March 2016
#08-31

BARTELT ENGINEERING

WATER AVAILABILITY ANALYSIS FOR THE MOUNTAIN PEAK WINERY 3265 SODA CANYON ROAD, NAPA, CA 94558 APN 032-500-033

As required by Napa County Planning, Building & Environmental Services, this study outlines a Water Availability Analysis for a potential winery and tasting room on the above referenced parcel located at 3265 Soda Canyon Road in Napa County, California.

SITE PLANS

A USGS site map showing the site and approximate property line locations is included in the submittal binder. Information regarding the location of the existing wells and structures are shown on the enclosed Use Permit Drawings prepared by Bartelt Engineering. Information regarding the location of the existing wells on adjacent properties is shown on the attached Well Location Exhibit.

PROJECT DESCRIPTION

The subject parcel is a 41.76± acre parcel currently containing a residence with some minor landscaped areas, vineyards and miscellaneous structures associated with vineyard operations. The subject parcel currently has an approved Track II Vineyard Erosion Control Plan[1] for 28.0± acres of vineyard that will primarily remain in production.

The purpose of this analysis is to evaluate the feasibility of constructing and operating a 100,000 gallons per year winery on a portion of the subject parcel. Along with the proposed wine production at the site, the project proposes a moderate staffing and marketing plan. The project proposes nineteen (19) full-time employees, four (4) part-time and four (4) seasonal (harvest) employees. The project also proposes to offer private tour and tasting appointments for a maximum number of eighty (80) guests per day and 320 guests per week. Furthermore, the Applicant plans to offer three (3) food and wine pairing events per month for parties up to 12 persons and three (3) food and wine pairing events per month for parties up to 24 persons. Additionally, the Applicant intends to host four (4) wine club/release events per year for groups of up to 75 persons and two (2) 125 person auction related events at the winery.

[1] Refer to Bartelt Engineering's Track II Vineyard Erosion Control Plan prepared for Mountain Peak Vineyard, LLC dated June 2013. Napa County P13-00144-ECPA.

CURRENT AND PROJECTED WATER CONSUMPTION

The total water consumption for the current (existing) and proposed uses on the parcel is calculated below using the Napa County Engineering & Conservation Division Water Availability Analysis, Phase I Study, Attachment A: Estimated Water Use Guidelines.

Current Water Use

Residence (Primary)	0.75 acre-feet/year
Vineyard (28.0± acres of irrigation)	14.00 acre-feet/year
Total	14.75 acre-feet/year

Proposed Water Use

Winery (Process Water; 100,000 gallons per year)	2.15 acre-feet/year
Winery (Domestic and Landscaping)	0.50 acre-feet/year
Vineyard (25.0± acres of irrigation)[2]	12.52 acre-feet/year
Vineyard Irrigation Credit for Treated Wastewater Reuse	-2.15acre-feet/year
Total	17.02 acre-feet/year

At the request of Napa County Planning, Building and Environmental Services Department, a more detailed analysis of water use (demand) was performed based on the proposed production, marketing, and landscape and vineyard irrigation values. A similar water use (demand) analysis was performed on the existing residential and approved vineyard irrigation use so that the comparison would be more complete. The current domestic water use (demand) was determined using standard industry values while the approved irrigation per vine per season use (demand) value was provided by the vineyard management company.

[2] This Use Permit's proposed improvements require the removal of 2.96± acres of vineyard approved under the Track II Vineyard ECP, Napa County P13-00144-ECPA. See the table Vineyard Development Statistics.

Detail Approved Water Demand

Residence (Primary, 5 Bedrooms)[3];	0.67 acre-feet/year
Vineyard (28.0± acres of irrigation)[4]	20.12 acre-feet/year
Total	20.79 acre-feet/year

Detailed Proposed Water Demand

Winery (Process Water; 100,000 gallons per year)	1.84 acre-feet/year
Marketing (Private Tours and Tastings, Food and Wine Pairings, Wine Club / Release Events and Action Related Events)	1.01 acre-feet/year
Vineyard (24.2± acres of irrigation)[2]	14.86 acre-feet/year
Tasting Room Landscape Irrigation	0.59 acre-feet/year
Credit for Treated Process Wastewater as Vineyard Irrigation	-1.84 acre-feet/year
Total	16.46 acre-feet/year

The more detailed water analysis shows that the total proposed water use for the entire parcel will be approximately 16.46± acre-feet of water per year (see the Water Availability Analysis - Detailed Tables I and II prepared by Bartelt Engineering for more information on detailed proposed water use).

It is the intent of this project to recycle and reuse treated wastewater for vineyard irrigation. The proposed water use calculations above shows that with the implementation of a wastewater treatment system a reduction of irrigation water supplied by the existing well can be achieved.

Allowable Water Allotment[5]

The following calculation assumes that the entire 41.76± acre parcel lies in an area designated as "Mountain Areas".

0.5 acre-feet/acre of water is allotted for parcels located on the Mountain Areas.

Allowable water allotment = 41.76 acres x 0.5 acre-feet/year = 20.88 acre-feet/year

The water use analyses above show that the project's proposed water use (demand) is **greater than** the current allowable water use calculation, **less than** the more detailed current water use (demand) analysis and **less than** the Phase I allowable water allotment for the subject parcel.

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[3] Residential Water Demand is calculated at 120 gallons per day per bedroom.
[4] 28.0± acres of vineyard, resulting in 50,826± vines, based on the approved Track II Vineyard ECP, Napa County P13-00144-ECPA. Average 129± gallons per vine per day per season is current use. Vine spacing, row spacing and water use vary by block and/or variety.
[5] Calculation based on the Napa County Policy for water usage.

EXISTING AND PROPOSED WATER SOURCE AND STORAGE CAPACITY

According to multiple reports, the existing onsite well is capable of producing a flow rate in excess of 50 gallons per minute[6] (gpm). The existing well is currently used to satisfy domestic and vineyard irrigation demands. Under this Use Permit, the existing well will be transitioned to satisfy future fire protection and vineyard irrigation demands. As stated previously, this project proposes reusing treated wastewater as an additional source for vineyard irrigation which reduces the required water supply from the existing well; therefore, the agricultural well's greatest estimated average monthly pump rate to satisfy vineyard irrigation water demand can be reduced to 99999999999 gallons per minute[7].

It is our understanding that this project may be required to install a Transient Non-Community Water System as a result of the proposed Use Permit Application. A transient non-community water system is identified as a system that has less than five (5) connections, serves less than 25 yearlong residents[8], serves 25 people per day at least 60 days per year and serves not more than 25 of the same people at least six (6) months out of the year. The four (4) seasonal employees are not considered yearlong residents. Therefore, Bartelt Engineering has included a Technical, Managerial and Financial (TMF) Capacity Worksheet document in the project's Use Permit Application package.

To comply with State regulations for a Water System, a new well will be drilled to meet the annular seal depth and satisfy domestic and production demand requirements. Currently, ground water is pumped from the existing well into onsite storage tanks on the parcel and then supplied to the vineyard and residence. The proposed project will use the existing well to pump ground water to proposed onsite vineyard irrigation tank(s) and fire protection storage tank(s)/cistern and the new constructed well to pump ground water to proposed domestic storage tank(s)/cistern. New pumps will then distribute the two (2) sources' stored water through separate transition lines as appropriate to the Winery, Tasting Room, Administrative Offices and vineyards as needed. Treated wastewater will complement the existing well as a source for vineyard irrigation water.

The fire protection storage tank(s)/cistern will be filled initially to meet Calfire's Conditions of Approval (COA) and to meet the Napa County Building Division's requirements for the purposes of obtaining a Building Occupancy Permit. Once filled, the fire protection storage tank(s)/cistern will remain at a level consistent with the project's COA. Filling of the fire protection storage tank(s)/cistern would occur only when evaporative losses and/or testing of the system resulted in a volume less than that required. It is proposed that the fire protection tank(s)/cistern will be watertight and therefore evaporative losses should be less than half a percent annually. Testing of the fire system would be conducted at the request of Calfire personal.

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[6] Doshier-Gregson Pump & Well Service *Surface Inspection Report,* dated 9/17/2012, and *Water Well Drillers Report,* dated July 31, 1991. McLean & Williams Well Drilling & Pump Service *Inspection Report,* dated April 18-24, 2014.

[7] Assumes a pump operation duration of 12 hours.

[8] Yearlong resident is considered an individual served by the water system for 183 or more days annually.

SUMMARY AND CONCLUSIONS

The estimated water use (demand) for the proposed Mountain Peak Winery Use Permit Application[9] is projected to be greater than the current allowable water use calculation, less than the more detailed current water use (demand) analysis and less than the allowable water allotment for the subject parcel. A new well will be drilled and pumped water will be treated by a new transient non-community water system to serve all domestic water demands of the tasting room and winery.

[9] Refer to Napa County PB&ES permit number P13-00320.

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Mountain Peak Winery
Water Availability Analysis - Detailed
Table I
CURRENT AND PROPOSED WATER DEMAND SUMMARY

Use	Annual Demand (gallons)	Annual Demand (acre-feet)
Current		
Residential (5 bedrooms)	219,600	0.67
Vineyard Irrigation (28.0± acres; 50,826 vines)	6,556,554	20.12
Total	6,776,154	**20.79**
Proposed		
Production (100,000 gallons)	600,000	1.84
Marketing	329,576	1.01
Vineyard Irrigation (25.0± acres; 45,440± vines)	4,843,058	14.86
Tasting Room Landscape Irrigation	193,386	0.59
Credit for Treated Process Wastewater as Vineyard Irrigation	-600,000	-1.84
Total	5,366,020	**16.46**

Notes:

> Current residential water demand based on 120 gallons per day per bedroom.

> Current vineyard irrigation demand is 129 gallons per vine per season.

> Current and Proposed number of vines based on approved Track II ECP Plan dated June 7, 2013 and proposed vineyard block layout, respectively.

> Proposed vineyard irrigation demand is 104+/- gallons per vine per season.

> Proposed Tasting Room landscape demand provided by WELO analysis.

> Proposed production, marketing and tasting room landscape demand supplied by proposed domestic well. Proposed vineyard irrigation demand supplied by treated process wastewater and supplemented by existing agricultural well.

> This analysis assumes proposed treated sanitary wastewater will be dispersed by alternative method (not combined with process wastewater).

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Mountain Peak Winery
Water Availability Analysis - Detailed
Table II
PROPOSED PRODUCTION AND MARKING EVENTS WATER DEMAND ANALYSIS

			Harvest Aug.- Nov.	Non-Harvest Dec- July		365 days/yr 30.5 days/mo
Residential Domestic Water (RW):			4	8	No. of Months	
Number of Bedrooms			**0**	**0**	bedrooms	
Design Demand per Bedroom			120	120	gallons per day per bedroom	
Residential Domestic Water Demand		*Daily*	0	0	gallons per day	
		Monthly	0	0	gallons per month	
		Annually	0	0	gallons per year	
Commercial Water Demand:						
Winery Process Water Demand:						
Annual Wine Production			**100,000**	**100,000**	gallons	
Days of Crush & Days per Year			60	305	days	
Gallons of Domestic Water per Gallon of Wine			**1.5**	**4.5**	gallons	
Winery Process Water Demand (PW)		*Daily*	2,500	1,475	gallons per day	
		Monthly	76,250	45,000	gallons per month	
Winery Domestic Water:						
Number of Employees	Full Time		**19**	**19**	employee	
Number of Employees	Part Time		**4**	**4**		
Number of Employees	Seasonal		**4**	**0**	employees	
Domestic Water Demand Rate per Employee			15.0	15.0	gallons per day per employee	
Winery Domestic Water Demand		*Daily*	405	345	gallons per day	
		Monthly	12,353	10,523	gallons per month	
						Peak Event
Number of Guest for	Private Tours & Tastings w/ Food		**80**	**80**	guests per day	3 gallons per guest;
Domestic Water Demand Rate per Guest and Commercial Kitchen			6	6	gallons per guest	Food preparation in
Private Tours & Tastings w/ Food Domestic Water Demand		*Daily*	480	480	gallons per day	commercial kitchen
		Monthly	14,640	14,640	gallons per month	
Number of Guests for	Food and Wine Pairings - Lunch		**12**	**12**	guests per pairing	8 gallons per guest;
Domesict Water Demand Rate per Guest and Commercial Kitchen			11	11	gallons per guest	Food preparation in
Food and Wine Pairings - Lunch Domestic Water Demand		*Day of Event*	132	132	gallons per pairing	commercial kitchen
Number of Food and Wine Pairing Events per Month	3	*Monthly*	396	396	gallons per month	
Number of Guests for	Food and Wine Pairings - Dinner		**24**	**24**	guests per pairing	8 gallons per guest;
Domestic Water Demand Rate per Guest and Commercial Kitchen			11	11	gallons per guest	Food preparation in
Food and Wine Pairings - Dinner Domestic Water Demand		*Day of Event*	264	264	gallons per pairing	commercial kitchen
Number of Food and Wine Pairing Events per Month	3	*Monthly*	792	792	gallons per month	
Number of Guests for	Wine Club / Release Events		**75**	**75**	guests per event	8 gallons per guest;
Domestic Water Demand Rate per Guest and Commercial Kitchen			11	11	gallons per guest	Food preparation in
Wine Club / Release Events Domestic Water Demand		*Day of Event*	825	825	gallons per event	commercial kitchen
Number of Wine Club / Release Events per Year	4	*Annually*	1,650	1,650	gallons per year, split between seasons	
Number of Guests for	Auction Related Events		**0**	**125**	guests per event	8 gallons per guest;
Domestic Water Demand Rate per Guest and Commercial Kitchen			11	11	gallons per guest	Food preparation in
Auction Related Events Domestic Water Demand		*Day of Event*	0	1,375	gallons per event	commercial kitchen
Number of Auction Related Events per Year	2	*Annually*	0	2,750	gallons per year	

Water Demand:		Harvest Aug.- Nov.	Non-Harvest Dec- July	
Cumulative PW & DW Demands w/ Private T&T and F&W (Lunch & Dinner) Events	*Monthly*	104,431	71,351	gallons per mo for PW, T&T and F&W events
Cumulative PW & DW Demands for All Events	*Monthly*	105,256	73,551	gallons per month for all events
Cumulative Process Water Demand	*Annually*	150,000	450,000	gallons per year
Cumulative PW & DW Demands for All Events	*Annually*	264,372	665,204	gallons per yr w/ all events
Total PW & RW Demands for Entire Year		929,576		gallons per year
		2.85		acre-feet per year
Average Daily Water Demand for the above Monthly, Annually and Yearly Water Demands				
Monthly Cumulative Process and Domestic Water Demand w/ Food and Wine Pairings - Lunch & Dinner		3,424	2,339	gallons per day
Monthly Cumulative Process and Domestic Water Demand for All Events		3,451	2,411	gallons per day
Annually Cumulative Process and Domestic Water Demand for All Events		2,167	2,726	gallons per day
Average Daily Process and Domestic Water Demand for Entire Year		2,547		gallons per day
Maximum Estimated Daily Water Demand (excludes Wine Club/Release Events)			3,781	gallons per day
	Water Demand:		3,800	gallons per day

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Mountain Peak Winery
Water Availability Analysis - Detailed
Table III
PROPOSED DOMESTIC WELL AND AGRICULTRUAL WELL PUMP DEMANDS

Month	Wastewater Flow (gallons)	Landscape Irrigation (gallons)	Vineyard Irrigation (gallons)	Domestic Well Average (GPD)	Domestic Well Average (GPM)	Agricultural Well Maximum (gallons)	Agricultural Well Maximum (ac-feet)	Agricultural Well Average (GPD)	Agricultural Well Average (GPM)
September	75,000	22,299	708,864	3,243	2.25	633,864	1.95	21,129	14.67
October	77,400	0	708,864	2,497	1.73	631,464	1.94	20,370	14.15
November	60,000	0	21,722	2,000	1.39	(38,278)	(0.12)	0	0.00
December	42,000	0	23,894	1,355	0.94	(18,106)	(0.06)	0	0.00
January	24,000	0	23,894	774	0.54	(106)	(0.00)	0	0.00
February	18,000	0	23,894	643	0.45	5,894	0.02	211	0.15
March	21,000	0	23,894	677	0.47	2,894	0.01	93	0.06
April	42,000	0	236,288	1,400	0.97	194,288	0.60	6,476	4.50
May	48,000	32,637	472,576	2,601	1.81	424,576	1.30	13,696	9.51
June	51,000	49,158	708,864	3,339	2.32	657,864	2.02	21,929	15.23
July	69,000	47,153	945,152	3,747	2.60	876,152	2.69	28,263	19.63
August	72,600	42,139	945,152	3,701	2.57	872,552	2.68	28,147	19.55
Total	**600,000**	**193,386**	**4,843,058**			**4,299,548**	**13.19**		
Average	**50,000**	**38,677**	**403,588**	**2,165**	**1.50**			**15,590**	**10.83**

Duration:	24 hours	12 hours	
Greatest Average Domestic Well Demand (gallon per minute):	2.60	5.2	(occurs in July)
Greatest Average Agricultural Well Demand (gallon per minute):	19.63	39.26	(occurs in July)
Greatest Average Combined Well Demand (gallon per minute):	22.23	44.46	(occurs in July)

Notes:

> Negative values for the Maximum Agricultural Well Demand mean there is a surplus of irrigation water available in the storage tank(s) supplied by the treated wastewater flow and that no additional pumping by the Agricultural well is required to meet demand.

> Average gallon per day (GPD) is the demand over the number of days in each month.

> Average gallon per minute (GPM) reported in the table is the demand over a 24 hour period. For 12 hour period, double the value.

> Vineyard irrigation monthly proportioning derived from plant evapotranspiration (Eto) methodology.

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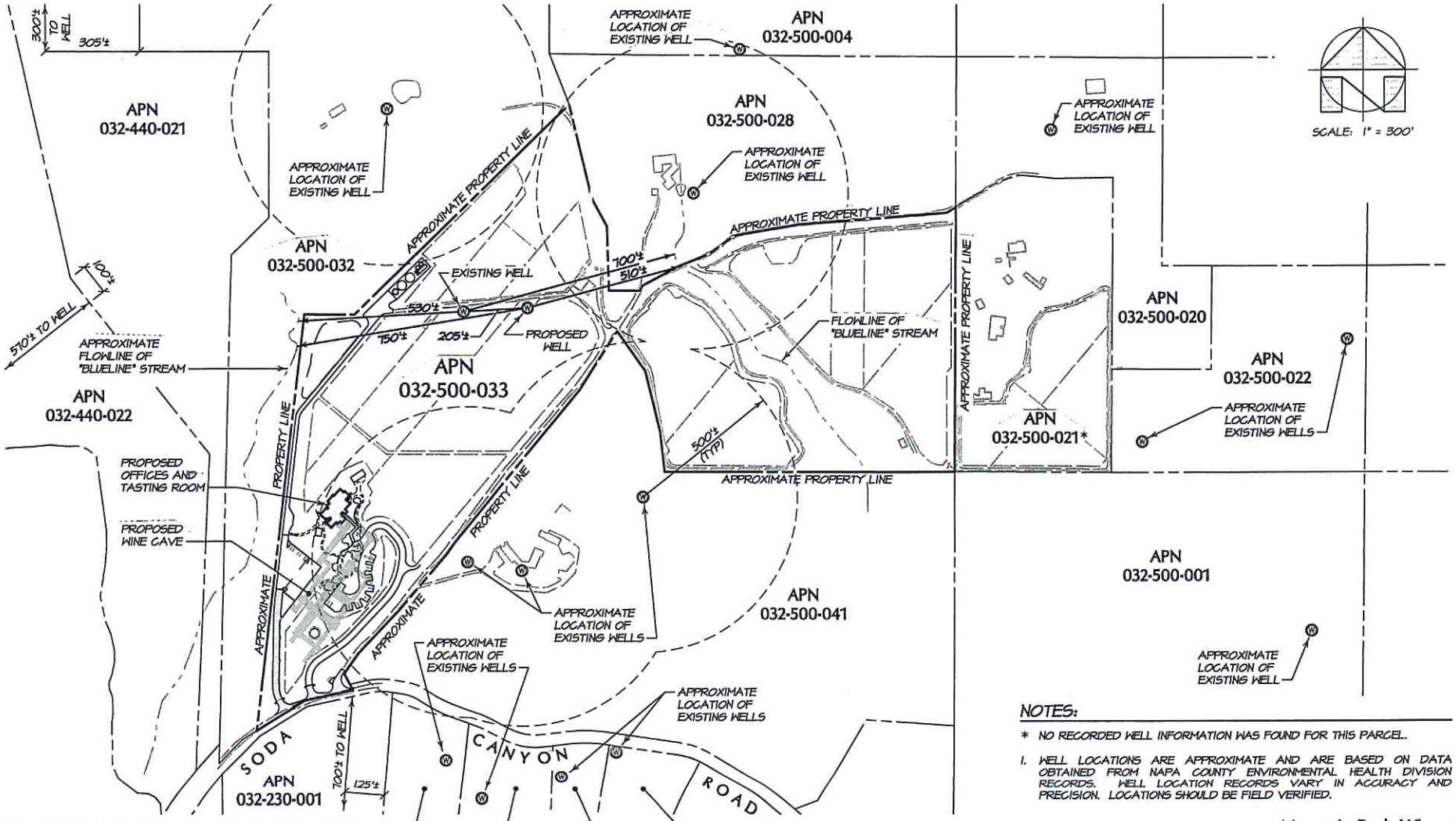
Mountain Peak Winery VINEYARD DEVELOPMENT STATISTICS			
Vineyard Block	Disturbed Area (acres)	Planted Area (acres)	Approximate Vine Count[4]
1[2]	0.0	0.0	0
2[2]	0.0	0.0	0
3[2]	0.0	0.0	0
4	2.2	1.9	3,502
5	0.8	0.7	1,216
6	0.4	0.3	598
7	1.3	1.1	1,996
8	2.3	2.2	3,993
9	4.1	3.8	6,933
10	1.5	1.3	2,268
11	1.0	0.9	1,597
12	1.0	0.9	1,651
13	2.4	2.0	3,684
14	2.4	2.1	3,775
15	2.2	1.8	3,248
16	1.3	1.2	2,105
17	2.3	2.2	3,938
18	2.2	1.9	3,394
Sub-Total	27.4	24.2	43,898
1,2,3[3]	1.3	0.9	1,542
Total	28.7	25.0	45,440

*Notes

1. Approximate Vine Count automatically rounds down in every row. No partial vines.
2. Approved Track II ECP Vineyard Block acrage reduced by proposed Production and Tasting Room Improvements (approximately 3.81 +/- acres).
3. Proposed Production and Tasting Room improvements vineyard planting. Offsets Track II ECP reduction (note 2).
4. Vine count based on vineyard block vine spacing of 4'x6'.



NOTES:

* NO RECORDED WELL INFORMATION WAS FOUND FOR THIS PARCEL.

1. WELL LOCATIONS ARE APPROXIMATE AND ARE BASED ON DATA OBTAINED FROM NAPA COUNTY ENVIRONMENTAL HEALTH DIVISION RECORDS. WELL LOCATION RECORDS VARY IN ACCURACY AND PRECISION. LOCATIONS SHOULD BE FIELD VERIFIED.

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WELL LOCATION EXHIBIT

SCALE: 1" = 300'

Mountain Peak Winery
3265 Soda Canyon Road
Napa County, CA 94558
APN 032-500-033
Job No 08-31
March 2016
Sheet 1 of 1