The Calamity and Rebirth of Anderson Springs: A Pressure Sewer Success Story

BY JOSEPH HARMES

On the afternoon of Sept. 12, 2015, gusty winds began whipping the flames of a small grass fire on a northern California mountainside into the third-most-destructive wildfire in state history (at the time). In its path was the tiny town of Anderson Springs, Calif., where 198 of its 212 homes were destroyed, and two people lost their lives. "If hell existed on Earth, it was the Valley Fire," one politician remarked.

Today, Anderson Springs counts far fewer people than its population of less than 500 only six years ago, but it's rebuilding around the narrow road in and out of its canyon setting once surrounded by tall trees and bisected by Anderson Creek, a high-quality trout stream that flows into Putah Creek.

A couple surveys the charred remains of their property.

Born in 1874 as a resort of bath houses fed by thermal waters, much of Anderson Springs' residential and vacation housing stock took shape on miniscule lots on the edge of the creek, all incorporating septic for wastewater disposal. After the fire, scarcely any lots could meet the state's new codes requiring septic systems be at least 100 feet from a stream, or the lot size was inadequate for a septic tank and drain field. Other homes were simply primitive, failing or lacked permits.

Septic Imperils the Town's Revival

Pivotal to any semblance of recovery was implementing the Lake County SD (Special District) Anderson Springs Septic-to-Sewer Construction Project, which had been considered for a decade but lacked the money until post-fire state and federal funds became available from community-development block grants, low-to-no-interest CalHome loans and U.S. Department of Agriculture grants.

About 115 homes could not be rebuilt without a municipal sewer system, and the proposed transition from septic gained urgency as most of the structures that burned had a time limit on when the insured properties must be replaced to use insurance money.

A year after the fire, Brelje & Race Consulting Engineers of Santa Rosa, Calif., was contracted for a new feasibility study comparing gravity and STEP sewers. Gravity sewers were dismissed as unfit, mostly because of expensive, massively disruptive excavation of igneous rock. The original plan called for STEP (septic tank effluent pumping), which utilizes a pump installed inside a septic tank to send the effluent to a community force main and eventually the

wastewater-treatment plant about 2 1/4 miles away in Middletown.

Utilizing "All-Terrain" Technology

Engineers, however, recommended a third option, the pressure-sewer system manufactured by Environment One Corp. (E/One), whose grinder stations are anchored by a 1-hp semi-positive displacement (SPD) pump that enables complex pressure-sewer system designs because of its nearly vertical pump curve and resulting predictable flow. Its "sewer anywhere" technology met many of the challenges of Anderson Springs, such as limited funding, environmentally sensitive waterways and habitats, and undulating and very steep terrains.

"The roads are narrow, and the houses are placed in an irregular fashion—not on flat paths but on hillsides," says Joseph J. Tortorello of local representative Signa Mechanical in Costa Mesa, Calif. "Even where grades are not very steep, they're still on some kind of grade."

"E/One's pumps allowed for simplified hydraulic design," says David Coleman, P.E., a senior principal of Brelje & Race. "The modular nature of the E/One system permits simple construction and startups. The pressure system in general allows for shallower trenches and excavations, which, in this area, was very important because of the rock."

Although similar in start-up costs, E/One averages eight to 10 years between service calls—including no preventive maintenance—while a STEP system requires regular aftercare such as a pump-out by a qualified septic hauler every two to three years, which can cost hundreds or thousands of dollars.

Grinder pump stations require only a small hole to be dug or augered, minimizing disruption to the property. Only the access lid and alarm panel are visible to the homeowner.

Six Years Later

The project's first phase, which cost $6.8 million, installed approximately seven miles of varying-diameter force-main piping throughout the town and to the Middletown treatment plant, in addition to appurtenant facilities such as laterals at the mains, for a total project buildout of approximately 310 single-family homes.

"When we installed the mains, we put a lateral kit on the road for each parcel so they don't even need to cut into the main; just connect (a grinder pump) to the pipe and open a valve, and it can pump right into it," says Coleman.

It was followed by a $1.7 million second phase completed in 2020, which installed 97 grinder pumps. The project's total buildout cost is estimated around $10 million. Because of the plug-and-play nature of the ATS, grinder pumps can be purchased and joined by a 1 1/4-inch lateral pipe to 2- to 4-inch PVC pipe in the street to force mains when a new house is constructed. As many contractors have found, this eliminates huge upfront infrastructure costs incurred before buildout.

The project, says Tortorello, "went very smoothly. It was quickly done, especially when you are in the pine trees in a canyon. The fact that this was in such a tight area and completed so quickly was a triumph."

For more information on the design and application of pressure sewers, and to download our free software for hydraulic analysis or our lifecycle cost calculators, visit E/One's Design Center at *https://eone.com/sewer-systems/design-center*. II