

INFORMATION SHEET

WASTE DISCHARGE REQUIREMENTS ORDER R5-2012-XXXX
VILLA TOSCANO INC.
VILLA TOSCANO WINERY
AMADOR COUNTY

Background

Villa Toscano Winery is at 10600 Shenandoah Road, two miles northeast of the City of Plymouth, as shown on Attachment A. The winery site occupies approximately 40 acres. The winery currently processes approximately 200 tons of grapes per year. Operations at the winery include grape crushing, fermentation, wine processing, and wine bottling and storage. The wastewater generated from the winery is discharged into onsite land application areas ("LAAs").

WDRs Order R5-2002-0169, adopted by the Central Valley Water Board on 6 September 2002, prescribes requirements for treatment and disposal of wastewater at Villa Toscano Winery. The Discharger proposes to upgrade the wastewater treatment facility and requests a flow limit increase to 400,000 gallons per year, which reflects the increased flows that have resulted from the Discharger's expanded operations. Order R5-2002-0169 will be rescinded and replaced with this Order.

The current wastewater treatment system consists of a 1,200-gallon septic tank used as a clarifier, a constructed wetland with a capacity of 22,000 gallons, a 142,000-gallon storage pond and 23 acres of LAAs. The LAAs consist of 19 acres of vineyards and four acres of horse pasture. The constructed wetland and the storage pond have double geosynthetic liners and leak detection systems. The supernatant from the septic tank is treated in the constructed wetland and then is discharged into the storage pond prior to land application. There are no groundwater monitoring wells onsite. It is estimated that the depth to groundwater ranges from less than 1 foot to 21 feet below the ground surface.

The annual wastewater influent flows were 329,000 gallons in 2010 and 278,500 gallons in 2011, which exceeds the total annual flow limit of WDRs Order R5-2002-0169.

The influent and effluent monitoring data for January 2009 through March 2012 are summarized below. The influent samples were collected prior to entering the constructed wetland and the effluent samples were collected from the storage pond.

Influent and Effluent Constituent Concentrations

<u>Constituent</u>	<u>Influent</u>			<u>Effluent</u>		
	<u>Minimum</u>	<u>Maximum</u>	<u>Average</u>	<u>Minimum</u>	<u>Maximum</u>	<u>Average</u>
Biochemical Oxygen Demand (mg/L)	317	29,000	4,880	11	6,400	1,048
Total Dissolved Solids	--	--	--	415	2,770	1,130
Nitrate as N (mg/L)	--	--	--	<0.1	5.0	0.5
Total Kjeldahl Nitrogen (mg/L)	--	--	--	2.5	79	17
pH (Std.)	4.3	6.8	5.5	4.4	9.2	6.7

The average effluent BOD was much greater than the current effluent limitation of 40 mg/L as a 30-day average. The Discharger stated that the current treatment system does not work efficiently and some problems have occurred, including clogging, motor burning, and pond liner leaking. To solve these issues and to increase the treatment capacity, the Discharger proposed to improve the existing wastewater treatment facilities.

Planned Changes in the Facility and Discharge

The Discharger plans to accept grapes from nearby vineyards to increase wine production from the current 200 tons per year to 336 tons per year. The projected wastewater flow will be 400,000 gallons per year with a peak production of 6,300 gallons per day (gpd) and an annual average of 1,096 gpd.

The proposed wastewater treatment system is an activated sludge system. It will consist of an initial sump, a rotary screen, a 3,000-gallon flow equalization tank with a pH controller, two 5,000-gallon aeration tanks, and a 12,000-gallon holding tank and the 23-acre LAAs. Blowers will be installed in the equalization tank and aeration tanks. The proposed treatment system will have a treatment capacity of 6,000 gpd as a monthly average. The Discharger requests to increase the flow limit to 400,000 gallons per year. A site plan is shown on Attachment B.

The septic tank will not be used as a clarifier anymore and the constructed wetland and the storage pond will be eliminated. The liners in the wetland and the pond and pea gravel in the pond will remain in place. The storage pond and wetland will be cleaned up, backfilled and capped with onsite soils.

The process wastewater from drain inlets will be collected into an initial sump, where it is then pumped through a rotary screen where solids will be removed. The wastewater will be conveyed into the flow equalization tank, where potassium hydroxide will be added to maintain a pH of 4.2 to 7. From the equalization tank, the wastewater will flow into two aeration tanks in series and then will be stored in the holding tank prior to being applied to the LAAs. The first aeration tank will receive recycled sludge from the second aeration tank for microorganisms seeding. All the solids collected from the waste treatment process including seeds, stems, skin and solids will be composted and used as a soil amendment on the vineyards. The treated wastewater will be applied to the LAAs by the existing drip irrigation system on the vineyards and the existing sprinkler system on the horse pasture.

The LAAs do not have tailwater or runoff control structures, and are located on moderately sloped land. Drip irrigation systems typically do not produce tailwater, but sprinkler systems can. Tailwater runoff from LAAs with sprinkler systems can be prevented by carefully timing and monitoring of irrigation events to ensure that applied wastewater remains within the LAAs. The Discharger will apply the wastewater to the LAAs at rates that will prevent runoff leaving the LAAs. The wastewater treatment process schematic is shown on Attachment C.

The annual application of 400,000 gallons of wastewater over the 23-acre LAAs, equates to an annual application depth of 0.7 inches. The RWD states that treated wastewater will supply approximately five percent of the annual crop irrigation demand. Each year, approximately 7.1 million gallons of supplemental irrigation water provided by the onsite supply wells are applied to the LAAs via irrigation systems. The supplemental irrigation water has an average TDS concentration of 186 mg/L based on the three sets of supply well monitoring data.

The Discharger projected the treated wastewater quality and nutrient loading rates as follows:

<u>Constituent</u>	<u>Projected Treated Wastewater</u>	
	<u>Average Concentration (mg/L)</u>	<u>Annual Loading Rates (lb/acre/year)</u>
Total Dissolved Solids	1,510	219
Biochemical Oxygen Demand	500	73
Total Nitrogen	22	3.2

The projected effluent TDS concentration of 1,500 mg/L exceeds the recommended Secondary MCL of 500 mg/L. However, the treated wastewater is only five percent of the annual crop irrigation demand; and the flow-weighted average TDS concentration of the wastewater and the supplemental irrigation water is 257 mg/L, which is less than the Secondary MCL of 500 mg/L for TDS. The overall TDS loading rate for the wastewater and the supplemental irrigation water is 700 pounds per acre per year (lbs/ac/yr). The wastewater TDS loading rate of 219 lbs/ac/yr is 31 percent of the overall TDS loading rate. It is anticipated that cropping will take up approximately 700 to 1000 lbs/ac/yr of dissolved solids. Therefore, the discharge is not likely to degrade groundwater quality for TDS. This Order includes a performance-based effluent limitation of 1,500 mg/L for TDS as an annual average.

The projected effluent total nitrogen concentration of 22 mg/L is greater than the secondary MCL of 10 mg/L for nitrate. However, the projected nitrogen loading rate of 3.2 lb/ac/yr is much less than the crop demand. Based on information obtained from *Western Fertilizer Handbook*, grapes and pasture crops take up at least 126 lbs/ac/yr and 320 lbs/ac/yr of nitrogen, respectively. Additional nitrogen fertilizer will be required to support crop health. Therefore, the discharge is not likely to degrade groundwater quality for nitrogen. This Order does not allow the total nitrogen mass loading to the LAAs exceed the agronomic rate for the crop grown.

Discharge Prohibitions, Specifications and Provisions

Wastewater flows applied to the LAAs shall not exceed the limits specified in the following table. Any wastewater generated in excess of the flow limitations above shall be disposed of at an appropriately permitted off-site facility.

<u>Flow Measurement</u>	<u>Flow Limit</u>
Total Annual Flow ¹	400,000 gallons per year
Maximum Daily Flow	6,300 gpd
Average Daily Flow ²	6,000 gpd

1 Based on total flows during the calendar year (January through December).

2 Based on total flows for the calendar month divided by the number of days in the month.

The Provisions require that the proposed improvements be completed, as well as the submittal of *Improvements Completion Report* and a Notice of Intent for coverage under WQO No. 97-03-DWQ.

The Monitoring and Reporting Program is designed to verify compliance with flow limits, effluent limitations, and operational requirements of the WDRs.