

INFORMATION SHEET

ORDER NO. R5-2010-_____
WILDHURST VINEYARDS
WASTEWATER TREATMENT FACILITY
LAKE COUNTY

Wildhurst Vineyards owns and operates a wine processing facility located at 3495 Benson Lane, Kelseyville, Lake County. The facility was constructed in 1997. Activities at the winery include receiving, crushing, pressing, and fermentation of grapes. The Discharger has no plans to build a distillery at the facility. There is no tasting room at the facility, nor are there plans to build one at the site. Wastewater is generated during crushing operations and equipment and sanitation activities. The Discharger is not currently regulated under Waste Discharge Requirements. The discharger is currently discharging winery wastewater in a septic tank and leachfield system. Domestic wastewater is collected and treated with a septic tank and leachfield system separate from the winery wastewater. Both systems are regulated under a Lake County Environmental Health Department permit. The Discharger plans to increase wine production from 10,000 cases of wine per year (approximately 24,000 gallons of wine) and 137 tons of crushed grapes to 60,000 cases of wine per year (approximately 144,000 gallons of wine) and 823 tons of crushed grapes. With the increase of wine production, the Discharger plans to construct a pre-treatment plant and wastewater treatment ponds to treat the winery wastewater and land apply the treated wastewater at a designated land application area. Organic solid waste such as grape pomace (skin, pulp, seeds, and stalks) will be collected and disced into the orchards and or vineyards as a soil amendment.

Report of Waste Discharge Submittal

The Report of Waste Discharge (RWD) was submitted to allow an expansion of activities at the site. The Discharger submitted a RWD dated 12 July 2005 for treatment and land application of wastewater generated at the facility and an expansion that will allow increased grape crushing and fermentation. Additional information was submitted on 5 April 2007, 29 May 2007, 14 March 2008, 6 June 2008, and 29 December 2008.

Wastewater Generation

Wastewater is generated from the crushing and pressing of the grapes and equipment and sanitation activities. Stormwater that falls on the winery and mixes with wastewater is treated as wastewater. Treated wastewater will be stored in the treatment ponds during the winter months and land applied during the growing season. Winery wastewater is typically high in Total Dissolved Solids (TDS), Fixed Dissolved Solids (FDS), biochemical oxygen demand, and nitrogen concentrations.

Wastewater flow rates are anticipated to vary from approximately 2,769 to 3,600 gallons per day. The highest wastewater flows are expected during grape crushing activities, September thru October. The WDRs will allow a monthly average maximum flow limit to the treatment ponds of 0.182 Mgal per month or an average annual total of 1.1 Mgal of wastewater and/or stormwater mixtures.

The flow limit will allow the Discharger flexibility in managing wastewater application because in most months the wastewater generation will be less than the monthly average limit. The total flow limit is designed to control the total loading rate of the land application area with

waste constituents. The WDRs includes Discharge Prohibitions, Specifications, Effluent Limitations, and Land Application Area (LAA) Requirements that will prevent nuisance conditions and/or overloading the land application areas.

Wastewater undergoes a pretreatment process to remove solids than discharged into a series of wastewater treatment ponds, Ponds No. 1 and 2, for biological treatment. The ponds are double lined with 40-mil synthetic liners and are equipped with aerators. From the ponds, treated wastewater is applied to the LAA.

Land Application Areas

The facility has specified 17.5 acres of LAA available for irrigation with treated wastewater. Based on the water needs of the pear orchards, the water balance concludes that the treated wastewater will not provide adequate water to meet the crop demands. The Discharger anticipates supplemental irrigation water for the growing season (April, May, June, July, August, and September). Supplemental irrigation water will be provided by the water supply well.

The RWD states that nitrogen compounds are not expected to degrade groundwater quality because the proposed nitrogen loading rate, 200lb/ac/yr, is less than the likely crop uptake rate. The Discharger estimates the total amount of nitrogen in the winery wastewater including the injected aqueous ammonia will be 1934lb. Based on 17.5 acres of LAA, the nitrogen loading rate is estimated to be 110.5 lb/ac/yr. Information obtained from *The Western Fertilizer Handbook* states the nitrogen crop uptake rate for pear orchards is 85 lb/ac/yr. The WDRs requires the Discharger to submit an *Antidegradation Analysis Report*. The objective of the report is to identify the constituents of concern, propose a groundwater concentration for the identified constituents, evaluate the effectiveness of facility improvements, and determine the pounds per acre that may be applied to the land application area that will not cause an unpermitted level of degradation to the groundwater quality. This report shall include the recommended loading rates for TDS, FDS and nitrogen for the LAA. These loading rates shall be developed to prevent or limit the amount of groundwater degradation and shall limit storage of waste constituents in the soil for long-term sustainability. A nitrogen balance shall be included to demonstrate that the required amount of LAA for irrigation of treated wastewater will be protective of the groundwater quality. The report shall include but not limited to crop selection, nutrient uptake capacity, tolerance of anticipated soil conditions, consumptive use of water and irrigation requirements, evapotranspiration rates, crop rotation schedules and appropriate protocol for the application of any supplemental fertilizer. The report shall include the application concentration values of the blended wastewater and the supplemental irrigation water prior to irrigation. The location of any available LAA shall be included and presented in a map indicating the boundaries, including fences, tailwater ditches, nearby surface water drainage ditches, and public property boundaries (e.g. roads). The report shall specify crop selection, provide crop nutrient uptake information, and a revised water balance to reflect any new crop activities.

Solids Disposal

Solid wastes from the wine processing activities, including pomace and DE, will be collected and stored in water tight containers. The disposal location for the pomace was not specified in the RWD. The Order requires the Discharger to submit a *Solids Management Plan* that includes a map showing all available areas and the proposed protocols for onsite pomace disposal. The plan shall be approved by the Executive Officer before the Discharger is allowed to dispose of solids onsite. Until this approval, all waste solids will be contained and hauled offsite for proper disposal at a permitted facility. The WDRs prohibit placing any pomace or DE associated with the winery on unpaved ground because of the possibility wastewater leaching from the piles or of stormwater mobilizing wastewater constituents. .

Background Groundwater Quality

The Discharger prepared a baseline groundwater quality assessment study prior to the initiation of the land application of treated wastewater. The study includes the installation and sampling of three groundwater monitoring wells. Five monitoring events took place during December 2007 and November 2008. The groundwater production well serving the winery was sampled in December 2005.

The groundwater quality was found to be hard, but generally good. Average Hardness (CaCO₃) values obtained from monitoring wells MW-1, MW-2, and MW-3 samples were 844.8 Mg/L, 746.8 Mg/L, and 644.4 Mg/L, respectively. Average TDS values found at monitoring wells MW-1, MW-2, and MW-3 were 274 Mg/L, 224 Mg/L, and 250 Mg/L, respectively. The Discharger anticipates treated wastewater limits before disposal to the LAA as the following: BOD 425 mg/L, TDS 1,300 mg/L, and Total Nitrogen 40mg/L. The TDS and Total Nitrogen values are well above the current groundwater quality as determined by a baseline groundwater quality assessment study prior to the initiation of the land application of processed wastewater. Electrical Conductivity (EC) data was not analyzed during the groundwater monitoring events.

Limited information was submitted in the RWD regarding the water supply well. Detection limits for both Nitrate (NO₃) and Kjeldahl Nitrogen were not reported in the RWD. Typical detection values for Nitrate and Kjeldahl Nitrogen are 1.0 mg/L. TDS was found to be 180 mg/l. The TDS value in the water supply well is lower than the shallow groundwater and significantly lower than the proposed treated wastewater.

Stormwater

Most of the winery process operations are located under covered areas to avoid stormwater mixing with the wastewater. There is a stormwater diversion system for the uncovered portion of the crush pad. The valve will remain open during the crushing and cleaning operations of the crush pad and will remain closed during all other times. The WDRs requires the Discharger to complete and implement an operations and maintenance plan that will include routine "flush times" and any necessary cleaning operations to remove residual wastewater from the drainage area, piping and crush pad and prevent comingling of uncontaminated stormwater with wastewater. The WDRs requires the Discharger to apply for coverage and

submit a Notice of Intent for Order No. 97-03-DWG, Discharge of Storm Water Associated with Industrial Activities.

Site Specific Conditions

The new pretreatment wastewater system and treatment ponds will be located within the 100 year flood zone of Kelsey Creek, in Flood Zone AO. The WDRs requires the pond berms be 2 feet above the 100-year flood levels and be designed and constructed to prevent inundation or washout due to floods with a 100 year frequency.

Basin Plan, Beneficial Uses, and Regulatory Considerations

Surface water drainage is to Kelsey Creek, which is a tributary to Clear Lake. The *Water Quality Control Plan for the California Regional Water Quality Control Board Central Valley Region, Fourth Edition for The Sacramento River Basin and the San Joaquin River Basin* (Basin Plan), designates beneficial uses, establishes water quality objectives, and contains implementation plans and policies for all waters of the Basin. Beneficial uses often determine the water quality objectives that apply to a water body. For example, waters designated as municipal and domestic supply must meet the Maximum Contaminant Levels (MCLs) for drinking waters. The Basin Plan sets forth the applicable beneficial uses (municipal and domestic water supply, agricultural supply, industrial service supply, and industrial process supply) of groundwater, procedure for application of water quality objectives, and the process for and factors to consider in allocating waste assimilation capacity.

Antidegradation

The antidegradation directives of State Water Board Resolution No. 68-16, "Statement of Policy with Respect to Maintaining High Quality Waters in California," or "Antidegradation Policy" require that waters of the State that are better in quality than established water quality objectives be maintained "consistent with the maximum benefit to the people of the State." Waters can be of high quality for some constituents or beneficial uses and not others. Policies and procedures for complying with this directive are set forth in the Basin Plan.

Resolution 68-16 is applied on a case-by-case, constituent-by-constituent basis in determining whether a certain degree of degradation can be justified. It is incumbent upon the Discharger to provide technical information for the Regional Board to evaluate and fully characterizes:

- All waste constituents to be discharged;
- The background quality of the uppermost layer of the uppermost aquifer;
- The background quality of other waters that may be affected;
- The underlying hydrogeologic conditions;
- Waste treatment and control measures;
- How treatment and control measures are justified as best practicable treatment and control;
- The extent the discharge will impact the quality of each aquifer; and
- The expected degree of degradation below water quality objectives.

In allowing a discharge, the Regional Board must comply with CWC Section 13263 in setting appropriate conditions. The Regional Board is required, relative to the groundwater that may be affected by the discharge, to implement the Basin Plan and consider the beneficial uses to be protected along with the water quality objectives essential for that purpose. The Regional Board need not authorize the full utilization of the waste assimilation capacity of the groundwater (CWC 13263(b)) and must consider other waste discharges and factors that affect that capacity.

Groundwater monitoring has been conducted at the site. The Discharger did not submit an Antidegradation Analysis. The Discharger states in the RWD that the land application of treated wastewater will not degrade the underlying groundwater based on the available land application areas and nutrient uptake levels of the vegetation crops. However, the proposed treated wastewater values are fairly higher than the underlying groundwater quality. The WDRs requires the Discharger to submit an *Antidegradation Analysis Report* to verify no groundwater degradation or quantify limited groundwater degradation and a *Salinity Source Reduction Workplan* to investigate methods to reduce the salinity of the waste that enters the treatment ponds and or land application area. The proposed WDRs have established effluent limitations as a preventive measure to prevent degradation while the antidegradation analysis and salinity studies are being performed.

Title 27

Title 27, CCR, Section 20005 et seq. ("Title 27"), contains regulations to address certain discharges to land. Title 27 establishes a waste classification system, specifies siting and construction standards for containment of classified waste, requires extensive monitoring of groundwater and the unsaturated zone for any indication of failure of containment, and specifies closure and post-closure maintenance requirements. Generally, no degradation of groundwater quality by any waste constituent is acceptable under Title 27 regulations.

The discharge of wastewater and the operation of storage facilities associated with a wastewater application can be allowed without requiring compliance with Title 27 only if groundwater degradation complies with the Basin Plan, Resolution No. 68-16 (Antidegradation Policy), and does not violate any water quality objectives.

Based upon available information this discharge meets two of three requirements for an exemption from the requirements of *Consolidated Regulation for Treatment, Storage, Processing, or Disposal of Solid Waste*, as set forth in Title 27, CCR, Division 2, Subdivision 1, Section 20005, et seq., (Title 27) based on the following.

- a. The wastewater treatment ponds are exempt from Title 27 pursuant because the Regional Water Board has issued waste discharge requirements.
- b. As this treatment facility does not currently exist as proposed in the Order, wastewater characterization and management practices were developed based upon best professional judgment. Applicability of Title 27 exemption will not be known until the Discharger completes the necessary studies to evidence their assertions of not degrading

groundwater and be in compliance with the Basin Plan. Applicability of Title 27 for the facility will be determined and, if needed, the Order will be reopened and further revisions to the Order will be made to protect groundwater quality following the submittal and review of the following documents.

- i. The Discharge is required to submit an *Antidegradation Analysis Report*.
- ii. The Discharger is required to provide a *Salinity Source Reduction Workplan*.
- c. The wastewater does not need to be managed according to Title 22 CCR, Division 4.5, and Chapter 11, as a hazardous waste.

California Environmental Quality Act (CEQA)

A Mitigated Negative Declaration was approved by the Lake County Community Development Department on 26 June 2007 for the expansion of the facility per the provisions of the CEQA. The following mitigation measures were identified.

<u>Issue Identification</u>	<u>Environmental Issue</u>	<u>Mitigation Requirements</u>
Item 8.a Water Quality	Violation of any water quality standards or waste discharge requirements.	Prior to the winery construction activities and operation of wastewater treatment system, the Discharger will submit a Report of Waste Discharge to the Central Valley Water Board for review and approval.
Item 8.c Drainage Patterns- erosion or siltation	Construction activities for the winery facility may have the potential to alter the existing drainage patterns onsite in a manner that would result in substantial erosion or siltation on-site or off-site.	The Discharger will submit a final engineered drainage plan to be reviewed and approved by the Water Resources Engineer prior to the issuance of a grading or building permit.
Item 8.d Drainage Patterns- flooding	Construction activities for the winery facility may have the potential to alter the existing drainage patterns onsite in a manner that would result in flooding on-site or off-site.	The Discharger will submit a final engineered drainage plan to be reviewed and approved by the Water Resources Engineer prior to the issuance of a grading or building permit.

Item 8.g Flood Zone- facility location	A portion of the project is located in the 100-year flood plane at Flood Zone AO, depth 2 feet.	The new facilities will be constructed in accordance with Section 25-5.2 of the Lake County cod-floodplain Ordinance.
Item 8.h Flood Zone- impede or redirect flood flows	A portion of the project is located in the 100-year flood plane at Flood Zone AO, depth 2 feet.	The new facilities will be constructed in accordance with Section 25-5.2 of the Lake County cod-floodplain Ordinance.

Effluent Limitations

Effluent limitations for BOD, TDS and FDS are included in the WDRs.

Wastewater loading limits for the LAAs are included for Biochemical Oxygen Demand (BOD). The BOD limit is intended to minimize the possibility of odors being generated by the land application. The BOD limits are 425 mg/L as a monthly average.

Treatment Technology and Control

Given the character of food processing wastewater, slow rate land treatment or secondary treatment technology is generally sufficient to control degradation of groundwater from decomposable organic constituents. But slow rate treatment may not control all waste constituents such as FDS.

Food processing wastewater typically contains nitrogen in concentrations greater than water quality objectives. Groundwater degradation by nitrogen can be controlled by an appropriate screening, settling, and slow rate land application with cropping activities when crops are harvested and removed from the land application area. The effectiveness varies, but generally best practicable treatment and control is able to control nitrogen degradation of groundwater at a concentration well below the water quality objectives. The WDRs requires that the Discharger submit an *Antidegradation Analysis Report* to determine the nitrogen loading rate that will be protective of the underlying groundwater quality and include a nitrogen balance to demonstrate that the required amount of LAA will not cause degradation to the groundwater quality.

Dissolved solids can pass through the treatment process and soil profile; effective control of such constituents relies primarily upon source control and pretreatment measures. If not managed carefully, long-term land discharge of food processing wastewater is likely to degrade groundwater with dissolved solids (as measured by FDS). Source control is an effective means to prevent groundwater degradation by FDS. The WDRs requires that the Discharger submit an *Antidegradation Analysis Report* to determine the TDS and FDS loading rates that will be protective of the underlying groundwater quality.

A discharge of wastewater that overloads soils with nutrients and organics can result in anaerobic conditions in the soil profile, which in turn creates organic acids and decreases soil pH. Under conditions of low soil pH (below 5), iron and manganese compounds in the soil can solubilize and leach into groundwater. Overloading the land application areas is preventable. However, soil is expected to provide adequate buffering of acidic or basic wastewater.

Monitoring Requirements

Section 13267 of the CWC authorizes the Regional Board to require monitoring and technical reports as necessary to investigate the impact of a waste discharge on waters of the state. In recent years there has been increased emphasis on obtaining all necessary information, assuring the information is timely as well as representative and accurate, and thereby improving accountability of any discharger for meeting the conditions of discharge. Section 13268 of the CWC authorizes assessment civil administrative liability where appropriate.

The proposed WDRs include winery wastewater, wastewater pond, land application area, solids, and groundwater monitoring. In order to adequately characterize wastewater, the Discharger is required to monitor for BOD, dissolved solids (TDS and FDS), nitrogen, and pH.

Title 27 regulations pertaining to groundwater monitoring and the detection and characterization of waste constituents in groundwater have been in effect and successfully implemented for many years. No regulation currently specifies similar criteria more suitable for a situation where extensive land application of food processing wastewater occurs. It is appropriate that the Title 27 groundwater monitoring procedures be extended and applied on a case-by-case basis under Water Code Section 13267.

The Discharger must monitor groundwater for wastewater constituents expected to be present in the discharge, capable of reaching groundwater, and violating groundwater limitations if treatment, control, and environmental attenuation prove to be inadequate.