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SCREENING SOLUTIONS

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Robust grit removal system helps Florida facility treat septic system waste

Problem: A biosolids facility needed a screen that can handle high-volume of septic system waste.

Solution: Installing a rugged, long-lasting combined screen and grit system improves performance in harsh conditions.

In Florida, an estimated 10% of the 2 million to 3 million septic tank systems do not work properly. This leads to concern about potential pollution of the state’s waterbodies such as the Indian River Lagoon on the east coast near Vero Beach.

The Indian River County Residuals Dewatering Facility treats the wastewater and solids emptied from these systems. This service has been in high demand since the facility opened in 2010, and is expected to increase.

The Indian River County facility has been able to maintain a robust operation by installing the Lakeside Equipment Corp. (Bartlett, Ill.) Raptor® Septage Complete Plant – a high-quality, combined screen and grit removal system.

According to Rich Meckes, manager of the Indian River County facility, this system has been well worth the cost.

“We certainly didn’t anticipate getting 10 years of service from this combined screen and grit removal system. If you can get a decade out of any equipment on a tough application at a wastewater treatment plant, without any major problems, you know you’ve bought right,” Meckes said. “It shows no sign of stopping.”

Demand for septic system waste treatment on the rise in Florida

Some septic tanks currently are emptied only every 15 years, which contributes to nutrient and fecal coliform



The rotating rake teeth of Lakeside Equipment Corp. (Bartlett, Ill.) Raptor® fine screen fully penetrates the cylindrical screen bars to prevent plugging and blinding. Indian River County and Lakeside Equipment Corp. (Bartlett, Ill.)

bacteria in groundwater. In Brevard County, Fla., which accounts for 71% of the Indian River Lagoon watershed, there are 82,000 permitted septic tanks. Analysis has shown that 59,500 of these septic systems contribute pollution to groundwater that ultimately flows into the estuary, Meckes said.

New laws are being proposed that would require tanks to be inspected and emptied every 3 to 5 years. This would increase volume at the Indian River facility, which treats waste from commercial, industrial, and municipal sources.

At one time, approximately 66% of the waste hauled to the facility came from septic tanks located in Brevard,

Palm Beach, Martin, St. Lucie, and Okeechobee counties, Meckes said. Haulers came from as far as 161 km (100 mi) away. But because the facility was planned and built to serve the needs of the Indian River County community and is supported by taxes from the county, it no longer accepts loads from outside the county. But even without out-of-county deliveries, the facility continues to receive large volumes of septage. It receives about 378,500 L/d (100,000 gal/d) from 30 to 35 vacuum trucks.

Settling on a system

When the Indian River facility was under construction, staff looked at several



Lakeside's combined screen and grit removal system has been operating at Indian River County Residuals Dewatering Facility for 10 years and is going strong. Indian River County and Lakeside Equipment Corp.



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The system's pre-engineered design reduces installation costs and the stainless-steel construction resists corrosion. Indian River County and Lakeside Equipment Corp.

manufacturers and visited many sites to look for grit removal systems, Meckes said. After putting a request out for bids, facility staff did not go with the lowest bid, but chose the fully automated, Raptor Septage Complete Plant for its high-quality equipment and robust design.

The self-contained unit has a small footprint. It dewateres and compacts captured screenings to a solids content of 40%.

"There's nothing flimsy on the plant," Meckes said. "It is designed with thick stainless steel. Everything is rugged, and it is also far easier to access than others we looked at. You can open up the top cover and all the maintenance points are very conveniently located. It's clearly designed by those who understand the application and have thought through the role of the operator."

Technology proves the right tool for the job

The system's pre-engineered design reduces installation costs, and the stainless-steel construction resists corrosion. It incorporates the Raptor Fine Screen, with rotating rake teeth that fully penetrate the cylindrical screen bars. This was designed to prevent fouling and clogging caused by grease and small debris, enabling faster unloading times to authorized haulers to unload their waste at a facility. Adding the data management and accounting system with the RACS station provides administration capabilities to track and invoice customers.

The system also has proven that it's easy to maintain. Meckes explained that one of Indian River County's mechanics simply opens the system up for less than an hour per day for a clean down with a hose, or to apply a bit of grease on occasion.

"It doesn't always need a clean," Meckes said. "Another great thing about the machine is its overnight self-cleaning cycle. This stops the buildup in the bottom of the unit, which is very helpful."

Facility staff are satisfied with the technology and have a decade of evidence to prove it was a good choice. "The conditions it operates under are crazy, but in nearly a decade, there have been no bearing failures, and we have only had to carry out very basic daily maintenance," Meckes said. ■



System maintenance requires only a less than 1 h/d cleaning by Indian River County's mechanics who open the system to clean it with a hose. Indian River County and Lakeside Equipment Corp.

generate more revenue. Since installation the Indian River facility fills at least one 6-m³ (8-yd³) capacity dumpster every day with trash, Meckes said.

"We capture way more grit and rags than we ever anticipated," Meckes said. "It's

incredible what it pulls out ... The Septage Plant is extremely tough and can handle pretty much everything that comes its way."

The system also incorporates an Acceptance Control System (RACS), a security access station that allows

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***Raptor* Septage Complete Plant**

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