CASE STUDY

PROJECT NAME
Blue Oak Ranch Reserve
Santa Clara County, CA

SYSTEM SPECIFICATIONS
Gravity flow and pressurized trench wastewater recharge system

PRODUCTS USED
Infiltrator Quick4 Plus HC chambers

INSTALLATION DATE
2015/2016

ENGINEER
Biosphere Consulting
Santa Cruz, CA

INSTALLER
Battle Mountain Excavation
Santa Cruz, CA

California Wastewater Treatment System Meets Sustainability Goals and Recharges the Aquifer

SUMMARY
Blue Oak Ranch Reserve is a member of the world's largest network of university-owned and operated biological field stations and ecological reserves. It supports the University of California's commitment to excellence in teaching, research, and public service. The 3,280-square-acre property on Mount Hamilton near San Jose, California, was donated to the university in 2007, becoming part of a system of 39 reserves throughout the state that comprise the UC Natural Reserve System

CHALLENGES
A renovation of the facilities proposed by the University included new construction of housing to accommodate up to 50 people and facilities including two faculty residences, four cabins, eight seasonal cabins, and a large building to house the utility infrastructure. The plan also featured a massive off-the-grid solar array, battery backup power, generators, solar hot water heaters, water storage, and fire sprinkler pumps. A renovated barn with a research lab, accessible bathrooms and showers, large community kitchen, and presentation space would complete the renovation.

The significant increase to the existing facility necessitated the design of a suitable wastewater system to serve the expansion, protect the surrounding environment, and recharge the aquifer.

Onsite wastewater system designers, Biosphere Consulting, calculated the design flow from all of the facilities at a total peak usage of 3280 gallons per day. Due to the layout of the proposed expansion and the topography of the site, wastewater is dispersed in two separate leachfields. The first leachfield serves the faculty residences and the student cabins. This is a combination of gravity flow and pressurized (pump up) trenches. The second leachfield is a conventional gravity flow system that serves the barn. The two systems have septic tanks as primary treatment with the soils providing final treatment and polishing of the effluent prior to it returning to the local aquifer.

SYSTEM DETAILS
The wastewater recharge system installed by Battle Mountain Excavation includes 231 Infiltrator Quick4™ Plus High Capacity Chambers in a shallow system installation. Chambers were installed in trenches with equal distribution with minimal invasiveness and site disruption. The specification of recycled products for the wastewater system resulted in a reduced carbon footprint compared to labor intensive, mined aggregate, a significant benefit to the Research Station's sustainability commitment. The decentralized wastewater treatment system design also met the goal of completing the water cycle and replenishing the local aquifer.

RESULTS
With funding from the California Wildlife Conservation Board, the new facilities were completed in 2016. The project exemplifies full spectrum thinking to achieve water conservation, wastewater treatment, and energy sustainability goals.

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