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

ENCLOSURE A

SS SYSTEM SCHEMATIC

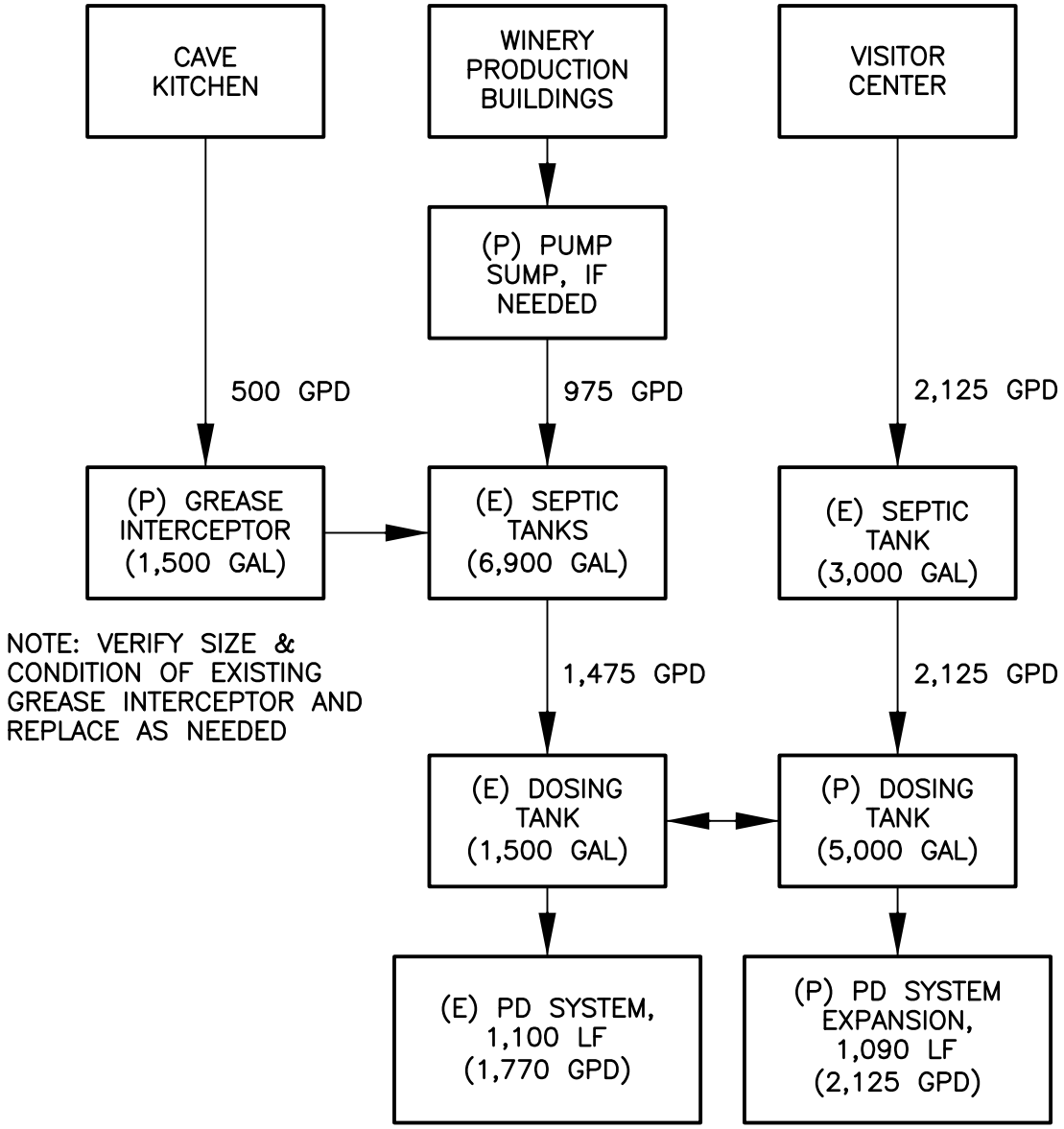
OVERALL SITE PLAN

SS WASTEWATER MANAGEMENT SYSTEM DESCRIPTION

SUMMIT

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\WWWATER\SS SYSTEM SCHEMATIC.DWG

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

APN 032-400-023 | APN 032-400-003 | APN 032-400-005 | APN 032-400-006 | APN 032-400-018

APN 039-030-026

FAY LAKE

SILVERADO TRAIL

(E) RESIDENCE

APN 039-030-034

(E) CAVE LEACHFIELD RESERVE AREA

DEBRIS AREA

APN 039-040-051

(E) BUILDING 2

520'±

(E) BUILDING 4

(E) CAVES

(E) BUILDING 3

(E) BUILDING 1

PROPOSED PRODUCTION BUILDING (TO REPLACE (E) BUILDINGS 1 & 2)

PROPOSED PARKING (9 SPACES)

122'±

74'±

78'±

PARKING REMOVAL AND RESTRIPING PER ARCH SITE PLAN

(E) DRIVEWAY

APPROXIMATE LOCATION OF STOCKPILE

(E) ENTRANCE

(E) HANDICAPPED ACCESS LIFT

(E) LEFT TURN LANE, APPROVED UNDER #03469-UP MOD/ #03468-VAR

(E) SS PRESSURE DISTRIBUTION SYSTEM (1,100LF)

(P) SS PRESSURE DISTRIBUTION SYSTEM EXPANSION AREA (1,090 LF)

(E) VINEYARD OFFICE

(E) FAY COMPLEX LEACHFIELD (520 LF)

(E) FAY COTTAGE

(E) FAY HOUSE

(E) CAVE LEACHFIELD (510 LF)

(P) WINERY SS SYSTEM RESERVE AREA, (24,000 SF)

59'±

LIMITS OF (E) VINEYARD

APPROXIMATE PROPERTY LINE, TYP

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

(E) VINEYARD

APN 039-030-040

(E) VISITOR CENTER HOSPITALITY BUILDING, APPROVED UNDER #03469-UP MOD/ #03468-VAR

341'±

100'

(E) BUILDING 5

(E) WELL

APN 039-030-008

42'±

(E) ENTRANCE AND SITE IMPROVEMENTS, APPROVED UNDER #03469-UP MOD/ #03468-VAR

(E) WELL

100'

APN 039-030-012

APN 039-030-014

CHASE CREEK

(E) WASTEWATER AND IRRIGATION PONDS

APN 039-030-028 (STAG'S LEAP WINE CELLARS)

(E) VINEYARD

0 120 240

GRAPHIC SCALE IN FEET

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

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
TOTAL	105	105

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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
					3,600 GPD

* 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
					2,850 GPD

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 meals x 5 gpd (onsite prepared meal) = 500 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:

Minimum Volume = Number of meals x WW Generation Rate x Retention Time x Storage Factor

= 100 meals peak x 6 gal/meal WW x 2.5 x 1.0

= 1,500 gallons

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:

$$\text{Leachline (LF)} = \frac{1{,}830 \text{ gpd}}{3.0 \text{ SF/LF} * (0.56 \text{ gal/SF/day})}$$

$$= \underline{1{,}090 \text{ LF}}$$

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:

$$\text{Subsurface Drip Area (SF)} = \frac{3{,}600 \text{ gpd}}{0.30 \text{ gal/SF/day}} * 200\%$$

$$= \underline{24{,}000 \text{ SF}}$$

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
					2,125 GPD

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

1,125 + 0.75 x Flow rate

1,125 + 0.75 (2,125 gpd) = 2,719 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
					1,475 GPD

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 x Flow rate

1,125 + 0.75 (1,575 gpd) = 2,306 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 x 3,600 gallons = 5,400 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

IRONMENTAL HEALTH DEPT. USE ONLY
: 348-00
E: 9-15-03
EIPT: 30224
PJ

030
PARCEL NUMBER: 39-~~2~~-35
JOB ADDRESS: 5766 SILVERADO TR.
OWNER: STAGS LEAP WINE CELLARS
TEST CONDUCTED BY: SUMMIT ENG.
707 527-0775

E OF TEST: FIELD ANALYSIS X
be run on 9/18 at 10:00 am/pm

PERCOLATION TEST ____
To be run on ____ from ____ am/pm to ____ pm

POSE OF TEST: HOUSE: ~~NO~~ WINERY: X OTHER: SANITARY ONLY

JECTED WASTEWATER FLOWS: 700 gpd

****

PERCOLATION TEST INSPECTION RESULTS

-soak checked? yes ____ no ____ Length of pre-soak: ____
cked by: ____ Date: ____
e at time of inspection: ____ Stabilized perc rate: ____
vel and Pipe Used? yes ____ no ____ If so, take the perc rate ____ x .6 = ____ in/hr

****

TYPE OF SYSTEM APPROVED

NDARD SYSTEM

eptable soil to: 72" / Assigned perc range: (1-3) / 3-6 / 6-12
th of trenches: 36" / Rock under pipe: 12" / Cover over rock: 18" (MINIMUM)
neal feet of Teachline required: 933' / Plot plan received: YES 9-18-03
ope: <5% / Surface drainage problems: NO
itional information: VINEYARD WILL NEED TO BE RIPPED TO PLACE LINES ON CONTOUR. ENGINEERED PRESSURE DISTRIBUTION.

ECIAL DESIGN SYSTEM DUE TO THE FOLLOWING - Size constraints: ____
rc rate too slow: ____ /Perc rate too fast: ____ /Steep slope: ____
sufficient soil depth: ____ /High seasonal groundwater: ____
ceptable soil for special design: ____ /Other problems: ____

FIELD ANALYSIS

TEXTURE (In the proposed trench zone)

CLAY CONTENT

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

SAND CONTENT

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

GRAVEL, COBBLE, STONE CONTENT

Core Hole	1	2	3	4	5
Very High (>60)					
High(35-60)					
Mod (15-35)				✓	
Low (<15)	X	X	X	✓	

* *

STRUCTURE

SOIL DENSITY WHEN PICKED (Circle whether wet or dry)

Core Hole	1	2	3	4	5	6
Pick sluffs or caves soil in						
Pick bites and soil sluffs	X	X	✓	X		
Pick bites/ little or no soil sluffs	✓	✓				

CONSISTENCE (Circle w or d

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

STRUCTURE

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

MODIFIER CHARACTERISTICS:

1) Soil Survey Name: _____

2) Horizon Boundaries: Diffuse ✓ Gradual ____ Abrupt ____

3) Topography: Concave X Convex ____ / Aspect: S →

4) Vegetation: Type VINEYARD Condition: GOOD

* *

CORE HOLE RECORD

HOLE #1

		EST. PERC
0 to	72" SANDY CLAY LOAM	2
____ to		
____ to		
____ to		

Roots: FEW FINE/COARSE 72"
Color: bright / dull
Water Table: NO
Dug: easy / hard / dusty / smear
Acceptable Soil To: 72"

HOLE #2

		EST. PERC
0 to	62" SAME AS #1 (HARDER)	
____ to	LAYER OF SAND / GRAVEL 46"-48"	
____ to		
____ to		

Roots:
Color: bright / dull
Water Table:
Dug: easy / hard / dusty / smear
Acceptable Soil To: 62"

HOLE #3

		EST PER
0 to	74" SAME AS #1	
____ to	HARDER 48"+	
____ to		
____ to		

Roots:
Color: bright / dull
Water Table:
Dug: easy / hard / dusty / smea
Acceptable Soil To: 74"

CORE HOLE RECORD

HOLE #4

		EST. PERC
0 to	78" SANDY GRAVELLY CLAY LOAM	3-4
____ to		
____ to		
____ to		

Roots:
Color: bright / dull
Water Table:
Dug: easy / hard / dusty / smear
Acceptable Soil To: 78"

HOLE #5

		EST. PERC
____ to		
____ to		
____ to		
____ to		

Roots:
Color: bright / dull
Water Table:
Dug: easy / hard / dusty / smear
Acceptable Soil To:

HOLE #6

		EST PER
____ to		
____ to		
____ to		
____ to		

Roots:
Color: bright / dull
Water Table:
Dug: easy / hard / dusty / smea
Acceptable Soil To:

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

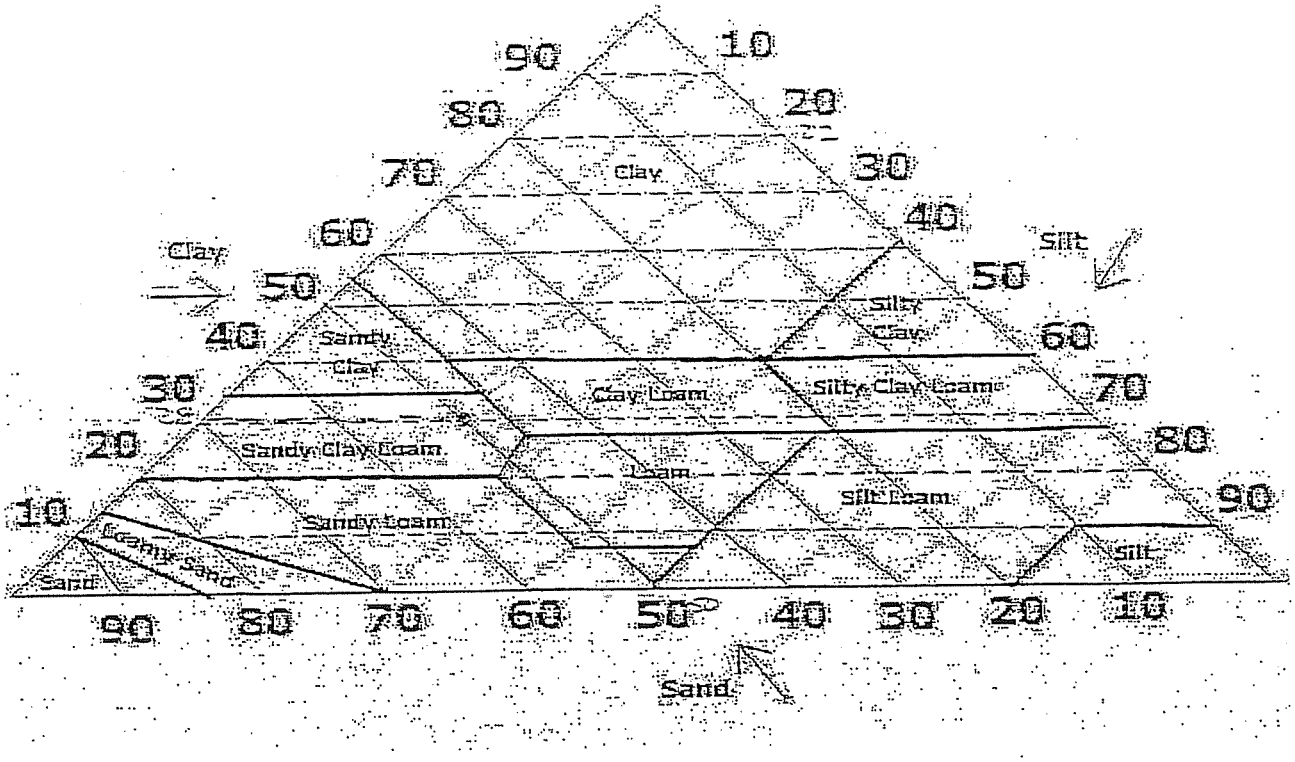
The results of soil texture analysis on samples received on August 28, 2003 are as follows:

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


90
10
80
20
70
30
60
40
50
50
40
60
30
70
20
80
10
90
Clay
Clay
Silt
Silty Clay
Sandy Clay
Clay Loam
Silty Clay Loam
Sandy Clay Loam
Loam
Silt Loam
Sandy Loam
Loamy Sand
Sand
Silt
90
80
70
60
50
40
30
20
10
Sand

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August 31, 2003
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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

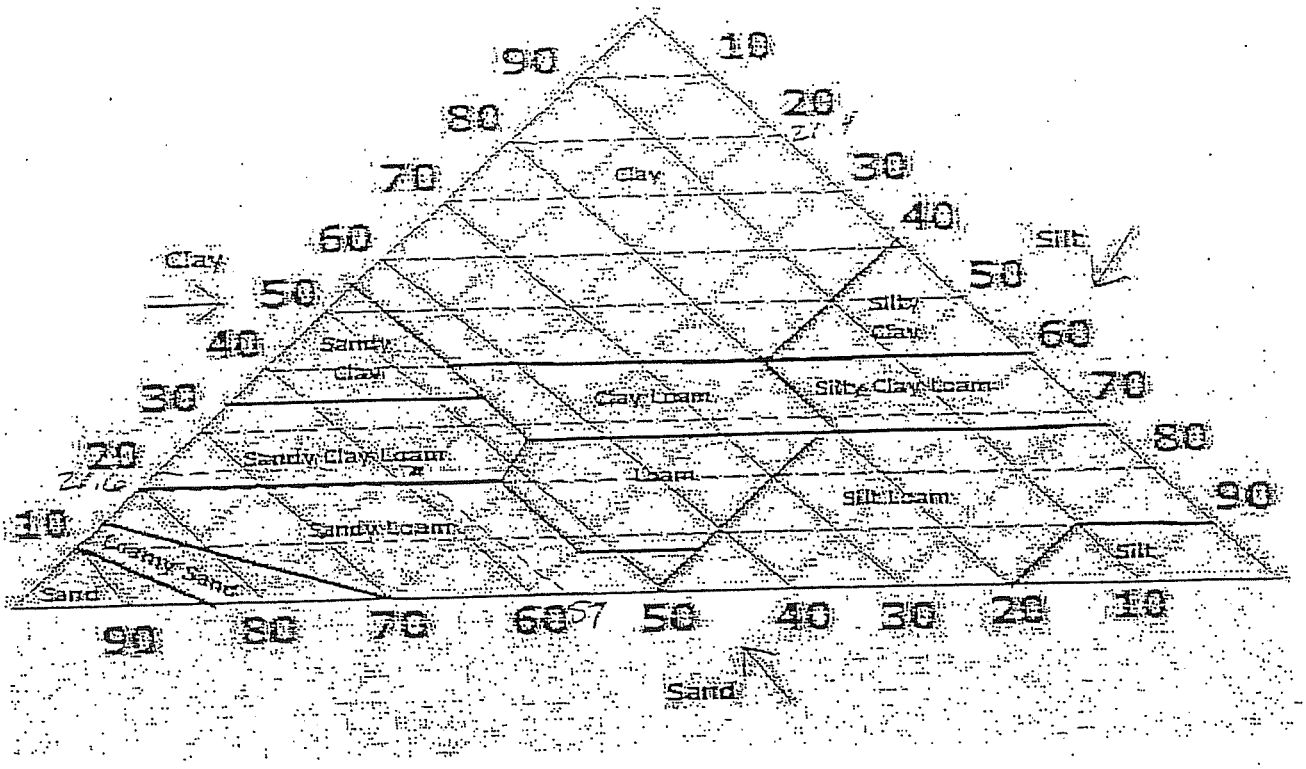
The results of soil texture analysis on samples received on August 28, 2003 are as follows:

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


90
10
80
20
70
30
60
40
50
50
40
60
30
70
20
80
10
90
Clay
Silt
Sand
Clay
Silty Clay
Sandy Clay
Clay Loam
Silty Clay Loam
Sandy Clay Loam
Loam
Silt Loam
Sandy Loam
Loamy Sand
Silt
Sand
90
80
70
60
50
40
30
20
10
Sand

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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

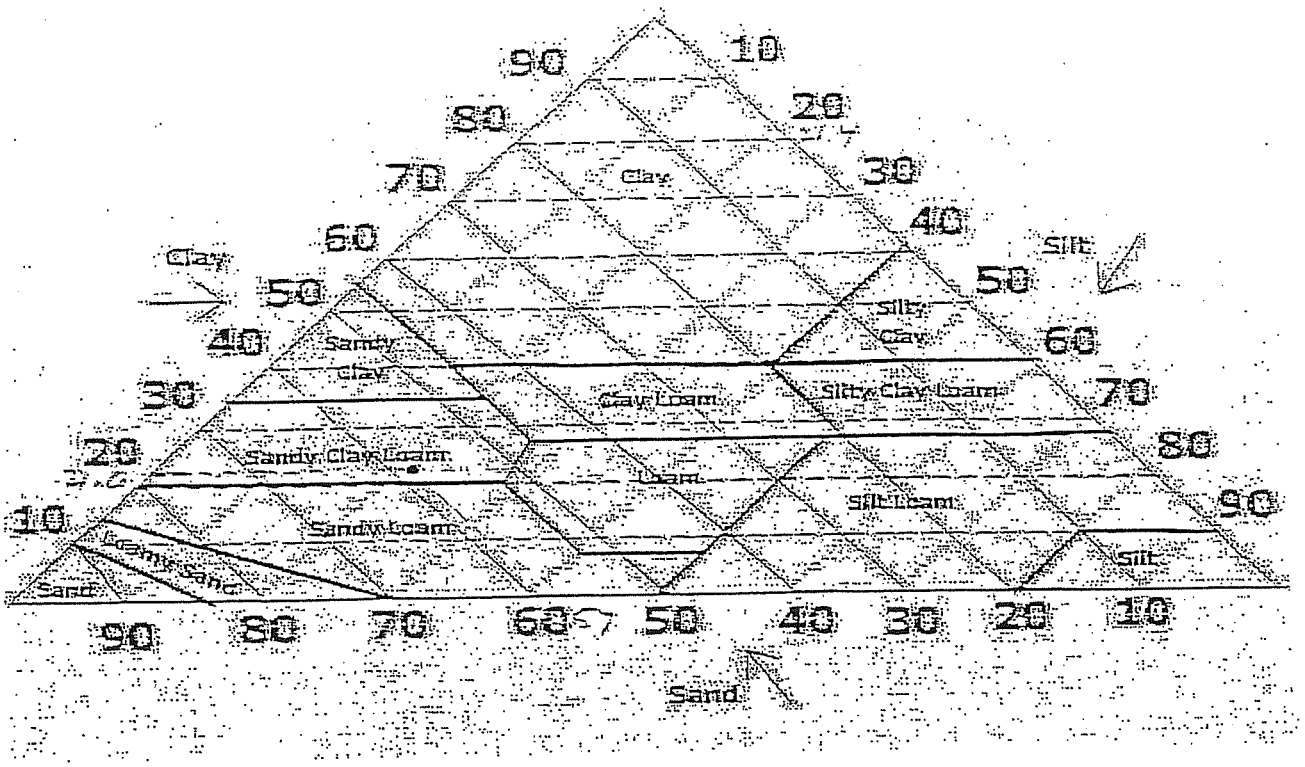
The results of soil texture analysis on samples received on August 28, 2003 are as follows:

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


90
80
70
60
50
40
30
20
10
Clay
Silt
Sand
Sandy Clay
Clay Loam
Silty Clay
Silty Clay Loam
Sandy Clay Loam
Loam
Silt Loam
Sandy Loam
Loamy Sand
Sand
Silt

ENCLOSURE C

PRESSURE DISTRIBUTION RESERVE AREA SITE EVALUATION

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 #:	ED-00719
APN:	039-030-038
(County Use Only) Reviewed by:	Date:

PLEASE PRINT OR TYPE ALL INFORMATION

Property Owner STAG'S LEAP WINE CELLARS	☐ New Construction ☐ Addition ☐ Remodel ☐ Relocation ☒ Other: New reserve area
Property Owner Mailing Address 7766 SILVERADO TRAIL	☐ Residential - # of Bedrooms: Design Flow: gpd
City State Zip SANTA ROSA CA 95403	☒ Commercial – Type: Sanitary Waste: TBD gpd Process Waste: Ø gpd
Site Address/Location 6736 SILVERADO TRAIL Napa, CA.	☐ Other: Sanitary Waste: gpd Process Waste: gpd

Evaluation Conducted By:

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

Primary Area	**Expansion Area**
Acceptable Soil Depth: in. Test pit #'s:	Acceptable Soil Depth: 36+/- in. Test pit #'s: 1-11, 12-17
Soil Application Rate (gal. /sq. ft. /day):	Soil Application Rate (gal. /sq. ft. /day):
System Type(s) Recommended:	System Type(s) Recommended: SUBSURFACE DRIP OR PD
Slope: %. Distance to nearest water source: ft.	Slope: <5 %. Distance to nearest water source: >100 ft.
Hydrometer test performed? No ☐ Yes ☐ (attach results)	Hydrometer test performed? No ☒ Yes ☐ (attach results)
Bulk Density test performed? No ☐ Yes ☐ (attach results)	Bulk Density test performed? No ☒ Yes ☐ (attach results)
Groundwater Monitoring Performed? No ☐ Yes ☐ (attach results)	Groundwater Monitoring Performed? No ☒ Yes ☐ (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		<5	SCL	S,SB	S	VFRB	S	m F,VF	F F	NO
32	G	<30	SC	S,AB	SH-H	FRB	VS	F F	F C	NO
38	G	<50	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		<5	SCL	S,SB	SH	VFRB	VS	m F,m	C F,m	NO
57	G	<30	SC	S,AB	H	FRB	VS	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		<5	CL	S,AB	H	VFRB	VS	m F,m	F F,m	NO
	NO LOWER LIMIT REACHED									

Attach additional sheets as needed

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		<5	SCL	S, AB	SH	VFRB	SS	m F, m	F F	No
57	G	<10	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	#A								
54	S/A	#A								

Test Pit # 6

Horizon Depth (Inches)	Boundary	%Rock	Texture	Structure	Consistence			Pores	Roots	Mottling
					Side Wall	Ped	Wet			
35	S/A	#A								
63	S/A	#A								@53" Distinct

Attach additional sheets as needed

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		<5-10	SCL	S,SB	SH	M F,m	VS	M F,m	F F,m	NO
36	G-D	<40	SCL+S	S,SB	S	M F,m	S	M F,m	F F	NO
60	G-D	<5-10	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		>50	Sand							
	LOWER LIMIT @ 59"									

Attach additional sheets as needed

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			
42	S/A	#4								
60	S/A	#4								@48"

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	@ 20'							

Attach additional sheets as needed

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	@ 58"							

Attach additional sheets as needed

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								
57	S/A ±	4								@45

Test Pit # 17

Horizon Depth (Inches)	Boundary	%Rock	Texture	Structure	Consistence			Pores	Roots	Mottling
					Side Wall	Ped	Wet			
32	S/A	#4								
57	S/A	#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-SB	H	FRB	S	m F, m	F m	NO
53	G	<5	SCL	S, AB-SB	S	FRB	VS	m F, m	F m	@30"

Attach additional sheets as needed

P:\PROJECT\2012\2012088 STAGS LEAP WINE CELLARS USE PERMIT\CAD\WWWATER\SOIL EVAL MAP.DWG

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