

“G”

## Wastewater Feasibility Study



HUGH LINN, PE, OSD, DSP  
PRINCIPAL + PRESIDENT

hLinn@RSAcivil.com

RYAN GREGORY, PE  
PRINCIPAL + VICE PRESIDENT

rGregory@RSAcivil.com

CHRISTOPHER TIBBITS, PE, LS  
PRINCIPAL + VICE PRESIDENT

ctibbits@RSAcivil.com

RSACivil.com

RECEIVED

NOV 08 2016

Napa County Planning, Building  
& Environmental Services

#4116014.0  
October 12, 2016

Kim Withrow  
Napa County  
1195 Third Street, Suite 201  
Napa, CA 94559

RE: B Cellars Vineyards and Winery Supplemental Septic Design Report  
APN 031-070-026

This supplemental letter illustrates that the existing septic wastewater treatment system is capable of treating and dispersing the combined flows of the existing residence and winery with the proposed increase in visitation and employees.

The existing system as described in the attached Septic System Design Report, prepared by Riechers Spence & Associates, dated March 21, 2014, has a treatment and dispersal capacity of 2,913 gpd with an allowable storage on event days of 590 gallons per day.

The proposed modifications will result in a typical peak daily flow of 1,973 gpd and a large event day peak flow of 3,443 gpd, as shown in the table below. The daily peak flow of 1,973 gpd is within the system's treatment and dispersal capacity of 2,913 gpd. The peak flow expected on an event day was reduced from the existing system design parameters of 3,505 gpd to 3,443 gpd.

Table 1. Projected Wastewater Flows for Use Permit Modification

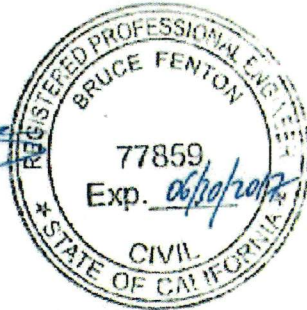
Use	Source	Number	Projected Flow (gpd)	Typical Day Flow (gpd)	Total Flow Large Event (gpd)
WINERY	Full-time employees	12	15	180	180
	Part-time employees	7.5	15	113	112.5
	Part-time event employees	4	15		60
	Visitors	80	3	240	
	Event Day Visitors	50	3		150
	Private Promotional w/ meals (catered)	150	10		1500
	Proposed 2 Bedroom Guest House	2	120	240	240
	Existing Residence	10	120	1200	1200
<b>Grand Total</b>			<b>Total Peak Flow</b>	<b>1973</b>	<b>3443</b>

We conclude that the existing system meets the treatment and dispersal needs of the proposed Use Permit modification.

Respectfully,

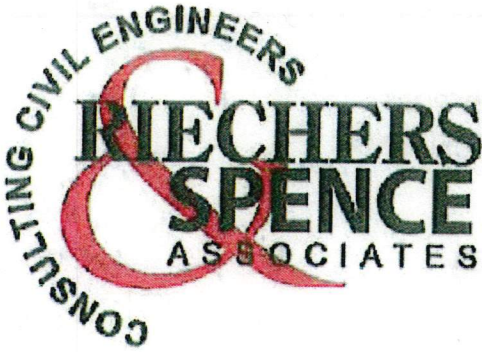


Bruce Fenton, P.E.  
Project Manager



MS/sb

Encl.



## SEPTIC SYSTEM DESIGN REPORT

VINTAGE OAKVILLE CROSS RESIDENCE  
703 OAKVILLE CROSS ROAD  
NAPA, CALIFORNIA

APN 031-070-026



Prepared for:

Vintage Oakville Cross, LLC  
c/o American Fidelity Realty  
2000 North Classen Boulevard  
Oklahoma City, OK 73106

February 5, 2014  
*Revised March 21, 2014*  
4113067.0



SEPTIC SYSTEM DESIGN REPORT  
VINTAGE OAKVILLE CROSS RESIDENCE

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1. Vicinity Map & USGS Quad Map
2. Site Evaluation
3. Septic System Calculations

## INTRODUCTION AND PROJECT DESCRIPTION

The owner intends to demolish an existing 3 bedroom residence and replace it with a new 10 bedroom residence in the same location. The residence is located on a 11.53 +/- acre parcel, APN 031-070-026 at 703 Oakville Cross Road, Napa. As well as the proposed 10 bedroom residence there is a 3 bedroom farm labor dwelling and a 45,000 gallon per year winery on the parcel. The topography on the parcel is mostly flat on the valley floor and has one knoll, which is where the existing residence is located. Three wells exist on the property. Appendix 1 contains a Site Location Map and a USGS Quad Map showing the parcel topography, features and boundary.

This report is for the addition of a septic tank and a subsurface drip dispersal lines to the existing wastewater system to accommodate the increase in bedrooms.

## EXISTING SEPTIC SYSTEM

Information from Napa County Environmental Management files for the parcel shows an existing septic system subsurface drip septic system that serves the existing 3 bedroom residence, the existing 3 bedroom farm labor dwelling and the sanitary flows from the existing winery. The main residence gravity flows to the field while the farm labor dwelling and the winery are pumped to the field.

## SITE EVALUATION

A site evaluation was conducted on May 28, 2013 by Lisa Blanc from Riechers Spence & Associates and observed by Rebecca Setliff of Napa County Environmental Management. Appendix 2 contains the Site Evaluation results. This report shows that the test pits contain silty clay and that the pits have at least an acceptable soil to a depth of 24".

A site evaluation was also conducted on June 8, 2012 by Lisa Blanc from Riechers Spence & Associates and observed by Sheldon Sapoznik of Napa County Environmental Management. Appendix 2 contains the Site Evaluation results. This report shows that the test pits contain silty clay loam and that the pits have at least an acceptable soil to a depth of 24".

Another site evaluation was done on the property on January 13, 2004 by Pridmore, and approved by Kim Withrow. These test pits were utilized in the design of the proposed system. The report shows that the test pits contain silty loam and that each pit has an acceptable soil to a depth of 48". Although this area has a greater application rate, the more conservative, silty clay loam, will be used for design purposes. Appendix 2 contains the Site Evaluation results.

Primary dispersal area for the residences and winery are located in the area represented by test pit #'s 1, 2, 3, and 4 from the 2004 site evaluation. The reserve area for the residences and winery are located in the area represented by test pit #'s 1, 2, 3, and 4 from the 2013 site evaluation. All test pits for the primary dispersal area have greater than the required 30" soil

depth. Sanitary wastewater will be pretreated to meet Napa County Requirements for pre-treated effluent prior to dispersal.

### WASTEWATER VOLUME ESTIMATE

The estimated peak wastewater volume is based on Napa County Environmental Health design standard of 120 gallons per day (gpd) per bedroom for a residence with low flow plumbing fixtures. The existing residence is 3 bedrooms and the proposed residence is 10 bedrooms, including study and exercise room which is an increase in bedrooms of 7. This equates to an additional 840 gpd for the proposed 10 bedroom residence.

### WASTEWATER TREATMENT SYSTEM DESIGN

Wastewater will undergo primary and pre-treatment in three Hoot H-1000 Aerobic Treatment Systems. Final disposal from the Hoot system will be to a subsurface Geoflow Drip Dispersal system. The treatment goal is to meet Napa County discharge limits for discharge of pre-treated effluent to a subsurface drip dispersal system of 30 mg/l BOD<sub>5</sub> and 30 mg/l TSS. The following tables are summaries of the flows for the existing septic system flows and the proposed septic system flows.

**Table 1 - Existing Flows**

Use	Source	Number	Projected Flow (gpd)	Typical Day Flow (gpd)	Total Flow Large Event (gpd)
WINERY	Full-time employees	8	15	120	120
	Part-time harvest employees	5	15	75	75
	Part-time event employees	4.5	15		67.5
	Visitors	60	3	180	180
	Private Promotional w/ meals (catered)	150	10		1500
	Existing Farm Labor Dwelling	3	120	360	360
	Existing Residence	3	120	360	360
<b>Grand Total</b>			<b>Total Peak Flow</b>	<b>1095</b>	<b>2663</b>

**Table 2 - Proposed Flows**

Use	Source	Number	Projected Flow (gpd)	Typical Day Flow (gpd)	Total Flow Large Event (gpd)
WINERY	Full-time employees	8	15	120	120
	Part-time harvest employees	5	15	75	75
	Part-time event employees	4.5	15		67.5
	Visitors	60	3	180	180
	Private Promotional w/ meals (catered)	150	10		1500
	Existing Farm Labor Dwelling	3	120	360	360
	Proposed Residence	10	120	1200	1200
<b>Grand Total</b>			<b>Total Peak Flow</b>	<b>1935</b>	<b>3503</b>

#### **Hoot Aerobic Treatment System (H-1000 BNR)**

The existing system consist of an 8,000 gallon septic/pump tank for the winery, a 1,200 gallon septic tank for the farm labor dwelling and a 2,000 gallon septic tank for the existing residence. Per Napa County Code, Table 13.44.020, a 10 bedroom residence requires a 2,500 gallon septic tank. Because there is already a 2,000 gallon septic tank at the residence, a 750 gallon holding tank will be added after the septic tank to achieve the same retention time as a 2,500 gallon tank would provide. All tanks flow into a 5,000 gallon equalization tank, and then to 3 - 1,000 gallon per day Hoot Aerobic Treatment System tanks (H-1000 BNR) and final distribution to a Geoflow subsurface drip dispersal field. The HOOT tanks operate in parallel with each other.

The existing design loading rate for the septic system is 2,313 gpd and stores 350 gallons from a large event at the winery in the equalization tank. The system doses a maximum of 2,313 gallons to the drip dispersal field. The proposed residence will add 7 bedrooms, which equates to 840 gpd. Due to the increase in bedroom count, the design loading rate will be increased to dose a maximum of 2,913 gpd to the dispersal field and will require the large winery events to store 590 gpd in the equalization tank.

System sizing, tank sizing, and treatment system settings are based on HOOT manufacturer's specifications to achieve the design treatment goals of 30 mg/l BOD<sub>5</sub> and 30 mg/l TSS. Pump sizing, timer settings and treatment system calculations are found in Appendix 3 of this report.

#### **Geoflow Drip Dispersal System**

The Geoflow field and reserve area are currently located as shown on sheet SS2.0 of the attached plans. Soil depth is at least 30 inches in the primary dispersal field area and will require no fill placement. The reserve dispersal field areas have a soil depth of at least 24" and will require 6 inches of silty clay fill.



The most restricting soil horizon for the primary area is silty clay loam with moderate sub-angular blocky structure. Referring to Table 2 of the Geoflow Design, Installation and Maintenance Guidelines, a Geoflow system installed in silty clay loam soil with moderate, sub angular blocky structure will accept 0.6 gpd/sf/day. For a total daily flow of 2,913 gpd this equates to base dispersal area of 4,855 square feet.

$$\text{Drip Dispersal Field Area} = \frac{2,913 \text{ gpd}}{0.6 \text{ gpd / SF}} = 4,855 \text{ square feet}$$

The Geoflow field will therefore need to consist of 2,428 lineal feet of drip line. The existing system consists of 1,952 lineal feet of drip line, therefore an additional 476 lineal feet will have to be added to accommodate the proposed residence. Four additional lines at 122' will be added to the system. The new lines will be oriented along the contours and attached to the existing supply and flush manifolds as shown on sheet SS2.0 of the attached plans. The field is separated into two zones. Both fields currently consist of 8 - 122 lineal feet of drip line. Each zone will add 2 - 122 lineal feet of drip line. Each zone will have 8 existing and 2 new, 122 foot geoflow drip lines lines.

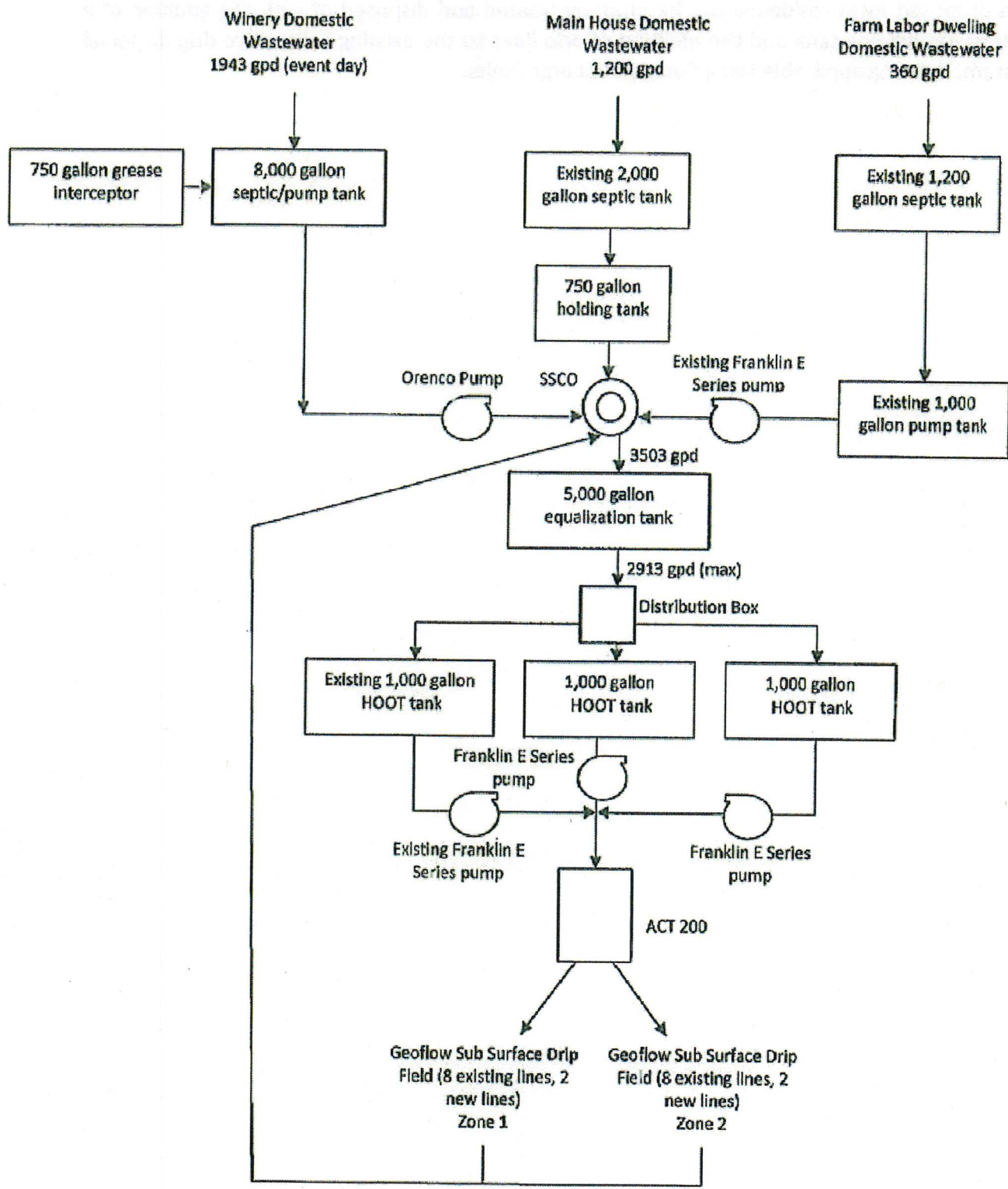
In addition to the primary dispersal area of 4,855 square feet, a 200% reserve area is required. A 200% reserve area has already been proven for the existing residences and winery and therefore will be only for the additional daily discharge from the proposed residence, 600 gpd. The reserve area will be located where the soil application rate is of 0.6 gallons/square foot/day.

$$\text{Drip Dispersal Field Area (reserve area)} = \frac{600 \text{ gpd}}{0.6 \text{ gpd / SF}} \times 200\% = 2,000 \text{ square feet}$$

The total requirement for additional wastewater reserve dispersal area is 2,000 square feet.

All monitoring wells that are currently installed will cover the additional lines. Geoflow field calculations are found in Appendix 6 of this report. Figure 1 shows a schematic of the process wastewater system.

**FIGURE 1  
PROCESS FLOW DIAGRAM  
SANITARY WASTEWATER**



## CONCLUSION

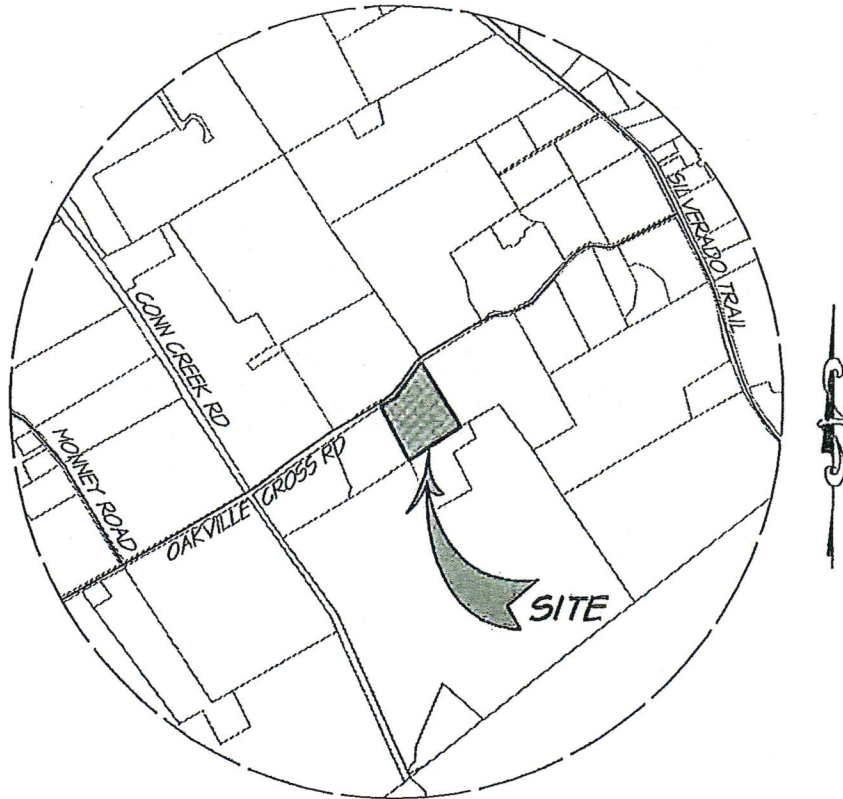
Based on the information contained in this report, we conclude that the additional bedrooms in the proposed main residence can be properly treated and disposed of with the addition of a 750 gallon holding tank and the addition of drip lines to the existing subsurface drip dispersal system, meeting applicable Napa County discharge limits.



Appendix 1

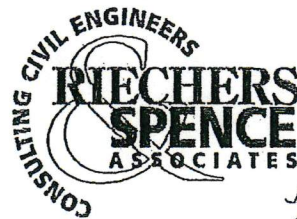
Vicinity Map  
USGS Quad Map

VINTAGE OAKVILLE  
CROSS RESIDENCE  
VICINITY MAP  
OAKVILLE CALIFORNIA



**VICINITY MAP**

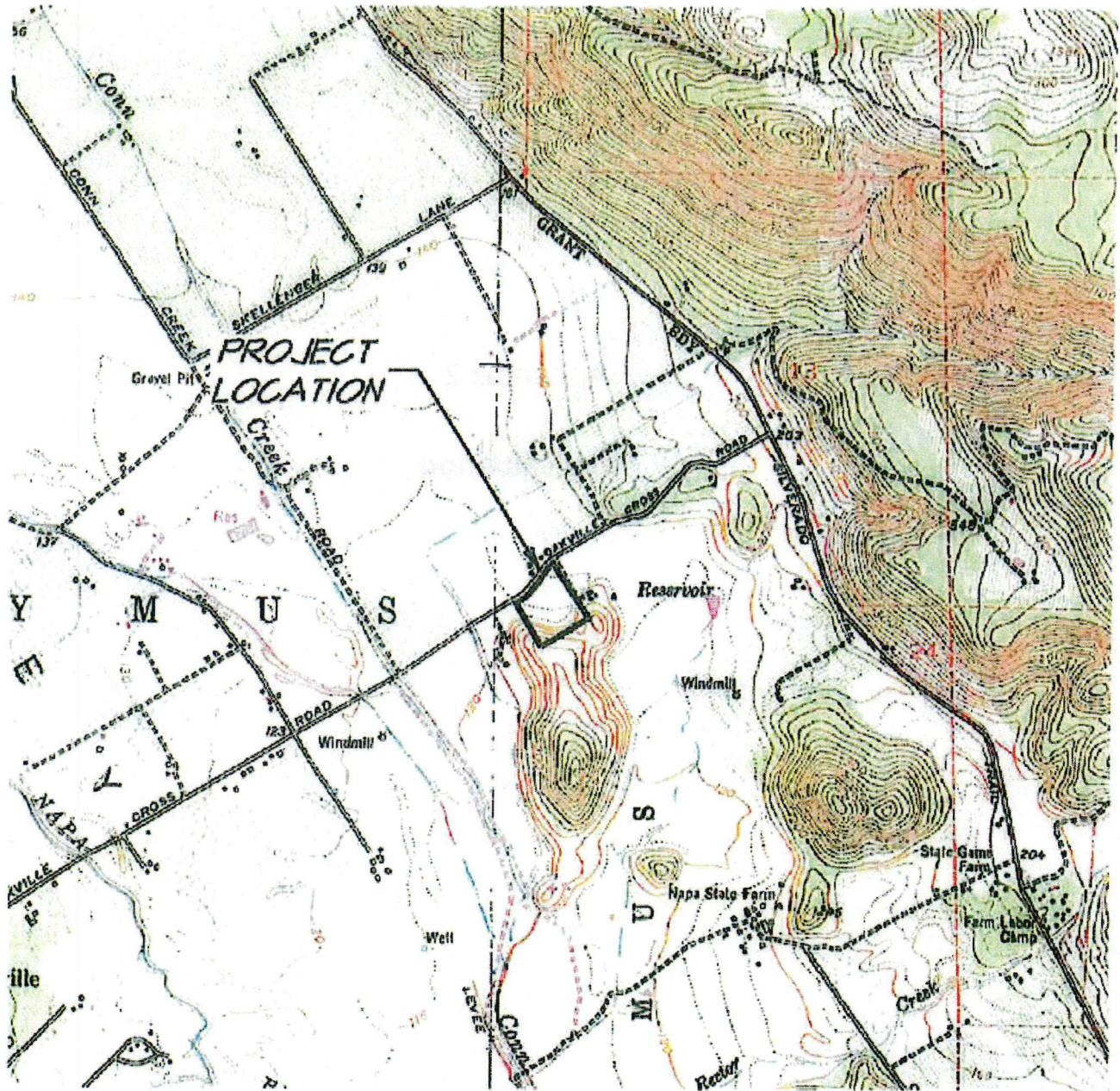
SCALE: 1" = 2000'



1515 Fourth Street  
Napo, Calif. 94559  
v 707.252.3301  
f 707.252.4966

JANUARY 16, 2014  
4113067.0 1 OF 1

# VINTAGE OAKVILLE CROSS RESIDENCE USGS QUAD MAP OAKVILLE CALIFORNIA



SCALE: 1" = 2000'

CONSULTING CIVIL ENGINEERS  
**RIECHERS & SPENCE**  
 ASSOCIATES

1515 Fourth Street  
 Napa, Calif. 94559  
 v 707.252.3301  
 f 707.252.4966

JANUARY 16, 2014  
 4113067.0 1 OF 1

Appendix 2  
Site Evaluation

PVMT  
APPROX  
AC

WATER TANK  
WATER LINE  
POWER POLE  
PAVEMENT

206-2-15148

NAPA COUNTY DEPARTMENT OF ENVIRONMENTAL MANAGEMENT  
REQUEST FOR SITE EVALUATION INSPECTION

ENVIRONMENTAL HEALTH DEPT. USE ONLY

FEE: 348.00  
DATE: 1/13/04  
RECEIPT: 32980  
BY: [Signature]

FARCEL NUMBER: 31-070-26  
JOB ADDRESS: 701 Oakville Road  
OWNER: Lisa Miller  
TEST CONDUCTED BY: Widmore

TYPE OF TEST: FIELD ANALYSIS  
To be run on 6/14 at 1:00 am pm

PERCOLATION TEST  
To be run on \_\_\_\_\_ from \_\_\_\_\_ am/pm to \_\_\_\_\_ pm

PURPOSE OF TEST: HOUSE: \_\_\_\_\_ WINERY: X OTHER: \_\_\_\_\_  
PROJECTED WASTEWATER FLOWS: 10,000 gpy = 500 gpd + down gpd

PERCOLATION TEST INSPECTION RESULTS

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

TYPE OF SYSTEM APPROVED

STANDARD SYSTEM  
Acceptable soil to: LO" / Assigned perc range: 1-3 / 3-6 / 6-12  
Depth of trench: 24" / Rock under pipe: 12" or 36" / Cover over rocks: 12"  
Lineal feet of leachline required: TBD / Plot plan received: 6-14-04  
Slope: 5-10% / Surface drainage problems: \_\_\_\_\_  
Additional information: Prohibit horses from going into system; stay lower on hill (at toe of slope)

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: \_\_\_\_\_

E.H. Specialist Kim Waltham Date 7-8-04



FIELD ANALYSIS

TEXTURE ( In the proposed trench zone )

CLAY CONTENT						SAND CONTENT						GRAVEL, COBBLE, STON.						
Core Hole	1	2	3	4	5	6	Core Hole	1	2	3	4	5	6	Core Hole	1	2	3	
Low (<12)							High (>50)							Very High (>60)				
Mod (12-27)	X	Y	Y	Y	Y		Mod (20-50)	X	Y	Y	Y	Y		High(35-60)				
High (27-40)							Low (<20)							Mod (15-35)				
High (>40)														Low (<15)	X	X	Y	Y

STRUCTURE

SOIL DENSITY WHEN PICKED (Circle whether wet or dry)							CONSISTENCE (Circle w or d)						
Core Hole	1	2	3	4	5	6	Core Hole	1	2	3	4	5	6
pick sluffs or caves soil in							Easy	X	X	Y	X	X	
pick bites and soil sluffs	X	X	Y	X	X		Moderate						
pick bites/ little or no soil sluffs							Hard						

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

MODIFIER CHARACTERISTICS

- 1) Soil Survey Name: \_\_\_\_\_
- 2) Horizon Boundaries: Diffuse \_\_\_\_\_ Gradual X Abrupt \_\_\_\_\_
- 3) Topography: Concave \_\_\_\_\_ Convex X / Aspect: \_\_\_\_\_
- 4) Vegetation: Type rowe pasture Condition: 1

\*\*\*\*\*

CORE HOLE RECORD

HOLE #1	EST. PERC	HOLE #2	EST. PERC	HOLE #3	EST. PERC
0 to <u>48" silt loam</u>	<u>3-6</u>	0 to <u>54" silt loam</u>	<u>3-6</u>	0 to <u>48" silt loam</u>	<u>3-6</u>
<u>48" to 66" rocky soil</u>		<u>54" to 66" rocky loam</u>	<u>3-6</u>	<u>48" to 250' rock</u>	
to _____		to _____		to _____	
Roots: <u>some at top</u>		Roots: <u>some at top</u>		Roots: <u>some at top</u>	
Color: <u>bright / dull</u>		Color: <u>bright / dull</u>		Color: <u>bright / dull</u>	
Water Table: <u>not noted</u>		Water Table: <u>not noted</u>		Water Table: <u>not noted</u>	
Dug: <u>easy / hard / dusty / smear</u>		Dug: <u>easy / hard / dusty / smear</u>		Dug: <u>easy / hard / dusty / smear</u>	
Acceptable Soil To: <u>48"</u>		Acceptable Soil To: <u>66"</u>		Acceptable Soil To: <u>48"</u>	

CORE HOLE RECORD

HOLE #4	EST. PERC	HOLE #5	EST. PERC	HOLE #6	EST. PERC
0 to <u>60" silt loam</u>	<u>3-6</u>	0 to <u>60" (on hard) silt loam</u>	<u>3-6</u>	_____ to _____	
to _____		to _____		to _____	
to _____		to _____		to _____	
Roots: <u>at surface</u>		Roots: <u>at surface</u>		Roots: _____	
Color: <u>bright / dull</u>		Color: <u>bright / dull</u>		Color: <u>bright / dull</u>	
Water Table: <u>not noted</u>		Water Table: <u>not noted</u>		Water Table: _____	
Dug: <u>easy / hard / dusty / smear</u>		Dug: <u>easy / hard / dusty / smear</u>		Dug: <u>easy / hard / dusty / smear</u>	
Acceptable Soil To: <u>60"</u>		Acceptable Soil To: <u>66"</u>		Acceptable Soil To: _____	

FEASIBILITY STUDY  
 FOR THE  
**MILLER WINERY**  
 OAKVILLE CROSS RD., NAPA, CA  
 A.P.N. 031-070-026

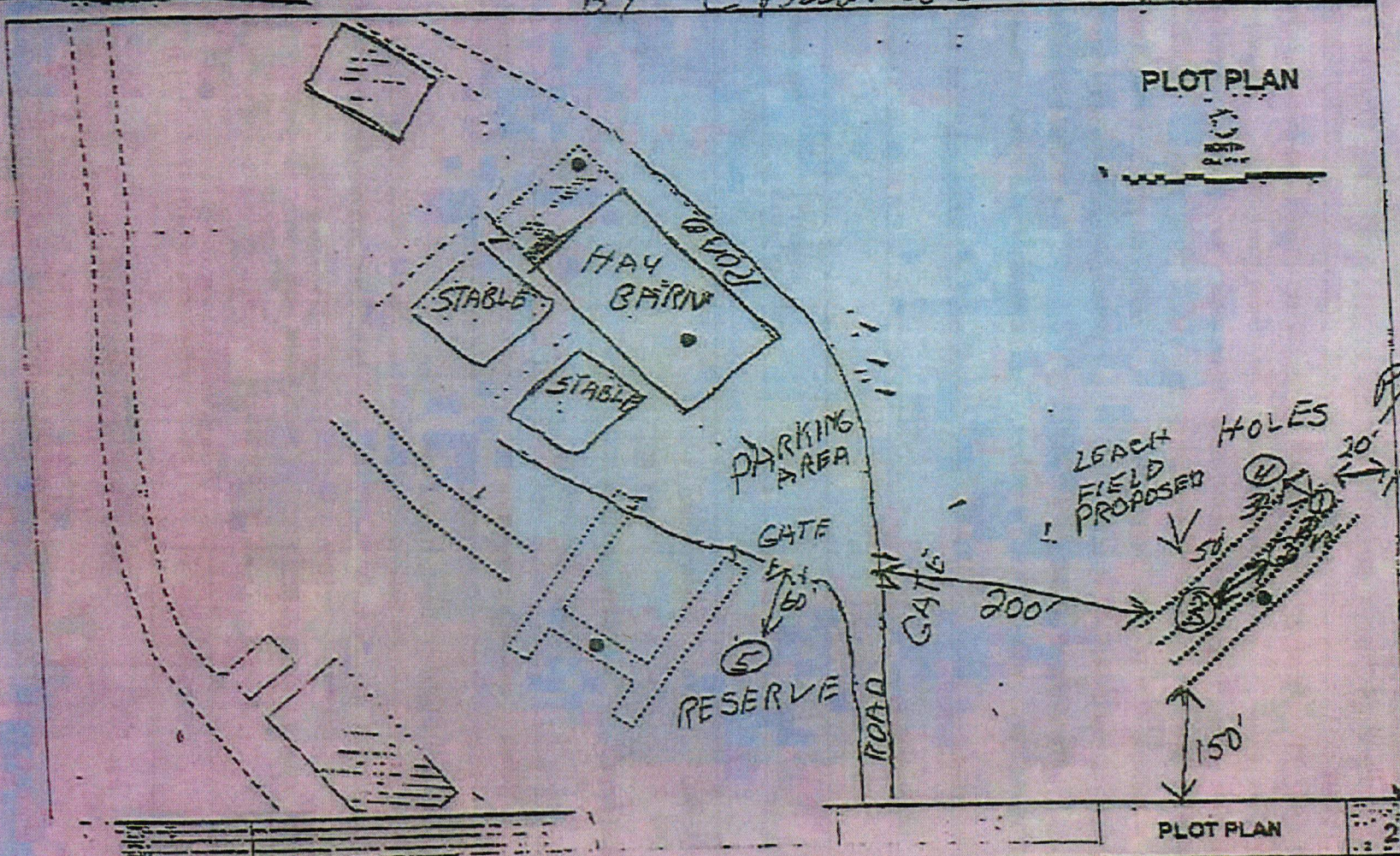
SITE EVALUATION  
 BY C. Prudmore

DATE 6-14-04

RECEIVED

JUN 14 2004

DEPT. OF



Post-It® Fax Note	7671	Date	6-14-04	# of pages	1
To	Kim	From	Prudmore Bros	Co.	
Co / Dept.		Phone #	224-0682		

Permit Number: E12-00296  
 APN 031-070-026  
 RSA Project Number: 4112023.0

Date: June 12, 2012  
 Page 1 of 4

Napa County Department of  
 Environmental Management

**SITE EVALUATION REPORT**

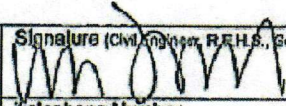
Please attach an 8.5" x 11" plot map showing the locations of all test pits triangulated from permanent landmarks or known property corners. The map must be drawn to scale and include a North arrow, surrounding geographic and topographic features, direction and % slope, distance to drainages, water bodies,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

Permit #: E12-00296	
APN: 031-070-026	
(County Use Only) Reviewed by:	Date:

**PLEASE PRINT OR TYPE ALL INFORMATION**

Property Owner Elissa Miller	<input checked="" type="checkbox"/> New Construction <input type="checkbox"/> Addition <input type="checkbox"/> Remodel <input type="checkbox"/> Relocation  <input type="checkbox"/> Other:
Property Owner Mailing Address 701 Oakville Cross Road	<input type="checkbox"/> Residential - # of Bedrooms:   Design Flow:   gpd
City                                  State                  Zip Oakville                                  CA                          94562	<input checked="" type="checkbox"/> Commercial - Type:  Sanitary Waste: 800 gpd                  Process Waste: 1167 gpd
Site Address/Location  701 Oakville Cross Road Oakville, CA 94562	<input type="checkbox"/> Other:  Sanitary Waste:                  gpd                  Process Waste:                  gpd

**Evaluation Conducted By:**

Company Name Riechers Spence & Associates	Evaluator's Name Lisa Blanc	Signature (Civil Engineer, R.E.H.S., Geologist, Soil Scientist) 
Mailing Address: 1515 Fourth Street		Telephone Number 707-252-3301
City                                  State                  Zip Napa    CA                          94559		Date Evaluation Conducted June 8, 2012

**Primary Area**

Acceptable Soil Depth: 60 in.   Test pit #'s: From Site Eval in 2004  
 Soil Application Rate (gal. /sq. ft. /day): 0.33  
 System Type(s) Recommended: Chambers with Pre Treatment  
 Slope: 1-9 %.   Distance to nearest water source: < 100 ft.  
 Hydrometer test performed?   No    Yes  (attach results)  
 Bulk Density test performed?   No    Yes  (attach results)  
 Percolation test performed?   No    Yes  (attach results)  
 Groundwater Monitoring Performed?   No    Yes  (attach results)

**Expansion Area**

Acceptable Soil Depth: 24 in.   Test pit #'s: 2, 3, 5, 6  
 Soil Application Rate (gal. /sq. ft. /day): 0.60  
 System Type(s) Recommended: Geoflow with Pre Treatment  
 Slope: 5-10 %.   Distance to nearest water source: < 100 ft.  
 Hydrometer test performed?   No    Yes  (attach results)  
 Bulk Density test performed?   No    Yes  (attach results)  
 Percolation test performed?   No    Yes  (attach results)  
 Groundwater Monitoring Performed?   No    Yes  (attach results)

**Site constraints/Recommendations:**

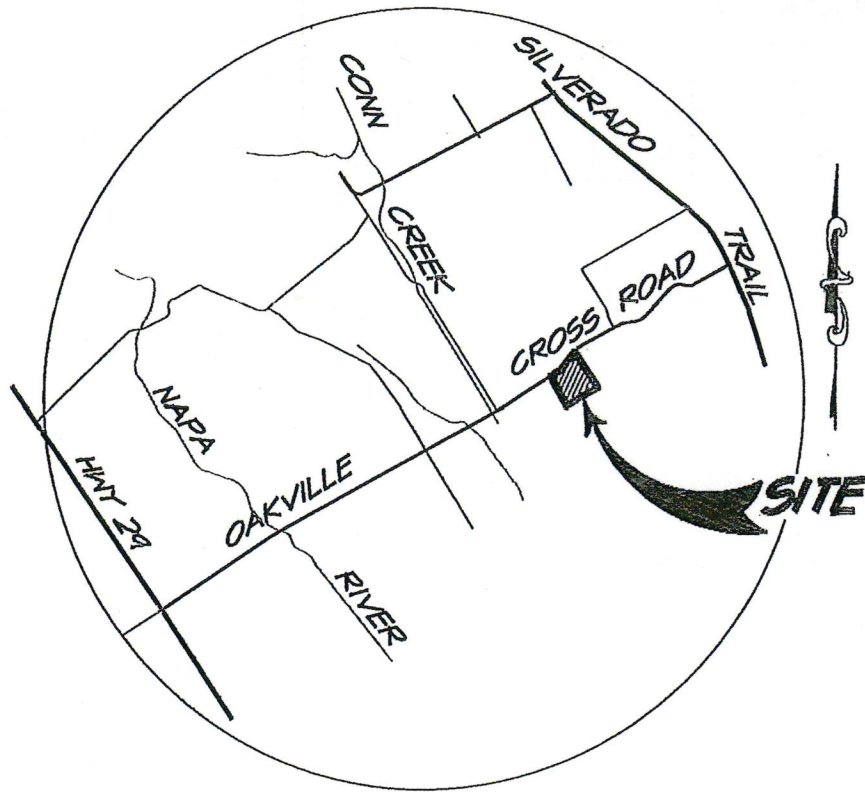
**Primary area for sanitary waste will be in same location as approved plans from 2009. Site evaluation was conducted in 2004.**  
**Reserve area and process waste information was gathered from this site evaluation. Reserve area to stay away from pits 1, 4 and 7.**





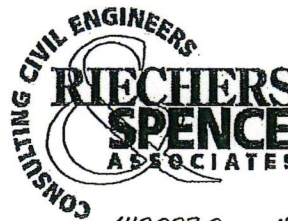


MILLER PROPERTY  
VICINITY MAP  
OAKVILLE CALIFORNIA



LOCATION MAP

NO SCALE

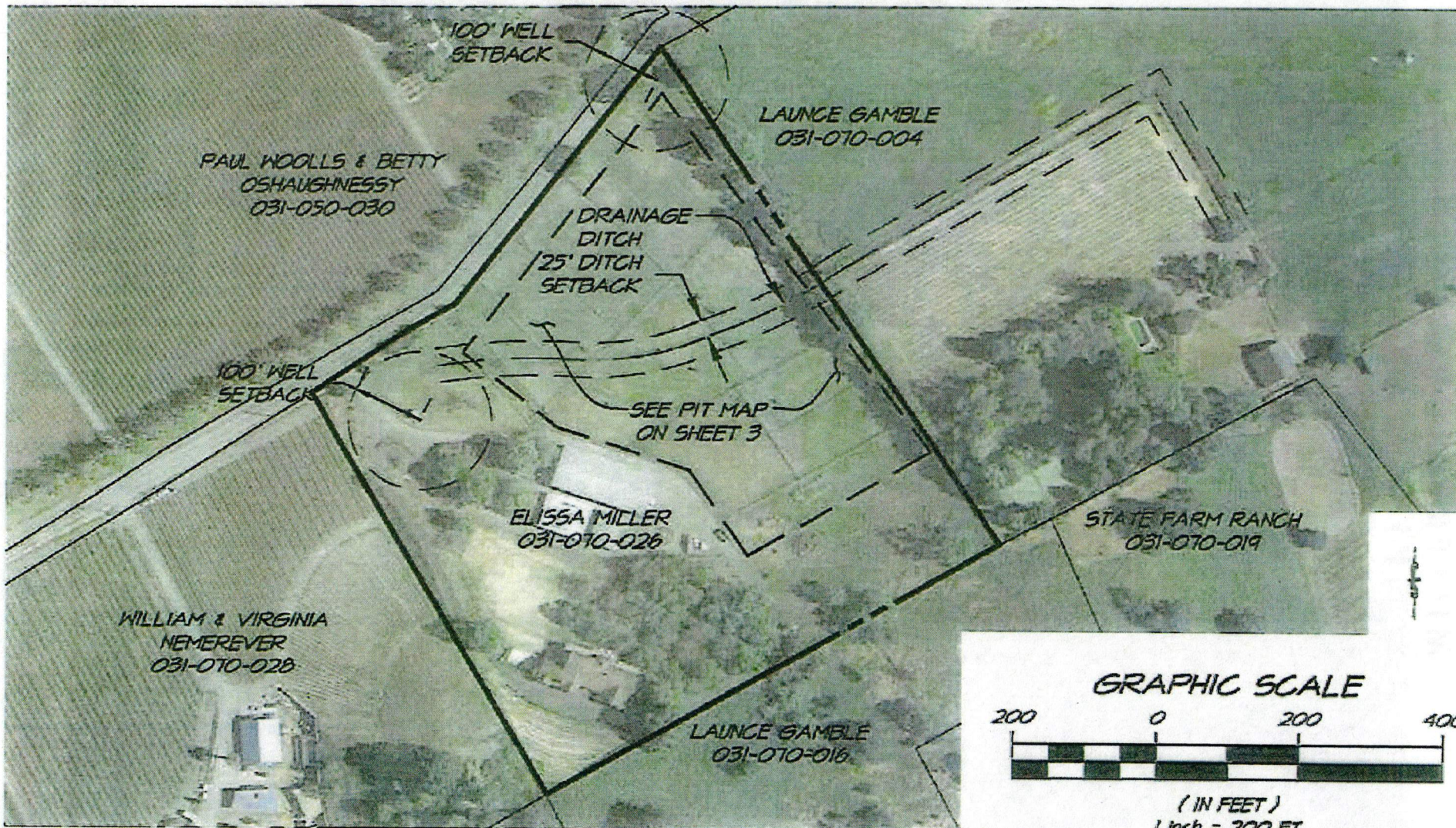


1515 Fourth Street  
Napa, Calif. 94559  
v 707.252.3301  
f 707.252.4966

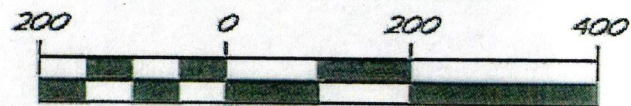
JUNE 12, 2012

4112023.0 pitmap.dwg 1 OF 3

# MILLER PROPERTY PIT MAP LOCATIONS



## GRAPHIC SCALE

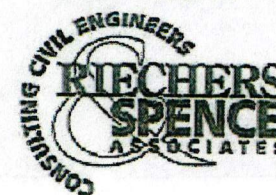


( IN FEET )  
1 inch = 200 FT

SITE EVALUATION DATE: JUNE 8, 2012  
 APN: 031-070-026  
 ADDRESS: 701 OAKVILLE CROSS ROAD  
 OAKVILLE, CA 94562  
 ENV. HEALTH INSPECTOR: SHELDON SAPOZNIK

### LEGEND

⊙ TP#1 TEST PIT



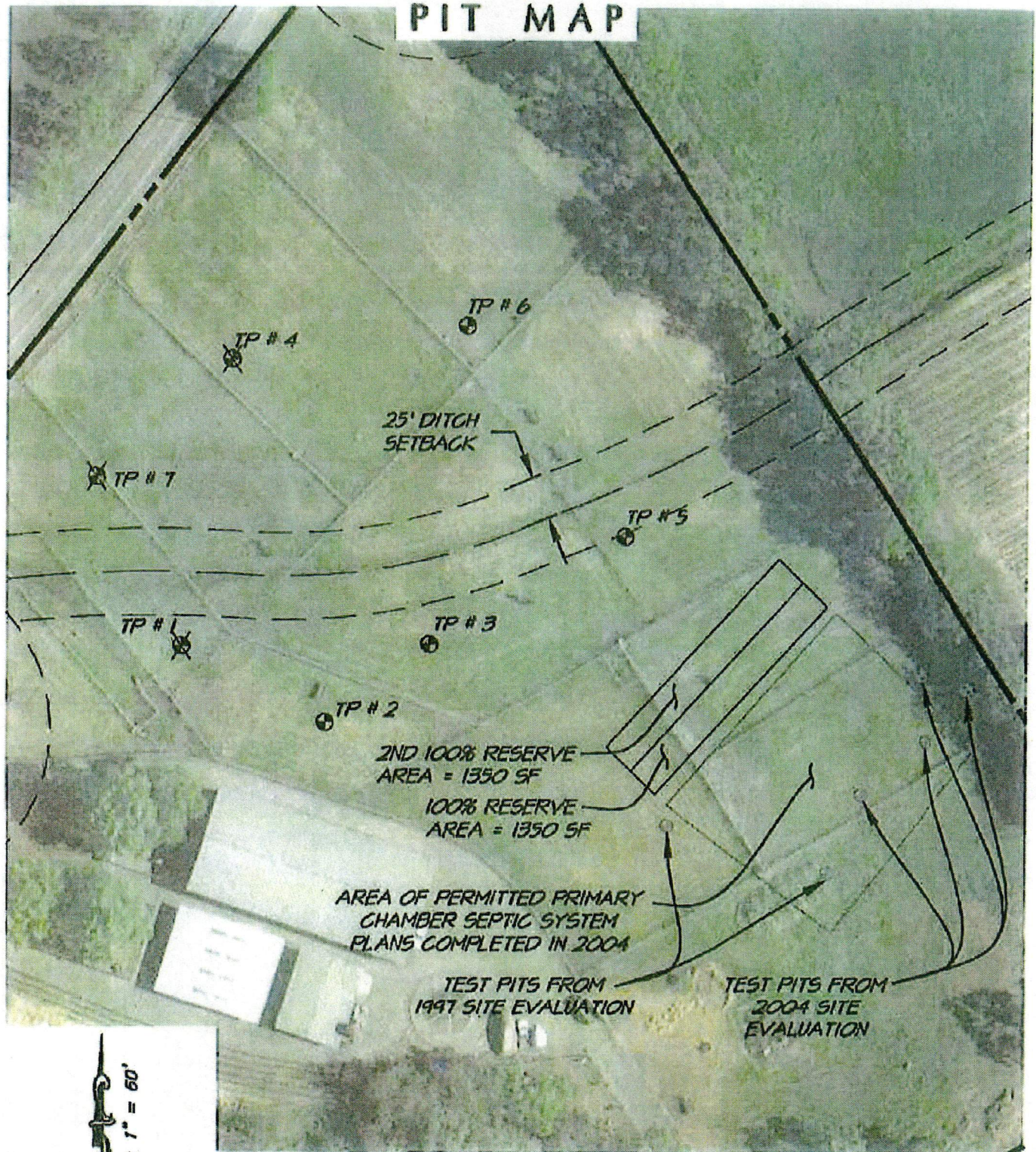
1515 Fourth Street  
 Napa, Calif. 94558  
 v 707.252.3301  
 f 707.252.4966

JUNE 12, 2012

4112023.0 pitmap.dwg 2 OF 3



# MILLER PROPERTY PIT MAP

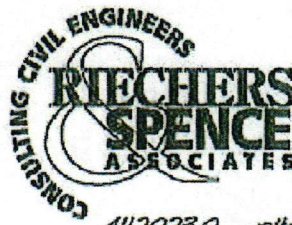


SCALE: 1" = 60'

## LEGEND

⊙ TP# TEST PIT

SITE EVALUATION DATE: JUNE 8, 2012  
 APN: 031-070-026  
 ADDRESS: 701 OAKVILLE CROSS ROAD  
 OAKVILLE, CA 94562  
 ENV. HEALTH INSPECTOR: SHELDON SAPOZNIK

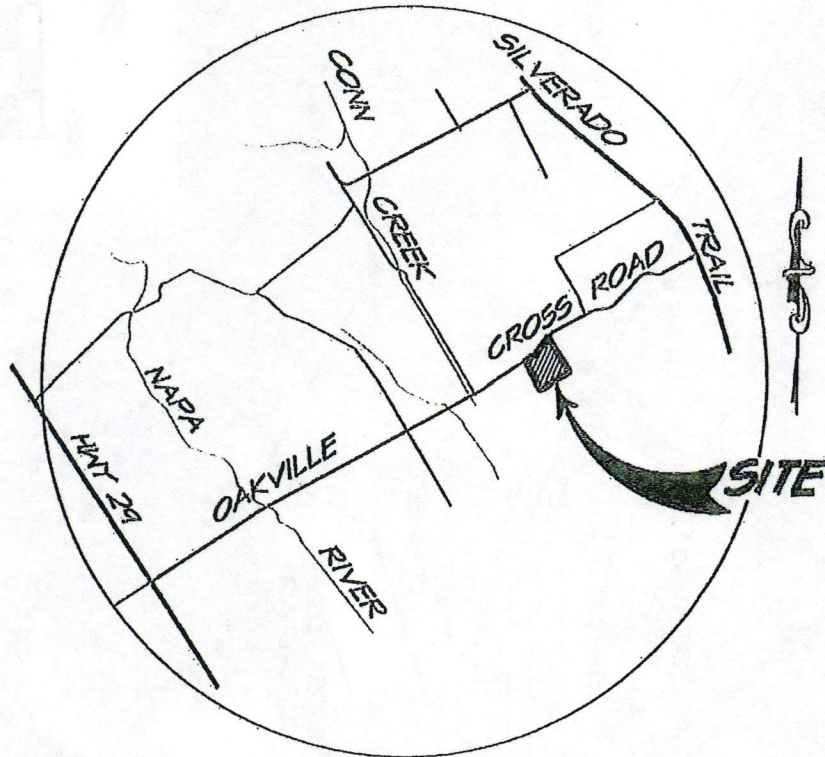


1515 Fourth Street  
 Napa, Calif. 94559  
 v 707.252.3301  
 f 707.252.4966

JUNE 12, 2012

4112023.0 pitmap.dwg 3 OF 3

MILLER PROPERTY  
VICINITY MAP  
OAKVILLE CALIFORNIA



LOCATION MAP

NO SCALE



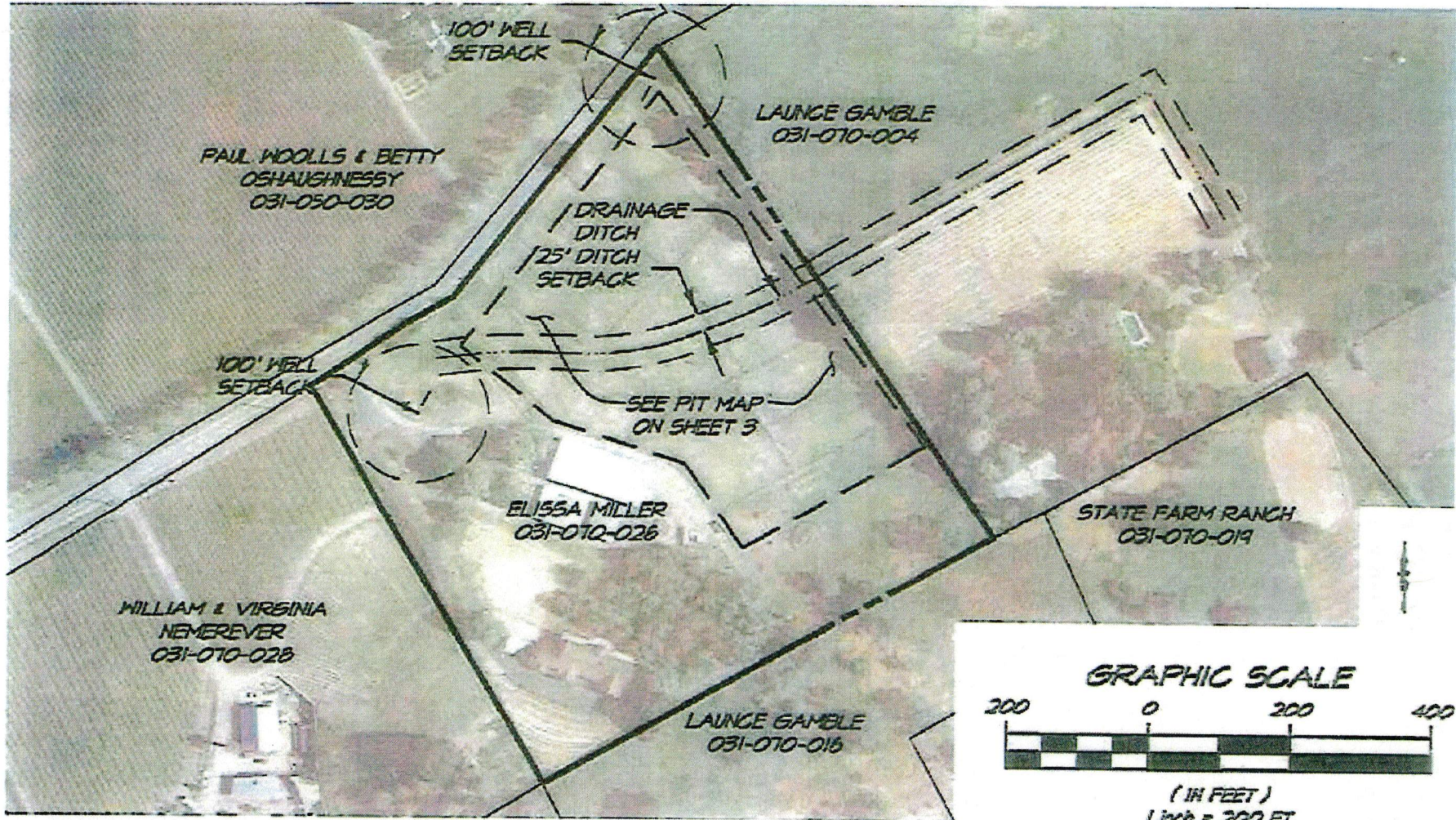
**RIECHERS  
SPENCE  
ASSOCIATES**

1515 Fourth Street  
Napa, Calif. 94559  
v 707.252.3301  
f 707.252.4966

JUNE 12, 2012

4112023.0 plmap.dwg 1 OF 3

# MILLER PROPERTY PIT MAP LOCATIONS



SITE EVALUATION DATE: JUNE 8, 2012  
 APN: 031-070-026  
 ADDRESS: 701 OAKVILLE CROSS ROAD  
 OAKVILLE, CA 94562  
 ENV. HEALTH INSPECTOR: SHELDON SAPOZNIK

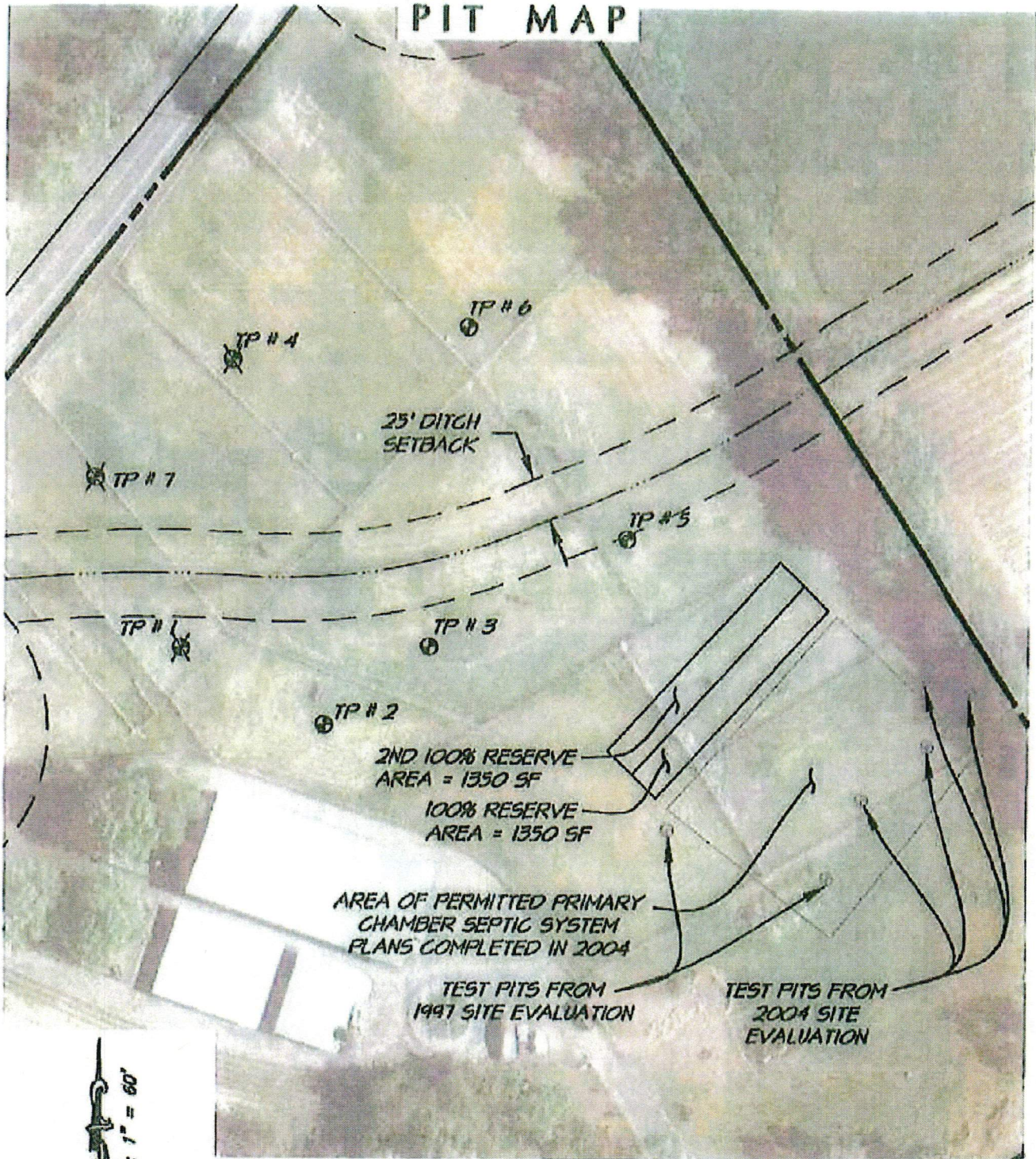
**LEGEND**  
 ⊙ TPI TEST PIT



1515 Fourth Street  
 Napa, Calif. 94558  
 P 707.252.3301  
 F 707.252.4988

JUNE 12, 2012  
 4112025.0 pitmap.dwg 2 OF 3

# MILLER PROPERTY PIT MAP

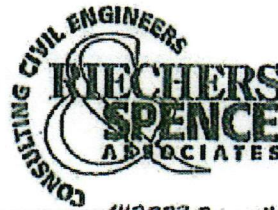


SCALE: 1" = 60'

## LEGEND

⊙ TP# TEST PIT

SITE EVALUATION DATE: JUNE 8, 2012  
 APN: 031-070-026  
 ADDRESS: 701 OAKVILLE CROSS ROAD  
 OAKVILLE, CA 94562  
 ENV. HEALTH INSPECTOR: SHELDON SAPOZNIK



1515 Fourth Street  
 Napa, Calif. 94859  
 v 707.252.3301  
 f 707.252.4966

JUNE 12, 2012

1112023.0 plmap.dwg 3 OF 3

## APPENDIX 3

### Septic System Calculations



## Field Flow

Job Description:	Platage Oakville Cross Residence
Contact:	Bruce Fenton
Prepared by:	Lisa Blawie
Date:	22-Jan-14

Please fill in the shaded areas and drop down menus.  
This spreadsheet serves as a guide, and is not a complete hydraulic design.

### Worksheet 1- Field Flow

#### Total field

Total quantity of effluent to be disposed per day	2,013	gallons / day
Hydraulic loading rate	0.6	gallons / sq.ft. / day
Minimum Dispersal Field Area	4,855	square ft.
Total Dispersal Field Area	4,855	square ft.

#### Flow per zone

Number of Zones	2	zone(s)
Dispersal area per zone	2,428	square ft.
Choose line spacing between WASTEFLOW lines	2	ft.
Choose emitter spacing between WASTEFLOW emitters	2	ft.
Total linear ft. per zone (minimum required)	1,214	ft. per zone
Total number of emitters per zone	607	emitters per zone
Select Wasteflow dripline (1/2 in)	Wasteflow PC - 1/2 gph	dripline
Pressure at the beginning of the dripline	40	psi
Feet of Head at the beginning of the dripline	92.4	ft.
What is the flow rate per emitter in gph?	0.53	gph
Dose flow per zone	536	gpm

Note: The flow rate per emitter is calculated based on the flow rate of the dripline. The flow rate of the dripline is calculated based on the flow rate of the dripline. The flow rate of the dripline is calculated based on the flow rate of the dripline. The flow rate of the dripline is calculated based on the flow rate of the dripline.

If required, choose flush velocity	2	ft/sec
How many lines of WASTEFLOW per zone?	10	lines
Fill in the actual length of longest dripline lateral	122	ft.
Flush flow required at the end of each dripline	1.48	gpm
Total flow required to achieve flushing velocity	14.80	gpm
Total flow per zone- worst case scenario	20.16	gpm

#### Select Filters and zone valves

Select Filter Type	BioDisc Filter	
Recommended Filter (item no.)	BioDisc-150 / Max flow 30 gpm	Select
Select Zone Valve Type	Electric Solenoid	
Recommended Zone Valve (item no.)	SVLVB-100	1-in. Solenoid valve

#### Dosing

Number of doses per day / zone:	48	doses
Timer ON- Pump run time per dose/zone:	5.40	minutes
Timer OFF- Pump off time between doses	6:24	hrs:mins
Per Zone - Pump run time per day/zone:	4:31	hrs:mins
All Zones - Number of doses per day / all zones	96	doses / day
Allow time for field to pressurize	0:00:30	hrs:mins:secs
Filter flush timer	0:00:20	hrs:mins:secs
Drain timer	0:05:00	hrs:mins:secs
Field flush timer	0:01:00	hrs:mins:secs
Field flush counter	3	cycles
Time required to complete all functions per day	19:39	hrs:mins
Dose volume per zone	10	gallons per dose

GEOFLOW PUMP SELECTION WORKSHEET		Pump Size
Job Description:	Village Oakville Cross Residence	
Contact:	Bruce Fenton	
Prepared by:	Lisa Blane	
Date:	1/22/2014	

Pressure losses may be grossly overstated, particularly if designing with WASTEFLOW Classic  
The letters on the diagram(right) match the letters in section 2 below.

### Worksheet - Pump Sizing

Section 1 - Summary from Worksheet 1	
Flow required to dose field	5.36 gpm
Flow required to flush field	14.80 gpm
Flow required to dose & flush field	20.16 gpm
Filter	Disc/Disc-150 / Max flow 30 gpm
No. of Zones	2 zones
Zone valve	SVLVB-100
Dripline	Wasteflow PC - 1/2gph
Dripline longest lateral	122.00 ft.

Section 2	Ft of head	Pressure
<b>A. Flush line - Losses through return line</b>		
Size of flush line in inches	1.25 inch	
Length of return line	310 ft.	
Equivalent length of fittings	62 ft.	
Elevation change. (if downhill enter 0)	9 ft.	
Pressure loss in 100 ft. of pipe	5.55 ft.	2.40 psi
Total pressure loss from end of dripline to return tank	29.6 ft.	12.83 psi
<b>B. Dripline - Losses through Wasteflow dripline</b>		
Length of longest dripline lateral	120 ft.	
Minimum dosing pressure required at end of dripline	23.10 ft.	10.00 psi
Loss through dripline during flushing	37.93 ft.	16.42 psi
Total minimum required dripline pressure	61.03 ft.	16.42 psi
<b>A+B. Minimum Pressure required at beginning of dripline</b>		
<b>CALCULATED</b> pressure required at beginning of dripline	90.65 ft.	39.25 psi
<b>SPECIFIED</b> pressure at beginning of dripline (from worksheet 1)	92.4 ft.	40.00 psi
Great! SPECIFIED Pressure is greater than CALCULATED Pressure requirement. Go to next step.		
<b>C. Drip components - Losses through headworks</b>		
Filter	4.6 ft.	2.00 psi
Zone valve pressure loss (not in diagram)	6.93 ft.	3.00 psi
Flow meter pressure loss (not in diagram)	2.00 ft.	0.87 psi
Other pressure losses	ft.	psi
Total loss through drip components	13.55 ft.	5.87 psi
<b>D. Supply line - Minimum Pressure head required to get from pump tank to top of dripline</b>		
Size of supply line in inches	1.25 inch	
Length of supply line	105 ft.	
Equivalent length of fittings	21 ft.	
Height from pump to tank outlet	5 ft.	
Elevation change. (if downhill enter 0)	1 ft.	
Pressure loss/gain in 100 ft. of pipe	9.83 ft.	4.26 psi
Total gain or loss from pump to field	18.4 ft.	7.96 psi
Total dynamic head	124.3 ft.	53.83 psi
Pump capacity *	20.2 gpm	
Pump Model Number	20FE07P4-2W230	
Voltz / Hp / phase	230 V / 3/4 HP / 1 Phase	

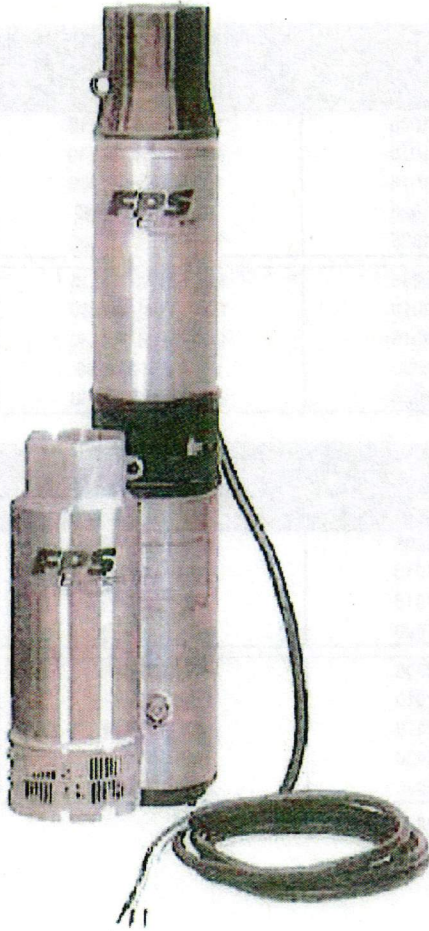
\* Note: Pump capacity flow assumes flow in dripline does not change during a dose cycle. With Wasteflow Classic For more accurate flows please see Geoflow's Flushing worksheet.

If you need assistance designing for this additional flow, please

- See Geoflow flushing worksheet or
- Contact Geoflow at 800-828-3388.

## Submersible Pumps

### E-Series Environmental Pumps Features



# FPS

E series

#### Applications:

- Filtered effluent service
- Aerallon
- Ornamental fountains/waterfalls

#### Features:

- Ideal for effluent pumping applications.
- Stainless steel or thermoplastic discharge and motor bracket are tough and non-corrosive. Both materials are highly resistant to damage by minerals, metals and other substances typically found in water.
- Heavy duty, 300 V, 10' SJOOW motor leads.
- Ceramic bearing sleeve has time proven durability for years of reliable service.
- Hex rubber bearing has extra large surface assuring shaft stability and multiple flow channels keeping particles away from bearing surfaces.
- Proven hydraulic staging allows close tolerances and increased performance.
- Carbon phenolic up thrust washer prevents excessive wear in severe applications.
- Removable built in check valve on 10-20 gpm pumps. No built in check valves on high capacity pumps.
- Powered by Franklin Electric submersible motor.



## Submersible Pumps

### E-Series Environmental Pumps

Ordering Information (See pgs. 2-3 for model number explanation)

#### Thermoplastic Ordering Information

1/2 - 1.5 HP Single-Phase Units						
GPM	HP	Volt	Wire	Order No.	Model	Wt.
10	1/2	115	2	94741005	10FE05P4-2W115	25
	1/2	230	2	94741010	10FE05P4-2W230	25
	3/4	230	2	94741015	10FE07P4-2W230	29
	1	230	2	94741020	10FE1P4-2W230	33
	1.5	230	2	94741025	10FE15P4-2W230	41
20	1/2	115	2	94742005	20FE05P4-2W115	24
	1/2	230	2	94742010	20FE05P4-2W230	24
	3/4	230	2	94742015	20FE07P4-2W230	28
	1	230	2	94742020	20FE1P4-2W230	31
	1.5	230	2	94742025	20FE15P4-2W230	39

1/2 - 2 HP Pump Ends						
GPM	HP	Volt	Wire	Order No.	Model	Wt.
10	1/2	N/A	2	94751005	10FE05P4-PE	7
	3/4	N/A	N/A	94751010	10FE07P4-PE	8
	1	N/A	N/A	94751015	10FE1P4-PE	9
	1.5	N/A	N/A	94751020	10FE15P4-PE	10
20	1/2	N/A	N/A	94752005	20FE05P4-PE	8
	3/4	N/A	N/A	94752010	20FE07P4-PE	6
	1	N/A	N/A	94752015	20FE1P4-PE	7
	1.5	N/A	N/A	94752020	20FE15P4-PE	8
	2	N/A	N/A	94752025	20FE2P4-PE	9

Notes: Discharge is 1-1/4" NPT. Maximum diameter across cable guard is 3.90" on all models. Weight in pounds.

# Submersible Pumps

## E-Series Environmental Pumps Thermoplastic - 20 GPM Performance Curves

