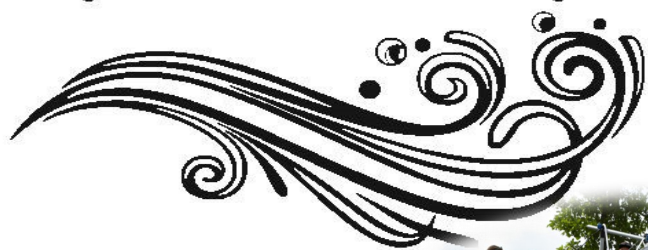


JUNE 2018



# We got WISE



On June 8, 2018, the Castle Rock Town Council and Board members from Parker Water & Sanitation District celebrated bringing WISE water to each of their communities. This major milestone helps secure water for our future. Fun activities were planned for the entire family.

## OUR VISION

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

# Castle Rock Water Improvements Project

The Castle Rock Water Improvements Project combined improvements at four Castle Rock Water facilities into a single project. The project included the replacement of two pressure reducing valve (PRV) vaults, two failed butterfly valves at the Meadows Water Treatment Plant, and the Maher Force Main discharge manhole. The projects were combined to create a more desirable project for contractors to bid on and to gain economies of scale usually found on larger projects.

This project included the replacement of two existing PRV vaults: the Canyon PRV located near the intersection of Canyon Drive and Oakwood Drive and the Baldwin PRV located near the intersection of Baldwin Park Road and S. Valley Drive. Both PRV vaults were originally constructed in the late 1980's.



*New Canyons PRV*



*Meadows WTP*

The new vaults were constructed with adequate space to work in and with solid concrete floors.

Another aspect of the overall project was the replacement of two 18-inch direct bury butterfly valves on the Meadows Water Treatment Plant (MWTP) discharge mains. The MWTP was constructed in 1987 and one of the 18-inch butterfly valves had failed and needed to be replaced. The two valves were not accessible without excavation because they were buried. The scope for this work included the installation of a new vault over these valves to provide access for future maintenance of these valves without excavation.

The fourth item included in the overall project scope was the replacement of the discharge manhole for the Maher Force Main, which was constructed in 2002 to serve the Sapphire Pointe subdivision. Hydrogen sulfide is formed in anaerobic environments, such as wastewater force mains. This gas is

corrosive to concrete manholes. The existing discharge manhole needed to be

replaced due to this damage. The new manhole is epoxy lined to minimize future damage from hydrogen sulfide gases. The manhole was replaced at night to minimize the requirement for bypass pumping of wastewater flows from the Maher Ranch Lift Station.

The total project cost was \$302,986 to design and construct these projects. Garney Construction constructed the project. The project was completed on-schedule and within the Town's budget.



*Maher manhole replacement at night*

## Six-Inch Backflow Replacement in The Meadows

Meter Services/Cross Connection along with help from Operations replaced the 6-inch irrigation backflow preventer at Meadows Blvd and Dragonfly Court. This backflow device had a failed number one check valve and was not passing the backflow certification test. Prior to replacing the device, an attempt to repair it was made; however it was deemed irreparable due to the age and the amount of corrosion found inside the number one check valve.

This device has been replaced to ensure our level of service is met in providing irrigation water to our homeowner association (HOA) customers in The Meadows neighborhood. Two additional 6-inch backflow preventers with similar issues will be replaced in the near future.

Great work and huge thanks to all of those involved!



**BEFORE**



**AFTER**

## 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:*



**Troy Martin**  
CDL

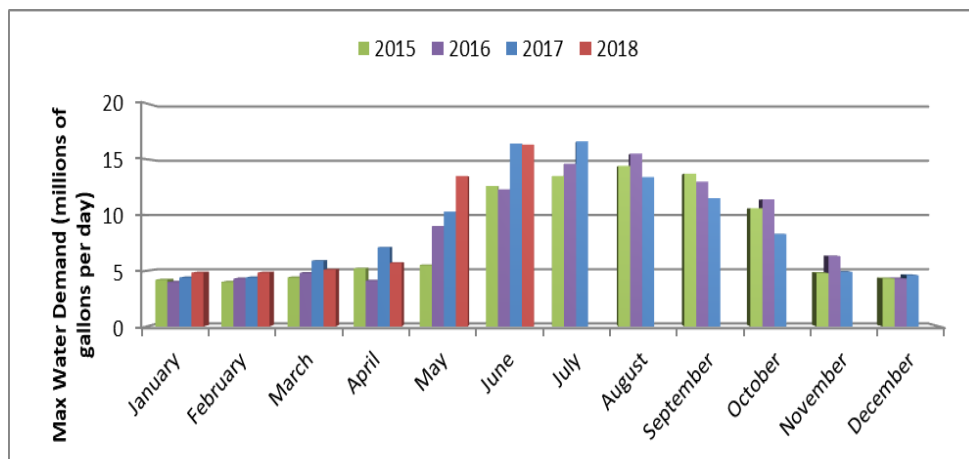


**Kristen Reaves**  
OCPO Distribution 2

## 2018 Water Demands

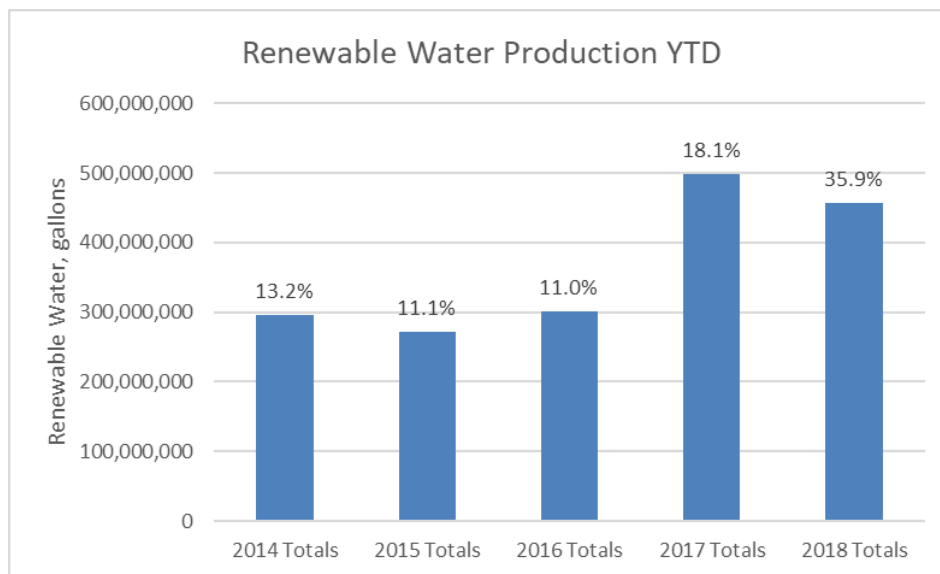
By: Lauren Tyner, Water Resources Program Analyst

The maximum daily water demands are plotted by month from 2015 to the current month. As observed by the data, the maximum demand for the month of June was 16.3 million gallons per day (MGD) which was 14% greater 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 June was 422.9 million gallons (MG), which was about a 48% increase from the May 2018 total of 285.7 MG, and a 0.5% increase from the June 2017 demand of 420.7 MG.



The CR-1 diversion produced an average of 0.56 MGD for the month of June, supplemented by 47 AF (minus stream losses) from our Bell Mountain – Denver Well during the second half of June. The Town's thirteen alluvial wells and CR-1 produced a total of 36.5 MG of renewable water and WISE deliveries totaled 53.5 MG during June, which represents 20.8% of the total water supply for the month (432 MG or 1,326 acre-feet) and 35.9% of the annual water supply (1,274 MG or 3,908 acre-feet).

Renewable supplies are those water sources that are replenished by precipitation (think of our alluvial wells, or CR-1 or WISE) whereas reusable supplies are those waters that are either from the Denver Basin (deep wells) or imported supplies (such as WISE) that can be used over and over, to extinction. The average reusable supplies used by Castle Rock for 2018 through June is 51.4% with 11.7% of available reusable supplies being used in the month of June.



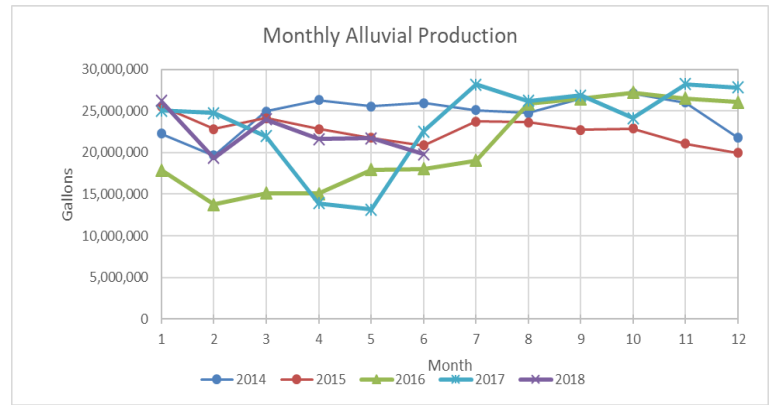
*\*2018 renewable production will vary as demand increases and additional sources*

*The percentage shown on top of the bars is the amount of renewable water relative to total water production.*

*Continued on next page*

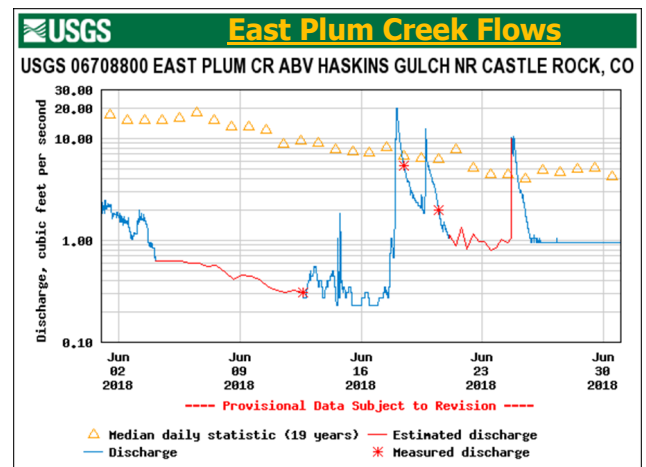
## Water Demands, continued

The Aquifer Storage and Recovery (ASR) Pilot Study started in November 2016 and we are currently on cycle 5 of the study. During the month of June, recovery of the 7.3 MG recharged was completed. During 80% recovery of the recharged water, water quality samples were taken and submitted to Colorado Analytical Laboratory. The ASR program helps us to store renewable water during the off peak season without evaporative losses while also helping to maintain the Denver Basin aquifers.



The following graph shows the monthly production of the Town's alluvial well system. The production from the alluvial wells in June 2018 was 20 MG, which is less than the second half of 2017. Lower production combined with rising water levels indicates that the wells are due for a cleaning. Well rehabilitation is scheduled for this fall.

The flow hydrograph represents stream flows in East Plum Creek taken from the stream gauge located above Haskins Gulch. The hydrograph shows that flows in the East Plum Creek basin ranged between 0.23 and 19.6 cubic feet per second (cfs) during the month of June. We had three precipitation events throughout the month, with flows averaging between 1 – 2 cfs. This June, the average streamflow in East Plum Creek (EPC) was 1.6 cfs which is approximately 12.8% of the median daily streamflow of 12.5 cfs. As a comparison, in June 2017 the average streamflow in EPC was 9.7 cfs, which is 77.6% of the median daily streamflow. Low streamflows in EPC correspond to a decrease in the amount of water that we can divert at CR-1, negatively impacting this surface water supply. We were, however, able to supplement East Plum Creek with close to 47 AF of water (minus stream losses) from our Bell Mountain – Denver Well upstream of CR-1.



There were active calls on the South Platte River in June. Some of the active calls have had a more senior water right than some of the Town's water rights. This means that those diversions are out-of-priority, so the stream depletions will be covered by non-tributary return flows. This also means that the Town will have slightly less reusable water going down Plum Creek during an active call. 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, the northern half of Douglas County is abnormally dry, while the southern half is considered to be in a moderate drought. In April 2018, Town Council approved a Town of Castle Rock Drought Management Plan. This plan uses a Water Supply Index (WSI) for the Town that is similar to the U.S. Drought Monitor in that it provides us an indicator to drought level; however, the WSI accounts for local conditions relative to the Town's capability to address our water resources and daily water demands. The WSI is calculated by taking the sum of our supply (deep groundwater, alluvial wells, surface water, and WISE) and dividing that by our maximum daily demand. We generally want to see a WSI above 1.1, which means that we have enough resources to meet our demands. Anything below a 1.1 will trigger a drought stage relative to its severity. The average WSI for June was 1.3, above the 1.1 trigger level, which is good.



# Plan Review Update

*By Tina Close, Plan Review Engineer*

Castle Rock Water reviewed 94 applications (see below) this month which compares to 74 during the same time period in 2017. The average assigned due date by Development Services was ten days, and Castle Rock Water completed the reviews in an average of nine days.

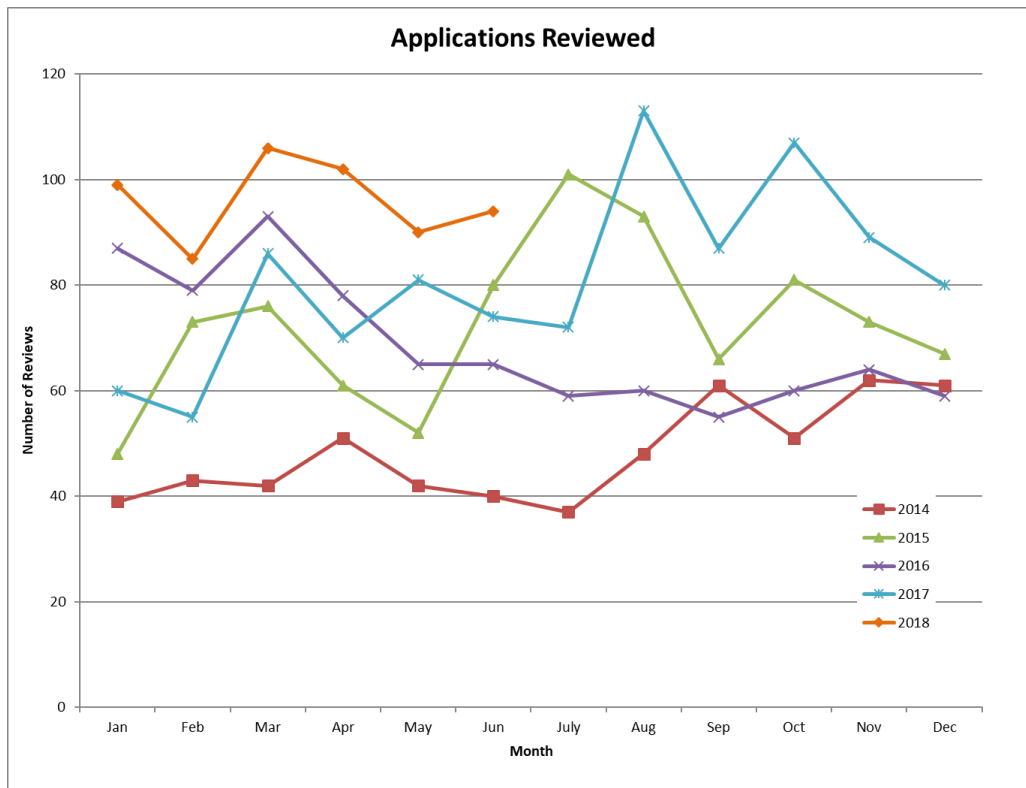
- 6 Agreements
- 17 Field Change Orders
- 15 Grading, Erosion, and Sediment Control (GESC) Plans
- 1 Use by Special Review
- 1 County Referrals
- 2 Planned Development Plans
- 5 Plats
- 1 Preliminary Project Application
- 22 Construction Drawings
- 9 Technical Criteria Variances

The applications reviewed consisted of:

- 47 1<sup>st</sup> submittals
- 30 2<sup>nd</sup> submittals
- 10 3<sup>rd</sup> submittals
- 7 Special reviews
- 14 Completed late
- 80 Completed on-time as scheduled

In addition, Castle Rock Water completed 40 building permit reviews and associated system development fees.

Castle Rock Water provides plan review for all water, wastewater and stormwater projects submitted through the development review process. The line graph (below) shows development activity data (by month and year) since 2014.



# Operations and Maintenance



## STORMWATER UPDATE

*Our team of four “storm troopers” maintains over 138 miles of pipe and drainageways, 110 detention ponds and 4,439 inlets as well as completes special projects designed to improve water quality.*



*The old Front Street stormwater channel was improved to allow for proper drainage.*



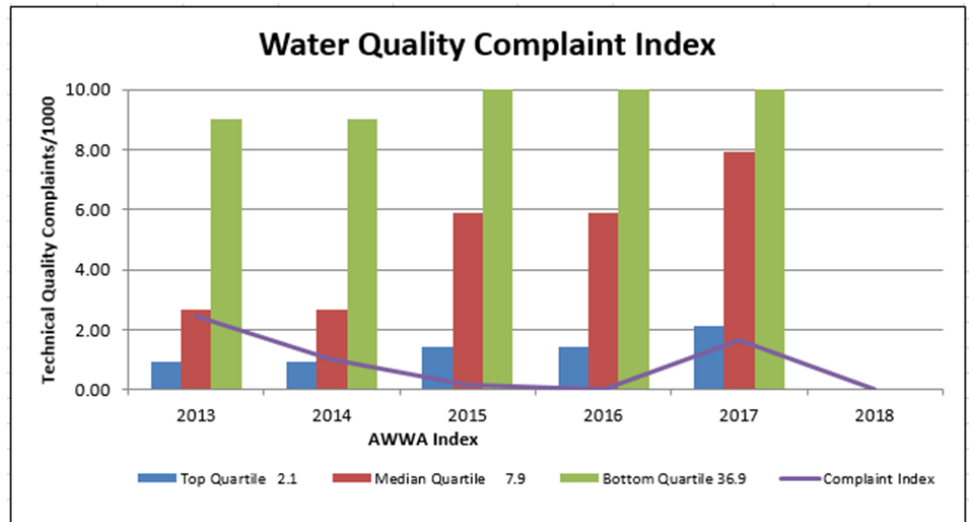
*The Stormwater Team removed the sediment from the Rocky Mountain Pond channel.*



*Asphalt millings were added to the A13 Well House, enabling safe access in any weather.*

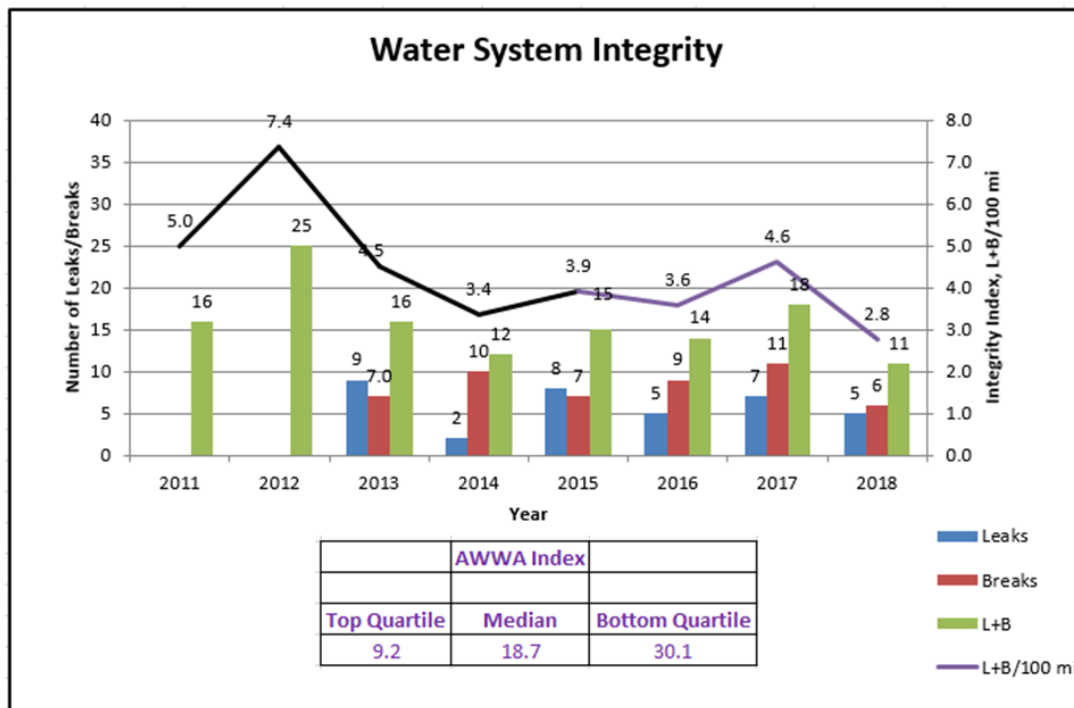
## Water Quality Complaints

The Water Quality Complaint index shows that we are doing very well in this category; rating in the top quartile since 2015 according to the American Water Works Association. There were no water quality complaints in June 2018.



For more information, view the current water quality report at [CRgov.com/waterqualityreport](http://CRgov.com/waterqualityreport).

## Water System Integrity



As the Water System Integrity chart indicates we have consistently remained in the top quartile of 25 percent for water system integrity based on American Water Works Association benchmarking since 2011. There were two water system integrity issues in June.

## Operations Projects

The roof at the Miller Water Treatment Plant was renovated, six skylights were removed and the shake shingles were replaced with durable asphalt shingles.



The Water Treatment team repaired and operated the newly acquired Denver well at the Bell Mountain Wellfield. This well water is pumped into East Plum Creek and is recovered by CR-1 for treatment at the Plum Creek Water Purification Facility.



Before you start a project, call 811. Whether you are planning to do it yourself, or hiring a professional, we'll help you do it safely. The local 811 Call Center will contact Castle Rock Water. We will schedule a time to come out to locate public water and wastewater lines in the road and in your project area.

The graphs below show our monthly utility locates and a chart showing the year-to-year comparison

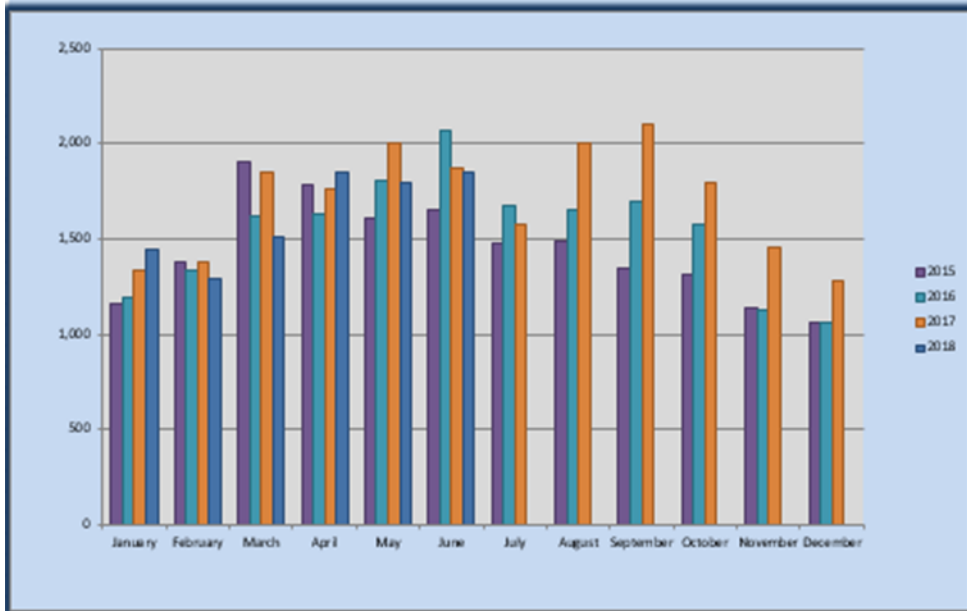
## ANNUAL UTILITY LOCATES

	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
January	577	475	617	1,190	1,289	1,162	1,199	1,334	1,442			
February	521	485	538	1,094	1,093	1,383	1,334	1,378	1,293			
March	660	552	818	1,437	1,349	1,906	1,625	1,851	1,514			
April	838	681	1,025	1,482	1,552	1,784	1,631	1,760	1,856			
May	853	863	985	1,541	1,531	1,609	1,809	2,002	1,801			
June	969	844	982	1,314	1,399	1,654	2,075	1,872	1,854			
July	680	582	859	1,350	1,392	1,477	1,675	1,582				
August	901	723	1,123	1,476	1,468	1,494	1,651	2,001				
September	880	723	1,029	1,240	1,373	1,343	1,701	2,102				
October	715	688	1,155	1,501	1,376	1,314	1,579	1,792				
November	536	518	1,041	1,072	866	1,134	1,131	1,460				
December	415	405	925	1,005	1,043	1,063	1,059	1,277				
<b>Totals</b>	<b>8,545</b>	<b>7,539</b>	<b>11,097</b>	<b>15,702</b>	<b>15,731</b>	<b>17,323</b>	<b>18,469</b>	<b>20,411</b>	<b>9,760</b>			



Know what's below.  
Call before you dig.

## 3 Year Locate Trend



# JUNE 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 Safe Drinking Water Act and Colorado Drinking Water Standards. Our annual Consumer Confidence Report is available to view at [CRgov.com/waterquality](http://CRgov.com/waterquality).*

## Pressure Adequacy

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

*There were 17 internal water pressure customer issues in June.*

## Sewer System Effectiveness

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

*There were no issues in June.*

## Drinking Water Supply Outages

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

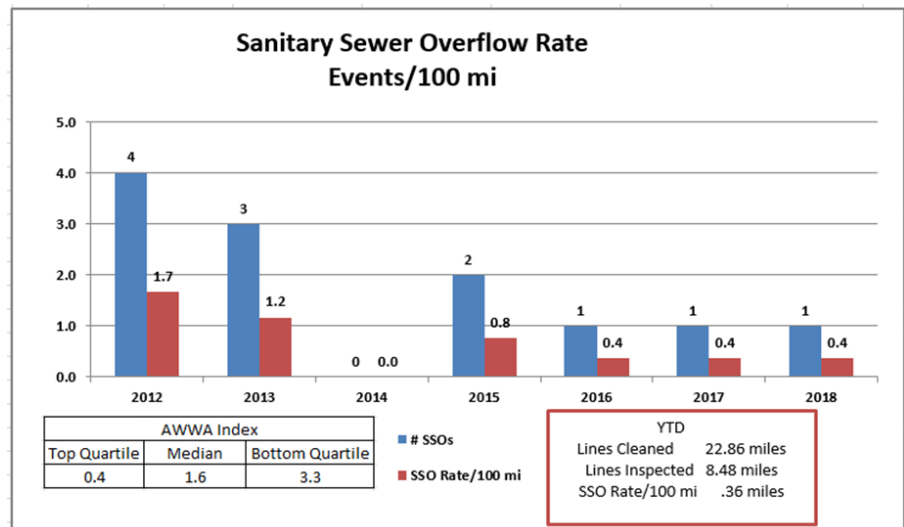
*There was a service line repair in The Meadows which consisted of a pinhole leak behind the curb stop and another hole halfway between the corp and curb stop. One house was out of water for less than four hours during the repair.*

*There was a main break on an eight-inch ductile iron pipe (DIP) which consisted of a golf ball sized hole in the pipe. The repair took approximately four hours, but no houses were without water during this repair.*

## Sanitary Sewer Overflows

We are tracking in the Top Quartile in the Sanitary Sewer Overflow Rate since 2014, according to the American Water Works Association, showing one incident for the year. There were no sanitary sewer issues in June.

### ***How do we avoid overflows?***



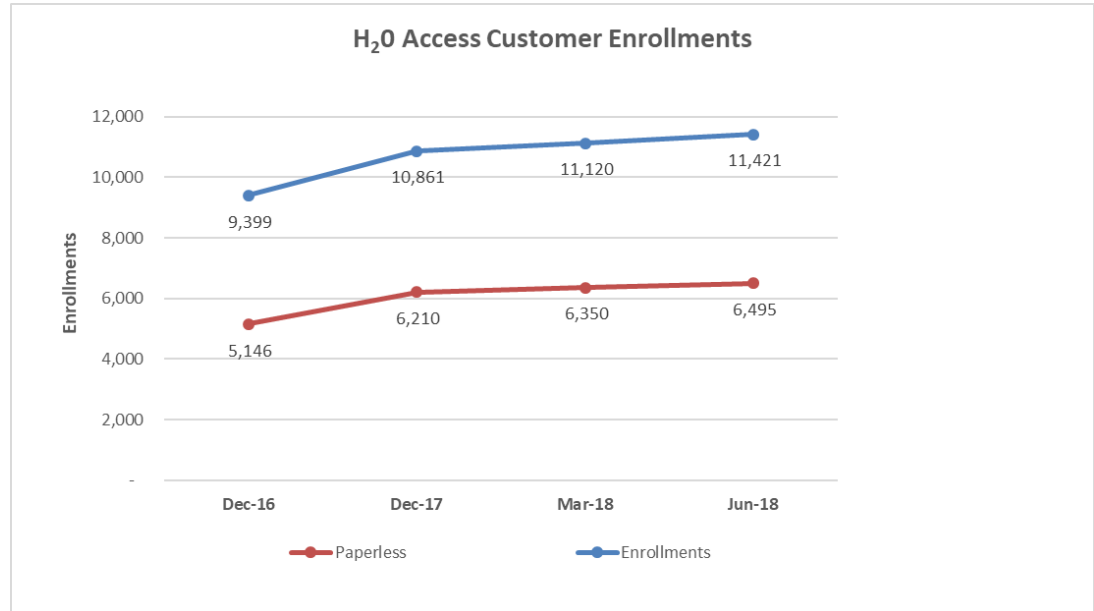
Our team runs a camera through the sewer mains to look for problems. When problems are identified, they are cleared with a high pressure water jet. So far, we have cleaned and inspected 22.86 and 8.48 miles, respectively.

The goal this year is to clean and video approximately 33 percent of the collection system or about 90 miles.

## Customer Statistics

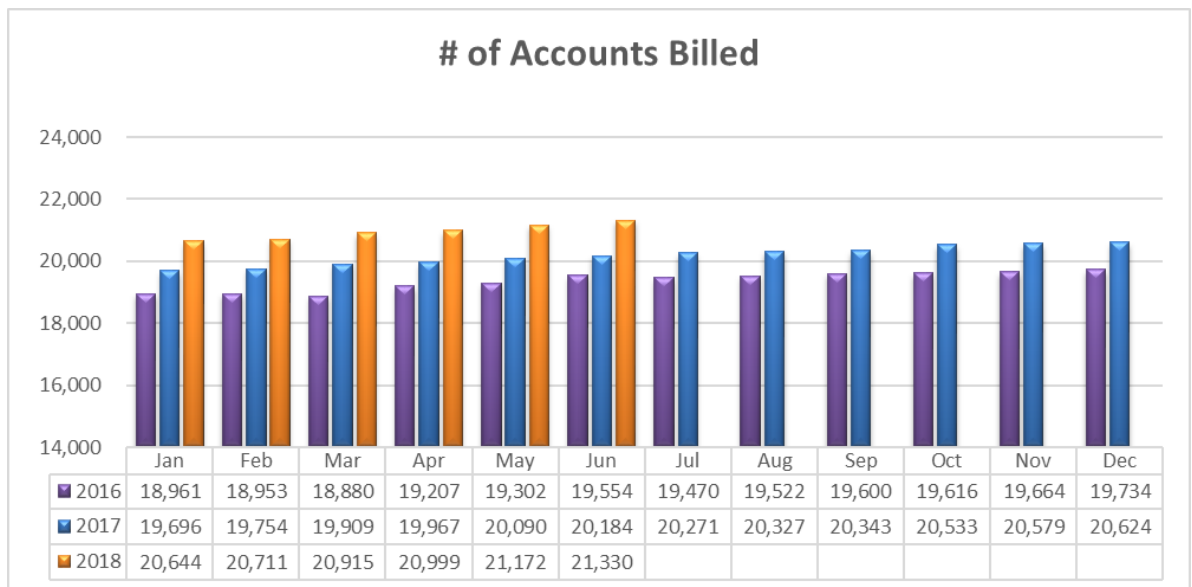
By: Anne Glassman, Business Solutions Manager

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.



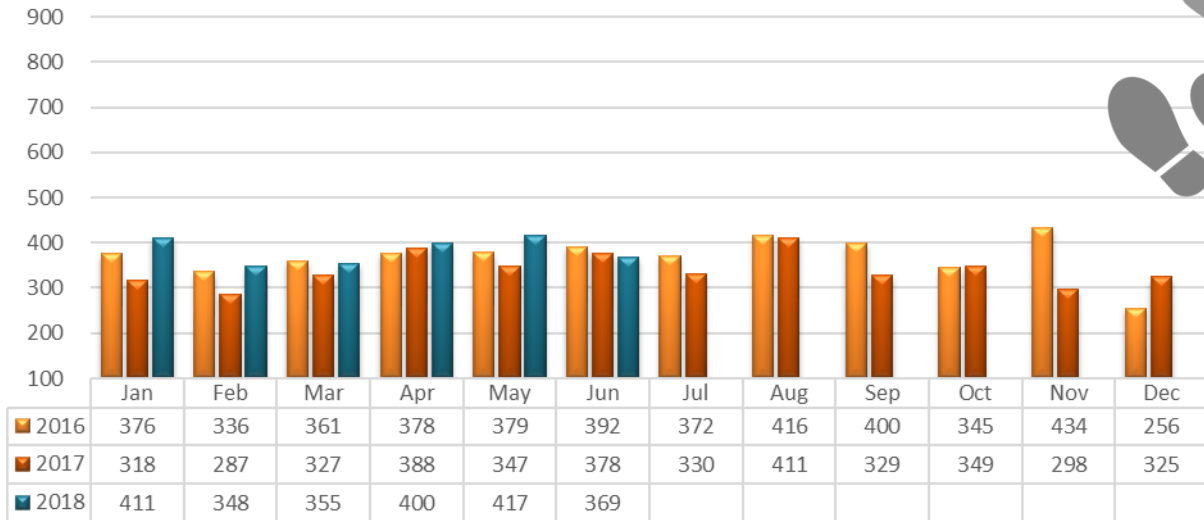
Updated quarterly - Data reported quarter ending 6/2018

The number of customers enrolled in paperless billing has remained steady at 57 percent over the last several months.



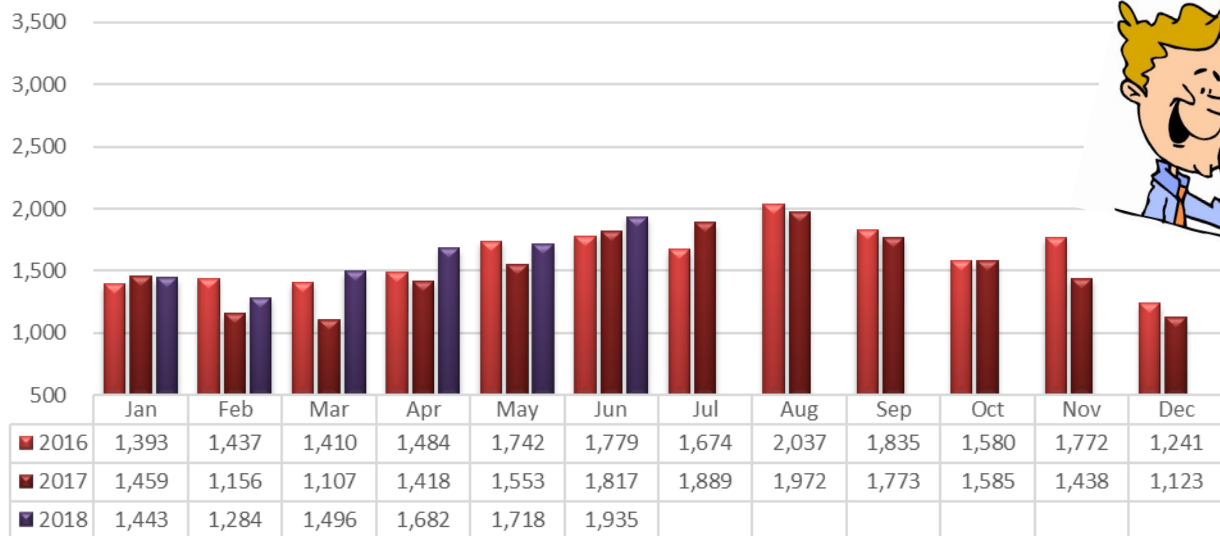
The number of accounts billed continues to increase year over year due to new residential and commercial growth.

## Walk-In Customers



Walk-in customers are higher this time of year due to the start-up of irrigation season, specifically the water schedule, water wiser workshops, and overall general water conservation questions.

## Customer Phone Calls



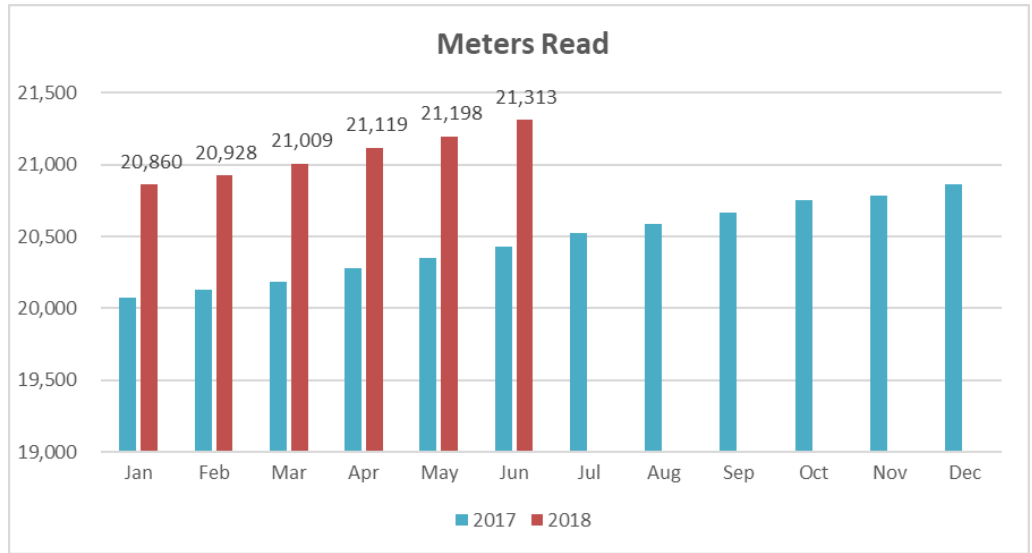
Customer phone calls are higher this time of year due to the start-up of irrigation season, specifically the water schedule, water wiser workshops, and overall general water conservation questions.

# METERS



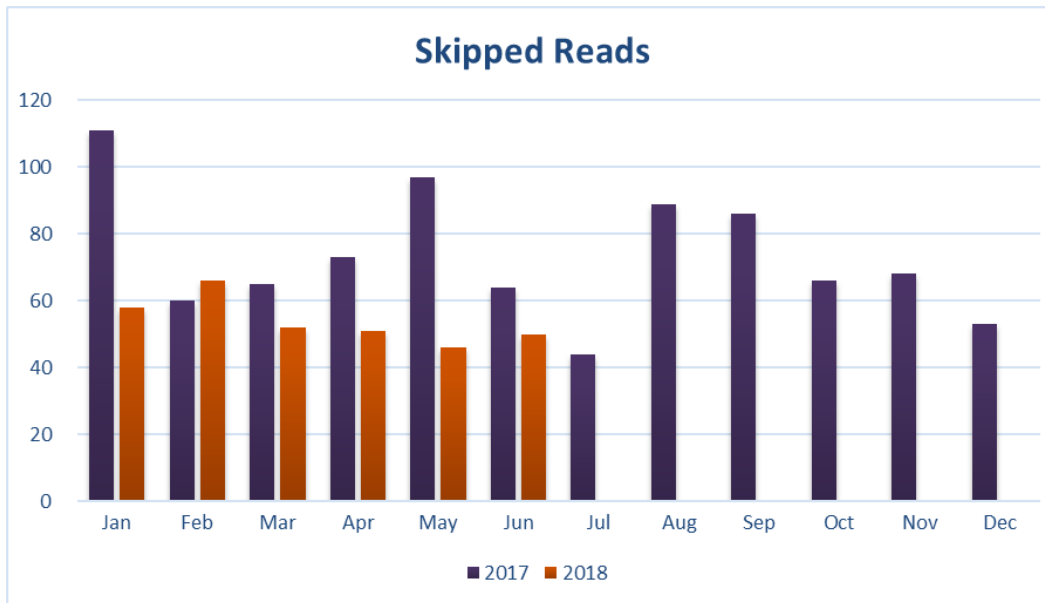
## Meter Sets

Month-to-Date 100  
Year-to-date 538



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

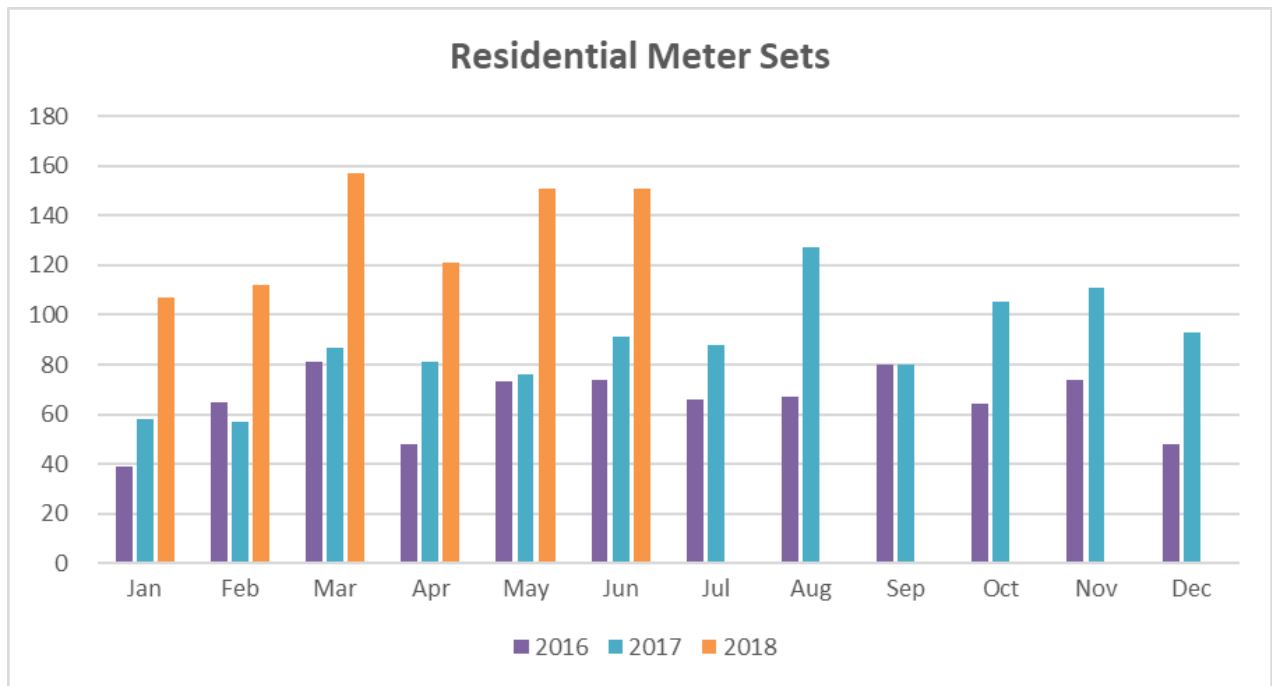
## Skipped Reads



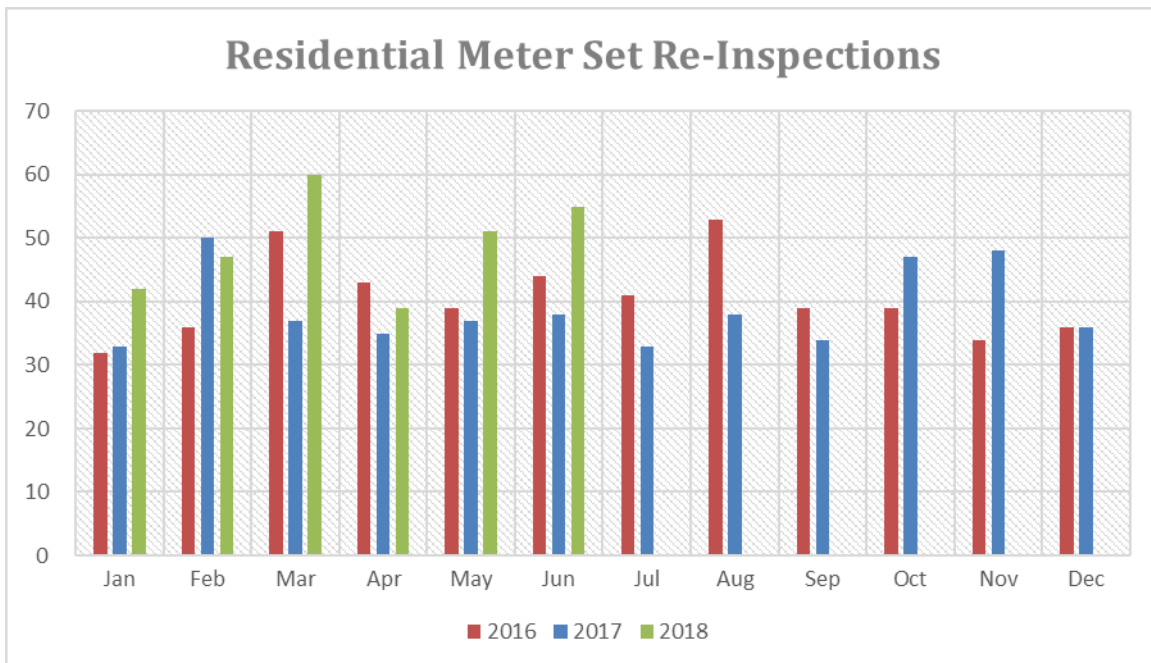
The American Water Works Association (AWWA) standard for skipped reads is 2 percent, so at 0.23 percent in June we still continue to stay well below the industry average. This is a result of continued maintenance and repair efforts on meter infrastructure.

## 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 metering infrastructure (i.e. battery, wiring, etc.). Fewer skipped reads means more properly working meters, which is good for all our customers.



Residential meter sets continue to remain higher than last year due to new commercial and residential development.



Residential meter set re-inspections in June are consistent with that seen in May.