

SJRA'S FOCUS HAS BEEN TO DELIVER A HIGH QUALITY AND AFFORDABLE WATER SOURCE FOR MONTGOMERY COUNTY

As part of the SJRA's Groundwater Reduction Plan (GRP) program, a 30 million gallon per day (MGD) water treatment plant is being constructed at the west end of the Lake Conroe dam. To begin delivering by late summer the treatment plant will provide surface water to Montgomery County in order to comply with the Lone Star Groundwater Conservation District's (LSGCD) mandate for reducing groundwater withdrawals. SJRA's GRP will allow Montgomery County to reduce its dependence on groundwater by utilizing a reliable, long-term alternative water supply.

The source water for this treatment plant is Lake Conroe, which until now has not been used as a source for potable water. As a result, much time and research went into the beginning stages of the plant before its design and construction began. The focus of this project has been to provide our water receiving facilities with quality water at an affordable price. From August 2010 – February 2011 a pilot plant was constructed to test the treatability of Lake Conroe's water. In addition, it was also used as a tool to select which treatment technology and process configuration would achieve State and Federal regulatory requirements for the finished product to be indistinguishable from current ground water supplies.

The heart of the treatment process is a membrane system. Raw water from Lake Conroe will be chemically treated to oxidize iron and manganese and cause them to precipitate to be later removed during the sedimentation and filtration steps. These chemicals will also aid in the outcome of much higher quality water.

At pre-treatment, chemicals will be used to adjust water alkalinity and pH. Additional chemical will be added to smaller particles present in the water to agglomerate and make bigger particles that will settle by gravity during the sedimentation step. The sedimentation step evens out and slows down the water to allow gravity to settle the bigger particles to the bottom of the sedimentation basin.

After the sedimentation step, the water will be pumped through the membrane filters. Membranes are hollow tubes through which water passes but particles and bacteria are left behind since they are too large to pass through the very small pores. The pore size through a membrane fiber is 0.1 micron (small enough to filter out the smallest of bacteria).

After the membrane filtration step, granular activated carbon (GAC) contactors will be used to remove taste, odor, and organic compounds present in the water. GAC is the same material used in home faucet filters to remove chlorine, taste, and odor compounds. Approximately 200,000 pounds of GAC will be collected in each contactor. SJRA's SWTP will have 8 contactors.

Clean water will be used throughout the water treatment process for backwashing of strainers, GAC contactors, and the membranes. This water will be recycled back into the plant to receive full treatment, creating a very water efficient process. Process efficiency, for the treatment plant, is estimated to be in the 95-98% range with minimal water loss throughout the process.

After GAC, the water will be disinfected with chlorine to ensure that it is safe for consumption by the end user. It will be stored on-site in two 5 million gallon storage tanks.

Once the water is treated to comply with Federal and State requirements, it will be pumped out of the storage tanks and into SJRA's transmission system by way of a pump station and two discharge headers located at the plant site. One header will head south towards The Woodlands and one north towards Conroe. The SJRA water transmission system is comprised of approximately 57 miles of pipelines ranging from 12 inches to 60 inches in size and 16 water receiving facilities.

At the 16 receiving facilities, the SJRA treated surface water will be blended with groundwater. The blended water will then be served to the end users in Montgomery County.

SJRA has gone to lengths to ensure the quality of the water that will be delivered to their participants for them to deliver to their customers.

For more information on this process of the GRP, please visit www.sjra.net/GRP.