CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

ORDER NO. R5-2009-0073-001

WASTE DISCHARGE REQUIREMENTS
FOR
SUTTER HOME WINERY
SUTTER HOME WINERY WESTSIDE FACILITY
SAN JOAQUIN COUNTY

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

1. Sutter Home Winery (hereafter Discharger) submitted a Report of Waste Discharge (RWD) dated 31 October 2008 for treatment and land application of wastewater generated at its wine processing and storage facility. The RWD includes information on plans to begin crushing and fermenting wine at the facility. The Discharger submitted additional information on 27 February 2009 and 27 May 2009.
2. Order No. R5-2002-0034, adopted by the Central Valley Water Board on 1 March 2002, prescribes requirements for the Discharger's facility. This Order is neither adequate nor consistent with the current plans and policies of the Central Valley Water Board, nor with the Discharger's current operational plans.
3. The facility is located at 18667 Jacob Brack Road, Lodi in San Joaquin County. The winery and associated Land Application Areas (LAAs) comprise approximately 297 acres (Assessor's Parcel Nos. 011-15-12, 011-15-23, 011-09-03, and 011-09-14) in Section 34 and 35, T4N, R5E, MDB&M. The location of the facility is shown on Attachment A, which is attached hereto and is made part of this Order by reference.
4. The Discharger owns the property where the facility is located. The facility was constructed in 1998. Current activities at the winery include receiving and shipping grape juice or wine and distribution in bulk containers. Neither crushing nor bottling currently occurs at the facility. Wastewater is generated during tank, piping, equipment, and floor cleaning activities. Wastewater is also generated when stormwater falls on tank farms and mixes with wastewater.
5. Sutter Home currently operates the facility as a non-distilling, non-crushing, non-fermenting wine storage facility; activities include receiving and shipping wine and distribution in bulk containers. Fermented wine is transported to the facility for fining, stabilization, and storage. Currently, slightly more than 20 million gallons of stainless steel storage capacity exists.
6. Past land use at the facility, and historic and current use of the surrounding area appear to have impacted shallow groundwater quality. In addition, surface water features exist at the north and south property lines, and an abandoned irrigation canal historically bisected the property. The surface water features have the potential to impact groundwater quality both negatively and positively. Additional information on the quality of water in the surface water features is needed and required by this Order.

FACILITY CHANGES

7. The Discharger is proposing an expansion at the winery that will change the quantity and quality of the wastewater generated. The following expansion is planned:

   a. The Phase 1 expansion will allow the Discharger to crush approximately 50,000 tons of grapes per year to make 10,000,000 gallons of wine. The expansion will include new wine processing equipment, new storage and fermentation tanks, additional wastewater system equipment, two new synthetically lined wastewater ponds, and new Land Application Areas (LAA). In Phase 1, the facility will continue to receive an additional 9,000,000 gallons of bulk wine per year. The existing wastewater ponds will be decommissioned and will no longer be used to store wastewater.

   b. The Phase 2 expansion will increase the production capacity of the facility and will provide the capacity to crush 100,000 tons of grapes per year. A third pond will be constructed as part of Phase 2. The Phase 2 expansion will occur on an as-needed basis, approximately 5 to 10 years after completion of Phase 1. The Phase 2 expansion is not authorized by this Order.

8. The Discharger plans to begin grape crushing at the facility in 2009. As part of the crushing operation, grapes will be crushed, fermented, pressed and filtered, stabilized (without the use of ion exchange columns), stored in refrigerated units, and hauled to other facilities for bottling. Finished wine from other facilities will continue to be transported to the facility for storage.

9. New presses and filters will be added to facilitate processing of must (the juice pressed from grapes before fermentation). Spent Diatomaceous Earth (DE), (from the filtration of wine), and pomace (the crushed pulp of grapes) will be stored on a concrete pad (Pomace/DE Pad) equipped with a drain to return liquids to the wastewater system. The location of the Pomace/DE Pad is presented on Attachment B, which is attached hereto and is made part of this Order by reference.

10. A summary of the existing tanks is presented below:

Size (gal)	Use	Number
2,500	Ferment/Storage	10
5,000	Ferment/Storage	10
10,000	Ferment/Storage	10
15,000	Ferment/Storage	6
26,091	Ferment/Storage	24
51,242	Ferment/Storage	52
100,350	Ferment/Storage	60
202,368	Ferment/Storage	12
363,879	Ferment/Storage	23
51,869	Ferment	18
21,308,043	Totals	225

11. The Discharger is expanding the LAAs. Two new synthetically lined wastewater ponds have been constructed to treat wastewater prior to land application. The total active

cropped LAA acreage will be 107.5 acres. An additional 79 acres of land can be developed in the future as LAA and will be available to use once it has been configured to comply with the requirements of this Order.

WASTEWATER SYSTEM

12. Currently, wastewater is collected in a gravity drain system, collected in concrete lined sumps, and pumped to the wastewater treatment ponds (Ponds A and B, previously identified as Ponds No. 1 and 2 in Order No. R5-2002-0034) which are equipped with mechanical aerators. The location of Ponds A and B is presented on Attachment B. Treated wastewater is applied to the 15.5 acre LAA.

13. Stormwater that mixes with wastewater is discharged to the wastewater system. Uncontaminated stormwater is discharged to the stormwater pond.

14. In the expanded wastewater treatment system, wastewater will continue to be collected in a gravity drain system and stormwater can be diverted if uncontaminated. The expanded wastewater system will include the following components:

    a. Screening will be improved. Existing screens will continue to be used and some floor drain screens will be equipped with finer screens.

    b. The gravity collection system will be expanded into newly developed areas. New collection sumps will be constructed.

    c. Additional solids removal will be performed using rotary drum screens to remove large solids from entering the wastewater ponds. Solids from the screens will be managed as pomace.

    d. Two new double lined facultative wastewater ponds (Ponds No. 1 and 2) have been constructed. The location of Ponds No. 1 and 2 is presented on Attachment B. The ponds will provide approximately 8.7 million gallons (Mgal) of treatment and storage capacity and are equipped with mechanical aerators. A meter will measure the outflow of treated wastewater to the LAAs.

    e. The available LAA acreage will be increased from 15.5 acres to 107.5 active acres with an additional 79 acres available for use. The expanded LAA is described in the Land Application Area section of this Order.

15. When grape crushing is initiated at the facility in 2009, wastewater and stormwater/wastewater mixtures will continue to be piped to the wastewater sumps. Attachment C, which is attached hereto and made part of this Order by reference, presents a flow diagram that identifies the various wastewater streams.

16. Because the winery has not begun crushing grapes, wastewater generation rates were estimated from another winery that the Discharger owns and operates in St. Helena, Napa County. The following estimates are provided:

    a. Because activities at the facility will be similar to the St. Helena winery, wastewater generation rates per ton of grape crushed at St. Helena were used to estimate wastewater generation rates for the expanded facility in Lodi. The RWD estimates a wastewater generation rate of 2.7 gallons of wastewater per gallon of wine manufactured. Wastewater generation associated with the 50,000 tons of grapes crushed is estimated to be 25.7 Mgal/year.

b. Wastewater will continue to be generated in the bulk wine storage activities. The wastewater generation rate for that activity is estimated to be 0.3 gallons of wastewater per gallon of wine processed at the facility. Wastewater generation associated with the wine storage activities is estimated to be 2.7 Mgal/year. (Note: the total wastewater estimate is 25.7+2.7= 28.4 Mgal as shown below.)

c. Stormwater that falls on a portion of the facility will be comingled with the wastewater. The RWD estimates a catchment of 80,000 ft^2. The RWD estimates 860,000 gallons of stormwater will be added in a normal rainfall year and 1,630,000 gallons will be added in a 100-year return annual year.

d. The RWD estimates the distribution of the wastewater and stormwater generation rates. The crush season is typically from August through November. Review of the data presented below indicates the highest flow rates occur in that time period.

Month	Units	Monthly Flow	Stormwater	100-year Stormwater
January	million gallons	2.6	0.17	0.33
February	million gallons	2.6	0.15	0.27
March	million gallons	2.8	0.14	0.26
April	million gallons	2.0	0.06	0.12
May	million gallons	1.3	0.03	0.06
June	million gallons	1.3	0.01	0.01
July	million gallons	1.4	0.00	0.00
August	million gallons	2.4	0.00	0.00
September	million gallons	3.5	0.01	0.03
October	million gallons	3.7	0.04	0.08
November	million gallons	2.4	0.10	0.18
December	million gallons	2.4	0.15	0.28
Total	million gallons	28.4	0.86	1.63

17. Average flow rates from the winery facility (to the wastewater ponds) were calculated for the years 2006 through 2008. The data are presented below:

Parameter	Units	2006	2007	2008
Flow Rate from Winery	gal/month	289,132	273,700	407,916

18. Wastewater quality has been monitored at the facility since 2002. A summary of the annual average treated wastewater data (after treatment in the ponds but prior to land application) is presented below.

Analyte/Parameter	Units	2006	2007	2008
Total Dissolved Solids	mg/L	2,617	2,909	3,094
Total Sulfate	mg/L	20	3.1	1.9
Nitrate as N	mg/L	2	18.3	8.8
Total Kjeldahl Nitrogen	mg/L	6	5	38
Biochemical Oxygen Demand	mg/L	588	727	904

In 2008, the Discharger discovered errors in the analytical data that overstate the concentration of TDS in the samples. Because operation of the expanded facility will emphasize source control, the Discharger believes the historic data do not represent future wastewater quality.

19. The Discharger will use a number of chemicals in the wine-making, processing, cleaning, and sanitation processes at the facility. The future chemicals and quantities to be used at the facility in Phase 1 are identified below:

Chemical	Areas Used	Used For	Annual Usage
Potassium Hydroxide	Cellar	Tanks, piping, and equipment cleaning	64,300 pounds
Ammonia	Cellar	Closed-circuit refrigeration	50,000 pounds
Nitrogen	Cellar	Prevent oxidation of wine in tanks.	3,000 pounds
Peracetic Acid	Cellar	Tanks, piping, and equipment cleaning	3,860 gallons
Potassium Metabisulfite	Cellar	Wine Making	14,500 pounds
Calcium Hypochlorite (65%)	Cellar	Floor Cleaning	12,000 pounds
Zinc	Condensing Towers	Corrosion Control	< 10 pounds
Iodine	Condensing Towers	Biocide	< 10 pounds

SOURCE CONTROL

20. Future wastewater quality at the Sutter Home Lodi winery has been estimated based on wastewater quality observed at the St. Helena winery, which has similar operations. After implementing the source control measures developed at St. Helena, and employing the Lodi facility supply water FDS value in calculations, the Discharger anticipates a wastewater FDS value of 730 mg/L. That represents an increase of 500 mg/L over the supply water. The value will increase, or decrease, depending upon evapoconcentration or stormwater dilution effects in the wastewater ponds. The RWD describes the following Best Practicable Treatment and Control (BPTC) measures that have been incorporated into the design of the facility:

    a. Replacement of chemicals with more environmentally acceptable substitutes:

        i. Replacement of sodium hydroxide with potassium hydroxide. Using a potassium-based cleaner rather than a sodium-based cleaner can reduce the amount of FDS that reaches groundwater because plants in the LAA can take up potassium as a plant nutrient.

        ii. Replacement of Sani-bac, trisodium phosphate, and citric acid with peracetic acid (PAA). PAA breaks down to acetic acid, water, and oxygen; it will contribute to alkalinity in the wastewater, but does not contribute sodium, phosphate, or other salts to the wastewater.

b. Portable CIP systems will be used to clean wine filters. Use of a CIP system can reduce the amount of caustic used at the winery by reusing caustic for cleaning to the extent possible. CIP systems may also conserve more water thereby reducing the FDS load from the source water. The portable cleaning units do not use hot water; therefore, a boiler and boiler feed water residuals will not be generated.

c. The facility will use a chemical-free water treatment system for the new condensing towers. The EnviroTower uses electrostatic technology to precipitate calcium carbonate without the use of chemicals; the product vendor claims the need for antiscalant chemicals is eliminated.

d. Insulated, jacketed wine tanks are used to maintain the temperature of stored wine. Jacketed tanks are wrapped with refrigeration coils that chill the wine. This process reduces the need to run the wine from the storage tanks through a remote wine chiller for temperature regulation. By routing the coolant to the wine tanks rather than routing the wine to the cooling system, the amount of line sanitation and associated water and chemical usage is reduced.

e. Wastewater is collected by floor drains and is piped to the wastewater sumps. Routine solids removal from the sumps will reduce the ultimate organic loading to the ponds, which will help prevent odor generation.

f. Crops will be planted in the LAAs. Crops will take up some of the waste constituents in the treated wastewater.

g. A concrete pad will be used for storage of pomace and spent DE prior to offsite disposal. The concrete pad will drain to the wastewater system.

h. Institutional changes such as Best Management Practices (BMPs), Standard Operating Procedures (SOPs) and employee orientation and training were implemented at both Discharger facilities and will be expanded to increase employee awareness of source control activities.

WATER BALANCE

21. A revised water balance was submitted as an RWD addendum on 27 May 2009 for the wastewater treatment, storage, and land application system. The water balance was based on an annual wastewater discharge of 30.0 Mgal, 100-year annual return rainfall amounts, and a total of 107.5 acres of LAA (15.5 acres of existing LAA and an additional 92 acres of new LAA). As described previously, an additional 79 acres of land is available for land application use.

22. Stormwater is handled differently depending upon where it falls, and if it has mixed with wastewater. The stormwater pond has a capacity of approximately 4.9 Mgal. The following summarizes the stormwater procedures:

    a. Stormwater draining from roofed areas and surrounding surface areas not mixed with wastewater is discharged to the stormwater pond

    b. Stormwater that falls onto exterior tank and wine processing areas without roof cover is collected in the facility's wastewater drainage system. During winery operations, the wastewater/stormwater mixture is pumped to the wastewater ponds for treatment, and then applied to the LAA. However, during high precipitation

events, the pipes are flushed to the wastewater ponds and then the subsequently collected stormwater is routed via an automated valve to the stormwater pond.

i. After the pumps have pumped three sump volumes of water into the wastewater ponds, the valve switches position so that water subsequently accumulated on the paved area will be diverted to the stormwater pond. Each sump is flushed three times to remove residual wastewater constituents. After that flushing process, the valves are programmed to switch position so that water entering the sumps overnight or on weekends would be diverted to the stormwater pond. The system is provided with alarms so that if a valve fails to operate properly, a display light will appear on a control panel.

ii. Stormwater quality has been monitored at the facility since 2002 whenever there is enough water in the stormwater pond to be sampled. The water depth in the stormwater pond is generally very low, which makes collection of representative samples difficult. In general, the data collected shows that the Discharger's program to separate wastewater from stormwater has been largely successful. The years 2006 and 2008 had a total of four sample events each; there were no sample events in 2007. The table below summarizes the stormwater quality as reported by the Discharger, for the years 2006 through 2008:

Analyte	Units	2006	2007	2008
Electrical Conductivity	umhos/cm	315	IWTS	564
Total Dissolved Solids	mg/L	1000	IWTS	0
Nitrate as N	mg/L	1.0	IWTS	7.8
Total Kjeldahl Nitrogen	mg/L	0	IWTS	19.3
Biochemical Oxygen Demand	mg/L	28	IWTS	87.5

IWTS denotes insufficient water to sample.

c. The Discharger minimizes stormwater discharge to the wastewater ponds by performing outdoor work in zones to minimize the area where mixing of stormwater and wastewater occurs. During the rainy season, active outdoor work areas are confined to zones of limited square footage (approximately 80,000 ft^2). This minimizes the amount of stormwater/wastewater mixtures that are diverted to the wastewater ponds

23. The wastewater storage and treatment ponds are not large enough to allow storage of wastewater through the winter and application only during the growing season. As a result, the Discharger will have to apply wastewater throughout the year. Because of restrictions on applying wastewater that are contained in this Order, the Discharger will have to carefully schedule winery activities to manage the available storage in the wastewater ponds. Climatic conditions or LAA conditions (saturated soil, odors, etc.) may require winery process schedule changes to comply with this Order.

LAND APPLICATION SYSTEM

24. Historically, 15.5 acres of the site were used for spray irrigation of treated wastewater. With the facility expansion, approximately 92 acres of additional LAA will be added

(67 acres of field crops and 25 acres of vineyards). A total of 107.5 acres of LAA will be available immediately. An additional 79 acres of land can be used for land application once configured to comply with this Order. The locations of the LAAs are presented on Attachment B. A summary of the LAAs is presented below:

LAA	Acreage	Crop Type	Status
LAA No. 1	15.5	Turf	Active
LAA No. 2	67.0	Corn	Active
LAA No. 3	25.0	Vineyard	Active
LAA No. 4	79.0	Vineyard	Future
Total	186.5		

25. Treated wastewater may be applied by flood irrigation, sprinkler system, or drip irrigation. The irrigation systems are acceptable as long as treated wastewater applications are performed consistent with the requirements in this Order, allow even distribution, and prevent spills outside the LAAs. Reapplying tailwater to the LAAs or returning it to the wastewater ponds is acceptable.

26. Average daily hydraulic loading and calculated annual average loading rates to the 15.5 acre LAA from 2002 to 2007 are presented below.

Application	Units	2002	2003	2004	2005	2006	2007
Irrigation	gal/ac/day	2,318	2,065	2,573	2,242	2,304	2,803
Total Nitrogen	lbs/ac/yr	26	16	103	66	36	199
TDS	lbs/ac/yr	6,144	15,482	13,198	7,728	11,528	12,512
BOD	lbs/ac/yr	2.4	3.1	3.0	9.1	12.5	13.3

TDS denotes Total Dissolved Solids. BOD denotes 5-day Biochemical Oxygen Demand.

27. Crops will be cut and removed from the LAAs. Removal of the crop will remove the nitrogen and dissolved solids that are taken up by the crop.

    a. TDS is composed of both Volatile Dissolved Solids (VDS) and FDS. The proportion of VDS to FDS in wastewater varies with the source, but 50-percent of the TDS in winery wastewater may be in the volatile form. The VDS can be biologically treated by soil microorganisms in a well-managed wastewater treatment and land application system, when wastewater is not over-applied. The Discharger has estimated FDS concentrations in the RWD based on salinity control measures at a similar winery (Sutter Home in St. Helena, Napa County). The forecast FDS concentration is 730 mg/L. Based on the anticipated average annual wastewater flow rate of 29.3 Mgal, approximately 177,529 pounds/year of FDS will be applied (1,651 lbs/ac/year).

    b. The Discharger has estimated the average total nitrogen concentration in wastewater to be 35 mg/L. Based on the anticipated average annual wastewater flow rate (29.3 Mgal), approximately 8,511 pounds/year of total nitrogen will be applied (79.2 lbs/ac/year). The LAAs planted with crops generally will take up at least 200 lbs/ac/year; LAAs with vineyards will take up approximately 125 lbs/ac/year (slightly more with cover crops planted between rows of grape

vines). The proposed nitrogen loading rate is unlikely to degrade groundwater quality. This Order requires the Discharger to develop and implement a Nutrient Management Plan.

28. Because treated wastewater will not provide adequate water to meet the crop demand, supplemental water will be applied. The Discharger anticipates supplemental irrigation water will be required for crop health in the months of June, July, August, and September. The preferred supplemental irrigation water source is the Woodbridge Irrigation District (WID) canal that exists along the southern boundary of the facility. Four water samples were collected from the canal; the average FDS concentration was 50 mg/L. An alternative to the WID water is the on-site well, which produces lower quality water (approximately 228 mg/L FDS). The FDS loading that occurs from the supplemental irrigation water is in addition to that derived from wastewater.

29. Application of treated wastewater to the LAAs will occur during the wet season. Applications will be managed to minimize over-application, which could result in more rapid leaching of wastewater constituents. Therefore, this Order prohibits irrigation with treated wastewater during, or within 24 hours after a rain event, or when soils are saturated.

SOLID WASTE

30. Pomace and spent DE will be generated in wine making processes and will be placed on the Pomace/DE pad. The Pomace/DE pad is constructed of concrete and equipped with a sump that collects liquid that drains from the material and any storm water that falls on the pad. Liquid from the Pomace/DE pad is discharged to the wastewater system.

    a. Pomace will be removed daily during the crush season for off-site disposal.

    b. DE will be removed as needed during crush. During the remainder of the year, spent DE will be stored in watertight bins for off-site disposal.

31. Pomace and/or DE can be applied to off-site cropland as a beneficial soil amendment. If it is composted, the composting facility must be a permitted green waste facility, or be listed for permitting when the Green Waste General Order is prepared.

32. Storage of pomace and DE on bare ground after the initial drying on the Pomace/DE pad may allow stormwater to mobilize residual waste constituents. Such storage is not protective of groundwater quality.

GROUNDWATER CONDITIONS

33. Groundwater conditions have been investigated by installing and sampling groundwater monitoring wells, performing direct push/grab groundwater sampling, and sampling the supply well (which was drilled to a greater depth than the monitoring wells). All of the groundwater wells and direct push sample locations are presented on Attachment D, which is attached hereto and is made part of this Order by reference.

34. The winery is served by a groundwater production well. The well is 225 feet deep and its surface seal extends to a depth of 100 feet below ground surface (bgs). The screen interval is from 195 to 225 feet bgs. Supply water is treated with an ozone

injection system and multimedia filtration to reduce iron and manganese concentrations. Filter backwash is discharged to the wastewater ponds.

a. Samples were collected from the supply well. Because the well is screened in a much lower zone than the depth of the groundwater monitoring wells, the supply well data are presented separately. The supply well groundwater quality is presented in the table below:

Date	Nitrate	TKN	TDS	EC	pH	Sodium	Calcium	Magnesium	Chloride
01/15/08	5.9	NA	190	358	6.8	2	27	9	16
08/06/08	1	NA	230	383	8	34	23	8	29
08/20/08	<0.1	0.6	240	384	7.4	39	27	9	24
09/03/08	<0.1	<0.5	220	383	7.5	39	28	10	25
09/17/08	<0.1	0.8	260	383	7.6	38	27	9	24
Average	1.62	0.63	228	378	7.5	30	26	9	24

All constituents reported as mg/L except EC (reported as umhos/cm) and pH (reported as standard units). Nitrate reported as Nitrate. TKN denotes Total Kjeldahl Nitrogen. TDS denotes Total Dissolved Solids. EC denotes Electrical Conductivity.

35. The remainder of the groundwater quality data for the site addresses the shallow groundwater quality and elevation. Based on the available data, the water table exists approximately between 0.41 to 9.28 feet bgs and groundwater flows from east to west. The groundwater gradient is very low (0.0007).

36. Three groundwater monitoring wells are located at the domestic wastewater disposal area (mound system) and were installed by requirement of the San Joaquin County Environmental Health Department (SJCEHD). The SJCEHD maintains oversight of the domestic wastewater system.

    a. Wells DWS-1 and DWS-2 are located adjacent to the mound where domestic wastewater is disposed. Although DWS-1 is located upgradient of the mound, because the gradient is so low, it may be within the influence of the mound. Well DWS-3 is located downgradient of the mound.

    b. As part of the permitting process for the septic tank/mound distribution system installation, the Discharger prepared a nitrate loading study. Four shallow groundwater samples were collected from open boreholes and analyzed for nitrate (as nitrate) concentrations. Analytical results were 53, 88, 140, and 170 mg/L. Because at the time the samples were collected domestic wastewater and/or winery wastewater discharges had not yet begun at the site, the source of the elevated nitrate concentrations may be related to previous land use.

37. In March 2002, the Discharger constructed seven groundwater monitoring wells at the facility to monitor groundwater quality related to wastewater disposal at the site. The well construction details are presented below

Well Name	Date Constructed	Screened Interval (feet bgs)	Casing Elevation (feet)
GW-1	3/21/02	5.5-14.4	13.80
GW-2	3/21/02	5.9-14.8	10.27

Well Name	Date Constructed	Screened Interval (feet bgs)	Casing Elevation (feet)
GW-3	3/21/02	5.4-14.3	11.14
GW-4	3/21/02	5.7-14.6	9.85
GW-5	3/22/02	5.8-14.7	8.98
GW-6	3/22/02	5.9-14.8	7.99
GW-7	3/22/02	5.8-14.7	8.62

bgs denotes below ground surface.
Casing elevations measured relative to a local datum.

38. Interpretation of the data from the groundwater monitoring wells is complicated by the relatively flat groundwater gradient and sources of wastewater and/or stormwater discharge. Such discharges may result in localized and temporary groundwater elevation changes that can cause flow direction changes. In general, the groundwater monitoring wells monitor the following:

    a. All the wells are located in an area that has been extensively developed for agricultural use.

    b. Well GW-1 is located on the upgradient side of the facility.

    c. Well GW-2 is located upgradient of the processing facility but downgradient of an on-site vineyard which may impact groundwater quality.

    d. Well GW-3 is located adjacent to a stormwater disposal pond. Because of the very low groundwater gradient, relatively clean stormwater discharged to the pond may affect the groundwater quality at the well's location.

    e. Well GW-4 is located adjacent to both the stormwater disposal pond and LAA No. 1. The low groundwater gradient may affect groundwater quality at Well GW-4.

    f. Well GW-5 and GW-6 are located in LAA No. 1. The area is subject to groundwater quality changes as a result of wastewater application.

    g. Well GW-7 is located downgradient of the existing wastewater ponds (Ponds A and B).

39. Quarterly groundwater monitoring has been performed since 2002 for the winery wastewater monitoring wells (labeled with "GW"); annual monitoring has been performed since 2002 for the domestic wastewater system monitoring wells (labeled with "DWS"). Average concentrations for selected analytes are summarized in the following table. Groundwater quality is discussed in Finding No. 41, after the grab groundwater quality data is presented.

Analyte	Units	GW-1	GW-2	GW-3	GW-4	GW-5	GW-6	GW-7	DWS-1	DWS-2	DWS-3	WQO
pH	std.	7.0	7.1	6.9	7.0	7.0	7.1	7.2	7.0	7.4	7.0	NA
EC	µmhos/cm	774	1,237	654	964	1,200	1,188	1,375	1049	1157	1341	700[1]
TDS	mg/L	482	773	439	591	731	725	878	662	749	813	450[1]
NO_3-N	mg/L	4.3	7.1	8.5	14.7	21.8	4.2	13.4	6.0	7.7	18	10[2]
TKN	mg/L	2.1	ND	1.2	1.3	1.1	ND	1.3	ND	ND	ND	NA
Sulfate	mg/L	23	64	31	40	40	63	174	NS	NS	NS	250[3]

Analyte	Units	GW-1	GW-2	GW-3	GW-4	GW-5	GW-6	GW-7	DWS-1	DWS-2	DWS-3	WQO
Calcium	mg/L	73	68	46	83	101	76	82	NS	NS	NS	NA
Magnesium	mg/L	30	35	27	36	50	37	51	NS	NS	NS	NA
Potassium	mg/L	2.6	2.3	2.5	1.6	2.5	1.7	3.0	NS	NS	NS	NA
Sodium	mg/L	23	132	42	51	66	115	120	NS	NS	NS	69[1]
Chloride	mg/L	18	28	14	20	39	33	26	NS	NS	NS	106[1]
Alkalinity.	mg/L	310	512	251	372	453	511	455	NS	NS	NS	NA
Hardness	mg/L	307	316	225	355	461	343	415	NS	NS	NS	NA

EC denotes Electrical Conductivity. TDS denotes Total Dissolved Solids. NO_3-N denotes Nitrate as Nitrogen. TKN denotes Total Kjeldahl Nitrogen. WQO denotes Water Quality Objective. ND denotes Not Detected above the laboratory reporting limit. NA denotes Not Applicable.
[1] Agricultural Water Quality Screening Level.
[2] Primary Maximum Contaminant Level (Drinking Water).
[3] Recommended Secondary Maximum Contaminant Level (Drinking Water).

40. In September 2008, 11 direct push soil borings were completed to collect grab groundwater samples beneath the northern parcel of the site where the new wastewater ponds have been constructed and the new LAAs will be developed. Samples were collected at depths varying between 10 and 15 feet bgs. The soil boring locations are presented on Attachment D. The data are presented below:

Analyte	Units	KB-1	KB-2	KB-3	KB-4	DUP	KB-5	KB-6	KB-7	KB-8	KB-9	KB-10	KB-11
Depth	ft. bgs	15	15	13	10	10	15	10	10	10	10	15	10
pH	std.	7.8	7.3	7.4	7.1	7.0	7.6	7.4	7.1	7.5	7.1	7.0	7.4
EC	umho/cm	220	1,630	1,390	1,150	1,360	1,360	1,300	1,000	469	1,350	934	1,070
TDS	mg/L	202	1,070	972	793	795	893	878	622	317	944	622	750
FDS	mg/L	141	724	776	607	627	733	480	443	283	576	559	750
NO_3-N	mg/L	0.72	28.5	37.5	31.1	31.4	33.5	53.6	6.90	<0.25	44.0	3.51	29.5
TKN	mg/L	<1.00	<1.00	1.23	<1.00	1.29	<1.00	3.14	<1.00	<1.00	<1.00	<1.00	<1.00
Sulfate	mg/L	4.66	74.5	76.6	110	121	53.3	56.0	35.0	12.6	132	26.9	37.0
Calcium	mg/L	22.7	61.8	65.0	78.8	79.9	52.2	85.9	95.2	41.6	100	91.5	73.4
Magnesium	mg/L	13.2	42.6	33.6	39.1	39.8	30.5	51.8	47.1	20.7	46.7	50.3	43.1
Potassium	mg/L	2.60	4.10	2.81	2.54	1.85	2.13	2.54	1.92	2.06	3.90	2.88	1.79
Sodium	mg/L	7.75	221	183	90.7	98.0	181	100	34.5	25.2	92.3	40.6	88.6
Chloride	mg/L	2.52	70.0	29.9	41.9	43.8	29.0	30.7	18.3	21.8	38.3	24.1	14.9
Boron	mg/L	<0.100	0.417	0.257	0.201	0.225	0.271	0.241	0.152	<0.100	0.152	0.112	0.267
Silica	mg/L	52.5	71.6	50.1	51.4	48.0	32.4	40.5	55.2	56.5	53.7	59.8	47.8
Alkalinity	mg/L	143	1,260	875	308	307	995	1,280	1,420	1,540	1,580	2,290	2,440
Hardness	mg/L	111	330	301	358	363	256	428	432	189	442	436	361

EC denotes Electrical Conductivity. TDS denotes Total Dissolved Solids. FDS denotes Fixed Dissolved Solids. NO_3-N denotes nitrate as nitrogen. TKN denotes Total Kjeldahl Nitrogen. Total Alkalinity as Calcium Carbonate. Hardness measured as Calcium Carbonate. <1.00 denotes not detected, detection limit shown. DUP is a sample duplicate of sample KB-4.

41. Review of the groundwater data presented in Findings 34, 39, and 40 indicates highly variable groundwater quality across the site. All of the reasons for the variability are not known; but the low groundwater gradient, past land use, localized discharge of both high and low quality wastewater/stormwater, and nearby irrigation canals are probable influences. This Order requires installation of additional wells and further

evaluation of groundwater quality at the site. The following can be stated about the groundwater quality as it is presently understood:

a. With respect to TDS and EC data:

   i. Although no winery wastewater has been applied in the new land application areas, many of the highest EC values reported came from samples collected there.

   ii. Upgradient groundwater quality is highly variable. Along the upgradient property boundary, EC values ranged from 774 umhos/cm to 1,630 umhos/cm. The cause of the variability is unknown.

   iii. The TDS and EC data collected at existing Ponds A and B may require further investigation. Although, not conclusive, the data may indicate groundwater degradation associated with the ponds. The Discharger has stated the ponds will no longer be used for wastewater treatment or storage and will be decommissioned.

b. With respect to nitrate as nitrogen data:

   i. Although no winery wastewater has been applied in the new land application areas, many of the highest nitrate as nitrogen values reported came from samples collected there.

   ii. Upgradient groundwater quality is highly variable. Along the upgradient property boundary nitrate as nitrogen values ranged from 0.41 mg/L to 37.5 mg/L. The cause of the variability is unknown.

c. Additional study of the nearby irrigation canals (including the abandoned canal that bisected the property previously and is shown on groundwater monitoring reports) is needed to understand the relationship between surface water quality and site groundwater quality.

d. Groundwater quality in the supply well is significantly better than the shallow groundwater quality. However, that assessment is based on the data from only one well.

SITE SPECIFIC CONDITIONS

42. Land use in the vicinity of the site consists of vineyards and agricultural operations, including confined animal facilities. The topography of the surrounding area is level. Groundwater quality appears to be impacted by the previous and nearby land use activities.

43. The tops of the berms of all of the wastewater ponds (existing Ponds A and B, and new Ponds No. 1 and 2) are higher than the currently-defined Federal Emergency Management Agency (FEMA) 100-year flood zone. Approximately the western third of the facility is located within the 100-year floodplain. The estimated 100-year flood zone is presented on Attachment B.

44. Shallow soils are described as consisting of sandy silt to a depth of approximately 9 feet bgs and silty sand to an investigated depth of 15 feet bgs.

45. Based on the California Department of Water Resources rainfall data, the mean annual rainfall is approximately 17.2 inches; the 100-year return annual precipitation is 31.1 inches. Evapotranspiration was estimated from a nearby California Irrigation Management Information System monitoring station; evapotranspiration is estimated to be 50.30 inches per year.

46. The facility currently employs approximately four employees in one eight-hour shift per day. The number of employees is expected to increase to 24 following the expansion of the facility. Domestic wastewater is discharged to an engineered mound septic system. The system is regulated by the San Joaquin County Environmental Health Department. The 3,000-gallon septic tank is regularly pumped and the septage is disposed of at a domestic wastewater treatment facility. There is no tasting room, so the septic system primarily serves winery employees.

OTHER CONSIDERATIONS FOR FOOD PROCESSING WASTE

47. Excessive application of food processing wastewater to land application areas can create objectionable odors, soil conditions that are harmful to crops, and degradation of underlying groundwater by overloading the shallow soil profile and causing waste constituents (organic carbon, nitrate, other salts, and metals) to percolate below the root zone. Ordinarily, it is reasonable to expect some attenuation of various waste constituents that percolate below the root zone within the vadose (unsaturated) zone. Specifically, excess nitrogen can be mineralized and denitrified by soil microorganisms, organic constituents (measured as both BOD and volatile dissolved solids) can be oxidized, and some salinity species will undergo cation exchange with clay minerals, effectively immobilizing them.

48. Loading of BOD should be limited to prevent nuisance conditions. The maximum BOD loading rate that can be applied to land without creating nuisance conditions can vary significantly depending on the operation of the land application system. *Pollution Abatement in the Fruit and Vegetable Industry*, published by the United States Environmental Protection Agency (US EPA Publication No. 625/3-77-0007) (hereafter *Pollution Abatement*), cites BOD loading rates in the range of 36 lbs/acre/day to 600 lbs/acre/day but indicates the loading rates can be even higher under certain conditions. In no case shall the loadings cause a nuisance.

49. Acidic and/or reducing soil conditions can be detrimental to land treatment system function, and may cause groundwater degradation if the buffering capacity of the soil is exceeded. If soil pH decreases below 5 and the soil remains in a reducing state for prolonged periods, naturally occurring metals (including iron and manganese) could dissolve and degrade underlying groundwater. In practice, prolonged reducing conditions may not occur because: a) the annual cycle of lowered pH during loading with either wastewater or fertilizer is followed by pH recovery during cropping and organic matter cycling and; b) the dose and rest cycling for wastewater application either in spreading basins or using irrigation creates alternate anoxic and aerobic conditions. *Pollution Abatement* recommends that water applied to crops have a pH within 6.4 to 8.4 to protect crops. The soils and underlying groundwater are expected to adequately buffer the discharge.

BASIN PLAN, BENEFICIAL USES, AND REGULATORY CONSIDERATIONS

50. 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 Section 13263(a) of the California Water Code (CWC), waste discharge requirements (WDRs) must implement the Basin Plan.

51. Surface water drainage is to the Mokelumne River. The facility is within the Lower Mokelumne Hydrologic Area (No. 531.20), as depicted on interagency hydrologic maps prepared by the Department of Water Resources in August 1986.

52. The beneficial uses of the Mokelumne River from Camanche Reservoir to the Sacramento/San Joaquin Delta are agricultural supply; water contact recreation; non-contact water recreation; warm freshwater habitat; cold freshwater habitat; migration of aquatic organisms; spawning, reproduction, and/or early development; and wildlife habitat.

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

54. 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 WDRs that will result in the best practicable treatment or control of the discharge. Resolution 68-16 prohibits degradation of groundwater quality as it existed in 1968, or at any time thereafter that groundwater quality was better than in 1968, other than degradation that was previously authorized. An antidegradation analysis is required for an increased volume or concentration of waste.

55. The facility was constructed in 1998 and groundwater investigations have characterized groundwater quality. The recently performed grab groundwater sampling performed in the northern area of the property, where wastewater has not been applied, shows highly variable groundwater quality. That finding is consistent with groundwater quality data collected from site monitoring wells. Confined animal facilities are located in close proximity to the site. It is reasonable to conclude area groundwater has been impacted by the animal facilities and the long history of agricultural activity in the area. Degradation caused by prior activities at the facility may require corrective action.

    Limited degradation of high-quality groundwater by some of the typical waste constituents released with discharge from a winery (after effective source control, treatment, and control) may be consistent with maximum benefit to the people of the State at appropriate sites. When allowed, the degree of degradation permitted depends upon many factors (e.g., background water quality, the waste constituent, the

beneficial uses and water quality objectives, management practices, source control measures, and waste constituent treatability).

The Discharger cannot fully evaluate actual impacts to groundwater quality until completion of additional hydrogeologic studies and implementation of new or planned facility upgrades, and any additional measures that will be required to comply with Provision G.1. A preliminary hydrogeologic study submitted by the Discharger indicates that planned operation will not impact groundwater quality; however, Section F presents interim groundwater limits that are effective immediately and require no degradation beyond existing background groundwater quality. Final groundwater limits are effective on 1 July 2014 and provide numeric limits, or background groundwater concentrations, whichever is greater.

This Order imposes new effluent limitations, and limits land application of nitrogen to agronomic rates. This Order contains a time schedule for assuring that BPTC and the highest water quality consistent with the maximum benefit to the people of the State will be achieved. Upon completion of the time schedule, this Order will establish final groundwater limitations and therefore prohibit the Discharger from causing or contributing to an exceedence of groundwater objectives, and minimizes any degradation that may occur pending completion of the required tasks. Completion of these tasks, and implementation of the approved strategies developed from that work, will ensure that BPTC and the highest water quality consistent with the maximum benefit to the people of the State will be achieved.

The Discharger expects the facility to provide 24 year-round and additional seasonal jobs. Prohibiting discharges pending completion of the required facility upgrades could eliminate some or all those jobs. In addition, it is reasonable to assume that the facility provides an economic benefit to the growers that will supply grapes to the crushing facilities, and to equipment suppliers and transportation companies. The use of winery wastewater to irrigate crops in place of higher quality surface or ground water supplies is a benefit to the people of the State. Any limited, short-term degradation that may result while the Discharger completes the required studies is consistent with maximum benefit to the people of the State. This Order establishes requirements to ensure the discharge will not unreasonably threaten present and anticipated beneficial uses or result in groundwater quality that exceeds water quality objectives set forth in the Basin Plan. This Order establishes effluent limitations that are protective of the beneficial uses of the underlying groundwater, requires a groundwater evaluation and determination of the need for salinity source reduction, and requires the sampling of groundwater monitoring wells to quantify any impacts on the underlying groundwater quality. Following completion of the time schedule, this Order will be reopened if necessary to reconsider effluent limitations and other requirements to comply with Resolution 68-16. Based on the existing record, the discharge is consistent with the antidegradation provisions of Resolution 68-16.

56. Based on the threat and complexity of the discharge, the facility is determined to be classified 2-B as defined below:

    a. Category 2 threat to water quality, defined as, “Those discharges of waste that could impair the designated beneficial uses of the receiving water, cause short term violation of water quality objectives, cause secondary drinking water standards to be violated, or cause a nuisance.”

b. Category B complexity, defined as, "Any discharger not included above that has physical, chemical, or biological treatment systems (except for septic systems with subsurface disposal) or any Class 2 or Class 3 waste management units."

57. California Water Code Section 13267(b) 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*."

    The technical reports required by this Order and the attached Monitoring and Reporting Program No. R5-2009-0073 are necessary to assure compliance with these WDRs. The Discharger owns and operates the facility that generates the waste subject to this Order.

58. 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. 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.

59. California Department of Water Resources 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.

60. The discharge meets the criteria 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 upon the following.

    a. The Regional Water Board has issued waste discharge requirements,

    b. The discharge is in compliance with the Basin Plan. Studies submitted by the Discharger conclude that compliance with effluent limits and management practices in these WDRs will achieve compliance with the Basin Plan. The Regional Water Board concurs with these studies but this Order requires verification of the study results. As this facility does not currently exist as proposed in this Order, wastewater characterization and management practices were developed based upon best professional judgment using data obtained from similar facilities owned and operated by the Discharger. Groundwater quality is characterized over part of the facility with existing monitoring well data, supplemented by groundwater grab samples over the expanded land application

areas. Groundwater quality is highly variable across the site and further characterization of groundwater is necessary to formally determine background water quality; however, based upon existing groundwater data, reasonable assumptions were made for use in groundwater impact studies. This Order contains a time schedule for the Discharger to further investigate groundwater quality and determine the background groundwater value.

i. The surrounding area contains numerous confined animal operations and a long history of intensive agricultural operation. Background groundwater quality is believed to be degraded by the historic use.

ii. The Discharger has prepared an Antidegradation Study that shows wastewater with a FDS concentration of 1,500 mg/L could be mixed with WID supplemental irrigation water and applied to LAAs with no groundwater degradation. This Order limits the treated wastewater (effluent from Pond No. 2) FDS concentration to a monthly maximum of 1,500 mg/L and an annual average of 1,100 mg/L. The time schedule in Provision G.1, requires that on or before 1 July 2013, the Discharger submit additional site-specific information on wastewater quality and background groundwater quality, and an evaluation of the impact of the wastewater discharge on the groundwater to verify that the submitted groundwater impact study is correct.

iii. Wastewater storage ponds will be double lined to prevent infiltration of stored wastewater to groundwater.

iv. The Discharger is increasing the LAA acreage from 15.5 acres, to an immediately available 107.5 acres; an additional 79 acres are available for use in the future.

v. The Discharger is required to implement source control in the winery, as described in Finding 20 (see Prohibition A.4) which will minimize the salinity of the discharge.

c. The wastewater does not need to be managed according to Title 22 CCR, Division 4.5, and Chapter 11, as a hazardous waste.

61. 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 filed a *Notice of Non-Applicability of Coverage Under the NPDES General Permit for Discharges of Stormwater* in 1998. Following a site visit in 2002, the Central Valley Water Board concurred that the facility is exempt from the requirements to acquire coverage under the General Permit. However, because the expansion is significant, the Discharger is required to resubmit a Notice of Non-Applicability or apply for stormwater coverage.

62. A Negative Declaration was approved by the San Joaquin County Community Development Department on 17 May 2007 for the expansion of the facility per the provisions of the California Environmental Quality Act (CEQA). The Central Valley Water Board, as a responsible agency, has considered the negative declaration and

concurs that the expansion of the facility will not have significant adverse environmental impacts if the Discharger complies with this Order.

63. Pursuant to CWC 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

64. 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.

65. 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.

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

IT IS HEREBY ORDERED that Order No. R5-2002-0034 is rescinded and pursuant to Section 13263 and 13267 of the California Water Code, Sutter Home Winery, its agents, successors, and assigns, in order to meet the provisions contained in Division 7 of the California Water Code and regulations adopted there under, shall comply with the following:

Note: Other prohibitions, conditions, definitions, and the method 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, including irrigation tailwater, to surface waters or surface water drainage courses is prohibited.
2. Bypass or overflow of untreated or partially treated wastewater is prohibited.
3. Discharge of waste classified as "hazardous," defined in Section 20164 of Title 27, CCR, or "designated," as defined in Section 13173 of the CWC, is prohibited.
4. The discharge of wastewater in a manner other than as described in the findings is prohibited.
5. The discharge of toxic substances into the Discharger's wastewater ponds such that biological mechanisms are disturbed is prohibited.
6. The discharge of treated wastewater other than to the approved LAAs identified in Finding No. 24 is prohibited.
7. The discharge of domestic wastewater to the winery wastewater treatment system is prohibited.
8. The discharge of winery wastewater to a domestic wastewater treatment system (septic system) is prohibited.
9. The discharge of domestic wastewater to the stormwater pond is prohibited.

10. Discharge of stormwater not consistent with the procedures described in Finding No. 22, or more stringent measures if developed and approved by the Executive Officer, is prohibited.

11. By **12 November 2009**, wastewater will no longer be stored or treated in Ponds A or B.

B. Discharge Specifications:

1. The discharge to the wastewater treatment ponds shall not exceed ~~3.8 million gallons per month. In addition, the discharge to the wastewater treatment ponds shall not exceed an annual total of 30 million gallons of wastewater and/or stormwater mixtures. All monitoring periods shall be based on a standard calendar.~~the following:

Flow Measurement	Unit	Flow Limit
Total Annual Flow [1]	million gallons per year	30
Monthly Flow [2]	million gallons per month	7.0

[1] As determined by the total flow for the calendar year.
[2] As determined by the total flow each calendar month.

2. Neither the treatment nor the discharge of wastewater shall cause a nuisance or condition of pollution as defined by the CWC, Section 13050.

3. The discharge shall not cause the degradation of any groundwater.

4. No wastewater 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. Sufficient dissolved oxygen must be maintained in the upper zone (one foot) of any pond in order to prevent objectionable odors.

7. The Discharger shall operate all systems and equipment to maximize treatment of wastewater and optimize the quality of the discharge.

8. All ponds shall be managed to prevent the breeding of mosquitoes. In particular:

   a. An erosion control program should assure that small coves and irregularities are not created around the perimeter of the water surface.

   b. Weeds shall be minimized through control of water depth, harvesting, and/or use of herbicides.

   c. Dead algae, vegetation, and debris shall not accumulate on the water surface.

9. The LAAs shall be managed to prevent the breeding of mosquitoes.

10. The wastewater treatment ponds shall be designed, constructed, operated, and maintained to prevent inundation or washout due to floods with a 100-year return frequency. Adequate LAA shall be available to replace LAA made unusable by a flood event.

11. No physical connection shall exist between wastewater piping and any domestic water supply, domestic/industrial supply well, irrigation water pipeline, or irrigation canal without an air gap or approved reduced pressure device.

12. The freeboard in each pond shall never be less than two feet, as measured vertically from the water surface to the lowest point of overflow.

13. The wastewater treatment and land application system shall have sufficient capacity to accommodate wastewater flow and seasonal precipitation. 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.

14. On or about **15 October** each year, available pond storage capacity shall at least equal the volume necessary to comply with Discharge Specifications No. B.12 and No. B.13.

15. Storage of pomace and/or DE on areas not equipped with means to prevent leachate generation and infiltration into the ground is prohibited.

16. Application of pomace and/or DE to LAAs at the winery is prohibited.

17. If generated, all water softening ion exchange regeneration brine shall be separated from the wastewater system and disposed of at East Bay Municipal Utility District or a similar facility.

C. Effluent Limitations:

1. Treated wastewater applied to land shall not exceed the following effluent and loading rate limits, or other concentrations as determined in accordance with Provision G.1.g to ensure compliance with the Groundwater Limitations.

Constituent	Units	Daily	5-day Average	Monthly Average	Annual Average [1]
Biochemical Oxygen Demand	lbs/ac/day	300	100	NA	NA
Fixed Dissolved Solids	mg/L	~~1,500~~NA	NA	~~1,500~~NA	~~1,100~~1,500 [1]
Total Nitrogen	lbs/ac/year	NA	NA	NA	300

[1] ~~Annual average for Fixed Dissolved Solids shall be calculated as described in the Monitoring and Reporting Program and shall be based on calendar year.~~Flow-weighted annual average.
NA denotes Not Applicable.

Compliance with the annual average FDS concentration requirement shall be determined using the formula listed below:

$$C = \frac{\sum_{i=1}^{n}(C_i \times V_i)}{\sum_{i=1}^{n} V_i}$$

Where C = flow weighted average annual FDS concentration in milligrams per liter (mg/L);
C_i = FDS concentration monitoring result for the calendar month i in mg/L;

V_i = total effluent discharged to the LAAs during calendar month i in Mgal;
i = the number of the month (i.e.; January = 1, February = 2, etc.);
n = 12

2. Wastewater applied to the LAA shall not have a pH of less than 6.5 or greater than 10.0.

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. Crops shall be grown on the LAAs. Crops shall be selected based on nutrient uptake capacity, tolerance to high soil moisture conditions, consumptive use of water, and irrigation requirements. Cropping activities shall be sufficient to take up the nitrogen applied, and crops shall be harvested and removed from the land at least on an annual basis.
3. Neither pomace nor DE shall be stored on unpaved ground. Acceptable alternatives include storage on paved areas that are equipped with liquid collection systems or other alternatives that prevent generation of leachate, such as roofed areas or use of ag bags for well-drained materials.
4. Discharge of treated wastewater, including runoff, spray or droplets from the irrigation system, shall not occur outside the boundaries of the approved LAAs. Treated wastewater application using sprinklers, flood, or drip irrigation is acceptable if the discharge complies with all requirements of this Order.
5. Hydraulic loading of treated wastewater and irrigation water shall be at reasonable agronomic rates designed to minimize the potential impact to groundwater quality by percolation of wastewater and irrigation water below the root zone (i.e., deep percolation).
6. Wastewater conveyance lines shall be clearly marked as such. Wastewater controllers, valves, etc. shall be affixed with reclaimed water warning signs; quick couplers and sprinkler heads shall be of a type, or secured in such a manner, that permits operation by authorized personnel only.
7. Irrigation systems shall be labeled as containing reclaimed wastewater. If treated wastewater and irrigation water utilize the same pipeline, then backflow prevention devices shall be installed to protect the potable/irrigation water supply.
8. Application of treated wastewater to the LAAs using sprinkler irrigation is prohibited when wind velocities exceed 30 miles per hour.
9. Public contact with wastewater shall be precluded through such means as fences, signs, and/or irrigation management practices. Signs with proper wording of sufficient size shall be placed at areas of access and around the perimeter of the LAAs to alert the public of the presence of wastewater.
10. The LAAs shall be managed to prevent breeding of mosquitoes. More specifically:

    a. All applied 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.

c. Low pressure pipelines, unpressurized pipelines, and ditches that are 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 resulting from application of treated wastewater.

12. A 50-foot buffer zone shall be maintained between any industrial, domestic, or irrigation well and the wetted area resulting from application of treated wastewater.

13. A 50-foot buffer zone shall be maintained between any properties developed with residences and the wetted area resulting from application of treated wastewater.

14. Discharges to LAAs shall be managed to minimize both erosion and runoff from the irrigated area.

15. A berm shall be maintained around the perimeter of the LAAs to prevent the runoff of treated wastewater or stormwater.

16. 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.

17. The Discharger may not discharge effluent to the LAAs within 24 hours of a predicted storm event, during periods of precipitation, and for at least 24 hours after cessation of precipitation, or when soils are saturated.

18. Application of treated wastewater to the LAAs via flood irrigation shall only occur on furrows graded or irrigation checks configured so as to achieve uniform distribution, minimize ponding, and provide for tailwater control. Furrow runs and irrigation checks shall not be longer and slopes shall not be greater than what permits reasonably uniform infiltration and maximum practical irrigation efficiency.

19. Wastewater application areas shall be allowed to dry for at least 5 days from the end of wastewater application before the next wastewater application.

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

E. Solids/Sludge Disposal Requirements:

1. Collected screenings and other solids removed from winery wastewater shall be disposed of offsite 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 sumps, screens, wastewater ponds, etc. 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. Storage and disposal of domestic wastewater sludge (septage) shall comply with existing Federal, State, and local laws and regulations, including permitting requirements and technical standards.

4. Sludge and other solids shall be removed from septic tanks as needed to ensure optimal operation and adequate hydraulic capacity. A duly authorized carrier shall haul sludge, septage, and domestic wastewater.

5. 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:

1. Effective immediately as interim groundwater limitation, the discharge, in combination with other sources, shall not cause underlying groundwater to contain waste constituents in concentrations statistically greater than existing background water quality. Background groundwater quality shall be calculated using the methods provided in Title 27 Section 20415(e)(10). Background values must be updated annually as described in the MRP.

2. Effective **1 July 2014**, the final groundwater limits will be the groundwater quality objectives or the background groundwater quality (as determined by required studies approved by the Executive Officer), whichever is greater. If background values are not determined, the groundwater water quality objectives listed below will be the final groundwater limitations. If necessary to meet groundwater limits, the Discharger shall upgrade its ponds or upgrade wastewater treatment before the effective date. The groundwater quality objectives are presented below:

Constituent	Units	Limitation
Boron	mg/L	0.7
Chloride	mg/L	106
Iron	mg/L	0.3
Manganese	mg/L	0.05
Sodium	mg/L	69
Total Dissolved Solids	mg/L	450 [1]
Total Nitrogen	mg/L	10
Nitrate (as N)	mg/L	10
Ammonia (as NH_4)	mg/L	1.5
Bromoform	µg/L	4
Bromodichloromethane	µg/L	0.27
Chloroform	µg/L	1.1
Dibromochloromethane	µg/L	0.37

[1] A cumulative impact limit that accounts for several dissolved constituents in addition to those listed here separately [e.g., alkalinity (carbonate and bicarbonate), calcium, hardness, phosphate, and potassium].

G. Provisions:

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

   a. By **12 November 2009**, the Discharger shall submit and implement an *Operation and Management Plan* (*O&M Plan*) that addresses operation of the wastewater treatment and disposal facility. 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 LAAs, and procedures to prevent excessive BOD, nitrogen, or dissolved solids loading of LAAs, (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 LAAs, (g) the locations of solid waste disposal areas, methods of disposal, and the daily practices associated with the disposal of solid waste, (h) means to secure the LAAs and control wastewater or stormwater from discharging offsite (i.e., installation of fencing or notification signs, installation of berms to prevent runoff, configuration of checks to control application rates), (i) planning for potential response to natural disasters, (j) institutional controls such as Best Management Practices (BMPs), (k) Standard Operating Procedures (SOPs), (l) specific procedures to ensure that contaminated stormwater is discharged to the wastewater pond and clean stormwater is discharged to the stormwater pond, (m) employee orientation and training. 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.

   b. By **12 November 2009**, the Discharger shall submit a *Nutrient Management Plan* that evaluates the nutrient load to each land application area and develops and implements pollution prevention management practices to restrict nutrient loading that that necessary for the specified crop.

   c. By **12 November 2009**, the Discharger shall apply for coverage or submit a Notice of Non-Applicability for *Order No. 97-03-DWQ, Discharges of Storm Water Associated With Industrial Activities* or provide a reevaluation of the Notice of Non-Applicability previously issued.

   d. By **12 November 2009**, the Discharger shall submit a *Hydrogeologic Investigation Workplan and a Groundwater Sampling and Analysis Workplan* prepared in accordance with, and including the items listed in, Section 1 of Attachment E which is attached hereto and is made part of this Order by reference. The workplan shall describe an investigation designed to explain the high level of variability in groundwater quality. The investigation shall include examination of historic land use, nearby surface water bodies, and the potential that confined animal facilities (or other operations) have impacted groundwater at or near the facility. The workplan shall also propose the installation of groundwater monitoring wells to monitor the groundwater upgradient and downgradient of the new LAAs, wastewater ponds, and any other feature of concern. All groundwater monitoring wells or other groundwater sample collection methods shall be designed to yield samples representative of the uppermost portion of the first saturated interval below the water table. The workplan shall also specify proposed sampling

techniques designed to ensure that representative samples of sufficient volume are obtained and analyzed.

e. By **14 December 2009**, the Discharger shall submit a *Land Application Preparation Report* that describes the condition of the 79 acre LAA as ready to accept wastewater if needed due to a flood event. The 79 acre LAA does not have to be immediately used for land application of wastewater, but it shall be maintained in a condition that allows wastewater application should flood conditions prevent wastewater from being applied to other on-site LAAs.

f. By **17 June 2010**, the Discharger shall submit a *Hydrogeologic Investigation Report* that describes the findings of the hydrogeologic investigation and presents the results of the monitoring well installations at the site. If additional information is needed to characterize the hydrogeologic conditions at the site, recommendations for additional work shall be included in the report.

g. By **1 July 2013**, the Discharger shall submit a *Background Groundwater Quality Standard Report* that presents a summary of all monitoring data (including data obtained prior to adoption of this Order), determines the background groundwater quality, and verifies the Discharger's Antidegradation Study. The determination of background groundwater quality shall be made using the methods approved by the Executive Officer, and shall be based on data from at least 12 consecutive groundwater monitoring events. For each monitoring constituent, the report shall compare the measured concentration in each compliance monitoring well with the proposed background concentration. The report shall propose a background groundwater value for FDS and all constituents listed in Groundwater Limitations F.2 for the land application areas. The background value will be used to determine the need to reopen the order to revise the FDS Annual Average Effluent Limit described in Effluent Limitation C.1. On **1 July 2013** if the determination indicates:

i. The FDS background groundwater value is higher than the Annual Average Effluent Limit specified in Effluent Limitation C.1, the Discharger may petition the Central Valley Water Board for consideration of establishing a higher Annual Average Effluent Limit or take no action.

ii. The FDS background groundwater value is lower than the Annual Average Effluent Limit specified in Effluent Limitation C.1, the Discharger shall submit a Facility Improvement Workplan by **1 December 2013** that will describe the improvements or operational changes it will implement at the facility and a schedule to allow the discharge to comply with the Groundwater Limitation F.1.

2. In accordance with California Business and Professions Code Sections 6735, 7835, and 7835.1, engineering and geologic evaluations and judgments shall be performed by or under the direction of registered professionals competent and proficient in the fields pertinent to the required activities. All technical reports specified herein that contain workplans, that describe the conduct of investigations and studies, or that contain technical conclusions and recommendations concerning engineering and geology, shall be prepared by or under the direction of appropriately qualified professional(s), even if not explicitly stated. Each technical report submitted by the

Discharger shall contain a statement of qualifications of the responsible licensed professional(s) as well as the professional's signature and/or stamp of the seal.

3. The Discharger shall comply with the Monitoring and Reporting Program No. R5-2009-0073, 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 Central Valley 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 Central Valley 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 specified 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 Central Valley 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 Section 313 of the “Emergency Planning and Community Right to Know Act of 1986.”

8. The Discharger shall report promptly to the Central Valley 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 the Executive Officer. Violations may result in enforcement action, including Central Valley Water Board or court orders requiring corrective action or imposing civil monetary liability, or in revision or rescission 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 Central Valley 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 13 March 2009 and amended by Order XXX on ~~13 August 2009~~ August 2012.

PAMELA C. CREEDON, Executive Officer

Amended by Order R5-2012-xxxx
~~TRO 8/13/09~~LLA:061812

~~AMENDED~~