



## MUNICIPAL WASTEWATER

# IFM Designs a Trial UF/ RO System to Treat High Ammonia

IFM was contacted by a long-term client regarding a facility that was having compliance issues. They were particularly struggling with their ammonia limit. The waste stream at this facility is primarily composed of storm water runoff from the parking lot area and flows to an Environmental Control Pond (ECP). When the ECP was designed and installed it was not intended to treat a high ammonia level due to urea in the stream.

IFM took laboratory and flow data on the waste stream to design a treatment system that would be applicable here. To ensure that this treatment would meet NPDES permit limits, IFM created a temporary, test system to put on site for 45 days and test the process efficiency.

IFM designed an Ultrafiltration (UF) / Reverse Osmosis (RO) system for ammonia removal. The pilot system was designed to pump the water out of the ECP to the membrane UF system. The permeate water (clean water) flowed from the UF to a frac tank (FC#1). The RO system then pulled its feed water from FC#1 and the RO permeate is captured into FC#2. The concentrated contaminants from the RO unit was fed back into FC#1 for further treatment.

Operators that were running the system would collect samples from FC#2 and take them to a lab for



analysis. If the sample results were in compliance with the NPDES permits, IFM was permitted to discharge the permeate to the waters of the state.

During this 45-day pilot, IFM successfully treated and discharged 31,900 gallons. The system successfully brought sample results for CBOD, TSS, pH, Oil & Grease, Ammonia and Chemical Oxygen Demand into compliance with their permit limits with impressive percent removal rates (see Table 1.0). The greatest

success of the project was bringing ammonia levels down under 1.5 mg/L when the UF raw water quality was as high as 45 mg/L.

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### PERCENT REMOVAL

CBOD	TSS	NH3	COD	O&G	TKN	Phos	TOC
98.2	93.6	97.9	97.7	62.8	98.1	95.6	97.9

During the 45-day time span, the system was subject to heavy rain, warm temperatures, low flow, and high concentrations of ammonia, which is an accurate representation of environmental changes that would occur throughout the year. IFM's follow up to this trial is to determine the sustainability of this type of permeant treatment system at this facility.

For more information on this project or for a quote of your own, please contact IFM.

