

SEPTIC SYSTEM FEASIBILITY REPORT

FOR

BELL WINERY

BY

CAB CONSULTING ENGINEERS

DATE: March 31, 2014

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APR 21 2014

Napa County Planning, Building
& Environmental Services

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II. INTRODUCTION

The purpose of this feasibility report is to provide preliminary calculations and siting for an alternative sewage treatment system for a Use Permit Major Modification to the Bell Wine Cellars Use Permit. The project is located at 6200 St Helena Highway approximately 600 feet north of the Highway 29 and Hoffman Lane intersection. The project will include a single phase of construction splitting the domestic and process waste into separate effluent streams and independent dispersal fields. A commercial kitchen is proposed for the winery.

A single family residence and winery currently occupy the site. The residence is currently vacant and has been so for several years. Plans for the existing winery and residential septic system were received by Napa County Department of Environmental Management and dated November 20, 2007.

III. SITE EVALUATION DATA

A site evaluation was conducted on July 24th 2003, with representatives of McCollum General Engineering and Darryl Choate of Napa County environmental management. In total, six test holes were dug with acceptable soils to a depth of 32" in holes 1-4 within the vineyard. An additional site evaluation was conducted on November 26, 2013 with representatives of CAB Consulting Engineers and Napa County Environmental Health.

The 2013 site evaluation proposes a design hydraulic loading rate of 0.6 gallons/sf/day based on field conditions. Due to slight slopes and variability in site soils, 0.4 gallons/sf/day is recommended in field sizing of the proposed domestic waste disposal area.

The 2003 and 2013 test pit maps and site evaluation data are provided in Appendix A.

IV. EXISTING SEPTIC SYSTEM

The existing gravity distribution system for the winery and home was designed and permitted in 2003 by Johnson and Foulk, Inc. The design from Johnson and Foulk included shows independent influent lines for the domestic and process waste from the winery. A 1200 gallon septic tank and line from the existing residence is also shown on the plans to be connected upstream of the 2000 gallon domestic waste septic tank for the winery.

The process and domestic waste streams are then combined upstream of a 2000 gallon sump tank located on the western edge of the lawn and bocce area approximately 50-feet north of the winery building. Effluent from the sump tank is pumped to the existing pressure distribution leach field located in the vineyard northwest of the winery. 2,600 linear feet of leach line are shown on the Johnson and Foulk plans to accommodate a peak daily flow of 1,950 gallons per day.

Based on visual observation, it appears that all elements from the Johnson and Foulk design were installed per plan save for the 1200 gallon septic tank for the existing residence. The Johnson and Foulk preliminary calculations and septic system plan are provided in Appendix B.

V. PROPOSED SEPTIC SYSTEM

A. Domestic Waste Demand

The site evaluation conducted on November 26, 2013 provided for 15,000 square feet of potential dispersal area for domestic waste. The maximum domestic waste load is based on the previously recommended 0.4 gal/sf-day loading rate:

5,000 sf (primary) * 0.4 gal/sf-day = 2,000 gal/day.
 10,000 sf (reserve)

The following influent sources are proposed for the existing residence and winery:

Category	Quantity (bedroom or persons)	Flow Rate (gpd) ¹	Domestic Flow (gpd)
Residence			
Bedroom	4	120	480
Winery			
Employee	15	15	225
Wine Tasting	130	3	390
Event	60	15	900
Total			1,995

B. Process Waste Demand

The existing process waste demand is 1,333 gallons per day based on an annual production of 40,000 gallons of wine per year. An increase in production and subsequent increase in process waste are proposed due to the separation of the domestic and process waste streams. More specifically, an additional 627 gallons of process waste per day are proposed for a total of 1,950 gallons of process waste per day.

The following calculation illustrates total production increase as a result of the increase in process waste flow:

$$\text{Winery Process Waste} = \frac{(\text{Gallons of Wine Produced Per Year} \times 1.5)}{60} \text{ or;}$$

$$\begin{aligned} \text{Gallons of Wine Produced per Year} &= \frac{60 \times \text{Winery Process Waste (gpd)}}{1.5} \\ &= \frac{60 \times 1950 \text{ (gpd)}}{1.5} \\ &= 78,000 \text{ (gpd)} \end{aligned}$$

Therefore, an increase in production of 38,000 gallons, to a total of 78,000 gallons per year is proposed.

¹ Napa County Alternative Sewage Treatment System Design Guidelines, 2006, Table 4. Event categorized as "Restaurant, Conventional Sit Down, Multi Use Utensils".

C. Proposed Septic System Modifications

The domestic system will be essentially new. The residence will be retrofitted with a new 1,500 gallon septic tank. The winery's existing 2,000 gallon domestic septic tank will remain. Both tanks will be plumbed to a new 2,500 gallon recirculation tank. Two (2) AX-100 Advantex pods will be tied to the recirculation tank and provide for pretreatment following septic tank primary treatment. Effluent from the AX-100 pods will either reenter the recirculation tank or continue to a new 2,500 gallon sump tank based on recirculation tank water levels. The sump tank will utilize a duplex pump system to convey treated effluent to a new 5,000 square foot Geoflow drip dispersion field in the vineyard west of the existing septic field. A 10,000 square foot reserve area is provided adjacent to the primary drip dispersal area.

The process waste system will remain essentially the same. A new 2,000 gallon septic tank will be provided downstream of the last existing process waste septic tank to accommodate the increase in daily process waste flows. The sump tank and pressure distribution field will remain unchanged. The process waste reserve area has been updated from the Johnson and Foulk permit set to show an area outside of the Hopper Creek 100 foot setback.

All proposed modifications are detailed in Appendix C.

VI. CONCLUSION

This report demonstrates, based on newly obtained site evaluation data, that an increase in visitation is available to Bell Wine Cellars to accommodate 15 employees, 130 daily tasting visitors, and 60 event visitors with meals. Moreover, separation of the existing domestic system from the process waste system provides an opportunity for increased production of 38,000 gallons of wine per year to a total of 78,000 gallons of wine per year.

In accordance with previous Use Permit Conditions, no expansion of the existing pressure distribution field is proposed under these modifications.

VII. APPENDIX A – TEST PIT MAP AND SITE EVALUATION DATA



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McCOLLUM
 GENERAL ENGINEERING CONTRACTOR
 P.O BOX 2223
 YOUNTVILLE, CA 94599
 PHONE: 707.252.6220
 FAX: 707.224.1753
 MGECONSTRUCTION@YAHOO.COM

TRANSMITTAL PAGE

To: N.C.E.H.M.	From: Aleyda
Attn: <u>Daryl</u>	Pages: Two (including this page)
Fax: # N.C.E.H.M.707.253.4545	Subject: Spanos
C.C.:	C.C. Fax: #

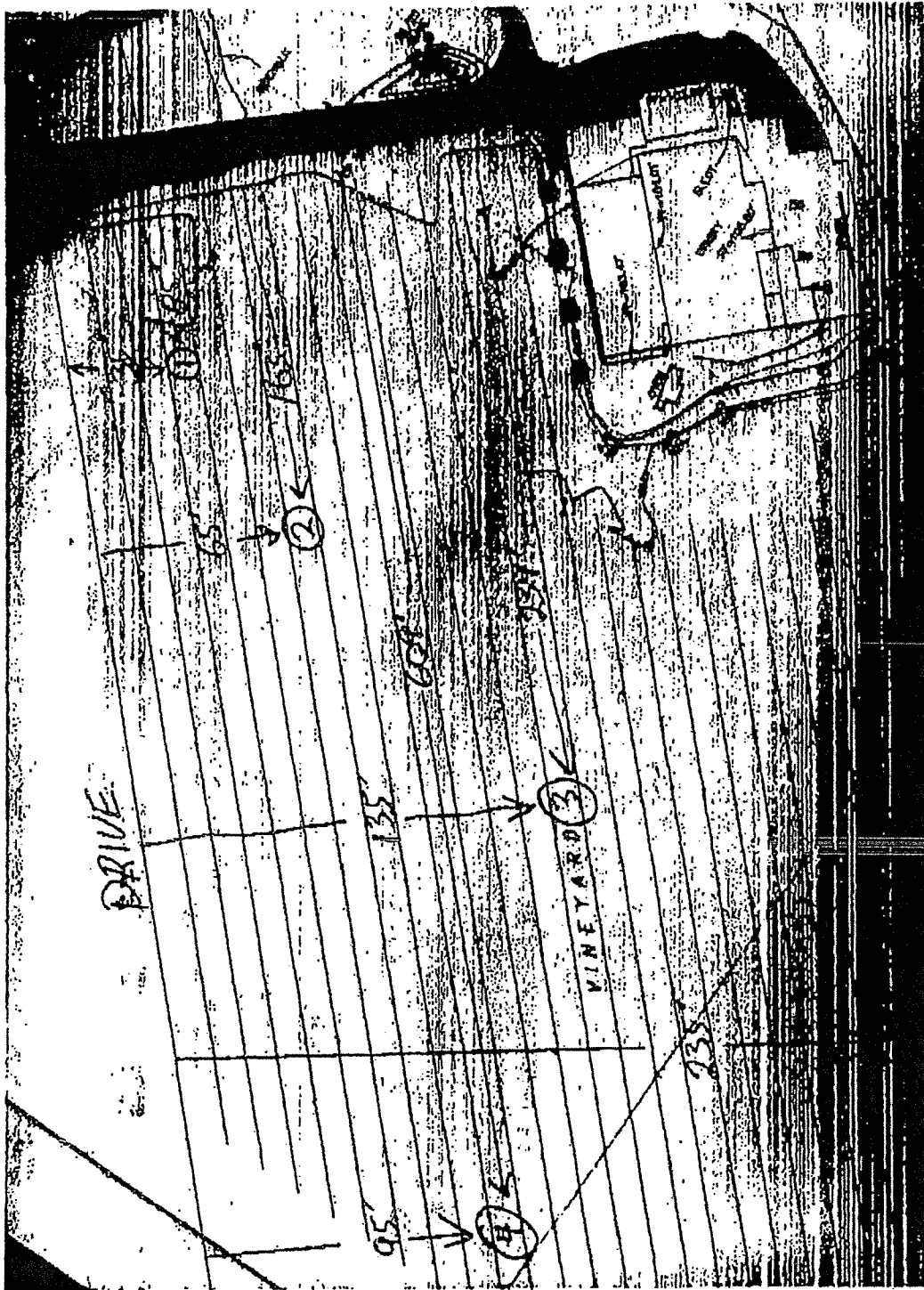
Daryl,

Should you have any questions do not hesitate to contact Mr. McCollum.

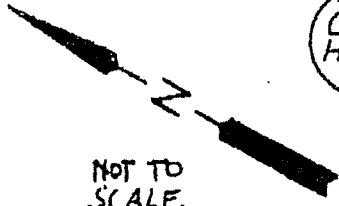
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Monday, July 28, 2003

We Appreciate Your Business!



CORE
HOLE



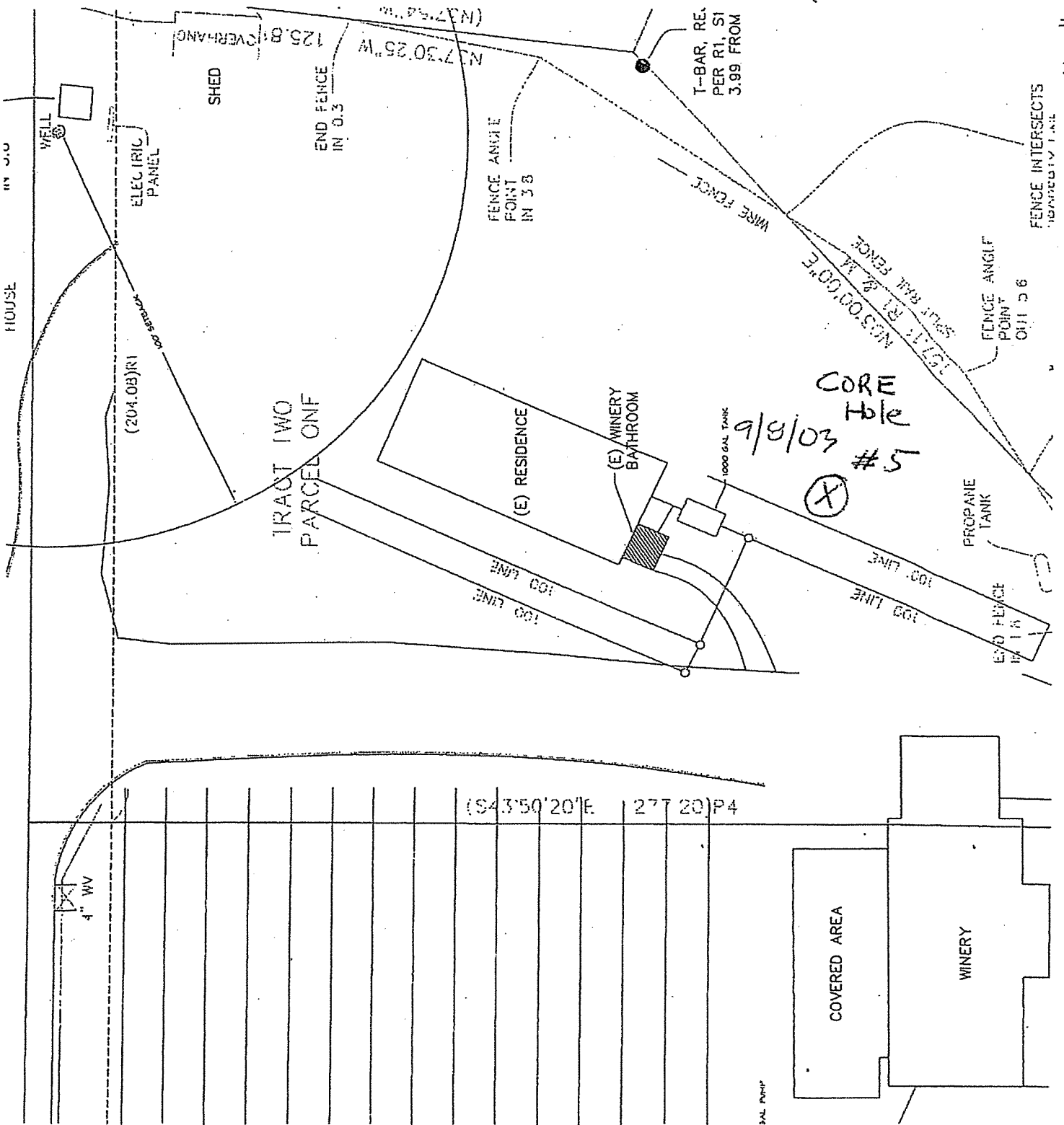
NOT TO
SCALE

SPANOS
6200 WASHINGTON
YOUNTVILLE
APN 036-110-030

030-110 030

Bell Winery
6200 Washington St

Cr. 115' 1/2" = 115'



6200 Washington
Mountville, PA

FIELD ANALYSIS

TEXTURE (In the proposed trench zone)

Core Hole	CLAY CONTENT					
	1	2	3	4	5	6
Low (<12)						
Mod (12-27)						
High (27-40)	X	X	X	X		
High (>40)					X	

Core Hole	SAND CONTENT					
	1	2	3	4	5	6
High (>50)						
Mod (20-50)	X	X	X	X		
Low (<20)					X	

Core Hole	GRAVEL, COBBLE, STONE CONTENT					
	1	2	3	4	5	6
Very High (>60)						
High(35-60)						
Mod (15-35)						
Low (<15)	X	X	X	X	X	

STRUCTURE

SOIL DENSITY WHEN PICKED (Circle whether wet or dry)

Core Hole	SOIL DENSITY WHEN PICKED					
	1	2	3	4	5	6
pick sluffs or caves soil in						
pick bites and soil sluffs						
pick bites/ little or no soil sluffs	X	X	X	X		X

CONSISTENCE (Circle w or d)

Core Hole	CONSISTENCE					
	1	2	3	4	5	6
Easy						
Moderate	X	X	X	X		
Hard					X	

Core Hole	STRUCTURE					
	1	2	3	4	5	6
Granular						
Blocky	X	X	X	X		
Prism						
Platy						
Massive	X	X	X	X		
Cemented						X

MODIFIER CHARACTERISTICS

- Soil Survey Name: _____
- Horizon Boundaries: Diffuse _____ Gradual _____ Abrupt _____
- Topography: Concave _____ Convex _____ / Aspect: _____
- Vegetation: Type VINEYARD Condition: OK

CORE HOLE RECORD

HOLE #1	EST. PERC
0 to 32" CLAY LOAM	1-3
32" to 42" TIGHTER CLAY LOAM	1"
42" to 57" MASSIVE CLAY	
Roots: FINE FIBROUS 32"	
Color: bright / dull	
Water Table: NO	
Dug: easy / hard / dusty / smear	
Acceptable Soil To: 42"	

HOLE #2	EST. PERC
0 to 32" CLAY LOAM	1-3
32" to 54" MASSIVE CLAY	4"
Roots: FEEL 32"	
Color: bright / dull	
Water Table: NO	
Dug: easy / hard / dusty / smear	
Acceptable Soil To: 32"	

HOLE #3	EST. PERC
to SAME AS #2	
to	
to	
Roots:	
Color: bright / dull	
Water Table:	
Dug: easy / hard / dusty / smear	
Acceptable Soil To: 32"	

CORE HOLE RECORD

HOLE #4	EST. PERC
0 to 38" CLAY LOAM	1-3
38" to 58" MASSIVE CLAY	<1"
Roots: 38"	
Color: bright / dull	
Water Table: NO	
Dug: easy / hard / dusty / smear	
Acceptable Soil To: 38"	

9/8/03

HOLE #5	EST. PERC
0 to 10" COMPACTED GRAVEL (PARKING AREA)	
10" to 20" CEMENTED CLAY	4"
30" to 40" SLIGHTLY LOOSE CEMENTED CLAY	<1"
Roots: FEEL COARSE 20"	
Color: bright / dull	
Water Table: NO	
Dug: easy / hard / dusty / smear	
Acceptable Soil To: 0"	

HOLE #6	EST. PERC
to SAME AS #4	
to	
to	
Roots:	
Color: bright / dull	
Water Table:	
Dug: easy / hard / dusty / smear	
Acceptable Soil To: 38"	

Permit Number: E13-00781
 APN 052-152-001
 CABCE Project Number:2013.12

Date: December 6, 2013

Page 1 of 2

Napa County Department of
 Environmental Management

SITE EVALUATION REPORT

Please attach an 8.5" x 11" plot map showing the locations of all test pits triangulated from permanent landmarks or known property corners. The map must be drawn to scale and include a North arrow, surrounding geographic and topographic features, direction and % slope, distance to drainages, water bodies, potential areas for flooding, unstable landforms, existing or proposed roads, structures, utilities, domestic water supplies, wells, ponds, existing wastewater treatment systems and facilities.

Permit #: E13-00797	
APN: 036-110-030	
(County Use Only) Reviewed by:	Date:

PLEASE PRINT OR TYPE ALL INFORMATION

Property Owner Spanos Berberian Properties Llc	<input type="checkbox"/> New Construction <input type="checkbox"/> Addition <input type="checkbox"/> Remodel <input type="checkbox"/> Relocation <input type="checkbox"/> Other:
Property Owner Mailing Address 2021 W. March Ln #2a	<input type="checkbox"/> Residential - # of Bedrooms: Design Flow :
City Stockton	<input checked="" type="checkbox"/> Commercial – Type:
State CA	Sanitary Waste: 2000 gpd Process Waste: gpd
Zip 95207	<input type="checkbox"/> Other:
Site Address/Location 6200 Washington St Yountville, CA	Sanitary Waste: gpd Process Waste: gpd

Evaluation Conducted By:

Company Name CAB Consulting Engineers	Evaluator's Name Carl Butts	Signature (Civil Engineer, R.E.H.S., Geologist, Soil Scientist)
Mailing Address: 851 Napa Valley Corporate Way Suite D		Telephone Number 707 252 2011
City Napa	State CA	Zip 94558
		Date Evaluation Conducted November 26, 2013

<u>Primary Area</u>	<u>Expansion Area</u>
Acceptable Soil Depth: 24 in. Test pit #'s: 1,2,12	Acceptable Soil Depth: 24 in. Test pit #'s: 7,5,6,11
Soil Application Rate (gal. /sq. ft. /day): 0.6	Soil Application Rate (gal. /sq. ft. /day): 0.6
System Type(s) Recommended: Subsurface Drip	System Type(s) Recommended: Subsurface Drip
Slope: 0-1%. Distance to nearest water source: 100+ ft.	Slope: 0-1 % Distance to nearest water source: 100+ ft.
Hydrometer test performed? No <input checked="" type="checkbox"/> Yes <input type="checkbox"/> (attach results)	Hydrometer test performed? No <input checked="" type="checkbox"/> Yes <input type="checkbox"/> (attach results)
Bulk Density test performed? No <input checked="" type="checkbox"/> Yes <input type="checkbox"/> (attach results)	Bulk Density test performed? No <input checked="" type="checkbox"/> Yes <input type="checkbox"/> (attach results)
Percolation test performed? No <input checked="" type="checkbox"/> Yes <input type="checkbox"/> (attach results)	Percolation test performed? No <input checked="" type="checkbox"/> Yes <input type="checkbox"/> (attach results)
Groundwater Monitoring Performed? No <input checked="" type="checkbox"/> Yes <input type="checkbox"/> (attach results)	Groundwater Monitoring Performed? No <input checked="" type="checkbox"/> Yes <input type="checkbox"/> (attach results)

Site constraints/Recommendations:
 Site evaluation conducted to support Winery Use Permit Major Modification and increase visitation. Acceptable soils depths range from 24-30" with massive clays as limiting condition. "SC" designation for Sandy Clay represents yellowish weathered clays with slight presence of mottling.

Test Pit # 1

X = Limiting Condition	Horizon Depth (Inches)	Boundary	%Rock	Texture	Structure (Grade / Shape)	Consistence			Pores (QTY / Size)	Roots (QTY / Size)	Mottling (QTY / Size/ Contrast)
						Side Wall	Ped	Wet			
	0-30		0	CL	M/SB	SH	FRB	NS	C/M	C/M	
X	30+	C	0	SC	S/M	H	F	NS	F/F	F/M	F/F/D
Notes:											

Test Pit # 2

X = Limiting Condition	Horizon Depth (Inches)	Boundary	%Rock	Texture	Structure (Grade / Shape)	Consistence			Pores (QTY / Size)	Roots (QTY / Size)	Mottling (QTY / Size/ Contrast)
						Side Wall	Ped	Wet			
	0-24		0	CL	M/SB	SH	FRB	NS	C/M	C/F	
X	24+	C	0	SC	S/M	H	F	SS	F/F	--	
Notes:											

Test Pit # 3

X = Limiting Condition	Horizon Depth (Inches)	Boundary	%Rock	Texture	Structure (Grade / Shape)	Consistence			Pores (QTY / Size)	Roots (QTY / Size)	Mottling (QTY / Size/ Contrast)
						Side Wall	Ped	Wet			
	0-18		0	CL	S/SB	SH	FRB	NS	C/M	C/F	
X	18+	C	0	SC	S/M	H	F	SS	F/F	--	
Notes:											

Test Pit # 4

X = Limiting Condition	Horizon Depth (Inches)	Boundary	%Rock	Texture	Structure (Grade / Shape)	Consistence			Pores (QTY / Size)	Roots (QTY / Size)	Mottling (QTY / Size/ Contrast)
						Side Wall	Ped	Wet			
	0-18		0	CL	S/SB	SH	FRB	NS	C/M	C/F	
X	18+	C	0	SC	S/M	H	F	SS	F/F	--	

Notes:

Test Pit # 5

X = Limiting Condition	Horizon Depth (Inches)	Boundary	%Rock	Texture	Structure (Grade / Shape)	Consistence			Pores (QTY / Size)	Roots (QTY / Size)	Mottling (QTY / Size/ Contrast)
						Side Wall	Ped	Wet			
	0-24		0	CL	M/SB	SH	F	NS	F/M	F/F	
X	24+		0	SC	S/M	H	VF	SS	F/F	F/F	

Notes:

Test Pit # 6

X = Limiting Condition	Horizon Depth (Inches)	Boundary	%Rock	Texture	Structure (Grade / Shape)	Consistence			Pores (QTY / Size)	Roots (QTY / Size)	Mottling (QTY / Size/ Contrast)
						Side Wall	Ped	Wet			
	0-12		30	CL	M/SB	SH	FRB	NS	C/F	C/F	
	12-30		40	SCL	M/SB	S	VRF B	NS	C/M	F/F	
X	30+		60	LS	W/SB	L	L	NS	F/F	--	

Notes: Pit has sand greater than 30" with gravels less than 1".

Test Pit # 7

X = Limiting Condition	Horizon Depth (Inches)	Boundary	%Rock	Texture	Structure (Grade / Shape)	Consistence			Pores (QTY / Size)	Roots (QTY / Size)	Mottling (QTY / Size/ Contrast)
						Side Wall	Ped	Wet			
	0-16		0	CL	M/SB	SH	FRB	NS	C/F	C/F	
X	16+	C	0	C	S/M	H	VF	NS	F/F	--	
Notes:											

Test Pit # 8

X = Limiting Condition	Horizon Depth (Inches)	Boundary	%Rock	Texture	Structure (Grade / Shape)	Consistence			Pores (QTY / Size)	Roots (QTY / Size)	Mottling (QTY / Size/ Contrast)
						Side Wall	Ped	Wet			
	0-16		0	CL	M/SB	SH	FRB	NS	C/F	C/F	
X	16+	C	0	C	S/M	H	VF	NS	F/F	--	
Notes:											

Test Pit # 9

X = Limiting Condition	Horizon Depth (Inches)	Boundary	%Rock	Texture	Structure (Grade / Shape)	Consistence			Pores (QTY / Size)	Roots (QTY / Size)	Mottling (QTY / Size/ Contrast)
						Side Wall	Ped	Wet			
	0-20		0	CL	M/SB	SH	F	NS	C/F	C/F	
X	20+	C	10	SC	S/M	ExH	VF	SS	F/F	F/C	
Notes:											

Test Pit # 10

X = Limiting Condition	Horizon Depth (Inches)	Boundary	%Rock	Texture	Structure (Grade / Shape)	Consistence			Pores (QTY / Size)	Roots (QTY / Size)	Mottling (QTY / Size/ Contrast)
						Side Wall	Ped	Wet			
	0-24		0	CL	M/SB	H	F	NS	C/F	C/F	
X	24+		0	SC	S/M	VH	VF	SS	F/F	--	
Notes:											

Test Pit # 11

X = Limiting Condition	Horizon Depth (Inches)	Boundary	%Rock	Texture	Structure (Grade / Shape)	Consistence			Pores (QTY / Size)	Roots (QTY / Size)	Mottling (QTY / Size/ Contrast)
						Side Wall	Ped	Wet			
	0-24		20	CL	M/SB	SH	F	NS	C/F	C/F	
X	24+		35	SC	S/M	VH	VF	SS	F/F	F/F	
Notes:											

Test Pit # 12

X = Limiting Condition	Horizon Depth (Inches)	Boundary	%Rock	Texture	Structure (Grade / Shape)	Consistence			Pores (QTY / Size)	Roots (QTY / Size)	Mottling (QTY / Size/ Contrast)
						Side Wall	Ped	Wet			
	0-24		0	CL	M/SB	SH	H	NS	C/M	C/M	
X	24+	C	0	SC	S/M	H	VH	SS	F/F	F/F	
Notes:											

NAPA SEPTIC TANK SERVICE, INC.
P.O. Box 13
Napa, CA 94559

July 09, 2013

Bell Wine Cellars
Sharon Kelly
6200 Washington Street
Yountville, CA 94599

Re: 6200 Washington Street, Yountville

Dear Ms. Kelly:

On June 19, 2013, Napa Septic Tank Service inspected the septic system at the above referenced address.

The septic system at the winery consists of 3 - 1,500 gallon concrete tanks for winery waste. All three tanks are in good condition and do not need to be pumped.

The domestic tank for the winery is a 2,000 gallon concrete tank in good condition. This tank was pumped by our company at the time of inspection.

There is a 2,000 gallon concrete sump tank, with two pumps that pump effluent to the leach field. The tank does not need to be pumped. Both pumps and alarms were working at the time of inspection.

The tank behind the winery is a 2,000 gallon concrete tank with a pump. This tank does not need to be pumped. The pump and alarm were working properly at the time of inspection.

The leach lines appear to be in proper working order. We do not guarantee the condition or longevity of the leach lines or any component of this system.

Please refer to the attached 5 pages of septic information.

Sincerely,

Jose Ceja
California Contractor's Lic. #254028

JC:lmc

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AUG - 5 2013

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