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a blueprint for bluepoints

By Steve Prior

Florida marina adopts environmentally friendly wash water system

ARTICLE SUMMARY

Challenge: A large marina located in sub-tropical climate conditions needed to provide a large volume of clean recycled water for boat cleaning under strict environmental conditions.

Solution: The marina sought the expertise of an engineering firm that designed a system incorporating multiple technologies to collect, store, treat, disinfect and redeliver the wash water.

Conclusion: The results have been optimal and the entire system was made of marine-grade aluminum, stainless steel and non-ferrous materials, allowing it to withstand harsh conditions.

As the developers of the Bluepoints Marina project in Port Canaveral, Fla., were designing their new facility across the waters from the rocket launch pads of Cape Kennedy, they realized they would have to bring some expertise aboard to solve their boat washdown problems. Plans called for 18 individual wash stations capable of operating simultaneously throughout the day; however, several obstacles had to be overcome:

1. The local municipality could not cost effectively supply the desired 200-gal-per-minute flow.
2. The water treatment and storage equipment would be located outdoors in direct sunlight, exposed to humidity and salt air.
3. There are stringent regulatory requirements for the wash water storage and disposal.
4. The developer's plans included the possibility of a future expansion with additional wash stations.

After searching for qualified technical support, the developers selected Waste Water Management Inc. (WWMI) of Jupiter, Fla., to join their team. WWMI had designed and built similar systems, and was knowledgeable about the environmental and regulatory conditions that would impact the design.

Minimum Impact, Maximum Protection

The system designed by WWMI's engineers incorporated multiple technologies to accomplish the collection, storage, treatment, disinfection and redelivery of the wash water. One of the goals of the Bluepoints Marina's developers was to design their facility for minimal environmental impact and maximum protection of the surrounding area. By utilizing a combination of complementary technologies, WWMI was able to meet those goals with fully automated equipment requiring minimal oversight while providing reliable service. In doing so, WWMI also ensured that its portion of the project met its objectives to remain cost-effective and reliable.

Because the equipment and all of the boat washing were located outdoors, both the high heat and frequent heavy rainfalls needed to be taken into account. A rainwater detection system was incorporated into the equipment design to enable the system to identify and capture the initial rainfall, and then to divert the remainder of the rainwater to the storm drain system. This met the regulatory requirements for initial capture without co-mingling the diverted water with wash water.

The hot summer days created a number of other design issues. Equipment and storage tanks needed to be durable enough to withstand the constant sun exposure; the evaporation rate required an automated make-up system and water quality monitoring for increased water salinity; the potential for rapid bacteria growth in the storage tanks resulting in septic water conditions; and the potential for hurricane-level weather conditions were all driving factors in the system design.

The equipment and all storage and treatment tanks were painted or coated with ultraviolet-inhibited paint, which has successfully withstood all weather conditions for more than four years. An integrated pH control and oxidation-reduction potential system manages and controls the large ozone generator in the system to prevent the water from developing any odors, and assists in the separation of some of the free and dissolved oils in the wash water. By utilizing a large corona-discharge ozone generator, the water remains disinfected without the need for any added chemicals that could affect the water quality in the closed-loop system design. Water salinity is monitored visually; however, the total dissolved solids levels have not proven to be an issue since the system was installed in early 2009.

The wash water collected in the pit system is stored and ozonated, then filtered prior to reuse through deep-bed media filters. The system was designed as three separate modules, each supplying six wash stations but capable of expansion to additional stations if needed. Each module contains large automated multimedia filters and carbon filters to polish the water prior to reuse. These filters, and the entire system, are controlled by an onboard programmable logic controller that manages the automatic filter backwashing and delivery pump control.

In order to withstand the constant saltwater and highly corrosive ambient conditions, the entire system was manufactured from marine-grade aluminum, stainless steel and non-ferrous materials. This has prevented it from deteriorating despite several intense storms and constant exposure to the salt air.

Successful Design & Operation

The performance of the system has far exceeded the initial expectations of the designers. The water quality has been consistently excellent with no reported odors or adverse quality issues. The carbon media, which had been projected to require rebedding after 12 to 18 months, has yet to be changed because the water quality has remained superior. WWMI has maintained a quarterly maintenance contract on the system since the installation, and total costs for all maintenance have been

approximately $1,000 per year. The system collects and recycles 100% of all the wash water.

"This system has been almost trouble free since the installation, and has saved us thousands of dollars in water bills from the city. We are extremely happy with the design and operation of the system, and have enjoyed our relationship with WWMI's highly professional and experienced staff," said Keith Smith, manager for Bluepoints Marina.

"Other than some minor maintenance issues, we've had excellent results with this system and have been able to offer our boat owners reliable washing capability," said Chip Gaines, operations manager for the marina. "The quality of the recycled water has also remained excellent since the system was started up."

Smith recently decided to add some additional wash stations and hired WWMI to incorporate them into the system.

Bluepoints Marina has experienced continued growth since it opened, despite local competition and a challenging economy. As one of the most environmentally friendly marinas in the area, it can point to the boat washing operation as one of the many benefits it offers to the community. Environmental proactivity, cost-effective water recycling and a customer-oriented focus have helped Bluepoints Marina become a success story. WWD

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