



CASE STUDY

PROJECT NAME

Stockton State Park
Cedar County, MO

SYSTEM SPECIFICATIONS

6300 GPD Low Pressure Pipe and
recirculating pea gravel filter system

PRODUCTS USED

9000 linear feet of
EZflow by Infiltrator

INSTALLATION DATE

2013

ENGINEER

White River Engineering
Springfield, MO

DISTRIBUTOR

Stewart Concrete
Halfway, MO

OWNER

Missouri Division of State Parks

EZflow by Infiltrator Low Pressure Pipe System Handles Large Flows at Missouri State Park

OVERVIEW

Stockton State Park in Cedar County, Missouri is a popular recreation and boating area that attracts thousands of visitors each year. Extensive guest facilities include campsites, cabins, and duplexes, restrooms and shower houses, and a 3000 slip marina with a 220-seat snack bar, and watercraft pump out station. A recreational vehicle (RV) dump station is also provided. The existing wastewater treatment system was more than 15-years old and consisted of a single cell lagoon and slow-rate land application system. There was also an inactive lagoon on the site. With a total design capacity of less than 150 people, the system was outdated and not able to accommodate future needs. The discovery of karst activity near the existing site caused the Division of State Parks to initiate the design and construction of a new wastewater treatment facilities and close the old lagoons.

CHALLENGES

Design flows averaging 6,300 GPD with peak daily flows near 12,000 GPD, seasonal operations, karst activity at the site, and stringent effluent limitations prior to discharge imposed by the Missouri Department of Natural Resources (MDNR) limited design options. The initial design included a new facultative lagoon and land application system, however a sinkhole opened in the bottom of the new lagoon during construction and the MDNR halted lagoon completion.

SYSTEM DESIGN

The revised design includes a recirculating pea gravel filter system preceded by a septic tank to achieve denitrification followed by ultraviolet light disinfection and subsurface disposal of the treated effluent via a Low-Pressure Pipe (LPP) system. The LPP system includes 9,000 linear feet of EZflow by Infiltrator geosynthetic aggregate bundles. The recirculating pea gravel filter system and LPP subsurface dispersion system were selected to achieve a high degree of treatment to protect shallow groundwater levels and avoid any surface discharge of treated wastewater effluent directly to Stockton Lake. Due to the size of the system, each field was divided into multiple zones to minimize dosing pump size with distribution laterals within each field divided into 6 equally sized zones dosed sequentially. A repeat cycle time is included with high- and low-level overrides to control pump cycles. Because preservative chemicals contained in RV waste are toxic to microorganisms in wastewater treatment systems, a pre-treatment system for the RV Dump Station including an aerobic treatment unit (ATU) preceded by a 1,500-gallon settling (trash) tank was installed.

RESULT

The \$800,000 treatment has been in continuous operation since 2013.



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