CASE STUDY

SOUTH JORDAN

Utah Utility Puts Active Mixing to the Test and Improves Disinfectant Residual in Distribution Network

This is the Jordanelle Reservoir, one of the main sources of water for JVWCD.

OVERVIEW

South Jordan, Utah is a fast- growing city with over 79,000 residents. It is located at the south end of the Salt Lake Valley. Just over 30 years ago, the population of South Jordan was 13,000. Due to the installation of the first water utility, which covered over 15 square miles, South Jordanians flourished and the city began to grow.

South Jordan receives its potable water from Jordan Valley Water Conservancy District (JVWCD), a regional wholesaler. The city's distribution network is made up of nine storage tanks totaling 38 million gallons of storage. This network aids in the distribution of water to almost 23,000 connections.

SITUATION

Since South Jordan did not have a treatment plant and thus depended on the Jordan Valley Water Conservancy District for its potable water, South Jordan had limited means to actively control disinfectant residuals in its distribution network.

The City of South Jordan currently uses almost 245 million gallons of water per day. Though, the City aims to decrease that number by 23%, or roughly 187 million gallons per day, over the next 10 years for conservation purposes.

South Jordan operations team and engineering personnel were interested in maintaining effective residuals while conserving water for the community. They discouraged the use of various water-age reduction techniques such as flushing because they were costly and time-consuming.

The City wanted a system that could resolve their residual problems without having to resort to flushing or raising costs through other means.

Staff began studying active reservoir mixing as a method to help maintain residuals by eliminating chemical stratification in water storage assets.

APPROACH

South Jordan wanted to test the reservoir mixing concept before they were required to invest in a particular device for the South Jordan tanks.

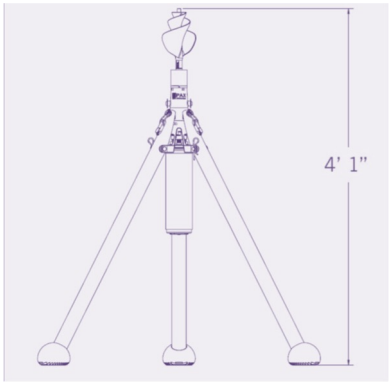
SOUTH JORDAN
UTAH

South Jordan Water wanted to identify and procure the highest performing mixer for the City's tanks. This lead the team to investigate PAX Mixers.

The PAX Mixer design is unique in that it is based on rigorous scientific analysis of fluid mechanical principles to achieve rapid disinfectant blend time. The patented and award-winning PAX "lily impeller" embodies a design based on the energy transfer mechanisms observed in natural systems and is at the heart of PAX Mixer economy and efficiency.

After considering their options, the team decided on beginning this evaluation with the tripod-shaped open-impeller PAX Mixer PWM-500.

The South Jordan team took copious samples from multiple locations throughout the 3.75-million-gallon cell of the demonstration tank to gather information on temperature and chlorine residuals. Immediately, staff observed improvements in disinfectant residual stability and chlorine levels in the test tank. They also noticed uniformity in temperature readings.



Dimensions of the PAX Impeller Mixer

The PAX Impeller mixer was able to effectively mix water throughout the tank, even during problem areas where temperatures used to fluctuate.

RESULTS

- **After installing the PAX Impeller Mixer to their test tank, the operating team noticed a dramatic difference in the chlorine levels in the tank that were previously lacking.**
- **Overall residual balance throughout the entirety of the tank remained consistent and wholly balanced after the PAX Impeller Mixer began operation.**
- **The temperature samples taken from the top, middle, and bottom of the tank all had similar readings. Meaning that the mixer was able to effectively mix water throughout the tank, even during problem areas where temperatures used to fluctuate.**
- **The water-age had a considerable decrease once the water became thoroughly mixed.**

CONCLUSION

The results of the demonstration proved to the City that the PAX Impeller Mixer generated enough mixing energy to satisfy their goals of maintaining consistent residual levels and raising the chlorine levels of certain areas in their tanks.

Furthermore, the operators no longer had to worry about flushing water now that residual levels were balanced.

As a result of this successful test, South Jordan invested in additional mixers for multiple water storage tanks throughout their system.

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