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Charlene Gallina
Napa County Planning Department
1195 Third Street, Ste. 210
Napa, CA 94559

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NAPA CO. CONSERVATION
DEVELOPMENT & PLANNING DEPT.

RE: Williams St. Helena Outlet
Blue Oak Dispersion Field Abstract

Dear Charlene:

This abstract is intended as a specific summary of technical information contained in the "Winery Wastewater Feasibility Report" which was prepared in December 2011 by Riechers Spence and Associates (RSA) and submitted to the Napa County Department of Environmental Management. The "Winery Wastewater Feasibility Report" is also part of the public record as part of the application for the use permit for Cairdean Winery at 3125 St. Helena Hwy., St. Helena, CA 94574. The purpose of this abstract is to summarize and clarify questions raised recently by the Napa County Planners regarding the processed winery waste water dispersion areas proposed for this project. The report was also reviewed by and incorporated into the March 2012 Biological Resource Survey conducted for the Cairdean Winery by Kjeldsen Biological Consulting. This survey evaluated the potential impacts of the winery project including the wastewater disposal option discussed in the RSA report on site vegetation and plant communities.

The Cairdean winery project proposes two distinct on-site areas for dispersing winery processed waste water. Winery process wastewater is generated during the barrel and equipment washing. Process wastewater is distinguishable from domestic wastewater which is generated by visitors and employees and is treated and disposed of in a separate wastewater treatment system. The primary area for process wastewater disposal is the lower portion of the 50-acre parcel, which is currently non-native grasslands which will be planted to vineyard (*Vitis vinifera* vines) as part of the winery project. These vines are currently intended to be the late-ripening cultivar Cabernet Sauvignon. Due to Napa County constraints such as road, well, and drainage system setback requirements, the primary area does not provide adequate space to accommodate 100% of the potential volume of winery processed waste water. Therefore, a second area on the 50-acre parcel has been identified to handle additional flow that may occur during peak usage. Peak usage is expected primarily during the hot and dry months that exist during wine grape harvest time. This second area is located in a region on the parcel that is inhabited by a minimal number of blue oak trees. Since the blue oak species in Napa

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(Region 1) is classified as having a VL (very low) water demand, extra care has been taken to insure that this secondary area and application rates for processed wastewater dispersion is strictly limited.

The RSA standard approach when designing dispersion fields is to maintain agronomic balance. Agronomic balance occurs when the plant species irrigated receives the optimum amount of water balanced with the rate of evaporation at a given time of the year. The water balance in the "Winery Wastewater Feasibility Report" limits water application in both the primary and secondary overflow areas to maintain agronomic balance at all times. In addition, the extra conservative approach taken by RSA did not take into account processed waste water that would be taken up by the cover crop in the vineyard or the underlying native grasses in the blue oak area. Cover crops and native grasses have shallow roots which will have access to surface water before any other deep rooted species such as vines or blue oaks, thus further minimizing the impact of this approach.

The dispersion field in the blue oak woodland will utilize a standard above ground drip system (see photo #1). The emitters and piping will be suspended from a staking system and placed at 10' to 15' intervals along the ground contours. The spacing will be varied to avoid placing emitters directly adjacent to trees. Above ground drip irrigation systems have an efficiency of less than 50% (i.e. 50% of the water will immediately evaporate). During the peak month of irrigation, the total required irrigation time within the blue oaks is approximately 2 hours and 45 minutes. Because the annual grassland understory has an irrigation requirement of 60% to 80% of reference evapotranspiration (ET_o), the abundant surface grasses, as opposed to the blue oaks with 10% ET_o, will take up most, if not all, of the applied water. Because of all of these factors, within 48 hours of irrigation, we expect there would be no evidence of irrigation water on the surface or within the soil profile.

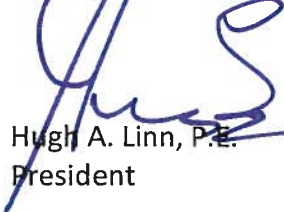
The application and projected evaporation rates and the areas proposed by RSA for the dispersal of process wastewater was evaluated by Kjeldsen Biological Consulting for any potential impacts on the secondary, blue oak woodland dispersal area. Kjeldsen noted that the peak application for the oak woodland is 0.72" per month during the dry summer months when process wastewater may be applied in the secondary dispersal area. Kjeldsen concluded that "due to the low application rates and pretreatment of the winery process waste[,] the nutrient composition and the organic matter (BOD) is well within the acceptable range for the [blue oak woodland] plant community on site. Further, Kjeldsen concludes, "Blue Oaks in the area should continue to grow and will not be negatively impacted by increase of water over natural weather patterns."

In summary, using the blue oak area as a secondary area for the dispersal of processed wastewater will only occur when the vineyard and landscape areas can not make beneficial use of the recycled water. The data in the wastewater feasibility report demonstrates that the water balance and dispersion system would not exceed the water demands for either the vineyard or the blue oaks. Considering the evaporation rate, existing natural cover crop (native

grasses), and limit of application, we conclude that the blue oak species will not be negatively impacted.

Should you have any questions regarding the above, please do not hesitate to contact me at 707.252.3301.

Sincerely,



Hugh A. Linn, P.E.
President



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Encl

cc: Edwin and Stacia Williams
Mary Doyle
Jeff Redding
Juan Carlos Fernandez