

Central Valley Regional Water Quality Control Board  
9 June 2011 Board Meeting

Response to Comments for Bogle Vineyards, Inc.  
Bogle Delta Winery  
Tentative Waste Discharge Requirements

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The following are Central Valley Regional Water Quality Control Board (Central Valley Water Board) staff responses to comments submitted by interested parties regarding the tentative Waste Discharge Requirements (WDRs) for the Bogle Delta Winery. The order was distributed for public comment on 23 March 2011. Comments were required to be submitted to the Central Valley Water Board by 5:00 p.m. on 22 April 2011. Comments were received from Bogle Vineyard, Inc. (Discharger) and Ms. Jo Anne Kipps (a private citizen) within the comment period. The comments were accepted into the record and are summarized below, followed by staff's responses.

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**DISCHARGER'S COMMENTS**

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**Bogle Comment No. 1:** The Discharger requests that the due date for the Salinity Evaluation and Salt Minimization Plan required by Provision G.1.d be changed to allow at least one full year of processing and monitoring to provide a baseline to quantify salt usage and identify opportunities for salinity reduction.

**RESPONSE:** Allowing the Discharger time to collect site-specific data is acceptable. The due date was extended to 30 October 2012 as requested.

**Bogle Comment No. 2:** The proposed storm water pond sampling program is unnecessary. The storm water pond is designed to allow water from the adjacent irrigation canals to move freely into and out of the pond during the winter season. Therefore, monitoring results from this pond may show whether there has been a process wastewater discharge into the storm water pond. This is especially true for electrical conductivity and concentrations of nitrogen and dissolved solids, all of which have been shown to increase dramatically in the canal water during the winter months. The facility incorporates structural best management practices (BMPs) to significantly reduce the potential for process wastewater to flow into the storm water pond from the outdoor processing area drains. There are switches on all diversion valves to indicate when the valves are open to the storm water pond, providing facility operators with a constant reminder when the valves are open. There are also high water alarms in the diversion boxes to provide warnings before water rises to the level of the overflow to storm water pond.

**RESPONSE:** The requirement to monitor samples from the storm water pond was deleted from the Monitoring and Reporting Program. Discharges of storm water will be regulated under WQO No. 97-03-DWQ, the General NPDES Permit for Discharges of Storm Water Associated with Industrial Activities.

**Bogle Comment No. 3:** As an alternative to direct flow measurement, we propose calculating the amount of supplemental water as the difference of the irrigation demand and the measured flow of reclaimed process wastewater.

**RESPONSE:** A flow meter is the only reliable way to measure supplemental irrigation flows and supplemental irrigation flow rates are necessary to verify compliance with the requirement to apply water at rates that will minimize leaching below the root zone of the crops. No revision was made to address this comment.

**Bogle Comment No. 4:** Due to the large size of the LAA, it will be difficult for the farming employees to take daily flow readings for discharge of effluent to the land application area. The Discharger requests that the frequency of effluent flow readings be reduced to weekly.

**RESPONSE:** Daily effluent flow data are required to determine compliance with the BOD loading rate limits. The burden and cost of recording daily flow data are minimal. No revision was made to address this comment.

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#### **JO ANNE KIPPS' COMMENTS**

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**Jo Anne Kipps Comment No. 1:** Finding 6 indicates the winery will accept wastewater from the Discharger's Old River Vineyard winery but it is not clear whether the flow rates in Finding 9 reflect that contribution.

**RESPONSE:** The flow rates in Finding 9 were revised to reflect the wastewater generated at the winery and wastewater received from the Discharger's two other winery facilities located in Clarksburg.

**Jo Anne Kipps Comment No. 2:** Revise Finding 10.e to identify the function of Pond 1 as "Secondary Treatment".

**RESPONSE:** Finding 10.e was revised to identify Pond 1 from a primary to a secondary treatment.

**Jo Anne Kipps Comment No 3:** The WDRs do not indicate that Ponds 2 and/or 3 will be equipped with aerators. The WDRs should demonstrate that adequate dissolved oxygen levels will be maintained in Ponds 2 and 3 without mechanical aeration.

**RESPONSE:** Ponds 2 and 3 will be aerated, and the aeration systems will be automatically controlled so that sufficient dissolved oxygen is maintained. Finding 10.e was revised to reflect this. Regardless, the proposed WDRs prohibit nuisance conditions and require that adequate dissolved oxygen be maintained in all ponds to prevent nuisance odors. Although it is not appropriate for WDRs to specify the means of compliance with these requirements, they are enforceable and the Discharger must comply with them through whatever means are necessary.

**Jo Anne Kipps Comment No. 4:** The WDRs should include characterization of the wastewater that will be impounded and state that the winery's process wastewater is designated waste as defined in CWC Section 13173(b).

**RESPONSE:** Finding 10.h provides projected characterization for the treated effluent. The wastewater is not designated wastes. California Water Code Section 13173(b) defines "designated waste" as non hazardous waste that consists of, or contains pollutants that could be released in concentrations exceeding applicable water quality objectives or could affect the beneficial uses. The treatment ponds have synthetic liners, minimizing percolation. Furthermore, the wastewater quality is better than the underlying groundwater. Although, total nitrogen concentrations of the wastewater is expected to be higher than the groundwater, the nutrients will be taken up by the crops and removed from the land application area.

**Jo Anne Kipps Comment No. 5:** The Order should include a finding that characterizes the solids and sludge that is allowed to be discharged to the LAA, and require the nitrogen loading to be included in the LAA monthly and annual nitrogen loading calculations. In addition, the WDRs should require that applied solids and sludge be disced into LAA soils within 48 hours of application to preclude the development of nuisance odors and vector conditions.

**RESPONSE:** Typical moisture and nutrient content data for pomace and stems was included in Finding 21 to address this comment. Because the facility is not yet operating, the pond sludge that will be generated has not been characterized. As noted above, the MRP requires that all sources of nitrogen be considered in calculating the nitrogen loading rate to the LAA.

Requiring discing within 48 hours of application is more prescriptive than necessary. When managed appropriately, land application of solids and sludge should not cause nuisance conditions. However, the Order was revised to include a solids/sludge disposal requirement, requiring the materials to be evenly applied to prevent nuisance conditions. Additionally, a Provision was added to address the removal of sludge from the ponds.

**Jo Anne Kipps Comment No. 6:** Finding 28 should be deleted or should explain how the estimated wastewater TDS of 700 mg/L was determined and specify whether this TDS concentration pertains to the wastewater discharged to Pond 1 (the first-stage treatment pond) or discharged from Pond 3 (the terminal treatment pond) to the LAA.

**RESPONSE:** The estimated TDS concentration of 700 mg/L accounts for the concentration in the source water, expected concentration from the chemicals used in the winemaking process, and the net effect of water lost from evaporation from the

**evaporative condenser and the ponds. Finding 28 was clarified to address this comment.**

**Jo Anne Kipps Comment No. 7:** If applicable, revise Finding 13.i to include the rotary screen as one of the wastewater operations that will be placed on concrete pads. If the Discharger does not propose to place the rotary screen on a concrete pad, the WDRs should require the rotary screen area be equipped with containment to preclude the infiltration of leachate into the ground.

**RESPONSE:** The rotary screen will be installed on a paved surface. Therefore, Finding 13.i was revised to identify that the rotary screen will be placed on a concrete pad.

**Jo Anne Kipps Comment No. 8:** Given the high strength of wastewater impounded in the ponds and the shallow groundwater conditions of the discharge site, the WDRs should explain why the ponds are not equipped with a secondary liner and a leachate collection and return system to preclude the infiltration of waste constituents into the soil as a best practicable control measure. Additionally, the WDRs should identify the cost of installing a secondary liner and leachate collection system and explain why the economic benefit to the Discharger of not installing these containment features is consistent with the maximum benefit of the people of the State of California.

**RESPONSE:** As stated previously, the wastewater in the ponds is forecast to have lower salinity than the groundwater, so it is not particularly high strength. However, the nitrogen in the wastewater could degrade groundwater if allowed to percolate from the ponds. The pond lining minimizes that percolation and allows the nitrogen to be used by the crops in the land application areas. A single liner is consistent with measures implemented by other wineries and has been effective in protecting groundwater quality.

The pond lining system is a control measure. However, a leak detection test is required upon installation of the liner and routine liner inspections are required every five years thereafter.

**Jo Anne Kipps Comment No. 9:** Revise Finding 10 to correct the meaning of BOD from Biological to Biochemical Oxygen Demand.

**RESPONSE:** Finding 10.h text was revised from Biological to Biochemical to address this comment.

**Jo Anne Kipps Comment No. 10:** The WDRs should prescribe a limit on the BOD loading rate that is consistent with the loading rate projected by the Discharger (i.e., 5 lb/ac/day).

Because evaluating compliance with prescribed BOD loading rates is complicated due to the large amount of monitoring required, the WDRs should establish an effluent limitation for BOD of 100 mg/L applicable to the discharge from Pond 3 to the LAA and should require that effluent be applied to the LAA by sprinkler irrigation.

**RESPONSE:** The Order was revised to limit the maximum daily BOD loading to 60 lb/ac/day, a rate which the Discharger will consistently be able to meet.

**Although we expect the Discharger to be able to comply with a BOD concentration limit, it is unnecessary. The Order contains a BOD loading limit in the Land Application Areas. That limit is designed to prevent nuisance odors and the potential for mobilization of soil constituents.**

**Likewise, although the Discharger has proposed sprinkler irrigation, there is no reason to require it. The WDRs contain appropriate requirements for irrigation methods such as flood or drip.**

**Jo Anne Kipps Comment No. 11:** The WDRs require effluent pH not be less than 6.5 or greater than 10.0 and justifies the upper pH limitation by stating, “low frequency dosing allows ample time for soil recovery between doses. Therefore, soils and underlying groundwater are expected to adequately buffer a wider range of pH.” The WDRs should provide technical justification that the prescribed pH limitation is adequately protective of the biological processes in the three-pond treatment system or, if this is not possible, revise the pH limit to reflect the pH range identified by the Discharger in its Report of Waste Discharge (i.e., 6.0 to 9.0).

**RESPONSE:** The processes occurring in the winery wastewater ponds are well documented in publications<sup>1</sup>. Algae, a plant, through photosynthesis releases oxygen to the wastewater. Some of that oxygen is used by aerobic bacteria in stabilizing the waste constituents in the winery wastewater. The process results in dissolved oxygen concentrations changes throughout the day. A secondary effect is an increase of pH in the pond. The process that causes the pH change in the wastewater ponds is biological in origin.

**Secondly, the process is dependant upon sunlight penetration which typically only penetrates about two feet in a wastewater pond. The wastewater ponds are approximately 14 feet deep. Therefore, the pH change is likely limited to the upper portions of the pond. It is unlikely that all of the water in the pond will experience the pH change.**

**Furthermore, controlling the pH would require chemical additives that would raise the fixed dissolved solids concentration needlessly. The Order requires the Discharger to control the amount of salinity impacts to the groundwater. So requiring pH control by**

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<sup>1</sup> Small and Decentralized Wastewater Management Systems, Crites and Tchobanoglous, Chapter 8 – Lagoon Treatment Systems, WCB/McGraw-Hill, 1998.

**chemical additives would be counter-productive. These requirements are sufficient to prevent upset and protect water quality.**

**Jo Anne Kipps Comment No. 12:** Finding 18 states, “Total annual irrigation demand for the crops is estimated to be approximately 168 Mgal.” It is probable that a considerable amount of the crop demand will be met by shallow groundwater water. The Finding should be revised to indicate whether the identified crop demand will be met by shallow groundwater.

**RESPONSE:** The crop root zone depth is typically considered to be from the surface, to approximately five feet below the surface. Finding No. 25 describes the depth to groundwater to be from 4.4 to 5.9 feet below ground surface. Therefore, deeply rooted plants may obtain a portion of their irrigation demand from groundwater, however with an adequate irrigation supply located closer to the surface, the plants are likely to preferentially use that water. If the plants do take up shallow groundwater, the water may contain some wastewater constituents so that process would be desirable. Because the distinction is not important for the purpose of regulatory control, the Finding was not changed.

**Jo Anne Kipps Comment No. 13:** Finding 24 presents the results of a single sample of groundwater from the winery’s supply well. The finding does not provide basic construction details such as well depth and screened interval. This information is necessary to evaluate groundwater conditions at the discharge site. The sample results indicate that groundwater extracted by the winery’s supply well is of high quality for most constituents of concern.

**RESPONSE:** Finding 24 was revised to include the well construction details. It is reasonable to believe that the water supply data provided by the Discharger are representative of the water supply.

**The primary use of water supply monitoring data is to allow an assessment of how water quality is changed through use. Water supply wells are typically deep and may be screened in multiple intervals. For this reason, water supply wells are usually of limited use in evaluating water quality impacts caused by a discharge of waste. The shallow zone monitoring wells currently in place will provide the best indication of groundwater degradation caused by the discharge, if any.**

**Jo Anne Kipps Comment No. 14:** The Findings state that groundwater occurs at around six feet below ground surface based on monitoring data from three monitoring wells, but do not identify any of the wells as representing upgradient groundwater. The groundwater gradient data indicate that the groundwater flow direction fluctuates significantly which suggests that none of the wells will be capable of monitoring groundwater unaffected by the discharges to the wastewater pond treatment system and LAA. The WDRs should require the Discharger install a groundwater monitoring well in an area that will remain unaffected by discharges to the pond treatment system and LAA.

**RESPONSE:** The fact that the groundwater flow direction is variable indicates possible influence by the operation of the irrigation canals that essentially surround the site. Because of this, it may not be possible to position a monitoring well that will be reliably upgradient of the discharge area. However, we have several pre-discharge groundwater monitoring events that are sufficient to determine baseline (pre-discharge) groundwater quality. These data can be used for intrawell (comparing a well with the historical data collected from the well) statistical analysis to set site specific groundwater limitations and determine compliance with those limits. The Order was revised to require that the Discharger evaluate the monitoring well network, determine whether it is feasible to establish background groundwater quality, propose additional monitoring wells as appropriate, propose a method of setting final groundwater limitations, and propose a method of determining compliance with those limitations.

**Jo Anne Kipps Comment No. 15:** The groundwater monitoring data presented in the Findings show that groundwater contains manganese in concentrations exceeding the applicable water quality objective of 0.05 mg/L, and MW-2 contains nitrate (as N) in concentrations approaching twice the water quality objective of 10 mg/L. This suggests that groundwater also contains sufficient organic carbon to mobilize manganese and has no assimilative capacity for additional loadings of organic carbon. Finding 26.a should be revised to include a summary of monitoring results for total organic carbon, if available.

**RESPONSE:** Central Valley Water Board staff has determined that groundwater samples are sometimes collected and preserved with acid before filtering. This procedure results in elevated concentrations of iron and manganese. To prevent sampling errors in the future, a requirement to filter select groundwater samples prior to adding acid has been added to the MRP. We believe the concentrations reported are indicative of sampling error rather than overloading the LAA with wastewater. It should be noted that wastewater has not yet been applied in the LAA monitored by the groundwater wells. Total organic carbon was not provided in the RWD.

**Jo Anne Kipps Comment No. 16:** The WDRs should identify the separation distance between the pond bottom and the highest anticipated groundwater. If the separation distance is less than five feet, then the WDRs should explain why a separation distance of less than five feet reflects best practicable control.

**RESPONSE:** Finding 10.e. was revised to identify a separation distance between the pond bottom and the highest anticipated groundwater at approximately 4.4 feet. However, the discharge is exempt from Title 27 as described in Finding No. 49 and therefore the five feet separation distance is not a requirement.

**Jo Anne Kipps Comment No. 17:** The location of the winery's domestic wastewater septic system, which is regulated by Yolo County, is not shown on the site plan. The WDRs should evaluate whether the winery's septic system complies with the minimum Basin Plan

requirements, particularly the requirement for a minimum five feet of vertical separation between the bottom of leach field trenches and highest anticipated groundwater.

**RESPONSE:** The domestic septic system will be a mound system that provides approximately six feet of separation from groundwater. The Order was revised to include this information, and the location of the septic system is now shown on Attachment C.

**Jo Anne Kipps Comment No. 18:** Finding 42 states, “Groundwater limitations in this Order are based on background water quality because the background concentrations of constituents of concern exceed water quality objectives in the shallow aquifer as shown in Finding No. 26.a.” The WDRs do not contain an adequate characterization of “background water quality.”

**RESPONSE:** A discussion of groundwater quality issues is provided in the response to Comment No. 14. The Findings have been revised to reflect that the groundwater data provided are representative of baseline (pre-discharge) groundwater quality, and that baseline groundwater quality exceeds some groundwater quality objectives.

**Jo Anne Kipps Comment No. 19:** Finding 47 classifies the discharge’s threat to water quality as “2” and the discharge’s complexity as “B”. Title 23, California Code of Regulations, Section 2200 defines Category A complexity as: “Any discharge of toxic waste, any small volume discharge containing toxic waste, any small volume discharge containing toxic waste or having numerous discharge points **or groundwater monitoring**, or Class 1 waste management unit” (emphasis added). Because the TWDRs require groundwater monitoring, the proper classification of the discharge’s complexity is “A”.

**RESPONSE:** The threat to water quality and complexity of the discharge is based on criteria set by the State Water Board. The threat and complexity described in the Order is appropriate and is consistent with other wineries in the Region. The discharge is not toxic waste. Groundwater monitoring is required by the Order, but it is required to allow on-going evaluation of the potential for water quality degradation. The Order was not revised to address this comment.

**Jo Anne Kipps Comment No. 20:** Land Application Area Requirement D.3 allows the Discharger to apply wastewater to the LAA via sprinklers, flood, or drip irrigation. The Discharger indicated it plans to apply wastewater via sprinkler irrigation. Sprinkler application allows for greater control of BOD loading and maximizes the uniform distribution of wastewater to the entire LAA and is a best practicable treatment or control measure. This requirement should be revised to require wastewater be applied to the LAA only by sprinkler irrigation. The WDRs should include a requirement for flushing with fresh water all pressurized pipelines conveying wastewater to the LAA as necessary to preclude odor nuisance.

**RESPONSE:** Although the Discharger has stated that sprinklers will be used, there is no reason to restrict irrigation to sprinkler application. Each method of irrigation (sprinkler, flood, and drip) offers some advantages and disadvantages. The Order contains appropriate requirements to address all three types of irrigation. The Order was not revised to address this comment.

The small diameter, relatively short length pipes that convey treated wastewater, are unlikely to generate odor. The Discharger states that the pipeline will be flushed periodically with supplemental irrigation water. A Land Application Area Requirement was added to specify that the irrigation system must be flushed after use as needed to prevent nuisance conditions. Furthermore, Discharge Specification B.6 prohibits generation of objectionable odors and the Discharger must operate the system to prevent nuisance conditions.

**Jo Anne Kipps Comment No. 21:** Land Application Requirement D.10 establishes 50-foot setback between the edges of the land application area to industrial, domestic, or irrigation wells. To minimize the potential for wastewater to enter shallow groundwater monitoring wells, and thereby compromise the representativeness of groundwater monitoring data, the requirement should include groundwater monitoring wells.

**RESPONSE:** Monitoring wells constructed under the supervision of a California licensed professional and maintained in accordance with Yolo County, California Well Standards Bulletin 74-90 (June 1991), and Water Well Standards: State of California Bulletin 94-81 (December 1981) should be sufficient to prevent wastewater from directly entering the wells. No revisions were made to address this comment.

**Jo Anne Kipps Comment No. 22:** Groundwater Limitation F.1 establishes “interim groundwater limitations” based on “background concentration limit” or water quality objective, whichever is greater. As indicated above, the WDRs do not include findings that explicitly characterize background groundwater quality. The Information Sheet states, “Interim groundwater limitations are based on statistical analyses of background groundwater data using a 0.025 critical t-score.” However, the Information Sheet does not provide any information on this background groundwater data. The WDRs should thoroughly characterize background groundwater and provide supporting data, as appropriate, regarding the data used to characterize background groundwater in the Information Sheet. Additionally, the interim groundwater limitation for nitrate (as N) should be changed to 10 mg/L.

**RESPONSE:** As noted in the response to Comment No. 14 above, it may not be possible to establish background groundwater quality for existing conditions, and the data presented in the Findings represent baseline (pre-discharge) groundwater quality. The statistically derived interim groundwater limits were removed from the Order to allow time for additional study. The groundwater limit for nitrate (as N) is the water quality objective of 10 mg/L or the background groundwater quality, whichever is greater.

**Jo Anne Kipps Comment No 23:** The WDRs do not, but should, include a reopener provision to allow the Central Valley Water Board to reopen the Order for consideration of adding or revising numerical effluent or groundwater limitations for problem constituents.

**RESPONSE:** Reopening text was added to Finding 45. The text reads:

**“...Based on the result of the scheduled tasks, this Order may be reopened to reconsider effluent limitations and other requirements to comply with Resolution 68-16. Accordingly, the discharge is consistent with the antidegradation provisions of Resolution 68-16.”**

**Jo Anne Kipps Comment No 24:** The Monitoring and Reporting Program (MRP) requires that composite samples be collected from the ponds for determining electrical conductivity (EC). Given the amount of flow equalization provided in the pond treatment system, grab samples for determining wastewater EC should be adequate.

**RESPONSE:** Either grab or composite samples would be adequate to characterize the salinity of the wastewater. The MRP was revised to require grab samples.

**Jo Anne Kipps Comment No 25:** The MRP states, “Loading rates for the land application areas shall be calculated using applied wastewater and any supplemental irrigation water.” This directive appears to conflict with the methods specified in the WDRs for calculating BOD and nitrogen loading rates. The MRP should be revised to require the calculation of BOD and nitrogen loading rates as specified in Effluent Limitation C.1. Additionally, calculation of nitrogen loading rates should include loadings from applications of winery solids, pond sludge and farm fertilizers.

**RESPONSE:** The MRP was revised to require loading rates for the land application area to be calculated as specified in the Effluent Limitations of the WDRs. The MRP does require that the total nitrogen applied include nutrients from all sources, including fertilizers and supplemental irrigation water if used.

**Jo Anne Kipps Comment No 26:** The MRP does not, but should, require groundwater monitoring for total organic carbon or arsenic. The discharge of winery waste to land has the potential for increasing the concentrations in groundwater of these two constituents. In order to evaluate the extent to which the discharge is overloading the LAA with organics, the MRP should require quarterly monitoring of groundwater for total organic carbon and arsenic.

**RESPONSE:** Monitoring for total organic carbon or arsenic is not necessary. The forecast BOD loading rate is low, less than two pounds of BOD per acre on an annual basis. For comparison, the discharge to land program typically allows a maximum of 350 pound per acre per day as a one day maximum with 100 pounds per acre per day as a cycle average.

**The presence or absence of total organic carbon and/or arsenic would not enhance our ability to determine whether the discharge of winery waste causes unreasonable degradation. The MRP requires monitoring of actual waste constituents as well as key surrogates (such as iron and manganese) that are sufficient for this purpose.**

**Jo Anne Kipps Comment No 27:** The MRP does not, but should, require periodic monitoring of pond sludge depth. In my 12 years experience working for the Central Valley Water Board in the WDR Program, many dischargers with pond treatment systems tend to delay monitoring for pond sludge depth until excessive suspended solids degrade effluent quality. Once this happens, sludge removal and dewatering can be a considerable and costly undertaking that may generate nuisance odors. Requiring periodic monitoring of pond sludge depth will provide necessary information to the discharger to ensure it optimizes pond operation and maintenance.

**RESPONSE:** The Order and MRP were revised to address this comment by requiring periodic sludge depth monitoring and a *Pond Sludge Management Plan* prior to pond cleanout to ensure that sludge handling and disposal practices are protective of water quality.

**However, the wastewater will be clarified and filtered before being discharged to the wastewater ponds. Sludge buildup is not expected to be a significant issue for many years.**

**Jo Anne Kipps Comment No 28:** The MRP does not, but should, require periodic monitoring of pond liners for containment integrity.

**RESPONSE:** The MRP was revised to require liner integrity testing every five years.