Power plant utilizes clarifier to reduce pond dredging

MPW DESIGNS CUSTOMIZED CLARIFIER TO TREAT LEACHATE BEFORE ENTERING SETTLING POND

Settling ponds are typically used in the wastewater treatment process, allowing for the natural removal of solids and turbidity from wastewater. Water is processed through the ponds so solid contaminants can settle and clean, reusable water can flow over top. Though this technique is quite common in many industries, settling ponds often become too full and don't operate as planned, creating a host of maintenance challenges.

An Ohio-based power plant had been utilizing a series of settling ponds to treat contaminated groundwater and leachate from its landfill, so that the outfall into the river would be compliant with regulatory standards. However, after months of operation the ponds would consistently fill to max capacity, leaving little to no time for proper sedimentation.

For years, workers at the plant were tasked with cleaning and dredging the settling ponds annually, causing unnecessary delays in production and additional spending for remediation. Moreover, the water was not meeting critical outfall requirements, complicating the process even further.

MPW's on-site crew, which had been working with the plant to help dredge the ponds, was determined to find a more efficient and cost-effective solution to the customer's issue.

SOLUTION

There are a variety of requirements that a power plant must meet when evaluating wastewater outfall, but the three contaminants that require critical attention are total suspended solids (TSS), arsenic and mercury. As settling ponds fill retention times decrease, leaving trace contaminants in the outfall, which can cause regulatory concerns.

In evaluating the situation at the plant, MPW quickly realized the customer's problem was two-fold: not only was the pond issue forcing them into a costly dredging process every year, but the plant was having trouble meeting outfall requirements even when the procedure was working as intended.

To mitigate these problems, MPW's team worked with plant personnel to treat the leachate before it entered the pond.

By pretreating the water and removing a substantial amount of TSS (up to 90 percent) ahead of time, the need to dredge the pond annually is drastically reduced.

As part of a pilot project to test the theory, MPW installed an inclined plate clarifier to chemically treat the leachate and remove TSS. The clarifier essentially separates the water into two streams, a product water that goes back into the pond for reuse, and a sludge that is extracted and transported back to the landfill. The installation process took place during the winter, prompting MPW to house the clarifier in an insulated building with heat tracing to prevent freezing. MPW also managed the disposal process, creating a seamless service experience for the customer.

RESULTS

After just six months of operation the project had already produced tremendous results for the customer. The plant typically saw incoming TSS in the range of 10,000 to 12,000 parts per million. The new clarifier system and related equipment removed nearly 90 percent of those solids, resulting in longer online operations and improved pond performance.

In addition, the customer experienced a 99 percent reduction in mercury and a 79 percent reduction in arsenic – all before the water even hits the pond.

In fact, because the program is a success, the customer is now looking to expand this process into all three waste ponds on site.

COMMITMENT TO SAFETY

MPW recorded zero safety violations during this project