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Water Availability Analysis

WHL Winery (P15-00215-UP)
Planning Commission Hearing, February 15, 2017

TIER 1 WATER AVAILABILITY ANALYSIS

FOR THE

1561 SOUTH WHITEHALL LANE WINERY

LOCATED AT:
1561 South Whitehall Lane
St. Helena, CA 94574
NAPA COUNTY APN 027-460-013

PREPARED FOR:
SWLD LLC
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PREPARED BY:

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Michael R. Muelrath — 5/6/2016

Michael R. Muelrath R.C.E. 67435 — Date

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INTRODUCTION

SWLD LLC is applying for a Use Permit to construct and operate a new winery at their property located at 1561 South Whitehall Lane in Napa County, California. The subject property, known as Napa County Assessor's Parcel Number 027-460-013, is accessed via Whitehall Lane and South Whitehall Lane located on the west side of State Route 29, approximately 0.4 miles north of the intersection of State Route 29 and Galleron Road.

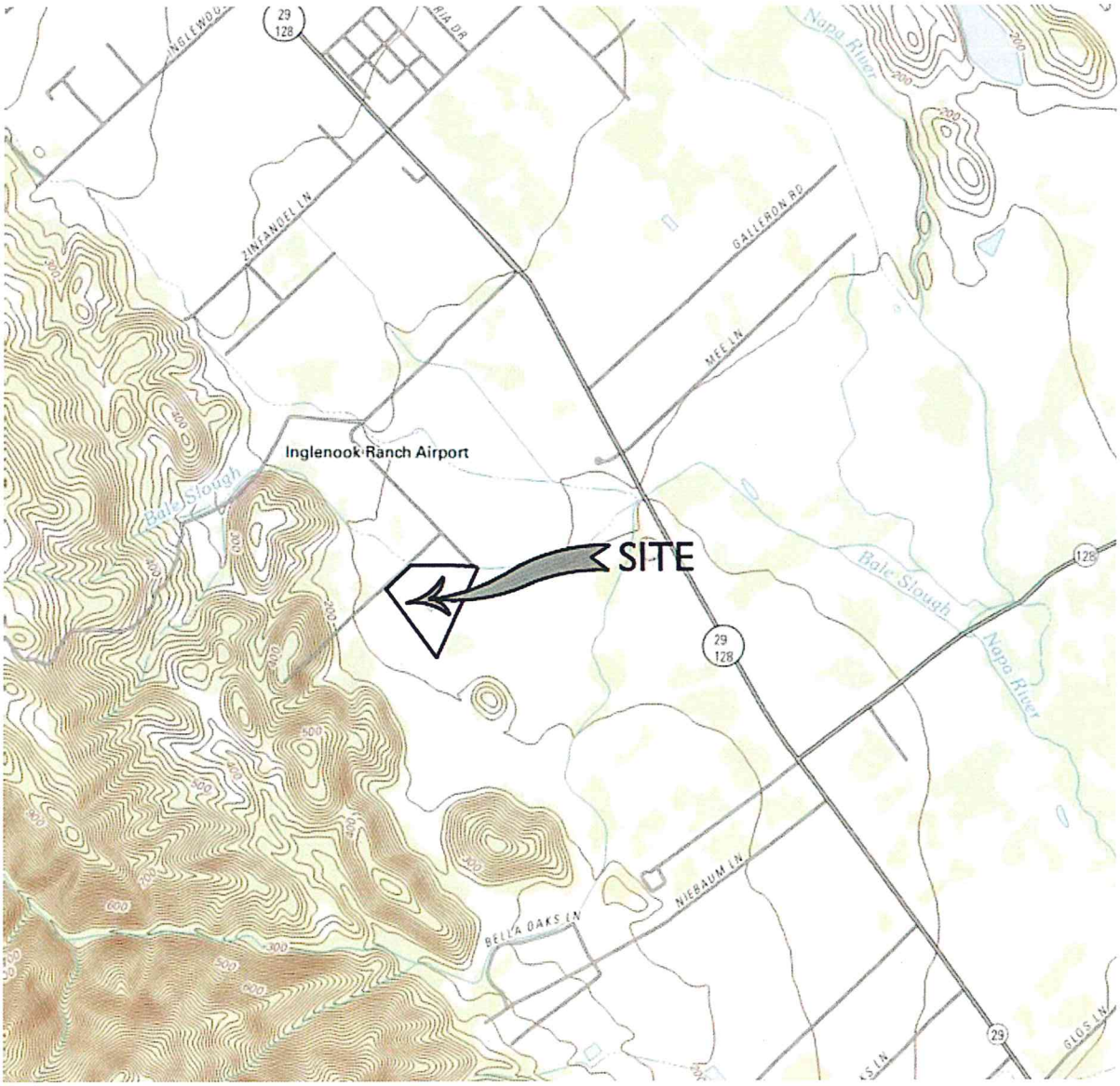

Figure 1: Location Map

The Use Permit application under consideration proposes the construction and operation of a new production only winery with the following characteristics:

- Wine Production:
  - 10,000 gallons of wine per year
  - Crushing, fermenting, aging and bottling

- Employees:
  - 2 full time employees
  - 2 part time employees

There are no visitors or marketing plans proposed as part of this application.

Other improvements on the property include residential development consisting of a new Caretaker's House, Main Residence, Guest Cottage, pool, water tanks, accessory structures, approximately 11.75 acres of vineyard and the related access and utility infrastructure. Please refer to the 1561 South Whitehall Lane Winery Use Permit Conceptual Site Plans for approximate locations of all site features.

Groundwater is currently used for residential needs and landscape and vineyard irrigation and will be used for residential, vineyard and landscape irrigation and the proposed winery facility in the future.

SWLD LLC has requested that Applied Civil Engineering Incorporated (ACE) prepare a Tier 1 Water Availability Analysis in accordance with the Water Availability Analysis (WAA) – Guidance Document adopted by the Napa County Board of Supervisors on May 12, 2015. The remainder of this report describes the estimated groundwater demand on the subject property for existing and proposed conditions and compares that to the prescribed water use screening criteria.

ESTIMATED GROUNDWATER DEMAND

Groundwater is currently used for residential uses on the property and to irrigate landscaping and approximately 11.75 acres of vineyard.

The estimated groundwater demand is summarized in the table below and details of the calculations supporting these estimates are included in the Water Use Estimate Supporting Calculations in Appendix 1.

Table 1: Estimated Groundwater Demand

	Existing (ac-ft/yr)	Proposed (ac-ft/yr)
Residential	1.45	1.45
Winery	0	0.28
Vineyard Irrigation	5.88	5.88
Landscape Irrigation	1.63	1.71
Total	9.0	9.3

WATER USE SCREENING CRITERIA

According to the WAA - Guidance Document properties located in the Napa Valley Floor area are subject to a Water Use Screening Criteria of 1.0 acre-feet of water per acre of land per year. A project complies with the requirements of the Tier 1 WAA if the total water use on the property is less than 1.0 acre-feet per acre per year. If the Tier 1 Water Use Screening Criteria is met and the property is located in the Napa Valley Floor area Tier 2 and Tier 3 Analyses are not required unless substantial evidence exists in the record that indicates a potential significant impact from the project.

The subject property is located in the Napa Valley Floor area and the geology is mapped as Qha & Qpa (alluvium) on the USGS geology maps as shown in Figure 2.

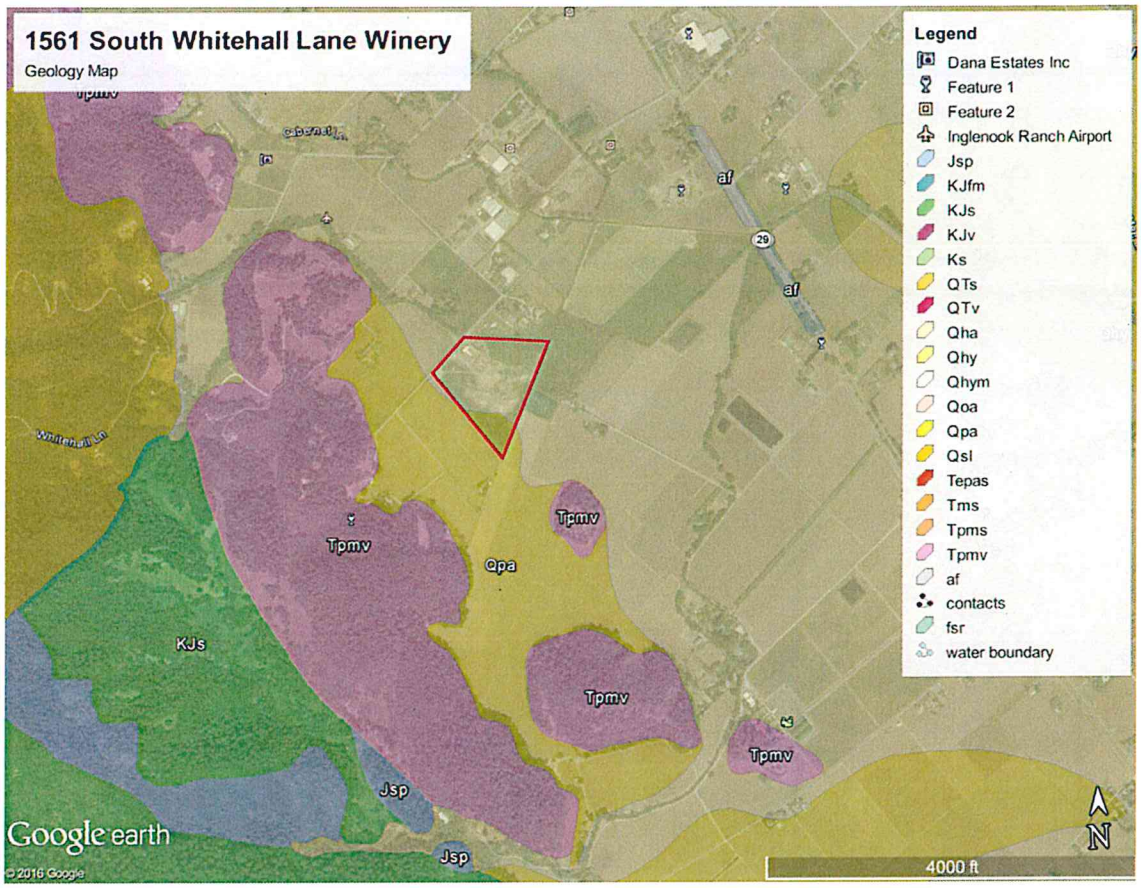

Figure 2: Geology Map Created with Google Earth Pro
(Source USGS Scientific Investigations Map 2918)

Since all groundwater extraction is from the Napa Valley Floor area we have evaluated the screening criteria associated with the Napa Valley Floor.

The parcel size is approximately 20 acres and therefore the water use screening criteria is calculated as follows:

Water Use Screening Criteria = 20 acres x 1.0 acre-foot per acre per year

Water Use Screening Criteria = 20 acre-feet per year

ANALYSIS

The total Estimated Water Use for existing conditions (9.0 ac-ft/yr) and proposed conditions (9.3 ac-ft/yr) are both significantly less than the Water Use Screening Criteria (20 ac-ft/yr).

CONCLUSION

Since the Water Use Screening Criteria is met the project is found to comply with the Napa County Water Availability Analysis requirements. Tier 2 and Tier 3 Analyses are not required according to the WAA – Guidance Document.

APPENDIX 1: Water Use Estimate Supporting Calculations

APPLIED CIVIL ENGINEERING INCORPORATED

1561 South Whitehall Lane Winery

Groundwater Use Estimate

	Estimated Water Use (Acre-Feet / Year)		
	Existing		Proposed
Residential Water Use			
Primary Residence	0.750		0.750
Pool - Included In Landscape (See Below)	0.000		0.000
Second Dwelling Unit	0.500		0.500
Guest Cottage	0.200		0.200
Total Residential Domestic Water Use	1.450		1.450
Winery Domestic & Process Water Use			
Winery - Daily Visitors[1][2]	0.000		0.000
Winery - Events with Meals Prepared Onsite[1][3]	0.000		0.000
Winery - Events with Meals Prepared Offsite[1][4]	0.000		0.000
Winery - Employees[1][5]	0.000		0.067
Winery - Event Staff[1][5]	0.000		0.000
Winery - Process[6]	0.000		0.215
Total Winery Water Use	0.000		0.282
Irrigation Water Use			
Landscape[7]	1.630		1.710
Vineyard - Irrigation[8]	5.875		5.875
Vineyard - Frost Protection	0		0
Vineayrd - Heat Protection	0		0
Total Irrigation Water Use	7.505		7.585
Total Combined Water Use	9.0		9.3

Estimates per Napa County Water Availability Analysis - Guidance Document, May 12, 2015 unless noted

[1] See attached Winery Production, Guest, Employee and Event Staff Statistics

[2] 3 gallons of water per guest per Napa County WAA Guidance Document

[3] 15 gallons of water per guest per Napa County WAA - Guidance Document

[4] 5 gallons of water per guest used because all food preparation, dishwashing, etc. to occur offsite

[5] 15 gallons per shift per Napa County WAA - Guidance Document

[6] 2.15 ac-ft per 100,000 gallons wine per Napa County WAA - Guidance Document

[7] See attached Irrigation Water Use Methodology & Calculations

[8] 0.5 ac-ft/ac/yr and 11.75 acres of vineyard

APPLIED CIVIL ENGINEERING INCORPORATED

1561 South Whitehall Lane Winery

Winery Production, Visitor, Employee & Event Staff Statistics

Winery Production[1]		10,000	gallons per year
Tours and Tastings by Appointment[1]			
Monday through Thursday	0 guests max per day		
Friday through Sunday	0 guests max per day		
Total Guest Second Dwelling Unit		0	
Events - Meals Prepared Offsite[1]			
0 per year	30 guests max	0	
0 per year	75 guests max	0	
0 per year	100 guests max	0	
Total Guests Per Year		0	
Events - Meals Prepared Onsite[1]			
0 per year	0 guests max	0	
0 per year	0 guests max	0	
0 per year	0 guests max	0	
Total Guests Per Year		0	
Winery Employees[2]			
4 employees	1 shift per day		
Total Employee Shifts Per Year		1,460	
Event Staff			
0 events per year	0 event staff	0	
Total Event Staff Per Year		0	

[1] Winery production, tours and tasting and event guest statistics per Winery Use Permit Application

[2] Employee counts per Winery Use Permit Application

Irrigation Water Use Estimate Methodology & Calculations

Methodology

Irrigation water usage was estimated by using the Water Use Classification of Landscape Species (WUCOLS) methodology developed by the University of California Cooperative Extension. WUCOLS predicts the required depth of irrigation for landscaping as follows:

Irrigation Depth = Plant Factor x ETo

Where:

Plant Factor is the ratio of a certain plant's water use relative to ETo; and
ETo is the reference evapotranspiration for the geographic region being evaluated

Plant Factors vary by plant species and WUCOLS identifies the following general Plant Factor ranges:

High (H)	70% to 100% of ETo
Moderate (M)	40% to 60% of ETo
Low (L)	10% to 30% of ETo
Very Low (VL)	0% to 10% of ETo

The reference evapotranspiration is the combined depth of water that is evaporated and transpired from a closely planted grass crop that fully shades the soil surface. ETo is influenced by climatic conditions including solar radiation, temperature, wind, vapor pressure, humidity and elevation relative to sea level and thus varies widely from location to location. The California Irrigation Management Information System (CIMIS) has over 120 monitoring stations throughout the State that compile ETo data to facilitate irrigation scheduling. According to the published CIMIS ETo Zone Map the project site is located in Zone 8 which has a total ETo of approximately 49 inches per year. The CIMIS ETo Zone Map indicates that ETo for the irrigation season consisting of the months of April through October is approximately 40 inches. We assumed that rainfall sufficiently meets the landscape water needs during the months of November through March in an average rainfall year.

Calculations

Existing and proposed landscape areas were broken down into High, Moderate, Low and Very Low water use classifications based on plans prepared by Steve Arns, Landscape Architect. Landscape areas were rounded up to an even 1,000 sf to simplify the analysis.

For existing conditions we utilized the following areas based on the planned build out of the existing residential structures and surrounding landscape:

Area 1 – Low Water Use Plants	38,000 sf	L
Area 2 – Moderate Water Use Plants	8,000 sf	M
Area 3 – Pool and High Water Use Plants	6,000 sf	H

Using this data we calculated the existing annual irrigation demand to be as follows:

Area 1	284,240 gallons
Area 2	99,733 gallons
Area 3	149,600 gallons
Total	533,573 gallons

The total existing landscape irrigation water demand is estimated to be 533,573 gallons or 1.63 ac-ft per year.

For proposed conditions we have included approximately 3,000 additional square feet of low water use landscaping that will be installed around the proposed winery resulting in the following total land use areas:

Area 1 – Low Water Use Plants	41,000 sf	L
Area 2 – Moderate Water Use Plants	8,000 sf	M
Area 3 – Pool and High Water Use Plants	6,000 sf	H

Using this data we calculated the proposed annual irrigation demand to be as follows:

Area 1	306,680 gallons
Area 2	99,733 gallons
Area 3	149,600 gallons
Total	556,013 gallons

The total proposed landscape irrigation water demand is estimated to be 556,013 gallons or 1.71 ac-ft per year.