

Winery Pioneers Wastewater Treatment System

By Yvette Saarinen



Marcus Larson / News-Register

Seven bio-reactors are part of the new water treatment system at 12th & Maple Wine Co. in Dundee.

DUNDEE — The eyes of the global wine industry will be on the Twelfth & Maple Wine Co. as it vets a new water treatment system during this year's crush. Implemented industry wide, the system could save wineries hundred of thousands of dollars annually in water treatment and disposal fees. And the payoff could be at least as big for cities with wineries hooked into their sewer systems. That's the case with Dundee, which is struggling with a badly overtaxed system in need of a multi-million-dollar replacement.

The new system at Twelfth & Maple came through summer testing with flying colors, said Assistant Winemaker Chris Baker, who oversaw the design work. And he's confident it will hold up under the rigors of a full-blown crush, slated to begin with Monday's arrival of the season's first fruit. Baker has been working on the project since the spring of 2007, when the winery, which handles custom crush work for 29 different clients, had to pony up \$180,000 to have grape waste hauled off in vacuum trucks. Dundee does not have the capacity or resources to treat raw waste from large winery operations. It is too high in biological oxygen demand or BOD for the city to handle. The city's treatment plant already is stretched to capacity, and winery operations are a major contributor.

Baker knew that the problem would be ongoing, and would thus continue to take a big bite out of profits for Twelfth & Maple. So he set his sights on developing a remedy. He nearly threw in the towel after a series of engineering firms submitted plans that called for him to do much of the work himself and still carried \$500,000 price tags. With a degree in geology from the University of North Carolina at Charlotte, and a background in analytical chemistry, he eventually decided to see if he could identify a firm willing to assist him in working up his own design. He found one in Portland-based American Equipment.

The city wanted the winery to cut its BOD all the way down to that of the typical household level, about 300. Testing showed winery waste was running anywhere from 4,000 to 15,000 BOD, so Baker knew he had a long way to go. He had to develop an extremely high-efficiency system to meet the city's strict standard. The new system achieves that with room to spare — lots of room to spare. It's been testing at 6 and 9 BOD. That drastically reduces the winery's need to filter out solids before sending its waste into the city system, and actually may eliminate it altogether. The system features an exceptionally small footprint. Given the limited space available at the winery's processing facility, which occupies one of the two buildings that used to house the Westnut operation, that's a huge plus.

Twelfth & Maple is owned by the Corus Group out of Seattle, which bought the building in 2004. Corus is hoping next spring to take over the other building on the old Westnut site, which houses the Saunders Co., a construction outfit. But for the time being, it is trying to serve a lot of clients in very little space.

The system features seven bio-reaction tanks seated on pedestals of different heights to accommodate gravity feed. Six are operational while the seventh is reserved for testing. Mark Hagg of American Equipment said they employ what's known as vacuum bubble technology. He said 3,780 pounds of oxygen are pumped in through aerators every 24 hours. The bubbles are tiny and feature a negative charge, causing them to implode. They saturate the bio-medium as they slowly rise toward the top. "It's the same thing that Mother Nature does in rivers and lakes, but we speed it up," Hagg said.

The system can virtually eliminate the BOD from a high-BOD in five days — faster than any winery system now in operation anywhere in the world, Hagg said. As a result, wineries everywhere will be watching closely, particularly those in California and the Pacific Northwest, which are dealing with similar material under similar conditions. Hagg said he knows of wineries in the Portland area that are currently paying more than \$1 million a year in treatment fees. He said the Twelfth & Maple system, which is capable of treating 10,000 gallons at a time, penciled out at around \$120,000. He said American Equipment is sharing some equipment that would otherwise have to be purchased, but the system is still quite reasonable, given what it costs to have waste hauled away in trucks every year. And Hagg said each reactor can be put on line or taken off line separately, maximizing flexibility and efficiency. He said that enables the operator to match the system to current needs at any given time.

Once Baker and Hagg got the design all worked out, they said, it took them only about two months to actually build the system. The process does have one drawback, Baker said. It requires him to descend through a pair of manholes to test and adjust pH levels, which he termed "a dirty job." Overall, he said, the project has been exciting. The winery processes all kinds of different varietals, including pinot gris and pinot noir that Baker bottles under his own Ancient Cellars label. It operates at two levels — super-premium, in which the fruit is machine-sorted, and ultra-premium, in which the fruit is hand-sorted. The full-time staff numbers 12. But counting 15 interns, the workforce rises to about 40 during the winemaking season.

For more information, e-mail Baker at Chris@12thandmaplewineco.com or call Hagg at 1-800-233-2425.