

The Town of Superior Wastewater Treatment Facility (WWTF) collects and treats wastewater from the Town's residents. The capacity of the current system is 2.2 million gallons per day (mgd) and 6,000 pounds per day (ppd) of BOD₅. The system consists of several processes to remove and treat the wastewater to meet the State of Colorado reuse requirements and the requirements of the Town's current discharge limits. Here's a quick overview of the treatment process.

Headworks. This is the first step in the treatment process and is the newest structure at the WWTF. The structures include screening and grit removal. Screenings are stringy materials such as hair, sticks, clothing, and personal care items. Grit is heavier, more dense inorganic material such as sand. Removal of these screenings and grit first improves the effectiveness of the rest of the treatment process. These processes are also referred to as preliminary treatment.

Secondary Treatment Process. The secondary treatment process consists of an aeration basin and secondary clarifiers. Collectively, these systems promote the growth of microorganisms that are responsible for biological treatment of the wastewater. In the aeration basins, the microorganisms (collectively called mixed liquor) are mixed with air to promote the oxidation of organic matter and ammonia. Ammonia is very toxic to aquatic life including trout. In the secondary clarifiers, the mixed liquor is removed from the treated water via gravity. The settled mixed liquor solids are recycled back to the aeration basin to assist with treatment while the treated water flows to the next treatment process. A portion of the recycled mixed liquor is wasted from the system each day and sent to the aerobic digesters for further treatment.

Filtration. The settled treated water is filtered through a sand filter similar for further removal of suspended solids materials. This process is required to meet the State of Colorado Reclaimed water regulations. With this process, the Town of Superior is able to reuse approximately one third of the wastewater generated in the Town! The reuse water is utilized to irrigate parks and commercial areas in the Town.

Disinfection. Post filtration, treated wastewater is disinfected with chlorine. This inactivates viruses and other biological hazards prior to discharge to the Town's reuse system or discharge to Rock Creek.

Solids Handling. Wasted mixed liquor from the secondary process is pumped to an aerobic digester. In the digester, air is blown into the digester to promote the degradation and stabilization of the biosolids. Once digested, the biosolids are dewatered (the process of separating water from the biosolids). The dewatered biosolids are then trucked offsite and recycled as a soil amendment (a Class B biosolid).

Sustainability Facts about the Superior WWTF

- The Town reuses about one third of the wastewater as reuse irrigation water!
- Biosolids are recycled and land applied as a soil amendment!
- The Town is actively researching sustainable processes to upgrade the treatment process remove nutrients from the wastewater. This will improve water quality and decrease eutrophication in downstream water bodies.