

The Summit Bechtel Family Scout Reserve Greywater Reuse/Onsite Wastewater Treatment & Dispersal

Fayette County, West Virginia



Opened in 2013, the 10,600-acre Summit Bechtel Family Scout reserve is the Boy Scouts of America's (BSA) high adventure base, and permanent home to the iconic National Scout Jamboree, an event drawing over 75,000 people. Situated in rugged, forested mountains, adjacent to the 70,000-acres New River Gorge National River area, The Summit is rich in natural, cultural, and recreational resources. With the protection of those resources in mind, the BSA held sustainability as a core principle in The Summit's design, programming and operations.

Given the site's unique landscape and proximity to the New River Gorge, wastewater management required out-of-the-box engineering. With a goal to protect the New

River by eliminating any direct discharge of treated wastewater, Biohabitats designed a system to treat reclaimed effluent on site and slowly disperse it through the soils and rich ecology of the forest floor via spray irrigation. This allows the effluent to be further polished and filtered before percolating into the groundwater, which helps protect water quality and recharge groundwater.

Spray irrigation requires good soils and areas free of steep slopes and rocks, conditions that are in limited supply at The Summit. It thus became clear that a radical reduction in visitor water use and wastewater generation was required.

The easiest way to do this? Provide low-flow, pull-chain, ambient temperature showers and then capture, treat and reuse

Reusing greywater, treating wastewater on site, and dispersing treated water through a forested ecosystem in the pristine New River Gorge.

shower and sink water ("grey-water") to flush nearby toilets. After the water is used twice and becomes "blackwater," it enters a centralized treatment plant located far from camping areas, where it is filtered, disinfected, and then dispersed through the forested sprayed system.

The greywater systems, located at each of The Summit's 112 showerhouse complexes, consist of a surge tank, recirculating textile filter (AdvanTex® by Orenco Systems), mechanical filtration, ultraviolet disinfection and reuse pump to provide clean, disinfected water for toilet flushing. Once used in the toilets and urinals, the water enters a septic tank and joins any unused greywater prior to being pumped to the wastewater treatment plant

The wastewater treatment plant has substantial equalization capacity to ensure it can handle the large flows that occur periodically during the high-population

Jamboree events. The plant relies upon the low-energy, biologically stable operations provided by fixed-film microbiology using trickling filters with integrated clarifiers. Components include primary treatment tanks at each showerhouse complex, a covered, 14 million gallon equalization lagoon, anoxic reactors, trickling filters with clarifiers, microfiltration and ultraviolet disinfection. The design flow is up to 96,000 gpd after equalization.

The greywater and blackwater systems at The Summit not only reduce the use of potable water by 30% and save acres of land that would otherwise be needed for effluent dispersal, they demonstrate responsible water use and the BSA's commitment to sustainability to future leaders.

SERVICES

Planning
Green Infrastructure
Design
Construction Management
Program Management

*conservation planning
ecological restoration
regenerative design*



800.220.0919
www.biohabitats.com

