Case Study
City of St. Paul, NE

All-in-one grinder, screen, and auger compaction solution increases treatment efficiency for St. Paul, Nebraska

Located in central Nebraska, near Grand Island, the City of St. Paul has a population of about 2,400. The City of St. Paul Wastewater Treatment facility had been using a two-cell aerated lagoon system with UV disinfection to treat up to 175,000 gallons per day and discharge it into the Loup River, a tributary of the Platte River.

To simplify sludge management, the city built a new plant that includes a sequencing batch reactor (SBR). With this change came the need to reduce debris, including wipes, and prevent it from entering the facility's pumps. "Before we got our SBR system, we never had to worry about debris," explained Matt Helzer, city utilities superintendent. "Before, if wipes got into the lagoons, you wouldn't see them. Now you see them in our SBR, and we need to make sure they don't get caught in our pumps."

The city worked with its engineering firm, Olsson, to identify a solution that would help protect the pumps while reducing the volume of waste. Having used a Muffin Monster® Grinder in the old main lift station, the city was familiar with JWC Environmental and interested in incorporating their grinders into the new plant. "Compared to what we had before, the Muffin Monster's modern design is just so much better," stated Helzer.

Olsson and the city settled on a Vertical Auger Monster because it combines JWC's Muffin Monster grinder, fine screen, and auger compaction technology into one solution.

Problem

Shift from a lagoon system to a fully mechanical treatment plant demanded a solids conditioning and solids removal solution

Solution

Vertical Auger Monster® with wipes-ready technology

Creating a small headworks facility

The Vertical Auger Monster captures solids; vertically moves the waste out of the lift station; launders the screens to remove fecal matter; and dewaters the screens before depositing clean, dry material into a trash bin.

The unit handles wastewater flow rates up to 620 gallons per minute into a wet well. After the system captures and compacts solids, it conveys them upward approximately 67 inches above the top of the wet well. St. Paul's unit was initially configured with a 7-tooth grinder, which is capable of handling abrasive materials, like rocks and cinder blocks, and stringy material, like rags and wipes.

JWC Environmental®
A Sulzer Brand

Muffin Monster®

“After installation, we noticed the auger was getting plugged up more frequently,” said Helzer. “I don’t think it was shredding the wipes fine enough to push them up through the screen to dump them in the trash barrel.” Not unlike many other wastewater treatment facilities, St. Paul has seen an increase in the use of disposable wipes. While these wipes are flushable, they’re not biodegradable, and they need to be properly cut down to ensure they cannot reweave after leaving the grinder.

To address this issue, JWC adapted the cutter stack with a Monster Stack configuration. The updated open-channel grinder now features a 24-inch cutter stack with 7-tooth cam cutters on the bottom and 17-tooth wipes-ready cutter technology on the top. This configuration ensures the 7-tooth cam cutters handle dense, large abrasives, while the wipes-ready technology takes care of lightweight, floating debris.

The 17-tooth technology reduces the debris to about a quarter of an inch. It cuts the wipes two different ways and then punctures them, eliminating the chance of any downstream reweaving. “Since moving to the wipes-ready technology, we’re seeing more shredding in the wipes,” explained Helzer. “We’re now getting more waste in the trash barrel.”

Helzer continued, “The Vertical Auger Monster with the wipes-ready technology has been a huge help to us. We’ve had to pull some wipes out of pumps at our lift stations in town. However, we’ve never had to pull wipes from the pumps behind the grinder and auger. In fact, after seeing how the new configuration has helped us, Olsson plans to spec out wipes-ready grinders for other towns.”

Enhancing the efficiency of the wastewater system

Pairing the grinder with a vertical, spiral screw screen helps prevent throwback and extends the life expectancy of the screening equipment. Reducing the more abrasive, heavier solids helps prevent punctures or ruptures in the screen and reduces stress on the shaftless auger that carries the waste upward.

The quarter-inch screen also enables a higher separation of organic material from the waste, minimizing odors and lowering disposal costs . Screening spray bars wash the waste, keeping the beneficial organic material in the wastewater stream.

The Vertical Auger Monster also comes standard with a jam sensor feature to prevent premature failure or mechanical issues. Should debris get caught in the grinder, the unit will try three times to remove the jam, and if unsuccessful, will send an alarm to the plant and shut the system down.

Because the unit is located outside without an overhang or awning, JWC provides weather wrapping and heat tracing to protect it from the extreme cold and heat that the Midwest is known for. Through proper construction, sealing, and insulation, JWC ensures the Vertical Auger Monster’s motor will not overheat, nor will the elements freeze up when temperatures drop to sub-zero.

“Having solids conditioning and solids removal in one unit helps reduce maintenance and protect our downstream equipment, giving us the confidence that we can handle today’s demands and be ready for whatever comes in the future.”

Matt Helzer, City Utilities Superintendent, City of St. Paul Wastewater Treatment Facility

Preparing St. Paul for the long term

With the new fully mechanical treatment plant, the city no longer has to call someone to remove the sludge from its lagoons. Removing this manual process has helped make the treatment process more cost- and time-effective.

JWC is the only manufacturer that provides a grinder and a screen in one unit. “Having one company to reach out to has been very handy, especially when we were dealing with the wipes issue,” stated Helzer. “Having solids conditioning and solids removal in one unit helps reduce maintenance and protect our downstream equipment, giving us the confidence that we can handle today’s demands and be ready for whatever comes in the future.”

For any inquiries please contact

800.331.2277

jwce.com

JWC All in One Grinder Screen Auger cs en 10.2025,
Copyright © JWC Environmental 2025

This case study is a general product presentation. It does not provide a warranty or guarantee of any kind. Please contact us for a description of the warranties and guarantees offered with our products. Directions for use and safety will be given separately. All information herein is subject to change without notice.