

Quanics

Engineering Water Solutions®

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Advanced Treatment System

Case Study

Site: Wild Briar Ridge Development

Location: Pigeon Forge, Tennessee

Wild Briar Ridge is a 70-lot residential development located in the shadow of the Smoky Mountains in East Tennessee.

The developers of this subdivision were faced with the prospect of building in a pristine rural setting without the advantages of urban infrastructure such as sewer. The success of managed decentralized technology provided the solution needed.

In 2004, the developers of Wild Briar needed technology that would provide wastewater treatment in an area that would be traditionally served by individual onsite systems. The problems presented by the site included shallow soil over sloping bedrock and excessive slopes. The conditions would not support more than a few individual systems. The developers chose a SCAT Aerocell cluster with drip irrigation. This allowed the construction to begin in the summer of 2005 and final start-up of the system occurred in March 2006.

The treatment system consisted of 24 SCAT Aerocell modules located at the bottom of the development. All the building lots are located upslope from the treatment cluster that allow for collection of the wastewater by STEG and STEP systems located on each lot. The wastewater is then sent to a tank farm consisting of a 25,000 gallon recirculation tank. The wastewater is then dosed to the treatment cluster. The returning treated water is split with 80% going back for treatment and the remaining 20% being discharged to a 15,000 gallon drip dosing tank. After ultra-violet disinfection, the treated water is then dosed to a 6 zone drip field. The drip system was placed in two large fields located at the bottom of the development and was installed using a vibratory plow.

The system is maintained by a level 5 management entity that sees to routine maintenance and performs mandatory testing as required by the Tennessee Department of Environment and Conservation. The utility management assures that the future needs of the public will be served in this development.



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Design Specifications Wild Briar Ridge Development

Installation Date - June 2005

Facility/Development Served

70 Lot Subdivision
24,000 gpd design flow

Tanks

Residential primary/pump - 2000 gallon capacity
Recirculation pump tank - 25,000-gallon capacity
Dispersal field pump tank - 15,000-gallon capacity

Treatment System

24 SCAT AeroCell fixed film media filters
2,040 ft³ of open cell foam media
Loading Rate: 11.76 gpd/ft³
Recirculation: 80%

Dispersal

Subsurface dispersal through drip irrigation
28,000' of pressure compensating drip tubing
Total area required: 140,000 ft²
Hydraulic loading rate: 0.17 gal/ft²/day
installed in six zones

Required Effluent Quality

Secondary quality
CBOD⁵: 25 Mg/L
TSS: 30 Mg/L
Disinfection: 20 gpm pressure UV

Operation and Maintenance

Level 5 utility management
Monthly monitoring visits recommended

