

JULY 2016



Water Storage Tank 3 Improvements and Repairs Project

By: Josh Hansen, Project Manager

Tank 3 is the Town's oldest water storage tank currently in service. The water tank has a capacity of one million gallons and was built in 1969 and is rapidly approaching the half century mark. In today's dollars, replacement of the tank could exceed \$2 million.

During the Town's routine tank inspections, several areas for improvements were identified at Tank 3 – the most important of these being repairs needed to address degradation of the concrete roof and walls. Canterbury Construction was the low bidder on the project and was awarded a contract in the amount of \$111,166.



Tank 3 Concrete Roof Repair Sequence

Construction of the improvements began in May and were completed in July. Temporary shoring support had to be installed inside of the tank before the damaged concrete could be removed from the roof. Additional improvements included installation of a new interior tank



Temporary Shoring Inside Tank 3

ladder and overflow pipe to replace corroded existing equipment and installation of a new raised tank roof hatch, raised air vents, and a silt stop on the tank outlet. Construction of the improvements was completed within budget and the tank is back in service. The completed improvements will help improve staff safety at the tank, meet the latest state regulatory standards, and significantly extend the lifespan of Tank 3.

As a side note on how construction has changed over the past half century, the original Tank 3 construction plans from 1969 were a total of four pages. The construction plans for the Town's most recently designed water storage tank are 72 pages along with 523 pages of technical specifications.

OUR VISION

We will be a national leader among water utilities focused on customer satisfaction and delivering outstanding quality and value.

6400 South Tributary Drop Structure Repair Project

By: Erik Dam, Project Manager

The 6400 South Tributary drainageway starts just north of Coachline Road, and flows north through the Red Hawk Ridge Golf Course, Red Hawk subdivision, and much of The Meadows development before discharging into East Plum Creek northeast of Castle View High School. Much of this drainageway has been improved and stabilized through the construction of storm sewer culverts, drop structures, channel grading and regional detention facilities.

In late April of this year, Parks Department referred a stormwater maintenance issue to us from a nearby homeowner. The resident was concerned about erosion at a storm sewer flared end section discharging into the drainage channel behind her home. Upon investigation it was determined that a much more serious condition existed with a grouted boulder drop structure at this location. Not only was the whole structure in danger of collapse, but it also protected a 12" water main and soft surface trail 50-feet upstream. Failure to act quickly would result in much more expensive repairs in the future, and could interrupt the public water supply.

The Stormwater Team contracted with 53 Corporation for \$23,340 to complete emergency repairs to the structure, working closely with the contractor to determine a scope of work necessary to repair the facility and prevent more damage from subsequent rainfall events. Work began the last week in June, and was completed in less than two weeks.

Additionally, as the channel immediately downstream of this location is still unstable and will eventually cause further harm to the structure, we have initiated an engineering contract with a consultant to design permanent stabilization measures that will complete the ultimate channel improvements for this reach of the drainageway. The design work will be completed in 2016 and construction is planned for 2017.

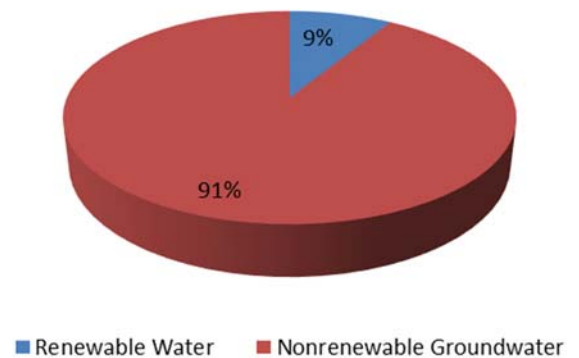


2016 Water Demands

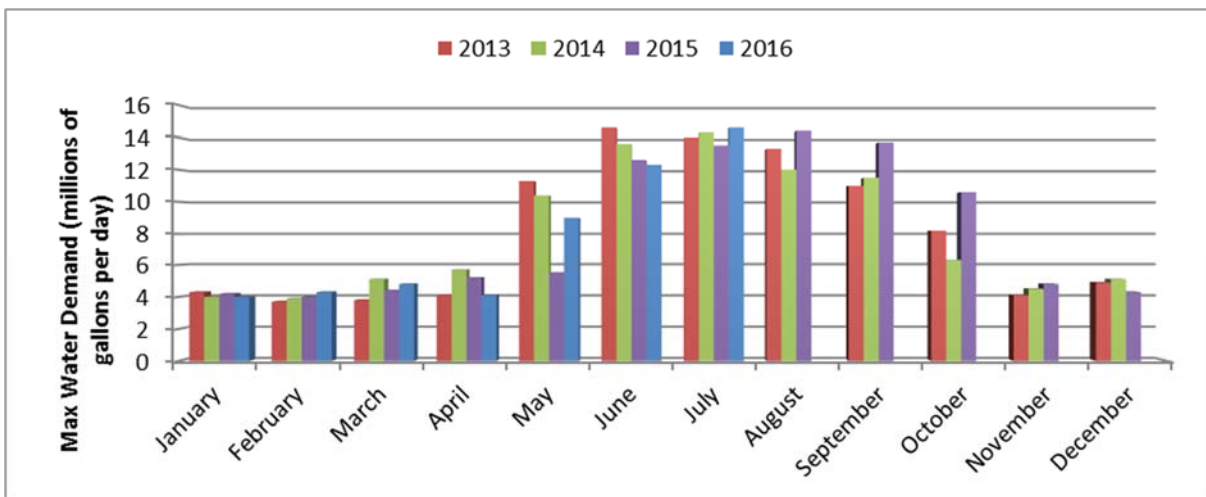
By: Heather Justus, Water Resources Program Analyst

The maximum daily water demands are plotted by month from 2013 to the current month. As observed by the data, the maximum demand for the month of July was 14.6 million gallons per day (MGD) which was about 3.4% more than the 5-year average maximum daily demand for the month. Summer time maximum demands inform us of the size of the infrastructure necessary to provide water service over short periods of time and help us to plan future water resources needs. The water demand total for July was 386.4 million gallons (MG), which was about a 32% increase from the June 2016 total of 293.3 MG, and an 18% increase from the July 2015 demand of 328.6 MG.

Water Supply Sources YTD



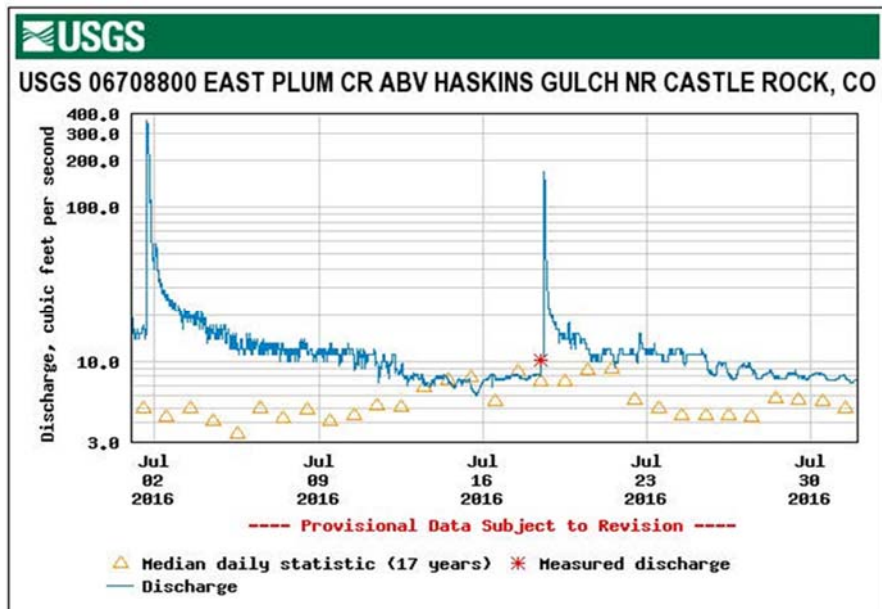
CR-1, a new surface water diversion located near Plum Creek Water Purification Facility (PCWPF), came online on June 30th and is an important step in transitioning to a 75% renewable water supply. In July, 3.8 MG of renewable water was diverted from East Plum Creek to PCWPF by CR-1. The Town's nine alluvial wells and CR-1 produced a total of 23.1 MG of renewable water during July, which represents 5.9% of the total water supply for the month and 8.7% (121 MG or 372 acre-feet) of the water supply year to date. The total renewable water produced since the opening of the PCWPF has surpassed 866 MG, which represents 10.9% of the Town's total water supply since the alluvial wells began pumping in May 2013. Currently, the Town's renewable water rights surpass the capacity of the alluvial wells. The alluvial well projects the Town is currently working on will help close this gap.



The flow hydrograph (next page) represents stream flows in East Plum Creek taken from the stream gauge located at Haskins Gulch. The hydrograph shows that flows in the East Plum Creek basin ranged between 5 to 300 cubic feet per second (cfs) during the month of July, with flows averaging around 10 cfs toward the end of the month. Precipitation events caused short lasting spikes in stream flow. Since June 27, the call on the main stem of the South Platte River was changed from free river to active calls. These calls on the South Platte River have a more senior water right than our Meadows Alluvial Wells located in our Central Well Field and the Castle Rock Surface Diversion #1. This means that those diversions are now out-of-priority, so the stream depletions will now be covered by nontributary return flows and/or more senior native water rights along East and West Plum Creek. This also means that the Town will now have slightly less reusable water going down Plum Creek. The priority date on a river call may change each day depending on the stream flow available and the seniority of the diversions that need water on that day. According to the U.S. Drought Monitor from USDA, we are no longer in drought conditions.

Continued on next page

2016 Water Demands, continued



Plan Review Update

By Mark Mantua, Plan Review Engineer

The applications reviewed consisted of:

- 19 1st Submittals
- 29 2nd Submittals
- 11 Special reviews
- 2 Completed one week early
- 3 Completed late
- 54 Completed on-time as scheduled

Castle Rock Water reviewed 59 applications this month which compares to 101 during the same time period in 2015. The average assigned due date by Development Services was 1.6 weeks, and we completed the reviews in 1.4 weeks, which included:

- 3 Agreements
- 15 Construction Drawings
- 3 Technical Criteria Variances
- 1 Use by Special Review
- 7 Field Change Orders
- 6 Grading, Erosion and Sediment Control (GESC) Plans
- 2 GESC Permit
- 1 Lot Line Adjustment
- 1 Planned Development Minor Amendments
- 9 Plats
- 2 Preliminary Project Applications
- 9 Site Development Plans

In addition to completing the above listed applications as scheduled, Castle Rock Water completed 49 building permit reviews and associated system development fees.

Welcome to our Team!



Mark Mantua
Plan Review Engineer

John Chrestensen Recipient of the RMSAWWA Water Distribution System Operator Award for 2016



Our own John Chrestensen, Utilities Field Services Superintendent, was selected by the Rocky Mountain Section of the American Water Works Association as recipient of the Water Distribution System Operator Award for 2016. John was selected from a pool of award nominations submitted by water utilities in Colorado, Wyoming and New Mexico, and is being recognized for his excellent qualifications and commitment to the industry. John has been employed in the Utilities Department since January 2005 and has demonstrated tremendous dedication to the Town and serving the citizens of Castle Rock as the Operator in Responsible Charge for the water distribution system. He has progressed from a Maintenance Worker I into a Superintendent role and has done an excellent job supporting Castle Rock Water's Vision and Mission. During John's tenure with the Town, he has helped advance the utility through his instrumental role in the Field Services Division.

John holds the highest level operator certification in water distribution. His notable accomplishments and contributions include:

- Creating and implementing numerous maintenance programs (valve & hydrant, tank cleaning, hydrant painting, flushing). Prior to this the Town had only a rudimentary and largely undocumented program. The implementation of these programs has enabled the Distribution team to hit the challenging goal of inspecting and performing maintenance on over 50% of the fire hydrants per year. They exercised and maintained 5,916 of 10,600 valves and 2,475 of 3,700 fire hydrants.
- Converting to secondary disinfection with chloramines, including creating a method to track migration of chloramines during the conversion with almost no water quality complaints.
- As part of a Utility wide initiative, John was a leader in implementing an Asset Management system and the data associated with appropriate tracking. He and his team were instrumental in providing information to help populate the data base.
- Excavating and restoring a century old wooden waterline. He and his crew safely excavated the antique pipe and then with the help of other Utility staff members restored it and prepared it for display. This was an important project as it relates to the history of water distribution systems and educating our citizens on how we have come a long way in protecting human health and delivering safe drinking water.
- Creating effective relationships with other Departments such as the Public Works Inspectors (who do the inspection of new water lines for the Utility) to ensure that water quality is preserved when new installations occur, saving us time and money.
- Ensuring a safe environment during emergency responses - over 50 line breaks/leak repairs since last safety incident on a repair.
- Implementing use of mobile technologies to improve effectiveness and efficiency of maintenance tasks. John has helped implement mobile computer and iPad connections with the Town Server, providing the technicians with immediate online access to GIS Mapping and the Town's Asset Management Program (Cartegraph).

Chrestensen, continued

- Training others, including the Castle Rock Fire Department, on proper use of fire hydrants. Additionally, John managed the Town's annual leak detection contracts and helped keep the Town's non-revenue water below 10%.
- Training and encouraging his team to help them obtain further certification.
- Presenting at Action Now seminars on topics such as tank cleaning and water hammer.
- Assisting the Fire Department in saving the life of private contractor when engulfed/buried by an improperly shored trench excavation.
- Reducing the amount of corrective maintenance and the amount of overtime.
- Increasing attention to safety and operating efficiencies.
- Operating the water system in such a way as to minimize water quality complaints, thus keeping our utility in the top quartile, according to AWWA Standards.
- John helped Castle Rock achieve zero deficiencies on our 2013 Sanitary Survey.
- John was part of the team that helped Castle Rock achieve a Gold Award in the Colorado Department of Health and Environment, "Pursuing Excellence Program."

JULY LEVELS OF SERVICE

Drinking Water Compliance

Castle Rock Water will deliver water that meets or exceeds both Primary Drinking Water Regulations and Secondary Maximum Contaminant Levels 100% of the time.

Seventy routine samples were completed. All samples were within the parameters set forth by the Federal Safe Drinking Water Act and Colorado Drinking Water Standards.

Pressure Adequacy

< 1% of our customers will experience less than 43 pounds per square inch (psi) of pressure at the meter during normal operations.

Pressure has been maintained at or above 43 psi throughout the distribution system.

Sewer System Effectiveness

<1% of our customers will experience a sewer backup caused by the utility's sewer system per year.

There were no system issues impacting customers in July.

Drinking Water Supply Outages

<5% of our customers will experience water outages for one or more events totaling more than 30 hours/year.

There were no water line breaks in July.

Stormwater Update

The stormwater team removed 6,300 gallons of sediment during maintenance on the South St. stormceptor.

Stormwater team making repairs to the Territorial Dr. ditch, including the addition of over 30 tons of rip rap.



Thank you to our summer seasonals!



Pictured left to right - Garrett West, Kayla Drost, Katherine Drake, Kelsey Schneiderwind, Lauren Paul, Alaric Rohl. Missing from photo - Cameron Thompson

We are pleased to welcome seasonal help over the summer months. This team assisted our distribution, storm-water and facilities divisions complete summer maintenance chores.

NEW CERTIFICATIONS

The water, wastewater and stormwater utility business is highly technical and regulated. As such, Castle Rock Water has to maintain an extensive staff of professionally licensed individuals. Most of these licenses require specialized education and the passing of state testing, as well as proof of continuing education. Below is a list of those passing various certifications this month:



Cory Williamson
Water D Operator

Rock Star Award



Our own Chris Damrow, SCADA Supervisor received the Rock Star Award.

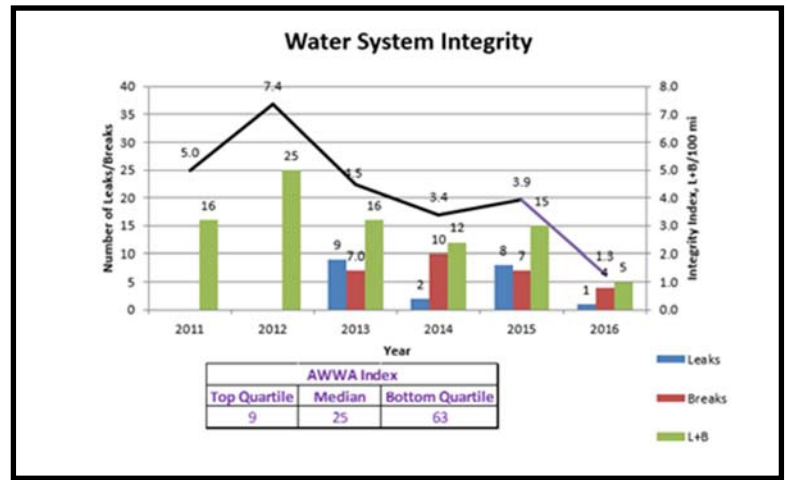
The Rock Star Award is a “pass-around award” designed to be an employee-to-employee award. The award is based on observed behavior that exemplifies the Town’s values.

Water System Integrity

As the Water System Integrity chart indicates, our occurrence rate has generally decreased over the last four years. We have been in the top quartile, the top 25%, for water system integrity based on American Water Works Association benchmarking since 2011. There were no water system integrity issues in July.



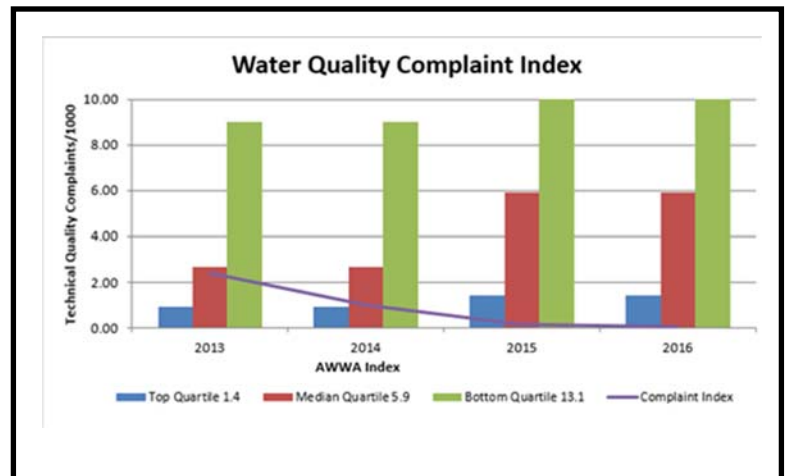
Our team maintains 390 miles of pipe, enough to run from Castle Rock to Kearney, Nebraska.



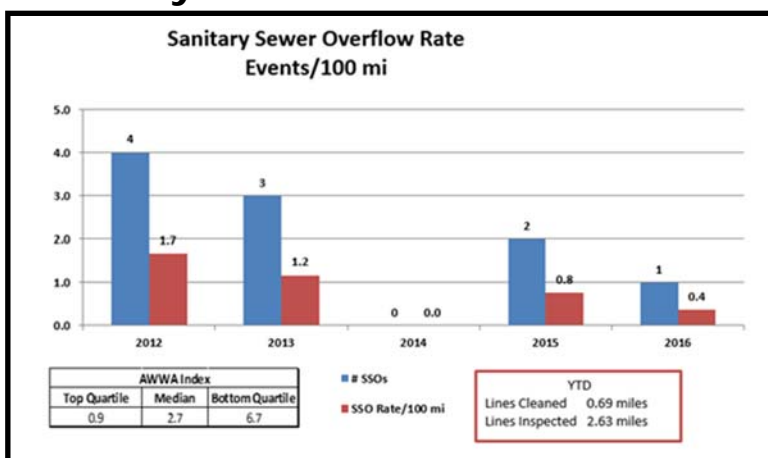
Water Quality Complaints

The Water Quality Complaint index shows that we are doing very well in this category; rating in the Top Quartile in 2015 according to the American Water Works Association. We did not have any Water Quality Complaints in July.

For more information, view the current water quality report at CRgov.com/waterquality.



Sanitary Sewer Overflows



How do we avoid overflows?

Our team runs a camera through the sewer mains to look for problems. When problems are identified they are cleared with a high pressure water jet.

We are also tracking in the Top Quartile in the Sanitary Sewer Overflow Rate since 2014, according to the American Water Works Association, showing two incidents for the year.

Customer Statistics

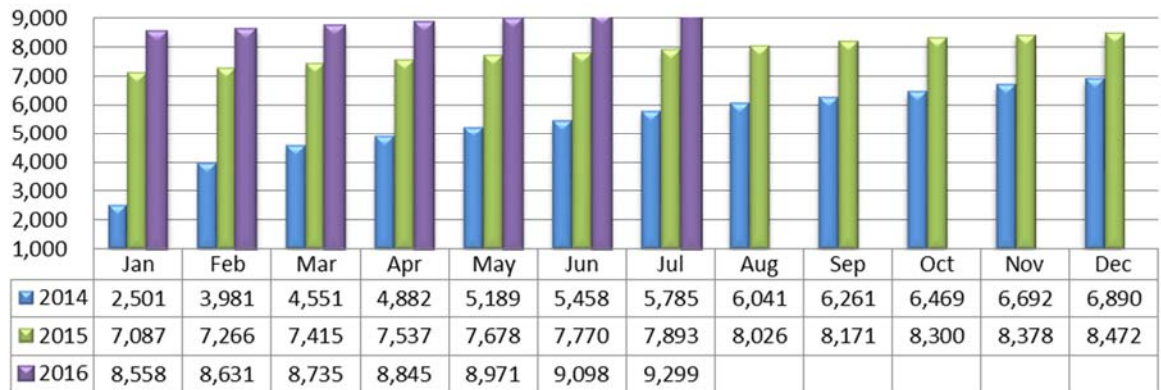
By: Anne Glassman, Business Solutions Manager

Our Business Solutions Team continues to track a host of statistics and data as we continue to evaluate our levels of service and look for efficient ways to improve on these levels.

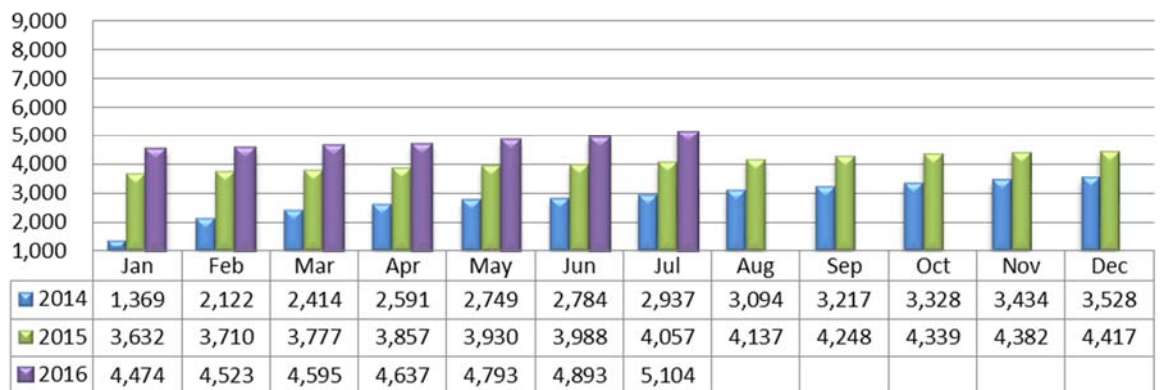
Customer enrollments have continued to increase from launching the H₂O Access Online Billing Solution in January 2014. The number of customers enrolled choosing paperless billing has increased slightly to 55%, with 48% of all customers we serve enrolled with an on-line account. To encourage further paperless adoption, all customers who had or were signed up for paperless billing by July 31 were entered into a drawing with a chance to win a \$50 credit on their water bill. As of July 31, there were 5,104 paperless customers who were entered into the drawing .

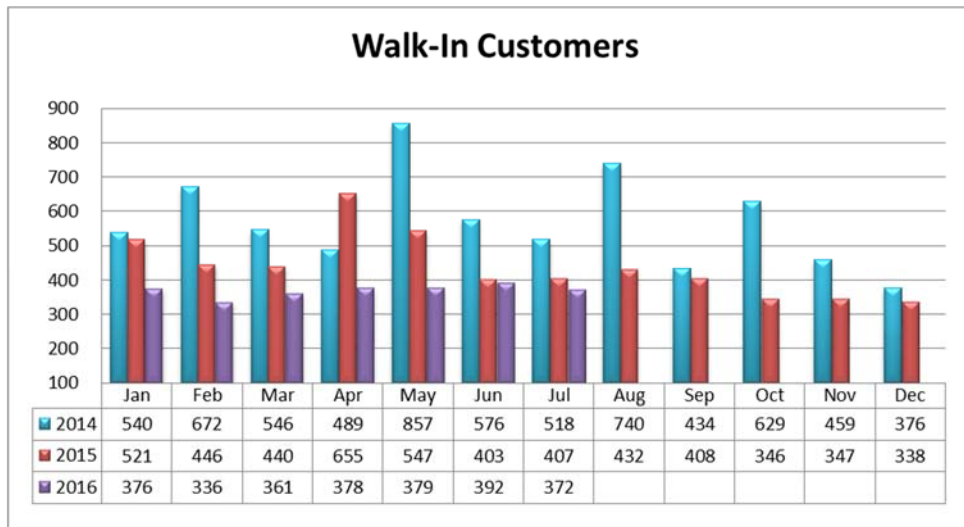


H₂O Access Online Billing Solution Customer Enrollments

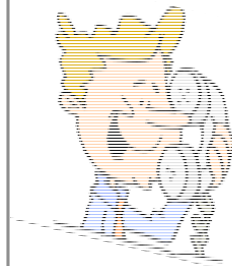
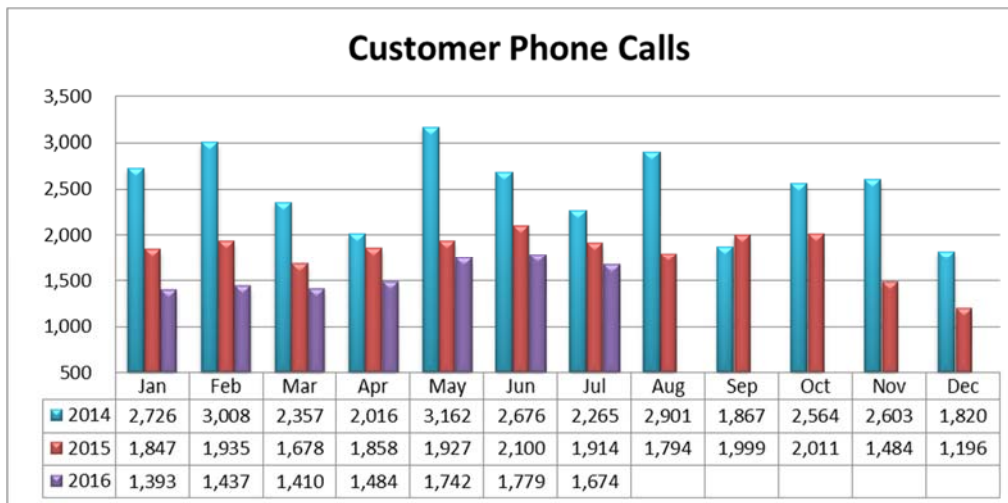


H₂O Access Online Billing Solution Paperless Adoption

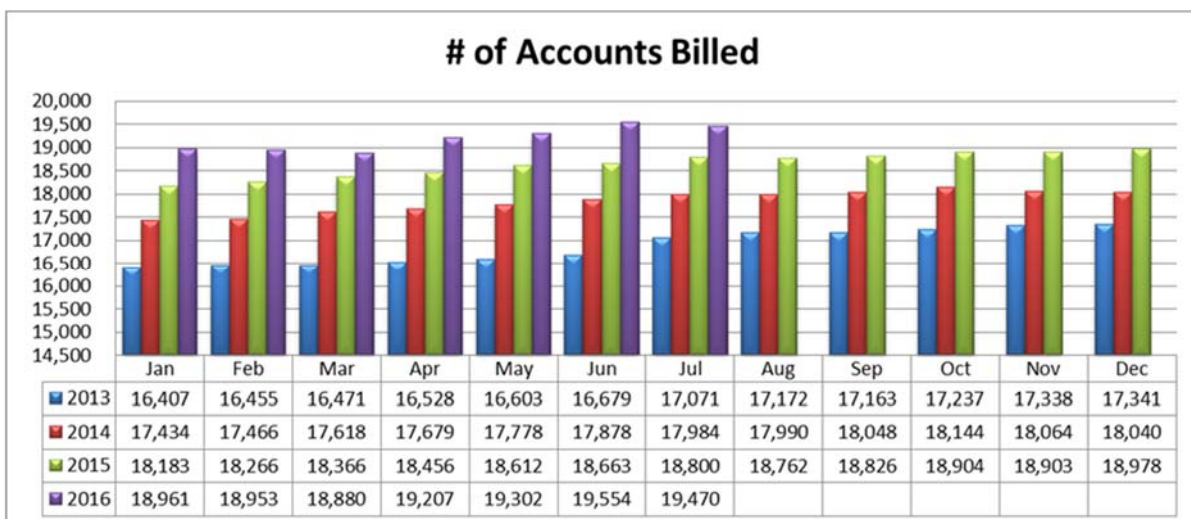




The number of walk-in customers has been consistent over the past few months.



The number of customer phone calls are consistent with last month.



The number of accounts billed compared to June last year is up due to new residential and commercial growth.

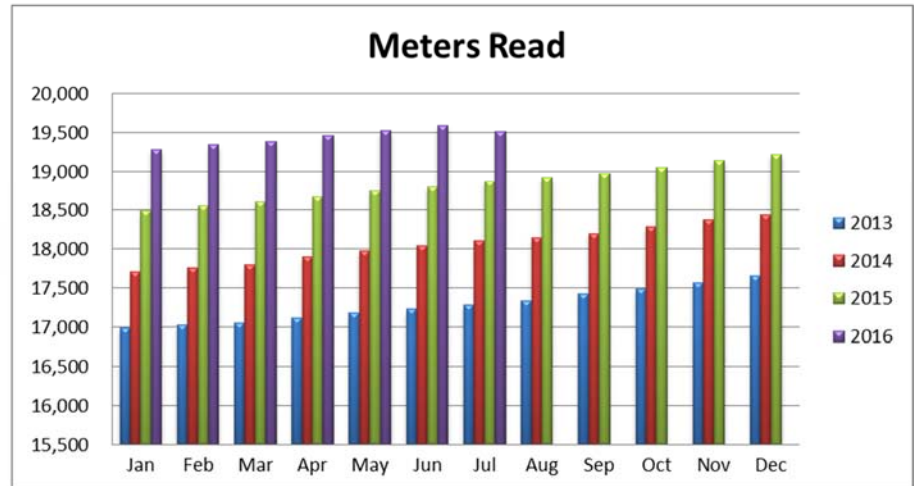


METERS

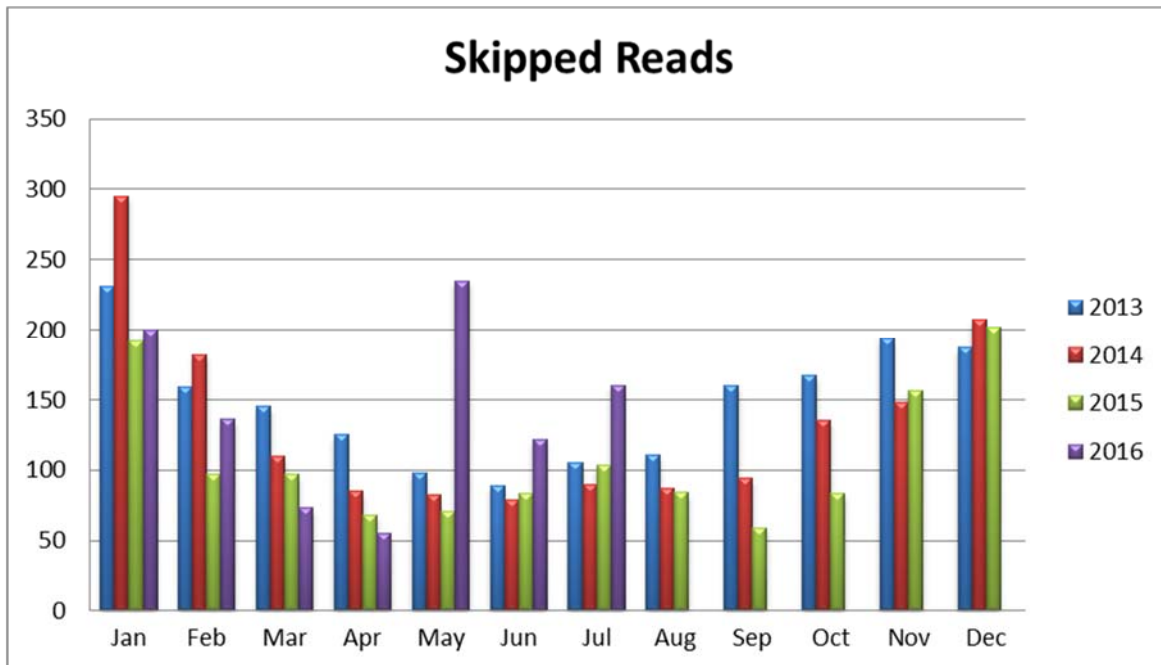
Meter Sets

Month-to-Date 66

Year-to-date 443



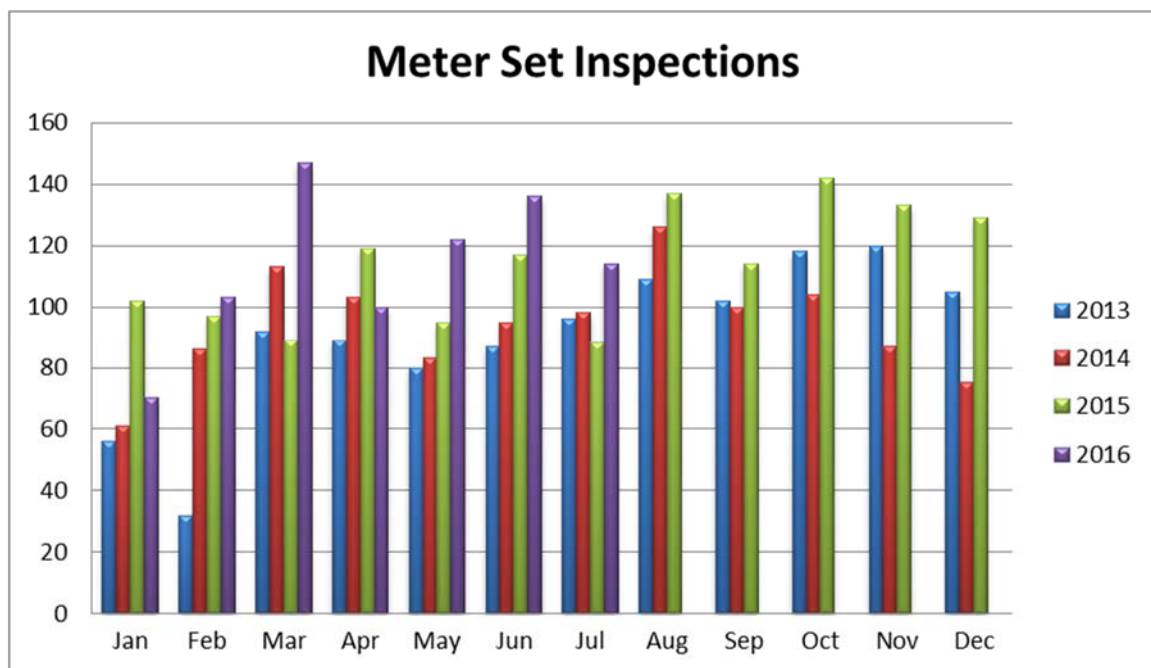
The meters read continues to increase month-to-month due to new residential and commercial accounts, with an increase year over year.



The American Water Works Association (AWWA) standard is 2 percent, so at 0.82 percent, we continue to stay below the industry average. This is a result of continued maintenance and repair efforts on meter infrastructure. Skipped reads were high in May - July due to a software issue, which is in the process of being tested and resolved.

WHY IS THIS IMPORTANT?

It is a strong indication of the level of preventative maintenance being done by our team. A skipped read is indicative of a problem with the meter. Less skipped reads means more properly working meters, which is good for all our customers.



Meter set inspections are up due to new commercial and residential growth.