

Drinking Water Treatment Plant

Past

The City of Litchfield has been ahead of the curve when it comes to providing high quality and sufficient quantity of drinking water for its residents.

As a growing town in the 1860's, Litchfield's first water supply was a groundwater well. In the 1870's, Walton Lake dam was constructed for a fire protection water supply. In the 1920s, the City of Litchfield constructed a new dam and water treatment plant which provided the city residents with a steady supply of drinking water. Litchfield Lake provided a water supply capacity of 240 million gallons. The water treatment plant included a coal burning facility that powered the pumps to send water to the City.

After Lake Lou Yaeger was built in 1966, the City added the initial clarifier to better remove contaminants from the new water supply. The

Lake Lou Yaeger watershed covers thousands of acres of agricultural land. In the 1980s the City added a ClariCone and Dezol filters to improve treatment of the drinking water. The City of Litchfield was the second water plant in the country to utilize a ClariCone to treat drinking water.

Present

The new water treatment plant has state of the art technology for drinking water. The water plant is designed to produce water that meets current regulatory requirements for drinking water with the following features.

- Lake water pumping station
- Water retention vessel
- Two ClariCone clarifiers
- Three GAC/sand filters
- Two clearwells
- High service pumping station
- Modern chemical treatment systems

- Plant security
- Electrically operated process valves
- Computer monitoring and control system
- Building to enclose all treatment vessels

The new lake pumping station pumps lake water up to the new plant. The new plant is located outside of the floodplain of the West Fork of Shoal Creek.

The retention tank provides a short period of contact for pretreatment chemicals to remove taste and odor and organics. The ClariCone vessel removes the majority of the dirt and other contaminants in the water. Water then passes through the granular activated carbon and sand media filters which remove organic material and the fine particles in the water.

The new chemical feed systems greatly improve operator safety and reliability. Chemicals are delivered in bulk or mixed in bulk. Operator contact with chemicals is greatly reduced.

The new plant has state of the art technology for monitoring and controlling the production of drinking water. Plant operators monitor the operation of the equipment and the quality of the water from the computer in the operating laboratory. Standby power is provided to provide continuous electric service during a power outage.

Energy saving features in the new plant include:

- Variable flow pumps for lake water and drinking water.
- No electric mixer in ClariCone clarifier
- No filter backwash pumps
- Infrared heaters in Process Area

- Energy efficient light fixtures
- Energy efficient HVAC equipment
- High energy pump motors

Future

The City of Litchfield will continue to provide its customers with a high quality of drinking water in the future. Membrane filtration will be added to the water plant in 2011. Membrane filtration is a technology that removes all particles larger than 0.1 micron (one ten-thousandth of a millimeter) and removes bacteria and protozoa.

The treatment plant capacity will increase to 4 million gallons per day with the membrane filtration system. Treatment plant operation will have split filtration at full capacity. 2/3 of the water will be treated by media filtration and 1/3 by membrane filtration. At lower flows, all water will be treated by sand filtration as well as membrane filtration.

The Process Area has space to add two skids of membrane filtration in the future should the City decide to increase the membrane capacity as a result of future regulation of drinking water.

During the design of the water treatment plant, the citizens of Litchfield showed a strong support for membrane filtration.

Litchfield Lake Dam

Litchfield Lake Dam was brought up to the current regulatory standards as part of the new water treatment plant project. The excess dirt from plant construction was placed on the dam slope to facilitate maintenance and mowing. A new emergency spillway was constructed at the north end of the dam. Litchfield Lake is the secondary water supply for the City.

