

# WATER TREATMENT PLANT UPGRADE

In December 2019, the Town broke ground on its largest and most expensive projects when it began upgrading the Treatment Plant. While the plant will not be fully commissioned until 2021, 2020 saw this project make considerable progress. This infographic outlines the primary steps to treat and transport water from the Red Deer River (approximately 22km away) to Town.



Our water comes from the Red Deer River

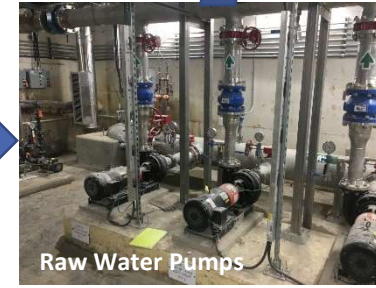


## 1. WATER INTAKE

Water is pumped (starred area) from the river into four large holding ponds that act as a reserve for the water treatment plant if the river becomes contaminated. About 68 million liters of water are held here – about 2 weeks worth of water.



Crayfish, freshwater shrimp, and pike are among the aquatic life that ends up in the holding ponds. These are filtered out before water is pumped into the treatment plant.



## 2. ADDING CHEMICALS

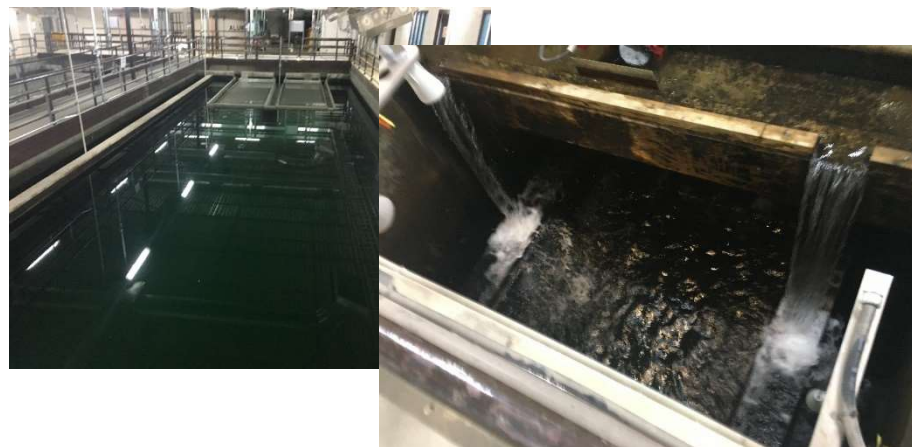


As water is fed into the treatment plant, several compounds are added. The first is called Potassium Permanganate. Its primary purpose is to neutralize any foul odors and alter how the water tastes. The second compound added is aluminum sulfate, which is used for cleaning the water and acting as a coagulant that helps catch any debris in the water. Aluminum sulfate works in conjunction with the third compound, called polymer, that makes the aluminum sulfate stickier, making it more effective at removing impurities in the water. These compounds are then thoroughly mixed in large tanks before being added to the Sediment Basins.

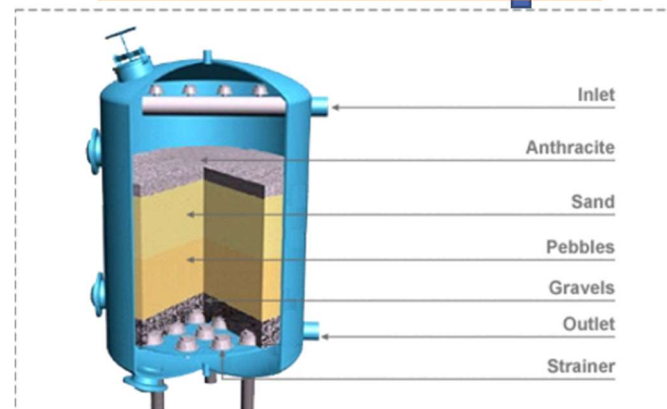
## 3. SEDIMENT BASIN & FILTRATION

After adding the compounds, water is passed through a series of cleaning tools that remove small plant and aquatic life from the water. This process begins with the water passing through the sediment basins where impurities in the water bind with the polymer. This material is heavier than water and sinks to the bottom of the basins where a sludge vacuum sucks up the material and removes it from the water supply.

Simultaneously, there are two Lamella Plates on the surface of the basins, which collect smaller impurities that may not have bonded to the polymer. The smaller solids are heavier than the water they flow within and fall to the plate surface, which is then removed from the basins.



## Dual Media Filter (DMF)



Water then passes through a filtration system called a Dual Media Filter. The water flows through this filter from the top down, through several organic material layers to remove the finer particles from the water. The first layer is crushed anthracite, a type of coal that is excellent for water filtration. The second layer is a combination of Garnet and Silica Sand, which catch even finer impurities in the water. The last layer is a metal grate that allows water to pass through to the disinfection stage.

## 4. UV TREATMENT AND CHLORINE

By this point, all of the solid materials the naked eye can see have been removed. The disinfection process begins by shining high-intensity UV light into the water, which sterilizes the water of any contaminants. Chlorine is then cycled in the water over a 2-hour process, which kills any remaining mycobacteria and disinfects any last impurities. By this point, the water is safe for consumption!



Filtered Water Pumps

Following the disinfection process, water is now deemed potable (safe for drinking). Leaving the Water Treatment Plant, the water is pumped out of the river valley before flowing to Town. Along the route, water is accessed by 12 different rural properties and branched off to two different regional water lines.