

Case Study

Flo-MultiRake Screen & Flo-WashPress

Cuba Missouri Wastewater Treatment Plant

Overview

The City of Cuba is located in Crawford County Missouri close to St. Louis. The population is relatively small at 3,800, but the city has a large industrial base. One industrial facility in particular accounts for 30 – 35% of the daily flow primarily during the week. Dealing with a variable flow is one of the challenges of the Cuba WWTP. While Cuba does not have a combined sewer system, they do have long dry spells followed by torrential rains. With the torrential rains, come all the solids accumulated in the collection system. Run off from a large truck stop above the plant adds to the solids.

Problem

The wastewater treatment plant was originally built in 1980 and the headworks consisted of a manual bar rack. The plant was upgraded in 1999 to increase capacity, and a center flow screen was added to remove solids. The center flow screen required a rebuild five years ago and never operated properly after that.

The City Council instructed the plant superintendent to research screens and find the best one for the money. Based on his experience, the superintendent expanded his search criteria to include finding the correct screen for the Cuba headworks. He knew that all screen types are not equal. There are screens that must have a constant flow and screens that cannot handle large solids. Materials of construction, drive systems and maintenance requirements were also part of the criteria. Plus it was important that the new screen fit in the existing channel.



Flo-MultiRake screen and Flo-WashPress installed at the Cuba MO WWTP headworks

- **Variable Flows:** By 2012, the Cuba WWTP design flow was 5.7 MGD, but flow could drop as low as .9 – 1 MGD on the weekends.
- **Large solids:** No sewer system is free of infiltration and heavy rain events flush the Cuba sewer lines, periodically sending pieces of clay tile and large debris to the headworks.
- **Solids removal:** The Cuba WWTP has two screw pumps, two oxidation ditches, three clarifiers and 6 sludge basins. Capturing more solids at the headworks, means less cleaning of downstream equipment and better process efficiency.
- **Recognizable solids:** Cuba relies on a contract hauler to take their sludge and land apply it. Sludge with fewer inorganic solids is more desirable for land application.

Solution

After evaluating many screen types and brands and based on the above criteria, it soon became apparent that a multirake screen design was most efficient in handling variable flows and removing gross solids. Not only did the Enviro-Care Flo-MultiRake Bar screen fit the channel, but it was available with 6 mm fine bar spacing to capture more solids. The all stainless steel construction and type of drive system also received high marks.

In anticipation of a larger amount of solids being removed by the Flo-MultiRake screen and the potential for higher landfill costs, the plant superintendent added an Enviro-Care Flo-WashPress unit. Washed and dewatered screenings contain less organics. With less organics, the screenings can be dewatered more efficiently to produce a drier cake which means less volume for disposal.

Missouri has its share of cold weather, so the Flo-WashPress was supplied with a freeze protection package for the waterlines, washing area and discharge piping.

Results

The Flo-MultiRake Fine screen was installed just in time. April showers turned into an April downpour. The increased flow carried with it months of accumulated debris. The multiple rakes removed the solids faster with no blinding. Cuba anticipates that the screen will reduce maintenance costs for its downstream processes and equipment. It is too early to have data to support that but the plant superintendent promises to provide that data when it is available.

For more information, contact:

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Flo-MultiRake Fine Bar Screen with 6 mm bar spacing installed at a 90° angle.

“A multi-rake screen design was most efficient in handling variable flows and removing gross solids.”

Steve Black



Pieces of clay tile and large debris washed to the headworks during heavy rains.

