

Meadows Water Treatment Plant Valves and Actuators Replacement Program

By: Jeanne Stevens, Engineering Manager

In 2016, Operations staff identified the need to replace 26 automated valves at the nearly 30 years-old Meadows Water Treatment Plant. The valves controlled everything from raw water flowing into the plant, to water between process units and backwash water to clean filter media. The valves, and electric actuators that control them, were installed when the plant was originally constructed in 1987. The plant was subsequently expanded in 2003 to its current capacity, with chloramine disinfection capabilities added in 2013. The valves and actuators had effectively reached the end of their useful life, with parts increasingly difficult to procure, and modern data communications more difficult to integrate with the actuators.

Staff identified appropriate replacement valves and actuators, which were procured in late 2016 at a cost of \$140,031 from Pipestone Equipment. Due to a long lead time of almost 3 months for the valves, installation would be deferred to early 2017. Staff issued a request for proposals to local general contractors to do the physical installation of the valves and actuators. Moltz construction was the successful low bidder at \$52,800 and was awarded the construction contract in late 2016, with construction deferred until the valves would be available in March 2017.



Newly installed valve and actuator on the air blower surge pipe

Due to low demand during the winter, the Meadows Water Treatment Plant is usually shut down for maintenance and other work, and then brought back on-line in time to meet irrigation demands in late spring.

Moltz began installing the valves and actuators in early April. Subcontractor Sun Valley Electric completed electrical work. Castle Rock Water SCADA technicians, working with Sun Valley and Pipestone Equipment, did the communications integration with the existing plant logic and control system.

Moltz completed all work by the first week in May, and the plant was back on-line for demand season soon thereafter.

<u>OUR VISION</u> We will be a national leader among water utilities focused on customer satisfaction and delivering outstanding quality and value.

East Plum Creek Stream and South Well Field Improvements

By: Barbara Horton, Project Manager

The primary objectives of this project are to protect existing utilities and Town infrastructure along East Plum Creek (EPC) and provide stream stabilization improvements consistent with the Stormwater Master Plan. Improvements include stream and bank stabilization adjacent to the Town's water supply wells.

The proposed stream improvements are needed to address a severely eroded stream bank immediately adjacent to the well field. The wells are a critical component of the Town's renewable water supply system needed to keep up with the projected water demands.

53 Corporation, LLC was awarded the construction contract which began in March and is anticipated to be complete in July. The total construction cost for the Project is approximately \$1.2M. This is a multi-disciplined project utilizing Water, Stormwater and Water Resources funds to cover engineering and construction costs.

Steel sheet pile cutoff walls were installed across the stream and sculpted concrete drop structures were constructed to mimic exposed sedimentary rock. This provides an attractive feature in the live stream while guiding and controlling stream flow in EPC.



14th Annual Spring Up the Creek

By: Kim Guite, Stormwater Specialist



Another successful Spring Up the Creek event was held this year. This popular community event preserves our waterways by removing trash that collects along the stream banks. The theme for this year's event, held on Saturday, May 6, was "Scoop Up the Poop!", and was featured on over 200 t-shirts that were distributed to participants. We were pleased to see a turnout of **174 volunteers**.

In only two hours, **98 bags** of trash and various pieces of debris, including a tire, a kiddie pool, a car bumper, large signs and a bunch of chicken wire were removed from East Plum Creek and its tributaries. Volunteers gathered at Douglas County High School due to Festival Park being under construction. Participants walked or were shuttled to seven locations throughout town where they enjoyed exercise on the trails while collecting trash along the banks of the stream.

Before the event, volunteers were treated to breakfast burritos from the B&B Café, water from Allstate and coffee from Briccy's Coffee. The children enjoyed a poop toss game based on the beanbag toss game (see photo below), coloring, and exercises by Courtney from the Rec Center.

The Town of Castle Rock hosted this event in partnership with Douglas County, Castle Pines Metro District, Chatfield Watershed Authority, and Plum Creek Water Reclamation Authority. A special thanks to our event sponsors including Burns & McDonnell, Butler Snow LLP, Crystal Valley Ranch Development Company, Enginuity, Harris Kocher Smith, JRS Engineering, Dana Kepner Company, RESPEC, and W. W. Wheeler & Associates, Inc. Total contributions came in at \$4,200 which entirely covered the cost of the event. Through these donations, the partners were able to offer gloves, pet waste scoops and trash bags for the clean-up and commemorative t-shirts to volunteers free of charge. In addition, we were able to purchase a new pet waste station with full-sized trash can which will be installed at Front St. & Scott Blvd along the Hangman's Gulch trail.

We are very appreciative of the tremendous team effort set forth from several different departments in the Town and all the partners involved including Castle Rock Water, Community Relations, Public Works, and Parks and Recreation.



The following people are recognized for their involvement with this event: A special thanks to Melinda Pastore and Sandi Aguilar for supporting the Stormwater Division by devoting many hours over the last five months to plan, coordinate and facilitate the event. Through their creativity, forward planning and organizational abilities this event was a huge success!

Volunteers from Castle Rock Water - Jon Stapp, Lauren Tyner, Nichol Bussey, Jessup Schield, Brian Laschanzky, Barbara Horton, Erik Dam, Adan Rivas, Tina Close, Kevin Elliott, Debby Parochniak, Jennifer Thompson and Mark Marlowe; Community Relations - KerriAnne Mukhopadhyay; DoIT - Brittaney Murphy; and Public Works - Eric Lee.



Remember: One thing is clear: our creeks, rivers and lakes depend on you!

2017 Water Demands

By: Kurtis Cotten, Water Resources Program Analyst

The maximum daily water demands are plotted by month from 2014 to the current month. As observed by the data, the maximum demand for the month of May was 10.3 million gallons per day (MGD) which was about 11% 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 May was 218.1 million gallons (MG), which was about a 35% increase from the April 2017 total of 161.4 MG, and a 21% increase from the May 2016 demand of 179.8 MG.

The temporary pump at the CR-1 diversion was started back up in April and has been producing an average of nearly 0.5 MGD. The permanent pumps are planned to be online by the middle part of June. The Town's twelve alluvial wells and CR-1 produced a total of 27.2 MG of renewable water during May, which represents 12.8% of the total water supply for the month and 15.4% (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 1,167 MG, which represents 11.5% 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 renewable water projects the Town is currently working on will help close this gap.





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Water Demands, continued



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 19 to 180 cubic feet per second (cfs) during the month of May, with flows averaging around 40 cfs for the month. During May, there have been active calls on the South Platte River. 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. Since May 18, 2017, there have not been any calls that affect our district. According to the U.S. Drought Monitor from USDA, we are currently not experiencing drought conditions. The NRCS Colorado SNOTEL report generated on June 1, 2017, shows the precipitation for the South Platte River Basin is at 118% of average for the 2017 water year. On a typical year, significant snowmelt has occurred by early June and streams are experiencing peak flows. This year, the temperatures have stayed cool so snowmelt has been delayed.



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:



Alex Tarnawski Distribution I



Thomas Hecker Collections III



Brent Pickrell Wastewater D



Lauren Tyner Distribution I



Chrystal Ruby-Carrillo Operator III



John Chrestensen Water C Operator

NEW CERTIFICATIONS

Castle Rock Water reviewed 81 applications this month which compares to 65 during the same time period in 2016. The average assigned due date by Development Services was five days, and we completed the reviews in an average of five days, which included:

- 7 Agreements
- 5 Plats
- 7 County Referral
- 10 Field Change Orders
- 6 Site Development Plans
- 6 Preliminary Project Applications
- 16 Grading, Erosion and Sediment Control (GESC) Plans
- 17 Construction Drawings
- 2 Technical Criteria Variances
- 5 Use by Special Review Application

The applications reviewed consisted of:

- 49 1st Submittals
- 16 2nd Submittals
- 16 Special reviews
- 8 Completed late
- 73 Completed on-time as scheduled

Plan Review Update



By Mark Mantua, Plan Review Engineer

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.



In addition, Castle Rock Water completed 123 building permit reviews and associated system development fees.



Jane Chrestensen Sr. Customer Service Representative

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.



Fifty-six percent of the customers enrolled in $H_20Access$ have also chosen to "Go Paperless."



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



Walk-in customers are consistent with this same period last year.



Customer calls are slightly up this month due to the start of irrigation season, conservation rebates, watering schedules and sod exemptions.



METERS



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 0.48 percent, we still continue to stay below the industry average. This is a result of continued maintenance and repair efforts on meter infrastructure. The higher number of skipped reads in May 2016 were due to equipment failure.

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.



Meter set inspections are performed when a new house or business is constructed to make sure that the meter has been installed properly. The remote reading control system is also set at this time so the meter can be read by drive-by technology. These inspections are fairly consistent with prior years at this same time.



Residential meter set re-inspections through May 2017 are very similar to those seen last year through May 2016.





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.



To prevent erosion and create a durable surface, an asphalt road base was added to the North Meadows access road



The ditch located in front of the Tree Huggers Nursery on Ridge Road was regraded to facilitate drainage



Our team maintains about 780 miles of water, wastewater and stormwater pipeline, enough to run from Castle Rock to Las Vegas, Nevada.

Water Quality Complaints

The Water Quality Complaint index shows that we are doing very well in this category; rating in the Top Quartile since at least 2015 according to the American Water Works Association. Our score was even better in 2016! There were no water quality complaints in May of 2017.



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



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 May.



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-toyear comparison

ANNUAL UTILITY LOCATES

													4
	<u>2010</u>	<u>2011</u>	<u>2012</u>	<u>2013</u>	<u>2014</u>	<u>2015</u>	<u>2016</u>	<u>2017</u>	<u>2018</u>	<u>2019</u>	<u>2020</u>	<u>2021</u>	
January	577	475	617	1190	1289	1162	1199	1334					
February	521	485	538	1094	1093	1383	1334	1378					
March	660	552	818	1437	1349	1906	1625	1851					
April	838	681	1025	1482	1552	1784	1631	1760					
May	853	863	985	1541	1531	1609	1809	2002					
June	969	844	982	1314	1399	1654	2075						
July	680	582	859	1350	1392	1477	1675						
August	901	723	1123	1476	1468	1494	1651						
September	880	723	1029	1240	1373	1343	1701						
October	715	688	1155	1501	1376	1314	1579						
November	536	518	1041	1072	866	1134	1131						
December	415	405	925	1005	1043	1063	1059						
		1	1	1	1	1	1	1	1	1	1		
Total	8545	7539	11097	15702	15731	17323	18469	8325	0	0	0	0	
Difference from	•	•											
previous year's													
total	NI/A	1006	3558	4605	20	1502	1146	10144	8325	0	0	0	I.





Sanitary Sewer Overflows

We are also tracking in the Top Quartile in the Sanitary Sewer Overflow Rate since 2014, according to the American Water Works Association, showing one incident in 2017. There were no sanitary sewer issues in May.



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. In 2015 and 2016, we inspected and cleaned 42.44 and 45.65 miles, respectively.

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

MAY 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

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.

A planned waterline construction in the Plum Creek neighborhood caused homes to experience lower than normal pressure for approximately five hours. At no time did the pressure fall below the American Water Works Association standard of 35 pounds per square inch (PSI.)

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.

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 issues.

Welcome Seasonals!

Two of our seasonal employees, Nicholas Mares and Wyatt Leadens, previously interned with Castle Rock Water. They are returning to work with us this summer as seasonal employees for the Operations division.

A couple years ago, Nicholas Mares was an engineering intern for Castle Rock Water. During his internship, Nick worked closely with Jeanne Stevens (Engineering Manager). His work in the engineering division truly helped Nick and gave him some insight as to what his future could hold. With that said, Nick is continuing his education, by going to school at Geneva College, studying Mechanical Engineering. This year, Nick was selected as a seasonal employee for the Distribution team within the Field Services Division. He is eager to use his knowledge and learn more of the technical, hands-on portion of Castle Rock Water. Nick is excited to work outside and get his hands dirty!

Wyatt Leadens was an intern for Castle Rock Water in the spring of 2017. During his internship, he was able to meet with every division and spent some quality time learning the ins and outs of our department. Wyatt recently graduated from Castle View High School and will be attending the University of Wyoming in the fall where he will be studying Civil or Chemical Engineering. Castle Rock Water has helped Wyatt refine where he wants to go in the future. Wyatt was selected as a seasonal employee and is excited to work with the Distribution Team within Field Services. Wyatt is thankful for the opportunities that the Department has given him and is ready to learn more!

Adam Fogle has joined the Plant Maintenance team, he will keep our facilities mowed, trimmed and looking great! Kaycee Daniels is working with our Utility Locator. Locate requests have continued to rise over last year; she will be a valuable and much needed addition to the locating team.

Two of our seasonals have spent many summers helping our Field Services team. They have participated in hydrant maintenance and inspection, stormwater pond and drop box maintenance and much more. Their experience is invaluable and they always arrive ready to work and help the team. Katherine Drake will be returning for her fifth season and Lauren Paul will be joining us for her fourth season in Field Services.



(From left to right) Adam Fogle, Kaycee Daniels, Katherine Drake, Lauren Paul, Nicholas Mares and Wyatt Leadens.