CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

ORDER R5-2013-0028-001

WASTE DISCHARGE REQUIREMENTS

FOR
DELICATO VINEYARDS, INC.
DELICATO FAMILY VINEYARDS
SAN JOAQUIN COUNTY

TENTATIVE

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

1. On 19 March 2010, Delicato Family Vineyards, Inc., (hereafter "Discharger") submitted a Report of Waste Discharge (RWD) for an existing winery facility located in San Joaquin County, California. An amended RWD was submitted on 29 February 2012, with additional information provided on various dates in October and November 2012.

2. Waste Discharge Requirements (WDRs) Order No. 96-077 was adopted by the Central Valley Water Board on 22 March 1996 to regulate wastewater discharges associated with Discharger's winery operations. The Monitoring and Reporting Program (MRP), was revised on 14 September 2001 to include quarterly groundwater monitoring.

3. The Discharger owns and operates the winery facility and is responsible for compliance with these WDRs. The facility consists of approximately 140 acres of vineyards, administrative and wine production buildings, two unlined shallow wastewater ponds used as pumping sumps, and 23 acres of Land Application Areas (LAAs) for the discharge of winery wastewater. Domestic wastewater is discharged to several separate septic tank/leachfield systems regulated by the San Joaquin County Environmental Health Department.

4. The facility is located at 12001 S. Highway 99 in Manteca, California (Section 17, T1S, R7E, MDB&M). The facility occupies San Joaquin County Assessor's Parcel Numbers (APN)APN 204-04-007, 204-04-008, 204-04-009, 204-04-010, 204-04-012, 204-04-014, 204-04-016, 204-05-007, 204-05-008, 204-05-009, 204-05-010, 204-05-011, 204-05-014, 204-05-023, and 204-05-024. A topographic map of the site is shown on Attachment A, which is attached hereto and made part of this Order by reference.

5. Order 96-077 allows a maximum daily wastewater flow of up to 0.325 million gallons per day (MGD), which is equivalent to a total annual flow of 119 million gallons per year (MGY). The Discharger currently discharges approximately 0.153 MGD (56 MGY) and proposes to further expand winery operations, increasing daily wastewater discharge to 0.197 MGD (72 MGY). Process wastewater is currently collected from three sumps within the winery facility and conveyed to two unlined shallow wastewater ponds used as pumping sumps and then discharged

into approximately 23 acres of uncropped LAAs. Wastewater is applied to the LAAs by flood irrigation and is then passively treated by the soil and limited vegetative growth.

6. Facility expansion plans include constructing two 0.25 MG lined aeration ponds, increasing the volume of wastewater discharge, increasing the size of LAAs, and converting two unlined ponds into temporary storage for supplemental irrigation water. Therefore, Order 96-077 is rescinded and replaced by this Order.

Enforcement History

7. On 15 September 2003, Board staff issued a Notice of Violation (NOV) to the Discharger for violation of the Groundwater Limitations contained in WDRs Order 96-077 because groundwater monitoring data showed that shallow groundwater quality had been degraded with salinity constituents. The NOV required submittal of a *Groundwater Degradation Evaluation Report* to evaluate the extent to which wastewater discharge was degrading underlying groundwater.

8. On 29 December 2003, the Discharger submitted a report titled *Report: Groundwater Degradation Evaluation Delicato Vineyards*. The report concluded that wastewater application practices were contributing to the degradation of groundwater quality in the vicinity of the LAAs. The report also stated that the Discharger was assessing its process chemical usage and attempting to reduce the salinity of the discharge.

9. Cleanup and Abatement Order R5-2004-0705 (CAO) was issued on 27 April 2004. The CAO required submittal of a *Wastewater Characterization and Wastewater Treatment Evaluation Report, a Wastewater System Improvement Plan and Final System Design*, and quarterly progress reports describing work accomplished to comply with the Order.

10. A *Wastewater Characterization and Treatment Evaluation Report* that summarized wastewater characteristics and a proposed compliance plan were submitted on 1 December 2005. In accordance with the CAO, the Discharger submitted a RWD on 28 April 2006, and began providing quarterly progress reports detailing facility improvements and implementation of salinity reduction efforts.

11. The Discharger met with Board staff in August 2008 to discuss expanding the LAAs. The Discharger was asked to install monitoring wells in the proposed LAAs to identify background groundwater conditions. A Monitoring Well Installation Workplan was submitted on 11 April 2008, and three monitoring wells were installed in August 2008.

12. On 19 March 2010, the Discharger submitted a RWD that included data from the newly installed monitoring wells, described a planned expansion of winery operations and an increase in acreage of LAAs for the discharge of wastewater.

In response to comments, an amended RWD was submitted on 29 February 2012, with additional supporting information provided in October and November 2012. The 2012 RWD proposes both structural and operational improvements to reduce current degradation and mitigate the threat of degradation associated with expanded winery operations.

Existing Facility and Discharge

13. The facility currently crushes approximately 140,000 tons of grapes annually. Wastewater at the facility is generated from wine processing, tank and floor cleaning, and equipment maintenance activities (e.g. water softening regeneration, cooling tower and boiler blowdown).

14. The winery operates year-round, with maximum wastewater discharge occurring during the crush season of September through November. Since 2002, the facility has produced an average annual wastewater flow of approximately 0.132 MGD (48.1 MGY), with a peak annual flow of 0.16 MGD (58.5 MGY) in 2006.

15. Process water for facility operations is supplied by two on-site wells (Well #2 and Well #4), that are used for both domestic and winery processes. Well #4 is the primary facility supply well, while Well #2 functions as a backup well. The amount of water produced from the two supply wells since 2009 is presented below:

Year	Total Flow (MGY)
2009	51.1[(a)]
2010	56.3
2011	70.7

(a) Reported value is low due to mis-calibrated meter.

16. Water samples were collected from the two on-site supply wells and one agricultural well in December 2009. A summary of selected analytical results from the on-site supply wells is presented below:

Constituent	Analytical Result (mg/L, except as noted)	
	Well #2	Well #4
Total Hardness	47.3	61.4
Boron	0.3	0.2
Iron	0.17	<0.05
Sodium	58	57
pH	8.1	8.1
Sulfate	7.0	12
Chloride	12	13

Constituent	Analytical Result (mg/L, except as noted)	
	Well #2	Well #4
Nitrate as NO_3	2.7	7.8
Specific Conductance [1]	319	355

[1] µmhos/cm.

17. Wine processing wastewater includes a mixture of organic material comprised of wine, grape skins, seeds, and stems. Additional wastewater components include additives and chemicals such as caustic soda, sulfurous acid, sodium hypochlorite, soda ash, and diatomaceous earth (DE), which are used during grape processing or as part of equipment sanitizing activities. The chemicals and quantities that are currently used at the facility are identified below.

Trade Name	Primary Ingredient	Area Used	Current Annual Usage [1]	Future Annual Usage [1]
BW SpecialBSC HD Specialty Cleaner	Potassium Hydroxide (KOH liquid)Potassium Hydroxide	Cellar - CleaningCellar - Cleaning	5,500 gals6,700 gals	7,500 gals10,000 gals
UnidT.S.P.	KOH granularTrisodium Phosphate	Cellar - CleaningCellar - Cleaning	2,500 lbs8,000 lbs	2,500 lbs12,000 lbs
Premium DioxideCitric Acid	CLO2Citric Acid	Tank SanitationCellar - Cleaning	1,000 gals6,000 lbs	1,500 gal9,000 lbs
WintersunPotassium Metabisulfite	Potassium Metabisulfite	Cellar – Wine Making	2,200 lbs	3,300 lbs
Citric AcidSodium Percarbonate	Citric AcidSodium Percarbonate	Cellar - CleaningCellar - Cleaning	4,500 lbs300 lbs	6,000 lbs300 lbs
Potassium MetabisulfiteLerasep Special R-5	Peracetic Acid	Cellar - Cleaning	50 gals	75 gals
Provox CBCS LP Acid	Sodium PercarbonateNitric Acid / Phosphoric Acid	Cellar - CleaningCellar - Cleaning	2,200 lbs250 gals	3000 lbs375 gals
Premium PeroxideSodium Hypochlorite	Peracetic AcidSodium Hypochlorite	Cellar - CleaningBottling - Sanitation	5 gals2,900 gals	0 gals4,350 gals
High Temp Acid	Nitric Acid / Phosphoric Acid	Cellar - Cleaning	200 gals	375 gals
Sodium Hypochlorite	Sodium Hypochlorite	Bottling - Sanitation	600 gals	800 gals

Trade Name	Primary Ingredient	Area Used	Current Annual Usage [1]	Future Annual Usage [1]
~~Organophosophate~~	~~Organophosophate~~	~~Cooling Tower Biocide~~	~~1,000 gals~~	~~1,500 gals~~
~~Bromine Tablets~~	~~Bromine Tablets~~	~~Cooling Tower Corrosion Control~~	~~1,000 gals~~	~~1,500 gals~~

[1] Estimated

18. Solids are separated and pomace are sent to an off-site composting facility or recycled by on-site composting and reuse. Various residual solid wastes generated at the facility include pomace (the crushed pulp of grapes), grape stems and leaves, spent diatomaceous earth (DE) from wine filtration, and recovered material from wastewater screens. Residual solids are composted on-site for reuse as a soil additive in vineyard areas.

19. Wastewater is currently collected in a gravity drain system that directs water into three sumps within the winery facility. Because the majority of the facility is exposed to the elements, storm water that falls on processing areas of the winery is collected in the wastewater sump system. Wastewater flow and quality have been monitored on a monthly basis since 2002, in accordance with Revised MRP 96-077. Wastewater constituent concentrations are highly variable depending on the season and operations being conducted at the winery.

    The following table summarizes annual flow rates and annual flow weighted average wastewater constituent concentrations from 2002 through 2011.

Year	Annual Flow (MGY)	Annual Flow-Weighted Mean Result (mg/L)							
		BOD	Sulfate	NO_3 as N	TKN	TDS	VDS	FDS	pH[1]
2002	41.7	3,766	135	1.1	26	1,346	659	687	3.6-10.7
2003	41.9	2,066	119	1.3	19	1,078	491	587	3.7-12.1
2004	44.5	4,456	115	1.5	29	1,213	572	641	3.7-11.1
2005	50.7	3,565	117	1.5	27	1,269	553	716	3.5-11.9
2006	58.5	4,054	200	1.5	18	1,714	719	995	3.8-11.9
2007	46.1	3,589	169	1.4	19	1,296	482	814	4.0-12.1
2008	43.3	4,393	175	2.2	21	1,862	1,160	703	3.0-12.1
2009	51.4	5,303	165	2.0	51	1,850	1,091	760	3.7-9.7
2010	49.4	4,489	217	0.7	63	1,432	789	643	3.7-11.2
2011	53.5	4,231	125	0.8	54	1,330	879	451	3.8-10.1
Average[2]	48.1	3,987	154	1.4	32	1,442	736	706	3.0-12.1

[1] pH values are reported as ranges for individual sumps.

[2] Average values from 2002 through 2011.

20. Prior to 2011, the LAAs totaled approximately 20 acres. In 2011, the LAAs were reconfigured to include an additional three acres by shifting compost operations and removing internal roadways. All calculations for current discharge presented in the 2012 RWD were based on 20 acres of LAAs.

21. The 2012 RWD provided totals of wastewater discharge to 20 acres of LAAs between 2009 and 2011, as summarized below:

Year	Process Wastewater (MGY)	Average Daily Discharge (MGD)	Average Yearly Application Depth (Inches)
2009	51.4	0.14	95
2010	49.4	0.14	91
2011	53.6	0.15	99

22. The 2004 CAO required that the Discharger identify and describe potential wastewater and salinity reduction, reuse, recycling, and treatment opportunities. The 2012 RWD states that the Discharger has implemented some salinity source reduction, but the level of salinity reduction has not been adequately quantified. Effluent monitoring data since 2002 do not indicate that salinity reduction has been achieved. Therefore, this Order requires that the Discharger complete a post-source control salinity reduction evaluation to quantify the benefits achieved by salinity reduction measures previously implemented and provide a feasibility analysis of additional reduction measures.

23. Revised MRP 96-077 does not require wastewater monitoring to characterize salinity concentrations by species. Because potassium has a higher molecular weight than sodium, substitution of potassium for the previous use of sodium-based chemicals may not be reflected in the FDS results.

24. The facility currently does not have a process wastewater treatment system. The existing LAAs are located on the western and northern portions of the facility property and are referred to as the “southwest check” (LAA 1 on Attachment B) and the “northeast check” (LAA 3 on Attachment B). Wastewater is applied to the LAAs by flood irrigation, and the water is treated passively by the soil and/or taken up by grasses and weeds.

Proposed Changes to the Discharge

25. The Discharger is planning to increase winery production in three phases to ultimately crush up to 200,000 tons of grapes annually. Each phase of the expansion will correspond to an increase of about 20,000 tons of fruit per year. Although the timing of implementing each phase is dependent on market conditions and availability of wine grapes, the Discharger plans to complete the

final phase expansion in five years; however, due to market conditions the planned expansion may take 15 or more years.

26. The Discharger will upgrade fermenters, presses, hoppers, bottling, and barrel washing equipment to achieve a 200,000 ton processing capacity. Although additional wastewater will be generated from processing and cleaning activities. Some of the new equipment will be outfitted with clean-in-place systems, which will improve overall water use efficiency and salinity reduction.

27. The Discharger plans to construct a new wastewater system and cropped LAAs as part of the facility expansion. Attachment C, which is attached hereto and made part of this Order by reference, presents a flow diagram that identifies process flow, including all sumps, associated conveyances, screening, storage, metering and sampling locations, and LAAs. A preliminary wastewater system design submitted on 1 October 2012 included the following general elements.

    a. Process wastewater, residual solids, and storm water from winery operations will be collected by various drains and conduits, which gravity flow into three existing sumps located within the winery facility. These collection sumps are identified as Winery Sumps #1, #2, and #4. Former Winery Sump #3 has been abandoned. As shown in Attachment C, water collected in Winery Sump #2 is transferred into Winery Sump # 4.

    b. Winery Sumps #1, #2, and #4 each provide approximately 1,980 gallons in temporary storage capacity. Pumps installed in Winery Sumps #1 and #4 deliver an estimated flow rate of 1,200 gallons per minute (gpm) at 54 feet of total dynamic head.

    c. Upon completion of facility modifications, Winery Sumps #1 and #4 will transfer wastewater through a mechanical screen to separate coarse solids (i.e. debris, pomace, diatomaceous earth, etc.). The screen will be sized to accommodate pumped flow when both Winery Sumps #1 and #4 are operated concurrently during the peak crush flow. Screened solids will be sent to a designated compost area for processing into soil amendment for reapplication in vineyard areas.

    d. The screened water will be discharged by gravity flow into two 0.25-million gallon (MG) aeration ponds, referred to as PW-1 and PW-2. Aeration ponds PW-1 and PW-2 will be located west of the main winery facility, and south of existing monitoring well MW-2r. The two aeration ponds will be constructed at the location of the current composting area.

    e. The proposed wastewater system is not designed for extended residence time for complete aerobic degradation of organic constituents before discharge to the LAAs. Therefore, both ponds will be equipped with aerators to provide mixing and to prevent odors.

f. Flow meters will be installed downstream of Winery Sumps #1 and #4 before solids separation to measure influent flows. Flow meters will be also installed to measure the amount of effluent discharged from the aeration ponds and supplemental storage to all LAAs.

g. An emergency overflow pipe will be installed to allow emergency bypass of screened wastewater around the two aeration ponds and directly to the LAAs.

h. The existing unlined wastewater ponds will be abandoned and cleaned out prior to the construction of one or more ponds in this area which will be used as pumping sumps for supplemental irrigation water.

28. Aeration ponds PW-1 and PW-2 will be constructed as earthen basins with sloped berms constructed of native or imported fill material. The aeration ponds will be constructed with a single 60-mil high density polyethylene (HDPE) liner. The maximum allowable water depth in the two aeration ponds will include two feet of freeboard. The final dimensions and liner specifications of the two aeration ponds will be determined during final design, which will be documented as part of a Wastewater Pond Design and Pond Liner Construction Quality Assurance (CQA) Plan.

29. Aeration ponds PW-1 and PW-2 will provide temporary detention of process wastewater and storm water flow from Winery Sumps #1, #2, and #4. The two aeration ponds will normally be used on an alternating basis to provide treatment and temporary storage during periods when wastewater flows exceed agronomic rates for irrigation at the new LAAs and for redundancy during intervals of non-operational maintenance (i.e. solids removal, liner repairs, etc.). PW-1 and PW-2 may be operated in parallel to provide storage capacity during peak crush season flow.

30. Under normal operating conditions, water flowing into the wastewater aeration ponds will be immediately distributed to the LAAs. Effluent from the aeration ponds will be filtered as needed to prevent clogging of irrigation systems. Solids that accumulate in the aeration ponds will be removed in a manner that does not compromise the integrity of the pond liner. Large solids or debris will be removed by hand while finer solids accumulated on the side of the liner will be rinsed down to a collection sump in each of the aeration ponds.

    Initially, one aeration pond will be used for wastewater while the other aeration pond will be used to store supplemental irrigation water provided by the South San Joaquin Irrigation District. The second aeration pond will be converted to use for wastewater storage after the current unlined wastewater ponds are cleaned out and reconstructed to store supplemental irrigation water. Removal of sediment sludge and placement of a compacted clay liner in the reconfigured storage basins should reduce the flow of percolate through residual wastewater constituents in the vadose zone beneath the existing unlined wastewater ponds.

31. Based on current wastewater monitoring data and the design of the proposed wastewater system, effluent from the two aeration ponds is expected to be similar to current effluent water quality. Flow-weighted average effluent concentrations from 2002 through 2011 are tabulated below.

Annual Flow-Weighted Mean Result (mg/L) [1]							pH [2]
BOD	**Sulfate**	**NO_3 as N**	**TKN**	**TDS**	**VDS**	**FDS**	
3,987	154	1.4	32	1,442	736	706	7.7

[1] Average values from 2002 through 2011

[2] pH values are reported as annual median values from crush and non-crush maximums.

32. a. In 2013, tThe Discharger proposeds to convert the existing 23 acres of uncropped LAAs to cropped LAAs and add approximately 107 acres of vineyards as new LAAs, for a total cropped LAA area of 130 acres. The existing and new LAA locations are shown on Attachment B and are summarized below.

LAA Name	Approx. Acres	Proposed Land Use	Location
1	7	Cropped	Central portion of APN 204-040-15
2	6	Vineyards	Northern portion of APN 204-040-15
3	16	Cropped	APN 204-040-07
~~4~~	15	Vineyards	APN 204-040-08 and 204-040-09
5	58	Vineyards	APN 204-050-23 and 204-050-24
6	28	Vineyards	APN 204-050-14

b. By final buildout, the Discharger proposes to add additional LAAs, modify LAA locations and crop types, and increase composting acreage, as shown below.

LAA Name	Approx. Acres	Proposed Land Use	Location
1	9.7	Compost	Central portion of APN 204-040-15
2	5	Vineyards	Northern portion of APN 204-040-15
3	13	Cropped	APN 204-040-07
4	0	Not Used	APN 204-040-08 and 204-040-09
5	58	Vineyards	APN 204-050-23 and 204-050-24
6	15	Vineyards	APN 204-050-14
7	18	Cropped	APN 204-040-01
8	27	Almonds	APN 204-040-01
9	90	Almonds	APN 204-050-04, 204-050-16, 204-050-17, and 204-050-05
	Vineyards: 78 acres Cropped: 31 acres Almonds: 117 acres Compost: 9.7 acres **TOTAL LAA ACREAGE: 237.7 acres**		

33. The 2004 CAO required that the Discharger complete the facility improvement design and propose an implementation schedule in the RWD, which was due by 1 February 2006. The April 2006 RWD did not include detailed design improvements. The Discharger is now proposing to expand facility operations, increase wastewater flows over a five-year period, and improve the wastewater management and disposal system prior to the 2013 crush season. Because these improvements are necessary to prevent further groundwater degradation, this Order establishes a time schedule to complete the improvements in accordance with the proposed plan.

34. An on-site agricultural well (Ag-1) currently provides irrigation water for the existing vineyards. The on-site agricultural well has a screened casing interval from approximately 255 to 305 feet below ground surface. Irrigation water provided by the on-site agricultural well is distributed directly to vineyard areas through a drip irrigation system. Water quality data from the sampling of the irrigation well in 2009 is provided below:

Constituent	Analytical Result (mg/L, except as noted)
Total Hardness	149
Arsenic	0.009
Calcium	40

Constituent	Analytical Result (mg/L, except as noted)
Magnesium	12
Potassium	5.0
Sodium	46
Sulfate	29
Chloride	14
Nitrate as NO_3	52.2
Specific Conductance [2]	502
Total Dissolved Solids	320

[1] µmhos/cm

35. Supplemental irrigation water is provided by the South San Joaquin Irrigation District (SSJID), as needed. Two samples of supplemental irrigation water from the SSJID were collected on 20 August 2012. The analytical results are summarized below for the two different sampling locations. Storm water from a non-industrial storm water detention basin proposed for the facility expansion project ~~will be~~may be another source of supplemental irrigation water.

Constituent	Analytical Result (mg/L)	
	Sample No. 1	Sample No. 2
Fixed Dissolved Solids (FDS)	20	20
Total Dissolved Solids (TDS)	60	40
Total Suspended Solids (TSS)	5.0	5.0

36. Wastewater will be applied to the LAAs year-round as needed to support vineyard and seasonal crops. As shown on Attachment C, water will be released from the aeration ponds and from supplemental irrigation water storage basins through separate pipes to the various LAAs. Blending of wastewater and supplemental irrigation will typically occur in the discharge pipe. Application rates and frequencies will vary during the year depending on weather and crop conditions.

37. Cutback irrigation will be used to apply wastewater and SSJID supplemental irrigation water to the cropped LAAs using a series of narrow checks. Cutback irrigation is a variant of flood irrigation that minimizes runoff and potential ponding by matching the inflow rate with the average infiltration capacity of the soil. Cutback irrigation is similar to tailwater recovery systems where irrigation efficiency is improved by reducing runoff losses.

38. Vineyard LAAs will receive wastewater and supplemental irrigation water through a combination of furrow and drip irrigation. Some vineyard LAAs may alternatively receive irrigation water from the on-site agricultural supply well via drip irrigation.

39. Furrows and checks will be used to promote the even application of wastewater within the LAAs. Elevations of the new LAAs are lower than the surrounding access roads, which will prevent off-site runoff. Regular inspections of the LAAs will be performed to identify areas that need to be regraded or requiring maintenance.

40. The Discharger will not irrigate the LAAs when LAA soils are saturated. Precipitation that falls on the LAAs during the rainy season will be allowed to percolate, and will not be discharged off-site.

41. A water balance was included in the 2012 RWD to demonstrate the capacity of the wastewater treatment, storage, and land application system. The water balance modeled storage and disposal capacity during the 100-year, 365-day precipitation event with at least two feet of freeboard in the two 0.25 MG aeration ponds. The water balance presented in the RWD used reasonable estimates of normal influent flows, precipitation, evaporation, and evapotranspiration, including allowances for seasonal variations.

42. The water balance was based on the current annual wastewater discharge of 56 MGY, with a peak monthly flow of 7.8 MG, and a separate water balance was used to model the proposed increased wastewater flow of 72 MGY and peak monthly average of 10 MG. The water balance used the 100-year annual rainfall event for the existing 23 acres of LAAs and the proposed 130 acre LAAs. The water balance shows that 130 acres of LAAs and a storage volume of 0.45 MG would provide adequate storage and disposal capacity for a total annual wastewater flow of 72 MG per year.

43. Based on current wastewater quality, projected future flow rates, and modification of LAAs, the anticipated hydraulic and waste constituent loading rates are tabulated below.

Description	**Units**	**Current Operations**	**Winery Expansion Phase**			
			Initial Expansion (Phase I)		**Full Build-out (Phase II)**	
Annual Wastewater Flow	MGY	48.1 [1]	56		72	
Land Use	--	Uncropped	Cropped	Vineyards	Cropped	Vineyards
Land Application Area	Acres	23 [2]	23	107	23	107
Wastewater	Inches	70.9	14	14	27	15
Irrigation Water [3]	Inches	0	15	20.5	6	22
Max. BOD Loading	lbs/ac/day	285	106	76	183	105
Total Nitrogen	lbs/ac/yr	556	82	81	151	90
FDS Loading [4]	lbs/ac/yr	11,558	2,493	2,488	4,498	2,754

Description	Units	Current Operations	Winery Expansion Phase			
			Initial Expansion (Phase I)		Full Build-out (Phase II)	
Blended FDS [5]	mg/L	709 [1]	258	230	429	240

[1] Average for 2002-2011.

[2] 2012 RWD calculations for existing conditions were based on 20 acres of LAAs.

[3] Combined flow from on-site agricultural supply well and from South San Joaquin Irrigation District.

[4] FDS loading based on average wastewater FDS concentration blended with supplemental irrigation water at 50 mg/L TDS (assumes that TDS=FDS for supplemental water supply).

[5] Blended FDS concentrations calculated using average wastewater FDS concentration with supplemental irrigation water at 50 mg/L TDS and 13.8 inches of annual precipitation on outdoor process areas that drain to the wastewater sumps.

44. When necessary, sludge will be removed from the lined aeration ponds in a manner that does not compromise the integrity of the liner. Recovered sludge will be incorporated into the on-site compost operation or disposed of at a permitted disposal facility.

45. Pomace removed from the presses is either sold for off-site composting or composted on-site. Approximately 15,000 tons of pomace is currently produced annually from crushing operations. Approximately 3,000 tons are composted onsite and the remaining 12,000 tons are provided to an offsite composting facility. The amount of composted material reused on-site is determined by a San Joaquin Valley Air Pollution Control District Permit to Operate for the composting operation, and based on market conditions.

46. Spent diatomaceous earth is removed by a contractor daily during the crush period and approximately weekly during the non-crush period. Diatomaceous earth that is not hauled offsite is incorporated into the onsite compost operation.

47. On-site composting of pomace and DE is currently conducted within an approximately 3-acre area south of monitoring well MW-2r, as shown on Attachment B. The current composting area will be reconfigured into a 2.5 acre area when the two aeration ponds are built. The relocated compost area will be located adjacent to the two proposed aeration ponds. The subgrade compost containment area will be compacted and will include a drainage system to transfer compost leachate and storm water runoff from this area back into the aeration ponds.

48. Compost is typically stored from the end of harvest into the following spring, depending on the weather. ~~Finished compost is spread evenly over approximately 140 acres of vineyards, including the 100 acres of LAA vineyards, and 40 acres of non-LAA vineyards~~ The use of compost on-site is being phased out and will eventually be completely brokered off site depending on market conditions.

Site-Specific Conditions

49. Surrounding land uses are primarily agricultural with seasonal crops and vineyards, along with a few scattered rural residences. A golf course and a cemetery are located north of the facility across French Camp Road.

50. Topography of the site and surrounding area is generally level with an approximate elevation of 30 to 35 feet above mean sea level (MSL). Regional surface drainage is to the northwest towards Lone Tree Creek, which drains to French Camp Slough and eventually to the San Joaquin River. The facility is located within the San Joaquin Valley Floor Hydrologic Unit (535.10).

51. According to a 2008 Flood Insurance Rate Map for the area, the facility is located in Flood Zone X, which is outside the currently-defined Federal Emergency Management Agency (FEMA) 100-year flood zone.

52. Annual precipitation in the vicinity since 1949 averages approximately 13.8 inches per year. The 100-year, 365-day precipitation event is approximately 29.1 inches, and the average reference evapotranspiration (ETo) rate is approximately 52.1 inches per year.

53. Domestic wastewater generated at the winery is currently discharged into six separate septic systems that are permitted by the San Joaquin County Environmental Health Department. Domestic wastewater is generated at the tasting room, washrooms and toilets, and an employee lunchroom (no cafeteria). As part of the planned facility expansion, two of the existing septic systems will be abandoned and replaced. The new septic systems will be permitted by the San Joaquin County Environmental Health Department.

Groundwater Considerations

54. The facility site is underlain by alluvial fan deposits consisting of poorly sorted clay, silt, sand, and gravel. According to United States Department of Agriculture (USDA) Natural Resource Conservation Service (NRCS) data, near-surface soils at the facility are classified as Delhi, Timor, and Veritas series soils. These soils are characterized as having moderate to fast near-surface saturated hydraulic conductivity values. Timor and Veritas soils are located at the southwestern limits of the facility property and are characterized as having a duripan at depths of 40 to 60 inches, which may impede vertical percolation rates. Sandy loams in the LAAs are characterized as being moderately to highly drained soils with a soil water capacity of 4.7 to 7.6 inches in the top 60 inches.

55. Six groundwater monitoring wells (MW-1 through MW-6) have been installed at the facility and are monitored in accordance with the Revised MRP. The monitoring well locations are illustrated on Attachment B and summarized below.

Well ID	Year Installed	Screen Interval (feet bgs)	Description of Well Location [2]
MW-1	2001	30 - 45	Upgradient of current discharge areas and upgradient of planned LAA Nos. 1, 2, 3, and 4
MW-2 / MW-2r [1]	2001 / 2004	25 - 40	Downgradient of existing unlined wastewater ponds and compost area and within planned LAA-1
MW-3	2001	25 - 40	Downgradient of current LAAs and planned LAA-3
MW-4	2008	35 - 50	Upgradient of existing LAAs and planned LAA-5
MW-5	2008	35 - 50	Upgradient existing LAAs and downgradient of planned LAA-5
MW-6	2008	35 - 50	Downgradient of planned LAA-6

[1] Monitoring well MW-2 was replaced in 2004 as a result of surface damage from on-site operations.

~~[1]~~[2] Additional monitoring wells will be installed before discharging can occur at the new LAAs.

56. Monitoring well installation logs indicate that shallow soils at the facility consist of inter-bedded silt and fine to medium-grained sand intervals to depths of approximately 50 feet below ground surface (bgs). The six monitoring wells are screened across intervals of fine to medium grained sands inter-bedded with fine-grained sediments.

57. Quarterly groundwater monitoring conducted since 2001 shows that shallow groundwater occurs at depths ranging from approximately 30 to 40 feet bgs. The direction of groundwater flow is generally to the north-northeast, with a relatively low degree of horizontal gradient. Quarterly monitoring data since 2001 show seasonal fluctuations in groundwater levels, and also a general increase in groundwater elevations beginning in 2010. The local topography and low horizontal gradient may indicate a low net horizontal movement of shallow groundwater.

58. The monitoring well network is sampled quarterly and groundwater samples are analyzed for electrical conductivity (EC), TDS, nitrate as nitrogen, TKN, calcium, potassium, magnesium, sodium, chloride, sulfate, total alkalinity, hardness, and trihalomethanes. Groundwater monitoring also includes calcium, magnesium, sodium, chloride, sulfate, total alkalinity, and hardness on an annual basis.

59. Average groundwater monitoring results of selected wastewater-related constituents from 2001 through the third quarter of 2012 are presented below.

Well ID	Mean Analytical Result (mg/L, except as noted) [1]							
	TDS	TKN	NO3-N	SO_4	Ca	Na	Cl	Mg
MW-1	1,034	1.07	25	47	100	179	24	58

Well ID	Mean Analytical Result (mg/L, except as noted) [1]							
	TDS	TKN	NO3-N	SO_4	Ca	Na	Cl	Mg
MW-2/2r [2]	1,664	1.38	0.2	139	138	341	92	101
MW-3	1,663	0.86	1	163	143	366	123	101
MW-4 [3]	689	1.19	10	64	91	86	23	44
MW-5 [3]	777	1.29	32	97	92	50	23	38
MW-6 [3]	169	1.27	7	8	21	9	2	10
Potential Water Quality Objective	450 [4] to 1,500 [7]	---	10 [5]	250 [6]	---	69 [4]	106 [4] to 500 [7]	---

1 Averages include non-detect results factored in at the laboratory reporting limit.
2 Monitoring data combined from MW-2 and MW-2r.
3 Monitoring data collection began in August 2008.
4 Lowest potentially applicable water quality goal to protect the agricultural beneficial use.
5 Primary MCL.
6 Secondary MCL.
7 Secondary MCL range.

60. On 22 August 2012, groundwater samples collected from the six monitoring wells were analyzed for additional parameters. A summary of the supplemental groundwater analytical results is provided below.

Well ID	Analytical Result (mg/L)				
	Ammonia	FDS	Dissolved Arsenic	Dissolved Iron	Dissolved Manganese
MW-1	<0.2	590	0.01	<0.05	0.0022
MW-2r	<0.2	1,040	0.007	<0.05	1.62
MW-3	<0.2	1,360	0.007	<0.05	0.0175
MW-4	<0.2	520	0.007	<0.05	<0.0005
MW-5	<0.2	680	0.005	<0.05	<0.0005
MW-6	<0.2	80	0.022	<0.05	0.0009
Potential Water Quality Objective	-- [1]	-- [1]	0.010 [2]	0.30 [3]	50 [3]

1 No standards applicable to the beneficial uses of groundwater.
2 Primary MCL.
3 Secondary MCL.

61. Two sets of non-parametric statistical analyses were performed to assess ambient background groundwater conditions for TDS, electrical conductivity, nitrate as nitrogen, and TKN for data collected from August 2008 to September 2011. The combined analytical results from monitoring wells MW-4, MW-5, and MW-6 were

selected because these wells are located upgradient from the current LAAs. The combined groundwater monitoring data from MW-4, MW-5, and MW-6 were compared to the results from MW-4, as MW-4 is located further upgradient from the other two monitoring wells. Monitoring well MW-6 is located near an irrigation canal, which represents a source of high quality water that may influence local groundwater conditions. The following table summarizes statistical analysis of key salinity constituents for the three background groundwater monitoring wells.

Analyte	Units	MW-4, MW-5, and MW-6 95% UCL	MW-4 95% UCL	Potential Water Quality Objective
EC	µmhos/cm	1,077	1,141	700 to 2,200
TDS	mg/L	724	735	450 to 1,500
TKN	mg/L	1.35	1.40	--
NO3-N	mg/L	23.9	11.2	10

UCL = Upper Confidence Limit for the mean.

62. Review of the statistical analyses presented above compared to the results for downgradient monitoring wells from 2002 to 2011 indicates that groundwater continues to be degraded with TDS, sodium, chloride, and sulfate. Concentrations of TDS in downgradient monitoring well MW-3 continue to increase, indicating continued salinity loading from the discharge.

Basin Plan, Beneficial Uses, and Regulatory Considerations

63. 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 Board. Pursuant to Water Code section 13263(a), waste discharge requirements must implement the Basin Plan.

64. The facility is located in the San Joaquin Valley Floor Hydraulic unit (535.10). Local drainage is to Lone Tree Creek, which is tributary to French Camp Slough and eventually to the San Joaquin River. The Basin Plan designates the San Joaquin River as supporting the beneficial uses of municipal and domestic supply; agricultural supply; industrial process supply; hydropower generation; water contact recreation; non-contact recreation; warm freshwater habitat; cold freshwater habitat; migration of aquatic organisms; spawning, reproduction, and/or early development; and wildlife habitat.

65. The Basin Plan designates the underlying groundwater as supporting the beneficial uses of municipal and domestic supply (MUN), agricultural supply (AGR), industrial process supply, and industrial service supply (collectively, IND).

66. For groundwater, the Basin Plan establishes narrative water quality objectives for, among other things, chemical constituents, tastes and odors, and toxicity. The

Basin Plan also establishes a numeric objective for total coliform organisms. Quantifying a narrative water quality objective requires a site-specific evaluation of those constituents that have the potential to impact water quality and beneficial uses.

67. The Basin Plan sets a numeric water quality objective for bacteria requires that the most probable number (MPN) of coliform organisms over any seven-day period shall be less than 2.2 per 100 mL for groundwater designated as supporting the municipal and domestic supply beneficial use.

68. The Basin Plan's narrative water quality objectives for chemical constituents requires, at a minimum, that waters designated as supporting the municipal and domestic supply beneficial use to meet the maximum contaminant levels (MCLs) specified in Title 22 of the California Code of Regulations (hereafter Title 22). The Basin Plan recognizes that the Central Valley Water Board may apply limits more stringent than the Title 22 MCLs to ensure that waters do not contain chemical constituents in concentrations that adversely affect beneficial uses. The Basin Plan's narrative toxicity objective requires that groundwater be maintained free of toxic substances in concentrations that produce detrimental physiological responses in human, animal, plant, or aquatic life associated with designated beneficial uses.

69. The Basin Plan states that when compliance with a narrative objective is required to protect specific beneficial uses, the Central Valley Water Board will, on a case-by-case basis, adopt numerical limitations in order to implement the narrative objective.

70. In the absence of specific numerical water quality limits, the Basin Plan methodology is to consider any relevant published criteria. With regard to the agricultural supply beneficial use, general salt tolerance guidelines, such as *Water Quality for Agriculture* by Ayers and Westcot and similar references, indicate that yield reductions in nearly all crops are not evident when irrigation water has an EC less than 700 µmhos/cm. There is, however, an eight- to ten-fold range in salt tolerance for agricultural crops and the appropriate salinity values to protect agriculture in the Central Valley are considered on a case-by-case basis. It is possible to achieve full yield potential with waters having EC up to 3,000 µmhos/cm if the proper leaching fraction is provided to maintain soil salinity within the tolerance of the crop.

71. For some wastewaters, particularly food processing waste, sodium concentrations may be reduced or controlled by changing from sodium-based cleaning solutions (such as sodium hydroxide) to potassium-based solutions (such as potassium hydroxide). Because potassium is a plant nutrient, land application systems can be designed to maximize potassium uptake by the crop.

72. Chloride moves readily through the soil column with percolation. Chloride will not adsorb to soil as sodium can, and crop uptake of chloride is minimal for most crops. However, plants do take up chloride and excessive chloride in the soil and/or irrigation water can be toxic to crops. Crop sensitivity to chloride varies greatly, but leaching is often used to control chloride to keep crop land in production. Leaching, whether intentional or not, can degrade groundwater quality and may cause water quality objectives for chloride to be exceeded.

73. Groundwater monitoring at the facility since 2001 has demonstrated that the previous and current discharge has degraded groundwater quality to levels that could affect plant growth if the shallow groundwater were to be used for irrigation of salt-sensitive crops. However, the planned changes in the discharge, which are required by this Order, are expected to prevent future increases in groundwater salinity and the existing salinity levels should decrease over time through attenuation.

74. Excessive application of high organic strength wastewater to land can create objectionable odors, soil conditions that are harmful to crops, and degradation of underlying groundwater with nitrogen species and metals, as discussed below. Such groundwater degradation can be prevented or minimized through implementation of best management practices which include planting crops to take up plant nutrients and maximizing oxidation of BOD to prevent nuisance conditions.

75. Unless groundwater is very shallow, groundwater degradation with nitrogen species such as ammonia and nitrate can be prevented by minimizing percolation below the root zone of the crops and ensuring that the total nitrogen load does not exceed crop needs over the course of a typical year. Where there is sufficient unsaturated soil in the vadose zone, excess nitrogen can be mineralized and denitrified by soil microorganisms.

76. With regard to metals, excessive BOD loading rates can deplete oxygen in the vadose zone and lead to anoxic conditions. At the ground surface, this can result in nuisance odors and fly-breeding. When insufficient oxygen is present below the ground surface, anaerobic decay of the organic matter can create reducing conditions that convert metals that are naturally present in the soil as relatively insoluble (oxidized) forms to more soluble reduced forms. This condition can be exacerbated by acidic soils and/or acidic wastewater. If the reducing conditions do not reverse as the percolate travels down through the vadose zone, these dissolved metals (primarily iron, manganese, and arsenic) can degrade shallow groundwater quality. Many aquifers contain enough dissolved oxygen to reverse the process, but excessive BOD loading over extended periods may cause beneficial use impacts associated with these metals.

77. Typically, irrigation with high strength wastewater results in high BOD loading on the day of application. It is reasonable to expect some oxidation of BOD at the

ground surface, within the evapotranspiration zone and below the root zone within the vadose (unsaturated) zone. The maximum BOD loading rate that can be applied to land without creating nuisance conditions or leaching of metals can vary significantly depending on soil conditions and operation of the land application system.

78. Maximum BOD loading calculations were prepared for current wastewater discharge at 56 MGY with 23 acres of LAAs, ~~and~~ for the proposed facility expansion to 72 MGY with 130 acres of LAAs, and for the proposed LAA expansion to 226 acres with 72 MGY. Below is a summary of current and projected BOD loading estimates for the proposed modified LAAs.

Total Annual Flow (MGY)	Land Application Area	Max BOD Loading (lbs/ac/day)
Current: 48.1[1]	20 [2] Acres (Uncropped):	285
Phase I: 56	23 Acres (Cropped):	106
	107 Acres (Vineyards):	76
Phase II: 72	23 Acres (Cropped):	183
	107 Acres (Vineyards):	105
Phase II (LAA Final Buildout): 72	31 Acres (Cropped):	139
	78 Acres (Vineyards):	70
	117 Acres (Almonds):	31

[1] 2002-2011 average.

[2] 2012 RWD calculations for existing conditions were based on 20 acres of LAAs.

The projected future BOD loading rates are moderate and should not pose a threat of nuisance or pollution.

Antidegradation Analysis

79. State Water Resources Control Board Resolution 68-16 ("Policy with Respect to Maintaining High Quality Waters of the State") (hereafter Resolution 68-16) prohibits degradation of high-quality groundwater unless it has been shown that:

a. The degradation is consistent with the maximum benefit to the people of the state.

b. The degradation will not unreasonably affect present and anticipated future beneficial uses.

c. The degradation does not result in water quality less than that prescribed in state and regional policies, including violation of one or more water quality objectives, and

d. The discharger employs best practicable treatment or control (BPTC) to minimize degradation.

80. The Discharger has been monitoring groundwater quality at the site since 2001. Although a winery has operated at the site since 1924, it is not possible to determine pre-1968 groundwater quality for the shallow groundwater at or upgradient of the site. Therefore, determination of compliance with Resolution 68-16 for this facility must be based on available ambient background groundwater quality.

81. Constituents of concern that have the potential to degrade groundwater are TDS, sodium, chloride, sulfate, nitrate, and manganese are summarized in the following table and paragraphs:

Constituent	Effluent and Groundwater Concentrations (mg/L)			Potential Water Quality Objective (mg/L)
	Effluent [1]	Background Groundwater [2]	Downgradient Groundwater [3]	
TDS	1,442	169 – 777	1,663	450 [4] to 1,500 [8]
FDS	706	--	--	--
Nitrate as Nitrogen	1.4	6.8 – 32	1.0	10 [6]
TKN [5]	32	1.2 – 1.3	0.86	--
Sulfate	154	8.0 – 97	163	250 [7]
Sodium	--	8.7 – 86	366	69 [4]
Chloride	--	2.4 - 23	123	106 [4] - 600 [8]
Manganese [8]	--	<0.005 – 0.009	0.0175	0.050 [7]
Iron [8]	--	<0.05	<0.05	0.300 [7]
Arsenic [8]	--	0.005 – 0.022	0.007	0.010 [6]

[1] Flow weighted average from 2002-2011.
[2] Compiled from MW-4, MW-5, and MW-6 data collected from 2008-2012.
[3] Compiled from MW-3; mean of data collected 2001-2012.
[4] Lowest agricultural water quality goal.
[5] Total Kjeldahl nitrogen.
[6] Primary Maximum Contaminant Level.
[7] Secondary Maximum Contaminant Level.
[8] Secondary Maximum Contaminant Level range.
[9] Based on a single groundwater sampling event conducted in August 2012.

a. **Total Dissolved Solids.** The average wastewater FDS and TDS concentrations are 706 and 1,442 mg/L, respectively. The average TDS concentrations in background monitoring wells MW-4, MW-5, and MW-6 show that background groundwater quality is spatially variable with respect to TDS and has likely been degraded by agricultural land use upgradient of the site. As noted in Finding 61, the 95% upper confidence limit on the mean background TDS concentration is 724 mg/L. TDS concentrations in monitoring wells MW-2 and MW-3, which are downgradient of current LAAs, average 1,663 mg/L. Therefore, the previous and current discharge has caused exceedance of the least stringent potential water quality objective for protection of MUN beneficial uses, which is the short-term maximum

secondary MCL of 1,500 mg/L. There is not sufficient information about local agricultural practices to interpret the narrative water quality objective for protection of AGR beneficial uses. Therefore, this Order requires that the Discharger submit the information required to make this determination.

Based on the planned modifications to the wastewater management system and expanded LAAs that this Order requires, groundwater quality with respect to TDS is expected to improve over time, but it is not possible to predict the level of improvement that can achieved or when it might occur. Therefore, this Order sets a groundwater limitation for TDS that prohibits any statistically significant increase in groundwater TDS and includes a time schedule in the Provisions that requires the Discharger to complete the proposed improvements, and evaluate the effectiveness of salinity reduction measures implemented to date. If the required improvements do not result in significantly improved groundwater quality within five years of adoption of this Order, the Provisions require that the Discharger implement additional treatment or control as necessary to bring the discharge into compliance with the Basin Plan water quality objective. This Order also requires that the Discharger evaluate existing and potential future local agricultural uses of groundwater to support determination of a site-specific water quality objective that is protective of all beneficial uses.

b. **Nitrate.** For nutrients such as nitrate, the potential for degradation depends on effluent quality; crop uptake, and the ability of the vadose zone below the LAAs to be conducive to nitrification and denitrification to convert the effluent nitrogen to nitrate and the nitrate to nitrogen gas before it reaches the water table. Most of the nitrogen in the process wastewater is present as TKN, which can readily mineralize and convert to nitrate (with some loss via ammonia volatilization) in the LAAs. Background groundwater quality is poor with respect to nitrogen and exceeds the primary MCL of 10 mg/L in background monitoring wells MW4, MW-5, and MW-1, which are upgradient of the current discharge locations. The poor quality background groundwater is likely due to the predominantly agricultural land use in the area. In contrast, nitrate concentrations in groundwater downgradient of the current unlined ponds and LAAs are below the primary MCL in MW-2 and MW-3. The expanded LAA system will maximize nitrogen uptake by crops and minimize the potential for nitrate to migrate to groundwater. Therefore, this Order requires that nutrients associated with the wastewater and other sources be applied to the LAAs at rates consistent with crop demand, and the Groundwater Limitations require that the discharge not cause any statistically significant increase in groundwater nitrate concentrations.

c. **Sulfate.** The average sulfate concentration in the process wastewater averages 154 mg/L. Background groundwater sulfate concentrations are spatially variable with intrawell means that range from 8 mg/L to 97 mg/L. Sulfate concentrations in downgradient monitoring well MW-3 show clear

evidence of degradation due to the concentrations exceeding the Secondary MCL of 250 mg/L since December 2009. Following completion of the improvements required by this Order, sulfate concentrations in the downgradient monitoring wells are expected to improve but it is not possible to predict the level of improvement that can achieved or when it might occur. Therefore, this Order sets a groundwater limitation for sulfate at the Secondary MCL. The intent of this limit is not to allow additional degradation beyond that which has already occurred, but as a safeguard to accommodate short-term increases due to the inherent uncertainty associated with future transport of waste constituents already present in the vadose zone beneath the existing LAAs.

d. **Sodium.** The process wastewater is currently not monitored for sodium, but sodium is known to be a key salinity constituent in winery wastewater. Data for the three background monitoring wells indicate that background sodium concentrations average no more than 86 mg/L. However, groundwater monitoring data from 2001 through 2011 consistently shows elevated sodium concentrations downgradient of the existing LAAs (up to 366 mg/L on average), and the downgradient sodium concentrations have apparently not decreased over time. The most stringent potential water quality objective for sodium is the agricultural water quality goal of 69 mg/L. However, that goal is intended to protect the most salt sensitive crops, such as beans, nuts, and deciduous fruits. Additional information about the crops that could be grown in the area, soil calcium, soil exchangeable sodium percentage (ESP), and soil Sodium Adsorption Ratio (SAR) would be needed to determine the numeric water quality objective for sodium to protect the agricultural beneficial uses of groundwater[1]. Therefore, this Order requires that the Discharger submit the information required to make this determination.

Based on the planned modifications to the wastewater management system and expanded LAAs that this Order requires, concentrations of sodium in shallow groundwater are expected to decrease over time, but it is not possible to predict the level of improvement that can achieved or when it might occur. Therefore, this Order sets a groundwater limitation for sodium that prohibits any statistically significant increase in sodium concentrations in any compliance monitoring well and includes a time schedule in the Provisions that requires the Discharger to complete the proposed improvements, evaluate the effectiveness of salinity reduction measures implemented to date, and evaluate the feasibility of additional salinity reduction measures to reduce sodium concentrations in groundwater. This Order also requires that the Discharger evaluate existing and potential future local agricultural uses of groundwater to support determination of a site-specific water quality objective.

[1] Ayers, R. S. and D. W. Westcot, *Water Quality for Agriculture*, Food and Agriculture Organization of the United Nations - Irrigation and Drainage Paper No. 29, Rev. 1, Rome (1985), Section 4.1.2.

e. **Chloride.** The process wastewater is currently not monitored for chloride, but chloride is known to be a key salinity constituent in winery wastewater. Data for the three background monitoring wells indicate that background chloride concentrations average no more than 23 mg/L. However, groundwater monitoring data from 2001 through 2011 consistently shows elevated chloride concentrations downgradient of the existing LAAs (up to 123 mg/L on average), and the downgradient chloride concentrations have apparently not decreased over time. The level of apparent degradation that has occurred is not likely causing beneficial use impacts unless the groundwater is used to irrigate the most chloride sensitive crops, such as strawberries and avocados[2].

Based on the planned modifications to the wastewater management system and expanded LAAs that this Order requires, groundwater quality is expected to improve over time, but it is not possible to predict the level of improvement that can achieved or when it might occur. Therefore, this Order sets a groundwater limitation for chloride that prohibits any statistically significant increase in chloride concentrations in any compliance monitoring well and includes a time schedule in the Provisions that requires the Discharger to complete the proposed improvements, evaluate the effectiveness of salinity reduction measures implemented to date, and evaluate the feasibility of additional salinity reduction measures to reduce chloride concentrations in groundwater. This Order also requires that the Discharger evaluate existing and potential future local agricultural uses of groundwater to support determination of a site-specific water quality objective that is protective of all beneficial uses.

f. **Manganese**. The current monitoring program does not require analysis of manganese in wastewater or groundwater. Based on the character of process water supply and nature of typical winery operations, wastewater at the site is not expected to contain significant manganese concentrations. However as noted in Finding 76, excessive BOD loading rates can deplete oxygen, resulting in anoxic conditions that can solubilize naturally occurring metals in soil. A groundwater sample collected from monitoring well MW-2r in August 2012 indicates that the discharge has caused exceedance of the Secondary MCL for manganese. It is possible that the current practice of rapid infiltration with high-BOD wastewater has caused reducing conditions that favor dissolution of manganese from native soil. Additional groundwater monitoring data are needed before a determination of degradation can be made.

Based on the planned modifications to the wastewater management system and expanded LAAs that this Order requires, groundwater quality with respect to manganese is expected to improve over time. Therefore, this Order sets a groundwater limitation that prohibits any statistically significant increase in

[2] Ibid, Section 4.1.1.

manganese concentrations in any compliance monitoring well; includes a time schedule in the Provisions that requires the Discharger to complete the proposed improvements; and requires monitoring of manganese in the groundwater monitoring wells. If pollution is confirmed by future monitoring data and the required improvements do not result in significantly improved groundwater quality within five years of adoption of this Order, the Provisions require that the Discharger implement additional treatment or control as necessary to bring the discharge into compliance with the Basin Plan water quality objective.

g. **Arsenic.** The current monitoring program does not require analysis of arsenic wastewater or groundwater. However as noted in Finding 76, excessive BOD loading rates can deplete oxygen, resulting in anoxic conditions that can solubilize naturally occurring metals in soil. Based on one sampling event, it appears that arsenic exceeds the primary MCL of 10 µg/L in upgradient monitoring well MW-6. Groundwater samples from monitoring wells MW-1 through MW-6 in August 2012 indicate that the discharge has not caused degradation for arsenic; however, additional groundwater monitoring data are needed to verify that unreasonable groundwater degradation is not occurring.

g. **Iron.** The current monitoring program does not require analysis of iron in wastewater or groundwater. However as noted in Finding 76, excessive BOD loading rates can deplete oxygen, resulting in anoxic conditions that can solubilize naturally occurring metals in soil. Based on one sampling event in August 2012, iron was not detected in any monitoring well. The limited data indicate that the discharge has not caused degradation for iron; however, additional groundwater monitoring data are needed to periodically verify that groundwater unreasonable degradation is not occurring.

82. Degradation of groundwater by waste constituents associated with the discharge of winery wastewater after effective source control measures and treatment are implemented is consistent with the maximum benefit to the people of the state. The winery currently provides approximately 300 full-time equivalent jobs and supports continued employment of approximately 240 additional people that work at the vineyards that produce the grapes used to make the wine, as well as those that produce materials and equipment used for winemaking. The Discharger anticipates providing an additional 60 full-time equivalent jobs and support for additional ancillary services as part of the facility expansion. The economic prosperity of valley communities and associated industry is of maximum benefit to the people of the State, and provides sufficient justification for allowing the limited groundwater degradation that may continue to occur pursuant to this Order.

83. The Discharger has implemented the following salinity source control, water conservation, reuse and land application management practices:

a. Conversion of sodium- to potassium-based cleaning products;

b. Use of timers and nozzles for increased water efficiency;

c. Elimination of wine ion exchange;

d. Rotovac water-cooled pump recirculation servicing; and

e. Certification under California Sustainable Winegrowing guidelines

The RWD states that the Discharger has implemented some salinity source reduction, but did not specify the level of salinity reduction that was achieved. Effluent monitoring data since 2002 do not indicate that salinity reduction has been achieved. Therefore, this Order requires that the Discharger complete a post-source control salinity reduction evaluation to quantify the benefits achieved by salinity reduction measures previously implemented and provide a feasibility analysis of additional reduction measures. It should be noted that water conservation measures typically concentrate salinity constituents in wastewater, thus salinity reduction measures may not be reflected in wastewater monitoring data, but rather in reduced mass loading rates to the LAAs.

84. The proposed modifications to the land application system, which are required by this Order, will incorporate the following treatment and control:

a. The existing unlined wastewater ponds will be abandoned.

b. The LAAs will increase from 23 acres of uncropped LAAs that received water, decomposable organic matter, and nutrients well in excess of the soil's assimilative capacity to ~~130~~ 226 acres of cropped LAAs which will receive nutrients and water at agronomic rates.

c. Process wastewater will receive some treatment prior to discharge. Reduced BOD loading rates will also alleviate potentially reducing conditions in the LAAs, thereby reducing the threat of degradation from manganese.

d. Double cropping is proposed for some LAAs to provide a crop canopy for most of the year. This practice will reduce water loss by evapotranspiration and also result in higher removal rates for both TDS and nitrogen. Double cropping has been documented to result in high uptake of salinity constituents in other wastewater land application areas.

e. Cover cropping in the vineyards is a benefit for winter irrigation management and benefits vineyard soil vitality by improving nutrient uptake during the winter months.

f. Salinity source reduction;

g. The use of lined wastewater ponds for flow equalization and short-term storage;

h. Collection of winery storm water to prevent runoff to surface waters;

i. Land application of wastewater at agronomic rates for water and plant nutrients;

j. Using high quality supplemental irrigation water to maximize crop yield; ~~and~~

k. Utilizing tailwater and storm water runoff control systems on all LAAs; and~~.~~

~~k.~~l. Using non-industrial storm water collected in a planned detention basin as a source for additional supplemental irrigation water.

These measures constitute best practical treatment and control sufficient to justify the groundwater degradation that is allowed by this Order.

85. With respect to TDS, and possibly sodium and chloride, an unacceptable degree of groundwater degradation has occurred. Therefore this Order does not authorize any continued degradation beyond that which exists today for those constituents. The Groundwater Limitations are effective immediately and allow no degradation beyond existing groundwater quality in any compliance monitoring well and this Order requires intrawell analysis of compliance well groundwater monitoring data to determine compliance with the Groundwater Limitations. If the required improvements do not result in significantly improved groundwater quality within five years of adoption of this Order, the Provisions require that the Discharger implement additional treatment or control as necessary to bring the discharge into compliance with the Basin Plan water quality objectives. This Order also requires that the Discharger evaluate existing and potential future local agricultural uses of groundwater to support determination of site-specific water quality objectives for TDS and sodium that are protective of all beneficial uses.

86. This Order also requires implementation of upgrades and any additional measures that will be required to comply with the Groundwater Limitations of this Order, and which are expected to result in significant improvements in the shallow groundwater quality beneath the site. This Order imposes effluent and mass loading rate limitations and contains a time schedule for the implementation of additional treatment or control to ensure that the highest water quality consistent with the maximum benefit to the people of the State will be achieved while minimizing any degradation that may occur pending completion of the required tasks. 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 authorized by this Order is consistent with the antidegradation provisions of Resolution 68-16.

Other Regulatory Considerations

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

a. Category 2 threat to water quality: “Those discharges of waste that could impair the designated beneficial uses of the receiving water, cause short-term

violations 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 [as Category A] 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."

88. Title 27 of the California Code of Regulations (hereafter Title 27) contains regulatory requirements for the treatment, storage, processing, and disposal of solid waste. However, Title 27 exempts certain activities from its provisions. Discharges regulated by this Order are exempt from Title 27 pursuant to provisions that exempt domestic sewage, wastewater, and reuse. Title 27, section 20090 states in part:

> The following activities shall be exempt from the SWRCB-promulgated provisions of this subdivision, so long as the activity meets, and continues to meet, all preconditions listed:
>
> (a) Wastewater - Discharges of wastewater to land, including but not limited to evaporation ponds, percolation ponds, or subsurface leachfields if the following conditions are met:
>
> (1) the applicable RWQCB has issued WDRs, reclamation requirements, or waived such issuance;
>
> (2) the discharge is in compliance with the applicable water quality control plan; and
>
> (3) the wastewater does not need to be managed according to Chapter 11, Division 4.5, Title 22 of this code as a hazardous waste.
>
> (b) Soil Amendments - Use of nonhazardous decomposable waste as a soil amendment pursuant to applicable best management practices, provided that RWQCBs may issue waste discharge or reclamation requirements for such use.

89. The discharge authorized herein, and the treatment and storage facilities associated with the discharge, are exempt from the requirements of Title 27. The current unlined wastewater ponds, future aerated ponds and LAAs are exempt pursuant to Title 27, section 20090(b) because they are discharges of wastewater to land -and:

a. The Central Valley Water Board is issuing WDRs;

b. This Order prescribes requirements that will ensure compliance with the Basin Plan; -and

c. The wastewater discharged to the LAAs does not need to be managed as hazardous waste.

90. Although the facility is exempt from Title 27, the statistical data analysis methods of Title 27, section 20415(e) are appropriate for determining whether the discharge complies with Groundwater Limitations specified in this Order.

91. The State Water Board adopted Order 2014-0057-DWQ (NPDES General Permit 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. All storm water at the Facility is collected and commingled with process wastewater for discharge to the LAAs or conveyed to the storage pond for winter storage prior to application to the LAAs. Storm water is not discharged offsite or discharged to waters of the U.S. Coverage under NPDES General Permit CAS000001 is not required at this time.

~~91. The State Water Board adopted Order 97-03-DWQ (NPDES General Permit 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. Because storm water that falls on outdoor processing areas is directed to the wastewater system, the Discharger is not required to obtain coverage under Order 97-03-DWQ. Because the State Water Board adopted the NPDES General Permit for Storm Water Discharges Associated with Industrial Activities on 1 April 2014 (2014 IGP) which is after the adoption date of this Order, the Discharger must evaluate compliance requirements for industrial storm water relative to the 2014 IGP.~~

92. Water Code section 13267(b) states:

> In conducting an investigation specified in subdivision (a), the regional board may require that any person who has discharged, discharges, or is suspected of discharging, or who proposes to discharge within its region … shall furnish, under penalty of perjury, technical or monitoring program reports which the board requires. The burden, including costs of these reports, shall bear a reasonable relationship to the need for the reports 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 R5-2013-0028 are necessary to ensure compliance with these waste discharge requirements. The Discharger owns and operates the facility that discharges the waste subject to this Order.

93. The California Department of Water Resources sets standards for the construction and destruction of groundwater wells (hereafter DWR Well Standards), as 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

Water Code section 13801, apply to all monitoring wells used to monitor the impacts of wastewater storage or disposal governed by this Order.

94. A Negative Declaration was certified by the San Joaquin County Community Development Department on 30 November 2011, in accordance with CEQA (Pub. Resources Code, § 21000 et seq.). The Initial Study and Negative Declaration describe the project as expanding winery production from crushing and processing 140,000 tons of grapes per year to 200,000 tons per year over a five year period. Facility upgrades include additional winery equipment, buildings, process wastewater storage capacity, and upgrading the process wastewater system and management operations for vineyard and crop irrigation. The Initial Study found that the project would not cause potentially significant impacts to water quality and that mitigation measures were not necessary. San Joaquin County, the lead agency, requested that the Central Valley Water Board review the Draft CEQA documents as a responsible agency, and the Board issued comments on the project on 16 December 2011. The comment letter did not request additional analysis of potential water quality impacts or mitigation measures to protect water quality. Compliance with this Order will prevent potentially significant impacts to water quality.

95. Pursuant to 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

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

97. The Discharger and interested agencies and persons have been notified of the Central Valley Water Board's intent to prescribe waste discharge requirements for this discharge, and they have been provided an opportunity to submit written comments and an opportunity for a public hearing.

98. All comments pertaining to the discharge were heard and considered in a public hearing.

IT IS HEREBY ORDERED that Order 96-077 is rescinded except for purposes of enforcement and pursuant to sections 13263 and 13267 of the California Water Code, Delicato Family Vineyards, its agents, successors, and assigns, in order to meet the provisions contained in Division 7 of the California Water Code and regulations adopted thereunder, 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. **Effective 1 September 2013**, discharge of wastewater to any unlined pond is prohibited. Future use of the existing unlined wastewater ponds for supplemental irrigation water ponds or other unlined impoundments is permitted upon approval of the report submitted pursuant to Provision H.1.a.

2. Discharge of wastes to surface waters or surface water drainage courses, including irrigation ditches outside of control of the Discharger, is prohibited.

3. Discharge of waste classified as 'hazardous', as defined in the California Code of Regulations, title 23, section 2510 et seq., is prohibited.

4. Discharge of waste classified as 'designated', as defined in CWC Section 13173, in a manner that causes violation of groundwater limitations, is prohibited.

5. **Effective 1 September 2013**, bypass around, or overflow from, the aeration ponds is prohibited, except as allowed by Standard Provision E.2 of the *Standard Provisions and Reporting Requirements for Waste Discharge Requirements*.

6. Discharge of waste at a location or in a manner different from that described in the Findings is prohibited.

7. Discharge of toxic substances into the wastewater treatment system or land application areas such that biological treatment mechanisms are disrupted is prohibited.

8. The discharge of domestic wastewater to the process wastewater system is prohibited.

9. The discharge of process wastewater to any domestic wastewater septic system is prohibited.

10. Discharge of irrigation tailwater and/or storm water runoff from the LAAs to surface waters is prohibited.

B. Discharge Specifications:

1. No waste constituent shall be released, discharged, or placed where it will be released or discharged, in a concentration or in a mass that causes violation of the Groundwater Limitations of this Order.

2. The discharge shall not cause degradation of any water supply.

3. Wastewater treatment, storage, and disposal shall not cause pollution or a nuisance as defined by Water Code section 13050.

4. The discharge shall remain within the permitted waste treatment/containment structures and land application areas at all times.

5. The Discharger shall operate all systems and equipment to optimize the quality of the discharge.

6. All conveyance, treatment, storage, and disposal systems shall be designed, constructed, operated, and maintained to prevent inundation or washout due to floods with a 100-year return frequency.

7. Objectionable odors shall not be perceivable beyond the limits of the facility boundary at an intensity that creates or threatens to create nuisance conditions.

8. As a means of discerning compliance with Discharge Specification B.6, the dissolved oxygen (DO) content in the upper one foot of any wastewater pond shall not be less than 1.0 mg/L for three consecutive weekly sampling events. If the DO in any single pond is below 1.0 mg/L for three consecutive sampling events, the Discharger shall report the findings to the Regional Water Board in writing within 10 days and shall include a specific plan to resolve the low DO results within 30 days.

9. The Discharger shall operate and maintain all wastewater ponds sufficiently to protect the integrity of containment dams and berms and prevent overtopping and/or structural failure. For ponds lined with geosynthetic (plastic) material, the operating freeboard in any pond shall never be less than one foot (measured vertically from the lowest possible point of overflow). For unlined or clay lined ponds with berms that are higher than the surrounding grade, the operating freeboard shall never be less than two feet. As a means of management and to discern compliance with this requirement, the Discharger shall install and maintain in each pond a permanent staff gauge with calibration marks that clearly show the water level at design capacity and enable determination of available operational freeboard.

10. The treatment, storage, and disposal ponds or structures shall have sufficient capacity to accommodate allowable wastewater flow, design seasonal precipitation, and ancillary inflow and infiltration during the winter while ensuring continuous compliance with all requirements of this Order. 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.

11. All ponds and open containment structures shall be managed to prevent breeding of mosquitoes. Specifically:

a. An erosion control program shall be implemented to ensure 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, or herbicides.

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

d. The Discharger shall consult and coordinate with the local Mosquito Abatement District to minimize the potential for mosquito breeding as needed to supplement the above measures.

12. Newly constructed or rehabilitated berms or levees (excluding internal berms that separate ponds or control the flow of water within a pond) shall be designed and constructed under the supervision of a California Registered Civil Engineer.

13. Wastewater discharged to the LAAs shall not have a pH less than 4.5 or greater than 10.0.

14. The Discharger shall monitor sludge accumulation in the aeration ponds at least **every five years beginning in 2018**, and shall periodically remove sludge as necessary to maintain adequate storage capacity. Specifically, if the estimated volume of sludge in any pond exceeds 20 percent of the permitted pond capacity, the Discharger shall complete sludge cleanout within 12 months after the date of the estimate.

15. Storage or composting of pomace and/or diatomaceous earth on areas not equipped with means to collect leachate and minimize storm water infiltration is prohibited.

16. **Every five years beginning in 2018**, the Discharger shall test the integrity of all pond liners and repair all significant leaks in accordance with an approved workplan pursuant to Provision H.1.i.

17. All 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 aeration ponds is acceptable.

C. Flow Limitations

1. **Effective immediately**, the combined discharge from winery sumps #1, #2, and #4 shall not exceed the following limits:

Flow Measurement	Flow Limit
Total Annual Flow [1]	56 MG
Monthly Average Flow [2]	0.27 MGD

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

[2] As determined by the total flow during the calendar month divided by the number of days in that month.

2. **Effective on the date of Executive Officer approval of the report submitted pursuant to Provision H.1.c**, the combined discharge from winery sumps #1, #2, and #4 to the aeration ponds shall not exceed the following limits.

Flow Measurement	Flow Limit
Total Annual Flow [1]	72 MG
Monthly Average Flow [2]	0.33 MGD

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

[2] As determined by the total flow during the calendar month divided by the number of days in that month.

D. Effluent and Mass Loading Limitations

1. **Effective immediately**, the blend of treated wastewater, storm water, and supplemental irrigation water applied to the existing 23 acres of LAAs shall not exceed the following effluent and mass loading limits:

Constituent	Units	Daily Maximum	Annual Maximum
BOD Mass Loading	lbs/ac/day	285	--
Flow-Weighted Average Fixed Dissolved Solids Concentration	mg/L	--	740 [1]
Total Nitrogen Mass Loading	lbs/ac/year	--	500 [1]

[1] Based on total flow and concentration for each source of water discharged.

2. **Effective on 1 September 2013:**

   a. The blend of treated wastewater, storm water, and supplemental irrigation water applied to LAAs 1 and 3 (or any other LAA that is converted from vineyard to other crops) shall not exceed the following effluent and mass loading limits:

Constituent	Units	Daily Maximum	Annual Maximum
BOD Mass Loading	lbs/ac/day	183	--
Average Fixed Dissolved Solids Concentration	mg/L	--	620 [1]
Total Nitrogen Mass Loading	lbs/ac/year	--	Crop Demand

[1] Flow-weighted average based on total flow and concentration for each source of water discharged.

b. The blend of treated wastewater, storm water, and supplemental irrigation water applied to LAAs 2, 4, 5, and 6 (or any other vineyard LAA) shall not exceed the following effluent and mass loading limits:

Constituent	Units	Daily Maximum	Annual Maximum
BOD Mass Loading	lbs/ac/day	105	--
Average Fixed Dissolved Solids Concentration	mg/L	--	330 [1]
Total Nitrogen Mass Loading	lbs/ac/year	--	Crop Demand [2]

[1] Flow-weighted average based on total flow and concentration for each source of water discharged.

[2] Based on total flow and concentration for each source of water discharged.

3. Compliance with the above requirements shall be determined as specified below:

a. The mass of BOD applied to each LAA on a daily basis shall be calculated using the following formula:

$$M = \frac{8.345(CV)}{A}$$

Where:
M = mass of BOD applied to an LAA in lbs/ac/day
C = concentration of BOD in mg/L based on most recent monitoring result
V = volume of wastewater applied to the LAA in millions of gallons per day
A = area of the LAA irrigated in acres
8.345 = unit conversion factor

b. The mass of total nitrogen applied to each LAA on an annual basis shall be calculated using the following formula and compared to published crop demand for the crops actually grown:

$$M = \sum_{i=1}^{12} \frac{(8.345(C_i V_i) + M_x)}{A}$$

Where:
M = mass of nitrogen applied to LAA in lbs/ac/yr
C_i = Monthly average concentration of total nitrogen for month *i* in mg/L
V_i = volume of wastewater applied to the LAA during calendar month *i* in million gallons
A = area of the LAA irrigated in acres
i = the number of the month (e.g., January = 1, February = 2, etc.)
M_x = nitrogen mass from other sources (e.g., fertilizer and compost) in pounds
8.345 = unit conversion factor

c. The flow-weighted average annual FDS concentration shall be calculated using the following formula:

$$C_a = \frac{\sum_{1}^{12}[(C_{Pi} \times V_{Pi}) + (C_{Si} \times V_{Si})]}{\sum_{1}^{12}(V_{Pi} + V_{Si})}$$

Where:
C_a = Flow-weighted average annual FDS concentration in mg/L
i = the number of the month (e.g., January = 1, February = 2, etc.)
C_{Pi} = Monthly average process wastewater FDS concentration for calendar month *i* in mg/L
C_{Si} = Monthly average supplemental irrigation water FDS concentration for calendar month *i* in mg/L (considering each supplemental source separately)
V_{Pi} = volume of process wastewater applied to LAAs during calendar month *i* in million gallons
V_{Si} = volume of supplemental irrigation water applied to LAAs during calendar month *i* in million gallons (considering each supplemental source separately)

E. Land Application Area Specifications

1. Application of waste constituents to LAAs shall be at reasonable agronomic rates to preclude creation of a nuisance or degradation of groundwater, considering the crop, soil, climate, and irrigation management system. The annual nutritive

loading of the LAAs, including the nutritive value of organic and chemical fertilizers and of the wastewater shall not exceed the annual crop demand.

2. Any irrigation runoff (tailwater) shall be confined to the LAAs and shall not enter any surface water drainage course or storm water drainage system.

3. Discharge of process wastewater to any LAA not having a fully functional tailwater/runoff control system is prohibited.

4. Discharge of process wastewater to land overlying septic system leach lines or seepage pits is prohibited.

5. Crops (which may include pasture grasses, native grasses, and/or ornamental landscaping) shall be grown on the LAAs. Crops shall be selected based on nutrient uptake capacity, tolerance to soil moisture conditions, consumptive use of water, and irrigation requirements. Cropping activities shall be sufficient to take up the nitrogen applied, including any fertilizers and manure. Crops shall be harvested and removed from the land at least on an annual basis.

6. 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.

7. Discharge of storm water runoff from the LAAs irrigated with wastewater is prohibited.

8. Application of treated wastewater to the LAAs using sprinkler irrigation is prohibited when wind velocities exceed 30 miles per hour.

9. 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.

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

11. Irrigation shall not be performed when the ground is saturated.

12. Hydraulic loading of wastewater and supplemental irrigation water shall be at reasonable agronomic rates designed to:

    a. Maximize crop nutrient uptake;

b. Maximize breakdown of organic waste constituents in the root zone; and

c. Minimize the percolation of waste constituents below the root zone.

13. The LAAs shall be managed to prevent breeding of mosquitoes. In particular:

a. There shall be no standing water 48 hours after irrigation ceases;

b. Tailwater ditches shall be maintained essentially free of emergent, marginal, and floating vegetation; and

c. Low-pressure and unpressurized pipelines and ditches accessible to mosquitoes shall not be used to store wastewater.

F. Solids Disposal Specifications

1. Solids refer to screenings, pomace, diatomaceous earth and other residual or separable waste solids associated with the winemaking process.

a. 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 and will include a provisions to return leachate to the wastewater system.

b. Any handling and storage of waste solids at the facility shall be temporary (i.e., no longer than two years) and controlled and contained in a manner that minimizes leachate formation and precludes infiltration of waste constituents into soils in a mass or concentration that will violate the groundwater limitations of this Order.

c. Solids shall be disposed of in a manner that is consistent with Title 27, Division 2, Subdivision 1 of the CCR and as approved by the Executive Officer. Removal for further treatment, disposal, or reuse at disposal sites (i.e., landfills, wastewater treatment facilities, composting sites, soil amendment sites) operated in accordance with valid waste discharge requirements issued by a Regional Water Board will satisfy this specification.

d. Any proposed change in solids use or disposal practice shall be reported in writing to the Executive Officer at least 90 days in advance of the change.

G. Groundwater Limitations:

1. **Effective immediately**, Release of waste constituents shall not cause groundwater to contain waste constituents in concentrations statistically greater than the concentrations listed below in any compliance monitoring well[3]:

Constituent	Limitation
Chloride	No statistically significant increase [1]
Sodium	No statistically significant increase [1]
Nitrate nitrogen	No statistically significant increase [1]
Sulfate	250 mg/L
Total Dissolved Solids	No statistically significant increase [1]
Manganese	No statistically significant increase [1]

[1] In accordance with the definition of "statistically significant" specified in Title 27, Section 20164 and based on conditions as of the date of this Order.

2. Release of waste constituents shall not cause groundwater to contain taste or odor-producing constituents, toxic substances, or any other constituents in concentrations that cause nuisance or adversely affect beneficial uses.

3. **Effective 1 May 2018**, with the exception of nitrate nitrogen, concentrations of all of the constituents listed above shall exhibit a statistically significant decreasing trend in each compliance well.

Compliance with these limitations shall be determined annually based on an approved intrawell statistical analysis that uses methods prescribed in Title 27, Section 20415(e)(8). This limitation requires intrawell analysis (comparing the well to historic data collected at the well rather than an upgradient well).

H. Provisions:

1. The following reports shall be submitted pursuant to CWC section 13267 and shall be prepared as described in Provision H.4:

   a. **By 1 May 2013**, the Discharger shall submit a Wastewater *Pond Design and Pond Liner Construction Quality Assurance (CQA) Plan,* and an *Unlined Wastewater Pond Closure Plan.* The pond design report shall specify the final design of the new wastewater storage ponds and liner systems, including complete pond geometry, liner materials, liner thickness, seaming methods, and details of anchorage and typical penetrations. The CQA workplan shall describe the specific construction quality assurance

[3] Compliance monitoring wells are defined in the attached Monitoring & Reporting Program (MRP).

procedures and test methods that the Discharger proposes to ensure and verify that the liner subgrade preparation, installation and seaming will comply with the specifications; the entire liner is tested following installation to verify that all seams and liner penetrations are leak-free at the time of acceptance; and the entire liner is inspected for visible material defects and construction damage such as holes or tears prior to acceptance. The *Unlined Wastewater Pond Closure Plan* shall describe the proposed plan to close the existing two-acre unlined wastewater ponds and convert the area for supplemental irrigation water storage. The closure plan shall describe the specific means that will be implemented to prevent percolation of residual waste constituents in the soil underlying the former wastewater ponds, including proposed procedures to remove sludge and waste-containing sediments, provide verification of waste removal, plans for disposal of those materials, and plans for placement of clean fill or other lining material to reduce the percolation rate beneath the former pond(s).

b. **By 1 July 2013,** the Discharger shall submit a Groundwater Monitoring Well Installation Workplan that describes plans to install an appropriate number of monitoring wells beneath the expanded LAAs to verify compliance with the Groundwater Limitations. The workplan shall be prepared in accordance with, and include the items listed in, the first section of Attachment D: "*Requirements for Monitoring Well Installation Workplans and Monitoring Well Installation Reports*", which is attached hereto and made part of this Order by reference. The groundwater monitoring wells shall be designed to yield samples representative of the uppermost portion of the first aquifer underlying the LAAs.

c. **By 1 September 2013,** the Discharger shall submit a *Wastewater System Improvements Completion Report* that that documents the construction of the two aeration ponds and certifies that the ponds are fully functional and ready to receive wastewater in compliance with the requirements of this Order. The report shall also certify that improvements to LAAs 1 through 6 have been completed as described in Finding 32 and that the LAAs are fully functional and ready to receive wastewater in compliance with the requirements of this Order. The report shall include as-built drawings of the new LAA irrigation and tailwater/storm water runoff control systems. The report shall include final dimensions and liner specifications of the two aeration ponds and a *Liner Construction Quality Assurance (CQA) Report* that documents all construction observation, testing, and test results for the pond lining system.

d. **By 1 October 2014** the Discharger shall submit a *Former Unlined Pond Closure Report* that documents implementation of the approved workplan, provides results of any analyses performed to characterize soil/sludge removed from the checks, and describes the fate of the removed materials.

If the work deviated from the approved workplan, the report shall explain and justify the deviations.

e. **By 1 July 2014,** the Discharger shall submit a *Groundwater Monitoring Well Installation Report* that describes the installation of the new groundwater monitoring wells required by Provision H.1.b. The report shall be prepared in accordance with, and including the items listed in, the second section of Attachment D: "Monitoring Well Workplan and Monitoring Well Installation Report Guidance," which is attached hereto and made part of this Order by reference. The report shall describe the installation and development of all new monitoring wells, and explain any deviation from the approved workplan.

f. **By 1 December 2013**, the Discharger shall submit a *Groundwater Limitations Compliance Assessment Plan*. The plan shall describe and justify the statistical methods that are proposed to determine compliance with the Groundwater Limitations of this Order for the constituents listed in the Monitoring and Reporting Program. As described in the MRP, Compliance shall be determined annually based on intrawell statistical analysis that evaluates temporal trends based on all historic data collected at each well that uses methods prescribed in Title 27, Section 20415(e)(7 and 8).

g. **By 30 January 2015,** the Discharger shall submit and implement a *Salinity Reduction Evaluation Report* that includes the following:

   i. A description of the specific salinity reduction activities performed prior to adoption of this Order;

   ii. Pre-reduction flow estimates and analytical results for all contributing waste streams, and estimated annual mass discharge rates for TDS, FDS and key salinity constituents (i.e., sodium, chloride, sulfate, and potassium), as performed to comply with CAO R5-2004-0705 .

   iii. Current flow estimates and analytical results for all contributing waste streams, and estimated annual mass discharge rates for TDS, FDS and key salinity constituents (i.e., sodium, chloride, sulfate, and potassium).

   iv. Comparison of pre-reduction and current mass discharge rates to quantify the salinity reduction that was achieved after adoption of CAO R5-2004-0705.

   v. An evaluation of the feasibility of additional salinity control measures above and beyond those that have already been implemented. Estimates of capital and operation/maintenance costs for each option shall be provided.

h. **By 1 May 2015**, the Discharger shall submit an *Agricultural Beneficial Uses Study Report* that documents a study of local agricultural uses of groundwater; the types of crops that are or could be grown in the area based on climate and soil type; and an assessment of the water quality needed to sustain reasonable crop yields. The study shall include information on the history of irrigation water supply sources and a review of published information regarding the salinity of local groundwater prior to 1968. The study area shall include at least properties within one mile of the facility. Information sources and published references shall be cited and appended if not prohibited by copyright. The report shall evaluate and propose site-specific numeric water quality objectives to interpret the Basin Plan's narrative objectives for protection of agricultural beneficial uses of groundwater for TDS, EC, sodium, and chloride.

i. **By 1 February 2017**, the Discharger shall submit a *Pond Liner Integrity Evaluation Workplan* that specifies the means and methods that the Discharger proposes to use to evaluate all geosynthetic liner systems to comply with Discharge Specification B.16.

j. **By 1 May 2018**, the Discharger shall submit a *Groundwater Limitations Compliance Report* that demonstrates statistically significant decreasing trends in groundwater for TDS, sulfate, sodium, chloride and manganese in each compliance well. If compliance with Groundwater Limitation G.3 is not demonstrated for each constituent in each well, the report shall include a description of the specific additional treatment or control measures that will be implemented to achieve compliance with the Groundwater Limitations unless the report demonstrates that another source of pollutants is preventing compliance. The Discharger shall fully implement those measures by **1 May 2019**.

2. **At least 90 days prior to the use of the planned LAAs,** the Discharger shall submit a Groundwater Monitoring Well Installation Workplan that describes plans to install an appropriate number of monitoring wells beneath the expanded LAAs to verify compliance with the Groundwater Limitations. The workplan shall be prepared in accordance with, and include the items listed in, the first section of Attachment D: "*Requirements for Monitoring Well Installation Workplans and Monitoring Well Installation Reports*", which is attached hereto and made part of this Order by reference. The groundwater monitoring wells shall be designed to yield samples representative of the uppermost portion of the first aquifer underlying the LAAs.

3. **Within 30 days of completing the groundwater well installations,** the Discharger shall submit a *Groundwater Monitoring Well Installation Report* that describes the installation of the new groundwater monitoring wells required by Provision H.1.b. The report shall be prepared in accordance with, and including the items listed in, the second section of Attachment D: "Monitoring Well

Workplan and Monitoring Well Installation Report Guidance," which is attached hereto and made part of this Order by reference. The report shall describe the installation and development of all new monitoring wells, and explain any deviation from the approved workplan.

~~2.~~4. A discharger whose waste flow has been increasing, or is projected to increase, shall estimate when flows will reach hydraulic and treatment capacities of its treatment, collection, and disposal facilities. The projections shall be made in January, based on the last three years' monthly average flow and total annual flows, as appropriate. When any projection shows that capacity of any part of the facilities may be exceeded in four years, the discharger shall notify the Central Valley Water Board by **31 January**.

~~3.~~5. 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 for investigations and studies, 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 bear the professional's signature and stamp.

~~4.~~6. The Discharger shall submit the technical reports and work plans required by this Order for consideration by the Executive Officer, and incorporate comments the Executive Officer may have in a timely manner, as appropriate. Unless expressly stated otherwise in this Order, the Discharger shall proceed with all work required by the foregoing provisions by the due dates specified.

4. The Discharger shall comply with Monitoring and Reporting Program R5-2013-0028, which is part of this Order, and any revisions thereto as ordered by the Executive Officer. The submittal dates of Discharger self-monitoring reports shall be no later than the submittal date specified in the MRP.

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

6. The Discharger shall comply with all conditions of this Order, including timely submittal of technical and monitoring reports. On or before each report due date, the Discharger shall submit the specified document to the Central Valley Water Board or, if appropriate, a written report detailing compliance or noncompliance with the specific schedule date and task. If noncompliance is

being reported, then the Discharger shall state the reasons for such noncompliance and provide an estimate of the date when the Discharger will be in compliance. The Discharger shall notify the Central Valley Water Board in writing when it returns to compliance with the time schedule. 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.

7. The Discharger shall at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) that are installed or used by the Discharger to achieve compliance with the conditions of this Order. Proper operation and maintenance also includes adequate laboratory controls and appropriate quality assurance procedures. This provision requires the operation of back-up or auxiliary facilities or similar systems that are installed by the Discharger only when the operation is necessary to achieve compliance with the conditions of this Order.

8. The Discharger shall use the best practicable cost-effective control technique(s) including proper operation and maintenance, to comply with this Order.

9. As described in the Standard Provisions, 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.

10. 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."

11. The Discharger shall not allow pollutant-free wastewater to be discharged into the wastewater collection, treatment, and disposal systems in amounts that significantly diminish the system's capability to comply with this Order. Pollutant-free wastewater means rainfall, groundwater, cooling waters, and condensates that are essentially free of pollutants.

12. At least 90 days prior to termination or expiration of any lease, contract, or agreement involving disposal or recycling areas or off-site reuse of effluent, used to justify the capacity authorized herein and assure compliance with this Order, the Discharger shall notify the Central Valley Water Board in writing of the situation and of what measures have been taken or are being taken to assure full compliance with this Order.

13. In the event of any change in control or ownership of the process facility or any LAA, 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 the Central Valley Water Board.

14. 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 CWC. If approved by the Executive Officer, the transfer request will be submitted to the Central Valley Water Board for its consideration of transferring the ownership of this Order at one of its regularly scheduled meetings.

15. A copy of this Order including the MRP, Information Sheet, Attachments, and Standard Provisions, shall be kept at the discharge facility for reference by operating personnel. Key operating personnel shall be familiar with its contents.

16. The Central Valley Water Board will review this Order periodically and will revise requirements when necessary.

If, in the opinion of the Executive Officer, the Discharger fails to comply with the provisions of this Order, the Executive Officer may refer this matter to the Attorney General for judicial enforcement, may issue a complaint for administrative civil liability, or may take other enforcement actions. Failure to comply with this Order or with the WDRs may result in the assessment of Administrative Civil Liability of up to $10,000 per violation, per day, depending on the violation, pursuant to the Water Code, including sections 13268, 13350 and 13385. The Central Valley Water Board reserves its right to take any enforcement actions authorized by law.

Any person aggrieved by this action of the Central Valley Water Board may petition the State Water Board to review the action in accordance with Water Code section 13320 and California Code of Regulations, title 23, sections 2050 and following. The State Water Board must receive the petition by 5:00 p.m., 30 days after the date of this Order, except that if the thirtieth day following the date of this Order falls on a Saturday, Sunday, or state holiday, the petition must be received by the State Water Board by 5:00 p.m. on the next business day. Copies of the law and regulations applicable to filing petitions may be found on the Internet at:

http://www.waterboards.ca.gov/public_notices/petitions/water_quality

or will be provided upon request.

I, PAMELA C. CREEDON, Executive Officer, do hereby certify that this Order with all attachments is a full, true, and correct copy of an Order adopted by the California Regional Water Quality Control Board, Central Valley Region, on XX April 2018.

_____

PAMELA C. CREEDON, Executive Officer

Amended by Order R5-2018-XXXX