



PROBLEM: Overload of malodorous solids and costly landfill fees

SOLUTION: Screenings Washer Monster

CONSULTANT: New England Environmental

Monster Solutions

Landfill Closure Opens Door for Screenings Washer Monster[®]

Meriden, CT – A new system that grinds, washes, compacts, and dewateres bar screenings at the Meriden Water Pollution Control Facility has dramatically reduced organic content, overall volume, and eliminated remote landfill disposal costs, while significantly reducing handling needs and odor, according to the plant's manager.

The Screenings Washer Monster (SWM), installed last May as an alternative to costly, complex and burdensome procedures forced by closure of an adjacent landfill, is manufactured by JWC Environmental[®] in Costa Mesa, CA.

"Before the landfill was closed, all we had to do was haul the screenings over there in our own 8 yd³ (6m³) truck," recalls Robert T. Mercaldi, Assistant Director, Water Pollution Control Division, Dept. of Public Works, and manager of the 11.6 MGD (1830m³/h) plant, which is a two-time winner of the EPA Region One Operation and Maintenance Excellence Award.

"After the closure, we had to find a company licensed to haul over the road, certify testing for screenings parameters to be analyzed, rent a 15 yd³ (11m³) specially-lined dumpster at \$1200 a month, and pay landfill drop-off charges ranging from \$40-50/ton at sites in Ohio, Pennsylvania, and New Jersey," he said. "Meanwhile, we had a complex new task in the plant—moving solids heavily loaded with organics, heavy odor, and requiring double and triple handling."

"We called other plants in the same situation, and it didn't seem anyone had a great solution," Mercaldi continued. "We heard that a grinder/shredder already used in digesters might be used at the front end of the stream in the inlet, but we were concerned about possible re-accumulation of solids in the digester, causing plugging of pumps and heat exchangers. The state didn't like it

either, and strongly discouraged us. We were ready to award a bid and found that JWC Environmental had developed a new piece of equipment specifically designed for this situation."

"We installed the SWM unit without hiring outside contractors, including all wiring and controls, and haven't had any operational problems with it," he stated. "We did re-torque the drum head for the auger conveyor once when the LED light indicated. It's basically totally unattended. The control panel is routinely checked daily by regular plant operators, who have a manual to follow if they need it, and we'll be using our regular maintenance mechanics for bi-annual gear oil and transmission fluid checks."

"I was a little concerned when nothing came out the exit chute the first five days after startup, yet I noticed there wasn't any odor either,"



The Screenings Washer Monster, operated by the bar screen motor, collects screenings in this square hopper.



he remembered. "Finally, a very dry solid, resembling shredded newspaper, extended 6 to 8 inches (150 to 200mm) above the exit chute, like ashes at the end of a cigarette. That falls off into a bin and we bag it up for disposal as Special Waste, or for use in trash-to-energy plants. The Connecticut Dept. of Environmental Protection is working with the trash-to-energy plants to re-classify the material as Municipal Solid Waste."

"We've been able to reduce the weight of our bar screenings from eight tons (7000kg) per month to 660 lbs. (300kg) per month, and their volume reduced from 15 yd³ (11m³)/mo. to one yd³ (.7m³)/mo.," he concluded. "In addition to eliminating the cost for dumping, and the extra work with a backhoe, front-end loader, wheelbarrows, and dumpster, we no longer need the bar screen at our pump station. All the screenings formerly removed there are pumped to the inlet building where the new unit is."

Mercaldi said his two remaining units are 1½" (40mm) fine screens, with automatic raking systems. A single chute receives scrapings from each screen, with piped in effluent water pushing them into the SWM's hopper. They move through a grinder, and into a wash box, where high-pressure sprayers clean the ground up particles and wash out organics. Compression and dewatering follows, with more water squeezed out in the tapered exit chute. He adds the final product has the appearance of very compacted shredded newspaper.

He said the unit is driven by the bar screen, with a vertical float tripping the switch as the level rises. Fifteen to twenty minute cycles are repeated as needed. Plant back flow water is used to wash screenings down the chute, and potable water is used in the washbox.

JWC Environmental reports similar SWM success at a western location, where moisture content of rags and screenings coming from a bar screen was reduced from 86.2% to 47.2%, and a substantial reduction in organic volume. In addition, operations staff used to dump rags and screenings on a daily

basis, and now only dump them once every two weeks, with a 30% reduction in hauling costs.

The company says the Screenings Washer Monster is a self-contained unit that effectively processes solids that have been captured by screenings removal devices. Discharge is said to be virtually free of organic (fecal) matter, with the exit plug typically 40-50% dewatered, and reduced in volume by about 75-80%.

Screenings capacities are 150 ft³ (4.25 m³)/hr for a 10 HP (7.5 kW) unit, or 25 ft³ (0.71 m³)/hr for a 5 HP (3.7 kW) unit. The SWM is available in a grinder-less version for use with the JWC Auger Monster®.

"...the final product has the appearance of compacted, shredded newspaper"

"We've been able to reduce the weight of our bar screenings and their volumes."



Captured solids are ground into small particles then cleaned, washed and dewatered before being pushed out the exit chute as clean, dry disposable waste.



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