CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

ORDER NO. R5-2007-0082

CEASE AND DESIST ORDER
REQUIRING
R.M.E., INC.
WOODBRIDGE WINERY
SAN JOAQUIN COUNTY

TO CEASE AND DESIST
FROM DISCHARGING CONTRARY TO REQUIREMENTS

The Regional Water Quality Control Board, Central Valley Region, (hereafter referred to as "Regional Water Board") finds that:

1. R.M.E. Inc. (hereafter known as Discharger) owns and operates a winery at 5950 E. Woodbridge Road, Acampo, San Joaquin County. Treated wastewater is discharged to unlined ponds and then applied to land to irrigate crops.
2. Waste Discharge Requirements (WDRs) Order No. 87-184, adopted by the Regional Water Board on 23 October 1987, prescribes requirements for the discharge of wastewater to land. Ownership information for the facility was updated in Change of Name And/Or Ownership Order No. R5-2005-0062.
3. The Discharger submitted a Report of Waste Discharge (RWD) dated 31 July 2006 to apply for revised WDRs. The RWD proposed significant changes in the facility operations, including new wastewater treatment systems and an increase in wine production.
4. Staff's review of the proposed wastewater system indicated it would not be protective of groundwater quality. Therefore, a Cease and Desist Order (CDO) was necessary to allow the Discharger time to improve the quality of wastewater.

Background

5. The facility is located adjacent to and north of the Mokelumne River. The facility consists of a total of 202-acres. The facility includes office, warehouse, winery buildings, and paved areas; land application areas that are planted in vineyards (57-acres) and a land application area that is not cropped (30.0-acres); and unlined wastewater treatment/storage ponds. The property includes approximately 2,000 feet of river frontage and extends approximately 3,000 feet north from the river to E. Woodbridge Road.
6. The winery crushes 100,000 to 150,000 tons of grapes annually to produce wine. Crush occurs yearly from August to October/November. Recent crush tonnage is presented in the table below. In conjunction with the increased crush, the Discharger plans to increase bottling operations. Historically, a distillery was operated on site by a former owner.

Year	Gallons of Wine Produced	Grapes Crushed
2003	21,100,659	92,000

Year	Gallons of Wine Produced	Grapes Crushed
2004	20,677,560	103,000
2005	20,586,209	152,000
2006	25,828,042	97,800
Future	48,000,000	200,000

7. Stillage was discharged to a pond that was located in the southeast area of the winery processing facility. Distillation was discontinued in 1977. The pond was abandoned and the area covered with buildings and/or asphalt pavement in the 1970's. Woodbridge Winery never operated the still and previous owners conducted all distilling operations. There is no record of any remedial activities to reduce the concentration of waste constituents that may exist at the site of the stillage pond when it was closed. The area has been covered with a warehouse thereby reducing the amount of stormwater that can percolate through the former stillage pond location.

Regulatory Actions

8. The Regional Water Board began preparation of a *Cleanup and Abatement Order* (CAO) in June 2004 as a result of Regional Water Board staff's review of groundwater conditions at the site. Staff's review indicated waste discharge at the facility has degraded groundwater quality.

9. The impact that wastewater application has had on groundwater quality has been addressed in several documents. They include:

   a. On 8 October 2003 the Regional Water Board transmitted a *Request for Technical Report*. The request was issued for the Discharger to further investigate groundwater conditions at the facility. The request stated that groundwater monitoring wells indicated degradation of groundwater quality by wastewater application.

   b. On 22 June 2004 the Regional Water Board issued a *Draft Cleanup and Abatement Order* (CAO) as a result of the 16 March 2004 *Preliminary Groundwater Evaluation Report* prepared by Kennedy/Jenks Consultants.

   c. On 29 July 2004 a response to the *Draft CAO* was submitted by Kronick Moskovitz Tiedemann & Girard, which stated that issuance of a CAO was inappropriate and offered to enter into a "fully enforceable agreement with the state."

   d. On 8 October 2004 a *California Water Code (CWC) Section 13267 Order for Technical Reports* was issued requiring the Discharger to perform additional studies to characterize groundwater quality, characterize wastewater, and submit an RWD.

10. Staff's review of the 31 July 2006 RWD submitted in response to the *CWC Section 13267 Order* indicated the proposed winery expansion and wastewater system is not protective of groundwater quality. Furthermore, the additional information provided in the Discharger's groundwater quality investigation reports submitted in response to the *CWC Section 13267 Order* have confirmed the condition of groundwater degradation and verified the winery facility as the contaminant source. As a result, staff has prepared this Cease and Desist Order (CDO) to require wastewater system improvements.

Wastewater Generation

11. Wastewater is generated by tank and equipment wash water (rinse water, clean-in-place solutions, and other activities), general cellar wash water, barrel rinsing, ion-exchange regeneration brine, boiler blowdown, wine filtering, bottling wash water, refrigeration activities, and stormwater that falls on processing areas.

12. The facility generally discharges the following flows:

Season	Minimum Flow Rate	Maximum Flow Rate	Average Flow Rate
Non-Crush	400 gpd	1,052,900 gpd	170,000 gpd
Crush	5,200 gpd	657,600 gpd	270,000 gpd

Note: The maximum non-crush wastewater flow rate includes stormwater. gpd denotes gallons per day.

13. The combined wastewater stream from all sources contains high concentrations of BOD, total dissolved solids, and organic nitrogen.

14. Wastewater is collected and discharged to four unlined facultative ponds operated in series. The ponds are at the south portion of the property, and provide approximately 23-million gallons of storage capacity. The ponds are adjacent to the Mokelumne River; a levee separates the river and ponds but the ponds are not out of the 100-year flood zone. In 1992, Woodbridge raised the levee height to that allowed by the U.S. Army Corps of Engineers, but the levees are still six inches below the 100-year flood plain elevation. After passing through the ponds, the wastewater is pumped to the land application areas.

15. In 2005, the Discharger applied 82 million gallons of wastewater to the 72-acre land application area and an additional 5 million gallons of wastewater to the uncropped 14.6-acre land application area.

Wastewater Characterization

16. The 1 March 2006 *Process Water Characterization and Process Water Treatment Evaluation Report* prepared by Kennedy/Jenks provided estimated wastewater flow rates and loading rates. To characterize the wastewater, samples were collected from discrete waste streams. Because characterization consisted of grab samples, mathematical calculations resulted in some inconsistent results. For example some "% Total Load" values exceed 100-percent. The Discharger considers the data accurate enough to roughly characterize the wastewater components. A summary of the data is provided below:

Waste Stream	Flow Rate (gal/year)	BOD	FDS	TKN	NO3-N	TN
Bottling	19,500,000					
lbs/year		472,878	91,886	2,677	119	2,796
% Total Load		20	22	8	20	8
Water Softening	253,858					
lbs/year		0	99,507	0	0	0
% Total Load		0	23	0	0	0
Refrigeration	4,762,500					

Waste Stream	Flow Rate (gal/year)	BOD	FDS	TKN	NO3-N	TN
lbs/year		2,564	44,595	1,695	784	2,479
% Total Load		0.11	10	5	134	7
Tank Sanitation	5,375,000					
lbs/year		212,009	133,159	2,699	37	2,736
% Total Load		9	31	8	6	8
Barrel Rinsing	5,000,000					
lbs/year		954,930	105,501	9,174	0	9,174
% Total Load		40	25	27	0	27
Filtering	3,065,385					
lbs/year		468,130	63,637	816	70	869
% Total Load		20	15	2	12	3
Total	50,622,794					
lbs/year		2,110,511	538,284	17,061	1,009	18,054
% Total Load		88	126	51	172	53

BOD denotes five-day Biochemical Oxygen Demand. FDS denotes Fixed Dissolved Solids. TKN denotes Total Kjeldahl Nitrogen. NO3-N denotes Nitrate as Nitrogen. TN denotes Total Nitrogen.

17. Based on data provided in the RWD that characterizes wastewater pond effluent (samples collected downstream of the wastewater ponds and upstream of land application) since 2001, the average wastewater concentration of Total Dissolved Solids (TDS) is 1,141 mg/L; the average concentration of Fixed Dissolved Solids (FDS) is 737 mg/L. The data is summarized below:

Yearly Average	Units	TDS	FDS	TKN
2001	mg/L	1,070	707	25
2002	mg/L	1,142	765	22
2003	mg/L	1,226	766	30
2004	mg/L	1,043	672	33
2005	mg/L	1,223	775	38
Average	mg/L	1,141	737	30

Data from Table 6, 31 July 2006 RWD prepared by Kennedy/Jenks Consultants.

Land Application Compliance Issues

18. The Discharger applies treated wastewater to two locations. The first is a 57-acre land application area that is planted as vineyards. Historically, the cropped land application area consisted of 72-acres but the area was reduced to accommodate wastewater treatment system improvements in 2007. The historic loading rates for nitrogen, TDS, FDS, and biochemical oxygen demand for the years 2002 through 2005 are presented below. Fixed dissolved solids and nitrogen are applied at rates that significantly exceed the crop uptake capacity. The Western Fertilizer Handbook lists the plant macronutrient uptake potential for grapes to be approximately 365 lbs/ac•year. The nitrogen uptake

potential (which is one of the macronutrients) is estimated to be 125 lbs/ac•year. Secondary and trace nutrient uptake rates will increase the plant uptake rate to a minor extent. Without improved source control, the future loading rates for the waste constituents listed below will be higher as a result of the smaller land application area.

Constituent	Units	2002	2003	2004	2005
TN	lbs/acre•year	127	326	428	389
TDS	lbs/acre•year	8,600	14,200	11,700	11,500
FDS	lbs/acre•year	5,700	8,500	7,300	7,200
BOD	lbs/acre•year	24	66	84	55

TN denotes Total Nitrogen. TDS denotes Total Dissolved Solids. FDS denotes Fixed Dissolved Solids. BOD denotes Biochemical Oxygen Demand. Data from table contained in Section 3.5.2 Land Application System of 31 July 06 RWD prepared by Kennedy/Jenks Consultants.

19. The Discharger also applies treated wastewater to an uncropped land application area. The loading rates for nitrogen, total dissolved solids, fixed dissolved solids, and biochemical oxygen demand for the years 2004 through 2005 are presented below. Because there is no crop uptake, FDS is not removed from the land application area and nitrogen reductions are dependant solely on denitrification processes, the efficiency of which are unknown.

Constituent	Units	2004	2005
TN	lbs/acre•year	113	134
TDS	lbs/acre•year	3,000	3,600
FDS	lbs/acre•year	1,900	2,300
BOD	lbs/acre•year	20	17

TN denotes Total Nitrogen. TDS denotes Total Dissolved Solids. FDS denotes Fixed Dissolved Solids. BOD denotes Biochemical Oxygen Demand. Data from table contained in Section 3.5.2 Land Application System of 31 July 06 RWD prepared by Kennedy/Jenks Consultants.

20. As a result of proposed wastewater system improvements, source control in the winery, and a planned increase in the size of the land application areas to 95-acres (increased from 86.6-acres), the Discharger believes loading rates will decrease in the future. Table 17 of the RWD presents anticipated future loading rates using a 95-acre land application area: the total FDS loading rate is estimated to be 3,223 lbs/ac•year; the estimated nitrogen loading rate is 40 lbs/ac•year. The FDS loading rate will probably still exceed typical crop uptake rates and therefore, staff is concerned that the proposed application will not be protective of groundwater quality. This Order requires the Discharger to measure actual FDS uptake rates for the crops at this site.

Groundwater Degradation

21. The Discharger submitted a 28 April 2006 *Groundwater Characterization Report* prepared by Kennedy/Jenks Consultants. Groundwater investigations to date have employed groundwater monitoring wells and Hydropunch grab samples:

a. Groundwater monitoring wells MW-1 through MW-7 were installed in December 2001.

b. Nine Cone Penetrometer Tests (CPTs) were conducted at the facility between 4 and 7 April 2005. Grab groundwater samples were collected from all CPT holes. CPT holes were grouted after collecting the groundwater samples.

c. Soil Borings SB-1 through SB-7 were drilled between 10 and 14 October 2005. The depth of the borings varied from 15 feet to 64.5 feet below ground surface (bgs) depending on the depth of first encountered groundwater. Grab groundwater samples were collected from all of the borings. The borings were grouted after collecting the groundwater samples.

d. Groundwater monitoring wells MW-8 through MW-11 were installed between 3 and 7 October 2005.

e. A perched groundwater zone was reported at Well MW-8; all the other wells and grab groundwater samples were collected from an unconfined aquifer.

f. There are no groundwater monitoring wells located in close proximity to the former stillage pond. This Order requires the Discharger to conduct an investigation of the former stillage pond and determine if residual waste constituents are an on-going threat to groundwater quality.

22. Subsurface materials consist of silt/sand mixtures and sand. Groundwater exists at increasing depth further from the Mokelumne River. Close to the river, groundwater exists at 3.5 feet bgs and further from the river, groundwater exists at depths up to 65.5 feet bgs.

23. The facility is served by four production wells (PW-1, PW-2, PW-3, and PW-4). Well PW-2 is presently out of service and will no longer be used. Well PW-2 is located within the area of degraded groundwater quality and is also located generally downgradient of the former stillage pond. No details of the well construction are presented in the RWD or the 28 April 2006 *Groundwater Characterization Report* prepared by Kennedy/Jenks. Because of Well PW-2's location, it might be allowing poor quality shallow groundwater to migrate to deeper groundwater zones. This CDO requires the Discharger to investigate construction details of all production wells, and if appropriate, modify or properly destroy wells to prevent degradation of deeper zone groundwater quality.

24. Groundwater monitoring well samples and Hydropunch grab groundwater samples were collected at the facility to characterize groundwater quality. Average concentrations for selected constituents are presented below. Because there are significant differences in the number of sample events for the wells, the count of data points is presented. For averaging purposes, the detection limit was used when it was presented. If no detection limit was presented but the analyte was not detected, the result was not included in the calculation. Hydropunch samples were collected from CPT borings and only allow one grab sample to be collected so a count value is not provided. The position column identifies the location of the sample collection relative to potential on-site waste constituent source areas.

Sample		EC (umhos/cm)	TDS (mg/L)	TKN (mg/L)	NO3-N (mg/L)	SO4 (mg/L)	Cl (mg/L)	Na (mg/L)	Position
MW-1	average	203	60	1.2	1.1	1.8	7.1	11	UP
	Count	17	18	18	17	2	5	4	
MW-2	average	350	296	1.2	1.1	25	18	10	UP
	Count	17	18	18	17	5	5	5	
MW-3	average	323	158	2.7	1.1	2.0	27	35	UP
	Count	17	18	18	17	2	5	5	
MW-4	average	985	544	5.1	1.1	1.7	53	63	DGP
	Count	17	18	18	18	2	5	5	
MW-5	average	844	641	0.5	24	70	72	34	DGLA
	Count	17	18	18	18	5	5	5	
MW-6	average	601	476	1.1	10	52	33	32	DGLA
	Count	17	18	18	18	5	5	5	
MW-7	average	702	535	0.9	10	71	32	41	DGLA
	Count	17	18	18	18	5	5	5	
MW-8	average	1541	1060	3.6	7.6	79	54	136	DGLA*
	Count	2	2	2	2	1	1	1	
MW-9	average	1057	740	0.8	8.9	58	75	56	CGLA
	Count	2	2	2	2	1	1	1	
MW-10	average	510	405	0.5	12	53	15	51	CGLA
	Count	2	2	2	2	1	1	1	
MW-11	average	663	510	0.5	13	42	37	47	DGWLA
	Count	2	2	2	2	1	1	1	
CPT-1	4/6/2005	261	190	0.5	3.2	11	4	15	UG
CPT-1 Dup	4/6/2005	286	240	0.5	3.2	12	4	15	
CPT-2	4/6/2005	1110	720	0.6	28.2	78	83	28	DGLA
CPT-3	4/7/2005	1250	780	1.2	0.1	11	72	83	DGLA
CPT-4	4/6/2005	727	490	0.5	17.5	65	17	41	DGLA
CPT-5	4/4/2005	823	590	1.9	9.8	90	30	36	DGWLA
CPT-6	4/7/2005	1210	760	0.6	3.6	39	87	50	DGLA
CPT-7	4/6/2005	917	630	1	16.1	117	38	46	DGLA
CPT-8	4/5/2005	606	410	0.6	9.4	50	18	34	DGWLA
CPT-9	4/5/2005	1050	650	0.9	3.5	33	58	52	DGWLA

EC denotes Electrical Conductivity. TDS denotes Total Dissolved Solids. TKN denotes Total Kjeldahl Nitrogen. NO3-N denotes Nitrate as Nitrogen. SO4 denotes Sulfate. Cl denotes Chloride. Na denotes Sodium. Position denotes position of well relative to site features. UP denotes Upgradient. DGP denotes Downgradient of Wastewater Ponds. DGLA denotes Downgradient of Land Application Area. DGLA* denotes Downgradient of Land Application area – well screened in perched zone. CGLA denotes Partially Crossgradient of Land Application Area. DGWLA denotes Downgradient of Winery and Land Application Area.

25. The following groundwater quality observations are presented:

    a. At the facility, groundwater consistently flows away from the Mokelumne River to the north/northwest. The infiltrating river water strongly affects groundwater quality at the facility, providing a continuous supply of high quality (low TDS) groundwater.

    b. Groundwater quality is best in wells located near the Mokelumne River. Wells MW-1, MW-2, and MW-3 consistently have the lowest concentrations of TDS. The average values of TDS in the wells are 60 mg/L, 196 mg/L, and 258 mg/L, respectively. The Mokelumne River TDS concentrations generally range from 20 mg/L to 50 mg/L with only a few concentrations reported over 60 mg/L in the data collected since 1960.

    c. With the exception of the wells described in Subfinding b above, all the other site wells are located downgradient of a waste application area and are therefore not appropriate for use to determine background groundwater quality. However, Wells MW-1, MW-2, and MW-3 may not be representative of groundwater conditions because of the close proximity to the river.

    d. Grab groundwater (Hydropunch) sample from Cone Penetrometer Test (CPT) No. 1, which is located approximately 1,250 feet north of the river and upgradient of any waste application area, contained a TDS concentration of 190 mg/L (a duplicate, CPT-1 contained a TDS concentration of 240 mg/L). The data from the Hydropunch sample may represent conditions closer to the natural mineralization rate of groundwater in the area.

    e. Groundwater monitoring data obtained since December 2001 indicates that the ponds and land application areas, as well as a historic former stillage pond, have caused increases in concentrations of TDS, sulfate, chloride, sodium, and nitrogen compounds in groundwater. Therefore, it appears that the Discharger cannot immediately comply with the Groundwater Limitations of Order No. 87-184.

26. The nearby Mokelumne River influences groundwater quality at the facility, as does natural mineralization of groundwater as it travels through soil, waste application, crop fertilization practices, and the depth to groundwater.

27. Despite previous efforts, no agreement on background groundwater quality has been reached and this Order provides the Discharger with a final opportunity to establish background groundwater quality. The issue of characterizing the background groundwater quality has been well documented. The following correspondence is noted:

    a. The 8 October 2004 *Water Code Section 13267 Order for Technical Reports* prepared by Regional Water Board staff required submittal of a *Groundwater Characterization Workplan* that describes, "…the relationship between the river and underlying shallow groundwater, and the impact of historical wastewater discharge and other discharge practices on underlying shallow groundwater."

    b. The 15 February 2005 *Conditional Approval and Request for Addendum* review prepared by Regional Water Board staff after review of the *Groundwater Characterization Workplan* prepared by Kennedy/Jenks stated "The CPT/Hydropunch study is proposed in areas that are downgradient of the wastewater ponds or land application areas. To investigate groundwater quality trends in areas without

wastewater ponds, consider performing some sampling in areas not suspected to be impacted by waste application…" In response to the *Conditional Approval and Request for Addendum,* on 10 March 2005 Kennedy/Jenks submitted an *Addendum No. 1 to the Groundwater Protection Work Plan* that proposed CPT locations farther away from the ponds. On 8 July 2005, Kennedy/Jenks submitted an *Addendum No. 2* that proposed additional CPT and monitoring well locations based on the results from the initial CPT investigation.

c. The 23 August 2005 *Conditional Approval and Request for Addendum, Addendum No. 2* review prepared by Regional Water Board staff after review of the *Addendum No. 2 to Groundwater Protection Work Plan* prepared by Kennedy/Jenks stated "Consider relocating proposed Well MW-10. It is located at the upgradient edge of a land application area. The data that will be provided from that well will be difficult to interpret. Consider moving the well to an area upgradient of the land application area." The document also stated, "You may implement the workplan at your own risk. If staff determines the scope is incomplete, additional investigation may be required." Kennedy/Jenks submitted a response on 21 September 2005, stating that MW-10 was proposed for the best location and that moving it closer toward the river would cause it to come under the influence of the Mokelumne River. While MW-10 was installed at the farthest upgradient, on-site location that Kennedy/Jenks felt appropriate, it still does not provide background groundwater information.

Waste Character and Waste Management Unit Classification

28. Water Code Section 13173 defines "designated waste" to include "[n]on hazardous waste that consists of, or contains, pollutants that, under ambient environmental conditions at a waste management unit, could be released in concentrations that exceed applicable water quality objectives or that could reasonably be expected to affect beneficial uses of waters of the state as contained in the appropriate state water quality control plan."

29. Based on the waste characterization data and groundwater data summarized herein, it appears that the combined waste stream discharged from the facility to the wastewater pond system may be a designated waste due to concentrations of total dissolved solids, sulfate, chloride, sodium, and nitrogen that appear to exceed the applicable water quality limits.

30. Unlined wastewater ponds (permitted under the 1987 WDRs) are used to treat and store liquid waste that current data shows may be considered "designated". However, pursuant to California Code of Regulations Title 27, Section 20210 (Title 27), such waste can only be discharged to a Class I or Class II surface impoundment equipped with engineered lining and leachate collection and recovery systems. Therefore, continued discharge to the wastewater ponds appears to be a violation of Title 27. However, the Discharger cannot immediately cease the discharge of the waste and this Order provides the Discharger time to make facility improvements such that designated waste is no longer discharged.

31. Water Quality Objectives (WQOs) listed in the Basin Plan include numeric WQOs, (e.g., State drinking water Maximum Contaminant Levels (MCL)) that are incorporated by reference, and narrative Water Quality Limits (WQLs), including the narrative toxicity

objective and the narrative taste and odor objectives for surface and groundwater. Chapter IV of the Basin Plan contains the *Policy for Application of Water Quality Objectives*, which states:

> *Where compliance with narrative objectives is required (i.e., where the objectives are applicable to protect specified beneficial uses), the Water Board will, on a case-by-case basis, adopt numerical limitations in orders which will implement the narrative objectives*."

The numerical limits for the constituents of concern listed in the following table implement the Basin Plan WQLs and compare those values to concentrations observed in groundwater at the facility.

Analyte	Units	Minimum Value	Maximum Value	Upgradient[1]	WQLs
TDS	mg/L	60	1,060	215	450 [2]
EC	umhos/cm	203	1541	273	700 [2]
SO_4	mg/L	1.7	117	11.5	250 [3]
Chloride	mg/L	4.0	87	4	106 [2]
Sodium	mg/L	9.8	136	15	20 [4]
TKN	mg/L	0.5	5.1	0.5	NA
NO_3-N	mg/L	0.1	28.2	3.2	10 [5]

TDS denotes Total Dissolved Solids. EC denotes Electrical Conductivity. NO_3-N denotes Nitrate as Nitrogen. WQL denotes Water Quality Limit.

[1] Background calculated by averaging the value and duplicate values collected at CPT-1. [2] Agricultural Water Quality Goals. [3] Secondary Maximum Contaminant Level (Drinking Water). [4] USEPA Health Advisory (SNARL). [5] Primary Maximum Contaminant Level (Drinking Water).

Other Violations of the WDRs

32. Staff reviewed the Discharger's self-monitoring reports from January 2005 through December 2006. The following violations were noted:

    a. The dry weather flow limit was exceeded in September 2005 and September 2006. It is noted that the WDRs do not contain a year-round flow limit or a wet weather flow limit. The flow meter was not operational from January 2006 through April 2006.

    b. Inadequate wastewater pond freeboard was reported in one month.

    c. The wastewater ponds did not posses at least 1.0 mg/L of dissolved oxygen in every month during the time period examined.

    d. The hold time for one groundwater sample was exceeded for a nitrate as nitrogen analysis.

Wastewater Treatment System Improvements

33. The 31 July 2006 RWD described a wastewater improvement plan. The Discharger revised the plan in a 14 May 2007 response to the Tentative Cease and Desist Order. The plan consists of the following items:

Phase	Treatment System Components	Completion Schedule
Phase 1	• Screening • Equalization • Anaerobic treatment • Dissolved air floatation • Water conservation, source reduction, salt reduction	15 November 2008
Phase 2	• Aerobic treatment • Water Conservation, source reduction, salt reduction	15 August 2009
Phase 3	• Polishing treatment a. Water conservation, source reduction, salt reduction b. Cropping • Water Reuse	15 August 2010

34. As described in the 31 July 2006 RWD, the improvements will provide the following benefits:

Improvement	Features	Benefit
Phase 1		
Solids Removal	Coarse screening for particles greater than 0.25-inch.	Reduce constituent load to be treated.
Equalization	Use tank or reservoir to equalize flow rates.	Consistent quantity and quality of process water contributes to efficient treatment.
Anaerobic Biological Treatment	Adaptable to low or high flow rates. Reduce BOD and TSS by up to 90-percent. Reduce total nitrogen by up to 25-percent. Accomplish some conversion of total nitrogen to ammonia.	Reduce constituent load more cost-effectively than aerobic treatment alone.
Water Conservation	Goal of up to 25-percent reduction by use of best management practices.	Reduce process water volume to be treated.
Source Reduction	Goal of up to 25-percent reduction by use of best management practices.	Reduce constituent load and process water volume to be treated.

Improvement	Features	Benefit
Phase 2		
Aerobic Biological Treatment	Reduce BOD by up to 90-percent. Reduce TSS by up to 90-percent. Reduce total nitrogen by up to 50-percent.	Polish water and reduce constituent load for reuse.
Water Conservation	Goal of up to 25-percent reduction by use of best management practices.	Reduce process water volume to be treated.
Source Reduction	Goal of up to 25-percent reduction by use of best management practices.	Reduce constituent load and process water volume to be treated.
Phase 3		
Polishing	Use of wetlands, filtration, and/or storage.	Polish water for reuse and improve aesthetic value.
Water Conservation	Goal of up to 25-percent reduction by use of best management practices.	Reduce process water volume to be treated.
Source Reduction	Goal of up to 25-percent reduction by use of best management practices.	Reduce constituent load and process water volume to be treated.
Optimal Cropping	Replace vineyards with more appropriate crops for water and nutrient uptake.	Much greater uptake of treated water and nutrients.
Reuse for Irrigation and Winery Needs	Specific uses will depend on the final design.	Use water for beneficial uses to minimize source water pumping and maximize disposal options.

Regulatory Considerations

35. As a result of the events and activities described in this Order, the Regional Board finds that the Discharger has discharged waste in violation of the WDRs, and will not be able to fully comply with Order No. 87-184 until certain technical studies and facility improvements are completed. It is appropriate to impose a reasonable schedule for compliance with the requirements of Order No. 87-184.

36. The Regional Water Board's Water Quality Control Plan for the Sacramento and San Joaquin River Basins (Basin Plan) designates beneficial uses, includes water quality

objectives to protect the beneficial uses, and includes implementation plans to implement the water quality objectives.

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

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

39. Section 13301 of the California Water Code states in part: "When a Regional Board finds that a discharge of waste is taking place or threatening to take place in violation of the requirements or discharge prohibitions prescribed by the regional board or the state board, the board may issue an order to cease and desist and direct that those persons not complying with the requirements or discharge prohibitions (a) comply forthwith, (b) comply in accordance with a time schedule set by the board, or (c) in the event of a threatened violation, take appropriate remedial or preventive action."

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

41. The required technical reports are necessary to assure compliance with WDRs Order No. 87-184 and this Order, and to assure protection of public health and safety. The Discharger owns and operates the facility that discharges the waste subject to this Order.

42. The issuance of this Order is an enforcement action by a regulatory agency and is exempt from the provisions of the California Environmental Quality Act, pursuant to Section 15321(a)(2), Title 14, California Code of Regulations.

43. On 22 June 2007, in Rancho Cordova, California, after due notice to the Discharger and all other affected persons, the Regional Water Board conducted a public hearing at which evidence was received to consider a Cease and Desist Order.

44. Any person affected by this action of the Regional Water Board may petition the State Water Resources Control Board to review the action in accordance with Section 2050 through 2068, Title 23, California Code of Regulations. The petition must be received by the State Water Resources Control Board, Office of Chief Counsel, P.O. Box 100,

Sacramento, CA, 95812-0100, within 30 days of the date on which the Regional Water Board action took place. Copies of the law and regulations applicable to filing petitions are available at *www.waterboards.ca.gov/water_laws/index.html* and also will be provided upon request.

IT IS HEREBY ORDERED that, pursuant to Sections 13301 and 13267 of the California Water Code, R.M.E., Inc., its agents, successors, and assigns, shall in accordance with the following tasks and time schedule, implement the following measures and identify and implement all improvements required to ensure long-term compliance with WDRs Order No. 87-184 or any superceding permits or orders issued by the Regional Water Board.

Any person signing a document submitted under this Order shall make the following certification:

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my knowledge and on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

1. **Effective immediately**, the Discharger shall comply with all requirements set forth in WDRs Order No. 87-184, with the exception of Discharge Specifications B.1 and B.2 (groundwater pollution or degradation). Compliance with Discharge Specification B.1 shall commence no later than **30 September 2010**.

Groundwater Quality Investigations

2. By **31 July 2007**, the Discharger shall submit a *Groundwater Well Installation Workplan* for installation of groundwater monitoring wells to be located near CPT No. 1, the location of the former stillage pond, and any other location(s) the Discharger believes is required to determine background groundwater quality or better characterize the extent of degraded groundwater quality. The wells will establish groundwater conditions in areas impacted by waste disposal and natural background groundwater conditions. The workplan shall be prepared consistent with the attached guidance document, *Requirements for Monitoring Well Installation Workplans and Monitoring Well Installation Reports* and shall contain the information listed in Sections 1 and 2.
3. By **30 October 2007**, the Discharger shall submit a *Groundwater Well Installation Report* containing the information in Section 3 of Attachment A. Wells used to determine background groundwater quality shall be sampled **monthly** for one year for the constituents listed in the groundwater portion of the Revised Monitoring and Reporting Program (MRP) Order No. 87-184. The monthly data shall be included in the quarterly reports required by Revised MRP No. 87-184. (In addition to the groundwater monitoring required for the other groundwater monitoring wells). After one year of monthly monitoring, all groundwater monitoring wells shall be sampled quarterly.
4. By **15 January 2009**, the Discharger shall submit a *Background Groundwater Quality and Groundwater Degradation Assessment Report*. For each groundwater monitoring

parameter/constituent identified in the MRP, the report shall present a summary of all monitoring data (including data obtained prior to adoption of this Order) and calculation of the concentration in background monitoring well(s). This determination of background groundwater quality shall be made using the methods described in Title 27, Section 20415(e)(10), and shall be based on data from at least 12 consecutive groundwater monitoring events. For each monitoring parameter/constituent, the report shall compare the measured concentration in each compliance monitoring well with the proposed background concentration. The report shall also contain a delineation of degraded groundwater quality. The area of degraded groundwater will be used to identify potential conduit wells as described below. Should the Discharger fail to propose a suitable background groundwater concentration value, Regional Water Board staff will determine the value and document that determination in a memo that will be distributed within a reasonable time after submittal of the report described above.

5. By **1 May 2009**, the Discharger shall submit a *Potential Conduit Report* on the construction of all wells located on site. The report shall include construction details, an evaluation of well conditions, and an evaluation of the potential for the wells to act as conduits for degraded quality groundwater to migrate to deeper aquifer zones. If construction details are not available, the well construction shall be investigated using a video-log or similar method. If the investigation reveals a potential for any well to act as a conduit, the Discharger shall submit a Well Abandonment Workplan by **31 July 2009** and a Well Destruction Completion Report by **29 October 2009**.

Treatment System Improvements

6. By **1 September 2007**, the Discharger shall submit and implement a *Pond Contingency Plan* for handling wastewater during times when a 100-year flood may inundate the wastewater ponds.

7. By **1 September 2007**, the Discharger shall submit and immediately implement the *Phase 1 Wastewater Treatment Improvement Workplan*. The workplan shall propose improvements to be made in the following areas: wastewater screening, flow equalization, anaerobic treatment, dissolved air floation, water conservation, source reduction, and salt reduction.

8. By **15 January 2008**, the Discharger shall submit a *Crop Uptake Analysis Workplan*. The workplan shall describe a study designed to determine the amount of FDS and nitrogen that crops grown at this site will take up, and will be removed during harvest. The objective of the study is to determine the pounds per acre that may be applied to the land application area that will not result in an increase in these constituents over background groundwater quality. The study shall include ash testing and shall be completed over two cropping seasons (2008 and 2009).

9. By **15 March 2008**, the Discharger shall submit and immediately implement the *Phase 2 Wastewater Treatment Improvement Workplan*. The workplan shall propose improvements to be made in the following areas: aerobic treatment, water conservation, source reduction, and salt reduction.

10. By **15 November 2008**, the Discharger shall submit the *Phase 1 Wastewater Improvement Implementation Report*. The report shall describe the implementation of the Phase I improvements and present tabular and graphical representations of the wastewater improvements that have resulted from the improved wastewater treatment. The report shall compare the wastewater improvement results with the goals described in Finding No. 34.
11. By **15 March 2009**, the Discharger shall submit and immediately implement the *Phase 3 Wastewater Treatment Improvement Workplan*. The workplan shall propose improvements to be made in the following areas: polishing treatment, water conservation, source reduction, salt reduction, cropping, and water reuse.
12. By **15 August 2009**, the Discharger shall submit the *Phase 2 Wastewater Improvement Implementation Report*. The report shall describe the implementation of the Phase 2 improvements and present tabular and graphical representations of the wastewater improvements that have resulted from the improved wastewater treatment. The report shall compare the wastewater improvement results with the goals described in Finding No. 34.
13. By **1 May 2010**, the Discharger shall submit the results of the *Crop Uptake Analysis* study. The results shall include a recommended loading rate for FDS and nitrogen for each crop grown at the site. The loading rate shall be developed to prevent degradation to groundwater, and shall limit "storage" of waste constituents in the soil to that which can be sustained for the long-term.
14. By **15 August 2010**, the Discharger shall submit the *Phase 3 Wastewater Improvement Implementation Report*. The report shall describe the implementation of the Phase 3 improvements and present tabular and graphical representations of the wastewater improvements that have resulted from the improved wastewater treatment. The report shall compare the wastewater improvement results with the goals described in Finding No. 34.
15. By **30 September 2010**, the Discharger shall submit a *Report of Waste Discharge* that presents a sustainable FDS loading rate and source control activities that will result in discharges that will not exceed loading rates and cause groundwater degradation. If the RWD includes loading rates that are higher than values published in reference documents, the results of laboratory or pilot studies can be presented to support alternative loading rates. The RWD must also address improvements to the wastewater storage/treatment ponds such that groundwater will not be degraded. The RWD shall include either a) a design for Class II surface impoundments that comply with Title 27**,** or b) a design for wastewater source control, treatment, and or segregation that will allow the discharge to comply with State Board Resolution No. 68-16. If the latter is selected, the Report of Waste Discharge shall demonstrate that such compliance will be achieved within 180-days. The RWD must also describe how the wastewater ponds will be protected from inundation during a 100-year flood event.
16. **Beginning 1 August 2007**, and by the first day of the second month following each calendar quarter **(i.e., by 1 February, 1 May, 1 August, and 1 November each year)**,

the Discharger shall submit a progress report describing the work completed to date regarding each of the reporting requirements described in this Order.

In addition to the above, the Discharger shall comply with all applicable provisions of the California Water Code that are not specifically referred to in this Order.

All technical reports required herein that involve planning, investigation, evaluation, or design, or other work requiring interpretation and proper application of engineering or geologic sciences, shall be prepared by or under the direction of persons registered to practice in California pursuant to California Business and Professions Code, Sections 6735, 7835, and 7835.1. As required by these laws, completed technical reports must bear the signature(s) and seal(s) of the registered professional(s) in a manner such that all work can be clearly attributed to the professional responsible for the work.

Failure to comply with this Order may result in the assessment of an Administrative Civil Liability up to $1,000 or up to $10,000 per day of violation, depending on the violation, pursuant to the California Water Code, including Sections 13268, 13350, and 13385. The Regional Water Board reserves its right to take any enforcement actions authorized by law.

I, PAMELA C. CREEDON, Executive Officer, do hereby certify the foregoing is a full, true, and correct copy of an Order adopted by the California Regional Water Quality Control Board, Central Valley Region, on 22 June 2007.

PAMELA C. CREEDON, Executive Officer

REVISED
TRO: 6/22/07

Attachment A: Requirements for Monitoring Well Installation Workplans and Monitoring Well Installation Reports

Linda Adams
Secretary for Environmental Protection

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

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Arnold Schwarzenegger
Governor

CEASE AND DESIST ORDER NO. R5-2007-0082
ATTACHMENT A
REQUIREMENTS FOR MONITORING WELL INSTALLATION WORKPLANS AND MONITORING WELL INSTALLATION REPORTS

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

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

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

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

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

C. Monitoring Well Design (in narrative and/or graphic form):
- Diagram of proposed well construction details
  - Borehole diameter
  - Casing and screen material, diameter, and centralizer spacing (if needed)
  - Type of well caps (bottom cap either screw on or secured with stainless steel screws)
  - Anticipated depth of well, length of well casing, and length and position of perforated interval
  - Thickness, position and composition of surface seal, sanitary seal, and sand pack
  - Anticipated screen slot size and filter pack

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

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

F. Schedule for Completion of Work

G. Appendix: Groundwater Sampling and Analysis Plan (SAP)
The Groundwater SAP shall be included as an appendix to the workplan, and shall be utilized as a guidance document that is referred to by individuals responsible for conducting groundwater monitoring and sampling activities.

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

SECTION 2 - Monitoring Well Installation Report

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

A. General Information:
Purpose of the well installation project
Brief description of local geologic and hydrogeologic conditions encountered during installation of the wells
Number of monitoring wells installed and copies of County Well Construction Permits
Topographic map showing facility location, roads, surface water bodies

Scaled site map showing all previously existing wells, newly installed wells, surface water bodies, buildings, waste handling facilities, utilities, and other major physical and man-made features.

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

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

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

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