

Delafield-Hartland Water Pollution Control Commission

CleanFlo™ Monoscreen® and CleanWash™ Screw Wash Press



CASE STUDY

Location: Delafield, Wisconsin
Owner: City of Delafield, Wisconsin
Engineer: Foth Engineering

Expanding Service

In 1980, the Delafield-Hartland (Delhart) Water Pollution Control Commission built a wastewater treatment plant in Delafield, Wisconsin. At that time, those who built the plant never imagined that the facility would be able to help their community in the future, by offering cleaned, dried, nutrient-rich biosolids to the public for fertilizing their flower gardens and yards. But in 2003, when the Delhart plant needed to expand to facilitate population growth and increased sewage flow, the CleanFlo™ Monoscreen® and CleanWash™ Screw Wash Press (SWP) combination from WesTech Engineering was chosen as the new primary screening system.

The combination of screening and dewatering allows operators to effectively reduce the amount of contaminants that would otherwise end up in the plant's biosolids by screening out the non-organic plastics, rags, and other garbage, creating a cleaner biosolid. Delhart has since been able to develop a community program offering biosolids as fertilizer at no charge to the public.

Equipment Benefits

Since biosolids are a normal by-product of the wastewater treatment process, it only made perfect sense to put them to good use and reduce the cost of disposal. The Monoscreen's simple, yet highly effective, screening capabilities were installed in covered concrete channels that are easy to access for regular maintenance and cleaning. Odors from the channels and Monoscreen are kept to a minimum with the use of odor-control equipment.

The WesTech CleanFlo Monoscreen fine screen provides high-efficiency wastewater screening in a cost-effective design that is easy to maintain. The durable drive system uses few moving parts with no chains or submerged bearings to minimize maintenance. Its low-profile design allows easy access and inspection.

The Monoscreen improves upon traditional filter step screen designs by using a progressive step shape and motion that minimizes flow surges during operation and more evenly distributes the screenings on the face of the unit. The result is a screenings capture ratio of 82.5%, one of the highest solids removal efficiencies available for enhanced protection of downstream pumps and equipment.

Delhart CleanFlo™ Monoscreen®	
Flow Rate	3.26 MGD
Peak Flow Rate	8.1 MGD
Channel Width	36"
Overall Discharge Height	6.7'
Screen Lamella Spacing	6 mm

Combined with the optional CleanWash SWP for dewatering, the CleanFlo Monoscreen maximizes screenings capture while minimizing screenings volume for disposal.



CleanFlo™ Monoscreen® installation

WESTECH®

The improved solids washing significantly reduces odor generation and the presence of nuisance insects.

From the Monoscreen, the screenings travel to the SWP for washing and dewatering. The screenings discharge is dumped into a bagger for extra odor control and the bin is emptied on a weekly basis. The plant operators couldn't ask for a simpler system. Before the installation of the Monoscreen and SWP, they had been dealing with a soggy, wet mess from their old comminutors and grit screens.

Exceeding Expectations

Scott Luczak, General Manager at the Delhart plant, was instrumental in the decision to use the Monoscreen and SWP for the Delhart plant expansion. Luczak says that he prefers to maintain a base mat of rags and other garbage on the screening surface of the Monoscreen, which he feels helps maintain a higher capture rate of smaller particles. He periodically reduces the matt thickness to ensure that the screen is functioning properly and insists that they have had no functionality issues and have not had to replace any parts of the screen from wear since its installation in 2005. Luczak says this is the simplest, most reliable system he has worked with to produce the cleanest biosolids.

The final dried biosolids are tested quarterly. Currently, Delhart's biosolids meet Class "A" status that is approved for land application for agricultural spreading and public pickup.

One of the biggest obstacles Luczak has been trying to overcome is the public's acceptance of using domestic sewage waste as a fertilizer as opposed to traditional fertilizers or cattle manure. Even though the Class "A" biosolids have a slight barn-like odor and contain nitrogen, phosphorus, and potassium as the regular fertilizers, Luczak says they are looking at other ways to make the public feel more comfortable spreading this nutrient-rich product on their landscaping.



Efficient screenings capture makes the CleanFlo™ Monoscreen® one of the simplest and most reliable systems on the market.

"It actually should make them proud to be using recycled domestic sewage," said Luczak. "It's a 21st-century kind of 'getting down to earth.'"

