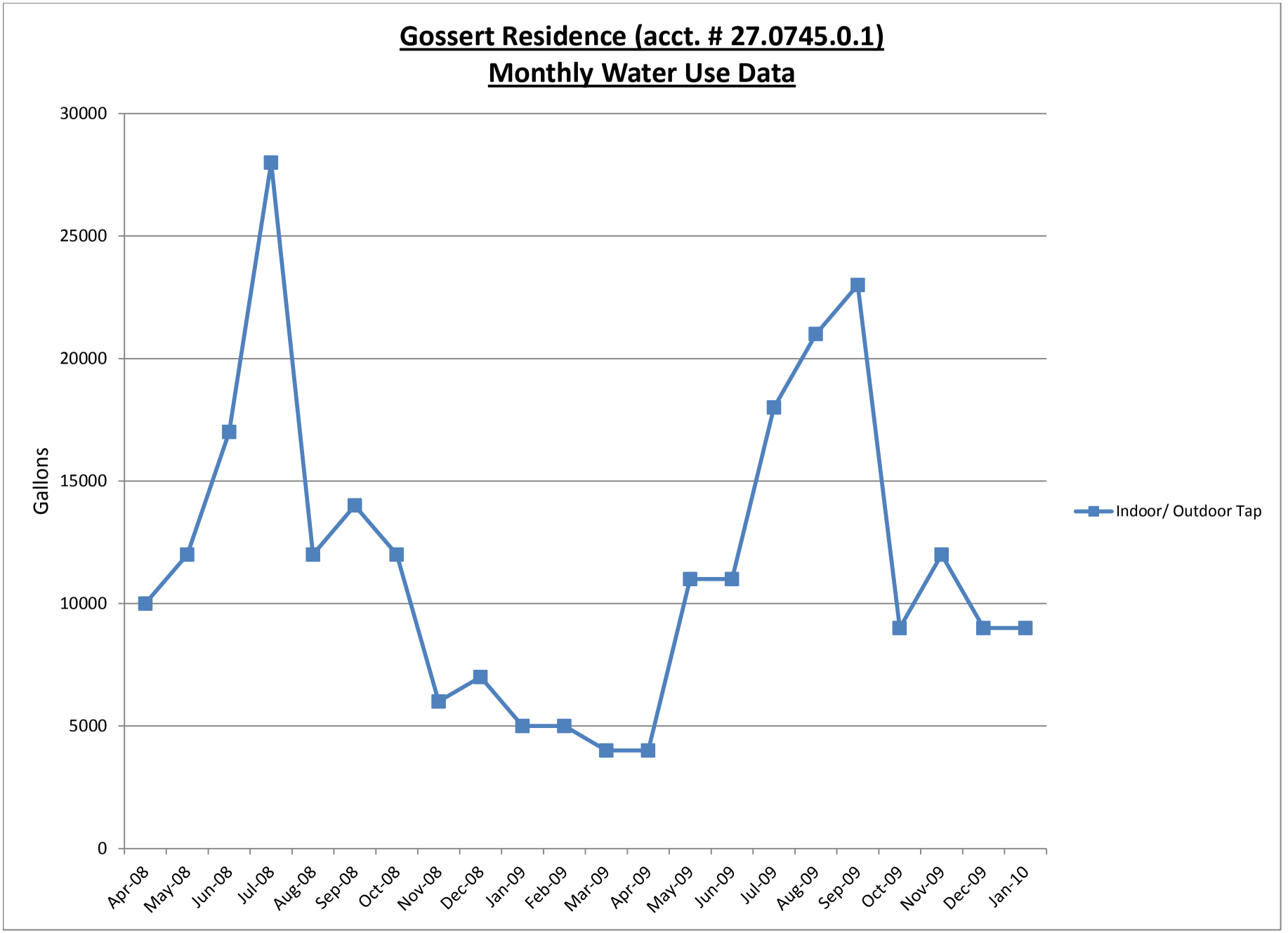
AF Savings: 0.009 $/ AF: $ 86,481

Replacement Water Cost* : $ 266 Avoided Cost** : $ 27

* Calculation based on $30,000 per AF

** Calculation based on $9.50/ 1000 gal

Cost Savings Assumptions: $8.50/1000 gal - cost of water and sewer, $0.065/kwh cost of energy


Gossert Residence (acct. # 27.0745.0.1)
Monthly Water Use Data
Gallons
30000
25000
20000
15000
10000
5000
0
Apr-08
May-08
Jun-08
Jul-08
Aug-08
Sep-08
Oct-08
Nov-08
Dec-08
Jan-09
Feb-09
Mar-09
Apr-09
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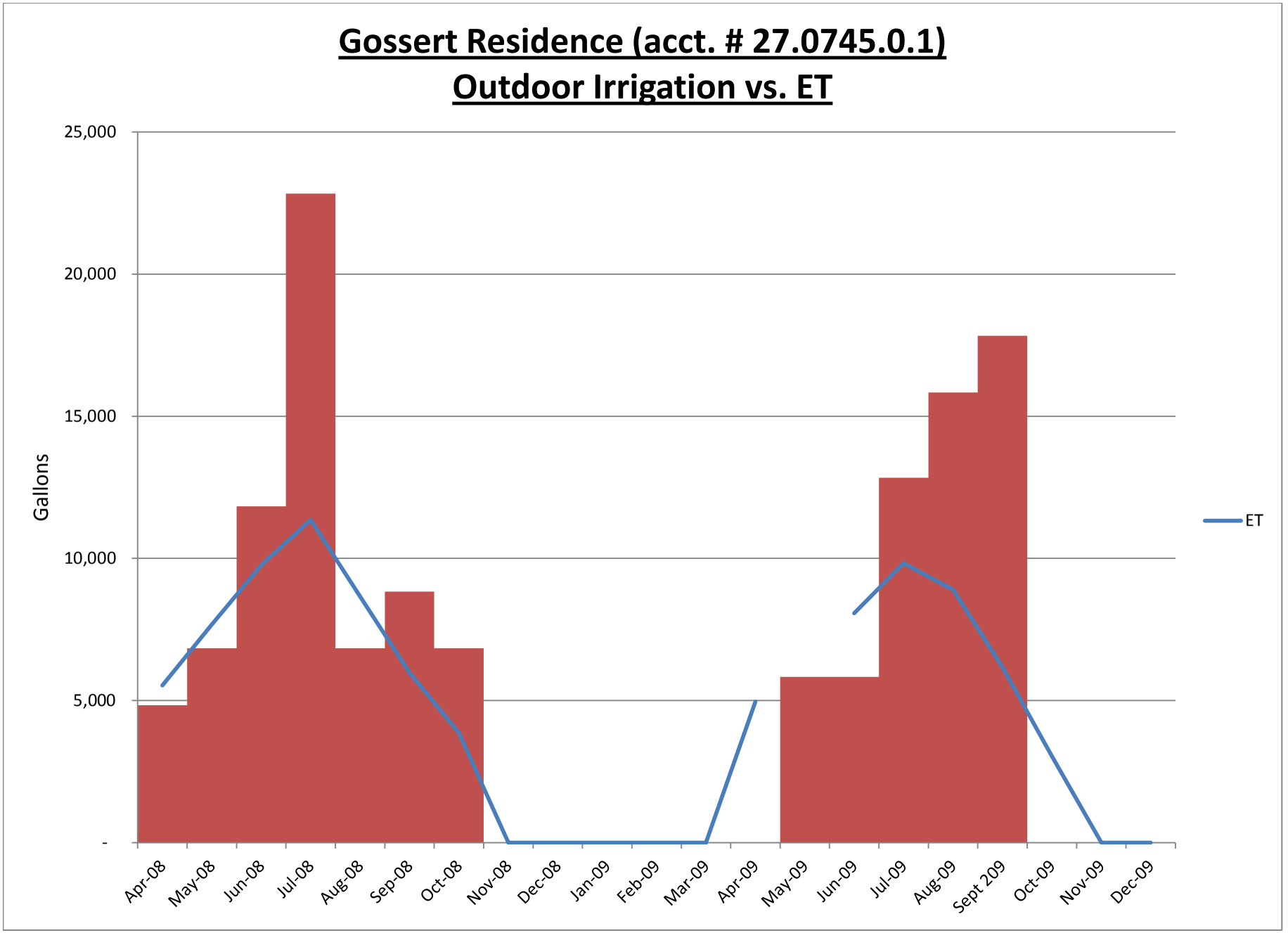
Dec-09
Jan-10
Indoor/ Outdoor Tap



GREAT WESTERN INSTITUTE

SMART WATER Audit Report

The Hansen Home

Overview

The City working with Great Western Institute, conducted a SMART WATER Audit of your home at 283 N. 9th Ave on August 25, 2010. The SMART WATER Audit was conducted as part of the City's audit project, whereby a select group of residences volunteered to help The City complete a residential audit program intended to assist in improving water use efficiency and in doing so, reduce water and energy operational costs.

The inventory of the Hansen's water using fixtures and appliances is provided in Table 1. Figure 1 presents the monthly water use at the Hansen's in 2008 and 2009.

Water Use Summary

Mr. Hansen was interested in the water audit program because he is surprised at the amount of water he was using with only one person living in his home. An inventory of water using fixtures and appliances was prepared and leaks and other water wasting behaviors were evaluated.

Based on the site visit, it appears that Mr. Hansen has done a good job of managing water use in his home with some water efficient appliances; however, the toilet is a 1950's vintage fixture using approximately 3.5 gallons per flush. By installing a new Water Sense approved high efficiency toilet, which uses only 1.28 gallons per flush, Mr. Hansen would spend about $375 with a total savings of approximately $20 per year.

Mr. Hansen does utilize two showerheads in his one shower, however both use only 1 gallon per minute and therefore it is not necessary to change them. Mr. Hansen's washing machine was purchased on 2005 and therefore is a high efficiency model. Replacing this appliance will not create substantial water savings.

The bathroom hand wash sink uses 2 gallons per minute. Replacing this sinks with a 0.5 gallon per minute faucet aerator would cost $6 per sink and could save a combined water and energy savings of about $4 per year.

Overall, Mr. Hansen operates a water efficient home – using about 45 gallons per day in the wintertime months. Mr. Hansen could improve his water use efficiency by replacing a few indoor fixtures which are outdated for about $380, saving an estimate of about $24 per year. These water saving measures are listed at the bottom of attached Table 2

Mr. Hansen does have a large irrigated backyard with 4 irrigation zones. However, he has his Rain Bird controller programmed correctly and waters his grass according to the amounts suggested by estimated evapotranspiration (ET). He also has his controller programmed according to the watering days specified by the City.

Table 1 - Inventory for Hansen Residence Water Using Fixtures and Appliances

Address	283 N. 9th Ave								
Contact	Alden Hansen								
Date	8/25/2010								
Type of Business	Residential								
Account Number	45.0430.0.4								
Notes									
Built Date	1952								
# of People	1								
Toilets	1.28 gpf	1.6 gpf	2.0 gpf	3.5 gpf					Comment
Bathroom 1				1					Old toilet/runs for 10 seconds
Shower	1 gpm	2 gpm	5 gpm						
Bathroom 1	2								2 showerheads each 1 gpm
Sinks	0.5 gpm	1.5 gpm	2 gpm	2.5 gpm	3 gpm	5 gpm	6 gpm		
Kitchen			1						
Bathroom 1		1							
Other Uses	Use	Make		Model		Capacity			
Hot Water Heater									
						30 gal			In basement
Dish Washer									
		GE Potscrubber 720		GSD720X-68WB					used 2x/wk
Clothes Washer									
		Kenmore		23822100					year 2001
Refrigeration									
		Kenmore		25371822102					
Cooling Towers									
									Small window air conditioner
Outdoor Irrigation	4 stations; run between 15-25 mintues each. 2 full cycles around.								
	Waters on specified days, 3 days/wk at 3 am.								
	Yard size - Front = Two 15 ft x15 ft sections; Back = 69 ft x 36 ft								

Table 2 - Summary of Current Water Use and Potential Water Savings
Hansen Residence Audit Summary

Maximum Use Calculation

1 person

	number	per use hot	per use cold	per use total		uses/day		subtotal gpd hot	subtotal gpd cold	subtotal gpd total	
Bathroom											
Toilet	1		3.5	3.5	gpf	4	flushes	-	14	14	
Shower	2	0.8	0.2	1	gpm	15	minutes	24	6	30	
Sink	1	1	1	2	gpm	0.6	minutes	1	1	1	
Kitchen Sink	1	1	1	2	gpm	7	minutes	7	7	14	
Clothes Washing Machine	1	12	12	24	g/use	0.15	use	2	2	4	
Dish Washing Machine	1	6	6	12	g/use	0.43	use	3	3	5	
								36	**32**	**68**	**max day**
									observed	2,000	max month
										29	days at max
									observed	67	max day

Average Use Calculation

	number	per use hot	per use cold	per use total		uses/day		subtotal gpd hot	subtotal gpd cold	subtotal gpd total	
Bathroom											
Toilet	1		3.5	3.5	gpf	3	flushes	-	11	11	
Shower	2	0.8	0.2	1	gpm	10	minutes	16	4	20	
Sink	1	1	1	2	gpm	0.5	minutes	0	0	1	
Kitchen Sink	1	1	1	2	gpm	5	minutes	5	5	10	
Clothes Washing Machine	1	12	12	24	g/use	0.10	use	1	1	2	
Dish Washing Machine	1	6	6	12	g/use	0.25	use	2	2	3	
								24	**23**	**47**	**avg day**
									observed	1,308	avg month
										28	days at avg
									observed	44	avg day

Maximum Use Water Savings

	number	per use hot	per use cold	per use total		uses/day		subtotal gpd hot	subtotal gpd cold	subtotal gpd total		Savings hot	Savings cold	Savings total
Bathroom														
Toilet	1		1.28	1.28	gpf	4	flushes	-	5	5		-	9	9
Shower	2	0.8	0.2	1	gpm	15	minutes	24	6	30		-	-	-
Sink	1	0.25	0.25	0.5	gpm	0.6	minutes	0	0	0		0	0	1
												-	-	-
Kitchen Sink	1	0.5	0.5	1	gpm	7	minutes	4	4	7		4	4	7
Clothes Washing Machine	1	12	12	24	g/use	0.15	use	2	2	4		-	-	-
Dish Washing Machine	1	5	5	10	g/use	0.43	use	2	2	4		0	0	1
								32	**19**	**50**	**max day**			
									observed	2,000	max month			
										40	days at max			
									observed	67	max day			

Average Use Water Savings

	number	per use hot	per use cold	per use total		uses/day		subtotal gpd hot	subtotal gpd cold	subtotal gpd total		Savings hot	Savings cold	Savings total
Bathroom														
Toilet	1		1.28	1.28	gpf	3	flushes	-	4	4		-	7	7
Shower	2	0.8	0.2	1	gpm	10	minutes	16	4	20		-	-	-
Sink	1	0.25	0.25	0.5	gpm	0.5	minutes	0	0	0		0	0	1
												-	-	-
Kitchen Sink	1	0.5	0.5	1	gpm	5	minutes	3	3	5		3	3	5
Clothes Washing Machine	1	12	12	24	g/use	0.1	use	1	1	2		-	-	-
Dish Washing Machine	1	5	5	10	g/use	0.3	use	1	1	3		0	0	1
								21	**13**	**34**	**avg day**			
									observed	1,308	avg month			
										39	days at avg			
									observed	44	avg day			

Costs to Implement

	number	Hardware	Installation	Total	Pay Back		Water Savings (gpy)	Energy Savings (kWhr)	Total Cost Savings/yr	Total Cost Savings/yr/fixture
Toilet	1	$ 282	$ 95	$ 377	29.50	yrs	2,431	-	$ 19.93	$ 19.93
Bathroom Sink	1	$ 1.61	$ 5	$ 7	1.61	yrs	246	32	$ 4.10	$ 4.10
				$ 384					$ 24	

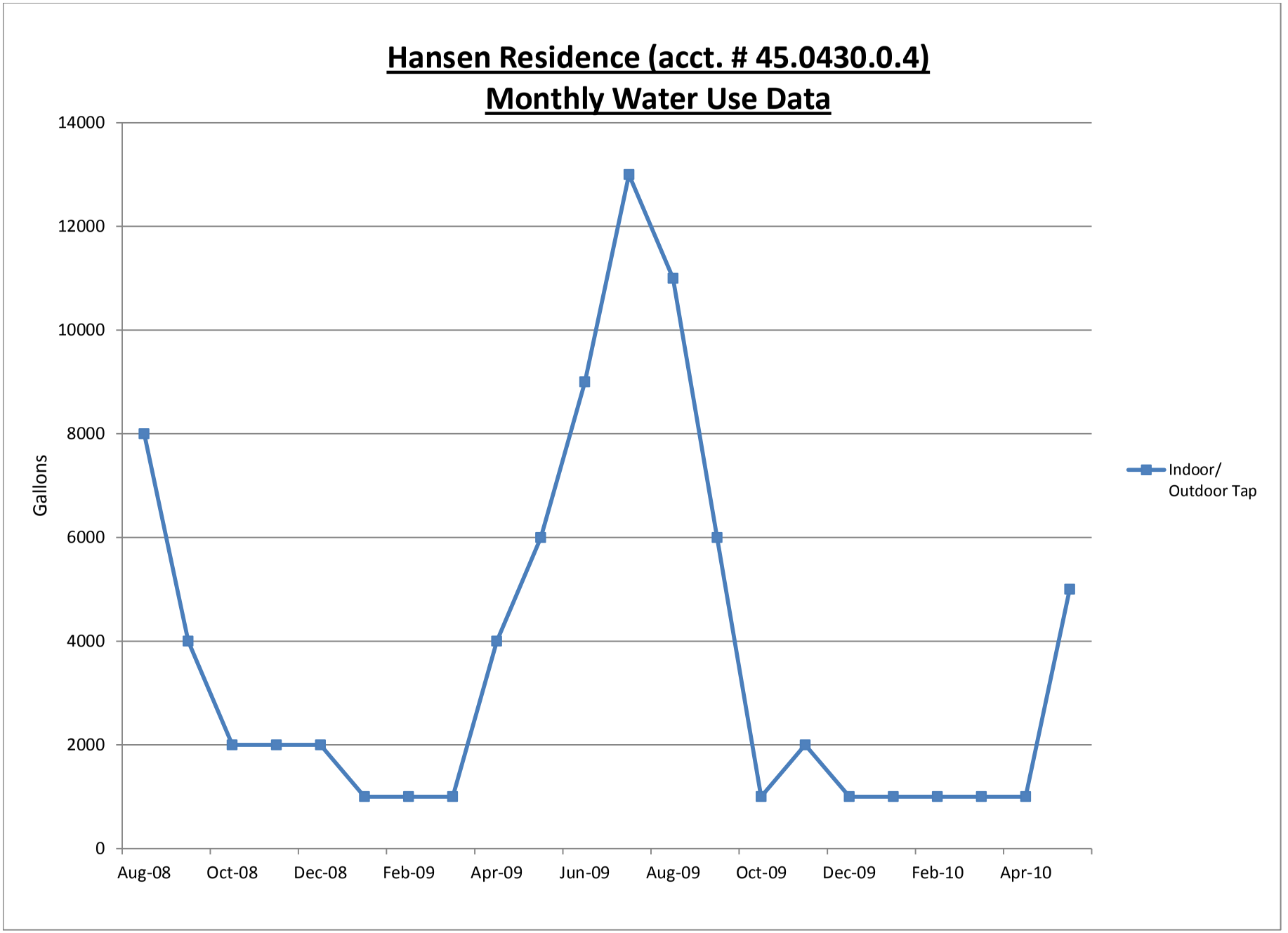
AF Savings: 0.008 $/ AF: $ 46,689

Replacement Water Cost* : $ 246 Avoided Cost** : $ 25

* Calculation based on $30,000 per AF

** Calculation based on $9.50/ 1000 gal

Cost Savings Assumptions: $8.50/1000 gal - cost of water and sewer, $0.065/kwh cost of energy



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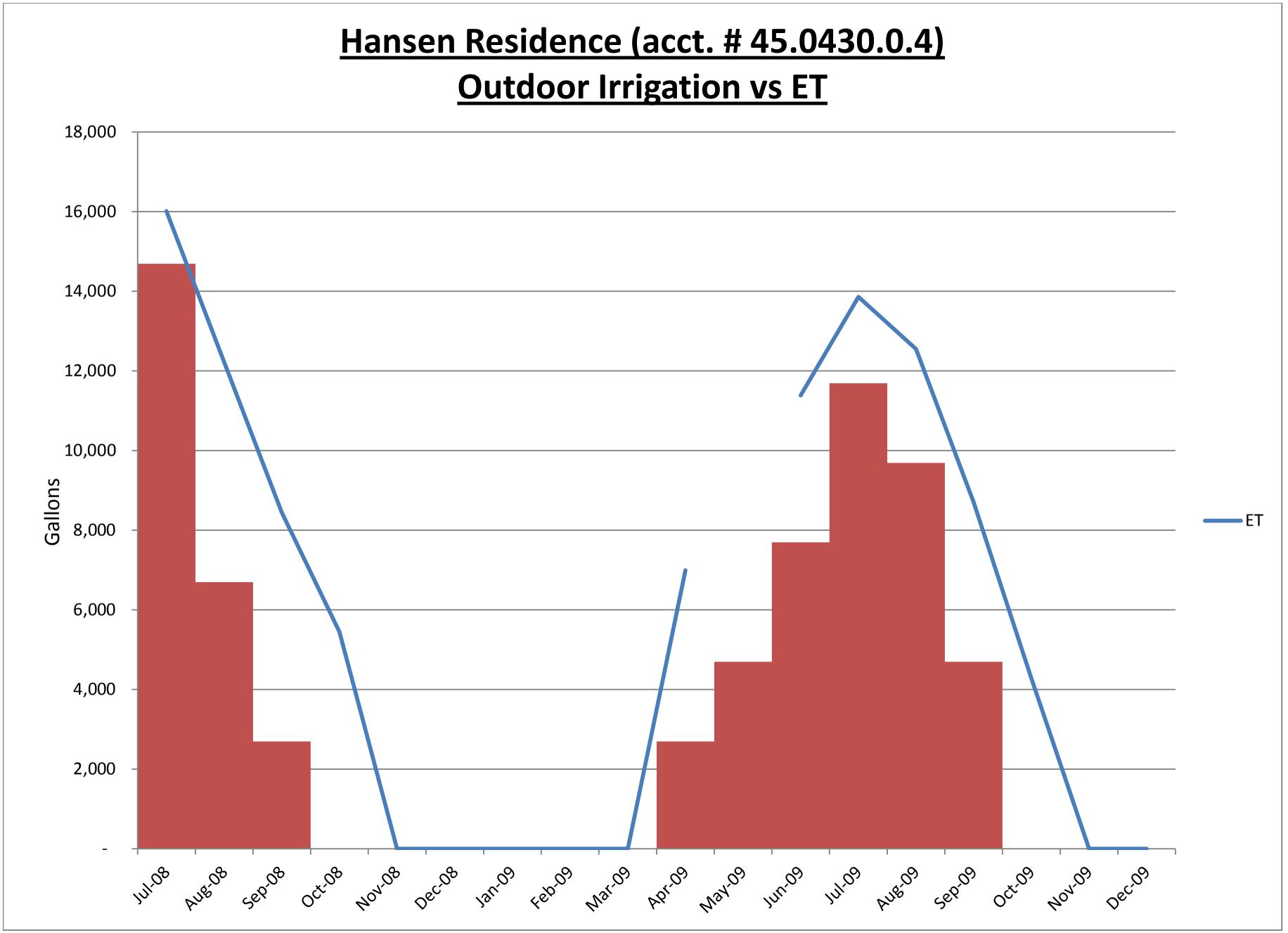

Hansen Residence (acct. # 45.0430.0.4)
Outdoor Irrigation vs ET
Gallons
18,000
16,000
14,000
12,000
10,000
8,000
6,000
4,000
2,000
-
Jul-08
Aug-08
Sep-08
Oct-08
Nov-08
Dec-08
Jan-09
Feb-09
Mar-09
Apr-09
May-09
Jun-09
Jul-09
Aug-09
Sep-09
Oct-09
Nov-09
Dec-09
ET

SMART WATER Audit Report

The Morales's Home

Overview

The City working with Great Western Institute, conducted a SMART WATER Audit of your home at 209 S. 13th Ave. on August 25, 2010. The SMART WATER Audit was conducted as part of the City's audit project, whereby a select group of local residences volunteered to help The City complete a residential audit program intended to assist in improving water use efficiency and in doing so, reduce water and energy operational costs.

The inventory of the Morales's water using fixtures and appliances is provided in Table 1. Figure 1 presents the monthly water use at the Morales's in 2008 and 2009.

Water Use Summary

The Morales have recently moved into this home, such that past water use records are not helpful in determining their water use behaviors. Since only the July 2010 water use data was available for the water audit, no quantitative analysis could be made to evaluate indoor or outdoor water use practices at this location.

Qualitatively, in the Morales's home, two low flow toilets have been installed within the last few months. These toilets use 1.6 gallons per flush. By installing new Water Sense approved high efficiency toilets which use only 1.28 gallons per flush, the Morales's would spend $750 with a total savings of approximately $12 per year.

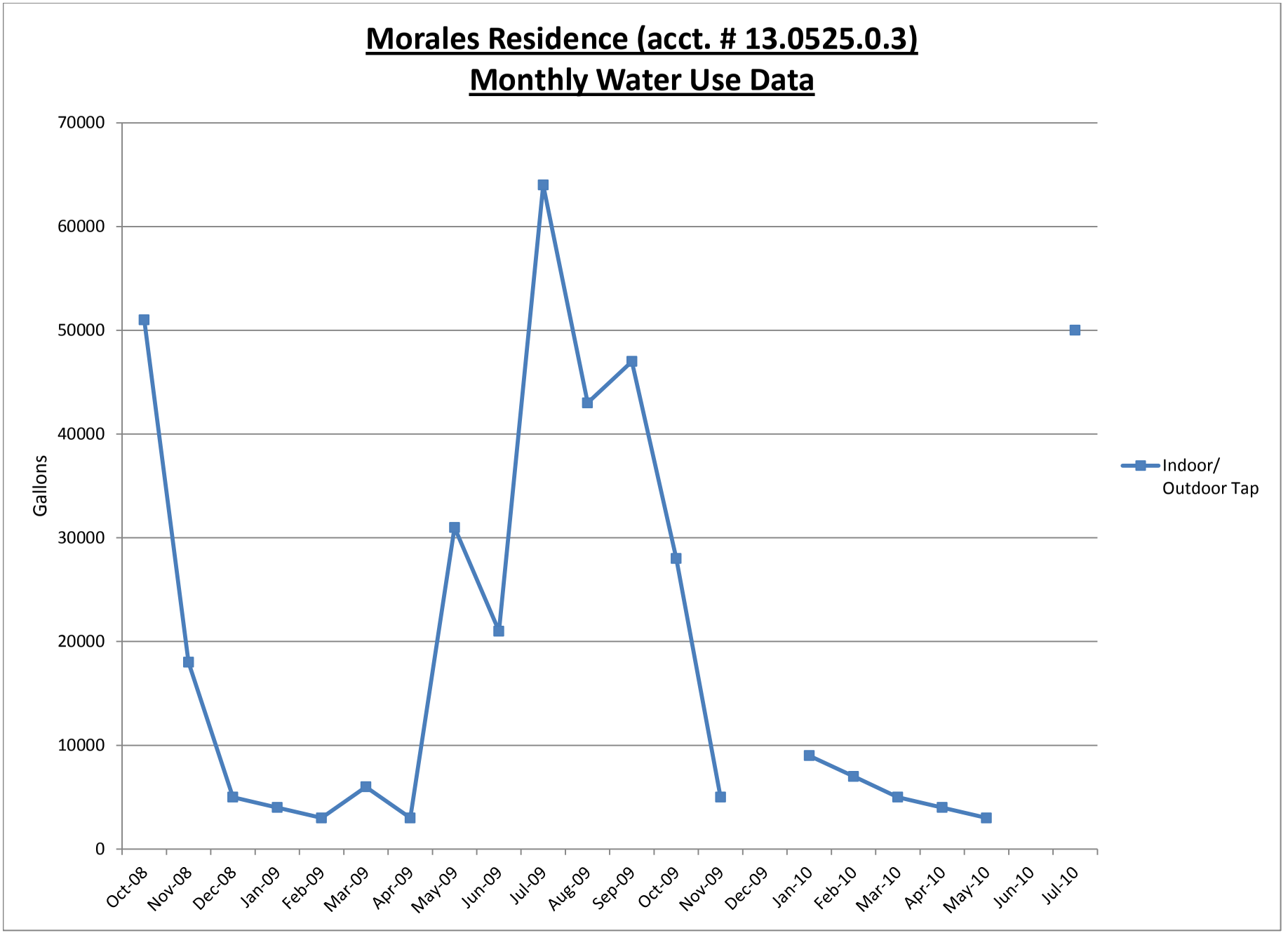
The Morales's have already installed low flow shower heads which use 2.5 gallons per minute. They also have a new Water Sense clothes washer which uses only 18 gallons per load.

The bathroom hand wash sinks use between 2.5 and 3 gallons per minute. Replacing these sinks with the new 0.5 gallon per minute faucet aerators would cost about $6 per sink and save a combined water and energy savings of on average about $6 per sink per year.

The significant source of the Morales's water use is a result of their large irrigated yard. They have irrigation covering two lots of which a majority is turf grass. They expressed an interest in cutting back on their water use by installing Xeriscape gardens and replacing turf with rocks. The Rain Bird irrigation controller at the Morales's home is an older version and is not compatible with programming to the City's watering schedule. Mr. Morales runs the sprinklers by hand every 3-5 days in order to avoid conflicts with the City's required watering schedule. Note that the Morale's water use in July 2010 is consistent with the irrigation applied by a previous owner/renter in 2009.

Table 1 - Inventory for Morales Residence Water Using Fixtures and Appliances

Address	209 S. 13th Ave								
Contact	Mary Morales								
Date	8/25/2010								
Type of Business	Residential								
Account Number	13.0525.0.3								
Notes									
Built Date	1962								
# of People	3								
Toilets	1.28 gpf	1.6 gpf	2.0 gpf	3.5 gpf					Comment
Bathroom 1		1							Brand new toilet
Bathroom 2		1							Brand new toilet
Shower	1.2 gpm	2.5 gpm	5 gpm						
Bathroom 1		1							
Bathroom 2		1							
Sinks	0.5 gpm	1 gpm	2 gpm	2.5 gpm	3 gpm	5 gpm	6 gpm		
Kitchen		1							
Bathroom 1			1						
Bathroom 2					1				
Other Uses	Use	Make		Model		Capacity			
Dish Washer									
		Fridgeaire Gallery		DGBD2432KFL					Only used w/ company, 1/month
Clothes Washer									
		Samsung		WF210ANWXAA					Brand new
Refrigeration									
		Samsung		RB217ABPN					Ice maker
Cooling Towers									
									Swamp Cooler in Living Room
Outdoor Irrigation	Sprinklers; used 1 to 2 times/week or every 5 days								
	Yard size = 2 lots; Front = approximately 225 ft x 195 ft + 54 ft x 36 ft; Back = 45 ft x 93 ft								
	Controls the sprinklers manually. Each zone set to 20 mintues each.								



GREAT WESTERN INSTITUTE

SMART WATER Audit Reports

HOAs

SMART WATER Audit Report

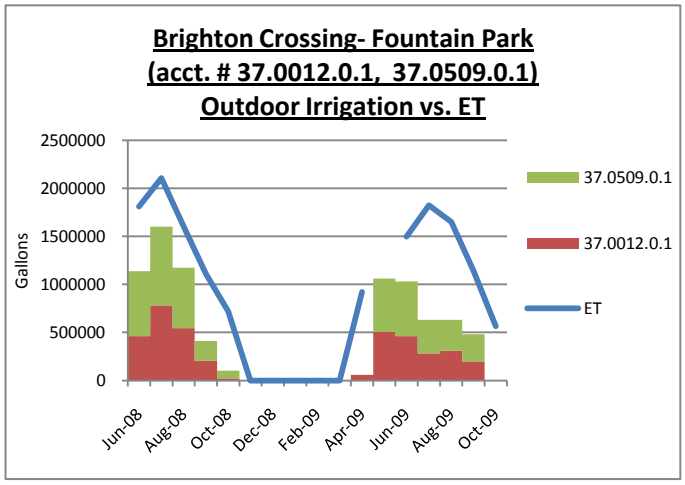
Brighton Crossing HOA

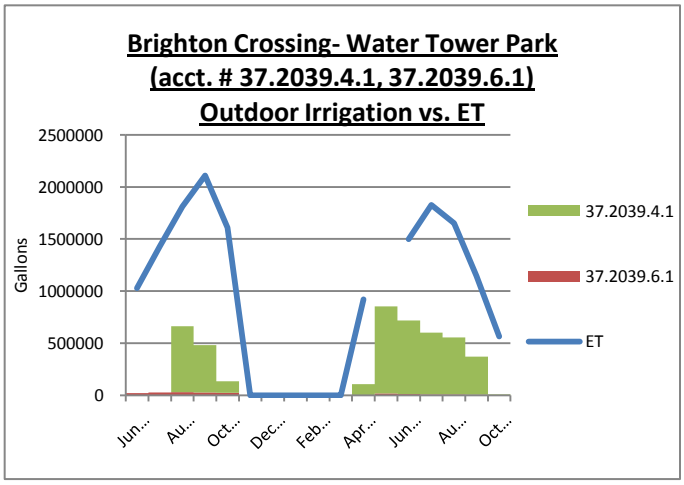
Overview

The City of Brighton, working with Great Western Institute, conducted a SMART WATER Audit of four separate outdoor Brighton Crossing taps in August, 2010. The SMART WATER Audit was conducted as part of the City's audit project; whereby a small group of volunteer home owners associations' irrigation systems were evaluated, and a comparison of actual water use data was made against expected water usage during the summer months. The SMART WATER Audit program is intended to assist Brighton's water customers improve water use efficiency and in doing so, reduce water and energy operational costs.

Water Use Summary

Irrigation at the Brighton Crossing is managed by Overlook Property Management. The two outdoor taps (37.0012.0.1 and 37.0509.0.1) used in the Fountain Park area of Brighton Crossing irrigate an a combined area of nine acres; and the two taps (37.2039.4.1 and 37.2039.6.1) together used to irrigate the Water Tower Park area of Brighton Crossing cover about three and a half acres. All of these taps utilize automated sprinkler systems to irrigate turf and various landscape materials in the Brighton Crossing area. Irrigated area was estimated for each property based on a review of as-built plats of the properties, verified with aerial photography.

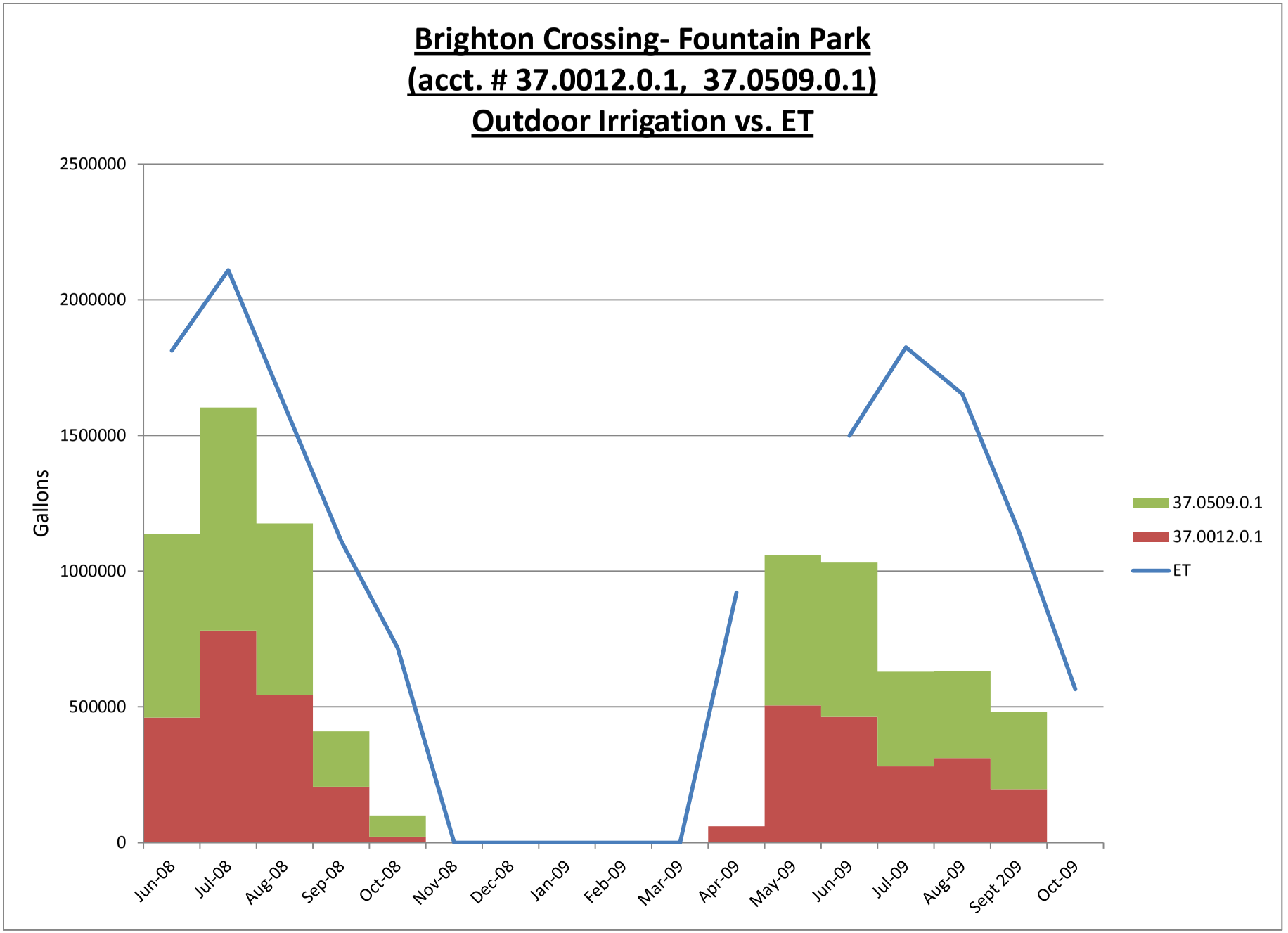


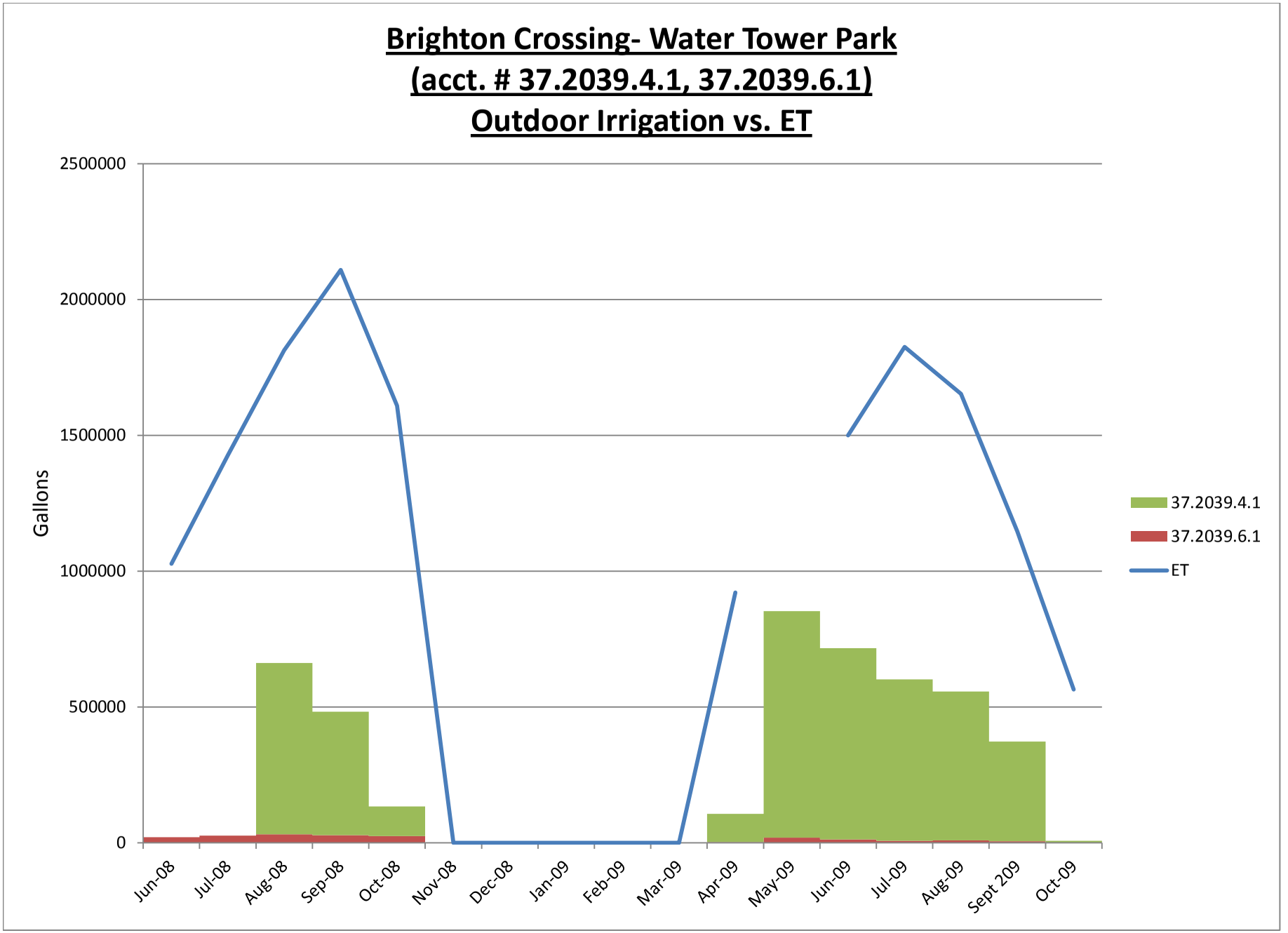


Seasonal evapotranspiration (ET) was estimated using the Northern Colorado Water Conservancy District's Turf Irrigation Management (TIM) Program, which utilizes the 1985 Hargreaves equation to calculate ET for a given location and prevailing weather conditions (based on average daily temperature and precipitation). Daily weather data for Brighton in 2008 and 2009 was obtained from the NOAA National Data Center.

Monthly observed water use is compared to estimated ET for both irrigation areas in the above figures. As indicated in these figures, irrigation in both sections of Brighton Crossing is below the budgeted irrigation rates for every summer month with observed monthly water use data.

Note that, there may be locations within the irrigation delivery system that were over irrigated; however, the audit conducted by the City, within the limitations of the CWCB grant, was unable to differentiate water application rates for individual turf areas. If suspicions of localized overwatering exist in Brighton Crossing, more rigorous testing of the existing irrigation system may be warranted to better characterize localized irrigation practices.


Brighton Crossing- Fountain Park
(acct. # 37.0012.0.1, 37.0509.0.1)
Outdoor Irrigation vs. ET
Gallons
2500000
2000000
1500000
1000000
500000
0
Jun-08
Jul-08
Aug-08
Sep-08
Oct-08
Nov-08
Dec-08
Jan-09
Feb-09
Mar-09
Apr-09
May-09
Jun-09
Jul-09
Aug-09
Sept 209
Oct-09
37.0509.0.1
37.0012.0.1
ET



GREAT WESTERN INSTITUTE

SMART WATER Audit Report

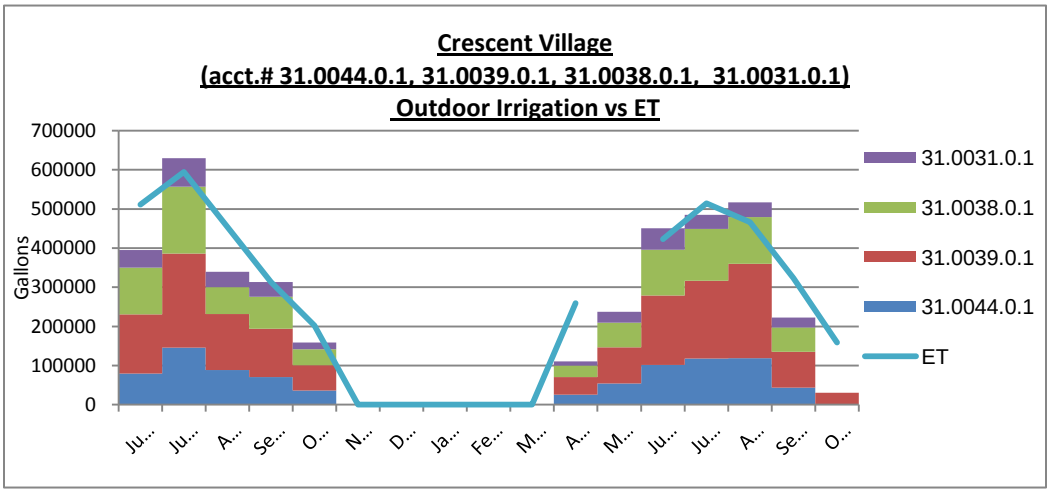
Crescent Village HOA

Overview

The City of Brighton, working with Great Western Institute, conducted a SMART WATER Audit of four separate outdoor Crescent Village taps in August, 2010. The SMART WATER Audit was conducted as part of the City's audit project; whereby a small group of volunteer home owners associations' irrigation systems were evaluated, and a comparison of actual water use data was made against expected water usage during the summer months. The SMART WATER Audit program is intended to assist Brighton's water customers improve water use efficiency and in doing so, reduce water and energy operational costs.

Water Use Summary

Crescent Village's four outdoor taps (31.0044.0.1, 31.0039.0.1, 31.0038.0.1, 31.0031.0.1) irrigate a combined area of about two and a half acres. All of these taps utilize automated sprinkler systems to irrigate turf and various landscape materials in the Crescent Village area. Irrigated area was estimated for each property based on a review of as-built plats of the properties, verified with aerial photography.

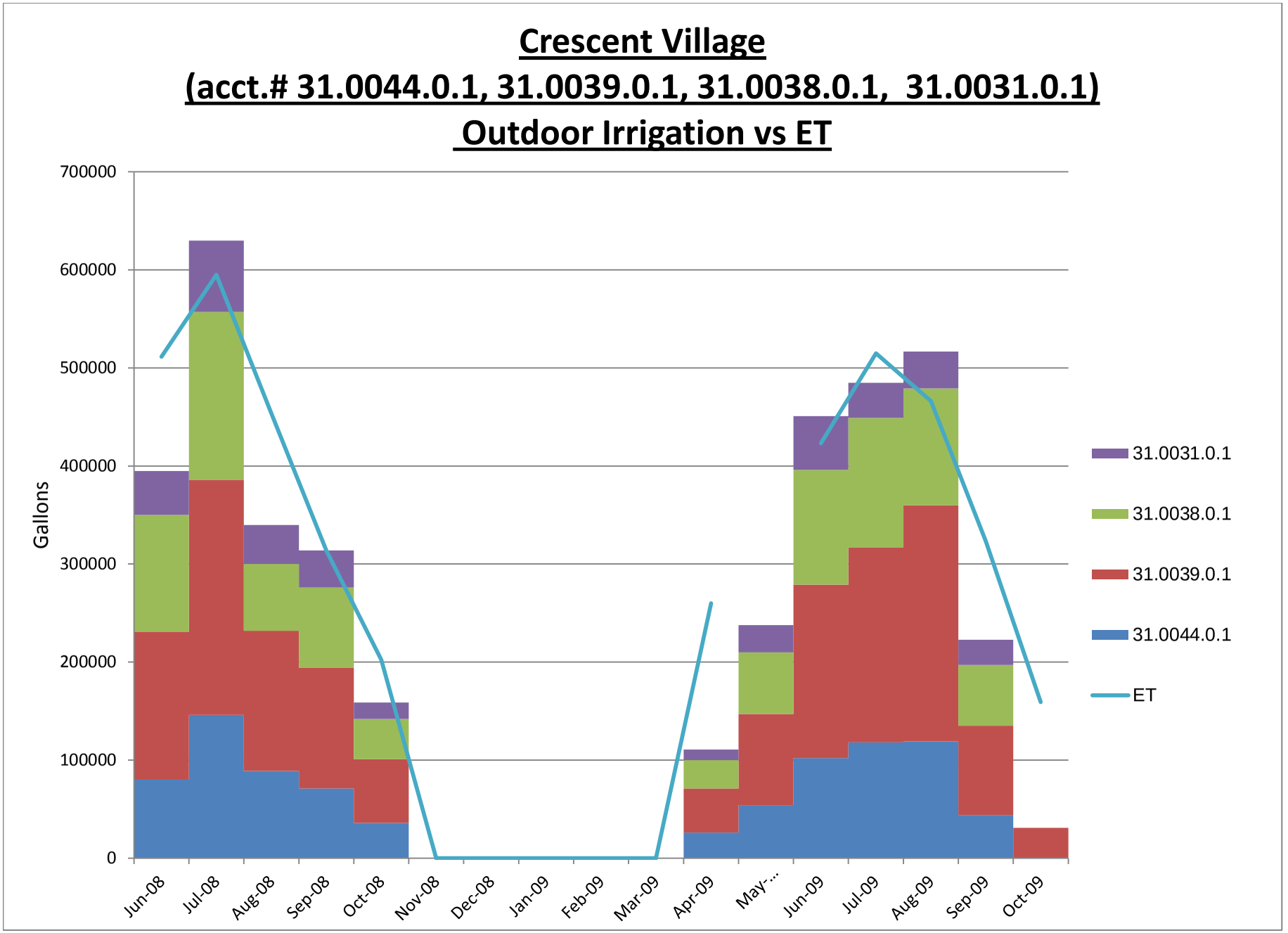


Seasonal evapotranspiration (ET) was estimated using the Northern Colorado Water Conservancy District's Turf Irrigation Management (TIM) Program, which utilizes the 1985 Hargreaves equation to calculate ET for a given location and prevailing weather conditions (based on average daily temperature and precipitation). Daily weather data for Brighton in 2008 and 2009 was obtained from the NOAA National Data Center.

Monthly observed water use is compared to estimated ET for both irrigation areas in the above figures. As indicated in these figures, irrigation in Crescent Village follows the budgeted irrigation rates for every summer month with observed monthly water use data.

Note that, there may be locations within the irrigation delivery system that were over irrigated; however, the audit conducted by the City, within the limitations of the CWCB grant, was unable to differentiate water application rates for individual turf areas. If suspicions of localized overwatering exist in Crescent Village, more rigorous testing of the existing irrigation system may be warranted to better characterize localized irrigation practices.

Crescent Village
(acct.# 31.0044.0.1, 31.0039.0.1, 31.0038.0.1, 31.0031.0.1)
Outdoor Irrigation vs ET



SMART WATER Audit Report

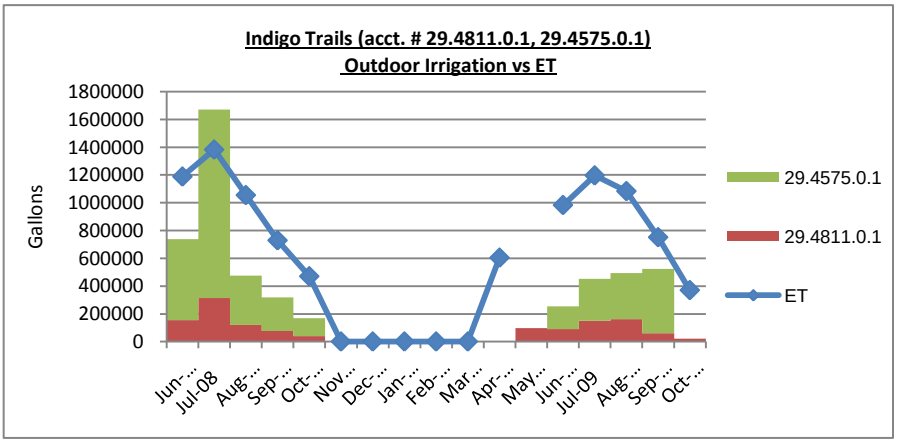
Indigo Trails HOA

Overview

The City of Brighton, working with Great Western Institute, conducted a SMART WATER Audit of two separate outdoor Indigo Trails taps in August, 2010. The SMART WATER Audit was conducted as part of the City's audit project; whereby a small group of volunteer home owners associations' irrigation systems were evaluated, and a comparison of actual water use data was made against expected water usage during the summer months. The SMART WATER Audit program is intended to assist Brighton's water customers improve water use efficiency and in doing so, reduce water and energy operational costs.

Water Use Summary

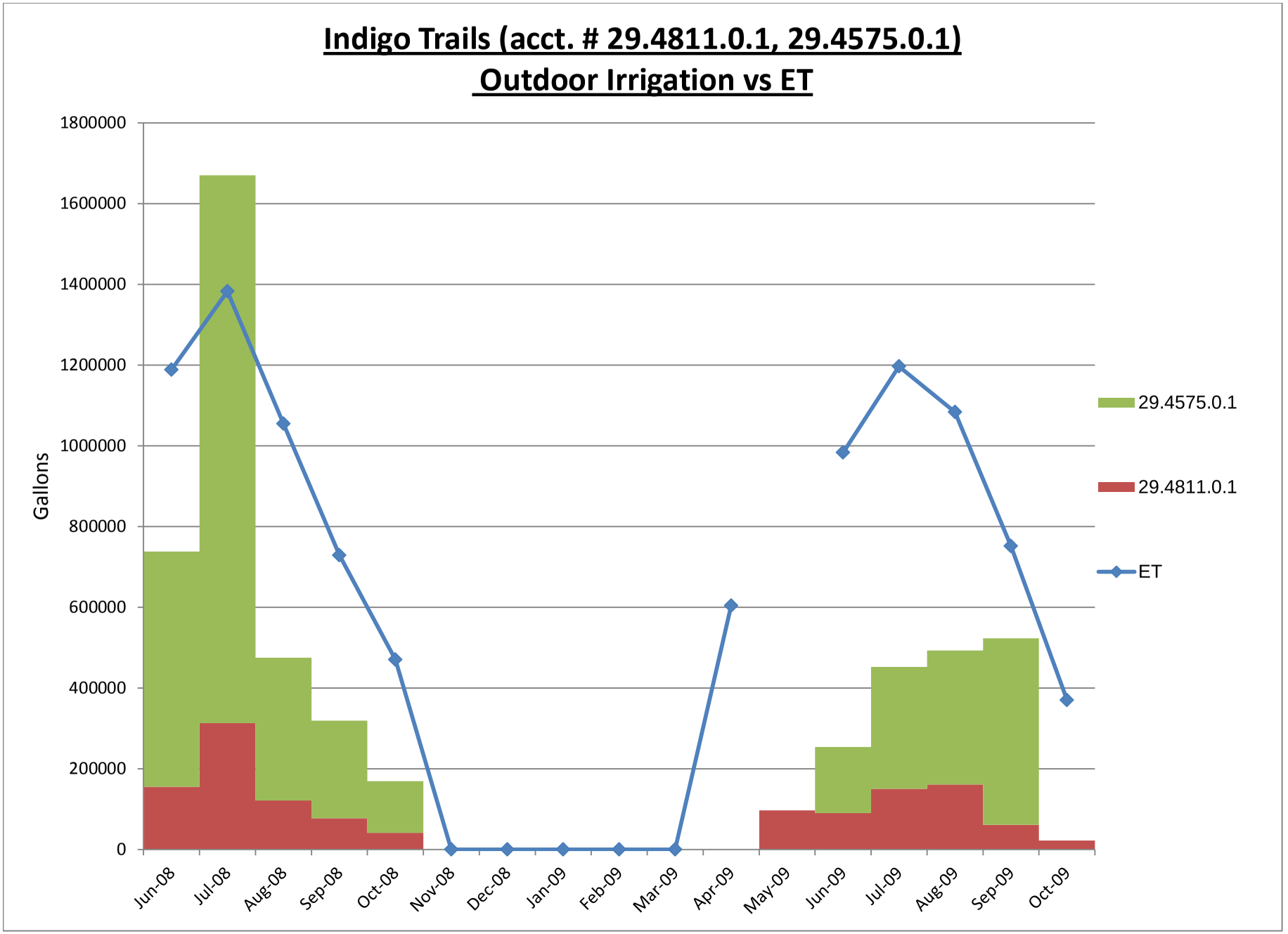
Irrigation at the Indigo Trails is managed by Homestead Management. Indigo Trails' two outdoor taps (29.4575.0.1, 29.4811.0.1) irrigate a combined area of just under six acres. All of these taps utilize automated sprinkler systems to irrigate turf and various landscape materials in the Indigo Trails area. Irrigated area was estimated for each property based on a review of as-built plats of the properties, verified with aerial photography.



Seasonal evapotranspiration (ET) was estimated using the Northern Colorado Water Conservancy District's Turf Irrigation Management (TIM) Program, which utilizes the 1985 Hargreaves equation to calculate ET for a given location and prevailing weather conditions (based on average daily temperature and precipitation). Daily weather data for Brighton in 2008 and 2009 was obtained from the NOAA National Data Center.

Monthly observed water use is compared to estimated ET for both irrigation areas in the above figures. As indicated in these figures, irrigation in Indigo Trails is below the budgeted irrigation rates for every summer month with observed monthly water use data.

Note that, there may be locations within the irrigation delivery system that were over irrigated; however, the audit conducted by the City, within the limitations of the CWCB grant, was unable to differentiate water application rates for individual turf areas. If suspicions of localized overwatering exist for Indigo Trails, more rigorous testing of the existing irrigation system may be warranted to better characterize localized irrigation practices. The irrigation system clocks should also be checked to verify that the correct seasonal watering adjustments are being made. The irrigation system clocks should also be checked to verify that the correct seasonal watering adjustments are being made.



GREAT WESTERN INSTITUTE

SMART WATER Audit Report

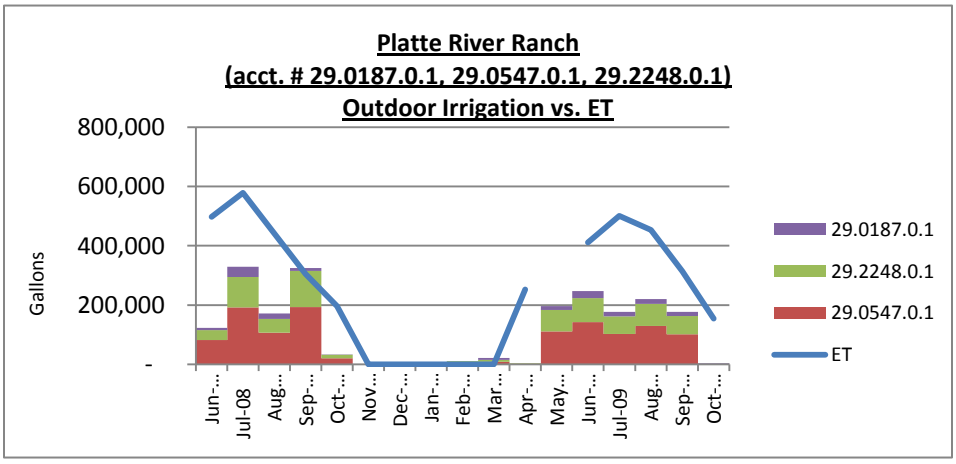
Platte River Ranch HOA

Overview

The City of Brighton, working with Great Western Institute, conducted a SMART WATER Audit of three separate outdoor Platte River Ranch taps in August, 2010. The SMART WATER Audit was conducted as part of the City's audit project; whereby a small group of volunteer home owners associations' irrigation systems were evaluated, and a comparison of actual water use data was made against expected water usage during the summer months. The SMART WATER Audit program is intended to assist Brighton's water customers improve water use efficiency and in doing so, reduce water and energy operational costs.

Water Use Summary

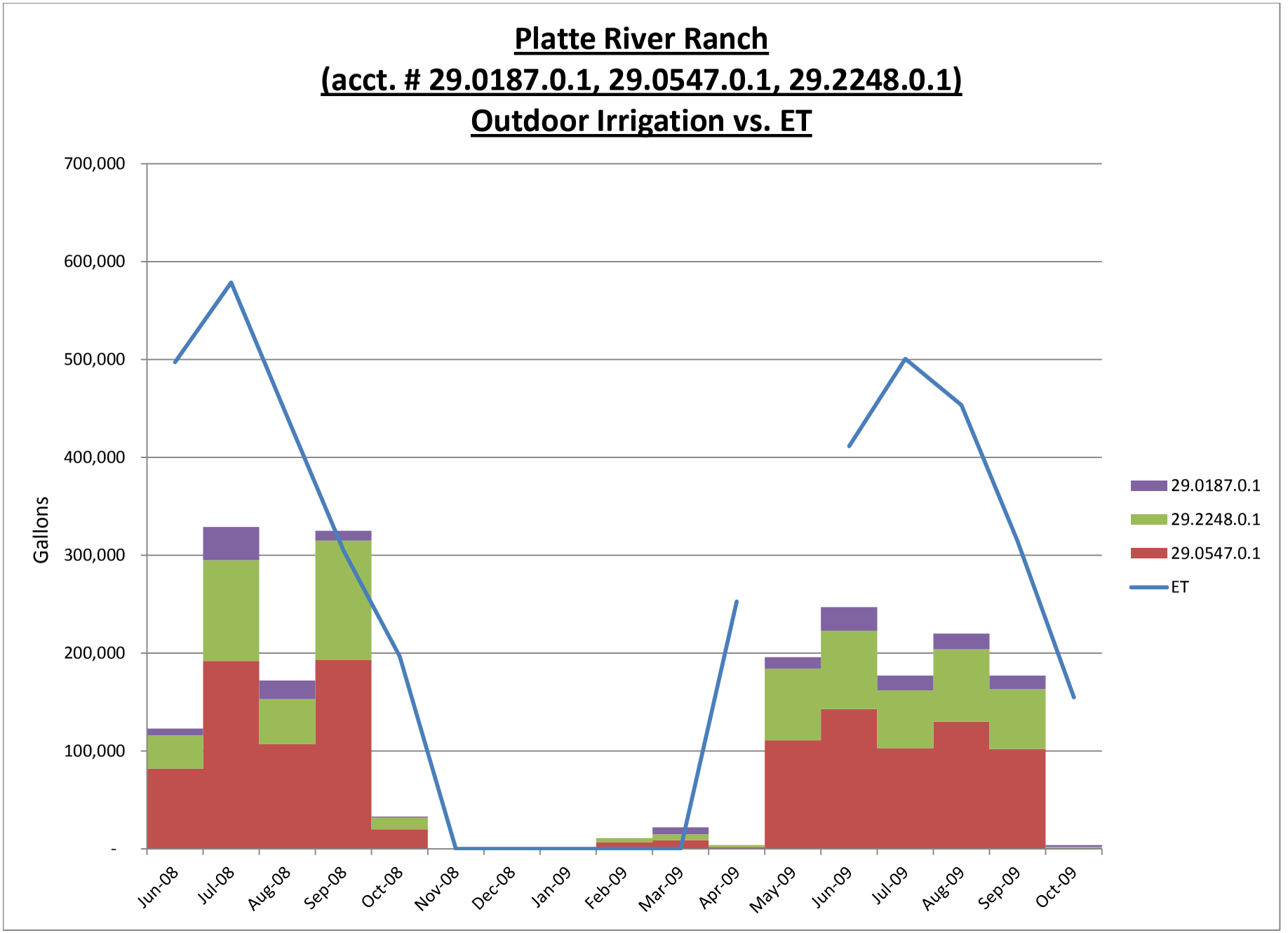
Irrigation at the Platte River Ranch is managed by Overlook Property Management. Platte River Ranch's three outdoor taps (29.0187.0.1, 29.0547.0.1, 29.2248.0.1) irrigate a combined area of about two and a half acres. All of these taps utilize automated sprinkler systems to irrigate turf and various landscape materials in the Platte River Ranch area. Irrigated area was estimated for each property based on a review of as-built plats of the properties, verified with aerial photography.



Seasonal evapotranspiration (ET) was estimated using the Northern Colorado Water Conservancy District's Turf Irrigation Management (TIM) Program, which utilizes the 1985 Hargreaves equation to calculate ET for a given location and prevailing weather conditions (based on average daily temperature and precipitation). Daily weather data for Brighton in 2008 and 2009 was obtained from the NOAA National Data Center.

Monthly observed water use is compared to estimated ET for both irrigation areas in the above figures. As indicated in these figures, irrigation in Platte River Ranch is below the budgeted irrigation rates for every summer month with observed monthly water use data.

Note that, there may be locations within the irrigation delivery system that were over irrigated; however, the audit conducted by the City, within the limitations of the CWCB grant, was unable to differentiate water application rates for individual turf areas. If suspicions of localized overwatering exist in Platte River Ranch, more rigorous testing of the existing irrigation system may be warranted to better characterize localized irrigation practices. The irrigation system clocks should also be checked to verify that the correct seasonal watering adjustments are being made.


Platte River Ranch
(acct. # 29.0187.0.1, 29.0547.0.1, 29.2248.0.1)
Outdoor Irrigation vs. ET
Gallons
700,000
600,000
500,000
400,000
300,000
200,000
100,000
-
Jun-08
Jul-08
Aug-08
Sep-08
Oct-08
Nov-08
Dec-08
Jan-09
Feb-09
Mar-09
Apr-09
May-09
Jun-09
Jul-09
Aug-09
Sep-09
Oct-09
29.0187.0.1
29.2248.0.1
29.0547.0.1
ET

Appendix D

Smart Water Audit Reports for Each City Facility

SMART WATER Audit Report

Brighton City Hall

Overview

The City of Brighton working with Great Western Institute conducted a SMART WATER Audit of this facility at 22 South 4th Avenue in Brighton in July of 2009. The SMART WATER Audit was conducted as part of the District's demonstration audit project, whereby a small group of City facilities was selected to help the City of Brighton complete a commercial audit program intended to assist local businesses improve water use efficiency and in doing so, reduce water and energy operational costs.

Water Use Summary

Brighton City Hall uses water in a manner consistent with other small government facilities throughout Colorado. Similar to many facilities built before 1993, Brighton City Hall has sinks, urinals and toilets that have not been updated with water efficient fixtures that are currently available in the marketplace.

A water demand model was created to estimate maximum and average daily water uses per existing fixture and to project the annual water savings that may be realized with the installment of new water smart fixtures. The water demand model for Brighton City Hall included the following assumptions:

- The water demand model for Brighton City Hall was configured and calibrated with the monthly water use data from 2009
- An analysis of the monthly water use data for Brighton City Hall indicated that there is no existing outdoor irrigation; therefore, no evaluation was performed to characterize outdoor water use for this property

Based on the 2009 audit, the following fixture replacements occurred in May and June of 2010. There are a total of eleven sink faucet aerators in the public restrooms in Brighton City Hall. Four of these faucet aerators were found to already be low-flow fixtures, using only 0.5 gallons of water per minute (gpm), while the remaining seven sink faucet aerators used 2 gpm. An additional six faucet aerators, located in private restrooms, used 1.5 gpm. These thirteen aerators were replaced with 0.5 gpm aerators at a cost of about $7 per sink and are estimated to have a water and energy savings of approximately $23 per year per sink. This savings results in a payback period of 3.5 months.

There are thirteen toilets located in the public restrooms in Brighton City Hall. Three of these public toilets are flushometer toilets and use 1.6 gallons of water per flush (gpf). Due to the flushing-valve mechanism on these toilets, new water smart toilet installations come at a higher cost, which ultimately negates the cost-effectiveness of the retrofits; therefore, these three toilets were not replaced. Six more toilets found in the private restrooms used an average of 4 gpf. Ten public toilets and four private toilets were replaced with new Water Sense approved high efficiency toilets which use 1.28 gpf at a cost of $377 per toilet. These retrofits are estimated to have a water and energy savings of approximately $61 per year per toilet, resulting in a payback period of just over six years.

In total, 14 toilets and 13 faucet aerators were updated in Brighton City Hall at a cost of $5,364. From the water demand model, it is estimated that a total annual water and energy cost savings of $1,151 will result from these changes, saving nearly 122,144 gallons in water and 2,305 kilowatt hours of energy annually.

Table 1 - Summary of Current Water Use and Potential Water Savings
City Hall Audit

Maximum Use Calculations

	number	per use hot	per use cold	per use total		uses/day		subtotal gpd hot	subtotal gpd cold	subtotal gpd total	
Toilets	19										
Public Restrooms (tanks)	10	-	2.5	2.5	gpf	20	flushes	-	500	500	
Public Restrooms (flushometers)	3	-	1.6	1.6	gpf	15	flushes	-	72	72	
Private	6	-	4.0	4.0	gpf	15	flushes	-	360	360	
Urinals	3										
Public Restrooms	3	-	1.0	1.0	gpf	45	flushes	-	135	135	
Sinks	21										
Public Restrooms (other)	7	1.0	1.0	2.0	gpm	12.1	minutes	85	85	169	
Public Restrooms (0.5 gpm currently)	4	0.25	0.25	0.5	gpm	12.1	minutes	12	12	24	
Private	6	1.25	1.25	2.5	gpm	5.3	minutes	39	39	79	
Galleys	4	2.5	2.5	5.0	gpm	12.0	minutes	120	120	240	
Other											
Ice Maker (Scotsman C0830MA)	1	-	18.4	18.4	gp 100#	3	daily	0	55.2	55.2	
Dish Washer (Hobart 271001481)	1	-	16	16	gpl	2	loads	0	32.0	32.0	
								256	**1,410**	**1,666**	**max day**
								observed		50,000	max month
										30	days at max
								observed		1,667	max day

Average Use Calculations

	number	per use hot	per use cold	per use total		uses/day		subtotal gpd hot	subtotal gpd cold	subtotal gpd total	
Toilets	19										
Public Restrooms (tanks)	10	-	2.5	2.5	gpf	10	flushes	-	250	250	
Public Restrooms (flushometers)	3	-	1.6	1.6	gpf	5	flushes	-	24	24	
Private	6	-	4.0	4.0	gpf	10	flushes	-	240	240	
Urinals	3										
Public Restrooms	3	-	1.0	1.0	gpf	33	flushes	-	99	99	
Sinks	21										
Public Restrooms (other)	7	1.0	1.0	2.0	gpm	2.9	minutes	20	20	41	
Public Restrooms (0.5 gpm currently)	4	0.25	0.25	0.5	gpm	2.9	minutes	3	3	6	
Private	6	1.25	1.25	2.5	gpm	1.5	minutes	11	11	23	
Galleys	4	2.5	2.5	5.0	gpm	8.0	minutes	80	80	160	
Other											
Ice Maker (Scotsman C0830MA)	1	-	18.4	18.4	gp 100#	1	daily	0	18.4	18.4	
Dish Washer (Hobart 271001481)	1	-	16	16	gpl	1	loads	0	16.0	16.0	
								115	**762**	**877**	**avg day**
								observed		26,167	avg month
										30	days at avg
								observed		872	avg day

Table 1 - Summary of Current Water Use and Potential Water Savings
City Hall Audit

Maximum Use Savings

	number	per use hot	per use cold	per use total		uses/day		subtotal gpd hot	subtotal gpd cold	subtotal gpd total		Savings Hot	Savings Cold	Savings Total
Toilets	19													
Public Restrooms (tanks)	10	-	0.90	0.9	gpf	20	flushes	-	180	180		-	320	320
Public Restrooms (flushometers)	3	-	1.6	1.6	gpf	15	flushes	-	72	72		-	-	-
Private	6	-	1.9	1.9	gpf	15	flushes	-	171	171		-	189	189
Urinals	3													
Public Restrooms	3	-	1.0	1.0	gpf	45	flushes	-	135	135		-	-	-
Sinks	21													
Public Restrooms (other)	7	0.25	0.25	0.5	gpm	12	minutes	21	21	42		63	63	127
Public Restrooms (0.5 gpm currently)	4	0.25	0.25	0.5	gpm	12	minutes	12	12	24		-	-	-
Private	6	0.25	0.25	0.5	gpm	5	minutes	8	8	16		32	32	63
Galleys	4	2.5	2.5	5.0	gpm	12	minutes	120	120	240		-	-	-
Other														
Ice Maker (Scotsman C0830MA)	1		18.4	18.4	gp 100#	3	daily	0	55.2	55.2		-	-	-
Dish Washer (Hobart 271001481)	1		16	16	gpl	2	loads	0	32.0	32.0		-	-	-
								161		**806**	**967**	**max day**		
									observed		50,000	max month		
											52	days at max		
									observed		1,667	max day		

Average Use Calculations

	number	per use hot	per use cold	per use total		uses/day		subtotal gpd hot	subtotal gpd cold	subtotal gpd total		Savings Hot	Savings Cold	Savings Total
Toilets	19													
Public Restrooms (tanks)	10	-	0.90	0.90	gpf	10	flushes	-	90	90		-	160	160
Public Restrooms (flushometers)	3	-	1.6	1.6	gpf	5	flushes	-	24	24		-	-	-
Private	6	-	1.9	1.9	gpf	10	flushes	-	114	114		-	126	126
Urinals	3													
Public Restrooms	3	-	1.0	1.0	gpf	33	flushes	-	99	99		-	-	-
Sinks	21													
Public Restrooms (other)	7	0.25	0.25	0.5	gpm	3	minutes	5	5	10		15	15	31
Public Restrooms (0.5 gpm currently)	4	0.25	0.25	0.5	gpm	3	minutes	3	3	6		-	-	-
Private	6	0.25	0.25	0.5	gpm	2	minutes	2	2	5		9	9	18
Galleys	4	2.5	2.5	5.0	gpm	8	minutes	80	80	160		-	-	-
Other														
Ice Maker (Scotsman C0830MA)	1		18.4	18.4	gp 100#	1	daily	0	18.4	18.4		-	-	-
Dish Washer (Hobart 271001481)	1		16	16.0	gpl	1	loads	0	16.0	16.0		-	-	-
								90		**452**	**542**	**avg day**		
									observed		26,167	avg month		
											48	days at avg		
									observed		872	avg day		

Costs to Implement

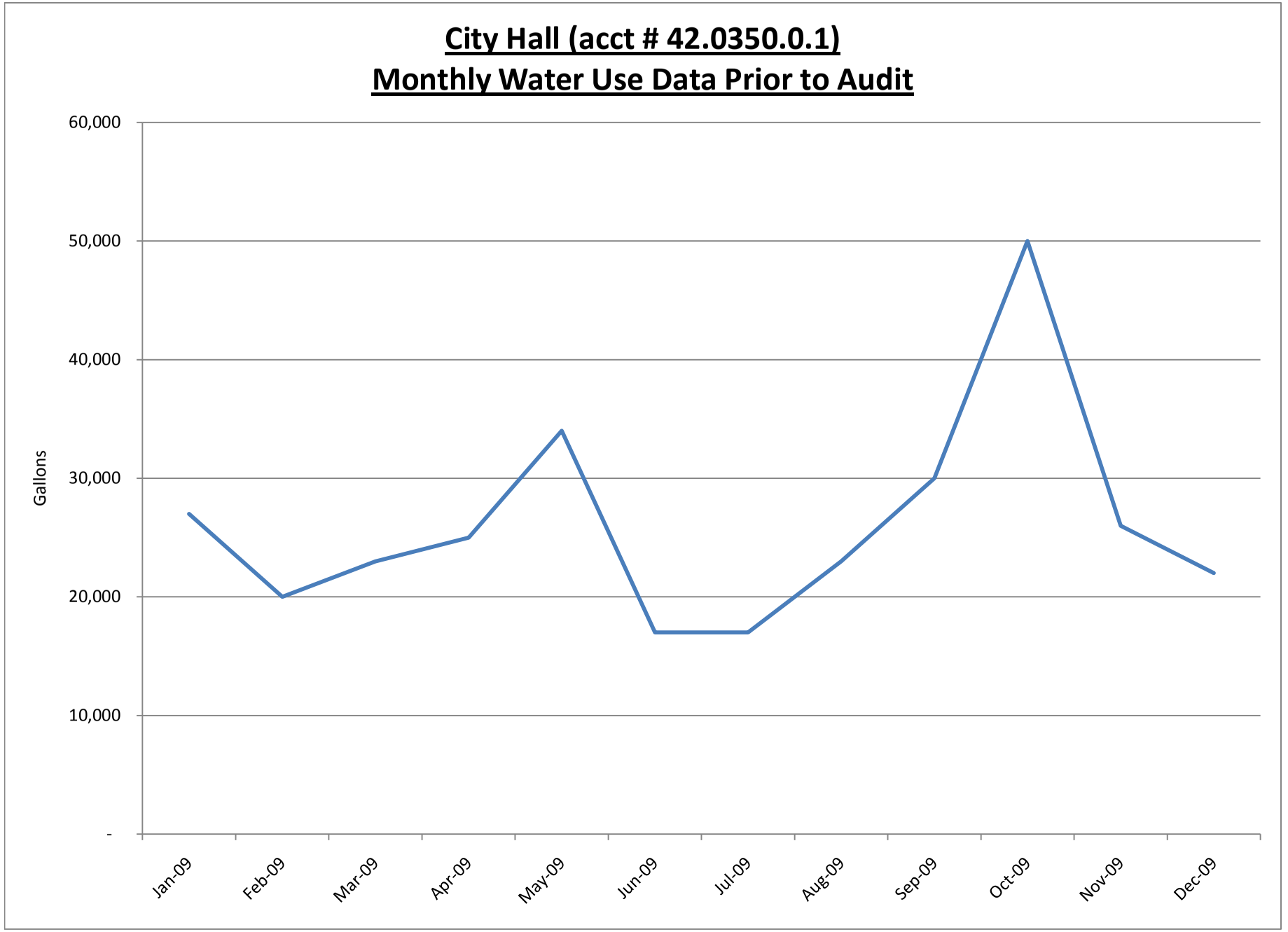
	number	Hardware	Installation	Total	Pay Back	Water Savings (gpy)	Energy Savings (kWhr)	Total Cost Savings/yr	Total Cost Savings/yr/fixture
Toilet	14	$ 282	$ 95	$ 5,278	6.17 yrs	104,390	-	$ 856	$ 61
Sink	13	$ 1.61	$ 5	$ 86	0.29 yrs	17,754	2,305	$ 295	$ 23
				$ 5,364				$ 1,151	

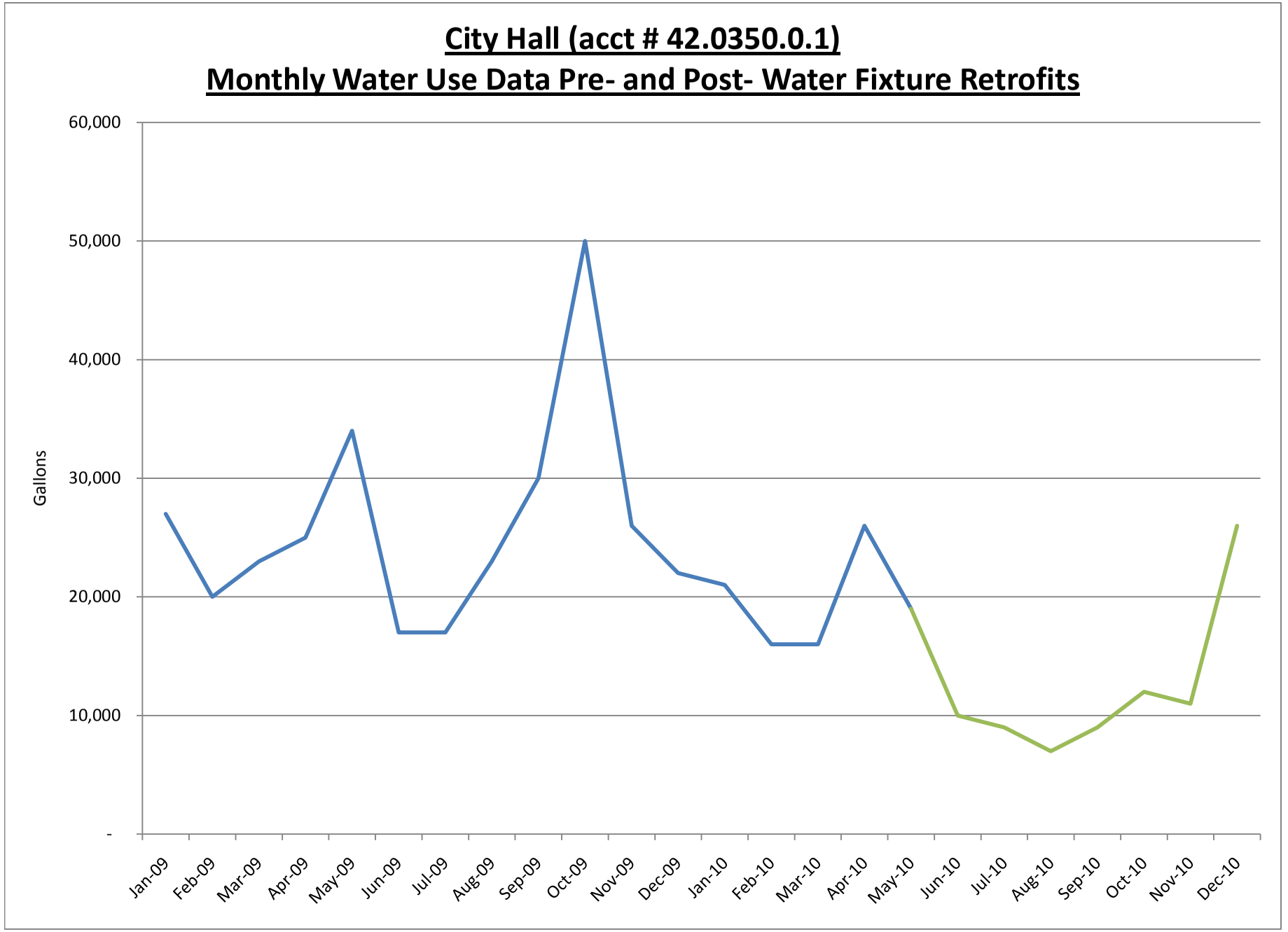
AF Savings: 0.37 $/AF: $ 14,310 Replacement Water Cost* : $ 11,245 Avoided Cost** : $ 1,160

* Calculation based on $30,000 per AF

** Calculation based on $9.50/ 1000 gal

Cost Savings Assumptions: $8.50/1000 gal - cost of water and sewer, $0.065/kwh cost of energy


City Hall (acct # 42.0350.0.1)
Monthly Water Use Data Prior to Audit
60,000
50,000
40,000
30,000
20,000
10,000
-
Gallons
Jan-09
Feb-09
Mar-09
Apr-09
May-09
Jun-09
Jul-09
Aug-09
Sep-09
Oct-09
Nov-09
Dec-09


City Hall (acct # 42.0350.0.1)
Monthly Water Use Data Pre- and Post- Water Fixture Retrofits
Gallons
60,000
50,000
40,000
30,000
20,000
10,000
-
Jan-09
Feb-09
Mar-09
Apr-09
May-09
Jun-09
Jul-09
Aug-09
Sep-09
Oct-09
Nov-09
Dec-09
Jan-10
Feb-10
Mar-10
Apr-10
May-10
Jun-10
Jul-10
Aug-10
Sep-10
Oct-10
Nov-10
Dec-10

SMART WATER Audit Report

Inglenook

Overview

The City of Brighton working with Great Western Institute conducted a SMART WATER Audit of this facility at 2195 Egbert St in Brighton in May of 2009. The SMART WATER Audit was conducted as part of the District's demonstration audit project, whereby a small group of City facilities was selected to help the City of Brighton complete a commercial audit program intended to assist local businesses improve water use efficiency and in doing so, reduce water and energy operational costs.

Water Use Summary

Inglenook uses water in a manner consistent with other retirement communities throughout Colorado. Similar to many facilities built before 1993, Inglenook has sinks, showers and toilets that have not been updated with water efficient fixtures that are currently available in the marketplace.

A water demand model was created to estimate maximum and average daily water uses per existing fixture and to project the annual water savings that may be realized with the installment of new water smart fixtures. The water demand model for Inglenook included the following assumptions:

- The water demand model for Inglenook was configured and calibrated with the monthly water use data from 2008
- An analysis of the monthly water use data for Inglenook indicated that some outdoor irrigation exists; therefore, a monthly winter average was calculated and used for the water demand model so as to isolate and define indoor water use only.

There are a total of 112 personal bathroom sinks (one for each residence) that used 3.5 gallons of water per minute (gpm). In addition, there are 6 public restroom sinks which had flows of 2.5 gpm. All six public sinks and 81 personal sinks were replaced with 0.5 gpm low flow sink faucet aerators at a cost of about $7 per sink and are estimated to have a water and energy savings of approximately $10 per year per sink. This savings results in a payback period of about eight months.

Each of the 112 showerheads in Inglenook had existing flows of 2.5 gpm. Of these, 30 showerheads were replaced with 1.5 gpm low flow fixtures at a cost of about $43 per showerhead and are estimated to have a water and energy savings of approximately $133 per year per fixture. This savings results in a payback period of about four months.

The six public toilets at Inglenook used 2.2 gallons of water per flush (gpf) and the 112 personal had flows of 2.4 gpf. All six public toilets and 30 personal toilets were replaced with new Water Sense approved high efficiency toilets which use 1.28 gpf at a cost of $377 per toilet.

In total, 87 sinks, 30 showers and 36 toilets were updated in Inglenook at a total cost of $15,437. From the water demand model, it is estimated that a total annual water and energy cost savings of $5,410 will result from these changes, saving nearly 304,147 gallons in water and 44,861 kilowatt hours of energy annually.

Table 1 - Summary of Current Water Use and Potential Water Savings
Inglenook Audit

Maximum Use Calculations

		per use					subtotal gpd			
	number	hot	cold	total		uses/day	hot	cold	total	
Toilets	118									
Rooms	112	-	2.4	2.4	gpf	5 flushes	-	1,322	1,322	
Public	6	-	2.2	2.2	gpf	10 flushes	-	134	134	
Showers	112									
Rooms	112	2.0	0.5	2.5	gpm	18 minutes	4,032	1,008	5,040	
Sinks	236									
Bath in Rooms	112	1.8	1.8	3.5	gpm	0.8 minutes	147	147	294	
Kitchen in Rooms	112	1.3	1.3	2.5	gpm	5 minutes	700	700	1,400	
Kitchen/Laundry	6	1.5	1.5	3.0	gpm	20 minutes	180	180	360	
Other Restrooms	6	1.3	1.3	2.5	gpm	1.5 minutes	11	11	23	
							-	-	-	
Other							-	-	-	
Maneurop Inc Water Cooled Compressor	1	-	30	30	gpd	1 daily	-	30	30	
Rezcon (swamp cooler for kitchen)	1	-	150	150	gpd	1 daily	-	150	150	
Laundry (LG Tromm)	2	-	24	24	gpd	10 loads	-	480	480	
Laundry (Maytag/Whirlpool Top Loader)	4	-	40	40	gpd	10 loads	-	1,600	1,600	
Ice Maker (Manitowoc Series 450)	1	-	18.4	18.4	gp 100#	4 daily	-	74	74	
Dish Washer (Jackson ES2000)	1	-	1.2	1.2	gpl	50 loads	-	60	60	
							5,070	**5,895**	**10,966**	**max day**
								observed	329,000	max month
									30	days at max
								observed	10,967	max day

Average Use Calculations

		per use					subtotal gpd			
	number	hot	cold	total		uses/day	hot	cold	total	
Toilets	118									
Rooms	112	-	2.4	2.4	gpf	3.5 flushes	-	925	925	
Public	6	-	2.2	2.2	gpf	6 flushes	-	80	80	
Showers	112									
Rooms	112	2.0	0.5	2.5	gpm	15 minutes	3,360	840	4,200	
Sinks	236									
Bath in Rooms	112	1.8	1.8	3.5	gpm	0.5 minutes	103	103	206	
Kitchen in Rooms	112	1.3	1.3	2.5	gpm	5 minutes	700	700	1,400	
Kitchen/Laundry	6	1.5	1.5	3.0	gpm	15 minutes	135	135	270	
Other Restrooms	6	1.3	1.3	2.5	gpm	0.9 minutes	7	7	14	
Other										
Maneurop Inc Water Cooled Compressor	1	-	30	30	gpd	1 daily	0	30	30	
Rezcon (swamp cooler for kitchen)	1	-	150	150	gpd	1 daily	0	150	150	
Laundry (LG Tromm)	2	-	24	24	gpd	8 loads	0	384	384	
Laundry (Maytag/Whirlpool Top Loader)	4	-	40	40	gpd	8 loads	0	1,280	1,280	
Ice Maker (Manitowoc Series 450)	1	-	18.4	18.4	gp 100#	2 daily	0	36.8	36.8	
Dish Washer (Jackson ES2000)	1	-	1.2	1.2	gpl	40 loads	0	48.0	48.0	
							4,305	**4,719**	**9,024**	**avg day**
								observed	270,714	avg month
									30	days at avg
								observed	9,024	avg day

Table 1 - Summary of Current Water Use and Potential Water Savings
Inglenook Audit

Maximum Use Potential Savings

	number	per use hot	per use cold	per use total		uses/day		subtotal gpd hot	subtotal gpd cold	subtotal gpd total		savings hot	savings cold	savings total
Toilets	118													
Rooms	112	-	2.0	2.0	gpf	5	flushes	-	1,120	1,120		-	202	202
Public	6	-	0.90	0.9	gpf	10	flushes	-	54	54		-	80	80
Showers	112													
Rooms	112	1.8	0.4	2.2	gpm	18	minutes	3,548	887	4,435		484	121	605
Sinks	236													
Bath in Rooms	112	0.65	0.65	1.3	gpm	0.8	minutes	55	55	109		92	92	185
Kitchen in Rooms	112	1.25	1.25	2.5	gpm	5	minutes	700	700	1,400		-	-	-
Kitchen/Laundry	6	1.5	1.5	3.0	gpm	20	minutes	180	180	360		-	-	-
Other Restrooms	6	0.25	0.25	0.5	gpm	1.5	minutes	2	2	5		9	9	18
Other														
Maneurop Inc Water Cooled Compressor	1	-	30	30	gpd	1	daily	-	30	30		-	-	-
Rezcon (swamp cooler for kitchen)	1	-	150	150	gpd	1	daily	-	150	150		-	-	-
Laundry (LG Tromm)	2	-	24	24	gpd	10	loads	-	480	480		-	-	-
Laundry (Maytag/Whirlpool Top Loader)	4	-	40	40	gpd	10	loads	-	1,600	1,600		-	-	-
Ice Maker (Manitowoc Series 450)	1	-	18.4	18.4	gp 100#	4	daily	-	74	74		-	-	-
Dish Washer (Jackson ES2000)	1	-	1.2	1.2	gpl	50	loads	-	60	60		-	-	-
								4,485	**5,391**	**9,877**	**max day**			
									observed	329,000	max month			
										33	days at max			
									observed	10,967	max day			

Average Use Potential Savings

	number	per use hot	per use cold	per use total		uses/day		subtotal gpd hot	subtotal gpd cold	subtotal gpd total		savings hot	savings cold	savings total
Toilets	118													
Rooms	112	-	2.0	2.0	gpf	3.5	flushes	-	784	784		-	141	141
Public	6	-	0.90	0.9	gpf	6	flushes	-	32	32		-	48	48
Showers	112													
Rooms	112	1.8	0.4	2.2	gpm	15	minutes	2,957	739	3,696		403	101	504
Sinks	236													
Bath in Rooms	112	0.65	0.65	1.3	gpm	0.5	minutes	38	38	76		65	65	129
Kitchen in Rooms	112	1.25	1.25	2.5	gpm	5	minutes	700	700	1,400		-	-	-
Kitchen/Laundry	6	1.5	1.5	3.0	gpm	15	minutes	135	135	270		-	-	-
Other Restrooms	6	0.25	0.25	0.5	gpm	0.9	minutes	1	1	3		5	5	11
Other														
Maneurop Inc Water Cooled Compressor	1	-	30	30	gpd	1	daily	0	30	30		-	-	-
Rezcon (swamp cooler for kitchen)	1	-	150	150	gpd	1	daily	0	150	150		-	-	-
Laundry (LG Tromm)	2	-	24	24	gpd	8	loads	0	384	384		-	-	-
Laundry (Maytag/Whirlpool Top Loader)	4	-	40	40	gpd	8	loads	0	1,280	1,280		-	-	-
Ice Maker (Manitowoc Series 450)	1	-	18.4	18.4	gp 100#	2	daily	0	36.8	36.8		-	-	-
Dish Washer (Jackson ES2000)	1	-	1.2	1.2	gpl	40	loads	0	48.0	48.0		-	-	-
								3,831	**4,359**	**8,190**	**avg day**			
									observed	270,714	avg month			
										33	days at avg			
									observed	9,024	avg day			

Costs to Implement

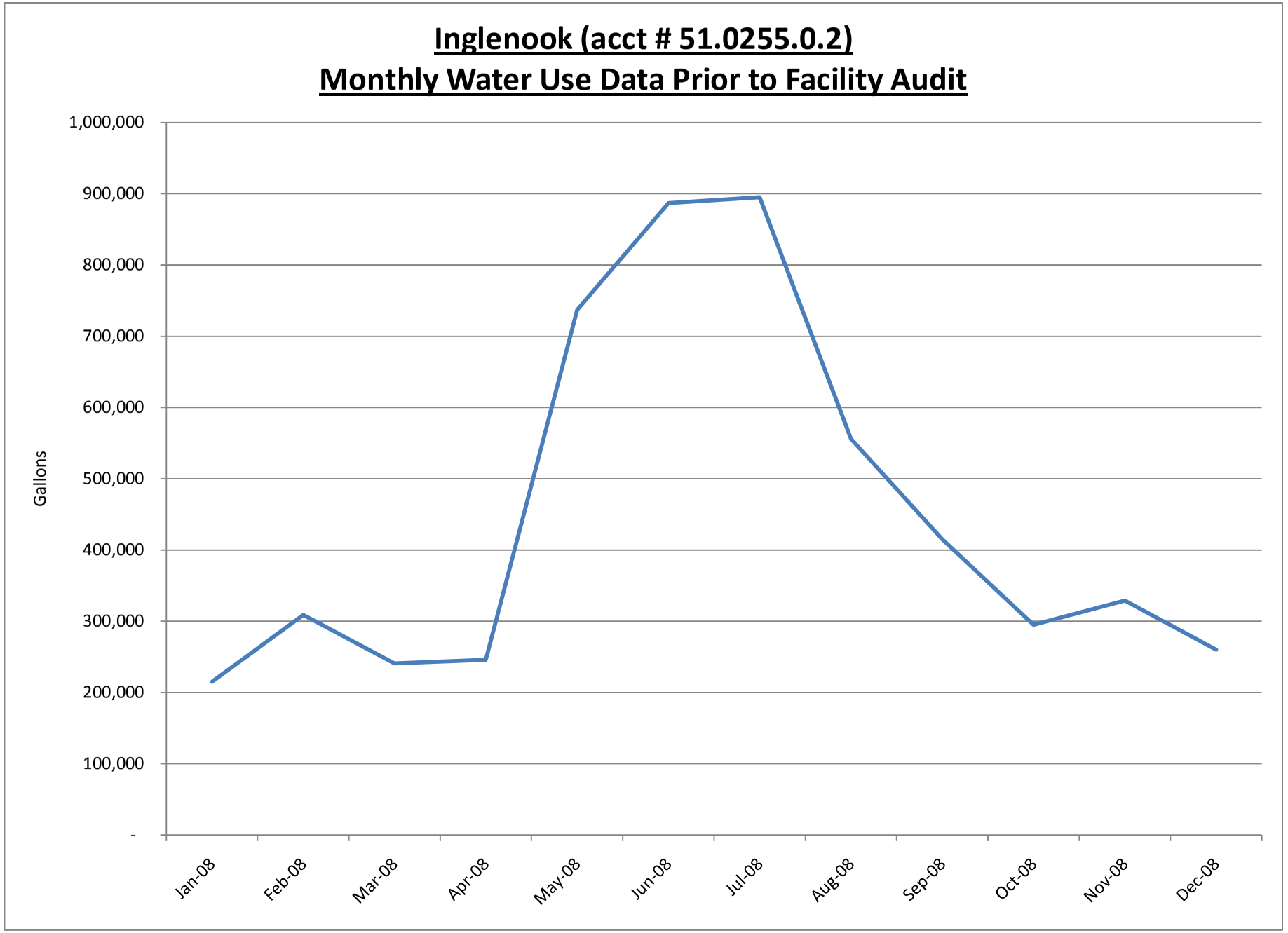
	number	Hardware	Installation	Total	Pay Back	Water Savings (gpy)	Energy Savings (kWhr)	Total Cost Savings/yr	Total Cost Savings/yr/fixture
Toilet	36	$ 282	$ 95	$ 13,572	23.98 yrs	69,029	-	$ 566	$ 16
Shower	30	$ 33	$ 10	$ 1,290	0.32 yrs	183,960	38,218	$ 3,993	$ 133
Sink	87	$ 2	$ 5	$ 575	0.68 yrs	51,158	6,643	$ 851	$ 10
				$ 15,437				$ 5,410	

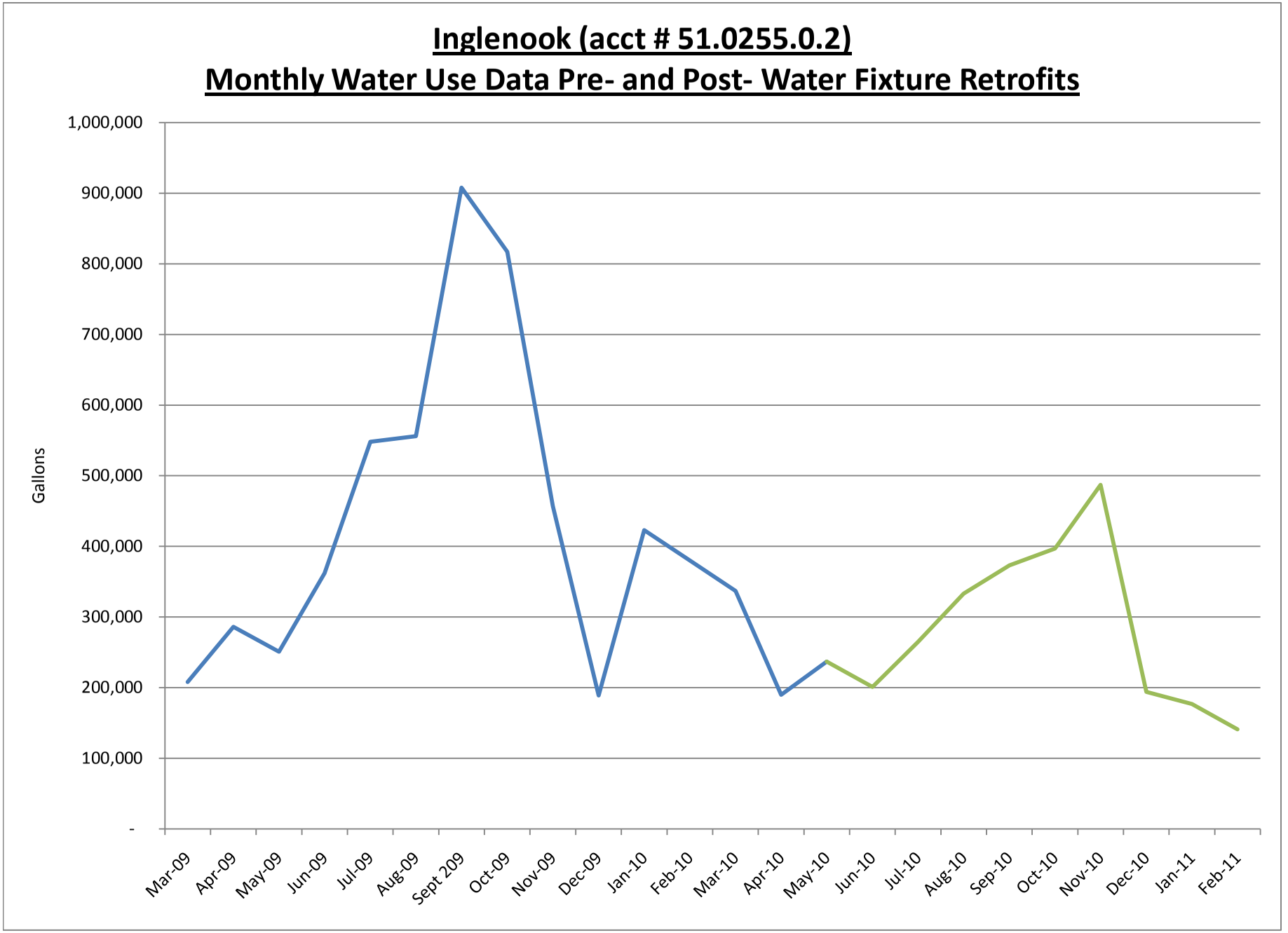
AF Savings: 0.93 $/AF: $ 16,539 Replacement Water Cost* : $ 28,002 Avoided Cost** : $ 2,889

* Calculation based on $30,000 per AF

** Calculation based on $9.50/ 1000 gal

Cost Savings Assumptions: $8.50/1000 gal - cost of water and sewer, $0.065/kwh cost of energy


Inglenook (acct # 51.0255.0.2)
Monthly Water Use Data Prior to Facility Audit
Gallons
1,000,000
900,000
800,000
700,000
600,000
500,000
400,000
300,000
200,000
100,000
-
Jan-08
Feb-08
Mar-08
Apr-08
May-08
Jun-08
Jul-08
Aug-08
Sep-08
Oct-08
Nov-08
Dec-08


Inglenook (acct # 51.0255.0.2)
Monthly Water Use Data Pre- and Post- Water Fixture Retrofits
Gallons
1,000,000
900,000
800,000
700,000
600,000
500,000
400,000
300,000
200,000
100,000
-
Mar-09
Apr-09
May-09
Jun-09
Jul-09
Aug-09
Sept 209
Oct-09
Nov-09
Dec-09
Jan-10
Feb-10
Mar-10
Apr-10
May-10
Jun-10
Jul-10
Aug-10
Sep-10
Oct-10
Nov-10
Dec-10
Jan-11
Feb-11

SMART WATER Audit Report

Brighton Police Station

Overview

The City of Brighton working with Great Western Institute conducted a SMART WATER Audit of this facility at 3401 East Bromley Lane in Brighton in July of 2009. The SMART WATER Audit was conducted as part of the District's demonstration audit project, whereby a small group of City facilities was selected to help the City of Brighton complete a commercial audit program intended to assist local businesses improve water use efficiency and in doing so, reduce water and energy operational costs.

Water Use Summary

Brighton Police Station uses water in a manner consistent with other small government facilities throughout Colorado. Similar to many facilities built before 1993, Brighton Police Station has sinks, showers, urinals and toilets that have not been updated with water efficient fixtures that are currently available in the marketplace.

A water demand model was created to estimate maximum and average daily water uses per existing fixture and to project the annual water savings that may be realized with the installment of new water smart fixtures. The water demand model for Brighton Police Station included the following assumptions:

- The water demand model for Brighton Police Station was configured and calibrated with the monthly water use data from 2009
- An analysis of the monthly water use data for Brighton Police Station indicated that some outdoor irrigation exists; therefore, a monthly winter average was calculated and used for the water demand model so as to isolate and define indoor water use only

Based on the 2009 audit, the following fixture replacements occurred in May and June of 2010. There are four public restroom sinks and four locker room sinks, all of which had flows of two gallons of water per minute (gpm). The five holding cells each contain a sink that used 2.5 gpm and the four galley sinks used five gpm. All of these sinks, except two galley sinks were replaced with 0.5 gpm low flow sink faucet aerators at a cost of about $7 per sink with an estimated water and energy savings of $28 per year per fixture. This savings results in a payback period of about three months.

There are three existing showerheads located in the Police Station locker rooms that had flows of 2.5 gpm. Two of these showerheads were replaced with 1.5 gpm low flow showerheads at a cost of about $43 per fixture, resulting in an estimated water and energy savings of $166 per year per fixture. This savings also results in a payback period of about three months.

In total, 15 sink faucet aerators and two showerheads were replaced in the Brighton Police Station for a total cost of $185. From the water demand model, it is estimated that a total annual water and energy cost savings of $752 will result from these changes, saving nearly 40,506 gallons in water and 6,454 kilowatt hours of energy annually.

Table 1 - Summary of Current Water Use and Potential Water Savings
Brighton Police Station Audit

Maximum Use Calculations

	number	per use hot	per use cold	per use total		uses/day		subtotal gpd hot	subtotal gpd cold	subtotal gpd total	
Toilets	20										
Public Restrooms (flushometers)	7	-	1.6	1.6	gpf	4	flushes	-	45	45	
Locker Rooms (flushometers)	8	-	1.6	1.6	gpf	3	flushes	-	38	38	
Holding Cells	5	-	1.6	1.6	gpf	2	flushes	-	16	16	
Urinals	5										
Public Restrooms	2	-	1.0	1.0	gpf	7	flushes	-	14	14	
Locker Rooms	2	-	1.0	1.0	gpf	10	flushes	-	20	20	
Holding Cells	1	-	1.0	1.0	gpf	3	flushes	-	3	3	
Showers	3										
Locker Rooms	3	2.0	0.5	2.5	gpm	20.0	minutes	120	30	150	
Sinks	17										
Public Restrooms	4	1.0	1.0	2.0	gpm	1.6	minutes	6	6	13	
Locker Rooms	4	1.0	1.0	2.0	gpm	1.7	minutes	7	7	13	
Holding Cells	5	1.25	1.25	2.5	gpm	0.4	minutes	2	2	5	
Galleys	4	2.5	2.5	5.0	gpm	5.0	minutes	50	50	100	
Other											
Ice Maker (Scotsman C0830MA)	1		18.4	18.4	gpd	2	gp 100#	-	37	37	
Dish Washer (Hobart 271001481)	1		16	16	gpl	1	loads	-	16	16	
								185	**284**	**470**	**max day**
									observed	14,000	max month
										30	days at max
									observed	467	max day

Table 1 - Summary of Current Water Use and Potential Water Savings
Brighton Police Station Audit

Average Use Calculations

	number	per use hot	per use cold	per use total		uses/day		subtotal gpd hot	subtotal gpd cold	subtotal gpd total	
Toilets	20										
Public Restrooms (flushometers)	7	-	1.6	1.6	gpf	3	flushes	-	34	34	
Locker Rooms (flushometers)	8	-	1.6	1.6	gpf	2.5	flushes	-	32	32	
Holding Cells	5	-	1.6	1.6	gpf	2	flushes	-	16	16	
Urinals	5										
Public Restrooms	2	-	1.0	1.0	gpf	5	flushes	-	10	10	
Locker Rooms	2	-	1.0	1.0	gpf	8	flushes	-	16	16	
Holding Cells	1	-	1.0	1.0	gpf	3	flushes	-	3	3	
Showers	3										
Locker Rooms	3	2.0	0.5	2.5	gpm	20.0	minutes	120	30	150	
Sinks	17										
Public Restrooms	4	1.0	1.0	2.0	gpm	1.2	minutes	5	5	9	
Locker Rooms	4	1.0	1.0	2.0	gpm	1.4	minutes	5	5	11	
Holding Cells	5	1.25	1.25	2.5	gpm	0.4	minutes	2	2	5	
Galleys	4	2.5	2.5	5.0	gpm	5.0	minutes	50	50	100	
Other											
Ice Maker (Scotsman C0830MA)	1	-	18.4	18.4	gpd	1	gp 100#	-	18	18	
Dish Washer (Hobart 271001481)	1	-	16	16	gpl	1	loads	-	16	16	
								182	**237**	**420**	**avg day**
									observed	17,286	avg month
										41	days at avg
									observed	576	avg day

Table 1 - Summary of Current Water Use and Potential Water Savings
Brighton Police Station Audit

Maximum Use Calculations

		per use						subtotal gpd				Savings		
	number	hot	cold	total		uses/day		hot	cold	total		Hot	Cold	Total
Toilets	20													
Public Restrooms (flushometers)	7	0	1.6	1.6	gpf	4	flushes	-	45	45		-	-	-
Locker Rooms (flushometers)	8	0	1.6	1.6	gpf	3	flushes	-	38	38		-	-	-
Holding Cells	5	0	1.6	1.6	gpf	2	flushes	-	16	16		-	-	-
								-	-	-				
								-	-	-				
Urinals	5							-	-	-				
Public Restrooms	2	0	1	1.0	gpf	7	flushes	-	14	14		-	-	-
Locker Rooms	2	0	1	1.0	gpf	10	flushes	-	20	20		-	-	-
Holding Cells	1	0	1	1.0	gpf	3	flushes	-	3	3		-	-	-
								-	-	-				
								-	-	-				
Showers	3							-	-	-				
Locker Rooms	3	1.44	0.36	1.8	gpm	20	minutes	86	22	108		34	8	42
								-	-	-				
								-	-	-				
Sinks	17							-	-	-				
Public Restrooms	4	0.25	0.25	0.5	gpm	1.6	minutes	2	2	3		5	5	9
Locker Rooms	4	0.25	0.25	0.5	gpm	1.7	minutes	2	2	3		5	5	10
Holding Cells	5	0.25	0.25	0.5	gpm	0.4	minutes	0	0	1		2	2	4
Galleys	4	1.25	1.25	2.5	gpm	5	minutes	25	25	50		25	25	50
								-	-	-				
Other								-	-	-				
Ice Maker (Scotsman C0830MA)	1	0	18.4	18.4	gpd	2	gp 100#	-	37	37		-	-	-
Dish Washer (Hobart 271001481)	1	0	16	16.0	gpl	1	loads	-	16	16		-	-	-
								115	**239**	**354**	**max day**			
									observed	14,000	max month			
										40	days at max			
									observed	467	max day			

Table 1 - Summary of Current Water Use and Potential Water Savings
Brighton Police Station Audit

Average Use Calculations

	number	per use hot	per use cold	per use total		uses/day		subtotal gpd hot	subtotal gpd cold	subtotal gpd total		Savings Hot	Savings Cold	Savings Total
Toilets	20													
Public Restrooms (flushometers)	7	0	1.6	1.6	gpf	3	flushes	-	34	34		-	-	-
Locker Rooms (flushometers)	8	0	1.6	1.6	gpf	2.5	flushes	-	32	32		-	-	-
Holding Cells	5	0	1.6	1.6	gpf	2	flushes	-	16	16		-	-	-
Urinals	5													
Public Restrooms	2	0	1	1.0	gpf	5	flushes	-	10	10		-	-	-
Locker Rooms	2	0	1	1.0	gpf	8	flushes	-	16	16		-	-	-
Holding Cells	1	0	1	1.0	gpf	3	flushes	-	3	3		-	-	-
Showers	3													
Locker Rooms	3	1.44	0.36	1.8	gpm	20	minutes	86	22	108		34	8	42
Sinks	17													
Public Restrooms	4	0.25	0.25	0.5	gpm	1.1625	minutes	1	1	2		3	3	7
Locker Rooms	4	0.25	0.25	0.5	gpm	1.35	minutes	1	1	3		4	4	8
Holding Cells	5	0.25	0.25	0.5	gpm	0.39	minutes	0	0	1		2	2	4
Galleys	4	1.25	1.25	2.5	gpm	5	minutes	25	25	50		25	25	50
Other														
Ice Maker (Scotsman C0830MA)	1	0	18.4	18.4	gpd	1	gp 100#	-	18	18		-	-	-
Dish Washer (Hobart 271001481)	1	0	16	16.0	gpl	1	loads	-	16	16		-	-	-
								114	**195**	**309**	**avg day**			
									observed	17,286	avg month			
										56	days at avg			
									observed	576	avg day			

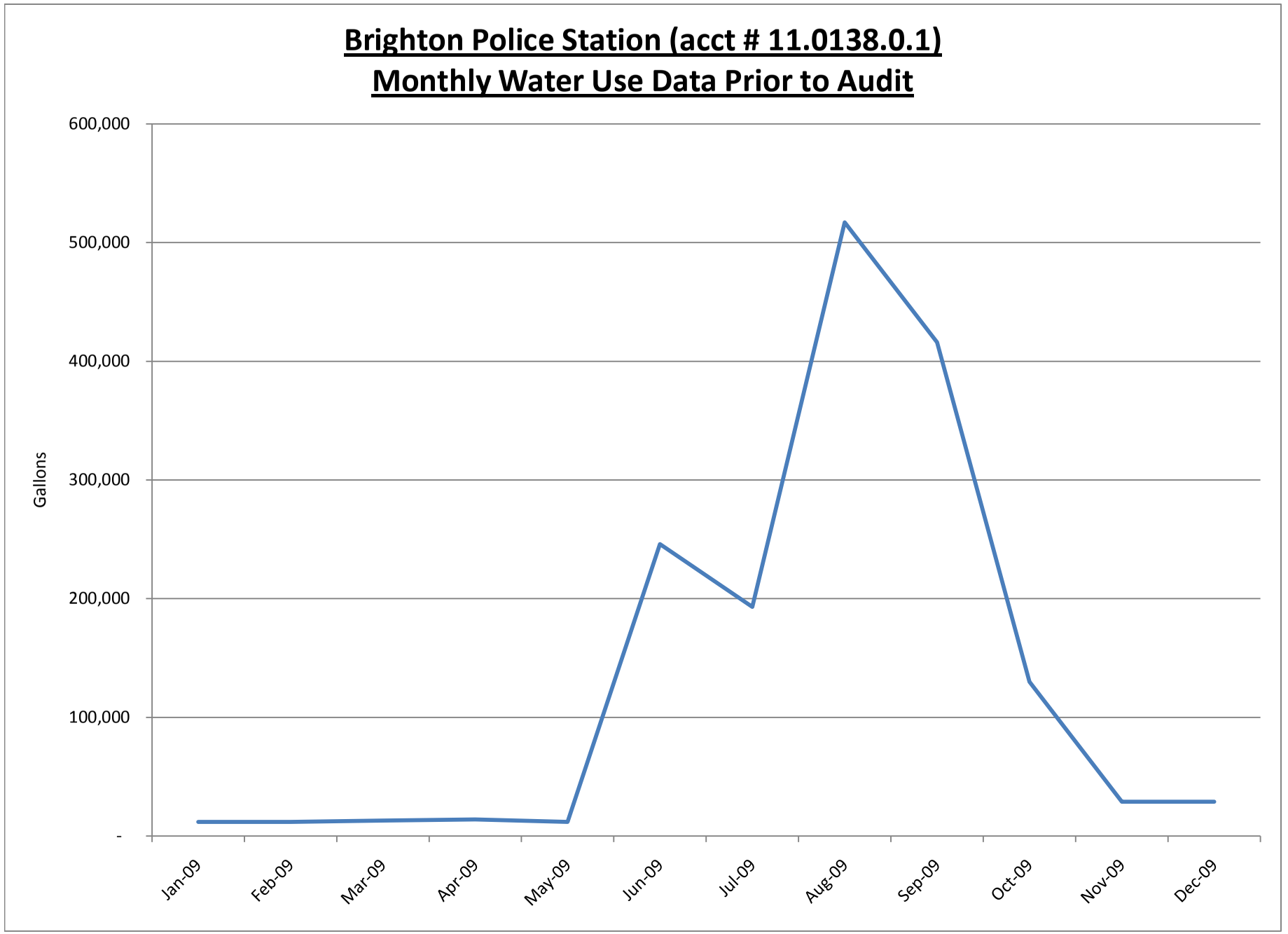
Costs to Implement

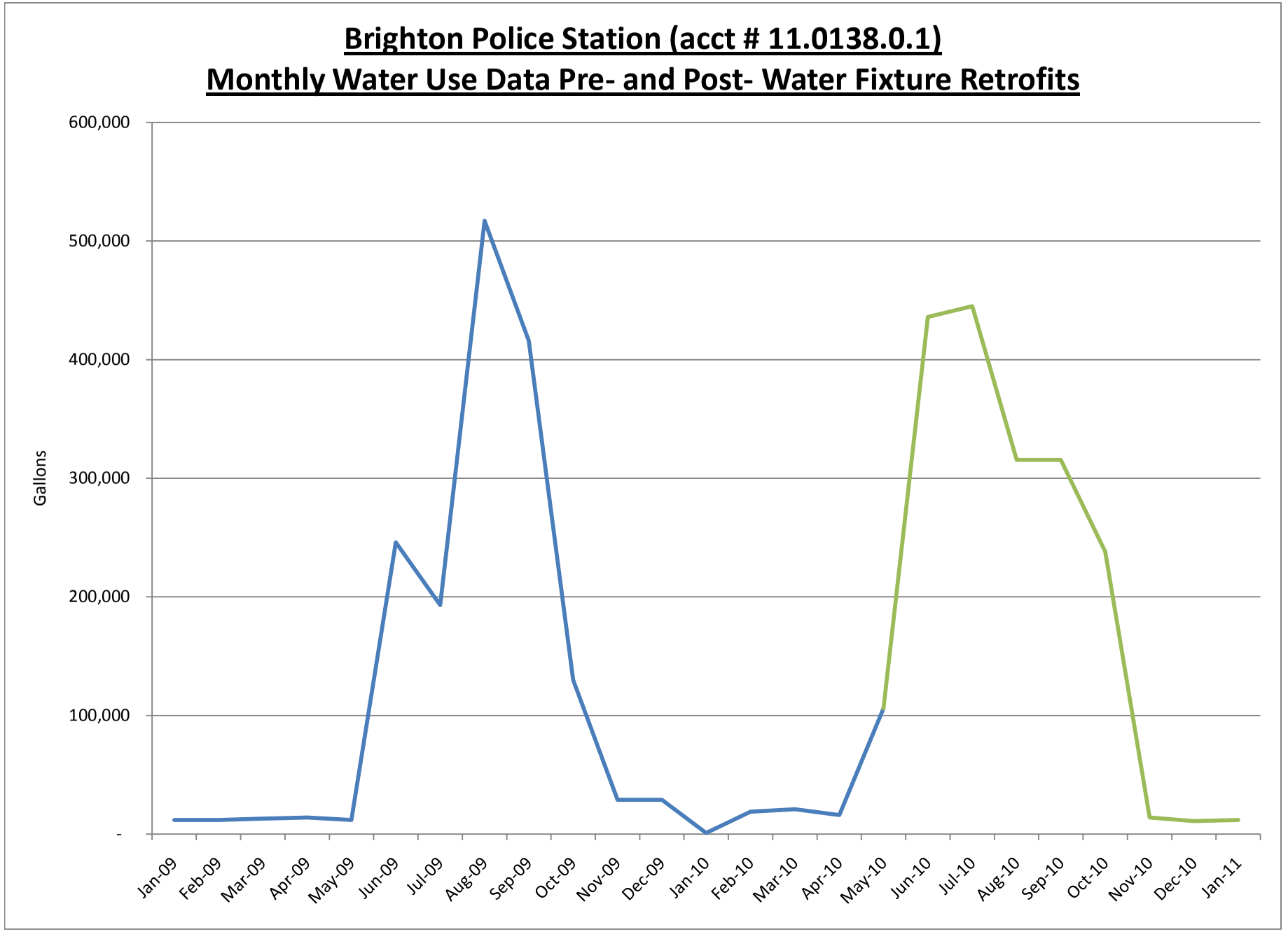
	number	Hardware	Installation	Total	Pay Back	Water Savings (gpy)	Energy Savings (kWhr)	Total Cost Savings/yr	Total Cost Savings/yr/fixture
Shower	2	$ 33	$ 10	$ 86	0.26 yrs	15,330	3,185	$ 333	$ 166
Sink	15	$ 1.61	$ 5	$ 99	0.24 yrs	25,176	3,269	$ 419	$ 28
				$ 185				$ 752	

AF Savings: 0.12 $/AF: $ 1,489 Replacement Water C $ 3,729 Avoided Cost $ 385

* Calculation based on $30,000 per AF ** Calculation based on $9.50/ 1000 gal

Cost Savings Assumptions: $8.50/1000 gal - cost of water and sewer, $0.065/kwh cost of energy


Brighton Police Station (acct # 11.0138.0.1)
Monthly Water Use Data Prior to Audit
Gallons
600,000
500,000
400,000
300,000
200,000
100,000
-
Jan-09
Feb-09
Mar-09
Apr-09
May-09
Jun-09
Jul-09
Aug-09
Sep-09
Oct-09
Nov-09
Dec-09


Brighton Police Station (acct # 11.0138.0.1)
Monthly Water Use Data Pre- and Post- Water Fixture Retrofits
Gallons
600,000
500,000
400,000
300,000
200,000
100,000
-
Jan-09
Feb-09
Mar-09
Apr-09
May-09
Jun-09
Jul-09
Aug-09
Sep-09
Oct-09
Nov-09
Dec-09
Jan-10
Feb-10
Mar-10
Apr-10
May-10
Jun-10
Jul-10
Aug-10
Sep-10
Oct-10
Nov-10
Dec-10
Jan-11

SMART WATER Audit Report

Brighton Recreation Center

Overview

The City of Brighton working with Great Western Institute conducted a SMART WATER Audit of this facility at 555 North 11th Avenue in Brighton in August of 2009. The SMART WATER Audit was conducted as part of the District's demonstration audit project, whereby a small group of City facilities was selected to help the City of Brighton complete a commercial audit program intended to assist local businesses improve water use efficiency and in doing so, reduce water and energy operational costs.

Water Use Summary

Brighton Recreation Center uses water in a manner consistent with other small government facilities throughout Colorado. Similar to many facilities built before 1993, Brighton Recreation Center has sinks, showers, urinals and toilets that have not been updated with water efficient fixtures that are currently available in the marketplace.

A water demand model was created to estimate maximum and average daily water uses per existing fixture and to project the annual water savings that may be realized with the installment of new water smart fixtures. The water demand model for Brighton Recreation Center included the following assumptions:

- The water demand model for Brighton Recreation Center was configured and calibrated with the monthly water use data from 2008
- An analysis of the monthly water use data for the Brighton Police Station indicated that some outdoor irrigation exists; therefore, a monthly winter average was calculated and used for the water demand model so as to isolate and define indoor water use only
- During the retrofit process in May and June of 2010, three shower timers were installed in the Recreation Center; however, these fixtures were removed soon after the retrofit process due to vandalism. Although these fixtures may have yielded some water savings, it could not be quantified and therefore, was not included in the water demand model.
- An analysis of the monthly water use data for the Brighton Recreation Center also indicated that an undetected leak averaging 10.6 gallons of water per minute (gpm) exists year round. The data provided does not allow for the source of the leak to be determined, however, it does show that the leak is not seasonal. The leak is assumed to be a cold water leak, creating no additional energy impact. Based on the data provided, it appears that this leak was partially addressed in Mid-March of 2010 and reduced to a 0.75 gpm leak.

There are eight sinks in the locker rooms, four sinks in the public restrooms and two sinks located in the daycare restrooms; all of which had flows of two gpm. Of these 14 sinks, 13 were replaced with 0.5 gpm low flow sink faucet aerators at a cost of about $7 per sink. The water and energy savings from these retrofits is estimated to be $27 per year per sink with an expected payback period of about 3 months.

In the locker rooms, there are 14 showers which had an average flow volume of 2.5 gpm. All 14 of these showerheads were replaced with 1.5 gpm low flow showerheads at a cost of $43 per fixture. The water and energy savings from these retrofits is estimated to be $938 per year per showerhead with an expected payback period of less than one month.

In total, 13 sink faucet aerators and 14 showerheads were replaced in the Brighton Recreation Center for a total cost of $688. From the water demand model, it is estimated that a total annual water and energy cost savings of $13,478 will result from these changes, saving nearly 625,901 gallons in water and 128,389 kilowatt hours of energy annually. If the leak is reduced from 10.6 gpm to 0.75 gpm (as the data suggests) in the Brighton Recreation Center, an additional 5,106,240gallons of water may be saved annually, saving an additional $41,871 in water costs annually.

Table 1 - Summary of Current Water Use and Potential Water Savings
Brighton Recreation Center Audit

Maximum Use Calculations

	number	per use hot	per use cold	per use total		uses/day		subtotal gpd hot	subtotal gpd cold	subtotal gpd total	
Toilets	16										
Locker Rooms	8	-	1.6	1.6	gpf	20	flushes	-	256	256	
Daycare Restrooms	2	-	1.6	1.6	gpf	15	flushes	-	48	48	
Other Restrooms	6	-	1.6	1.6	gpf	8	flushes	-	77	77	
Showers	14										
Locker Rooms	14	2	0.5	2.5	gpm	160	minutes	4,480	1,120	5,600	
Urinals	6										
Locker Rooms	4	-	1.0	1	gpf	25	flushes	-	100	100	
Other Restrooms	2	-	1.0	1	gpf	20	flushes	-	40	40	
Sinks	20										
Locker Rooms	8	1	1	2	gpm	5	minutes	39	39	78	
Daycare Restrooms	2	1	1	2	gpm	2	minutes	5	5	9	
Kitchens/Conference Room/Daycare	6	1.5	1.5	3	gpm	15	minutes	135	135	270	
Other Restrooms	4	1	1	2	gpm	3	minutes	13	13	26	
Other											
Undefined Leak	1	-	10.6	10.6	gpm	1440	minutes	0	15,264	15,264	
Pool	1	-	994	994	gpd	1	daily	0	994	994	
Hot Tub	1	-	60	60	gpd	1	daily	0	60	60	
Sauna (Mister Steam CU 1000)	1	-	10	10	gpd	1	daily	0	10	10	
Ice Maker (Scotsman C0830MA)	1	-	18.4	18.4	gp 100#	5	daily	0	92.0	92.0	
Dish Washer (Hobart 271001481)	1	-	16	16	gpl	5	loads	0	80.0	80.0	
								4,672	**18,333**	**23,005**	**max day**
									observed	690,000	max month
										30	days at max
									observed	23,000	max day

Average Use Calculation

	number	per use hot	per use cold	per use total		uses/day		subtotal gpd hot	subtotal gpd cold	subtotal gpd total	
Toilets	16										
Locker Rooms	8	-	1.6	1.6	gpf	15	flushes	-	192	192	
Daycare Restrooms	2	-	1.6	1.6	gpf	10	flushes	-	32	32	
Other Restrooms	6	-	1.6	1.6	gpf	4	flushes	-	38	38	
Showers	14										
Locker Rooms	14	2	0.5	2.5	gpm	120	minutes	3,360	840	4,200	
Urinals	6										
Locker Rooms	4	-	1	1	gpf	20	flushes	-	80	80	
Other Restrooms	2	-	1	1	gpf	15	flushes	-	30	30	
Sinks	20										
Locker Rooms	8	1	1	2	gpm	4	minutes	30	30	60	
Daycare Restrooms	2	1	1	2	gpm	2	minutes	3	3	6	
Kitchens/Conference Room/Daycare	6	1.5	1.5	3	gpm	5	minutes	45	45	90	
Other Restrooms	4	1	1	2	gpm	2	minutes	8	8	16	
Other											
Undefined Leak	1	-	10.6	10.6	gpm	1440	minutes	0	15,264	15,264	
Pool	1	-	826	826	gpd	1	daily	0	826	826	
Hot Tub	1	-	60	60	gpd	1	daily	0	60	60	
Sauna (Mister Steam CU 1000)	1	-	10	10	gpd	1	daily	0	10	10	
Ice Maker (Scotsman C0830MA)	1	-	18.4	18.4	gp 100#	3	daily	0	55.2	55.2	
Dish Washer (Hobart 271001481)	1	-	16	16	gpl	2	loads	0	32.0	32.0	
								3,446	**17,546**	**20,992**	**avg day**
									observed	629,800	avg month
										30	days at avg
									observed	20,993	avg day

Table 1 - Summary of Current Water Use and Potential Water Savings
Brighton Recreation Center Audit

Maximum Use Potential Savings

		per use						subtotal gpd				savings		
	number	hot	cold	total		uses/day		hot	cold	total		hot	cold	total
Toilets	16													
Locker Rooms	8	-	1.6	1.6	gpf	20	flushes	-	256	256		-	-	-
Daycare Restrooms	2	-	1.6	1.6	gpf	15	flushes	-	48	48		-	-	-
Other Restrooms	6	-	1.6	1.6	gpf	8	flushes	-	77	77		-	-	-
Showers	14													
Locker Rooms	14	1.2	0.3	1.5	gpm	160	minutes	2,688	672	3,360		1,792	448	2,240
Urinals	6													
Locker Rooms	4	-	1.0	1.0	gpf	25	flushes	-	100	100		-	-	-
Other Restrooms	2	-	1.0	1.0	gpf	20	flushes	-	40	40		-	-	-
Sinks	20													
Locker Rooms	8	0.25	0.25	0.5	gpm	5	minutes	10	10	20		29	29	59
Daycare Restrooms	2	0.25	0.25	0.5	gpm	2	minutes	1	1	2		3	3	7
Kitchens/Conference Room/Daycare	6	1.5	1.5	3.0	gpm	15	minutes	135	135	270		-	-	-
Other Restrooms	4	0.44	0.44	0.9	gpm	3	minutes	6	6	12		7	7	15
												-	-	-
Other												-	-	-
fix leak	1	-	1	0.75	gpm	1,440.0	minutes	-	1,080	1,080		-	14,184	14,184
Pool	1	-	994	994.5	gpd	1.0	daily	-	994	994		-	-	-
Hot Tub	1	-	60	60.0	gpd	1.0	daily	-	60	60		-	-	-
Sauna (Mister Steam CU 1000)	1	-	10	10.0	gpd	1.0	daily	-	10	10		-	-	-
Ice Maker (Scotsman C0830MA)	1	-	18	18.4	gp 100#	5.0	daily	-	92.0	92.0		-	-	-
Dish Washer (Hobart 271001481)	1	-	16	16.0	gpl	5.0	loads	-	80.0	80.0		-	-	-
								2,840	**3,661**	**6,501**	**max day**			
									observed	690,000	max month			
										106	days at max			
									observed	23,000	max day			

Average Use Potential Savings

		per use						subtotal gpd				savings		
	number	hot	cold	total		uses/day		hot	cold	total		hot	cold	total
Toilets	16													
Locker Rooms	8	-	1.6	1.6	gpf	15	flushes	-	192	192		-	-	-
Daycare Restrooms	2	-	1.6	1.6	gpf	10	flushes	-	32	32		-	-	-
Other Restrooms	6	-	1.6	1.6	gpf	4	flushes	-	38	38		-	-	-
Showers	14													
Locker Rooms	14	1.2	0.3	1.5	gpm	120	minutes	2,016	504	2,520		1,344	336	1,680
Urinals	6													
Locker Rooms	4	-	1.0	1.0	gpf	20	flushes	-	80	80		-	-	-
Other Restrooms	2	-	1.0	1.0	gpf	15	flushes	-	30	30		-	-	-
Sinks	20													
Locker Rooms	8	0.25	0.25	0.5	gpm	4	minutes	8	8	15		23	23	45
Daycare Restrooms	2	0.25	0.25	0.5	gpm	2	minutes	1	1	2		2	2	5
Kitchens/Conference Room/Daycare	6	1.5	1.5	3.0	gpm	5	minutes	45	45	90		-	-	-
Other Restrooms	4	0.44	0.44	0.9	gpm	2	minutes	4	4	7		5	5	9
Other														
fix leak	1	-	0.8	0.8	gpm	1,440.0	minutes	-	1,080	1,080		-	14,184	14,184
Pool	1	-	826	825.8	gpd	1.0	daily	-	826	826		-	-	-
Hot Tub	1	-	60.0	60.0	gpd	1.0	daily	-	60	60		-	-	-
Sauna (Mister Steam CU 1000)	1	-	10	10.0	gpd	1.0	daily	-	10	10		-	-	-
Ice Maker (Scotsman C0830MA)	1	-	18	18.4	gp 100#	3.0	daily	-	55.2	55.2		-	-	-
Dish Washer (Hobart 271001481)	1	-	16.0	16.0	gpl	2.0	loads	-	32.0	32.0		-	-	-
								2,073	**2,996**	**5,069**	**avg day**			
									observed	152,000	avg month			
										30	days at avg			
									observed	5,067	avg day			

Table 1 - Summary of Current Water Use and Potential Water Savings
Brighton Recreation Center Audit

Costs to Implement

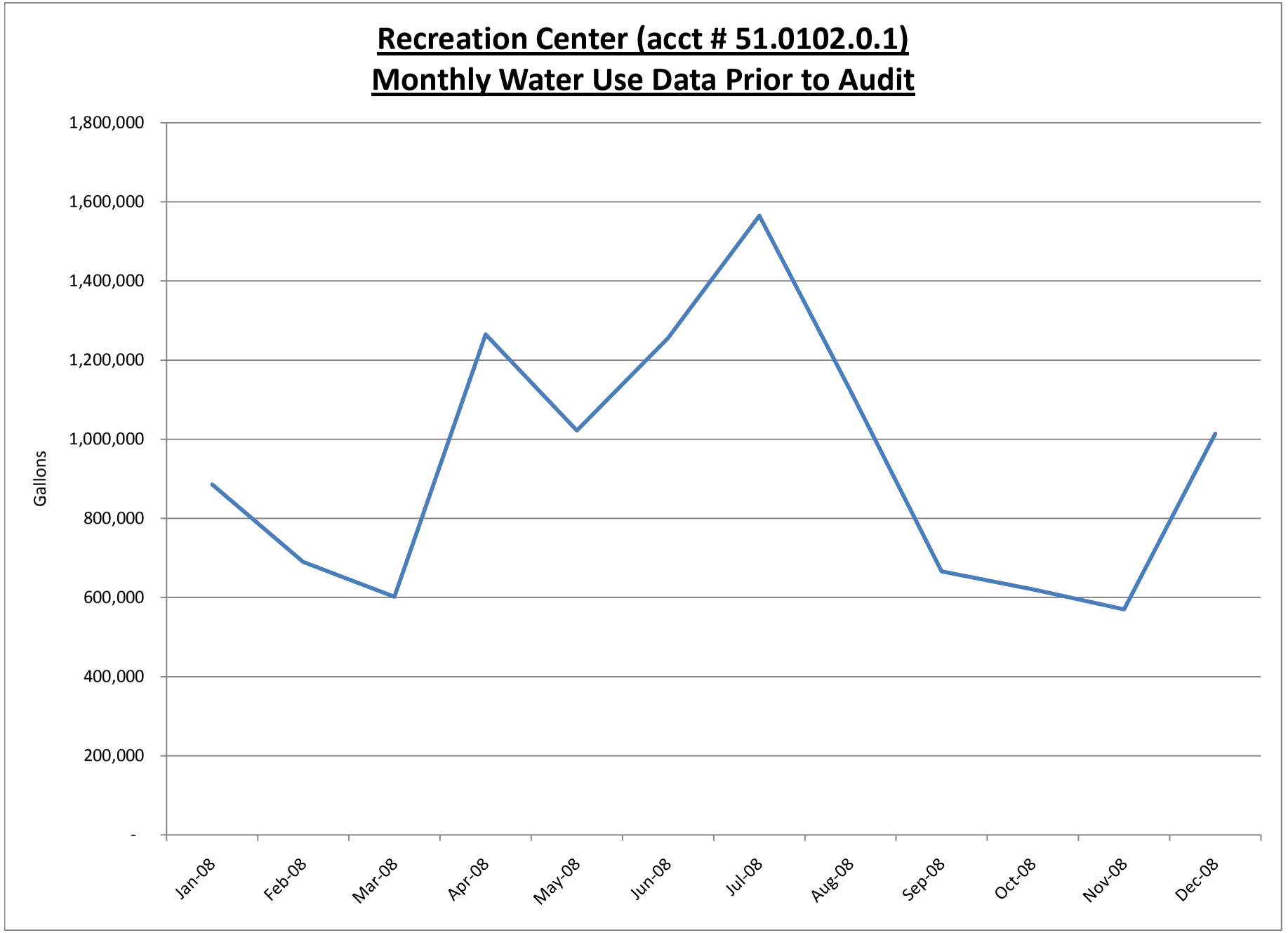
	number	Hardware	Installation	Total	Pay Back	Water Savings (gpy)	Energy Savings (kWhr)	Total Cost Savings/yr	Total Cost Savings/yr/fixture
Shower	14	$ 33	$ 10	$ 602	0.05 yrs	604,800	125,649	$ 13,127	$ 938
Sink	13	$ 1.61	$ 5	$ 86	0.24 yrs	21,101	2,740	$ 351	$ 27
Fix leak	1	$ 300.00	$ 850	$ 1,150	0.03 yrs	5,106,240	-	$ 41,871	$ 41,871
				$ 1,838				$ 13,478	

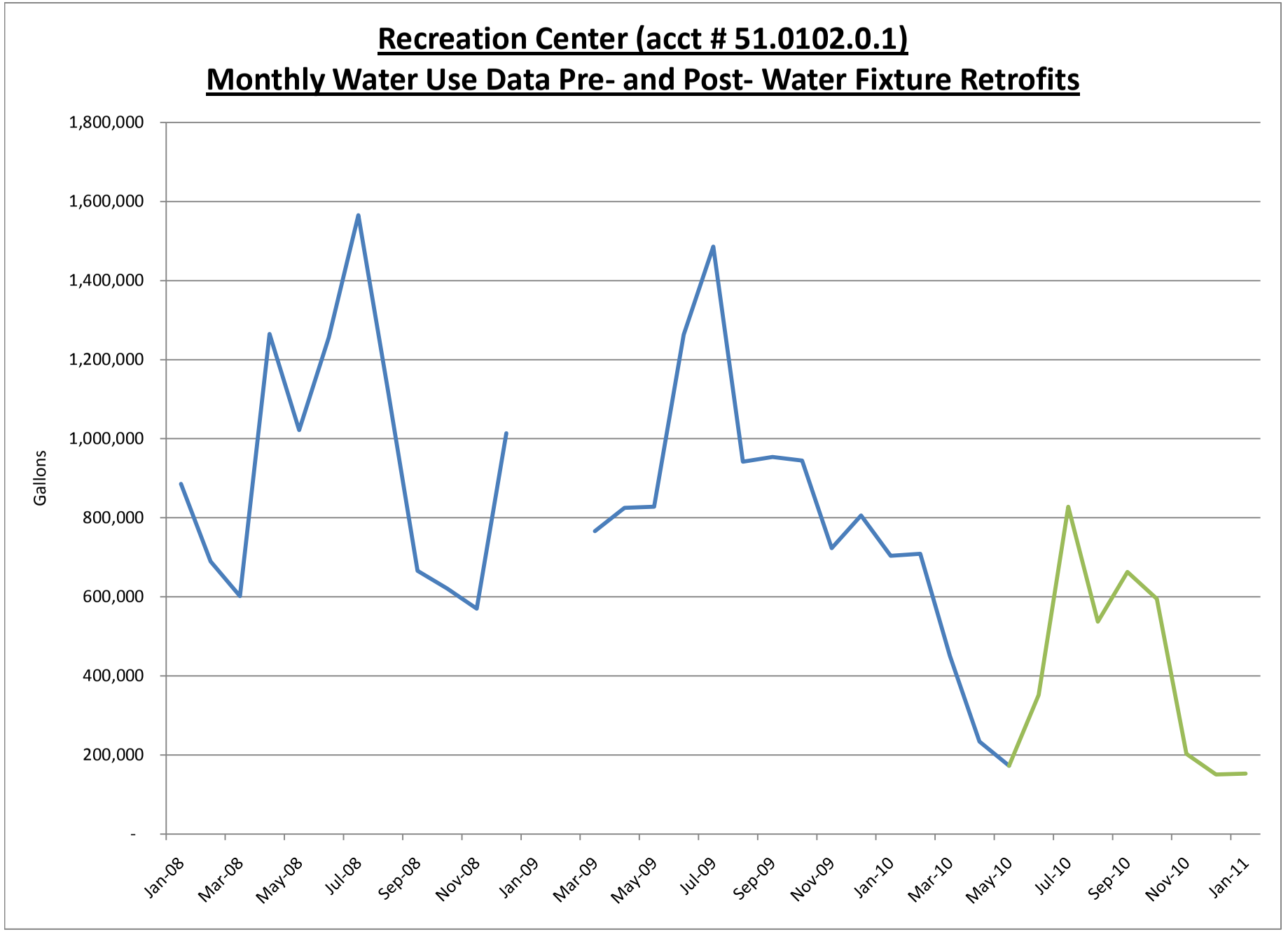
AF Savings: 17.59 $/AF: $ 104 Replacement Water Cost* : $ 527,739 Avoided Cost** : $ 54,455

* Calculation based on $30,000 per AF

** Calculation based on $9.50/ 1000 gal

Cost Savings Assumptions: $8.50/1000 gal - cost of water and sewer, $0.065/kwh cost of energy


Recreation Center (acct # 51.0102.0.1)
Monthly Water Use Data Prior to Audit
Gallons
1,800,000
1,600,000
1,400,000
1,200,000
1,000,000
800,000
600,000
400,000
200,000
-
Jan-08
Feb-08
Mar-08
Apr-08
May-08
Jun-08
Jul-08
Aug-08
Sep-08
Oct-08
Nov-08
Dec-08


Recreation Center (acct # 51.0102.0.1)
Monthly Water Use Data Pre- and Post- Water Fixture Retrofits
Gallons
1,800,000
1,600,000
1,400,000
1,200,000
1,000,000
800,000
600,000
400,000
200,000
-
Jan-08
Mar-08
May-08
Jul-08
Sep-08
Nov-08
Jan-09
Mar-09
May-09
Jul-09
Sep-09
Nov-09
Jan-10
Mar-10
May-10
Jul-10
Sep-10
Nov-10
Jan-11

Smart Water Audit Report

Brighton Senior Center

Overview

The City of Brighton working with Great Western Institute conducted a SMART WATER Audit of this facility at 575 Bush Street in Brighton in July of 2009. The SMART WATER Audit was conducted as part of the District's demonstration audit project, whereby a small group of City facilities was selected to help the City of Brighton complete a commercial audit program intended to assist local businesses improve water use efficiency and in doing so, reduce water and energy operational costs.

Water Use Summary

Brighton Senior Center uses water in a manner consistent with other small government facilities throughout Colorado. Similar to many facilities built before 1993, Brighton Senior Center has sinks, showers, urinals and toilets that have not been updated with water efficient fixtures that are currently available in the marketplace.

A water demand model was created to estimate maximum and average daily water uses per existing fixture and to project the annual water savings that may be realized with the installment of new water smart fixtures. The water demand model for Brighton Senior Center included the following assumptions:

- The water demand model for Brighton Senior Center was configured and calibrated with the monthly water use data from 2009
- An analysis of the monthly water use data for Brighton Senior Center indicated that there is no existing outdoor irrigation; therefore, no evaluation was performed to characterize outdoor water use for this property

The five public toilets at the Brighton Senior Center were using 2.5 gallons of water per flush (gpf). All five of these toilets were replaced with 1.28 gpf Water Sense high efficiency toilets at a cost of about $377 per toilet. The water and energy savings from these retrofits is estimated to be about $26 per year per toilet.

There are three sinks located in the public restrooms which were found to have flows of two gallons of water per minute (gpm). These sinks were replaced with 0.5 gpm low flow sink faucet aerators at a cost of about $7 per sink. The water and energy savings from these retrofits is estimated to be $21 per year per fixture with an expected payback period of about 3.5 months.

In total, five toilets and three sink faucet aerators were replaced in the Brighton Senior Center for a total cost of $1,905. From the water demand model, it is estimated that a total annual water and energy cost savings of $194 will result from these changes, saving nearly 19,688 gallons in water and 500 kilowatt hours of energy annually.

Table 1 - Summary of Current Water Use and Potential Water Savings
Senior Center Audit

Maximum Use Calculations

	number	per use hot	per use cold	per use total		uses/day		subtotal gpd hot	subtotal gpd cold	subtotal gpd total	
Toilets	5										
Public Restrooms (tanks)	5	-	2.5	2.5	gpf	6	flushes	-	75	75	
Urinals	1										
Public Restrooms	1	-	1.0	1.0	gpf	23	flushes	-	23	23	
Sinks	5										
Public Restrooms (other)	3	1.0	1.0	2.0	gpm	6.2	minutes	19	19	37	
Galleys	2	2.5	2.5	5.0	gpm	5.0	minutes	25	25	50	
Other											
Ice Maker (Scotsman C0830MA)	1	-	18.4	18.4	gp 100#	2	daily	0	36.8	36.8	
Dish Washer (Hobart 271001481)	1	-	12	12	gpl	1	loads	0	12.0	12.0	
								44	**190**	**234**	**max day**
								observed		7,000	max month
										30	days at max
								observed		233	max day

Average Use Calculations

	number	per use hot	per use cold	per use total		uses/day		subtotal gpd hot	subtotal gpd cold	subtotal gpd total	
Toilets	5										
Public Restrooms (tanks)	5	-	2.5	2.5	gpf	5.5	flushes	-	69	69	
Urinals	1										
Public Restrooms	1	-	1.0	1.0	gpf	20	flushes	-	20	20	
Sinks	5										
Public Restrooms (other)	3	1.0	1.0	2.0	gpm	2.4	minutes	7	7	14	
Galleys	2	2.5	2.5	5.0	gpm	5.0	minutes	25	25	50	
Other											
Ice Maker (Scotsman C0830MA)	1	-	18.4	18.4	gp 100#	1	daily	0	18.4	18.4	
Dish Washer (Hobart 271001481)	1	-	12	12	gpl	1	loads	0	12.0	12.0	
								32	**151**	**183**	**avg day**
								observed		5,500	avg month
										30	days at avg
								observed		183	avg day

Table 1 - Summary of Current Water Use and Potential Water Savings
Senior Center Audit

Maximum Use Savings

	number	per use hot	per use cold	per use total		uses/day		subtotal gpd hot	subtotal gpd cold	subtotal gpd total		Savings Hot	Savings Cold	Savings Total
Toilets	5													
Public Restrooms (tanks)	5	-	0.90	0.90	gpf	6	flushes	-	27	27		-	48	48
Urinals	1													
Public Restrooms	1	-	1.0	1.0	gpf	23	flushes	-	23	23		-	-	-
Sinks	5													
Public Restrooms (other)	3	0.25	0.25	0.5	gpm	6.2	minutes	5	5	9		14	14	28
Galleys	2	2.5	2.5	5.0	gpm	5.0	minutes	25	25	50		-	-	-
Other														
Ice Maker (Scotsman C0830MA)	1	-	18.4	18.4	gp 100#	2	daily	0	36.8	36.8		-	-	-
Dish Washer (Hobart 271001481)	1	-	12	12	gpl	1	loads	0	12.0	12.0		-	-	-
								30	**128**	**158**	**max day**			
								observed		7,000	max month			
										44	days at max			
								observed		233	max day			

Average Use Calculations

	number	per use hot	per use cold	per use total		uses/day		subtotal gpd hot	subtotal gpd cold	subtotal gpd total		Savings Hot	Savings Cold	Savings Total
Toilets	5													
Public Restrooms (tanks)	5	-	0.90	0.90	gpf	6	flushes	-	25	25		-	44	44
Urinals	1													
Public Restrooms	1	-	1.0	1.0	gpf	20	flushes	-	20	20		-	-	-
Sinks	5													
Public Restrooms (other)	3	0.25	0.25	0.5	gpm	2.4	minutes	1.8	1.8	3.6		5	5	11
Galleys	2	2.5	2.5	5.0	gpm	5.0	minutes	25	25	50		-	-	-
Other														
Ice Maker (Scotsman C0830MA)	1		18.4	18.4	gp 100#	1	daily	0	18.4	18.4		-	-	-
Dish Washer (Hobart 271001481)	1		12	12	gpl	1	loads	0	12.0	12.0		-	-	-
								27	**102**	**129**	**avg day**			
								observed		5,500	avg month			
										43	days at avg			
								observed		183	avg day			

Costs to Implement

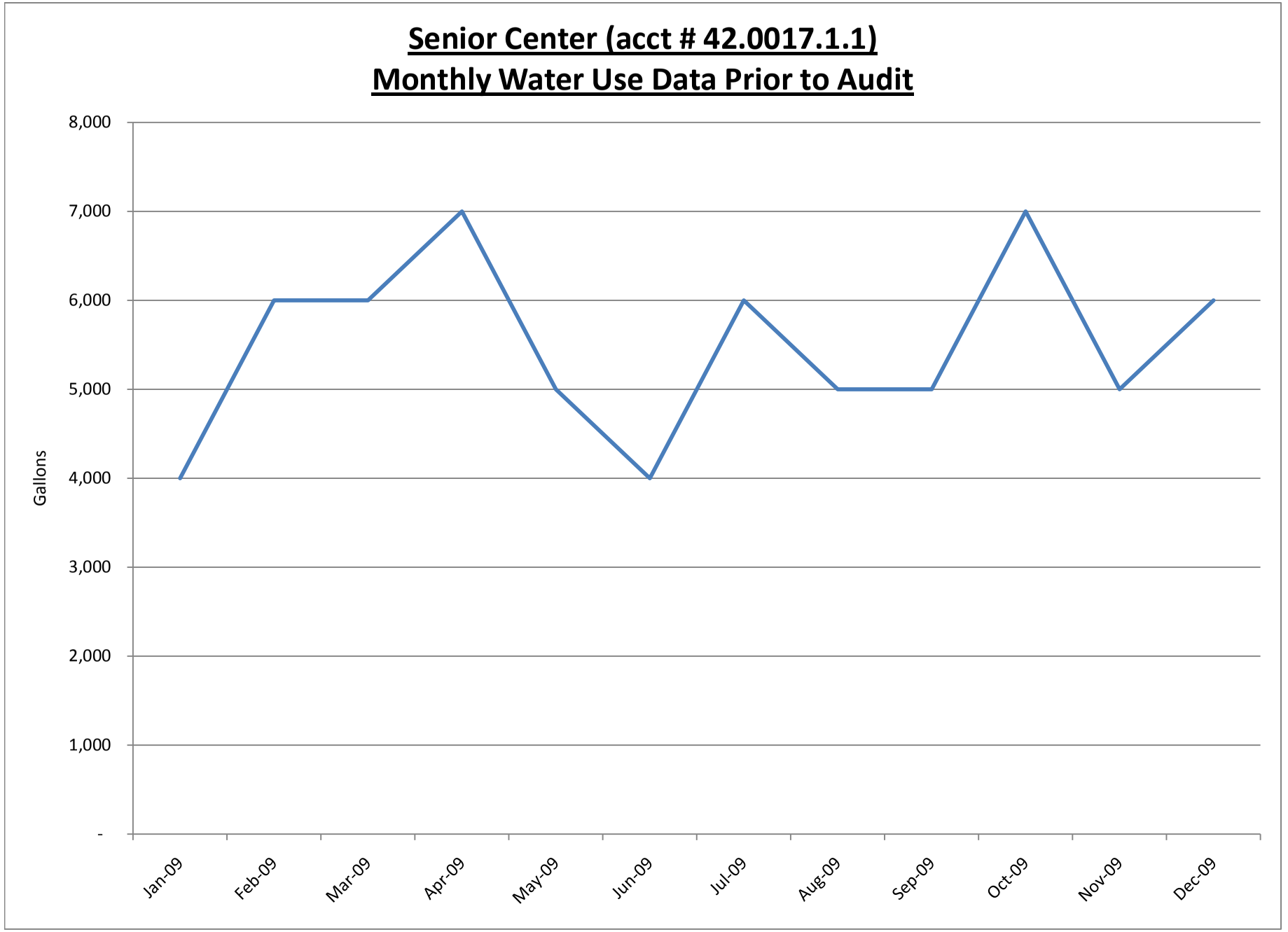
	number	Hardware	Installation	Total	Pay Back	Water Savings (gpy)	Energy Savings (kWhr)	Total Cost Savings/yr	Total Cost Savings/yr/fixture
Toilet (tanks)	5	$ 282	$ 95	$ 1,885	14.5 yrs	15,840		$ 130	$ 26
Sinks	3	$ 1.61	$ 5	$ 20	0.3 yrs	3,848	500	$ 64	$ 21
				$ 1,905				$ 194	

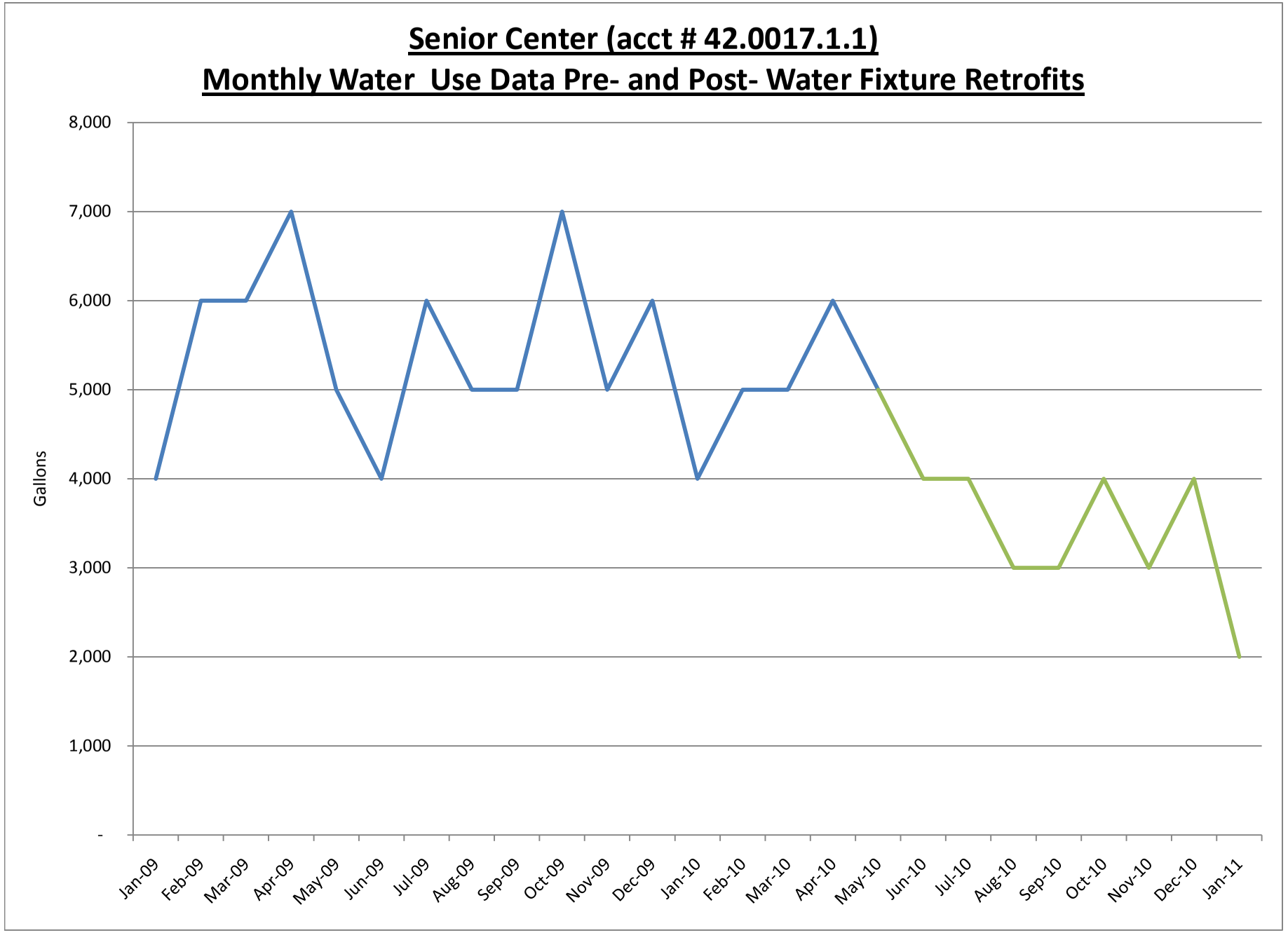
AF Savings: 0.06 $/ AF: $ 31,527 Replacement Water Cost* : $ 1,813 Avoided Cost** : $ 187

* Calculation based on $30,000 per AF

** Calculation based on $9.50/ 1000 gal

Cost Savings Assumptions: $8.50/1000 gal - cost of water and sewer, $0.065/kwh cost of energy


Senior Center (acct # 42.0017.1.1)
Monthly Water Use Data Prior to Audit
Gallons
8,000
7,000
6,000
5,000
4,000
3,000
2,000
1,000
-
Jan-09
Feb-09
Mar-09
Apr-09
May-09
Jun-09
Jul-09
Aug-09
Sep-09
Oct-09
Nov-09
Dec-09


Senior Center (acct # 42.0017.1.1)
Monthly Water Use Data Pre- and Post- Water Fixture Retrofits
Gallons
8,000
7,000
6,000
5,000
4,000
3,000
2,000
1,000
-
Jan-09
Feb-09
Mar-09
Apr-09
May-09
Jun-09
Jul-09
Aug-09
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Dec-10
Jan-11