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Water Availability Analysis

USE PERMIT MODIFICATION
APPLICATION PACKAGE
DAKOTA SHY WINERY
771 SAGE CANYON ROAD
NAPA COUNTY, CA
APN 030-120-024

Prepared For:

DS Property, LLC
c/o Mark V. Heitz
260 SW Yorkshire Road
Topeka, KS 66606

Prepared By:

Bartelt Engineering
1303 Jefferson Street, 200 B
Napa, CA 94559
(707) 258-1301

REGISTERED PROFESSIONAL ENGINEER
PAUL NATHAN BARTELT
No. 45102
CIVIL
STATE OF CALIFORNIA

11-4-15

Paul Bartelt, P.E.
Principal Engineer

November 2015 - 3rd Revision
August 2015- 2nd Revision
May 2015 - 1st Revision
September 2014
Job #14-02

BARTELT ENGINEERING

November 2015 – 3rd Revision
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BARTELT ENGINEERING

WATER AVAILABILITY ANALYSIS FOR THE DAKOTA SHY WINERY 771 SAGE CANYON ROAD, NAPA COUNTY, CA APN 030-120-024

As required by Napa County Planning, Building & Environmental Services this study outlines a Water Availability Analysis for the Dakota Shy Winery Use Permit Modification Application.

SITE PLAN

A USGS site map showing the site and approximate property line locations is included in the site plans section of this application. Information regarding the location of the existing wells and structures is 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 Neighboring Well Location Exhibit included with this study.

PROJECT DESCRIPTION

Currently, the 6.0± acre parcel contains olive and fruit orchards, a single family residence, guest house and pool house with some minor landscaped areas, a pool, winery, tennis court, two (2) wells, 36 inch City of Napa water main, septic fields and a Use Permit that allows for a production of 1,000 gallons per year of wine.

It is our understanding that the project proposes to expand the existing full crush winery operations on the above referenced parcel with the intent of increasing the facility's wine production capability from 1,000 gallons to 14,000 gallons of wine per year. Along with the increase in wine production, the project proposes a light staffing and marketing plan. The project proposes four (4) full-time employees, one (1) part-time employee and two (2) seasonal (harvest) employees. The project also proposes to offer private tour and tasting appointments for a maximum number of 20 guests per day and 140 guests per week. Additionally, the Applicant intends to host two (2) wine club/release events per year for groups of up to 40 guests. All Private Tours and Tastings and Wine Club/Release Events will have food catered with all food preparation and washing of tableware and serving dishes performed by an offsite catering service.

The following table summarizes the existing and proposed marketing plans:

TABLE 1: MARKETING PLAN SUMMARY

Description	Frequency		Number of Persons	
	Current	Proposed	Current	Proposed
Private Tours & Tastings	0 per day	4 per day	0 per appointment	5 per appointment
Wine Club/ Release Events	0 per year	2 per year	0 per event	40 per event

It is planned that Private Tours and Tastings along with Wine Club/Release Events may be held on the same day. Furthermore, all events will be catered with all food preparation, washing of tableware and serving dishes performed by an offsite catering service.

PROJECTED WATER CONSUMPTION

The total water consumption for the 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.

TABLE 2: PHASE ONE WATER AVAILABILITY ANALYSIS SUMMARY

Current Water Use	(acre-feet/year)
Residence (Primary)	0.00
Residence (Secondary)	0.00
Winery (1,000 gallons per year)	0.03
Winery (Domestic & Landscaping)	0.01
Olive & Fruit Orchard (1.69 acres)	6.76
Total Current Water Use	6.80
Proposed Water Use	
Residence (Primary)	0.00
Residence (Secondary)	0.00
Winery (14,000 gallons per year, Office and Tasting Room)	0.31
Winery (Domestic & Landscaping)	0.07
Vineyard (0.78± acres of irrigation)	0.39
Vineyard (0.78± acres of heat and frost protection)	0.40
Total Proposed Water Use	1.17

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 current (existing) residential and vineyard irrigation use so that the comparison would be more accurate. The current domestic water use (demand) was determined using standard industry values while the irrigation per vine per season use (demand) value was provided by the Dakota Shy Winemaker.

TABLE 3: DETAILED WATER AVAILABILITY ANALYSIS SUMMARY

Current Water Use	(acre-feet/year)
Residence (Primary)	0.00
Residence (Secondary)	0.00
Winery (Process wastewater; 1,000 gallons per year)	0.02
Winery (Domestic & Landscaping)	0.01
Olive & Fruit Orchard (1.69 acres)	6.76
Total Current Water Use	6.79
Proposed Water Use	
Residence (Primary residence based on 5 bedroom)	0.00
Residence (Secondary residence based on 1 bedroom)	0.00
Winery (Process wastewater; 14,000 gallons per year)	0.26
Winery (Landscaping)	0.36
Winery Marketing (Employees, Private Tours and Tastings and Wine Club/Release Events)	0.16
Vineyard (0.78± acres of irrigation)	0.37
Vineyard (0.78± acres of heat and frost protection each at 0.25 acre-feet per acre per year[1])	0.40
Total Proposed Water Use	1.55

It should be noted that the City of Napa provides domestic water to the primary and secondary residences and therefore their water use under a Phase 1 or detailed Water Availability Analysis is zero.

[1] Values taken from Napa County Water Availability Analysis Attachment A: Estimated Water Use Guidelines

Allowable Water Allotment

(Calculated using Napa County Policy for water usage in valley floor areas)

1.0 acre-feet/acre of site – valley floor

The following calculation assumes that the entire 6.0 acre parcel lies in an area designated as "Valley Floor".

Acceptable water use = 6.0 acres x 1.0 acre-feet/year = 6.0 acre-feet/year

The above analysis shows that the projected water usage will be less than the current water usage and less than the acceptable threshold water usage for the subject parcel.

EXISTING WATER SOURCE

According to the Property Owner, Well #1 is capable of producing a total flow rate of approximately 60 gallons per minute (gpm). This well will continue to be used for site irrigation and to maintain the fire protection tank at full capacity. Residential water use will continue to be provided by the City of Napa. Recently a new well (Well #2) was drilled that meets the requirements of Title 22. Well #2 will be used for all potable uses associated with the winery and winemaking process including but not limited to equipment cleaning and rinsing. According to the Well Completion Report[12], Well #2 is capable of producing approximately 40 gpm. Since the project may fall under the requirements of a Transient Non-Community Water System, a water treatment system may be required by Napa County Environmental Health. The location of the wells are shown on the Use Permit Drawings. The newest well (Well #2) has been permitted by Napa County and constructed, but is currently not in use.

SUMMARY AND CONCLUSIONS

The estimated water demand for the proposed Dakota Shy Winery development is projected to be less than the existing water usage and less than the acceptable threshold water usage level in accordance with the Napa County Water Availability Policy; therefore, a Phase Two Analysis should not be required.

[2] *Well Completion Report* dated 10/14/2014

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Department of Public Works

1195 Third Street, Suite 201
Napa, CA 94559-3092
www.co.napa.ca.us/publicworks

Main: (707) 253-4351
Fax: (707) 253-4627

Steve Lederer
Director

WATER AVAILABILITY ANALYSIS

PHASE 1 STUDY

Introduction: As an applicant for a permit with Napa County, It has been determined that Chapter 13.15 of the Napa County Code is applicable to approval of your permit. One step of the permit process is to adequately evaluate the amount of water your project will use and the potential impact your application might have on the static groundwater levels within your neighborhood. The public works department requires that a Phase 1 Water Availability Analysis (WAA) be included with your application. The purpose of this form is to assist you in the preparation of this analysis. You may present the analysis in an alternative form so long as it substantially includes the information required below. Please include any calculations you may have to support your estimates.

The reason for the WAA is for you, the applicant, to inform us, to the best of your ability, what changes in water use will occur on your property as a result of an approval of your permit application. By examining the attached guidelines and filling in the blanks, you will provide the information we require to evaluate potential impacts to static water levels of neighboring wells.

Step #1:

Provide a map and site plan of your parcel(s). The map should be an 8-1/2"x11" reproduction of a USGS quad sheet (1:24,000 scale) with your parcel outlined on the map. Include on the map the nearest neighboring well. The site plan should be an 8-1/2"x11" site plan of your parcel(s) with the locations of all structures, gardens, vineyards, etc in which well water will be used. If more than one water source is available, indicate the interconnecting piping from the subject well to the areas of use. Attach these two sheets to your application. If multiple parcels are involved, clearly show the parcels from which the fair share calculation will be based and properly identify the assessors parcel numbers for these parcels. Identify all existing or proposed wells.

Step #2: **Determine total parcel acreage and water allotment factor. If your project spans multiple parcels, please complete a separate form for each parcel.**

Determine the allowable water allotment for your parcels:

Parcel Location Factors

The allowable allotment of water is based on the location of your parcel. There are 3 different location classifications. Valley floor areas include all locations that are within the Napa Valley, Pope Valley and

Carneros Region, except for areas specified as groundwater deficient areas. Groundwater deficient areas are areas that have been determined by the public works department as having a history of problems with groundwater. All other areas are classified as Mountain Areas. Please circle your location classification below (Public Works can assist you in determining your classification if necessary):

Valley Floor	1.0 acre feet per acre per year
Mountain Areas	0.5 acre feet per acre per year
MST Groundwater Deficient Area	0.3 acre feet per acre per year

Assessors Parcel Number(s)	Parcel Size (A)	Parcel Location Factor (B)	Allowable Water Allotment (A) X (B)
030-120-024	**6.0**	**1.0**	**6.0 acre-feet per year**

Step #3:

Using the guidelines in Attachment A, tabulate the existing and projected future water usage on the parcel(s) in acre-feet per year (af/yr). Transfer the information from the guidelines to the table below.

EXISTING USE:		**PROPOSED USE:**	
Residential	0.00 af/yr	Residential	0.00 af/yr
Farm Labor Dwelling	0.00 af/yr	Farm Labor Dwelling	0.00 af/yr
Winery	0.04 af/yr	Winery	0.38 af/yr
Commercial	0.00 af/yr	Commercial	0.00 af/yr
Vineyard*	0.00 af/yr	Vineyard*	0.79 af/yr
Other Agriculture	6.76 af/yr	Other Agriculture	0.00 af/yr
Landscaping	0.00 af/yr	Landscaping	0.00 af/yr
Other Usage (List Separately):		Other Usage (List Separately):	
_____	_____ af/yr	_____	_____ af/yr
_____	_____ af/yr	_____	_____ af/yr
_____	_____ af/yr	_____	_____ af/yr
TOTAL:	6.80 af/yr	**TOTAL:**	1.17 af/yr
TOTAL:	2,215,790 gallons**	**TOTAL:**	381,246 gallons**

*Water use for vineyards should be no lower than 0.2 AF—unless irrigation records are available that show otherwise.

**To determine your existing and proposed total water use in gallons, multiply the totals (in acre- feet) by 325,851 gal/AF.

Is the proposed use less than the existing usage (X) Yes ( ) No ( ) Equal

Step #4:

Provide any other information that may be significant to this analysis. For example, any calculations supporting your estimates, well test information including draw down over time, historical water data, visual observations of water levels, well drilling information, changes in neighboring land uses, the usage if other water sources such as city water or reservoirs, the timing of the development, etc. Use additional sheets if necessary.

The City of Napa provides domestic water to the primary and secondary residences and therefore their water use under a Phase 1 WAA is zero.

Conclusion: Congratulations! Just sign the form and you are done! Public works staff will now compare your projected future water usage with a threshold of use as determined for your parcel(s) size, location, topography, rainfall, soil types, historical water data for your area, and other hydrogeologic information. They will use the above information to evaluate if your proposed project will have a detrimental effect on groundwater levels and/or neighboring well levels. Should that evaluation result in a determination that your project may adversely impact neighboring water levels, a phase two water analysis may be required. You will be advised of such a decision.

Signature: _____ **Date:** 11-4-15 **Phone:** 707 256-1301

Attachment A: Estimated Water Use Guidelines

Typical Water Use Guidelines:

Primary Residence	0.5 to 0.75 acre-feet per year (includes some landscaping)
Secondary Residence	0.20 to 0.30 acre-feet per year
Farm Labor Dwelling	0.06 to 0.10 acre-feet per person per year

Non-Residential Guidelines:

Agricultural:

Vineyards	
Irrigation only	0.2 to 0.5 acre-feet per acre per year
Heat Protection	0.25 acre feet per acre per year
Frost Protection	0.25 acre feet per acre per year
Farm Labor Dwelling	0.06 to 0.10 acre-feet per person per year
Irrigated Pasture	4.0 acre-feet per acre per year
Orchards	4.0 acre-feet per acre per year
Livestock (sheep or cows)	0.01 acre-feet per acre per year

Winery:

Process Water	2.15 acre-feet per 100,000 gal. of wine
Domestic and Landscaping	0.50 acre-feet per 100,000 gal. of wine

Industrial:

Food Processing	31.0 acre-feet per employee per year
Printing/Publishing	0.60 acre-feet per employee per year

Commercial:

Office Space	0.01 acre-feet per employee per year
Warehouse	0.05 acre-feet per employee per year

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Dakota Shy Winery
Water Availability Analysis - Detailed
PROPOSED PRODUCTION AND MARKETING EVENTS WATER DEMAND ANALYSIS

		Frequency of Event	Harvest Aug.- Nov.	Non-Harvest Dec.- July		
Residential Domestic Water (RW) :			4	8	No. of Months	
Number of Bedrooms			**6**	**6**	bedrooms	
Design Flow per Bedroom[1]			0	0	gallons per day per bedroom	
Residential 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			**14,000**	**14,000**	gallons	
Days of Crush & Days per Year			30	335	days	
Gallons of Domestic Water per Gallon of Wine			**1.5**	**4.5**	gallons	
Winery Process Water Demand (PW)		*Daily*	700	188	gallons per day	
		Annual	21,000	63,000	gallons per year	
Winery Domestic Water:						
Number of Employees	Full Time		**4**	**4**	employee	
Number of Employees	Part Time		**1**	**1**		
Number of Employees	Seasonal		**2**	**0**	employees	
Domestic Water Demand Rate per Employee			15.0	15.0	gallons per day per employee	
Winery Domestic Water Demand		*Daily*	105	75	gallons per day	
		Monthly	3,203	2,288	gallons per month	
						Peak Event
Number of Guest for	Private Tours & Tastings w/ Food		**20**	**20**	guests per day	3 gallons per guest;
Domestic Water Demand Rate per Guest			3	3	gallons per guest	Food preparation is off-
Private Tours and Tastings w/ Food Water Flow Domestic Water Demand		*Daily*	60	60	gallons per day	site catering
		Monthly	1,830	1,830	gallons per month	
		Annual				
Number of Guests for	Food and Wine Pairings - Lunch		**0**	**0**	guests per pairing	3 gallons per guest;
Domestic Water Demand Rate per Guest			3	3	gallons per guest	Food preparation is off-
Food and Wine Pairings - Lunch Domestic Water Demand		*Day of Event*	0	0	gallons per pairing	site catering
Number of Food and Wine Pairing Events per Month	0	*Monthly*	0	0	gallons per month	
		Annual				
Number of Guests for	Food and Wine Pairings - Dinner		**0**	**0**	guests per pairing	3 gallons per guest;
Domestic Water Demand Rate per Guest			3	3	gallons per guest	Food preparation is off-
Food and Wine Pairings - Dinner Domestic Water Demand		*Day of Event*	0	0	gallons per pairing	site catering
Number of Food and Wine Pairing Events per Month	0	*Monthly*	0	0	gallons per month	
		Annual				
Number of Guests for	Wine Club / Release Events		**40**	**40**	guests per event	3 gallons per guest;
Domestic Water Demand Rate per Guest			3	3	gallons per guest	Food preparation is off-
Wine Club / Release Events Domestic Water Demand		*Day of Event*	120	120	gallons per event	site catering
Number of Wine Club / Release Events per Year	2	*Annually*	240	240	gallons per year	
Number of Guests for	Auction Related Events		**0**	**0**	guests per event	3 gallons per guest;
Domestic Water Demand Rate per Guest			3	3	gallons per guest	Food preparation is off-
Auction Related Events Domestic Water Demand		*Day of Event*	0	0	gallons per event	site catering
Number of Auction Related Events per Year	0	*Annually*	0	0	gallons per year	

Water Demand		Harvest Aug.- Nov.	Non-Harvest Dec.- July	
Process Water Demand	*Annually*	21,000	63,000	gallons per year
Domestic Water Demand	*Annually*	20,130	32,940	gallons per yr w/ all events
Cumulative Process Water Demand		0.26		acre-feet per year
Cumulative Domestic Water Demand		0.16		acre-feet per year
Landscape Water Demand[2]	*Annually*	117,076		gallons per year
		0.36		acre-feet per year

[1]City of Napa provides domestic water to the primary and secondary residences, therefore water use under detailed Water Availability Analysis is zero
[2]See Landscape Architect WELO Calculations

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Dakota Shy Winery
Vineyard Irrigation
Table II

Vineyard area (acres):	0.78
Row width (feet):	4.0
Vine spacing (feet):	7
Total number of irrigated vines:	1,213

Seasonal irrigation (May - October)
Seasonal irrigation per vine (gallons/season): **100**

ESTIMATED VINEYARD PROCESS WASTEWATER IRRIGATION				
		Estimated		
Month	**Seasonal Percent (%)**	**Seasonal Irrigation (gal/vine)**	**Non-Seasonal Irrigation (gal/vine)**	**Total Irrigation (gallons)**
September	6.0%	6.0		7,281
October	20.0%	20.0		24,269
November[1]				0
December[1]				0
January[1]				0
February[1]				0
March[1]				0
April[1]				0
May	20.0%	20.0		24,269
June	20.0%	20.0		24,269
July	20.0%	20.0		24,269
August	14.0%	14.0		16,988
TOTAL	100.0%	100.0	0.0	**121,346**
				0.37 acre-feet

[1] *Total non-seasonal irrigation =*
*(vineyard area) * (43,560 sq.-ft./acre) * (depth of irrigation/12 in./ft.) * (7.48 gal./cu.-ft.)*

> Vineyard irrigation values based on information provided by winemaker

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PHASE ONE WATER AVAILABILITY ANALYSIS

Project Name: Dakota Shy Winery
Project #: 14-02
Project Address: 771 Sage Canyon Road
St. Helena, CA
APN: 030-120-024
Date: November 2015

	Parcel location	Factor	Size (ac)		
Allowable Water Allotment	Valley Floor	1.0	6.00	6.00	acre-feet per year

Typical Water Use Guidelines		Current Use:			Proposed Use:		
	Range	Value	units	acre-feet/year	Value	units	acre-feet/year
Residence							
Primary	0.5-0.75 acre-feet per year (includes some landscaping)	0.00		0.00	0.00		0.00
Secondary	0.20-0.30 acre-feet per year	0.00		0.00	0.00		0.00
Farm Labor Dwelling	0.06 to 0.10 acre-feet per person per year	0.00		0.00	0.00		0.00
Residence Sub-Total				0.00			0.00
Non-Residential Guidelines:							
Vineyards							
Irrigation only	0.2 to 0.5 acre-feet per acre per year	0.50	-	0.00	0.50	0.78	0.39
Heat Protection	0.25 acre-feet per acre per year	0.25	-	0.00	0.25	0.78	0.20
Frost Protection	0.25 acre-feet per acre per year	0.25	-	0.00	0.25	0.78	0.20
Vineyards Sub-Total				0.00			0.79
Farm Labor Dwelling	0.06 to 0.10 acre-feet per person per year	0.10	-	0.00	0.10	-	0.00
Irrigated Pasture	4 acre-feet per acre per year	4.0	-	0.00	4.0	-	0.00
Orchard	4 acre-feet per acre per year	4.0	1.69	6.76	4.0	-	0.00
Livestock (sheep or cows)	0.01 acre-feet per acre per year	0.01	-	0.00	0.01	-	0.00
Winery							
Process Water	2.15 acre-feet per 100,000 gallons of wine	2.15	0.01	0.03	2.15	0.14	0.31
Domestic and Landscaping	0.5 acre-feet per 100,000 gallons of wine	0.50	0.01	0.01	0.50	0.14	0.07
Winery Sub-Total				0.04			0.38
Industrial							
Food Processing	31 acre-feet per employee per year	31.00	-	0.00	31.00	-	0.00
Printing/Publishing	0.6 acre-feet per employee per year	0.60	-	0.00	0.60	-	0.00
Industrial Sub-Total				0.00			0.00
Commercial							
Office Space	0.01 acre-feet per employee per year	0.01	-	0.00	0.01	-	0.00
Warehouse	0.05 acre-feet per employee per year	0.05	-	0.00	0.05	-	0.00
Commercial Sub-Total				0.00			0.00
Other Usage (List Separately)		0.00		0.00	0.00		0.00
Total				6.80 acre-feet/year			1.17 acre-feet/year
				2,215,790 gallons/year			381,246 gallons/year