

“K”

Wastewater Feasibility Study

May 18, 2015

Kim Withrow  
Napa County PBES  
1195 Third Street, Room 210  
Napa, CA 94559-3001

RE:            Stag's Leap Wine Cellars  
                5766 Silverado Trail  
                Napa, CA  
                APN 039-030-040  
                Wastewater Feasibility Study  
                Project Number     2012088

Dear Ms. Withrow:

Enclosed is an updated Wastewater Feasibility Study (WWFS) for Stag's Leap Wine Cellars (SLWC). The winery has an existing Use Permit (03469-UP) that allows for a 330,000 gallon winery, a Visitor Center, tasting visitors and events. The Visitor Center has been constructed.

SLWC is applying for a modification to the Use Permit to increase the size of marketing events and to replace two of their production buildings. The modifications will not change the operating parameters of the winery and the production level will not be increased. The existing process wastewater management system is operating within permitted requirements. Therefore, the process wastewater management system will not be altered and is not discussed in the enclosed Wastewater Feasibility Study.

Since the previous WWFS update, the facility marketing plan has changed such that the facility's largest off-site catered and on-site catered events have reduced from 300 and 120 guests, respectively, to accommodate 250 and 100 guests, respectively. The existing winery domestic sanitary sewage (SS) systems serve winery employees, kitchen waste, and tasting and event guests. The existing SS disposal systems include a standard leachfield (known as the "cave" system) and a pressure distribution (PD) system. No changes are proposed which will increase flows to the cave system. The existing PD system is proposed to be expanded to account for the increase in event guests associated with the proposed marketing plan. The number of winery employees and tasting guests are not proposed to increase.

A description and sizing criteria for each system is provided in Enclosure A of this report. Additional enclosures are detailed below for your convenience.

Wastewater Feasibility Study Contents:

Enclosure A: SS System Schematic

Overall Site Plan

SS Wastewater Management System Description

Enclosure B: Existing Pressure Distribution System Documentation

Enclosure C: Pressure Distribution Reserve Area Site Evaluation

If there are any questions or you would like additional information please contact us at your convenience.

Sincerely,

Stella Tan, P.E.  
Staff Engineer

**STAG'S LEAP WINE CELLARS USE PERMIT**

Wastewater Feasibility Study

May 18, 2014

**SUMMIT ENGINEERING, INC.**

Project No. 2012088

**ENCLOSURE A**

SS SYSTEM SCHEMATIC

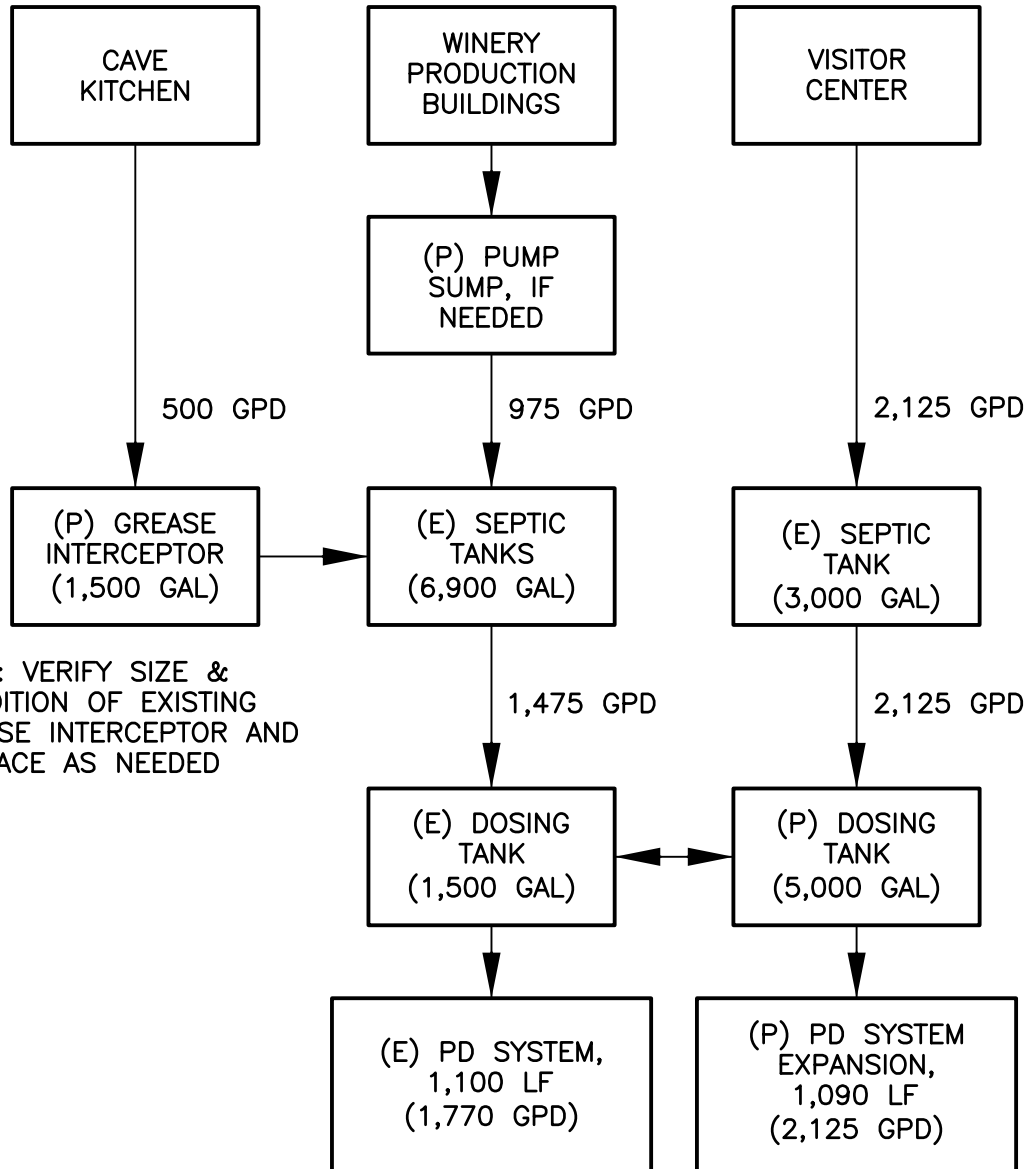
OVERALL SITE PLAN

SS WASTEWATER MANAGEMENT SYSTEM DESCRIPTION



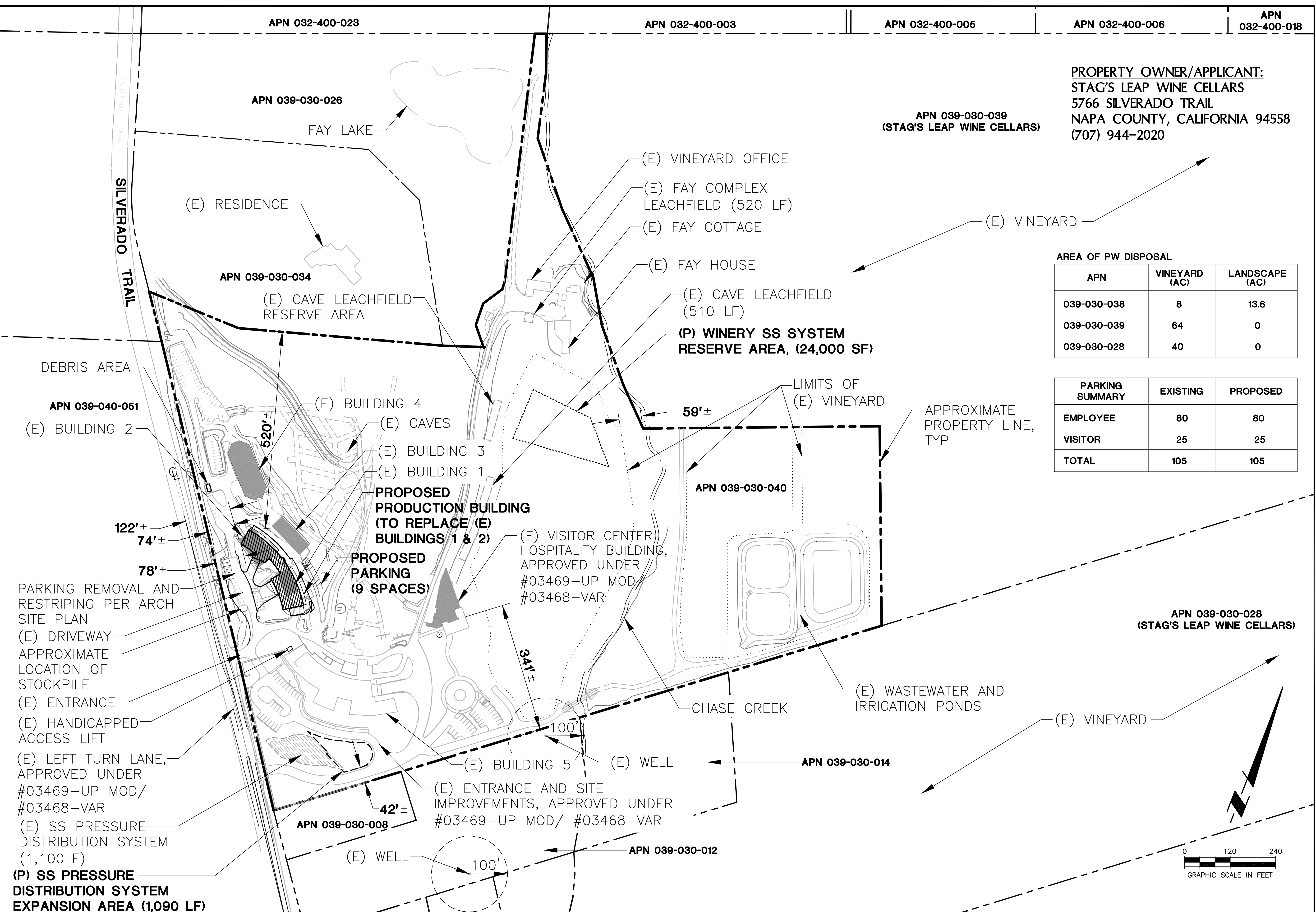
**STAG'S LEAP WINE CELLARS**  
**5766 SILVERADO TRAIL**  
**NAPA, CALIFORNIA**  
**APN 039-030-040**  
**SS SYSTEM SCHEMATIC**

PROJECT NO. 2012088  
DATE 05-18-2015  
SHT NO 1 OF 1  
BY SHT CHK GG



PLOTTED ON: 5/19/2015 9:52 AM  
P:\PROJECT\2012\2012088 STAG'S LEAP WINE CELLARS USE PERMIT\CAD\WWATER\SS SYSTEM SCHEMATIC.DWG

THIS DOCUMENT, AND THE IDEAS AND DESIGNS INCORPORATED HEREIN, IS THE PROPERTY OF SUMMIT ENGINEERING, INC. AND IS NOT TO BE USED IN WHOLE OR IN PART, FOR ANY OTHER PROJECT WITHOUT THE WRITTEN AUTHORIZATION OF SUMMIT ENGINEERING, INC.



**PROPERTY OWNER/APPLICANT:**  
**STAG'S LEAP WINE CELLARS**  
 5766 SILVERADO TRAIL  
 NAPA COUNTY, CALIFORNIA 94558  
 (707) 944-2020

**APN 039-030-039**  
 (STAG'S LEAP WINE CELLARS)

**AREA OF PW DISPOSAL**

APN	VINEYARD (AC)	LANDSCAPE (AC)
039-030-038	8	13.6
039-030-039	64	0
039-030-028	40	0

**PARKING SUMMARY**

	EXISTING	PROPOSED
EMPLOYEE	80	80
VISITOR	25	25
<b>TOTAL</b>	<b>105</b>	<b>105</b>

**SUMMIT**  
 Summit Engineering, Inc.  
 463 Aviation Blvd., Suite 200 • Santa Rosa, CA 95403  
 707-527-0775 • www.summit-sr.com

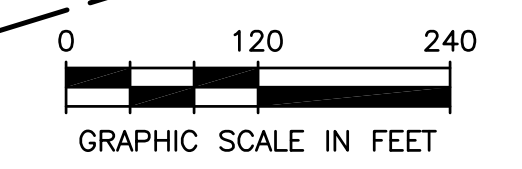
**STAG'S LEAP WINE CELLARS**  
 5766 SILVERADO TRAIL  
 NAPA, CALIFORNIA  
 APN 039-030-040

**USE PERMIT APPLICATION**  
**OVERALL SITE PLAN**

2013-04-15	ISSUE FOR REVIEW
2013-10-03	ISSUED FOR WWFS
2014-02-11	UP RESUBMITTAL
2014-10-15	UP RESUBMITTAL
2015-05-19	UP RESUBMITTAL

DATE: 04-09-2013  
 JOB NO: 2012088  
 SCALE: AS SHOWN  
 DRAWN: MS  
 CHECKED: TCS

SHEET **UP1**



## **WASTEWATER MANAGEMENT SYSTEM DESCRIPTION**

### **SANITARY SEWAGE**

#### **PROJECT DESCRIPTION**

Stag's Leap Wine Cellars (SLWC) proposes to increase their marketing events and construct a new production building to replace existing buildings 1 and 2. No increase in wine production is proposed. Therefore, only the SS flows generated by hospitality related functions will increase.

Stag's Leap Wine Cellars has constructed a new Visitor Center (B13-00758) as allowed under the current Use Permit (03469-UP). Improvements to the sanitary sewage collection system were constructed under a tank only permit (E13-00258). Additional improvements to the sanitary sewage disposal system will need to be accomplished to accommodate increased hospitality flows.

Flows from the Visitor Center will include sanitary sewage from tasting and event guests. Wine tasting operations will be moved from building 5 to the new Visitor Center. The PD system will be expanded to handle the flows from the proposed increase in marketing events. The existing standard cave system will not be modified.

#### **DESIGN FLOWS**

Events per the marketing plan will be accommodated with meals prepared onsite. Meals will be prepared in the existing cave kitchen, which includes a grease interceptor and discharges to the existing PD system.

SLWC currently has two existing onsite septic systems for winery sanitary sewage flows; a 510 lineal foot (LF) standard leachfield and a 1,100 LF pressure distribution (PD) system. Domestic flows from the cave restrooms are served by the existing standard leachfield, known as the "cave" system. No changes are proposed which will increase flows to the existing cave system. See the SS System Schematic for a flow diagram of each system and drawing UP1 for the location of the buildings on the site.

#### **Existing PD System**

The PD System currently serves domestic wastewater flows from buildings 2, 3, and 5, and the cave kitchen. No SS flows are generated in buildings 1 or 4. The PD system will also serve the new Visitor Center which will host events and tastings currently occurring in building 5. The PD system will be expanded to account for the proposed marketing events (meals to be prepared in the cave kitchen only). Buildings 1 and 2 will be replaced by the proposed new production building. No increase in sanitary flows is proposed in the new production building as there is no increase to the total number of employees onsite.

**Wastewater Generation Estimate:**

	Number		Wastewater Generation (GPD)	=	Total Wastewater (GPD)
Employees	80	@	15	=	1,200
Tasting	300	@	3	=	900
Peak Event (with meal)*	100	@	15	=	1,500
					<b>3,600 GPD</b>

\* Event contributions will vary from 375 to 1,500 gpd. Events shall be scheduled to prevent overlap exceeding the expanded disposal field capacity. For example, an event with meals prepared onsite would not occur the same day when the largest event (250 persons with catered appetizers) is occurring.

**Large Event Wastewater Generation Estimate:**

	Number		Wastewater Generation (GPD)	=	Total Wastewater (GPD)
Employees	80	@	15	=	1,200
Tasting	300	@	3	=	900
Event (with catered appetizers)	250	@	3	=	750
					<b>2,850 GPD</b>

Existing PD System Capacity 1,770 GPD

Expansion PD System Capacity Required 1,830 GPD

**3,600 GPD**

The total projected facility sanitary wastewater flow is 3,600 gpd. Improvements to the disposal system are proposed for accommodating the additional flows (1,830 gpd).

**Kitchen SS Flows**



For the events which provide a meal, a generation rate of 15 gallons of SS per event attendee is assumed. Of the 15 gallons, 5 gallons should be assumed to be associated with food preparation and cleanup and 10 gallons is assumed as a contribution from attendee restroom use. Therefore, the maximum flow generated by the kitchen is calculated as follows:

$$100 \text{ meals} \times 5 \text{ gpd (onsite prepared meal)} = 500 \text{ gpd}$$

A SS flow of 500 gpd has been used to size the kitchen grease interceptor and downstream elements associated with only the kitchen.

### GREASE INTERCEPTOR SIZING

The maximum flow generated by the kitchen is projected to be 500 gpd for food preparation. Therefore, the grease interceptor is sized as follows:

$$\begin{aligned} \text{Minimum Volume} &= \text{Number of meals} \times \text{WW Generation Rate} \times \text{Retention Time} \times \text{Storage Factor} \\ &= 100 \text{ meals peak} \times 6 \text{ gal/meal WW} \times 2.5 \times 1.0 \\ &= 1,500 \text{ gallons} \end{aligned}$$

The existing grease interceptor will be replaced with a 1,500 gallon precast concrete grease interceptor to handle kitchen SS flows.

### **SYSTEM SIZING**

#### ***Existing PD System***

A site evaluation was performed in the area of the existing PD system on September 15, 2003 by Summit Engineering. Sandy clay loam was present in each of the four profiles that were excavated to depths of 72 to 82 inches. A percolation rate of 1 to 3 in/hr was assigned to the soils and the system was designed with a perc rate of 2 in/hr and an application rate of 0.560 gal/SF/day. This application rate is between the accepted application rates of 0.5 to 0.8 gal/SF/day for weak/moderate to strong sandy clay loam soil. The pressure distribution system was designed and constructed with 36-inch deep trenches in native soil, 18 inches of gravel below the pipe and a trench sidewall area of 3.0 square feet/lineal feet (SF/LF) with 12 to 16 inches of fill material.

The system was permitted for a flowrate of 1,770 gpd. The design incorporated a total of 1,100 LF of PD lines at 6 feet on center. The total installed leachfield length exceeded the minimum required for disposal of the estimated flow.

#### ***PD System Expansion***

In order to accommodate the proposed marketing events, the disposal system needs a total capacity of 3,600 gpd. Therefore, the PD system needs to be expanded to accommodate the additional 1,830 gpd. To remain consistent with the design basis for the existing PD system, an application rate of 0.560 gal/SF/day is utilized for calculation of the necessary leachline length. This corresponds with a

percolation rate of 20 MPI or 2 inches per hour. The lineal footage required to accommodate the additional flow is as follows:

$$\begin{aligned} \text{Leachline (LF)} &= \frac{1,830 \text{ gpd}}{3.0 \text{ SF/LF} * (0.56 \text{ gal/SF/day})} \\ &= \underline{1,090 \text{ LF}} \end{aligned}$$

The required additional PD lines can be constructed in the area directly north east of the existing PD system. These areas are within the extents suitable for expansion given the site evaluation. See Use Permit drawing UP-1 for the location of the proposed expansion area and Enclosure B for the PD system site evaluation findings.

### **Reserve Areas**

A site evaluation performed by Summit Engineering on November 15, 2012 for location of a new reserve area associated with expansion of the PD system. Approximately 170,000 SF of sandy clay loam and sandy clay soils was found to be suitable for a PD or subsurface drip disposal system with acceptable soil depths between 30" and 54". Some pits had less than 30" and were not considered in this report for potential reserve area though fill could be placed in some of these locations to meet County code requirements and qualify as acceptable areas. See Enclosure C for the reserve area site evaluation report.

Since the PD expansion will be constructed on the current reserve area, new reserve area will need to be established. Assuming a subsurface drip disposal reserve system, the total area required would be:

$$\begin{aligned} \text{Subsurface Drip Area (SF)} &= \frac{3,600 \text{ gpd}}{0.30 \text{ gal/SF/day}} * 200\% \\ &= \underline{24,000 \text{ SF}} \end{aligned}$$

The required reserve area can be accommodated within the boundaries of acceptable test pits found during the site evaluation. See Use Permit drawing UP-1 for the location of the proposed reserve area.

### **SANITARY SEWAGE CONVEYANCE, TREATMENT AND DISPOSAL**

The sanitary sewage conveyance, treatment, and disposal elements for the sanitary sewage systems include the following components:

- 1) Collection System
- 2) PD System Septic Tanks
- 3) Grease Interceptor
- 4) Production Building Pump Sump
- 5) PD System Dosing Tank
- 6) PD Expansion Leachfield
- 7) Reserve Areas

A discussion of each of these components is provided below. Refer to the SS system schematic for a flow diagram of the SS management system.

**1) Collection System**

The SS gravity and force main collection system is existing. If the new production building encroaches upon the existing septic tank area, the septic tanks will be relocated or replaced in kind.

**2) PD System Septic Tanks**

Visitor Center

Individual existing SS septic tanks serve buildings 2, 3, and 5, and the cave kitchen. A new septic tank was installed during the construction of the Visitor Center to serve the flows from the Visitor Center only. Flows generating from the Visitor Center include:

	Number		Wastewater Generation (GPD)		Total Wastewater (GPD)
Employees	15	@	15	=	225
Tasting	300	@	3	=	900
Peak Event*	100	@	10	=	1,000
					<b>2,125 GPD</b>

The required septic tank size for commercial systems is based on the Uniform Plumbing Code formula:

$$1,125 + 0.75 \times \text{Flow rate}$$

$$1,125 + 0.75 (2,125 \text{ gpd}) = 2,719 \text{ gallons}$$

A 3,000 gallon precast concrete septic tank was installed in 2013 (permit E13-00258) for solids removal prior to flowing to the dosing tank and being pumped to the PD leachfield. An effluent filter was also installed to remove additional suspended solids.

Production Buildings

	Number		Wastewater Generation (GPD)		Total Wastewater (GPD)
Employees	65	@	15	=	975
Wine Cave Kitchen					500
					<b>1,475 GPD</b>

The existing septic tanks serving building 2 and the cave kitchen consists of two 1,200 gallons tanks near Building 1 and a 1,500 gallon tank south of Building 5. There are also two 1,500 gallon septic tanks for

building 3, located southwest of building 4. Therefore the total existing septic tankage serving the winery production buildings is 6,900 gallons. The required septic tank size for commercial systems is based on the Uniform Plumbing Code formula:

$$1,125 + 0.75 \times \text{Flow rate}$$

$$1,125 + 0.75 (1,575 \text{ gpd}) = 2,306 \text{ gallons}$$

The existing septic tankage exceeds the minimum capacity required. Therefore no improvements to the existing septic tanks are proposed.

### **3) Grease Interceptor**

A precast concrete grease interceptor of approximately 1,500 gallons is proposed for removal of oil and grease from the kitchen prior to discharge to the septic tanks. Oil and grease removal reduces pump failure and clogging of disposal systems.

### **4) Production Building Pump Sump**

The construction of the proposed production building may also require replacing and relocating the existing sump pump serving the existing production building (Building 2). If this sump is required, the pump sump shall be designed to meet Napa County standards. This will likely be a circular sump with a total capacity of approximately 100 gallons. Alternatively, a pump tank style system may be installed utilizing the minimum sized precast tank commonly available which is 750 gallons.

### **5) PD System Dosing Tank**

The existing precast concrete dosing tank for the PD system is approximately 1,500 gallons and contains a duplex pump system. Dosing tanks shall ideally be sized for at least 1.5 times the average daily flow to allow for timed dosing to the disposal field:

$$1.5 \times 3,600 \text{ gallons} = 5,400 \text{ gallons}$$

The existing dosing tank is not large enough to serve the proposed expanded PD system. A 5,000 gallon precast concrete dosing tank is proposed to be added adjacent to the existing pump tank. The bottom of the tanks would be connected so they would operate essentially as one tank with a new set of duplex pumps to direct wastewater to the new PD lines.

Alternatively, the facility may want to replace the existing tank entirely. If that is desired, a new 6,000 gallon dosing tank would be added to the system. Costs and construction phasing will be elements for consideration by the Owner prior to making a decision on which approach they wish to install.

### **6) PD Expansion Leachfield**

As discussed in the System Sizing section, a minimum of 1,090 LF of additional pressure distribution laterals are needed to meet the proposed increased design flows. The PD leachfield trenches will be excavated to a depth of 36 inches with the bottom 18 inches filled with ¾-inch drain rock. A 2-inch leachline lateral will be placed on top with two more inches of drain rock to cover the lateral. A minimum of 12 inches soil cover consisting of native backfill will be placed on top of the rock gallery. The disposal area has a slope between 0-5% requiring a minimum trench spacing of 5 feet on center and following the contour of the natural grade.

**7) Reserve areas**

As discussed in the System Sizing section, a new reserve area will be established for the PD system. A subsurface drip style system is proposed for the reserve area as this provides the greatest degree of flexibility should the reserve area need to be utilized in the future.

**OTHER CONSIDERATIONS**

***Odor Control***

There should be no noxious odors from a properly designed and operated system.

***Ground Water Contamination***

The nearest water well to the any of the sanitary wastewater treatment and disposal systems is greater than 100 feet. No disposal of wastewater will occur within 100 feet of any existing wells.

***Protection***

Disposal areas should be protected from heavy equipment to avoid potential damage to the system.

**ENCLOSURE B**

**(E) PRESSURE DISTRIBUTION SYSTEM DOCUMENTATION**

NAPA COUNTY DEPARTMENT OF ENVIRONMENTAL MANAGEMENT  
REQUEST FOR SITE EVALUATION INSPECTION

ENVIRONMENTAL HEALTH DEPT. USE ONLY  
6  
348.00  
9-15-03  
30224  
PT

030  
PARCEL NUMBER: 39-~~24~~-35  
JOB ADDRESS: 5766 SILVERADO TR.  
OWNER: STAES LEAD WINE CELLARS  
TEST CONDUCTED BY: SUMMIT ENG  
707 527-0725

TYPE OF TEST: FIELD ANALYSIS  PERCOLATION TEST  
To be run on 9/18 at 10:00 am/pm. To be run on \_\_\_\_\_ from \_\_\_\_\_ am/pm to \_\_\_\_\_ pm

PURPOSE OF TEST: HOUSE:  WINERY:  OTHER: SANDIARY ONLY  
PROJECTED WASTEWATER FLOWS: 700 gpd

PERCOLATION TEST INSPECTION RESULTS

Pre-soak checked? yes \_\_\_\_\_ no \_\_\_\_\_ Length of pre-soak: \_\_\_\_\_  
Checked by: \_\_\_\_\_ Date: \_\_\_\_\_  
Time at time of inspection: \_\_\_\_\_ Stabilized perc rate: \_\_\_\_\_  
Level and Pipe Used? yes \_\_\_\_\_ no \_\_\_\_\_ If so, take the perc rate \_\_\_\_\_ x .6 = \_\_\_\_\_ in/hr

TYPE OF SYSTEM APPROVED:

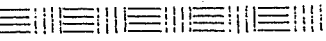
STANDARD SYSTEM  
Acceptable soil to: 72" / Assigned perc range: 1-3 / 3-6 / 6-12  
Depth of trenches: 36" / Rock under pipe: 12" / Cover over rock: 18" (VINEX)  
Additional feet of leachline required: 033 / Plot plan received: 9-18-03  
Slope: 590 / Surface drainage problems: NO

Additional information: VINEX WAS NEEDED TO BE REMOVED TO TRACE LINES ON  
PLANNED - ENLARGED NEW PRESSURE DISTRIBUTION

SPECIAL DESIGN SYSTEM DUE TO THE FOLLOWING - Size constraints: \_\_\_\_\_  
Perc rate too slow: \_\_\_\_\_ / Perc rate too fast: \_\_\_\_\_ / Steep slope: \_\_\_\_\_  
Insufficient soil depth: \_\_\_\_\_ / High seasonal groundwater: \_\_\_\_\_  
Acceptable soil for special design: \_\_\_\_\_ / Other problems: \_\_\_\_\_





**Oakley Laboratory & Field Services** 

1645 Chapman Way · Santa Rosa, CA 95403 · Telephone 707-575-1075

August 31, 2003  
Job No. 03-123.12

Summit Engineering  
1400 North Dutton Avenue #24  
Santa Rosa, Calif. 95401

Attention: Mr. Ben Monroe

Re: Results of Soil Texture Analysis  
By Bouyoucos Hydrometry Method

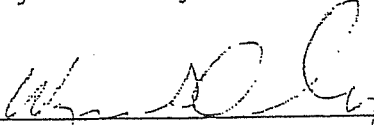
Client: Stag's Leap Wine Cellars A.P.N. 39-30-35

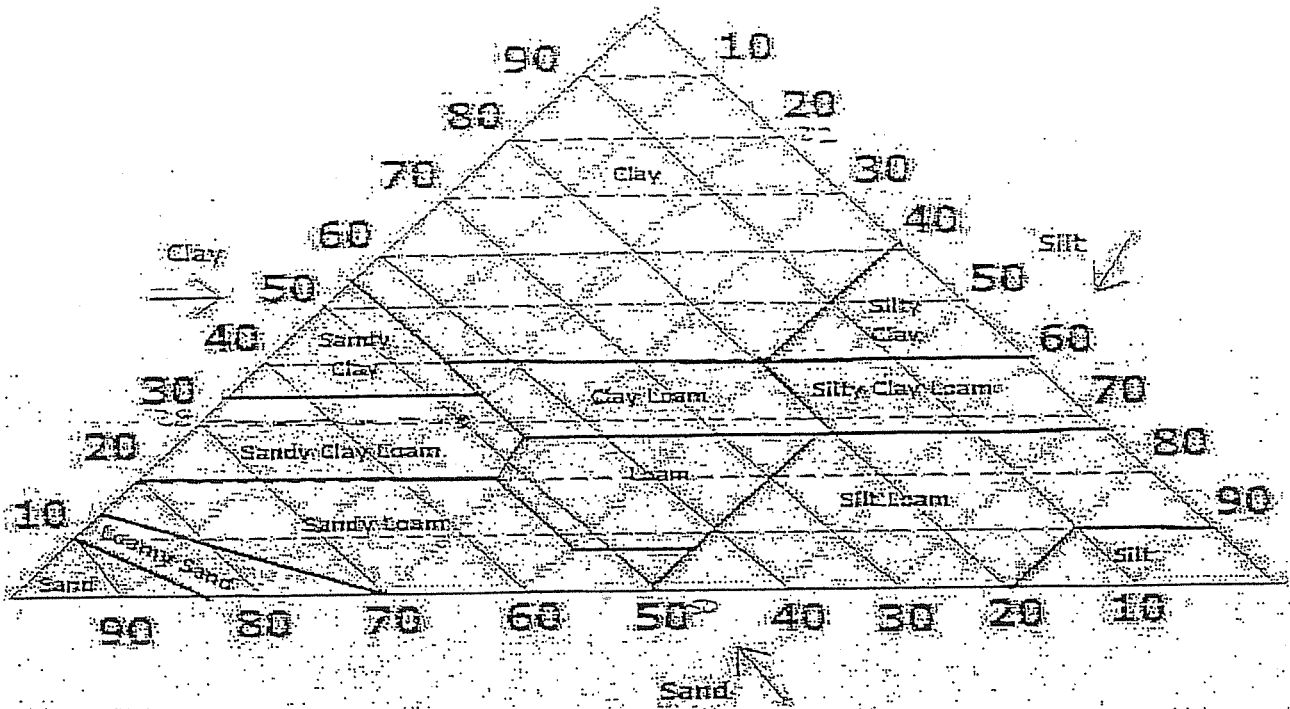
The results of soil texture analysis on samples received on August 28, 2003 are as follows:

Sample Location	SP-1 @ 12"-32"
% Plus No. 10 (WT)	25.8
% Sand	50.0
% Clay	27.6
% Silt	22.4
Db g/cc	--

We are pleased to provide laboratory services for you and look forward to your continued work. If you have any questions, please call.

Oakley Laboratory and Field Services

By:   
Wayne G. Oakley  
Laboratory Director



# Oakley Laboratory & Field Services

1645 Chapman Way • Santa Rosa, CA 95403 • Telephone 707-575-1075

August 31, 2003  
Job No. 03-123.12

Summit Engineering  
1400 North Dutton Avenue #24  
Santa Rosa, Calif. 95401

Attention: Mr. Ben Monroe

Re: Results of Soil Texture Analysis  
By Bouyoucos Hydrometry Method


Client: Stag's Leap Wine Cellars A.P.N. 39-30-35

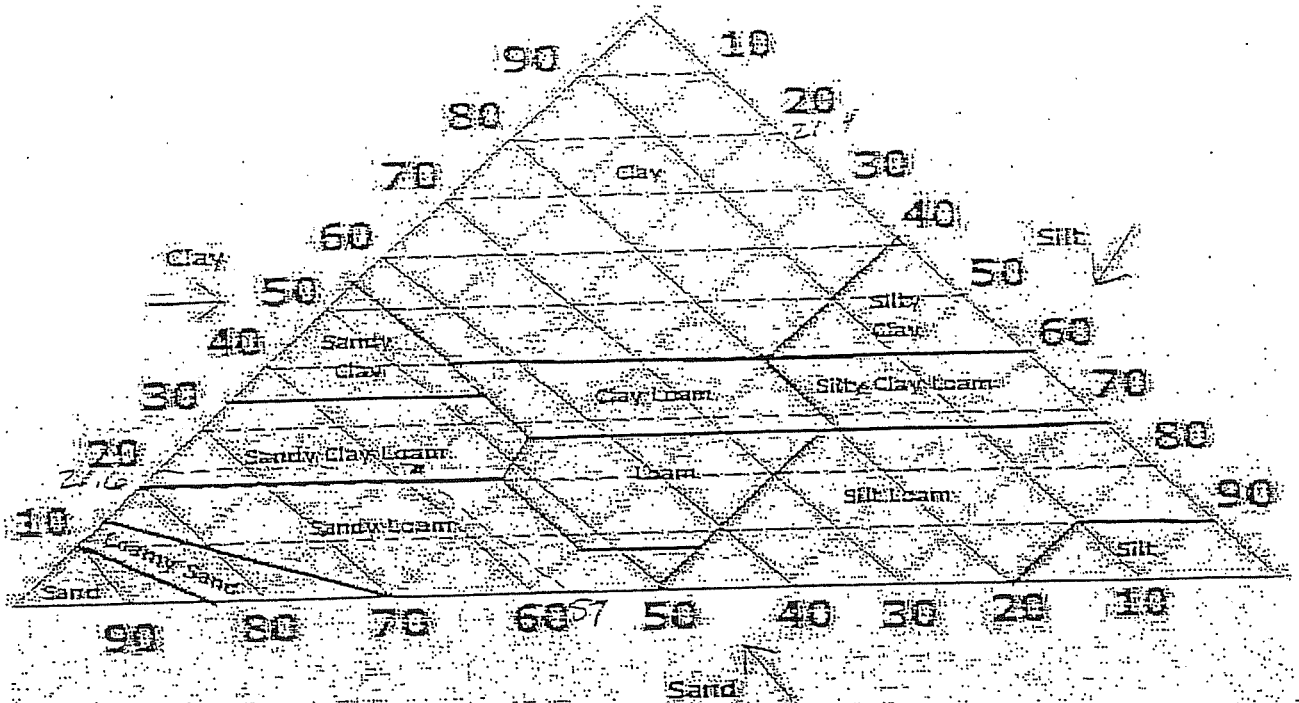
The results of soil texture analysis on samples received on August 28, 2003 are as follows:

Sample Location	SP-1 @ 32"-55"
% Plus No. 10 (WT)	18.8
% Sand	57.0
% Clay	21.6
% Silt	21.4
Db g/cc	--

We are pleased to provide laboratory services for you and look forward to your continued work. If you have any questions, please call.

Oakley Laboratory and Field Services

By:   
Wayne G. Oakley  
Laboratory Director



# Oakley Laboratory & Field Services

1645 Chapman Way • Santa Rosa, CA 95403 • Telephone 707-575-1075

August 31, 2003  
Job No. 03-123.12

Summit Engineering  
1400 North Dutton Avenue #24  
Santa Rosa, Calif. 95401-

Attention: Mr. Ben Monroe

Re: Results of Soil Texture Analysis  
By Bouyoucos Hydrometry Method

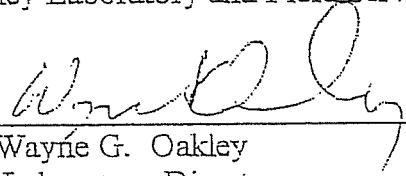
Client: Stag's Leap Wine Cellars A.P.N. 39-30-35

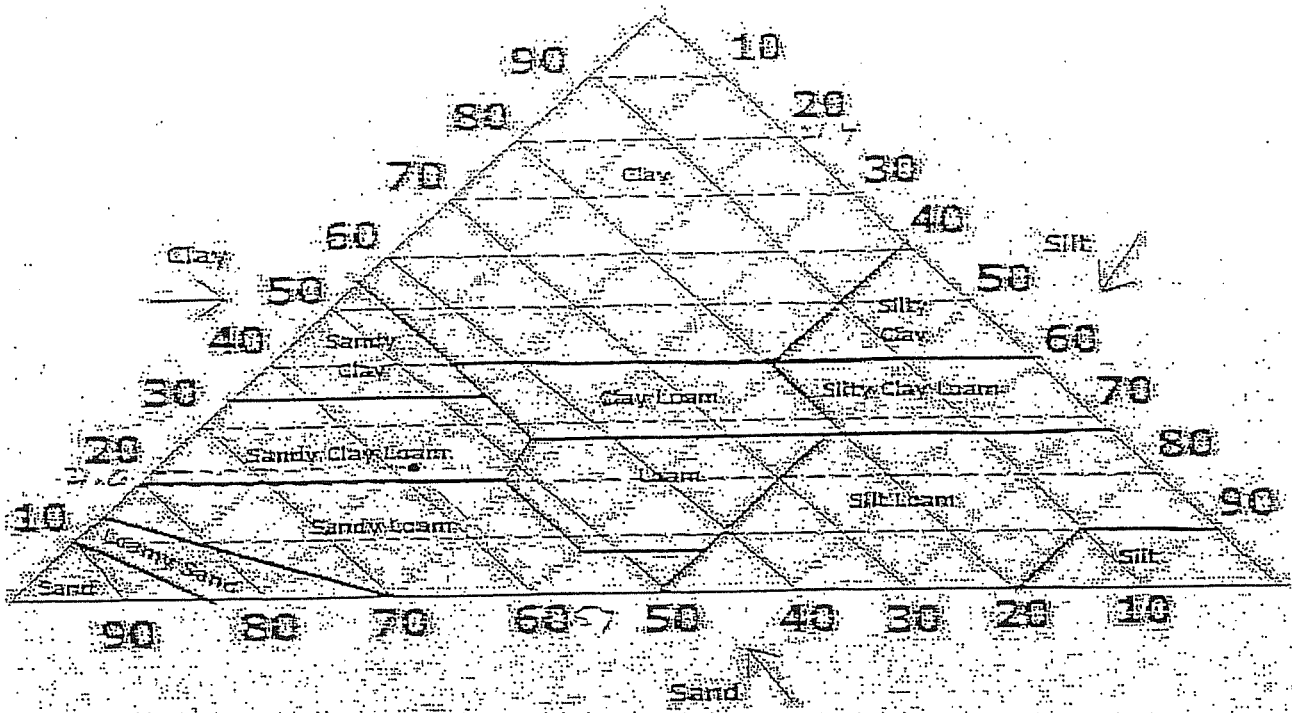
The results of soil texture analysis on samples received on August 28, 2003 are as follows:

Sample Location	SP-1 @ 55"-68"
% Plus No. 10 (WT)	17.9
% Sand	57.0
% Clay	21.6
% Silt	21.4
Db g/cc	--

We are pleased to provide laboratory services for you and look forward to your continued work. If you have any questions, please call.

Oakley Laboratory and Field Services

By:   
Wayne G. Oakley  
Laboratory Director



**ENCLOSURE C**

**PRESSURE DISTRIBUTION RESERVE AREA SITE EVALUATION**

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 #: <u>ED-00719</u>
APN: <u>039-030-038</u>
(County Use Only) Reviewed by: _____ Date: _____

**PLEASE PRINT OR TYPE ALL INFORMATION**

Property Owner <u>STAGI'S LEAP WINE CELLARS</u>	<input type="checkbox"/> New Construction <input type="checkbox"/> Addition <input type="checkbox"/> Remodel <input type="checkbox"/> Relocation <input checked="" type="checkbox"/> Other: <u>New reserve area</u>
Property Owner Mailing Address <u>5766 SILVERADO TRAIL</u>	<input type="checkbox"/> Residential - # of Bedrooms: _____ Design Flow: _____ gpd
City State Zip <u>SANTA ROSA CA 95403</u>	<input checked="" type="checkbox"/> Commercial - Type: _____ Sanitary Waste: <u>TBD</u> gpd      Process Waste: <u>0</u> gpd
Site Address/Location <u>6736 SILVERADO TRAIL Napa, CA.</u>	<input type="checkbox"/> Other: _____ Sanitary Waste: _____ gpd      Process Waste: _____ gpd

**Evaluation Conducted By:**

Company Name <u>SUMMIT ENGINEERING</u>	Evaluator's Name <u>KENDRA OLMOS</u>	Signature (Civil Engineer, R.E.H.S., Geologist, Soil Scientist) <u>Kendra Olmos</u>
Mailing Address: <u>463 AVIATION BLVD. #200</u>	Telephone Number <u>(707) 527-0775</u>	
City State Zip <u>SANTA ROSA CA 95403</u>	Date Evaluation Conducted <u>11/15/2012</u>	

<u>Primary Area</u>	<u>Expansion Area</u>
Acceptable Soil Depth: _____ in. Test pit #'s: _____	Acceptable Soil Depth: <u>36<sup>+</sup>/<sub>in.</sub></u> Test pit #'s: <u>1-11, 12-17</u>
Soil Application Rate (gal. /sq. ft. /day): _____	Soil Application Rate (gal. /sq. ft. /day): _____
System Type(s) Recommended: _____	System Type(s) Recommended: <u>SUBSURFACE DRIP OR PD</u>
Slope: _____ % Distance to nearest water source: _____ ft.	Slope: <u>&lt;5%</u> Distance to nearest water source: <u>&gt;100 ft.</u>
Hydrometer test performed? No <input 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 type="checkbox"/> Yes <input type="checkbox"/> (attach results)	Bulk Density test performed? No <input checked="" type="checkbox"/> Yes <input type="checkbox"/> (attach results)
Groundwater Monitoring Performed? No <input 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:

This site evaluation was conducted to locate additional reserve area for the winery domestic septic system. Soils were evaluated in the vineyard, south of the winery office. In general, soils were uniform and contained sandy clay loam and sandy clay soils (application rate of 0.6 gal/SF/day). Avoid pits 18 and 12. Soils are suitable for a subsurface drip or pressure distribution system. Avoid pit 15 for a PD system. Pit 15 will need 6" cover soil for a subsurface drip system.



Test Pit # 1

PLEASE PRINT OR TYPE ALL INFORMATION

Horizon Depth (Inches)	Boundary	%Rock	Texture	Structure	Consistence			Pores	Roots	Mottling
					Side Wall	Ped	Wet			
19		45	SCL	S,SB	S	VFRB	S	M F,VF	F F	NO
32	G	430	SC	S,AB	SH-H	FRB	VS	F F	C F	NO
38	G	450	SC	S,AB	SH-H	FRB	VS	F F	-	NO
NO LOWER LIMIT REACHED										

Test Pit # 2

Horizon Depth (Inches)	Boundary	%Rock	Texture	Structure	Consistence			Pores	Roots	Mottling
					Side Wall	Ped	Wet			
36		45	SCL	S,SB	SH	VFRB	VS	M F,m	C F,m	NO
57	G	430	SC	S,AB	H	FRB	VS	F,m F,m	F m	NO
NO LOWER LIMIT REACHED										

Test Pit # 3

Horizon Depth (Inches)	Boundary	%Rock	Texture	Structure	Consistence			Pores	Roots	Mottling
					Side Wall	Ped	Wet			
54		45	CL	S,AB	H	VFRB	VS	M F,m	F F,m	NO
NO LOWER LIMIT REACHED										

Test Pit # 4

PLEASE PRINT OR TYPE ALL INFORMATION

Horizon Depth (Inches)	Boundary	%Rock	Texture	Structure	Consistence			Pores	Roots	Mottling
					Side Wall	Ped	Wet			
29		45	SCL	S, AB	SH	VFRB	SS	M F, M	F F	NO
57	G	410	SCL	S, AB	H	FRB	VS	M F, M	F M	NO
	NO LOWER LIMIT REACHED									

Test Pit # 5

Horizon Depth (Inches)	Boundary	%Rock	Texture	Structure	Consistence			Pores	Roots	Mottling
					Side Wall	Ped	Wet			
29	S/A #4									
54	S/A #4									

Test Pit # 6

Horizon Depth (Inches)	Boundary	%Rock	Texture	Structure	Consistence			Pores	Roots	Mottling
					Side Wall	Ped	Wet			
35	S/A #4									
63	S/A #4									es3" distinct

Test Pit # 7

PLEASE PRINT OR TYPE ALL INFORMATION

Horizon Depth (Inches)	Boundary	%Rock	Texture	Structure	Consistence			Pores	Roots	Mottling
					Side Wall	Ped	Wet			
17		45-10	SCL	S,SB	SH	M F,m	VS	M F,m	F F,m	NO
30	G-D	40	SCL+S	S,SB	S	M F,m	S	M F,m	F F	NO
60	G-D	45-10	SCL	S,SB	H		VS	M F,m	-	NO
NO LOWER LIMIT REACHED										

Test Pit # 8

Horizon Depth (Inches)	Boundary	%Rock	Texture	Structure	Consistence			Pores	Roots	Mottling
					Side Wall	Ped	Wet			
31	S/A	#4								
54	S/A	#4								

Test Pit # 9

Horizon Depth (Inches)	Boundary	%Rock	Texture	Structure	Consistence			Pores	Roots	Mottling
					Side Wall	Ped	Wet			
41	S/A	#7								
59		750	Sand							
	LOWER LIMIT @ 59"									

Test Pit # 10

PLEASE PRINT OR TYPE ALL INFORMATION

Horizon Depth (Inches)	Boundary	%Rock	Texture	Structure	Consistence			Pores	Roots	Mottling
					Side Wall	Ped	Wet			
25	S/A	#4								
57	S/A	#4								

Test Pit # 11

Horizon Depth (Inches)	Boundary	%Rock	Texture	Structure	Consistence			Pores	Roots	Mottling
					Side Wall	Ped	Wet			
12	S/A	#4								
60	S/A	#4								e48 <sup>9</sup>

Test Pit # 12 AVOID

Horizon Depth (Inches)	Boundary	%Rock	Texture	Structure	Consistence			Pores	Roots	Mottling
					Side Wall	Ped	Wet			
20	S/A	#4								
25		>50	Sand							
57	S/A	#4								
	LOWER LIMIT	e.20								

Test Pit # 13

PLEASE PRINT OR TYPE ALL INFORMATION

Horizon Depth (Inches)	Boundary	%Rock	Texture	Structure	Consistence			Pores	Roots	Mottling
					Side Wall	Ped	Wet			
36	S/A	#4								
48	S/A	#4								

Test Pit # 14

Horizon Depth (Inches)	Boundary	%Rock	Texture	Structure	Consistence			Pores	Roots	Mottling
					Side Wall	Ped	Wet			
37	S/A	#4								
53	S/A	#4								

Test Pit # 15 SUITABLE for subsurface drip w/ 6" top soil

Horizon Depth (Inches)	Boundary	%Rock	Texture	Structure	Consistence			Pores	Roots	Mottling
					Side Wall	Ped	Wet			
28	S/A	#4								
38		>50	Sand							
63	S/A	#4								
	LOWER LIMIT @ 28"									

Test Pit # 16

PLEASE PRINT OR TYPE ALL INFORMATION

Horizon Depth (Inches)	Boundary	%Rock	Texture	Structure	Consistence			Pores	Roots	Mottling
					Side Wall	Ped	Wet			
28	S/A #4	4								
57	S/A #4	4								e45

Test Pit # 17

Horizon Depth (Inches)	Boundary	%Rock	Texture	Structure	Consistence			Pores	Roots	Mottling
					Side Wall	Ped	Wet			
32	S/A #4	4								
57	S/A #4	4								

Test Pit # 18 AVOID (due to high groundwater)

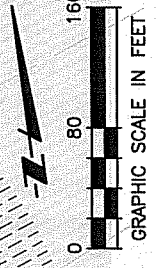
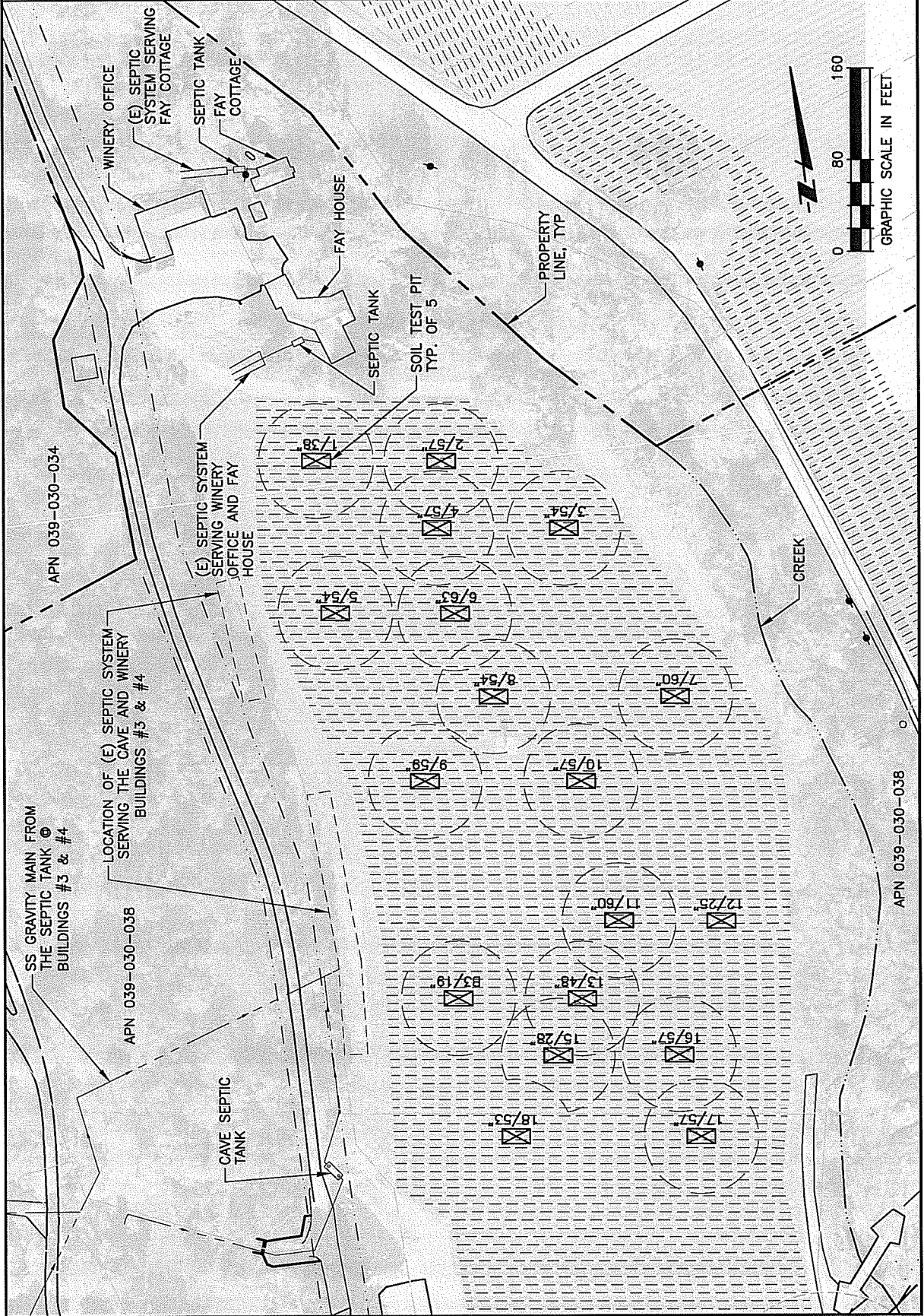
Horizon Depth (Inches)	Boundary	%Rock	Texture	Structure	Consistence			Pores	Roots	Mottling
					Side Wall	Ped	Wet			
37		<2	CL	S, AB <sup>-</sup> SB	H	FRB	S	m F,m	F m	NO
53	G	<5	SCL	S, AB <sup>-</sup> SB	S	FRB	VS	m F,m	F m	e30"

WINERY PARCEL  
 6736 SILVERADO TRAIL  
 NAPA, CALIFORNIA  
 APN 039-030-038

SITE EVALUATION MAP

PROJECT NO. 2012088 DATE 12-21-2012  
 BY TF CHK KCO SHT NO. 1 OF 1

SUMMIT ENGINEERING, INC.  
 463 AVIATION BLVD, STE 200  
 SANTA ROSA, CA 95403  
 WWW.SUMMIT-SE.COM 707.527.0775



PLOTTED ON: 12/21/2012 4:30 PM