

Water Treatment

Where does the water at your house come from?



The Process

- Collection
- Transportation
- Treatment
- Filtration
- Storage
- Monitoring
- Testing

Collection and Transportation

- The City of Brenham is contracted with the Brazos River Authority to pump water from Somerville Lake.



- An intake structure protected by screens on each end, channels raw water to a wet well where the water is pumped through a 24" pipe to Brenham approximately 14 miles until it reaches the Water Treatment Plant.

Collection



- The raw water from Somerville Lake is pumped to a 750,000 gallon raw water tank.
- The water is temporarily stored here until it is needed for use.
- While the water is in the tank, chlorine and ammonia are added for disinfection purposes.

Treatment



- When water is needed throughout the plant, it is pumped through a manifold station which diverts the water to 3 separate clarifiers.
- At this point, chemicals are added based on flow throughout the plant.

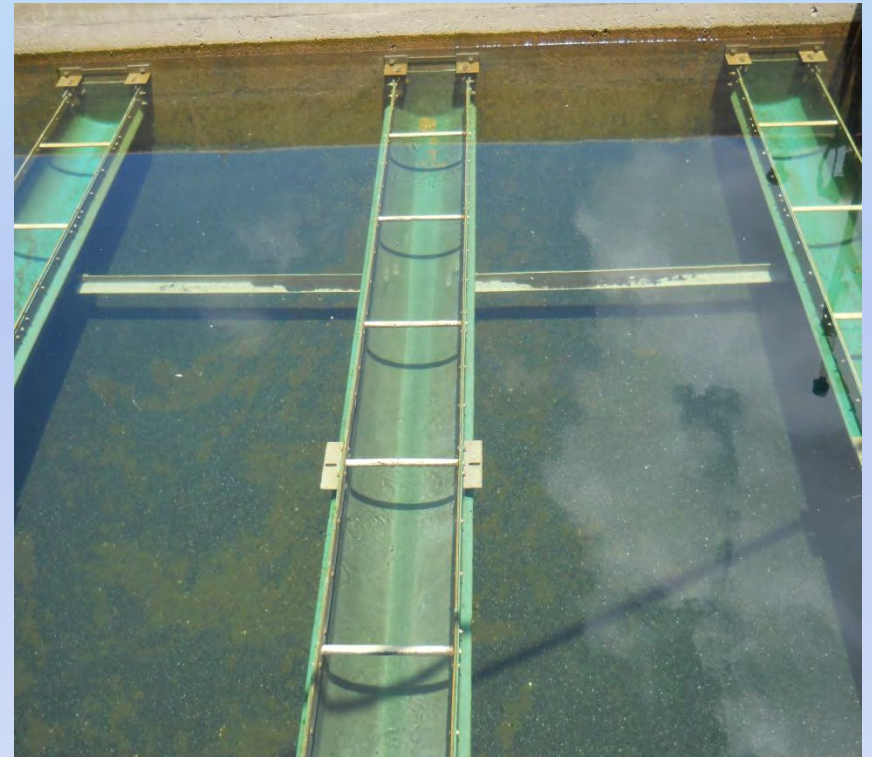
Treatment



- Water then enters the clarifiers, where the process slows down.
- The overall goal of the clarification process is to separate particles within the water (clean water to top, particles to bottom).
- The particles are able to fall to the bottom because a coagulant (Aluminum Sulfate) is added to the water. The particles then stick together forming a dense mass. This process is known as flocculation.

Filtration

- From the clarifiers, water is then delivered to four gravity flow filters which consist of rock, sand, and atrhacite coal.
- The filters polish the water from any other particles not settled out by the clarifiers. They also act as the only defense mechanism against pathogens such as *Giardia* and *Cryptosporidium parvum*.



Treatment

- These tanks contain a bulk supply of Fluoride, Alum, Caustic Soda and Chlorine which are all added to the drinking water.
- The City is required to have a minimum 30 day supply of these chemicals as a precaution.



Treatment

- From the large supply of chemicals, day tanks are used during normal operations for the injection of these chemicals. Below are example of both Alum and Polymer injection units.

Alum



Polymer



Storage



- Color coded pipes distinguish the types of water flowing through them. For example, drinking water (blue) or raw water (green).

- After filtration, clean, purified water is pumped through large pipes to both ground storage tanks and above ground storage tanks for consumption and fire protection.



Storage

- After the treatment process is complete, the clean water is sent to multiple water towers located throughout the City of Brenham.
- The water is kept here until it is needed for use in your home and community.



Monitoring



- The City uses a monitoring system called SCADA that helps keep watch of the water.
- SCADA monitors the water levels in multiple storage reservoirs and can recognize when towers and tanks need to be filled and when they have reached capacity. SCADA has the ability to automatically start and stop pumps.

Lab Tests



- Testing is done every 4 hours.
- The tests include:
 - pH
 - Turbidity
 - Alkalinity
 - Chlorine Residual
- Bacterial tests are taken at another 15 locations every month.

Importance of Treatment

- It is important to treat our drinking water to make certain that various water borne diseases are not living in our water.
- Pathogens such as *Giardia lamblia* and *Cryptosporidium parvum* can cause serious health problems if they gain entrance into our bodies.
- Therefore, treating our water with chloramines and utilizing filtration has substantial benefits to our short and long term health.
- Not only do the chemicals help by killing pathogens, they also help to maintain color, taste and odor of the water.