## Planning for Reuse

## Plum Creek Water Purification Facility with Advanced Treatment

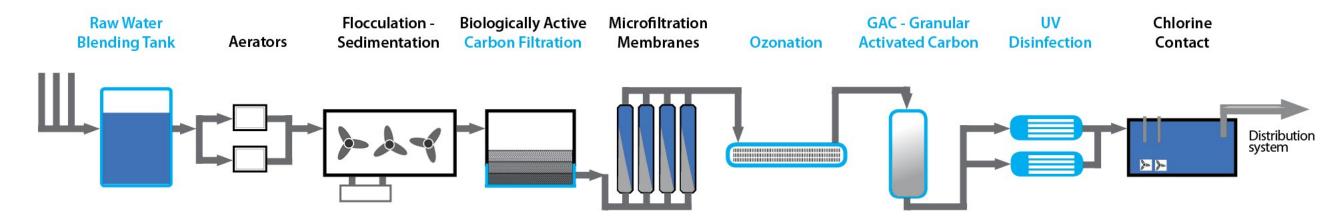


Plum Creek Water Purification Facility is being expanded to include Advanced Treatment processes, which are denoted in blue. While treatment already meets local, state and federal regulations for safe drinking water regardless of sources, the Advanced Treatment processes provide added redundancies, focus on removal of contaminants of emerging concern (CEC), and address new standards being established by reuse systems throughout Colorado and the U.S.





Current and reuse treatment systems include physical, chemical and biological processes for a more thorough treatment for purity in drinking water. These processes are designed to remove Giardia, Cryptosporidium, viruses, suspended solids, bacteria, algae, fungi and CECs, making drinking water reliable and safe.



Water from several sources are blended

- Local Plum Creek
- · Reuse water
- Groundwater

Aeration removes dissolved gases and oxidizes dissolved metals such as iron and manganese Chemicals are added to promote coagulation of the suspended particles. These clumps or 'floc' travel to sedimentation basins where the floc settles to the bottom and is removed.

The water passes through

particles remaining in the

water adhere to the filter

media. The filters have a

oxidize the dissolved

particulates.

special coating to further

several filters and any

Water is pushed through a membrane that is less than 0.1 microns (one-ten thousandth of a milimeter). This step removes particles such as bacteria, viruses, and other micro-organisms.

The oxidation process changes organic compounds into more biodegradable compounds which are more easily absorbed by the granular activated carbon.

Dissolved organic compounds are absorbed by the activated carbon and removed from the water. UV disinfection is a physical process that neutralizes any potentially remaining mirco-organisms as they pass by ultraviolet lamps. Chloramines are a combination of chlorine and ammonia which provide disinfection protection as water flows through the distribution system and into homes and businesses.

## Planning for Reuse

Casle Rock Water serves a community of 62,000 residents and is expected to grow to 105,000 by 2050. With or without growth, the existing deep ground water supply that the Town has been so reliant upon is a nonrenewing resource that is not by itself sustainable for the Town, long-term. Climate conditions are also significantly impacting supply and demand. Plans for securing water for the Town of Castle Rock include renewable surface water, importing water and reuse.





Additional Conservation
Box Elder Imported 16%
Other Imported Water 3%

Reuse Program 36%

Lawn Irrigation Return Flows 5% WISE Imported 6%

**Groundwater 25%** 

**Native Plum Creek 9%** 

2018

Plum Creek Water
Purification Facility
expansion for Advanced
Treatment is in design

2019

Several large irrigation accounts are slated for nonpotable reuse, including the municipal golf course

2020

Reuse water taken from East Plum Creek will be purified to drinking water standards for Town-wide household and business consumption



CRgov.com/WateReuse



