

# CASE STUDY:

## Wastewater Treatment Facility

RUSK, TX



### THE PLANT

Rusk treats approximately 0.9 million gallons of sewage per day during the dry months (although the permitted design flow is 1.75 million gallons per day) and up to 4.38 million gallons per day during peak flows.

### PROBLEM

The existing facility had one manual bar screen with 5/8" bar spacing. The large bar spacing allowed larger material to pass through the bar rack and into the facility, creating excessive maintenance issues. Additionally, the screenings were not washed or compacted, which led to odor and vector attraction problems for the facility. The existing oxidation ditch included eight brush rotor-style floating aerators that offered inefficient oxygen transfer rates and created a mist of wastewater. In addition, the aerators were costly to maintain and difficult to keep fully operational.

### THE SOLUTION

The City of Rusk and the design engineer, The Brannon Corporation, reviewed many screening and oxidation ditch technologies, and ultimately decided to design a facility upgrade around the Kusters Water ProTechtor™ Perforated Plate Filter Screen and Fuchs Self-Aspirating Aerators.

In order to significantly improve screening performance, the new ProTechtor™ Perforated Plate Filter Screen utilizes a series of 6mm moving perforated screen panels to capture unwanted influent materials. A ProTechtor™ Screenings Washer Compactor was recommended for the removal of organics, reduction of screenings volume, and reduced odor.

In order to improve mixing and oxygen transfer efficiencies in the oxidation ditch, nine 30hp self-aspirating aerators were selected. The new aerators provide better mixing and aeration and require significantly less maintenance than the existing brush style rotors.

The new screen, washer compactor, and self-aspirating aerators were installed in the fall of 2014 and were fully operational in January 2015. Since the equipment has been in operation, the plant has experienced a noticeable increase in DO levels (averaging 3.0 mg/L), and typically only operate six of the nine units at one time. Plant personnel have reported improved screening, clean and dry screenings discharge, and overall improvement in the entire wastewater treatment process for the City of Rusk.

<b>QUANTITY OF AERATORS</b>	9
<b>AERATOR HP</b>	30 hp
<b>PLANT DESIGN FLOW</b>	1.75 MGD
<b>PLANT PEAK FLOW</b>	5.25 MGD
<b>EFFLUENT BOD</b>	10 mg/L
<b>EFFLUENT TSS</b>	10 mg/L

PERMITTED PLANT EFFLUENT	FINAL PLANT EFFLUENT
10 mg/L CBOD	2.19 mg/L CBOD
15 mg/L TSS	6.7 mg/L TSS
2 mg/L NH3	0.1 mg/L NH3

ProTechtor™ Screen & Compactor



Self-Aspirating Aerators

