

CASE STUDY

CITY OF FORT WORTH

Fort Worth Texas Tackles Stormwater Infiltration Treatment with Dynajet™ Dry Polymer Feed System



OVERVIEW

The City of Fort Worth is one of the largest cities in the state of Texas. Due to its extreme weather, broad reach (approximately 350 square miles) and large population density, water demand in the City of Fort Worth is extremely high.

A key element in managing demand is the management and treatment of wastewater. In this case study, we focus on the Village Creek Water Reclamation Facility (VCWRF) in Fort Worth. This facility has a capacity of 166 MGD and discharges treated effluent into the West Fork of the Trinity River. The plant serves more than 20 surrounding communities in addition to over 700,000 Fort Worth residents.

Like wastewater treatment plants across the country, Village Creek experiences fluctuations in the volume of water to be treated due to the inflow and infiltration of stormwater.

SITUATION

As municipal wastewater and sanitary sewer systems age, stormwater infiltration, via groundwater, increases due to age-related deterioration, loose joints, pipe cracks and root damage from trees. Collection systems are typically built below creeks and streams. Since they are below the water table, they are especially susceptible to infiltration

when pipes crack. Stormwater that enters the sewer system is referred to as “clear water” to distinguish it from normal sewage water in the sewer system even though it is dirty from surface pollutants.

In an effort to manage peak flows resulting from stormwater infiltration, Village Creek installed a high-rate clarifier (HRC) with ballasted floc to rapidly settle out solids to treat large volumes of water quickly. As part of the HRC treatment process, polymer feed, activation and mixing equipment were installed to aid with flocculation. However, since the HRC was only used for peak flows, it was not used much of the year.

After several years of intermittent operation of the HRC, operators noticed problems with the polymer feed equipment. The equipment began experiencing problems with polymer clogging due to its limited use. The operating team at VCWRF decided that they needed a system that was designed for intermittent use versus continuous use, so the search began.

The Village Creek Water Reclamation Facility has a capacity of nearly 166 million gallons of wastewater per day and serves over 700,000 residents.

APPROACH

Working with their local manufacturer's representatives, operators at Village Creek installed the Dynajet™ polymer feed and activation system.

This dry polymer feed unit features a pneumatic polymer conveyance system that keeps the polymer dry until it reaches the wetting head for activation.

Elevated temperatures from the pneumatic blower and the heated feeder outlet, kept moisture out of the feed system. Since moisture was not activating polymer inside the feed tube, clogging was eliminated.

In addition, the hopper system on the Dynajet™ system featured an air dryer and desiccant tray, which addressed the second problem - extended polymer exposure to the environment. By reducing polymer exposure, the Dynajet™ reduced the possibility of clumping when used intermittently.



The Dynajet™ Dry Polymer Feed and Activation System



RESULTS

- The new Dynajet™ system eliminated the polymer clogging issue and increased operation efficiency.
- The Dynajet™ features an air dryer and desiccant tray which eliminates extended polymer exposure to the environment, which can cause clumping when used intermittently.
- The Dynajet™ didn't require the same maintenance upkeep that the previous system did, which reduced the cost of operation and maintenance.

CONCLUSION

The Dynajet™ dry polymer system, with its pneumatic conveyance and enhanced hopper system enabled operators at Village Creek to run their HRC as needed during peak storm events. The equipment has operated successfully and without problems since it was installed.

Operators at Village Creek trust the Dynajet™ system to address their periodic stormwater treatment requirements in order to manage wastewater in their region.

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