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# Wastewater Feasibility Study



July 27, 2018

Job No. 10-139

Kim Withrow, REHS  
Environmental Health Division  
Napa County Planning, Building and Environmental Services Department  
1195 Third Street, Suite 210  
Napa, CA 94559

Re: Onsite Wastewater Disposal Feasibility Study for the  
Chappellet Winery Use Permit Modification Application  
1581 Sage Canyon Road, St. Helena, CA 94574 APN 032-010-090

Dear Ms. Withrow:

At the request of Chappellet Winery we have evaluated the process and sanitary wastewater flows associated with the proposed Use Permit Modification. We have also analyzed the capacity of the existing process and sanitary wastewater system serving the winery facility to determine if they are adequate to serve the proposed changes in use.

The current Use Permit and Proposed Use Permit Modification conditions are outlined below:

| Category                   | Existing                 | Proposed                 | Notes   |
|----------------------------|--------------------------|--------------------------|---|
| Winery Production          | 150,000 gallons per year | 250,000 gallons per year |   |
| Employees                  | 24                       | 30                       |   |
| Tours and Tasting Visitors | 40                       | 95                       |   |
| Marketing Events           |                          |                          |   |
| 40 guests                  | 4 / month                | 4 / month                | Food catered or prepared in future onsite kitchen |
| 75 guests                  | 4 / year                 | 4 / year                 | Food catered                                      |
| 125 guests                 | 2 / year                 | 2 / year                 | Food catered                                      |
| 20 guests                  | 0 / year                 | 10 / year                | Food catered                                      |
| 80 guests                  | 0 / year                 | 6 / year                 | Food catered                                      |
| 160 guests                 | 0 / year                 | 3 / year                 | Food catered                                      |
| 200 guests                 | 0 / year                 | 3 / year                 | Food catered                                      |

Existing structures on the property include winery buildings and a single-family residence. No new structures are proposed as part of the Use Permit Modification.

Please see the Chappellet Winery Use Permit Modification Conceptual Site Plans for approximate locations of existing facilities.

The remainder of this letter describes the existing process and sanitary wastewater disposal systems, their design capacity, peak flows associated with the proposed changes in use and our analysis and recommendations related to the system's capability to handle the anticipated wastewater flows.

### **Existing Domestic Wastewater Septic System & Proposed Design Flows**

The winery facility is serviced by a pretreatment and subsurface drip type dispersal system. The system is located just northwest of the winery driveway, approximately 250 feet from the winery buildings and was constructed in 2012 under permit E12-00389. The system consists of a grease interceptor for an entitled but not constructed commercial kitchen, septic tank and AdvanTex pre-treatment system and a subsurface drip dispersal field. According to the design calculations prepared by this office and dated 6/27/2012 the system has a capacity of 1,080 gallons per day.

### Proposed Winery Sanitary Wastewater Design Flows

The peak sanitary wastewater flow from the winery is calculated based on the number of winery employees, the number of daily visitors for tastings and the number of guests attending scheduled marketing events. In accordance with Table 4 of the Napa County "Regulations for Design, Construction, and Installation of Alternative Sewage Treatment Systems" we have used a design flow rate of 15 gallons per day per employee and 3 gallons per day per visitor for tastings. Table 4 does not specifically address design wastewater flows for guests at marketing events. We have conservatively assumed 5 gallons of wastewater per guest at marketing events with food that is brought in by an outside catering service and 15 gallons per guest for events where food is prepared in an onsite kitchen. It should be noted that the facility is entitled to have a commercial kitchen but has not yet constructed it. When and if constructed, it is expected that the commercial kitchen will be used for preparing meals for smaller events of up to 40 guests. Based on these assumptions, the peak winery sanitary wastewater flows are calculated as follows:

#### Employees

Peak Sanitary Wastewater Flow = 30 employees X 15 gpd per employee

Peak Sanitary Wastewater Flow = 450 gpd

#### Daily Tastings

Peak Sanitary Wastewater Flow = 95 visitors per day X 3 gallons per visitor

Peak Sanitary Wastewater Flow = 285 gpd

Smaller Marketing Event with Meals Prepared in Onsite Kitchen (10 per year)

Peak Sanitary Wastewater Flow = 20 guests X 15 gallons per guest

Peak Sanitary Wastewater Flow = 300 gpd

Largest Marketing Event with Meals Prepared in Onsite Kitchen (4 per month)

Peak Sanitary Wastewater Flow = 40 guests X 15 gallons per guest

Peak Sanitary Wastewater Flow = 600 gpd

Smaller Marketing Event with Meals Prepared by Offsite Catering Service (6 per year)

Peak Sanitary Wastewater Flow = 80 guests X 5 gallons per guest

Peak Sanitary Wastewater Flow = 400 gpd

Largest Marketing Event with Meals Prepared by Offsite Catering Service (3 per year)

Peak Sanitary Wastewater Flow = 200 guests X 5 gallons per guest

Peak Sanitary Wastewater Flow = 1,000 gpd

Total Peak Winery Sanitary Wastewater Flow

In order to manage the peak sanitary wastewater flows delivered to the disposal field portable toilets will be used for all events with more than 40 guests in attendance. Furthermore, on days with an event with more than 20 guests and a meal prepared onsite, daily tours and tastings will be suspended. Therefore, the worst case peak winery sanitary wastewater flow is calculated based on 30 employees, 40 guests at a marketing event with meals prepared onsite. The peak flow for this scenario is calculated as follows:

Total Peak Winery Sanitary Wastewater Flow = 450 gpd + 600 gpd

*Total Peak Winery Sanitary Wastewater Flow = 1,050 gpd*

**Existing Process Wastewater Treatment System & Proposed Design Flows**

The winery facility is serviced by a pretreatment and surface irrigation type disposal system. All process wastewater is collected from the winery building and barrel storage building into a sump tank located near the barrel storage building. The process wastewater is then pumped to the flow equalization tank and Lyve aerobic bioreactor located approximately 800 feet southwest of the barrel storage building on the adjacent property. Treated process wastewater is stored in the irrigation reservoir located just east of the treatment system. Final disposal of the treated wastewater is via irrigation on the subject and adjacent properties. The system was constructed, and final inspections were completed in June of 2014 under permit EI I-00441. According to the design calculations prepared by this office and dated 9/20/2011 the system was designed to handle a full production winery facility with an annual production capacity of 150,000 gallons. Based on

detailed water use records kept by Chappellet winery the system was designed to handle a peak day design flow of 10,000 gallons per day.

### Proposed Process Wastewater Design Flows

We have used the generally accepted standard that six gallons of winery process wastewater are generated for each gallon of wine that is produced each year and that 1.5 gallons of wastewater are generated during the crush period for each gallon of wine that is produced. Based on the proposed 250,000 gallon production capacity and the expectation that both white and red wine will be produced at the winery, we have assumed a conservative 60 day crush period. Using these assumptions, the annual, average daily and peak winery process wastewater flows are calculated as follows:

$$\text{Annual Winery Process Wastewater Flow} = \frac{250,000 \text{ gallons wine}}{\text{year}} \times \frac{6 \text{ gallons wastewater}}{1 \text{ gallon wine}}$$

$$\text{Annual Winery Process Wastewater Flow} = 1,500,000 \text{ gallons per year}$$

$$\text{Average Daily Process Wastewater Flow} = \frac{1,500,000 \text{ gallons wastewater}}{\text{year}} \times \frac{1 \text{ year}}{365 \text{ days}}$$

$$\text{Average Daily Winery Process Wastewater Flow} = 4,110 \text{ gallons per day}$$

$$\text{Peak Winery Process Wastewater Flow} = \frac{250,000 \text{ gallons wine}}{\text{year}} \times \frac{1.5 \text{ gallons wastewater}}{1 \text{ gallon wine}} \times \frac{1 \text{ year}}{60 \text{ crush days}}$$

$$\text{Peak Winery Process Wastewater Flow} = 6,250 \text{ gallons per day (gpd)}$$

As shown above the predicted design flow for the 250,000 gallon production level using Napa County standard methodology would be 6,250 gpd. This is likely representative of wastewater flows when averaged over the full harvest season. However, based on historical water use data collected by the winery it is expected that the actual peak day flow will be approximately 10,000 gallons per day. According to Chappellet Winery this peak day flow is driven by the maximum amount of fruit that can be processed on any given day and the proposed increase in production will not change the peak day production but rather will extend the number of days that the winery process fruit. Therefore, the peak day process wastewater flow will be the same as previously determined at 10,000 gpd.

### **Proposed Design Flows vs Existing Capacity**

#### Sanitary Wastewater

The predicted Peak Winery Sanitary Wastewater Flow of 1,050 gpd is less than the design flow of 1,080 gpd.

#### Process Wastewater

The estimated peak flow of 10,000 gpd is equal to the design flow of 10,000 gpd.

## Summary

The calculations and discussions presented above illustrate that the wastewater flows associated with the proposed Use Permit Modification can be accommodated within the capacities of the existing sanitary and process wastewater systems. The key conditions for making these findings are as follows:

- 1) For the sanitary wastewater system, daily tours and tastings visitors will be suspended on days when events are held with more than 20 guest and with meals prepared onsite and portable toilets will be used for all events with more than 40 guests.
- 2) For the process wastewater system, the peak day wastewater generation will not increase beyond current levels but rather the number of days that peak flow occurs will increase to accommodate the additional production capacity.

We trust that this provides the information you need to process the subject Use Permit Modification. Please feel free to contact us at (707) 320-4968 if you have any questions.

Sincerely,

Applied Civil Engineering Incorporated

By:



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Michael R. Muelrath RCE 67435  
Principal

Copy:

Cyril Chappellet, Chappellet Winery (via email)  
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Attachments:

Chappellet Winery Use Permit Modification Conceptual Site Plans