CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

ORDER NO. R5-2007-0146

WASTE DISCHARGE REQUIREMENTS
FOR
KAUTZ VINEYARDS, INC.
IRONSTONE VINEYARDS
CALAVERAS COUNTY

The California Regional Water Quality Control Board, Central Valley Region, (hereafter Regional Water Board) finds that:

1. Kautz Vineyards Inc. (hereafter Discharger) submitted a Report of Waste Discharge (RWD), dated 22 April 2005 for updating Waste Discharge Requirements (WDRs) for the winery wastewater treatment and disposal system at Ironstone Vineyards Winery. Supplemental information was submitted on 6 March 2006.
2. Waste Discharge Requirements Order No. R5-2007-0049 was adopted by the Regional Water Board on 4 May 2007. This revised Order is necessary to change the area used for land disposal, as described below. The other specifications, limitations and provisions, including dates for submittal of certain reports, are unchanged from Order No. R5-2007-0049.
3. On 27 July 2007, the Discharger submitted a letter requesting that WDRs Order No. R5-2007-0049 be amended to allow winery process wastewater to be land applied to a different area than specified in the WDRs. The request was made because the Discharger identified that there was an overlap between the land application area proposed for the Ironstone Vineyards winery process wastewater and the area used for application of reclaimed water on Hay Station Ranch. This revised Order allows the discharge of winery process wastewater to the new land application area. The Discharger submitted information on the new land application area on 27 July 2007, and 7 and 9 August 2007.
4. Ironstone Vineyards, which is owned and operated by Kautz Vineyards, Inc, is located on Hay Station Ranch at 1894 Six Mile Road in Murphys, Calaveras County. The winery is on Assessors Parcel Nos. 66-010-04 and 66-022-01, which are in Sections 7, 8, and 18, T3N, R14E, MDB&M. The location of the winery is presented on Attachment A, which is attached hereto and made part of this Order by reference.
5. For the purposes of this Order, the term “wastewater treatment facility” (WWTF) shall mean the winery wastewater treatment system, the effluent storage tank, and the effluent disposal system.
6. WDRs Order No. 5-01-063, adopted by the Regional Water Board on 16 March 2001, prescribed requirements for both the Ironstone Vineyards winery wastewater treatment and disposal system, and the use of recycled water obtained from the Murphys Sanitary District wastewater treatment plant for irrigation of vineyards and orchards. The 2001

Order was no longer adequate because the Discharger has constructed a new winery wastewater treatment and disposal system to comply with a Cleanup and Abatement Order issued by the Executive Officer.

7. Updated requirements for the use of recycled water from Murphys Sanitary District on Hay Station Ranch are found in WDRs Order No. R5-2007-0050, adopted by the Regional Water Board on 4 May 2007. Requirements for the winery wastewater treatment and disposal system are contained in this Order.

Previous WDRs

8. WDRs Order No. 5-01-063 permitted the treatment and disposal of up to 146,000 gallons per day (gpd) of winery wastewater. Process wastewater includes wash water from cleaning of storage tank and floors, soiled or waste wine product, and residual liquid from the wine tanks.

9. At the time the WDRs were written and adopted, the Discharger could not comply with Discharge Prohibition A.9, or Discharge Limitations C.2 through C.4 of the WDRs. Therefore, the Discharger was given one year from the adoption date to come into full compliance with the WDRs. Discharge Prohibition A.9 states "*Disposal of winery wastewater during rain events or when the soil is saturated is prohibited*". Discharge Limitation C.2 limits the loading of BOD to the spray disposal field to 100 lbs per acre per day, while Discharge Limitation C.3 limits nitrogen loading to 150 lbs per acre per year. Discharge Limitation C.4 states "*Winery wastewater effluent shall not exceed the following limits:*

Constituent	*Units*	*Monthly Average*	*Daily Maximum*
TDS	*mg/l*	*450*	*1000*
Nitrate as nitrogen	*mg/l*	*10*	*45"*

10. In October 2001, the Discharger submitted a workplan proposing improvements to the winery wastewater treatment and disposal system to come into compliance with the WDRs. The proposed improvements included constructing a new pond to store winery wastewater during the winter months and to discharge the winery wastewater to new land application areas. Staff's review of the workplan determined that the proposed improvements were not adequate to comply with the WDRs.

11. In March 2002, the Discharger submitted a letter stating that it had retained a new consultant to revaluate the proposed wastewater treatment system. The Discharger stated that it would submit a revised workplan and upgrade the wastewater system to comply with the WDRs. In April and May 2002, the Discharger submitted two separate reports, describing future upgrades and improvements for the proposed wastewater system, and the improvements already made to the current wastewater system to comply with the WDRs. The future proposed improvements included constructing a

facultative pond, constructed wetlands, and winter storage pond. Treated winery wastewater would be land applied to new vineyards.

12. In August 2002, staff met with the Discharger to discuss the proposed improvements. During the meeting, the Discharger stated that it was reconsidering whether to make the improvements described in the April and May 2002 reports. The Discharger instead stated that it would make smaller physical and management changes to the wastewater system, and believed those changes would result in compliance with the WDRs.

13. In February and September 2003, the Discharger was issued Notices of Violation (NOVs) for continued non-compliance with the WDRs. Violations included failure to comply with the monthly average and daily maximum TDS effluent limits, and spray irrigation of winery wastewater during rain events.

14. In December 2003, the Discharger submitted a technical report as required by the September 2003 NOV. The technical report contained a review of the current wastewater system and a characterization of the soil in the land disposal area. The report contained a number of conclusions and recommendations, including: that elevated TDS concentrations in the effluent is caused by the pH adjustment of the wastewater with sodium hydroxide, and that the use of sodium to neutralize the pH of the wastewater is negatively impacting the chemistry of the shallow soil in the land disposal area. The report recommended that pH neutralization of the wastewater discontinue, and requested that the Regional Water Board issue a temporary wavier to violate the WDR's pH effluent limitation. The report also stated the Discharger would undertake a study to evaluate alternative sites for land discharge of winery wastewater, followed by the submittal of a RWD.

15. Based on the fact that the Discharger could not consistently comply with the WDRs, and the Discharger's proposed solutions in the September 2003 report, on 13 July 2004, the Executive Officer issued Cleanup and Abatement (C&A) Order No. R5-2004-0712. The C&A provided a time schedule for the Discharger to come into compliance with the WDRs, and required to Discharger to submit several technical reports, including a RWD to update the WDRs based on the proposed improvements.

Existing Discharge

16. Ironstone Vineyards winery currently operates a small wastewater treatment system that is designed to collect wastewater, remove portions of the solids that may be present in the wastewater, and neutralize the process wastewater. The primary components of process wastewater include wash water from cleaning of storage tanks and floors, spilled or waste wine product, and residual liquid from the wine tanks.

17. In order to reduce the amount of wastewater generated at the winery and to reduce total dissolved solid concentrations in wastewater, in 2003 the Discharger eliminated the use of agents used to clean and disinfect equipment and instead now uses ozone as the primary disinfectant. Therefore, this Order does not require the Discharger to conduct a salinity reduction study.

18. The process wastewater treatment system includes two septic tanks to remove solids, a pH neutralization system, and a stainless steel rotary drum screen, which is used to remove fine suspended solids from the wastewater prior to be applied to the land disposal area.

19. Process wastewater is pumped to a 4.5-acre spray irrigation field for disposal. Sprinklers are used to distribute the wastewater over the area. The spray disposal fields are plumbed such that wastewater can be distributed to nine separate zones. Wastewater is applied to each zone for a given period of time, typically three days, and then wastewater is switched to another zone. Zones that have received wastewater are typically allowed to rest for several weeks before wastewater is reapplied to that zone.

20. Although WDRs Order No. 5-01-063 allows a monthly average discharge of 146,000 gpd, process wastewater flows are significantly lower. Due to the fact that the winery made improvements (i.e., covered the winery production and process areas) to eliminate stormwater from entering the wastewater treatment and disposal system and changed the way winery equipment was cleaned, wastewater flows have been reduced. Based on flow monitoring data for 2004, the monthly average wastewater flows generated at the winery range from approximately 7,300 gpd during low productions periods to approximately 17,700 gpd during periods of peak production or the crush. Peak daily flows during crush were approximately 48,000 gpd. The Discharger's RWD states that it intends to maintain the level of production to that what was produced in 2004 for at least the next five years, and that wastewater flows should not increase. In the event that the winery expands production, the Discharger will submit a new RWD.

21. The Discharger's RWD provided effluent quality data for the years of 2003 and 2004 for wastewater that was being discharged to the existing spray disposal fields. In addition, staff compiled the effluent quality data from the Discharger's self-monitoring reports for January 2005 through April 2006. The table below describes wastewater generated at the winery:

		2003/2004		January 2005 to April 2006	
Constituent	Units	Concentrations		Concentrations	
		Range	Average	Range	Average
BOD	mg/L	152-3,240	1,009	22-4,920	685
Total Suspended Solids	mg/L	213-656	16	6-1,290	252
Total Nitrogen (as N)	mg/L	0.05-25.0	5.8	0.32-60.5	7.3
Total Dissolved Solids	mg/L	444-1174	715	86-5,740	434

Volatile Dissolved Solids	mg/L	188-505	331	--	--
Inorganic Dissolved Solids	mg/L	253-1146	539	10-2,860	219

22. According to information presented in the RWD, BOD concentrations in winery wastewater can be quite variable and range from as high as approximately 3,240 mg/L during the crush period to as low as approximately 150 mg/L during November when bottling of wine is occurring. BOD concentrations were lower in 2004 compared to 2003 due to better housekeeping practices at the winery. In addition, the RWD states that total suspended solids concentrations in wastewater are relatively low through most of the year, and tend to be approximately 15% of the concentration of BOD, indicating that the majority of the BOD in wastewater is in soluble form, such as dissolved sugar, organic acids, and alcohol.

23. In 2003 and 2004, the Discharger sampled and analyzed process winery wastewater for total dissolved solids (TDS), volatile dissolved solids (VDS), and inorganic dissolved solids (IDS). Results of samples collected indicate that approximately fifty percent of the total dissolved solids content is composed of VDS, which consists primarily of sugar and organic (tannic and humic) acids that are found in wine and wine residual in process wastewater. The remaining fraction is IDS, which are primarily minerals in the source water, as well as additional inorganic solids from the wine, primarily potassium, and lesser amounts of sodium, chloride, and bicarbonate.

24. The RWD states that prior to 2004, when the winery was using sodium hydroxide to neutralize the pH of the process winery wastewater, the use of sodium hydroxide resulted in significant increases of IDS in the wastewater. Upon adoption of C&A Order No. R5-2004-0712, the Discharger stopped using sodium hydroxide. Once this practice was eliminated, the concentrations of IDS decreased dramatically.

Proposed Changes in Discharge-Wastewater Treatment

25. The Discharger proposes to upgrade the existing wastewater treatment system by installing a new biological treatment system and treated process wastewater storage tank. The system will utilize a high rate two-stage trickling filter and subsurface flow vegetated bed treatment system to treat the winery process wastewater. The system is designed to reduce the suspended and soluble organic matter in the wastewater and to neutralize the pH of the wastewater using biological treatment. Treated process wastewater will be reused for irrigation of vineyards.

26. Process winery wastewater will be pumped to the new wastewater treatment system, which will be constructed in the area of the existing spray irrigation land disposal area. Attachments B and C, which are attached hereto and made part of this Order by

reference, show the location and layout of the new winery wastewater treatment system. The new wastewater system consists of the following: a 5,000 gallon primary clarifier with a recirculation tank; a Stage One trickling filter; a 5,000-gallon secondary clarifier; a Stage Two trickling filter; a final clarifier; twenty vegetated beds; 2,000 gallon pump tank; two Arkal Disc filters; and a 144,000 gallon effluent storage tank.

27. Once wastewater enters the 5,000-gallon primary clarifier tank, which houses a duplex pump station in the second chamber of the tank, partially treated wastewater will be pumped over the Stage One trickling filters. The filters will operate in parallel and each filter will receive wastewater on an alternative pump cycle, controlled by a programmable timer and a mechanically operated automatic distributing valve.

28. Effluent from the Stage One trickling filters will flow via gravity to the secondary 5,000-gallon clarifier. The second chamber of the secondary clarifier will also house a duplex pumping system that will pump effluent to the Stage Two filters, in a manner similar to the Stage One filters. Effluent from the Stage Two filters will flow via gravity to a system of constructed vegetated beds consisting of aquatic plants. These plants will reduce the nutrients (primarily potassium and nitrogen) present in the wastewater, neutralize the pH of the wastewater, and remove any bio-floc that may slough off of the Stage Two filters.

29. The vegetated beds will be constructed in twenty large above ground fiberglass tanks, with two parallel sets of ten boxes being plumbed in series. Each tank is approximately 8 feet wide by 24 feet long. The total area of the vegetated bed system will be approximately 3,840 square feet. Each bed will be filled with approximately one and a half feet of soil and/or gravel to support emergent vegetation.

30. Effluent from the vegetated beds will flow through a recirculating valve installed in the 5,000-gallon primary clarifier. When the level in the 5,000-gallon tank is low, wastewater will be recycled through the trickling filters and vegetated beds. The system is designed so that the wastewater will be recycled 2 to 3 times per day. When the tank level is high in the 5,000 gallon tank, treated effluent will enter the 2,000 gallon effluent pump system, which will pass the water through the two Arkal Disc or sand filters plumbed in parallel. The filters will remove fines in the water before it is stored in the 144,000 gallon treated effluent storage tank. During dry periods treated wastewater will be applied to the vineyards and other crops on a daily basis; however, during periods of rainfall the storage tank will be used to store treated process water, as required when the Winery is unable to discharge water to the vineyards.

31. The 144,000-gallon effluent storage tank will be constructed of steel and will be covered. The Discharger's RWD states that level sensors will be installed on the tank to continuously monitor wastewater levels. During normal operations, the winery will maintain the storage tank near empty in order to provide storage during prolonged winter storms. According to the RWD, the tank would only be full for brief periods of time during winter storms. This Order requires the Discharger to install a level sensor to monitor wastewater levels in the effluent storage tank.

32. The Discharger's RWD provided an evaluation of winter storage requirements for the treated effluent generated from the winery. The Discharger took into account the daily wastewater flows that would be generated at the winery for the months of December through February (flow range from 1,500 to 15,000 gallons gpd), and compiled and counted rainfall events for the wettest months of the year, including December, January, and February from 1989 through 2004. Results of the evaluation indicate that the winery will need at least four days of storage during an average rainfall year, and between seven and fifteen days of storage during a greater than average rainfall year. The Discharger proposes to install a 144,000-gallon storage tank, which should provide between ten and fifteen days of storage. Additionally, the winery may cease operation, tank and haul wastewater off site for disposal, and/or provide temporary storage if the storage tank becomes full and wastewater is unable to be applied to the land application areas. Staff is concerned that the winery will not have sufficient winter storage capacity, especially during prolonged rain events and potential saturated conditions in the land application areas. Therefore, this Order requires the Discharger to submit a Operation and Maintenance Plan describing, among other things, how wastewater will managed to maintain two feet of freeboard in the storage tank when irrigation of wastewater cannot be performed. In addition, Discharge Specification B.14 requires the Discharger to cease producing wastewater until it has either obtained additional storage tanks or started hauling wastewater to a permitted facility in sufficient quantities to ensure compliance.

33. Information presented in the RWD indicates that the proposed process winery wastewater treatment system will remove 80 percent of the BOD and total suspended solids, and 50 percent of the total nitrogen present in winery process wastewater. The RWD did not provide proposed effluent quality concentrations. Therefore, staff have established effluent limitation based on previous effluent quality data, proposed performance standards of the new wastewater treatment system, and protection of groundwater quality.

Proposed Changes In Discharge-Land Disposal

34. Treated process wastewater will be reused as a source of irrigation water for approximately 44.4 acres of pasture land and/or other crops, as shown on Attachment B. Treated wastewater will be applied to the land application areas by a spray and/or drip irrigation system. The irrigation system will be set up to use treated process wastewater, or fresh water, or a blend of the two. The total irrigation water requirements for 44.4 acres of pasture land is approximately 144 acre feet year; however, the average annual volume of treated process wastewater is approximately 13 acre feet, so treated process wastewater will represent less than nine percent of the total water applied to the 44.4 acres of land application areas. Union Public Utility District will supply the other 91 percent of the water needed for irrigation purposes.

35. The land application areas will not have tailwater control. However, to prevent potential tailwater runoff from the land application areas, this Order requires the Discharger to inspect land application areas on a daily basis when wastewater is used for irrigation.

36. In order to prevent the potential off-site discharge of storm water mixed with wastewater, this Order prohibits irrigation with wastewater 24 hours before, during, or 24 hours after a rain event, or when soils are saturated.

37. Staff calculated wastewater constituent loading rates to the proposed 44.4-acres of land application areas for BOD, total nitrogen, TDS, VDS, and IDS. The loading rate calculations were based annual wastewater flows (4,500,000 gallons) to be reused on approximately 44.4 acres of pasture land and/or other crops, and effluent limitations prescribed in this Order. Projected loading rates are presented below:

Constituent	Daily Loading Rate (lbs/acre/day)	Yearly Loading Rate (lbs/acre/year)
Biochemical Oxygen Demand	0.46	169
Total Nitrogen	0.03	12.7
Total Dissolved Solids	1.38	507
Inorganic Dissolved Solids	1.04	380

38. Based on the loading rates presented in the RWD and summarized above, the following conclusions can be reached:

    a. The BOD loading rate is below the loading rate that typically causes objectionable odors and is unlikely to mobilize constituents in the subsurface. Applications of BOD at less than 100 lbs/ac•day generally do not cause nuisance conditions. However, individual applications must be managed to prevent overloading of the land application area.

    b. The total nitrogen loading rate is below typical crop uptake rates and should not impact groundwater quality. Typical vineyards take up approximately 125 lbs/ac•year.

    c. The TDS loading calculations show application of the winery wastewater to the 44.4-acre land application area should not cause an increase in the salt (measured as specific conductivity, TDS, or chloride concentrations) in the underlying groundwater. The “total dissolved solids” component of the wastewater is composed of both volatile dissolved solids (VDS) and inorganic dissolved solids (IDS). The majority of the VDS should be removed by the treatment system, and soil microorganisms should break down any remaining VDS in a well-managed land application system. Because some plants can take up to 1,000 pounds of salt/acre/year, the loading rate for TDS should not degrade the underlying groundwater. However, it is appropriate to require groundwater monitoring to ensure that groundwater will not be degraded.

39. The RWD provides a water balance calculation to estimate the amount of land application areas that would be needed to dispose of treated process wastewater. The water balance was performed using average daily wastewater flow data collected in 2003, which is slightly higher that 2004 flows. The calculation accounts for the amount of wastewater generated, and the loss of water from evapotranspiration for the land application areas. Results of the water balance indicate that the minimum amount of acreage required for land disposal is 24 acres. This amount of land is required to allow for winter application when evapotranspiration rates are low, which restricts wastewater application rates. The Discharger proposes to irrigate 44.4 acres of land.

SOLID WASTE

40. Solid/semi-solid wastes such as pomace (skins, seeds, pulp, stems, etc. resulting from the grape crush) and filter cake media (bentonite and diatomaceous earth) are also generated by the processing operations. Such solid/semi-solid wastes are segregated from the process wastewater stream by cleanup processes (sweeping materials from floor drains) or by screens in the floor drains. Solid and semi solid wastes are placed in a composting area, and once composted, are reused as fertilizer/soil amendments in the landscaping areas throughout the winery.

WATER SUPPLY AND GROUNDWATER CONDITIONS

41. The winery receives potable water supply for the Union Public Utility District. The source of the water is the Stanislaus River that flows through Hunter Reservoir. Water quality testing of the potable water shows that the water is of very good quality. The Discharger's RWD provided water quality data collected in 2003, which is presented below:

Constituent	Units	Results
Specific Conductance	umho/cm	50
Hardness	mg/L	34
Chloride	mg/L	1.4
Sodium	mg/L	2.49
Sulfate	mg/L	1.1
Nitrate as N	mg/L	0.066

42. In April and August 2004, the Discharger conducted two subsurface field investigations to identify the presence of shallow groundwater, and to identify potential new land disposal areas. Results of the field investigations indicate that seasonal high groundwater can be as high as eight feet below ground surface. In addition, the RWD

states that due to the terrain and geology of the area, the groundwater levels commonly fluctuate 30 feet or more over a 12-month cycle of wet and dry seasons.

43. In January 2005, the Discharger collected near-surface groundwater samples from three different spring seep locations within the vicinity of the new wastewater land application areas. Prior to sampling, shallow holes were excavated to approximately 12 to 18 inches deep to allow groundwater to settle prior to sampling. Groundwater samples were filtered through a 25-mircon filter to remove gross particular matter. All three samples were analyzed for general minerals, pH, specific conductance, and hardness. Sample results are presented in the table below:

Constituent	Units	GW-1	GW-2	GW-3
Specific Conductance	µmhos/cm	237	225	188
Hardness as CaCO3	mg/L	79	79	59
pH	Std. Units	6.6	6.8	5.2
Potassium	mg/L	1.71	3.58	10.8
Chloride	mg/L	18	7.9	4.7
Nitrate as Nitrogen	mg/L	1.4	5	8.6
Sulfate	mg/L	17	5.3	31
Bicarbonate	mg/L	61	71	<5.0
Sodium	mg/L	13	17	9.3
Calcium	mg/L	20	18	18
Magnesium	mg/L	7.1	8.3	3.4
Inorganic Dissolved Solids	mg/L	139.2	136	144.8

44. While the data presented above represents localized groundwater conditions, it does suggest that, overall, the shallow groundwater is probably of good quality. General mineral concentrations are relatively low. The samples indicate that bicarbonate, sodium, and chloride are the predominant ions in solution. GW-3 had higher concentrations of potassium, sulfate, and nitrate, as compared to the other two sampling locations. GW-3 was collected from a shallow spring seep location in the middle of a meadow that was formerly used as pasture grazing land. Elevated nitrate concentrations may be a result of historical grazing practices in the area.

SITE SPECIFIC CONDITIONS

45. Average annual rainfall for the Murphys area is approximately 35.89 inches per year; the 100-year return annual total rainfall is 64.92 inches per year.

46. Evapotranspiration rates for the Murphys area are approximately 48.75 inches per year.

47. According to information presented in the RWD, the geologic conditions within the winery area consists of metamorphic rock (schist-like rock) overlaid by colluvium, which was derived from schist, which has developed into a soil. The contact between the soil

and underlying bedrock is not distinct or sharp but is mostly a gradual transition. The transition from plastic, fine-grained soil to a weathered rock is generally decomposed bedrock to remoldable clay. The depth of soils to weathered bedrock or bedrock range from approximately 5.5 to 12 feet bgs.

48. The facility is within the Angels Camp Hydrologic Area (No. 534.22), as depicted on interagency hydrologic maps prepared by the Department of Water Resources in August 1986.

49. The site is outside the 100-year flood zone.

50. Domestic wastewater generated at the winery is discharged into the Murphys Sanitary District (MSD) collection system and treated at the MSD wastewater treatment plant.

BASIN PLAN, BENEFICIAL USES, AND REGULATORY CONSIDERATIONS

51. The *Water Quality Control Plan for the Sacramento River and San Joaquin River Basins, Fourth Edition*, (hereafter Basin Plan) designates beneficial uses, establishes water quality objectives, contains implementation plans and policies for protecting waters of the basin, and incorporates by reference plans and policies adopted by the State Water Resources Control Board. Pursuant to §13263(a) of the California Water Code (CWC), waste discharge requirements must implement the Basin Plan.

52. Six Mile Creek, a seasonal creek, flows through the property. It begins as a drainage adjacent to the Murphys Sanitary District wastewater treatment plant storage ponds, flows through Hay Station Ranch and the Ironstone Winery facility, and finally enters Angels Creek, which is a tributary of New Melones Reservoir.

53. The beneficial uses of surface waters tributary to New Melones Reservoir, as stated in the Basin Plan, are municipal and domestic supply; agricultural supply; industrial process supply; hydropower generation; water contact recreation; non-contact water recreation; warm and cold freshwater habitat; spawning, reproduction, and/or early development; and wildlife habitat.

54. The beneficial uses of underlying groundwater are municipal and domestic water supply, agricultural supply, industrial service supply, and industrial process supply.

55. State Water Resources Control Board (State Board) Resolution No. 68-16 (the Antidegradation Policy) requires that the Regional Water Board, in regulating the discharge of waste, must maintain the high quality of waters of the state until it is demonstrated that any change in quality will be consistent with maximum benefit to the people of the State, will not unreasonably affect beneficial uses, and will not result in water quality less than that described in the Regional Water Board's policies (e.g., quality that exceeds water quality objectives). Resolution No. 68-16 also requires that waste discharged to high quality waters be required to meet waste discharge requirements, which will result in the best practicable treatment or control of the discharge.

56. The Discharger has requested that it should be allowed to degrade the groundwater as described in State Board Resolution No. 68-16 but has not shown that the degradation will be in the best interest of the people of the State of California, and therefore no degradation is allowed. This discharge of waste should not degrade surface water or groundwater quality. The waste will be treated using a biological treatment system (i.e., vegetated beds) and stored in an above ground tank. This Order establishes effluent limitations that are protective of the beneficial uses of the underlying groundwater, and requires the sampling of groundwater monitoring wells to assure that the discharge of waste is not impacting the underlying groundwater. Based on the result of the scheduled tasks, this Order may be reopened to reconsider effluent limitations and other requirements to comply with Resolution 68-16.

57. Application of the winery wastewater to the land application area should not cause an increase in the salt (measured as specific conductivity, TDS, or chloride concentrations) in the underlying groundwater. The "total dissolved solids" component of the wastewater is composed of both VDS and IDS. The proportion of VDS to IDS in wastewater varies with the source, but often 50-percent of the TDS in winery wastewater is in the volatile form. These volatile dissolved solids should be biologically treated in the wastewater treatment process (i.e., trickling filters, clarifiers, and vegetated beds), or a well managed land application system and should not reach groundwater. Because the crops will take up some salt, and the fact that treated wastewater only represents less than seven percent of the irrigation water demand for the vineyards, the Discharger maintains that the proposed loading rate should not degrade the underlying groundwater. However, success is highly dependent on wastewater management and the blending of irrigation water. Accordingly, effluent and groundwater monitoring is appropriate to assess whether management of the land application area prevents groundwater degradation.

58. Section 13267(b) of California Water Code provides that: "*In conducting an investigation specified in subdivision (a), the regional board may require that any person who has discharged, discharges, or is suspected of having discharged or discharging, or who proposes to discharge waste within its region, or any citizen or domiciliary, or political agency or entity of this state who has discharged, discharges, or is suspected of having discharged or discharging, or who proposes to discharge, waste outside of its region that could affect the quality of waters within its region shall furnish, under penalty of perjury, technical or monitoring program reports which the regional board requires. The burden, including costs, of these reports shall bear a reasonable relationship to the need for the report and the benefits to be obtained from the reports. In requiring those reports, the regional board shall provide the person with a written explanation with regard to the need for the reports, and shall identify the evidence that supports requiring that person to provide the reports*."

59. The technical reports required by this Order and the attached "Monitoring and Reporting Program No. R5-2007-0146" are necessary to assure compliance with these Waste Discharge Requirements (WDRs). The Discharger owns and operates the facility that generates the waste subject to this Order.

60. California Department of Water Resources sets standards for the construction and destruction of groundwater wells, is described in *California Well Standards Bulletin 74-90* (June 1991) and *Water Well Standards: State of California Bulletin 94-81* (December 1981). These standards, and any more stringent standards adopted by the state or county pursuant to CWC section 13801, apply to all monitoring wells.

61. State regulations that prescribe procedures for detecting and characterizing the impact of waste constituents from waste management units on groundwater are found in Title 27 California Code of Regulations Division 2 (Title 27). While the wastewater treatment facility is exempt from Title 27, the data analysis methods of Title 27 may be appropriate for determining whether the discharge complies with the terms for protection of groundwater specified in this Order.

62. Federal regulations for storm water discharges were promulgated by the U.S. Environmental Protection Agency on 16 November 1990 (40 CFR Parts 122, 123, and 124). The State Board adopted Order No. 97-03-DWQ (General Permit No. CAS000001) specifying waste discharge requirements for discharges of storm water associated with industrial activities, and requiring submittal of a Notice of Intent by all affected industrial dischargers. The Discharger has obtained coverage under General Permit No. CAS000001.

63. The action to update WDRs for this existing facility is exempt from the provisions of Chapter 3 of the California Environmental Quality Act (CEQA) (Public Resources Code section 21000, et seq.). The action to update WDRs for this existing facility is exempt from CEQA because it involves negligible or no expansion beyond the previous WDRs (14 California Code of Regulations (CCR) Section 15301) and it is an action taken by a regulatory agency to assure the protection of the environment, and the regulatory process involves procedures for protection of the environment (14 CCR Section 15308).

64. The discharge of wastewater is exempt from the requirements of Title 27. The exemption, pursuant to Section 20090(b), is based on the following:

    a. The Regional Water Board is issuing waste discharge requirements,
    b. The discharge complies with the Basin Plan, and
    c. The wastewater does not need to be managed according to Title 22 CCR, Division 4.5, and Chapter 11, as a hazardous waste.

65. Pursuant to California Water Code Section 13263(g), discharge is a privilege, not a right, and adoption of this Order does not create a vested right to continue the discharge.

PUBLIC NOTICE

66. All the above and the supplemental information and details in the attached Information Sheet, incorporated by reference herein, were considered in establishing the following conditions of discharge.

67. The Discharger and interested agencies and persons were notified of the intent to prescribe WDRs for this discharge and provided an opportunity for a public hearing and an opportunity to submit their written views and recommendations.

68. In a public meeting, all comments pertaining to the discharge were heard and considered.

IT IS HEREBY ORDERED that Order No. R5-2007-0049 is rescinded and, pursuant to Sections 13263 and 13267 of the California Water Code, Kautz Vineyards, Inc., its agents, successors, and assigns, in order to meet the provisions contained in Division 7 of the California Water Code and regulations adopted hereunder, shall comply with the following:

[Note: Other prohibitions, conditions, definitions, and some methods of determining compliance are contained in the attached "Standard Provisions and Reporting Requirements for Waste Discharge Requirements" dated 1 March 1991.]

A. Discharge Prohibitions:

1. Discharge of wastes to surface waters or surface water drainage courses is prohibited.
2. The discharge of stillage wastes is prohibited.
3. Bypass or overflow of untreated or partially treated waste is prohibited.
4. Discharge of waste classified as 'hazardous,' defined in Section 20164 of Title 27, CCR, or 'designated,' as defined in Section 13173 of the California Water Code, is prohibited.
5. The discharge of toxic substances into the Discharger's vegetated beds such that biological mechanisms are disturbed is prohibited.
6. The discharge of domestic waste to the winery wastewater treatment and disposal system is prohibited.
7. Discharge of treated winery wastewater to other than the land application areas shown on Attachment B is prohibited.
8. The disposal of any type of water softener backwash brine to the winery wastewater treatment system or domestic wastewater system is prohibited.

B. Discharge Specifications:

1. The monthly average discharge into the wastewater treatment system shall not exceed 18,000 gpd. Higher monthly average flows are allowed during the crush season (August through October) as long as the total yearly flow does not exceed 4,500,000 gallons.

2. Neither the treatment nor the discharge shall cause a condition of nuisance or pollution as defined by the CWC, §13050.
3. The discharge shall not cause the degradation of any water supply.
4. No waste constituent shall be released or discharged, or placed where it will be released or discharged, in a concentration or in a mass that causes violation of the Groundwater Limitations.
5. Objectionable odors originating at this facility shall not be perceivable beyond the limits of the property owned by the Discharger.
6. As a means of discerning compliance with Discharge Specification No. 5, the dissolved oxygen content of all wastewater applied to land shall not be less that 1.0 mg/L.
7. The Discharger shall operate all systems and equipment to maximize treatment of wastewater and optimize the quality of the discharge.
8. The vegetated beds shall be managed to prevent the breeding of mosquitoes.
9. As described in Discharge Prohibition A.3, no wastewater shall be discharged with partial treatment. All winery wastewater must be treated in the wastewater treatment system prior to discharge to the vineyards.
10. In the event that wastewater has to be hauled offsite for disposal, the winery must be shut down, and/or temporary storage is used because the effluent storage tank is full and irrigation of process wastewater cannot be conducted, the Discharger shall notify Regional Water Board staff within 24 hours.
11. No physical connection shall exist between wastewater piping and any domestic water supply or other domestic/industrial supply well without an air gap or approved reduced pressure device.
12. The wastewater treatment and land application system shall be designed, constructed, operated, and maintained to prevent inundation or washout due to floods with a 100-year return frequency.
13. The freeboard in the effluent storage tank shall never be less than two feet, as measured vertically from the water surface to the lowest point of overflow.

The wastewater treatment, storage, and land application system shall have sufficient capacity to accommodate wastewater flow and seasonal precipitation in compliance with Land Application Area Requirements D.2. Design seasonal precipitation shall be based on total annual precipitation using a return period of 100 years, distributed monthly in accordance with historical rainfall patterns. If the storage tank does not have capacity to hold wastewater when the land application areas cannot be irrigated in compliance with Land Application Area Requirements D.2, then the Discharger shall cease producing wastewater until it has either

obtained additional storage tanks or started hauling wastewater to a permitted facility in sufficient quantities to ensure compliance.

C. Effluent Limitations:

1. Hydraulic loading of wastewater and supplemental fresh water to the land application areas shall be at rates designed to minimize percolation below the evaporative zone, except as needed to promote surface soil chemistry that is consistent with sustainable agricultural land uses.

2. Wastewater discharged from the storage tank to the land application areas shall not exceed the following monthly average effluent limits, or such concentrations as the Discharger determines necessary to ensure compliance with the Groundwater Limitations:

Constituent	Units	Concentration
BOD	mg/L	200
Total Dissolved Solids	mg/L	600
Inorganic Dissolved Solids	mg/L	450
Total Nitrogen as N	mg/L	15

3. Wastewater discharged to the land application area shall not have a pH of less than 6.5 or greater than 9.0.

D. Land Application Area Requirements:

1. The discharge shall be distributed uniformly on adequate acreage in compliance with the Discharge Specifications and Effluent Limitations.

2. Wastewater shall not be applied to the land application area 24 hours before a predicted precipitation event, during precipitation, or within 24 hours after any precipitation event, nor shall it be applied when ground is saturated.

3. There shall be no standing water in the land application areas 24 hours after wastewater is applied, except during periods of heavy rains sustained over two or more consecutive days.

4. Crops shall be grown on the land application areas. Crops shall be selected based on nutrient uptake capacity, tolerance to high soil moisture conditions, and consumptive use of water and irrigation requirements. Cropping activities shall be sufficient to take up all the nitrogen applied. Crops and grasses shall be harvested and removed from the land application areas.

5. Discharge of process wastewater, including runoff, spray or droplets from the irrigation system, shall not occur outside the boundaries of the land application area.

6. Hydraulic loading of treated process wastewater and supplemental irrigation water shall be at reasonable agronomic rates designed to maximize uptake and breakdown of waste constituents in the root zone and minimize the percolation of waste constituents below the root zone (i.e., deep percolation).
7. Wastewater conveyance lines shall be clearly marked as such. Process wastewater controllers, valves, etc. shall be affixed with reclaimed water warning signs, and these and quick couplers and sprinkler heads shall be of a type, or secured in such a manner, that permits operation by authorized personnel only.
8. Irrigation systems shall be labeled as containing reclaimed wastewater. If wastewater and irrigation water utilize the same pipeline, then backflow prevention devices shall be installed to protect the potable water supply.
9. Public contact with wastewater shall be precluded through such means as fences, signs, and irrigation management practices. Signs with proper wording of sufficient size shall be placed at areas of access and around the perimeter of the land application areas to alert the public of the use of wastewater.
10. The land application areas shall be managed to prevent breeding of mosquitoes. In particular:
    a. All irrigation water must infiltrate completely within 24 hours;
    b. Ditches not serving as wildlife habitat should be maintained free of emergent, marginal, and floating vegetation, and;
    c. Low pressure pipelines, unpressurized pipelines, and ditches accessible to mosquitoes shall not be used to store wastewater.
11. A 50-foot buffer zone shall be maintained between any watercourse and the wetted area produced during irrigation used for process wastewater application.
12. A 100-foot buffer zone shall be maintained between any spring, domestic or irrigation well and the wetted area produced during process wastewater application.
13. Discharges to land application areas shall be managed to minimize both erosion and runoff from the irrigated area.
14. The resulting effect of the wastewater discharge on the soil pH shall not exceed the buffering capacity of the soil profile and shall not cause significant mobilization of soil constituents such as iron and manganese.

E. Solids/Sludge Disposal Requirements:

1. Collected screenings, sludge, and other solids removed from winery wastewater shall be disposed of in a manner that is consistent with Title 27, Division 2, Subdivision 1 of the CCR and approved by the Executive Officer.
2. Winery sludge and other solids shall be removed from the clarifiers, vegetated beds, and effluent storage tank as needed to ensure optimal operation and

adequate hydraulic capacity. Winery solids drying operations, if any, shall be designed and operated to prevent leachate generation.

3. Solid/semi-solid wastes (skins, seeds, pulp, stems, etc.) generated from winery process operations shall be dried, stored, and reused such that any leachate that may be present does not impact groundwater or surface waters.

4. Any proposed change in solids use or disposal practice from a previously approved practice shall be reported to the Executive Officer at least 90 days in advance of the change.

F. Groundwater Limitations:

Release of waste constituents from any system component associated with the wastewater treatment and disposal system shall not cause groundwater under and beyond that system component (as determined by an approved well monitoring network) to contain any constituents in concentrations greater than ambient background conditions, and shall not cause or contribute to the violation of any Basin Plan narrative or numeric water quality objective.

G. Provisions:

1. All technical reports required herein that involve planning, investigation, evaluation, or design, or other work requiring interpretation and proper application of engineering or geologic sciences, shall be prepared by or under the direction of persons registered to practice in California pursuant to California Business and Professions Code §6735, 7835, and7835.1. As required by these laws, completed technical reports must bear the signature(s) and seal(s) of the registered professional(s) in a manner such that all work can be clearly attributed to the professional responsible for the work.

2. All of the following reports shall be submitted pursuant to §13267 of the CWC, and shall be prepared by a California registered professional as described in Provision G.1.

   a. By **1 July 2007,** the Discharger shall submit a *Groundwater Monitoring Well Installation Workplan*. The workplan shall describe the proposed installation of groundwater monitoring wells around the land application areas to adequately characterize the groundwater quality upgradient and downgradient of this area. Every monitoring well shall be constructed to yield representative samples from the uppermost layer of the uppermost aquifer and to comply with applicable well standards. The workplan shall be consistent with, and include the items listed in, the first section of Attachment D, which is attached hereto and made part of this Order by reference.

b. By **30 September 2007**, the Discharger shall submit a *Construction Report* certifying that the new wastewater system has been constructed, inspected, and tested such that it will comply with all aspects of this Order. The report shall show the treatment system and land application area layout, describe the number of treated effluent storage tanks installed and their total volume in gallons, and shall clearly document any significant deviation from the system design as presented in the RWD.

c. By **15 October 2007,** the Discharger shall submit a Groundwater Monitoring Well Installation Report that describes the installation of groundwater monitoring wells and contains the items found in the second section of Attachment D.

d. By **30 October 2007**, the Discharger shall submit and implement an *Operation and Management Plan* (O&M Plan) that addresses operations of the wastewater treatment system and land application areas. At a minimum, the O&M Plan will describe (a) the daily operation and maintenance of the treatment system, (b) the practices used to treat the wastewater within limits specified in this Order, (c) the locations of the land application areas, and procedures used for applying wastewater to these areas to prevent excessive BOD, nitrogen, and salt over the loading limits specified in this Order, (d) the locations of flow and effluent sampling points, (e) quality control sampling procedures necessary to obtain representative samples, (f) practices used to maintain the land application area(s), and (g) the locations of the solid waste disposal areas, methods of disposal, and the daily practices associated with the disposal of the solid waste.

   In addition, the O&M plan shall include a *Contingency Plan*, describing the steps that will be taken if the wastewater in the storage tank encroaches within the two feet freeboard and irrigation of effluent cannot be conducted due to precipitation or field saturation conditions. The plan shall consider any and all steps necessary to prevent wastewater overflows from the tanks, including restricting water usage, hauling wastewater to another facility for disposal, shutting down winery processing activities, etc. This Contingency Plan shall be implemented whenever wastewater levels encroach within the two feet of freeboard in the storage tanks. A copy of the O&M Plan shall be kept at the facility for reference by operating personnel and they shall be familiar with its contents.

e. By **1 February 2010**, the Discharger shall submit a *Background Groundwater Quality Study Report*. For each groundwater monitoring parameter/constituent identified in the MRP, the report shall present a summary of monitoring data, calculation of the concentration in background monitoring wells, and a comparison of background groundwater quality to that

in wells used to monitor the land application areas. Determination of background quality shall be made using the methods described in Title 27, Section 20415(e)(10), or equivalent, and shall be based on data from at least eight consecutive quarterly (or more frequent) groundwater monitoring events. For each monitoring parameter/constituent, the report shall compare measured concentrations for compliance monitoring wells with the calculated background concentration.

If the *Background Groundwater Quality Study Report* shows that the wastewater discharge has impacted, or is likely to impact groundwater quality, then within 120 days of a request by the Executive Officer, the Discharger shall submit *Groundwater Mitigation Plan* which shall evaluate contaminant control alternatives, describe a preferred alternative, and proposed a timeline to meet the Groundwater Limitations of this Order. The selected contaminant control alternative must comply with State Water Resources Control Board Resolution No. 68-16 and be consistent with the most recent Basin Plan.

3. The Discharger shall comply with the Monitoring and Reporting Program No. R5-2007-0146, which is part of this Order, and any revisions thereto as ordered by the Executive Officer.

4. The Discharger shall comply with the "Standard Provisions and Reporting Requirements for Waste Discharge Requirements", dated 1 March 1991, which are attached hereto and by reference a part of this Order. This attachment and its individual paragraphs are commonly referenced as "Standard Provision(s)."

5. In the event of any change in control or ownership of the facility or wastewater disposal areas, the Discharger must notify the succeeding owner or operator of the existence of this Order by letter, a copy of which shall be immediately forwarded to this office. To assume operation as Discharger under this Order, the succeeding owner or operator must apply in writing to the Executive Officer requesting transfer of the Order. The request must contain the requesting entity's full legal name, the state of incorporation if a corporation, the name and address and telephone number of the persons responsible for contact with the Regional Water Board, and a statement. The statement shall comply with the signatory paragraph of Standard Provision B.3 and state that the new owner or operator assumes full responsibility for compliance with this Order. Failure to submit the request shall be considered a discharge without requirements, a violation of the California Water Code. Transfer shall be approved or disapproved by the Executive Officer.

6. The Discharger shall submit to the Regional Water Board on or before each compliance report due date the specified document, or if appropriate, a written report detailing compliance or noncompliance with the specific schedule date and task. If noncompliance is reported, then the Discharger shall state the reasons for noncompliance and shall provide a schedule to come into compliance.

7. The Discharger shall report to the Regional Water Board any toxic chemical release data it reports to the State Emergency Response Commission within 15 days of reporting the data to the Commission pursuant to §313 of the "Emergency Planning and Community Right to Know Act of 1986."
8. The Discharger shall report promptly to the Regional Water Board any material change or proposed change in the character, location, or volume of the discharge.
9. The Discharger must comply with all conditions of this Order, including timely submittal of technical and monitoring reports as directed by this Order and by the Executive Officer pursuant to Section 13267 of the California Water Code. Violations may result in enforcement action, including Regional Water Board or court orders requiring corrective action or imposing civil monetary liability, or in revision or recession of this Order.
10. A copy of this Order shall be kept at the discharge facility for reference by operating personnel. Key operating personnel shall be familiar with its contents.
11. The Regional Water Board will review this Order periodically and will revise requirements when necessary.

I, PAMELA C. CREEDON, Executive Officer, do hereby certify the foregoing is a full, true, and correct copy of an Order adopted by the California Regional Water Quality Control Board, Central Valley Region, on 26 October 2007.

PAMELA C. CREEDON, Executive Officer

JSK: 10/26/07

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

MONITORING AND REPORTING PROGRAM NO. R5-2007-0146

FOR
KAUTZ VINEYARDS, INC.
IRONSTONE VINEYARDS
CALAVERAS COUNTY

This monitoring and reporting program (MRP) incorporates requirements for monitoring of the process wastewater, vegetated beds, effluent storage tank, land application areas, solid waste, and groundwater. This MRP is issued pursuant to Water Code Section 13267. The Discharger shall not implement any changes to this MRP unless and until a revised MRP is issued by the Executive Officer.

All wastewater samples should be representative of the volume and nature of the discharge. The time, date, and location of each grab sample shall be recorded on the sample chain of custody form. Process wastewater flow monitoring shall be conducted continuously using a flow meter and shall be reported in cumulative gallons per day.

Field test instruments (such as pH and dissolved oxygen) may be used provided that:

1. The operator is trained in the proper use of the instrument;
2. The instruments are field calibrated prior to each use;
3. Instruments are serviced and/or calibrated by the manufacturer at the recommended frequency; and
4. Field calibration reports are submitted as described in the "Reporting" section of this MRP.

INFLUENT MONITORING

Process wastewater samples shall be collected prior to entering the wastewater treatment system. Influent monitoring shall include at least the following:

Constituents	Units	Type of Sample	Sampling Frequency	Reporting Frequency
Flow	gallons	Continuous	Daily[1]	Monthly
BOD_5[2]	mg/L	Grab	Monthly	Monthly

[1] Continuous monitoring requires daily meter reading or automated data collection.
[2] Five-day, 20° Celsius Biochemical Oxygen Demand.

VEGETATED BED AND EFFLUENT STORAGE TANK MONITORING

Samples shall be collected from an established sampling station located in an area that will provide a sample representative of the water in each vegetated bed vessel and the storage tank. Freeboard shall be measured vertically from the surface of the water to the lowest point of overflow, and shall be measured to the nearest 0.1 feet. Monitoring of each vegetated bed and storage tank vessel shall include, at a minimum, the following:

Constituent	Units	Type of Sample	Sampling Frequency	Reporting Frequency
Freeboard[1]	Feet	Measurement	Weekly	Monthly
Dissolved Oxygen[2, 3]	mg/L	Grab	Weekly	Monthly
Odors	--	Observation	Weekly	Monthly

[1] Freeboard monitoring only needs to be conducted for the effluent storage tank.
[2] Samples shall be collected at a depth of one foot from each pond in use, opposite the inlet. Samples shall be collected between 0700 and 0900 hours.
[3] Dissolved Oxygen monitoring only needs to be conducted for the vegetated beds.

EFFLUENT MONITORING

Effluent samples shall be collected downstream from the effluent storage tank prior to discharge to the land application areas, and shall be representative of the volume and nature of the discharge. Effluent monitoring shall include at a minimum the following:

Constituent	Units	Type of Sample	Sampling Frequency	Reporting Frequency
PH	pH Units	Grab	Weekly	Monthly
Biochemical Oxygen Demand	mg/L	Grab	Weekly[1]	Monthly
Nitrate as Nitrogen	mg/L	Grab	Weekly[1]	Monthly
Total Kjeldahl Nitrogen	mg/L	Grab	Weekly[1]	Monthly
Total Dissolved Solids	mg/L	Grab	Weekly[1]	Monthly
Inorganic Dissolved Solids	mg/L	Grab	Weekly[1]	Monthly

[1] Samples shall be collected weekly for the first year (beginning 1 October 2007). Starting 1 October 2008, samples shall be collected bi-weekly (i.e., every other week)

LAND APPLICATION AREA MONITORING

The Discharger shall monitor process wastewater discharged for irrigation to the land application areas. Monitoring shall be conducted **daily during operation** and the results shall be included in the monthly monitoring report. Evidence of erosion, field saturation, runoff, or the presence of nuisance conditions shall be noted in the report. Loading rates for the land application areas shall be calculated. Monitoring of the land application areas shall include the following:

Constituent	Units	Type of Sample	Sampling Frequency	Reporting Frequency
Wastewater Flow[1]	Gallons	Continuous[1]	Daily	Monthly
Supplemental Irrigation Flow	Gallons	Continuous[1]	Daily	Monthly
Local Rainfall	Inches	Measurement	Daily	Monthly
Saturated Soil Conditions	Yes/No	Observation	Daily	Monthly

Constituent	Units	Type of Sample	Sampling Frequency	Reporting Frequency
Acreage Applied[2]	Acres	Calculated	Daily	Monthly
Application Rate	gal/acre•day	Calculated	Daily	Monthly
BOD Loading Rate	lbs/acre•month	Calculated	Daily	Monthly
Total Nitrogen Loading Rate[3]	lbs/acre•month[4]	Calculated	Monthly	Monthly
TDS Loading Rate	lbs/acre•month[4]	Calculated	Monthly	Monthly

[1] Continuous monitoring requires daily meter reading or automated data collection and shall define the volume of wastewater discharged to the land application areas from the wastewater storage pond.
[2] Land Application Area(s) in use shall be identified by name or number and the acreage provided. If a portion of an area is used, then the acreage shall be estimated.
[3] Total nitrogen applied from all sources, including fertilizers and supplemental irrigation water if used.
[4] Report monthly total and cumulative annual to date.

At least **once per week** when wastewater is being applied to the land application areas, the entire application area shall be inspected to identify any equipment malfunction or other circumstance that might allow irrigation runoff to leave the area and/or create ponding conditions that violate the Waste Discharge Requirements. A log of these inspections shall be kept at the facility and be submitted with the monthly monitoring reports. If wastewater was not applied to the land application area, then the monthly monitoring reports shall so state.

SOLIDS MONITORING

The Discharger shall record and report monthly the quantity of solids generated, storage location, disposal location, and method of disposal for all solids generated and disposed. If solid waste is shipped offsite, then an estimated amount and location of disposal shall be reported in the monthly report and the hauler identified.

GROUNDWATER MONITORING

Groundwater monitoring shall commence with the fourth quarter 2007. Prior to construction and/or sampling of any groundwater monitoring wells, the Discharger shall submit plans and specifications to the Board for approval. Once installed, all new wells shall be added to the monitoring network and shall be sampled and analyzed according to the schedule below. All samples shall be collected using approved EPA methods. Water table elevations shall be calculated to determine groundwater gradient and direction of flow.

Prior to sampling, the groundwater elevations shall be measured and the wells shall be purged of at least three well volumes until temperature, pH, and electrical conductivity have stabilized. Depth to groundwater shall be measured to the nearest 0.01 feet. Groundwater monitoring shall include, at a minimum, the following:

Constituent	Units	Type of Sample	Sampling Frequency	Reporting Frequency[4]
Depth to Groundwater	±0.01 feet	Measurement	Quarterly	Quarterly

Constituent	Units	Type of Sample	Sampling Frequency	Reporting Frequency[4]
Groundwater Elevation[1]	±0.01 feet	Calculated	Quarterly	Quarterly
Gradient	feet/feet	Calculated	Quarterly	Quarterly
Gradient Direction	Degrees	Calculated	Quarterly	Quarterly
pH	pH units	Grab	Quarterly	Quarterly
Nitrate as Nitrogen	mg/L	Grab	Quarterly	Quarterly
Total Kjeldahl Nitrogen	mg/L	Grab	Quarterly	Quarterly
Total Dissolved Solids	mg/L	Grab	Quarterly	Quarterly
Inorganic Dissolved Solids	mg/L	Grab	Quarterly	Quarterly
Standard Minerals[2,3]	mg/L	Grab	Annually	Annually

[1] Groundwater elevation shall be determined based on depth-to-water measurements from a surveyed measuring point elevation on the well.
[2] Standard Minerals shall include at least the following compounds: boron, calcium, iron, magnesium, manganese, potassium, sodium, chloride, sulfate, total alkalinity (including alkalinity series), and hardness
[3] Standard Minerals shall be analyzed in the fourth quarter of the year.
[4] Beginning with the second quarter, 2007.

REPORTING

In reporting monitoring data, the Discharger shall arrange the data in tabular form so that the date, sample type (e.g., influent, effluent, land application area, groundwater monitoring well, etc.), and reported analytical result for each sample are readily discernible. The data shall be summarized in such a manner to clearly illustrate compliance with waste discharge requirements and spatial or temporal trends, as applicable. The results of any monitoring done more frequently than required at the locations specified in the Monitoring and Reporting Program shall be reported in the next scheduled monitoring report.

As required by the California Business and Professions Code Sections 6735, 7835, and 7835.1, all groundwater monitoring reports shall be prepared under the direct supervision of a registered professional engineer or geologist and signed by the registered professional.

A. Monthly Monitoring Reports

Monthly reports shall be submitted to the Regional Board by the **1st day of the second month** following the end of the reporting period (i.e. the January monthly report is due by 1 March). Monthly reports for the months of March, June, September, and December may be submitted as part of the Quarterly Monitoring Report, if desired. The monthly reports shall include the following:

1. Results of influent, vegetated bed, effluent storage tank, effluent, land application area, and solids monitoring;

2. A comparison of monitoring data to the discharge specifications and an explanation of any violation of those requirements. Data shall be presented in tabular format;

3. If requested by staff, copies of laboratory analytical report(s);

4. A calibration log verifying calibration of all hand held monitoring instruments and devices used to comply with the prescribed monitoring program;

5. The cumulative volume of wastewater generated during the year to date;

6. The total pounds of total dissolved solids (year to date) that have been applied to the land application area, as calculated from the sum of monthly loadings;

7. The total pounds of nitrogen (year to date, from all sources including fertilizer) applied to the land application area as calculated from the sum of monthly loadings; and

8. Whether the Contingency Plan was implemented during the month, and if so, what was done.

B. Quarterly Report

Beginning with the fourth quarter 2007, the Discharger shall establish a quarterly sampling schedule for groundwater monitoring such that samples are obtained approximately every three months. Quarterly monitoring reports shall be submitted to the Regional Board by the **1st day of the second month after the quarter** (i.e. the January-March quarter is due by May 1st) each year. The Quarterly Report shall include the following:

1. Results of groundwater monitoring;

2. A narrative description of all preparatory, monitoring, sampling, and analytical testing activities for the groundwater monitoring. The narrative shall be sufficiently detailed to verify compliance with the WDR, this MRP, and the Standard Provisions and Reporting Requirements. The narrative shall be supported by field logs for each well documenting depth to groundwater; parameters measured before, during, and after purging; method of purging; calculation of casing volume; and total volume of water purged;

3. Calculation of groundwater elevations, an assessment of groundwater flow direction and gradient on the date of measurement, comparison of previous flow direction and gradient data, and discussion of seasonal trends if any;

4. A narrative discussion of the analytical results for all groundwater locations monitored including spatial and temporal tends, with reference to summary data tables, graphs, and appended analytical reports (as applicable);

5. A comparison of monitoring data to the groundwater limitations and an explanation of any violation of those requirements;

6. Summary data tables of historical and current water table elevations and analytical results;

7. A scaled map showing relevant structures and features of the facility, the locations of monitoring wells and any other sampling stations, and groundwater elevation contours referenced to mean sea level datum; and

8. Copies of laboratory analytical report(s) for groundwater monitoring.

C. Annual Report

Annual Report shall be prepared as the December monthly monitoring report. The Annual Report shall be submitted to the Regional Board by **1 February** each year. In addition to the data normally presented, the Annual Report shall include the following:

1. The contents of a regular December monthly monitoring report;

2. The contents of the regular quarterly monitoring report for the last quarter of the year;

3. If requested by staff, tabular and graphical summaries of all data collected during the year;

4. Tabular and graphical summaries of historical monthly total loading rates for wastewater generation, process water used for irrigation (hydraulic loading in gallons and inches), total nitrogen, and total dissolved solids.

5. A comprehensive evaluation of the effectiveness of the past year's wastewater application operation in terms of odor control and groundwater protection, including consideration of application management practices (i.e.: waste constituent and hydraulic loadings, application cycles, drying times, and cropping practices), and groundwater monitoring data;

6. A summary of the quantity of solid waste (lees, stems, pomace, etc) generated and disposed of both on and off the site;

7. An evaluation of the groundwater quality beneath the land application area;

8. Estimated flows for the next calendar year;

9. A discussion of compliance and corrective actions taken, as well as any planned or proposed actions needed to bring the discharge into full compliance with the waste discharge requirements; and

10. A discussion of any data gaps and potential deficiencies/redundancies in the monitoring system or reporting program.

A letter transmitting the self-monitoring reports shall accompany each report. Such a letter shall include a discussion of requirement violations found during the reporting period, and actions taken or planned for correcting noted violations, such as operation or facility modifications. If the Discharger has previously submitted a report describing corrective actions

and/or a time schedule for implementing the corrective actions, reference to the previous correspondence will be satisfactory. The transmittal letter shall contain the penalty of perjury statement by the Discharger, or the Discharger's authorized agent, as described in the Standard Provisions General Reporting Requirements Section B.3.

The Discharger shall implement the above monitoring program as of the date of this Order.

Ordered by: _____
PAMELA C. CREEDON, Executive Officer

26 October 2007
(Date)

JSK: 10/26/07

INFORMATION SHEET

ORDER NO. R5-2007-0146
KAUTZ VINEYARDS, INC.
IRONSTONE VINEYARDS
CALAVERAS COUNTY

Kautz Vineyards, Inc. (Discharger) owns and operates Ironstone Vineyards, which is located in the town of Murphys, Calaveras County. The existing WDRs (Order No. 5-01-063) prescribed requirements for both the Ironstone Vineyards winery wastewater treatment and disposal system, and the use of recycled water obtained from the Murphys Sanitary District wastewater treatment plant for the irrigation of vineyards and orchards. Order No. R5-2007-0049 now regulates the discharge of recycled water. This Order only prescribes requirements for treatment, storage, and disposal of winery process wastewater.

The Regional Water Board adopted WDRs Order No. R5-2007-0049 for Ironstone Vineyards at its 4 May 2007 meeting of the Regional Board.

On 27 July 2007, the Discharger submitted a letter requesting that WDRs Order No. R5-2007-0049 be amended to allow winery process wastewater to be land applied to a new land application. The request was made because the Discharger identified that there was an overlap in the land application areas for Ironstone Vineyards winery process wastewater, and the use of reclaimed water on Hay Station Ranch. This Order is being revised to allow the discharge of winery process wastewater to the new land application areas.

Although WDRs Order No. 5-01-063 allows a monthly average discharge of 146,000 gpd, process wastewater flows are significantly lower. Based on flow monitoring data for 2004, the monthly average wastewater flows generated at the winery range from approximately 7,300 gpd during low production periods to approximately 17,700 gpd during periods of peak production or the crush. Peak daily flows during crush were approximately 48,000 gpd. The Discharger's RWD states that it intends to maintain the level of production to that which was produced in 2004 for a least the next five years, and that wastewater flows should not increase. Process wastewater includes wash water from cleaning of storage tanks and floors, spilled or waste wine product, and residual liquid from the wine tanks.

At the time Order No. 5-01-063 was adopted, the Discharger could not comply with specific Discharge Prohibitions and Limitations, including TDS and nitrate effluent limitations, spray irrigation during precipitation events or when the ground is saturated, and BOD and total nitrogen loading to the spray disposal areas. Therefore, the Discharger was given one year from the adoption date to come into full compliance with the WDRs.

The Discharger did not make the necessary improvement to comply with the existing WDRs. Therefore in July 2004, the Executive Officer issued Cleanup and Abatement (C&A) Order No. R5-2004-0712, which provided a time schedule for compliance, and required the Discharger to submit several technical reports, including a Report of Waste Discharge to update the WDRs based on the proposed improvements.

The Discharger proposes to upgrade the existing wastewater treatment system by installing a new biological treatment system and treated process wastewater storage tank. The proposed

system will utilize a high rate two-stage trickling filter and subsurface flow vegetated beds treatment system. Treated process wastewater will be storage in a 144,000 gallons above ground tank and then be reused as a source of irrigation water for 44.4 acres of pasture land and/or other crops.

Wastewater loading rate calculation for the new land application areas indicate that (1) BOD loading rates are less than 100 lbs per acre per day and should not cause nuisance conditions, (2) nitrogen loading rates are below typical crop uptake rates and should not impact groundwater quality, and (3) TDS loading to the land application areas should not cause an increase in the salt concentrations in the underlying groundwater.

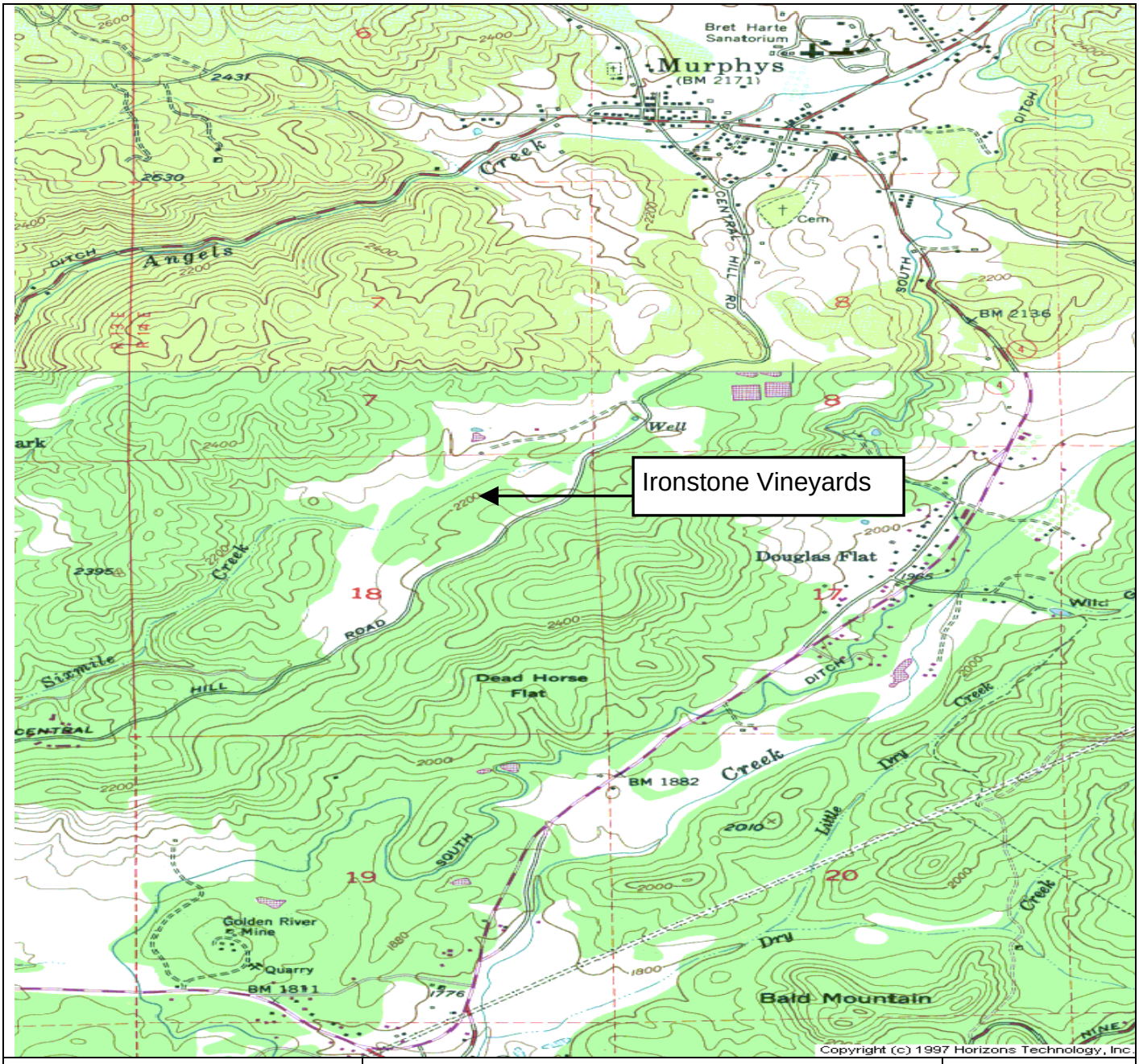
Solid/semi-solid wastes such as pomace (skins, seeds, pulp, stems, etc. resulting from the grape crush) and filter cake media (bentonite and diatomaceous earth) are also generated by the processing operations. Such solid/semi-solid wastes are segregated from the process wastewater stream by cleanup processes (sweeping materials from floor drains) or by screens in the floor drains. Solid and semi solid waste are placed in a composting area, and once composted are reused a fertilizer/soil amendments in the landscaping areas throughout the winery.

Domestic wastewater generated at the winery is discharged into the Murphys Sanitation District (MSD) collection system and is treated at the MSD wastewater treatment plant.

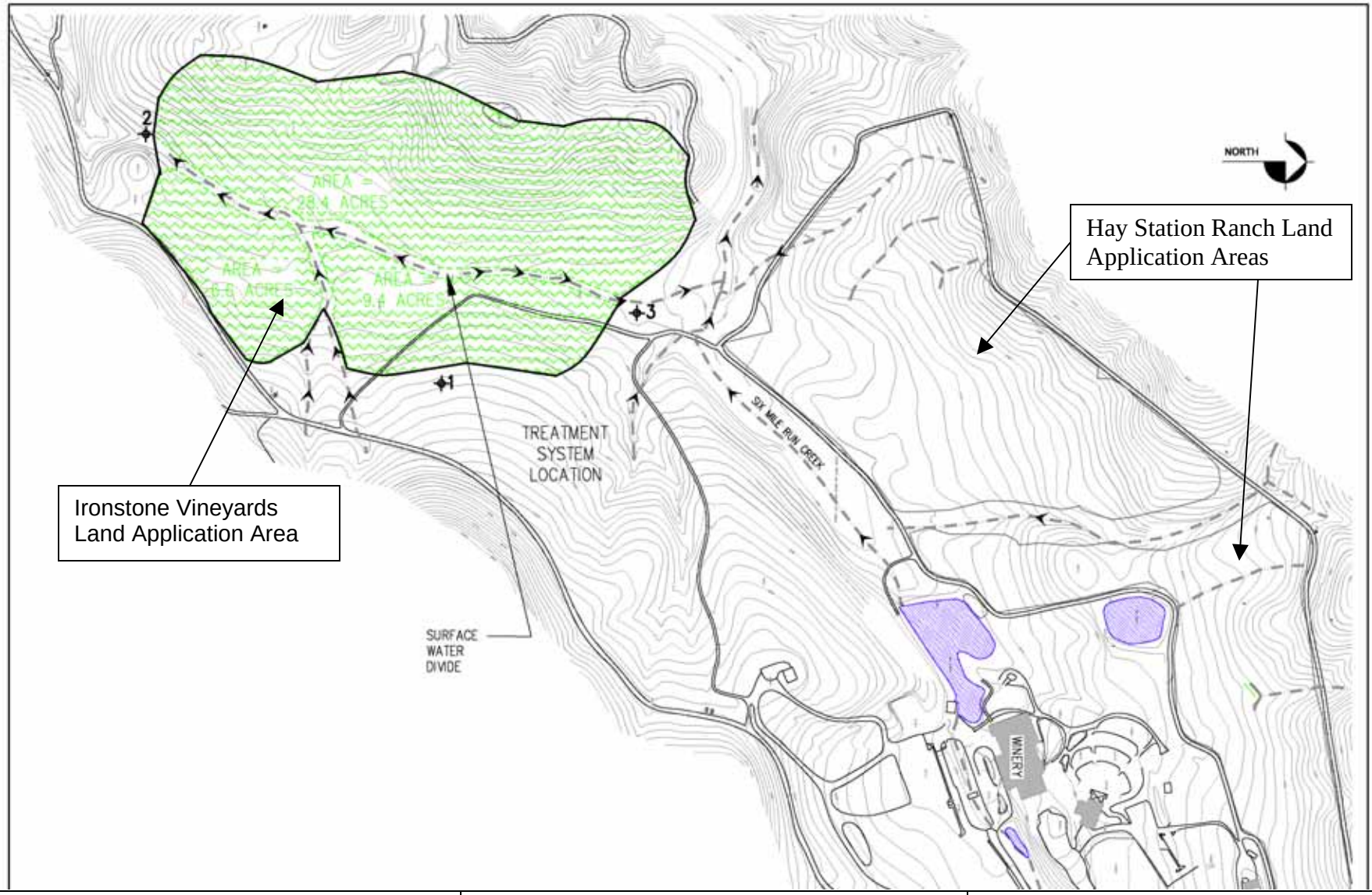
This Order limits the amount of wastewater inflow to the winery wastewater treatment system to 18,000 gpd (monthly average) and an annual total of 4.5 million gallons. In addition, the Order prescribes effluent limits for BOD, TDS, inorganic dissolved solids, and total nitrogen, and also requires the Discharger to submit a Construction Report, an Operation and Management Plan, a Groundwater Monitoring Installation Workplan and Installation Report, and a Background Groundwater Quality Study Report.

Surface water drainage in the area is to Six Mile Creek, which is a tributary to Angels Creek that flows into New Melones Reservoir.

JSK 10/26/07

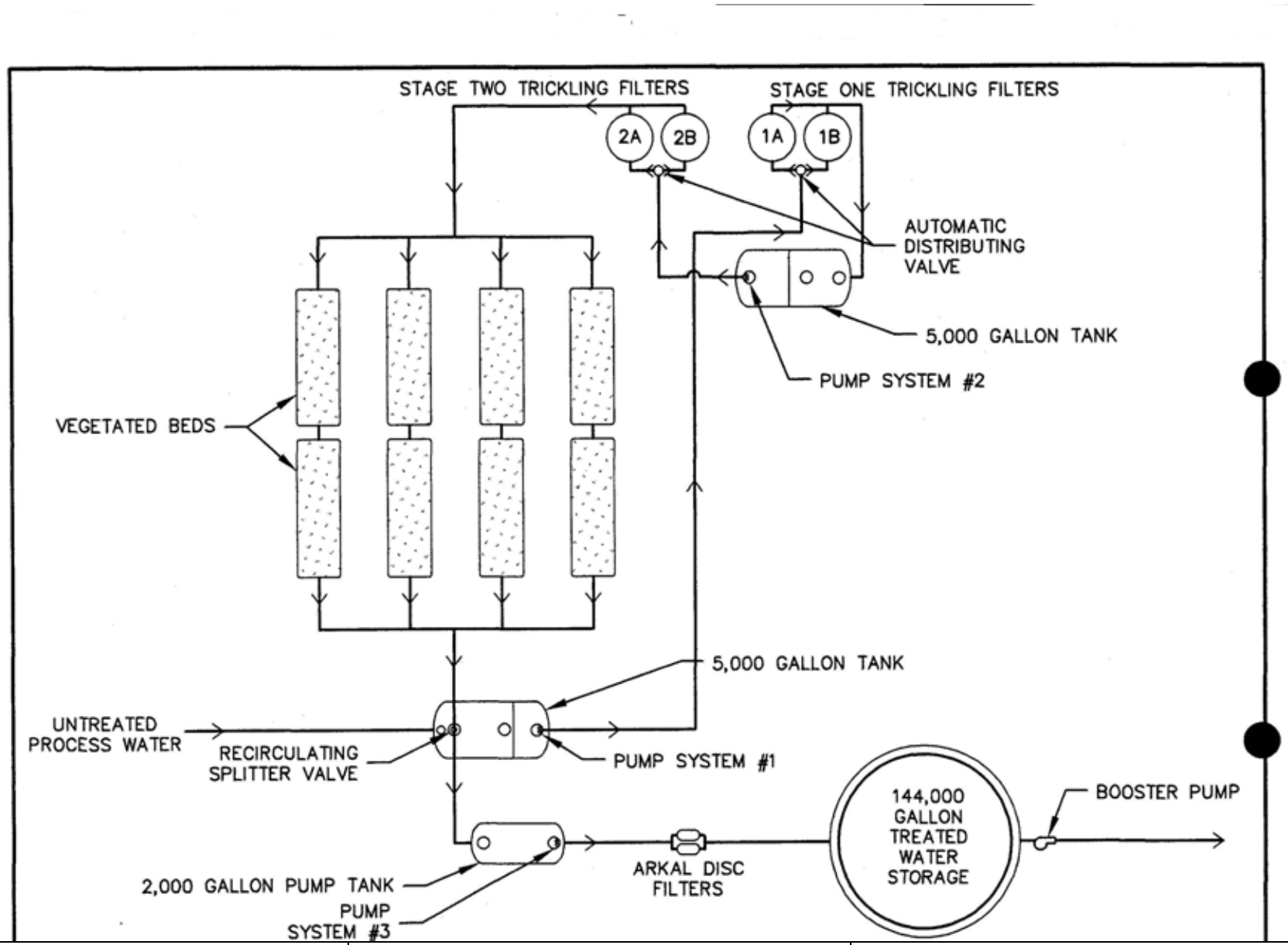


Drawing Reference: U.S.G.S TOPOGRAPHIC MAP 7.5 MINUTE QUADRANGLE	**SITE LOCATION MAP** KAUTZ VINEYARDS, INC. IRONSTONE VINEYARDS	N W E S approx. scale 1 in.= 24,000 ft.



DRAWING REFERENCE:
Ironstone Vineyards-Figure 1
Groundwater Workplan
Approximate Scale:
Not to Scale

Kautz Vineyards, Inc
Ironstone Vineyards
Wastewater System Layout



DRAWING REFERENCE: Ironstone Vineyards RWD—Figure 7 Approximate Scale: Not to Scale	Kautz Vineyards, Inc Ironstone Vineyards Wastewater Treatment Schematic	

California Regional Water Quality Control Board
Central Valley Region
Karl E. Longley, ScD, P.E., Chair

Linda S. Adams
Secretary for Environmental Protection

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Arnold Schwarzenegger
Governor

ATTACHMENT D

ORDER NO. R5-2007-0146

REQUIREMENTS FOR
MONITORING WELL INSTALLATION WORKPLANS AND
MONITORING WELL INSTALLATION REPORTS

Prior to installation of groundwater monitoring wells, the Discharger shall submit a workplan containing, at a minimum, the information listed in Section 1, below. Wells may be installed after Regional Water Board staff approve the workplan. Upon installation of the monitoring wells, the Discharger shall submit a well installation report, which includes the information contained in Section 2, below. All workplans and reports must be prepared under the direction of, and signed by, a registered geologist or civil engineer licensed by the State of California.

SECTION 1 - Monitoring Well Installation Workplan and Groundwater Sampling and Analysis Plan

The monitoring well installation workplan shall contain the following minimum information:

A. General Information:
Purpose of the well installation project
Brief description of local geologic and hydrogeologic conditions
Proposed monitoring well locations and rationale for well locations
Topographic map showing facility location, roads, and surface water bodies
Large scaled site map showing all existing on-site wells, proposed wells, surface drainage courses, surface water bodies, buildings, waste handling facilities, utilities, and major physical and man-made features

B. Drilling Details:
On-site supervision of drilling and well installation activities
Description of drilling equipment and techniques
Equipment decontamination procedures
Soil sampling intervals (if appropriate) and logging methods

C. Monitoring Well Design (in narrative and/or graphic form):
Diagram of proposed well construction details
- Borehole diameter
- Casing and screen material, diameter, and centralizer spacing (if needed)
- Type of well caps (bottom cap either screw on or secured with stainless steel screws)

- Anticipated depth of well, length of well casing, and length and position of perforated interval
- Thickness, position and composition of surface seal, sanitary seal, and sand pack
- Anticipated screen slot size and filter pack

D. Well Development (not to be performed until at least 48 hours after sanitary seal placement):
Method of development to be used (i.e., surge, bail, pump, etc.)
Parameters to be monitored during development and record keeping technique
Method of determining when development is complete
Disposal of development water

E. Well Survey (precision of vertical survey data shall be at least 0.01 foot):
Identify the Licensed Land Surveyor or Civil Engineer that will perform the survey
Datum for survey measurements
List well features to be surveyed (i.e. top of casing, horizontal and vertical coordinates, etc.)

F. Schedule for Completion of Work

G. Appendix: Groundwater Sampling and Analysis Plan (SAP)

The Groundwater SAP shall be included as an appendix to the workplan, and shall be utilized as a guidance document that is referred to by individuals responsible for conducting groundwater monitoring and sampling activities.

Provide a detailed written description of standard operating procedures for the following:

- Equipment to be used during sampling
- Equipment decontamination procedures
- Water level measurement procedures
- Well purging (include a discussion of procedures to follow if three casing volumes cannot be purged)
- Monitoring and record keeping during water level measurement and well purging (include copies of record keeping logs to be used)
- Purge water disposal
- Analytical methods and required reporting limits
- Sample containers and preservatives
- Sampling
  - General sampling techniques
  - Record keeping during sampling (include copies of record keeping logs to be used)
  - QA/QC samples
- Chain of Custody
- Sample handling and transport

SECTION 2 - Monitoring Well Installation Report

The monitoring well installation report must provide the information listed below. In addition, the report must also clearly identify, describe, and justify any deviations from the approved workplan.

A. General Information:
Purpose of the well installation project
Brief description of local geologic and hydrogeologic conditions encountered during installation of the wells
Number of monitoring wells installed and copies of County Well Construction Permits
Topographic map showing facility location, roads, surface water bodies
Scaled site map showing all previously existing wells, newly installed wells, surface water bodies, buildings, waste handling facilities, utilities, and other major physical and man-made features.

B. Drilling Details (in narrative and/or graphic form):
On-site supervision of drilling and well installation activities
Drilling contractor and driller's name
Description of drilling equipment and techniques
Equipment decontamination procedures
Soil sampling intervals and logging methods
Well boring log
- Well boring number and date drilled
- Borehole diameter and total depth
- Total depth of open hole (same as total depth drilled if no caving or back-grouting occurs)
- Depth to first encountered groundwater and stabilized groundwater depth
- Detailed description of soils encountered, using the Unified Soil Classification System

C. Well Construction Details (in narrative and/or graphic form):
Well construction diagram, including:
- Monitoring well number and date constructed
- Casing and screen material, diameter, and centralizer spacing (if needed)
- Length of well casing, and length and position of perforated interval
- Thickness, position and composition of surface seal, sanitary seal, and sand pack
- Type of well caps (bottom cap either screw on or secured with stainless steel screws)

E. Well Development:
Date(s) and method of development
How well development completion was determined
Volume of water purged from well and method of development water disposal
Field notes from well development should be included in report

F. Well Survey (survey the top rim of the well casing with the cap removed):
Identify the coordinate system and datum for survey measurements
Describe the measuring points (i.e. ground surface, top of casing, etc.)
Present the well survey report data in a table
Include the Registered Engineer or Licensed Surveyor's report and field notes in appendix