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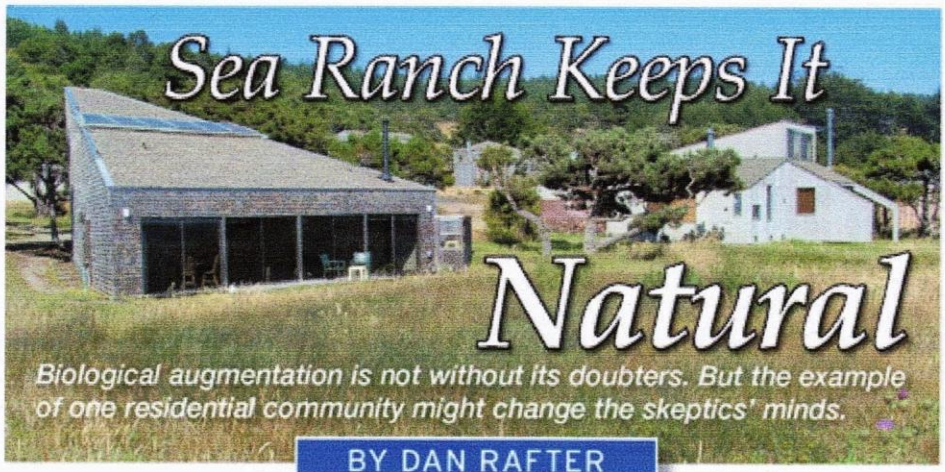

Sea Ranch Keeps It Natural

Biological augmentation is not without its doubters. But the example of one residential community might change the skeptics' minds.

BY DAN RAFTER

The Sea Ranch residential community features some of the most exclusive real estate in the country. A total of 1,500 homes sit on 2,500 lots on rugged, rocky land that hugs the California coastline for about 10 miles on either side of the famed Highway 1 in Sonoma County, CA. Picturesque views, abundant wildlife, and the feeling of "getting away from it all" are some of the reasons that draw scores of weekend and holiday residents. Officials with the Sea Ranch Association estimate that only 600 of the community's homes are lived in by full-timers—and because more than 1,200 of the community's homes rely on onsite septic systems, the high number of part-time residents can cause serious wastewater problems.

Maintaining an onsite septic system isn't always easy for the homeowners who live with them 365 days a year. Imagine, then, what a challenge it can be for people who visit the Sea Ranch after being spoiled by the power of their city sewer systems. Sea Ranch water department officials, unfortunately, don't have to imagine this. "You have renters or holiday visitors who come up from the city. They don't know either what a fireplace is or what a septic system is, and they have no idea how they really work," said Randy Burke, interim director of utilities for the Sea Ranch Association. "You have an uneducated populace up here that needs to have a turnkey system. They end up challenging their septic systems. A lot of things go down the toilet that people aren't supposed to flush down them."

Sea Ranch utility officials, though, have done a good job educating their part-time residents and renters about both the positives and negatives regarding onsite systems. The national failure rate of onsite septic systems stands at about 15%. At the Sea Ranch, this number is closer to 1%.

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Problem is, about half of the ranch's onsite systems—which come in a wide array, including sand filter, mounds, pressure distribution, and whitewater systems—have been operating for 20 or more years, and are nearing the end of their useful life spans. In the course of two decades, these systems have seen significant amounts of biological materials build up inside them. In the worst cases, the septic systems have begun failing, with wastewater bubbling to the surface. In other cases, draining time has increased significantly, resulting in odors no homeowner or renter wants to sniff.

Physical repair of these failing systems isn't an easy solution. Hiring contractors to repair or even service failing systems can cost owners up to $40,000, a large sum of money for homeowners who only want a nice vacation house.

"It's pretty serious to get hit with a bill like that," said Russ Hayter, field inspector at the Sea Ranch. "People aren't happy when they hear about how expensive it can be to solve their problems."

Sea Ranch Association officials, though, are trying something new: They're turning to Oswego, N.Y.-based Knight Treatment Systems and its White Knight septic tank insert, a product that uses a small aerator to distribute a blend of bacteria specifically designed to reopen soil passages clogged by biological materials.

"We've just started experimenting with this. If it works, it'll be a big help to some of our homeowners here who don't want to get hit with some huge repair bills," Hayter said. "We're hoping it'll give us the potential for keeping more of our older units functioning."

Background of Sea Ranch

The community got its start in 1963, when an architect and land planner named Al Boeke recommended that Oceanic California Inc., a division of developer Castle and Cooke, buy some rocky and rugged land hugging about 10 miles of coastline in Sonoma County. Boeke envisioned a community much like what Sea Ranch has become: a place where homeowners would live while impacting their surrounding

environment as little as possible. To this end, the Sea Ranch acts as a type of wildlife and game refuge. Any improvements made by either individuals or public workers must involve a minimum of grading. Utilities are required to be kept underground, and the population density low. Homes are supposed to blend into the natural landscape.

The Sea Ranch's remote location—at the north end of Sonoma County—adds to the community's charm. It also adds up to a challenge for Sea Ranch officials charged with monitoring and operating the community's water and sewer services.

"We don't get as much EPA enforcement out here as we'd like," Burke said. "We're kind of an island up here. Services are slow to get here. We have to do a lot of volunteer work or contracting ourselves, such as what we do with our sewer district."

The Sea Ranch is unique because its residents are served by a combination of centralized and decentralized sewer services. The 600 homes here that aren't connected to onsite septic systems are instead served by one of two sewer treatment plants owned by the Sonoma County Water Agency. The staffers at the Sea Ranch Association Water Co. are contracted by the county to maintain and operate the water treatment plants. The community's central treatment plant can handle 27,000 gallons of water per day, while its north one can take 160,000 gallons daily. The ranch uses treated water from the north sanitation zone to irrigate its golf links. It uses treated wastewater from the central sanitation plant for irrigation.

In all, the water company is responsible for about 40 miles of pipeline, seven water tanks, and a 300-acre surface water reservoir.

The combination of decentralized and centralized systems has worked well, both the water treatment plants and the septic systems. But the high number of newer part-time residents has had an impact on the Sea Ranch's older onsite systems.

Biological Augmentation

White Knight, manufactured by Knight Treatment Systems, is an example of enhanced biological augmentation, a form of septic system care that is relatively new to the industry. The system uses specific types of bacteria to eat through clogged soil passages. The key, according to Mark Noga, vice president of market development with Knight Treatment Systems, is that the product uses bacteria specifically chosen for the job. "We act as a sort of employment agency prequalifying a biological workforce," Noga said.

Buildup of Biological material was slowing drain times in many older systems.

White Knight uses three specific microorganisms that work well together to rehabilitate organically clogged absorption systems. The company has been marketing the product for five years; earlier this summer it tackled its first onsite septic system at the Sea Ranch, about which Hayter and Burke each report positive results.

This doesn't surprise Noga. He's only surprised that more contractors and government officials have yet to give biological augmentation a try. "There is a lot of skepticism out there regarding this," he said. "That's predictable, though, in the beginning. There are a lot of people, especially those on the academic side, who view all flushable additives as snake oil. This, though, is different. White Knight really works."

To prove this, Knight Treatment Systems has conducted tests of its product in the states of Maine and New York, getting results showing that septic systems treated with White Knight perform significantly better, draining faster, after the bacteria are injected in their tanks.

The Sea Ranch provides a perfect venue for White Knight. The community features a number of septic systems nearing the ends of their design lives. The community itself sits in an environmentally sensitive area, a place where biological means to solve problems are appreciated. By flushing a system with White Knight, homeowners avoid the mess and environmental costs of having work crews displacing large chunks of land. This also minimizes the potential for future erosion.

Finally, the residents whose systems are treated with White Knight can save significant amounts of money working with White Knight rather than replacing an entire system. Biologically treating an existing septic system costs around $6,000, while replacement could easily cost nearly twice that amount, Hayter said.

"This is a win-win for everyone involved," Noga said. "There are economic advantages to the homeowners and you see minimal disturbance of the existing landscape." White Knight, though, cannot work for every onsite system. Company officials perform site investigations to first make sure that the system failures are the result of biological clogging. White Knight only corrects failures that are caused by this.

The system at Sea Ranch that has been treated with White Knight is an example of one that has failed because of biological reasons.

First Use

The Sea Ranch Association Water Co. currently monitors about 1,250 onsite septic systems. The company educates homeowners about how the systems work, how they should best take care of them, and what they should do if a system begins to fail.

Even with education, though, problems do arise, especially with the community's older systems.

"It's become an increasingly common issue with us," said Hayter. "On a lot of our older systems, the drain times are increasing because of the buildup [of biological material] in the drainfield. Before the biological augmentation process, the only option homeowners had was physical repair. That could cost many thousands of dollars and up—up to $40,000. It's a pretty serious issue to get hit with something like that."

This summer, the Sea Ranch turned to White Knight, applying the enhanced biological product with an aeration pump that is slightly larger than the pumps operating aquariums. This creates an augmented sludge filled with active bacteria that aggressively attack the dead bacteria that form clogs of biological material.

The first system treated with White Knight is connected with a rental unit that sits about 100 feet from the ocean bluff. Sea Ranch officials, and the home's owner, have had problems with the septic system for about four years, Hayter said.

Sea Ranch officials will be watching the system closely. Knight Treatment Systems estimates that it takes from three to six months to see any remediation effects from White Knight applications.

So far, though, Sea Ranch inspectors like what they see. Hayter and fellow water company staffers inspected the treated system a week after the application, concluding that White Knight appears to be working as advertised.

"I was impressed with the redemption of the odor coming from the system," Hayter said. "That's the first thing you notice. We are very hopeful about this. If it can remediate the biological material on this system, it can save our homeowner many thousands of dollars."

Noga expects the Sea Ranch's experiment to prove exactly this. And he expects homeowners in the community to turn to White Knight in the future as they see how the product works. He warns that White Knight is no cure-all, however. "A big part of getting our product to work correctly is to have a proper site evaluation done," Noga said. "We have to find the real cause of the problem up front. If it's not a problem caused by biological reasons, White Knight is not going to do anything. Sometimes we'll find that something else has to be done in conjunction with using White Knight to solve the problem."

In the meantime, Sea Ranch water company officials will continue to educate their homeowners about the importance of treating the onsite systems properly, an effort whose monthly news bulletin that usually includes a story by Hayter. Regular e-mails frequently contain information about onsite system care. The community also conducts regular tests of onsite systems to make sure they are operating properly.

"We open our doors to anyone who wants to come in and talk to us about their systems," Burke said. "We still have a lot of educating to do, though. A lot of people will be surprised and ask us if they have a cesspool. We'll tell them, no, they have a septic tank."

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