EXHIBIT D

Lyons Hillside Vineyards

8280 Wild Horse Valley Road, Napa, California

Water Availability Analysis



December 13, 2019

Prepared by: Omar Reveles, P.E.

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Water Availability Analysis – Lyons Hillside Vineyards, Napa, CA.

November 27, 2019

Prepared by: Omar Reveles, P.E.

Introduction

Parcel 033-190-004 contains approximately 10.3 acres of existing vineyard. The parcel includes a primary residence with landscaping. Currently, the subject parcel includes five new vineyard development areas that measure approximately 19.0 acres combined (including vineyard avenues), and approximately 15.9 vine acres combined (excluding vineyard avenues). Furthermore, there are two additional areas that measure approximately 3.8 acres combined (including vineyard avenues), and approximately 3.3 vine acres combined (excluding vineyard avenues), which were approved for development in 1997 but were never developed. The pre-approved development areas are adjacent to 3 of the newly proposed development areas, and as a result the owner would like to develop the pre-approved development areas and the newly proposed development areas together in 2020.The proposed new vineyard development is on moderate to strong sloping terrain, ranging from 13% to 38% slopes. Elevations at the proposed development area range from approximately 1545 feet to 1805 feet (based on LiDAR contours from Napa County GIS Database). There are currently two wells on the project site that can provide water for the domestic, landscaping and vineyard uses. Additionally, one of the existing wells provides water to a neighbor's home.

The following report and calculations are intended to describe current water usage, proposed water usage, well capacity and groundwater recharge to demonstrate that the proposed vineyard development will not have an adverse effect on neighboring wells and the aquifer that the well(s) draws from.

Tier 1 – Water Use Criteria

Annual water usage required for activities on parcel 033-190-004

The existing water uses on the parcel include a primary residence with landscaping, 10.3 acres of vineyard and a neighbor's home. New vineyard irrigation and associated minor uses (filling of spray tanks, etc.) are the only anticipated additional usages at this time. Water usage for vineyard frost and/or heat protection is not anticipated. All calculations discussed in this report are shown in the appendix section.

In the Napa County Water Availability Analysis (WAA) guidance document for residential buildings (Appendix B – Guidelines for Estimating Residential Water Use), the range is 0.5 to 0.75 acre-feet per year for a primary residence with minor to moderate landscaping and 0.2 to 0.5 acre-feet per year for a secondary residence or farm labor dwelling. Furthermore, in the same document for vineyards (Appendix B – Non-residential uses), the range is 0.2-0.5 acre-feet per acre.

Historical data provided by the owner was used to determine that the neighbor used a total of 0.14 acre-feet of water during all of 2019. This value is below the range specified in the Napa

County WAA guidance document, therefore the minimum 0.2 acre-feet per year value shall be used (this is a conservative approach).

Combining all the domestic water demands on the subject parcel totals to an annual domestic water usage of approximately 0.95 acre-feet.

Historical data (flow meter readings) provided by the owner was used to estimate existing vineyard irrigation water usage (for the 10.3 acres of existing vineyard) at approximately 3.90 acre-feet per year. This translates into a vineyard irrigation water usage factor of approximately 0.38 acre-feet per acre, which is within the range specified in the Napa County WAA guidance document. Using the same vineyard irrigation water usage factor for the 3.3 net acres of pre-approved vineyard and 15.9 net acres of newly proposed vineyard yields an approximate water usage of 1.25 and 6.01 acre-feet per year, respectively, for a total of approximately 7.26 acre-feet per year.

A second examination, based on vine spacing and water usage for the existing vineyard was performed. The most conservative method shall be used to determine the estimated annual water use for the existing vineyard. All existing vineyard spacing is 8' x 4' (row x vine). This equates to 1,361 vines per acre, which in turn yields approximately 14,021 existing vines. According to the owner, existing vines are irrigated for 1 hour every other day so as to apply approximately 1 gallon of water per vine per watering. This irrigation schedule yields approximately 3.5 gallons of water per vine per week, during the irrigation season (May 1 – October 31). This equates to an annual water usage of approximately 3.96 acre-feet per year for the existing vineyard (10.3 acres). Converting this value to acre-feet per acre per year equates to a usage factor of 0.38 which is not only within the range specified in the Napa County WAA guidance document, but is identical to the calculated water usage factor based on historical data. The larger amount of 3.96 acre-feet per year shall be used in the water usage calculations for the existing vineyard area.

According to the owner, the 3.3 acres of pre-approved vineyard and the 15.9 acres of newly proposed vineyard shall also have a vineyard spacing of 8' x 4' (row x vine). This equates to approximately 4,492 and 21,644 vines for the pre-approved and newly proposed vineyard areas, respectively, for a total of 26,136 vines. The current irrigation schedule shall also be applied to the pre-approved and newly proposed vineyard areas. This equates to an annual water usage of approximately 1.27 and 6.11 acre-feet per year for the pre-approved and newly proposed vineyard areas, respectively, for a total of 7.38 acre feet per year.

Combining the domestic water usage (0.95 acre-feet per year), the existing vineyard water usage (3.96 acre-feet per year), the pre-approved vineyard water usage (1.27 acre-feet per year), and the newly proposed vineyard water usage (6.11 acre-feet per year) results in an annual total water usage requirement of 12.29 acre feet per year for the subject parcel.

Peak and average weekly water usage required for activities on parcel 031-050-047

Due to the high frequency and low application rate associated with the current irrigation schedule. Peak and average weekly water usage for vineyard irrigation shall be identical. Average water usage will occur every week from May 1-October 31. During these weeks, 40,157 vines would each require 3.5 gallons of water. This results in an average weekly water

usage of 140,550 gallons or 20,079 gallons per day. Irrigation from the well(s) shall be 20 hours per day or less. The estimated yield at well 1 (from the well completion report) is 180 gpm. The estimated yield at well 2 (from the well completion report) is 160 gpm. The tested capacity of well 2 is 85 gpm as tested by Imboden Pump in May of 2019.

Operating well 2 at 85 gpm for 20 hours equates to 102,000 gallons per day of well production. Daily irrigation water required is 20,283 gallons. Due to this surplus of 81,718 gallons per day, storage is not required.

Water Availability and Recharge

The wells that will be used to supply water for all uses on the subject parcel are on the same parcel that the vineyard development will occur on (APN: 033-190-004, 79.3 acres). There is also existing storage in the form of four 5,000 gallon poly tanks (20,000 gallons total) at the highest point within the subject parcel (along the southern parcel boundary near proposed vineyard block 3). Although storage is not required, an additional 5,000 gallon poly tank would increase the available storage to 25,000 gallons. This would hold one days' worth of required irrigation water, by doing so, the well(s) would only need to operate for 4 hours each day to recharge the tanks to full capacity.

The mapped surface soils on the subject parcel consist of Sobrante Loam throughout the entire parcel. The underlying geologic map shows primarily Sonoma volcanics with some surficial deposits. The underlying volcanics provide a better geologic setting for well development than surficial deposits and alluvium.

As previously mentioned there are two wells at the subject parcel. They will be denoted as well 1 and well 2. Well 1 is located near the southwest corner of the parcel. Well 1 was drilled in 1991 by Huckfeldt Well Drilling. From the drillers report the depth to static water level was 89 feet below ground surface (bgs), and the well produced 180 gpm via air lift. Well 2 is located immediately north of Wild Horse Valley Road near the gravel road that leads up the water storage tanks. Well 2 was drilled in 2019 by Huckfeldt Well Drilling. From the drillers report the depth to static water level was 93 feet bgs, and the well produced 160 gpm via air lift. Since air lift information is typically higher than actual well production, a pumping test was done in 2019 by Imboden Pump to determine the viable well production rate.

The pump test for well 2 shows a static water level of 93 feet bgs at the start of the test with an initial pumping rate of 100 gpm. The well flowrate was decreased until equilibrium was attained at 85 gpm with a water level of 152 feet bgs. Total depth of the well is 458 feet with a 54 foot concrete annular seal and #6 sand annulus from 54 feet bgs to the bottom of the well. Production zones are located from 158 to 258 feet bgs, 338 to 398 bgs and 418 to 438 feet bgs. Slot size in the liner is 0.032 inches.

For annual recharge, the major source of groundwater is precipitation. Recharge is provided by infiltration from streams and exposed tuffs in the area. From the report USGS WRI 77-82 – Ground Water Hydrology of the Lower Milliken-Sarco-Tulucay Creeks Area, Napa, by M.J. Johnson, 1977 it is estimated that 10% of the annual rainfall reaches the aquifer for recharge purposes. The remaining 90% is lost to runoff, stream flow, evaporation and plant transpiration. While the well locations are outside the study area and to the east of the subject

watershed, the report states that the majority of groundwater recharge comes from the hills east of the study area. The area with the greatest recharge is in the Sonoma volcanics consistent with the locations of the project wells.

To determine the rainfall amount on the well parcel, annual rainfall data was examined. The initial inspection of the Napa County isohyetal map of annual precipitation available on the Napa County's GIS website (isohyetal_cnty.zip) shows a mean annual rainfall amount of 22.5 inches. When reviewing the website of the Western Regional Climate Center, the annual rainfall average for the period of 1981-2010 was 30-40 inches. This is a colorized map, so the range is fairly large. Additionally, information was obtained from napa.onerain.com which has a station at Mt. George at a gage elevation of 1,075 feet. Mt. George is located approximately 2.65 miles northwest of the existing well sites. Wells 1 and 2 have an elevation of approximately 1675 feet. The average annual rainfall amount from napa.onerain.com at the Mt. George station was 23.66 inches, examined from 2001-2018. By comparing the mean annual precipitation at the well location sites to the average annual rainfall amount at the Mt. George station it was found that there is a 5% reduction in the amount of rainfall that occurs on the well location sites compared to the rainfall that occurs at Mt George. Furthermore, to account for the variation in location and elevation, isopluvial maps of Northern California storm events were examined for variations in rainfall amounts between Mt. George and the existing well site locations. Storm events for 2 year/24 hour and 100 year/24 hour were examined for the ratio of difference between the two locations. It was found that there was approximately 19-20% more rainfall at the well site locations compared to the rainfall at Mt. George for a given storm event. Taking a conservative approach, the lowest average annual rainfall amount of 22.5 inches (from isohyetal map) at the project well locations shall be used for calculations.

Based on the 22.5 inches of rain per year on the subject parcel of 79.3 acres, the parcel receives approximately 148.69 acre-feet of rainfall per year. Taking 10% of the 148.69 acre-feet results in 14.87 acre-feet per year of groundwater recharge for the subject parcel. With the usage of 12.29 acre-feet per year and a recharge of 14.87 acre-feet per year yields a usage of 83% of the available groundwater annually.

In reviewing the available data for the Mt. George rain station for the past 18 years, it was found that there were two significant years. The first would be considered a dry year and occurred in water year 2017/2018. That year the rainfall amount at Mt. George station was 16.35 inches, which is 69% of the average annual rainfall for that station. The second significant year occurred in water year 2006/2007, and would be considered a very dry year. That year the rainfall amount at Mt. George station was 13.36 inches, which is 56% of the average annual rainfall for that station.

Relating this back to a 10% annual recharge yields, 10.27 acre-feet for the subject parcel in 2017/2018 and 8.40 acre-feet in 2006/2007. The usage ratio equates to 120% and 146% respectively of the available annual groundwater. If the water usage for the domestic, existing and proposed vineyard development area of 12.29 acre-feet were to equal the annual calculated recharge of the well site parcel, an annual rainfall amount of 18.59 inches or 83% of the average annual rainfall would be required.

Tier 2 – Well and spring interference criterion

Well Interference

The two existing wells on the subject parcel are not within 500 feet from one another. Similarly wells on adjacent parcels are not within 500 feet of the two wells in the subject parcel. Therefore, a Tier 2 Well Interference Evaluation is not required for this project.

Spring Interference

There are no natural springs that are being used for domestic or agricultural purposes within 1500 feet of the two wells in the subject parcel. Therefore, a Tier 2 Spring-Aquifer Connectivity Evaluation is not applicable to this project.

Conclusion

The required water usage at the subject parcel is summarized below:

- 10.3 acres of existing vineyard — 3.96 acre-feet per year
- Domestic and landscaping — 0.95 acre-feet per year
- 3.3 acres of pre-approved vineyard — 1.27 acre-feet per year
- 15.9 acres of newly proposed vineyard — 6.11 acre-feet per year
- Total — 12.29 acre-feet per year

The total water usage is less than the available recharge of 14.87 acre-feet per year on parcel 033-190-004, and should not adversely affect the well(s) ability to recharge annually. In the event of a shortage of recharge in one year, the required water usage is such that the groundwater should recover in the following years. In the long term, the ground water aquifer being utilized for the intended use should not be compromised or diminished.

There are no wells within 500 feet of the project well(s). Therefore, a Well Interference Evaluation is not required for this project.

There are no natural springs that are being used for domestic or agricultural purposes within 1500 feet of the project well(s). Therefore, a Spring-Aquifer Connectivity Evaluation is not applicable to this project.

References:

Water Availability Analysis (WAA) – guidance document, Napa County Board of Supervisors, 2015

Napa One Rain http://napa.onerain.com

Geologic Map of California http://maps.conservation.ca.gov/cgs/gmc/app/index.html

Watershed Information and Conservation Council – Napa County

https://www.napawatersheds.org/app_pages/view/48

Western Regional Climate Center http://wrcc.dri.edu/

USGS Water Resources Investigations 77-82 Groundwater Hydrology of the Lower Milliken-Sarco-Tulucay Creeks Area, Napa County, California, M.J. Johnson, 1977

Napa County GIS database

http://gis.napa.ca.gov/giscatalog/catalog_xml.asp?srch_opt=all&db_name=x&theme=x&sort_order=layer&meta_style=fgdc&submit=Submit

Appendix

Annual Rain Gage Data for Mt. George

Source: napa.onerain.com

Mean Annual Precipitation (2001-2015) = 23.66 inches

Water Year		Inches	% of average	
2018	2019	34.47	146%	
2017	2018	16.35	69%	Dry
2016	2017	46.65	197%	
2015	2016	24.15	102%	
2014	2015	19.42	82%	
2013	2014	17.97	76%	
2012	2013	18.83	80%	
2011	2012	19.66	83%	
2010	2011	35.18	149%	
2009	2010	29.2	123%	
2008	2009	21.59	91%	
2007	2008	20.92	88%	
2006	2007	13.36	56%	Extremely Dry
2005	2006	37.47	158%	
2004	2005	28.21	119%	
2003	2004	19.7	83%	
2002	2003	24.11	102%	
2001	2002	25.61	108%	

(/)

WICC Interactive Map map tips

hide map steps ▲

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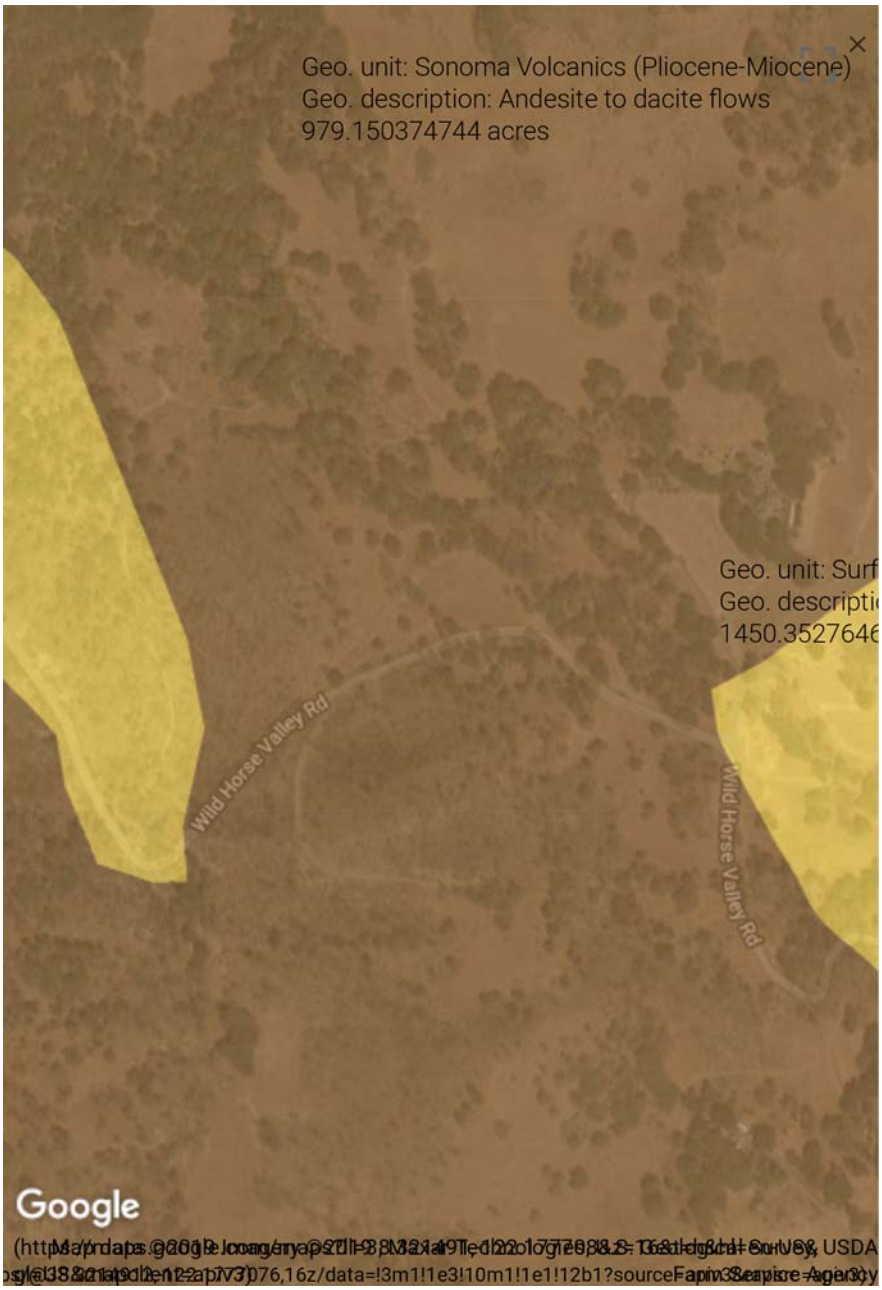
Select a theme map from the three **Basins** below.

Explore

Turn **Layers** on and off using the checkboxes.

Discover

Find WICC events, news and mo by adding **WICC** pins to the map.



Legend

Hide Legen

- **BASIN**
- LAYERS
- **WICC**

Suisun Creek Basin More

Soil and Geology Map

Toggle layers using the checkboxes

Click ℹ to learn more about each layer

ℹ

− Major Streams

ℹ

− Faults

ℹ

▾ Geology

■ Sonoma Volcanics (Pliocene-Miocene)

■ Great Valley Complex (Cretaceous-Jurassic)

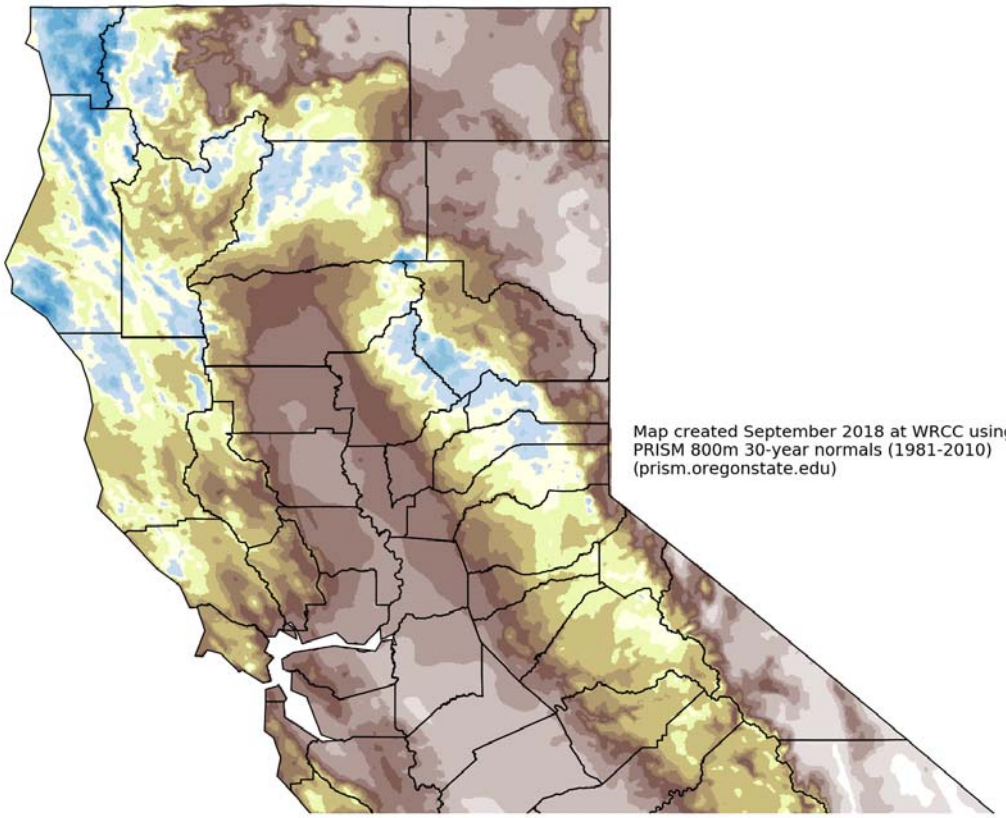
■ Surficial Deposits

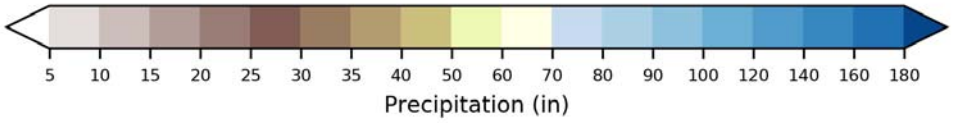
■ Water

ℹ

▸ English units ◂ metric units

Average Annual Precipitation
Northern California





close



Western US | Hawaii Island | Maui County | Oahu Island | Kauai Island

1981-2010 Monthly Average Precipitation by State: Arizona

Calculations

Water Usage Estimation Factors (per Napa County WAA Guidance Document in Appendix B)

Primary Residence w/ minor or moderate landscaping:	0.50	to	0.75	acre-feet per	use	**0.75**	(conservative)
Secondary Residence or Farm Labor Dwelling:	0.20	to	0.50	acre-feet per	use	**0.20**	(conservative)
Proposed Vineyard Usage:	0.20	to	0.50	acre-feet per year			

Conversions Used:

1 acre foot = 325851 gallons 1 acre = 43560 square feet

Primary Residence Usage:	**0.75**	acre-feet per year	
Neighbors Residence Usage:	45,500	gallons in 2019	(based on historical data provided by owner)
	0.14	acre-feet per year	
	0.20	acre-feet per year	(from Napa County WAA Guidance Document Appendix B)
Total Domestic Water Usage:	**0.95**	**acre-feet per year**	

Vineyard Irrigation Usage

Based on existing flow meter data

Existing vineyard acreage:	10.3	acres, approximate
First year of existing vineyard:	1993	
Latest year of existing vineyard:	2019	
Flow meter totalizer volume:	33,000,000	gallons, approximate, (provided by owner)
Irrigation water use per year:	1,269,231	gallons, approximate
	3.90	**acre-feet, approximate**
Calculated water usage factor:	**0.38**	**acre-feet per acre per year**
		Within range provided in Napa County Guidelines, therefore OK.
Pre-approved vineyard acreage:	3.30	acres
Pre-approved vineyard usage:	**1.25**	acre-feet per year
Newly proposed vineyard acreage:	15.90	acres
Newly proposed vineyard usage:	**6.01**	acre-feet per year
Combined vineyard usage:	**7.26**	acre-feet per year (pre-approved and newly proposed only)

Based on Irrigation Scheduling

Existing vineyard acreage:	10.3	acres, approximate
Existing vineyard row spacing:	8	feet
Existing vineyard vine spacing:	4	feet
Vines per acre (approximate):	1,361	vines, approximate
Total number of vines:	14,021	vines, approximate
Gallons of water applied:	1	gallon per vine, approximately, every other day (provided by owner)
	3.5	gallons per vine per week, approximate
Duration of Irrigation Season:	184	days (May 1 - Oct 31, assumed)
Irrigation water use per year:	1,289,921	gallons, approximate
	3.96	**acre-feet, approximate**
Calculated water usage factor:	**0.38**	**acre-feet per acre per year**
		Within range provided in Napa County Guidelines, therefore OK.
Pre-approved vineyard acreage:	3.30	acres and approximately 4,492 vines
Pre-approved vineyard usage:	**1.27**	acre-feet per year (same vineyard spacing & irrigation scheduling as existing vineyard)
Newly proposed vineyard acreage:	15.90	acres and approximately 21,644 vines
Newly proposed vineyard usage:	**6.11**	acre-feet per year (same vineyard spacing & irrigation scheduling as existing vineyard)
Combined vineyard usage:	**7.38**	acre-feet per year (pre-approved and newly proposed)

Select most conservative values:	**3.96**	**acre-feet per year (existing vineyard)**
	1.27	**acre-feet per year (pre-approved vineyard)**
	6.11	**acre-feet per year (newly proposed vineyard)**
Total vineyard usage:	**11.34**	**acre-feet per year (existing and future vineyard)**

Total parcel water usage: **12.29 acre-feet per year (domestic and vineyard)**

Note: Discrepancies are due to rounding.

Calculations

Peak Weekly Usage

Existing Vineyards:	14,021	vines
Proposed Vineyards:	26,136	vines
Peak Irrigation:	3.5	gallons per vine per week
Total Vines:	40,157	vines

Peak weekly water usage:	140,550	gallons per week
Peak daily water usage:	20,079	gallons per day

Currently well 1 meets the water usage requirements for all domestic and existing vineyard uses on the subject parcel.
However, because well test data for well 1 is not available, its capacity will be conservatively ignored for the purposes of this study.

Well 1 Production:	0	gpm	very conservative assumption
Well 2 Production:	85	gpm	from well test data
Combined Well Production:	85	gpm	
Combined Daily Well Production:	102,000	gpd	(assuming 20 hours per day max run time)

Combined Daily Well Production - Peak Daily Water Usage =	81,922	gpd surplus	
Pump(s) required run time:	236	minutes or	
	4	hours	

Therefore, water storage is not required; however, approximately 20,000 gallons of water storage already exists at the subject parcel, this is enough to hold 1 days worth of irrigation water, by doing so, well 2 pump would only need to run for 4 hours each day for all anticipated vineyard uses.

Calculations

Water Availability

Recharge: 10% of rainfall from USGS Water Resources Investigations 77-82 Groundwater Hydrology of the Lower Milliken-Sarco-Tulucay Creeks Area, Napa County, California, M.J. Johnson, 1997

Calculate Parcel Annual Rainfall:

Mt George - mean annual precipitation (2001-2015) = 23.66 inches (per napa.onerain.com)
38°20'34.44" N, 122°13'43.68" W and elevation = 1075 feet (from napa.onerain.com)
2 yr/24 hour rainfall: 3.58 inches from NOAA Atlas 14 Volume 6 Version 2
100 yr/24 hour rainfall: 8.53 inches from NOAA Atlas 14 Volume 6 Version 2

Well 1 Data Lat/Long = 38°19'10.61" N, 122°10'48.26" W and elevation = 1675 feet (from Google Earth)

Well 2 Data Lat/Long = 38°19'16.45" N, 122°10'44.79" W and elevation = 1675 feet (from Google Earth)

2 yr/24 hour rainfall: 4.26 inches from NOAA Atlas 14 Volume 6 Version 2
100 yr/24 hour rainfall: 10.2 inches from NOAA Atlas 14 Volume 6 Version 2

Geologic Map of California
Rock Type: Tv
Ptype: Tv
Age: Tertiary
General: Volcanic Rocks
Description: Tertiary volcanic flow rocks with minor pyroclastic deposits

Wells are located in volcanics.

Wells are located in a single parcel (APN: 033-190-004) 79.3 acres

Well sites are approximately 2.65 miles southeast of Mt. George
Mean annual precipitation at well sites: 22.5 inches
Percent of Mt. George annual precipitation: 95%
Rainfall volume at well location parcel: 148.69 acre-feet per year
Recharge volume (assuming 10% of rainfall): **14.87** acre-feet per year
14.87 acre-feet per year available > 12.29 acre-feet per year required

$\frac{12.29}{14.87}$ = **83% of Annual Recharge Rate**

Dry Year (2017/2018) rainfall at Mt. George station: 16.35 inches, or 69% of average annual rainfall
Very Dry Year (2006/2007) Rainfall at Mt. George station: 13.36 inches, or 56% of average annual rainfall

Dry Year (2017/2018): 10.27 acre-feet of annual recharge, 120% (Usage/Recharge)
Very Dry Year (2006/2007): 8.40 acre-feet of annual recharge, 146% (Usage/Recharge)

Total Annual Water Usage after Proposed Development: 12.29 acre-feet
Minimum Required Annual Rainfall to Meet Demand: 18.59 inches
83% of average annual rainfall

TRIPLICATE
Owner's Copy
Page 1 of 1
Owner's Well No. _____
Date Work Began 7-9-1991, Ended 7-11-1991
Local Permit Agency Napa County Environmental Mgmt.
Permit No. 28983 Permit Date 7-10-1991

STATE OF CALIFORNIA
WELL COMPLETION REPORT
Refer to Instruction Pamphlet
No. 482445

DWR USE ONLY — DO NOT FILL IN
STATE WELL NO./STATION NO.
LATITUDE LONGITUDE
APN/TRS/OTHER

GEOLOGIC LOG

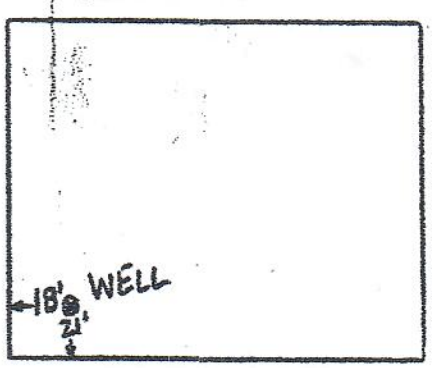
ORIENTATION (✓) X VERTICAL ___ HORIZONTAL ___ ANGLE ___ (SPECIFY)
DEPTH TO FIRST WATER ___ (Ft.) BELOW SURFACE

DEPTH FROM SURFACE Ft.	to Ft.	DESCRIPTION *Describe material, grain size, color, etc.*
0	5	white tuff
5	22	yellow tuff
22	30	volcanic sands
30	80	white tuff
80	120	yellow/white ash
120	130	mixed volcanics
130	160	tuff
160	320	mixed black & green volcanics

TOTAL DEPTH OF BORING 320 (Feet)
TOTAL DEPTH OF COMPLETED WELL 320 (Feet)

WELL OWNER
Name W.E. Lyons Construction
Mailing Address 50 Hegenberger Loop
CITY Oakland STATE Ca. ZIP 94621

WELL LOCATION
Address Twin sisters Dr. (top)
City Napa
County Napa
APN Book 33 Page 190 Parcel 04
or Township 6 N. Range 3 W. Section 26
or Latitude 38 DEG. 20 MIN. SEC. NORTH Longitude 122 DEG. 10 MIN. SEC. WEST

LOCATION SKETCH
NORTH / WEST / EAST / SOUTH


Illustrate or Describe Distance of Well from Landmarks such as Roads, Buildings, Fences, Rivers, etc. PLEASE BE ACCURATE & COMPLETE.

ACTIVITY (✓)
X NEW WELL
MODIFICATION/REPAIR
___ Deepen
___ Other (Specify)
___ DESTROY *(Describe Procedures and Materials Under "GEOLOGIC LOG")*

PLANNED USE(S) (✓)
___ MONITORING
WATER SUPPLY
X Domestic
___ Public
___ Irrigation
___ Industrial
___ "TEST WELL"
___ CATHODIC PROTECTION
___ OTHER (Specify)

DRILLING METHOD Rotary (air) FLUID _____

WATER LEVEL & YIELD OF COMPLETED WELL
DEPTH OF STATIC WATER LEVEL 89 (Ft.) & DATE MEASURED 7-11-91
ESTIMATED YIELD* 180 (GPM) & TEST TYPE air lift
TEST LENGTH 2 (Hrs.) TOTAL DRAWDOWN 300 (Ft.)
** May not be representative of a well's long-term yield.*

CASING(S)

DEPTH FROM SURFACE Ft.	to Ft.	BORE-HOLE DIA. (Inches)	TYPE (✓) BLANK	SCREEN	CONDUCTOR	FILL PIPE	MATERIAL/GRADE	INTERNAL DIAMETER (Inches)	GAUGE OR WALL THICKNESS	SLOT SIZE IF ANY (Inches)
0	23	11								
23	320	8								
0	160		x				plastic	5	F480	
160	320			xx			"	"	"	1/8"

ANNULAR MATERIAL

DEPTH FROM SURFACE Ft.	to Ft.	TYPE CEMENT (✓)	BENTONITE (✓)	FILL (✓)	FILTER PACK (TYPE/SIZE)
0	33	x			grout
33	320			x	pea gravel

ATTACHMENTS (✓)
___ Geologic Log
___ Well Construction Diagram
___ Geophysical Log(s)
___ Soil/Water Chemical Analyses
___ Other _____
ATTACH ADDITIONAL INFORMATION, IF IT EXISTS.

CERTIFICATION STATEMENT
I, the undersigned, certify that this report is complete and accurate to the best of my knowledge and belief.
NAME HUCKFELDT WELL DRILLING (PERSON, FIRM, OR CORPORATION) (TYPED OR PRINTED)
ADDRESS 611) 2110 Penny Lane CITY Napa STATE CA ZIP 94559
Signed Lloyd Huckfeldt (WELL DRILLER/AUTHORIZED REPRESENTATIVE) DATE SIGNED 7-12-1991 C-57 LICENSE NUMBER 439-746

DWR 188 REV. 7-90
IF ADDITIONAL SPACE IS NEEDED, USE NEXT CONSECUTIVELY NUMBERED FORM

ORIGINAL
File with DWR

Page 1 of 1

STATE OF CALIFORNIA
WELL COMPLETION REPORT
Refer to Instruction Pamphlet

No. e0370342

DWR USE ONLY --- DO NOT FILL IN
STATE WELL NO./ STATION NO.
LATITUDE LONGITUDE
APN/TRS/OTHER

Owner's Well No. 1-2019
Date Work Began 2/7/2019, Ended 3/8/2019
Local Permit Agency Napa County Environmental Mgmt
Permit No. E19-00031 Permit Date 1/18/2019

GEOLOGIC LOG

ORIENTATION (✓) ✓ VERTICAL — HORIZONTAL — ANGLE — (SPECIFY)
DRILLING METHOD ROTARY FLUID BENTONITE

DEPTH FROM SURFACE Ft.	to Ft.	DESCRIPTION *Describe material, grain, size, color, etc.*
0	6	BOULDERS
6	15	HARD GRAY VOLCANIC ROCK
15	20	SOFT TAN VOLCANIC ROCK
20	40	FRACTURED GRAY VOLCANICS
40	55	TAN VOLCANIC ASH
55	110	FRACTURED GRAY VOLCANICS
110	120	FRACTURED TAN VOLCANICS
120	160	FRACTURED GRAY VOLCANICS
160	180	RED VOLCANIC ROCK
180	195	FRACTURED GRAY VOLCANICS
195	200	SOFT RED VOLCANICS
200	250	HARD FRACTURED BLACK VOLCANICS
250	262	SOFT BLACK VOLCANIC ROCK
262	298	SANDY GRAY, GREEN ASH
298	340	GRAY, GREEN ASH
340	401	BLACK, GREEN VOLCANICS
401	420	GREEN ASH
420	438	BLACK, GREEN VOLCANICS
438	460	STICKY GREEN ASH
		CONTINUED CASING LAYOUT
398	418	BLANK PVC 8"
418	438	SCREEN PVC 8" .032 SLOT
438	458	BLANK PVC 8"

TOTAL DEPTH OF BORING 460 (Feet)
TOTAL DEPTH OF COMPLETED WELL 458 (Feet)

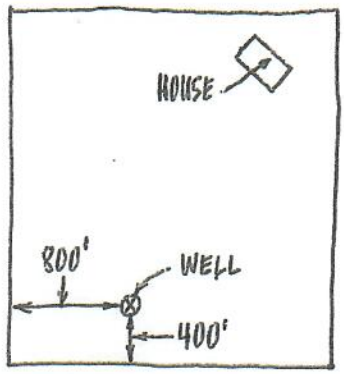
WELL OWNER

Name Richard & Sylvia Lyons
Mailing Address 8280 Wild Horse Valley Rd
Napa CA 94558
CITY STATE ZIP

WELL LOCATION

Address 8280 Wild Horse Valley Road
City Napa CA
County Napa
APN Book 033 Page 190 Parcel 004
Township — Range — Section —
Latitude — DEG. MIN. SEC. — DEG. MIN. SEC.

LOCATION SKETCH



Illustrate or Describe Distance of Well from Roads, Buildings, Fences, Rivers, etc. and attach a map. Use additional paper if necessary. PLEASE BE ACCURATE & COMPLETE.

ACTIVITY (✓)

✓ NEW WELL
MODIFICATION/REPAIR
— Deepen
— Other (Specify)
— DESTROY (Describe Procedures and Materials Under "GEOLOGIC LOG"

PLANNED USES (✓)
WATER SUPPLY
✓ Domestic — Public
✓ Irrigation — Industrial
MONITORING —
TEST WELL —
CATHODIC PROTECTION —
HEAT EXCHANGE —
DIRECT PUSH —
INJECTION —
VAPOR EXTRACTION —
SPARGING —
REMEDIATION —
OTHER (SPECIFY) —

WATER LEVEL & YIELD OF COMPLETED WELL

DEPTH TO FIRST WATER 150 (Ft.) BELOW SURFACE 1
DEPTH OF STATIC WATER LEVEL 93 (Ft.) & DATE MEASURED 3/8/2019
ESTIMATED YIELD 160 (GPM) & TEST TYPE AIR LIFT
TEST LENGTH 2 (Hrs.) TOTAL DRAWDOWN N/A (Ft.)
May not be representative of a well's long-term yield.

CASING (S)

DEPTH FROM SURFACE Ft.	to Ft.	BORE-HOLE DIA. (Inches)	TYPE (✓) BLANK	SCREEN	CONDUCTOR	FILL PIPE	MATERIAL / GRADE	INTERNAL DIAMETER (Inches)	GAUGE OR WALL THICKNESS	SLOT SIZE IF ANY (Inches)
0	460	15								
0	158		✓				PVC F480	8	SDR-21	
158	258			✓			PVC F480	8	SDR-21	.032
258	338		✓				PVC F480	8	SDR-21	
338	398			✓			PVC F480	8	SDR-21	.032

ANNULAR MATERIAL

DEPTH FROM SURFACE Ft.	to Ft.	TYPE CEMENT (✓)	BENTONITE (✓)	FILL (✓)	FILTER PACK (TYPE/SIZE)
0	54	✓			10 SK SAND
54	458			✓	#6 SAND

ATTACHMENTS (✓)

— Geologic Log
— Well Construction Diagram
— Geophysical Log(s)
— Soil/Water Chemical Analysis
— Other —
ATTACH ADDITIONAL INFORMATION, IF IT EXISTS.

CERTIFICATION STATEMENT

I, the undersigned, certify that this report is complete and accurate to the best of my knowledge and belief.
NAME HUCKFELDT WELL DRILLING, INC.
(PERSON, FIRM, OR CORPORATION) (TYPED OR PRINTED)
2110 Penny Lane Napa CA 94559
ADDRESS CITY STATE ZIP
Signed [signature] 03/15/19
WELL DRILLER/AUTHORIZED REPRESENTATIVE DATE SIGNED
439-746
C-57 LICENSE NUMBER

DWR 188 REV. 11-97

IF ADDITIONAL SPACE IS NEEDED, USE NEXT CONSECUTIVELY NUMBERED FORM

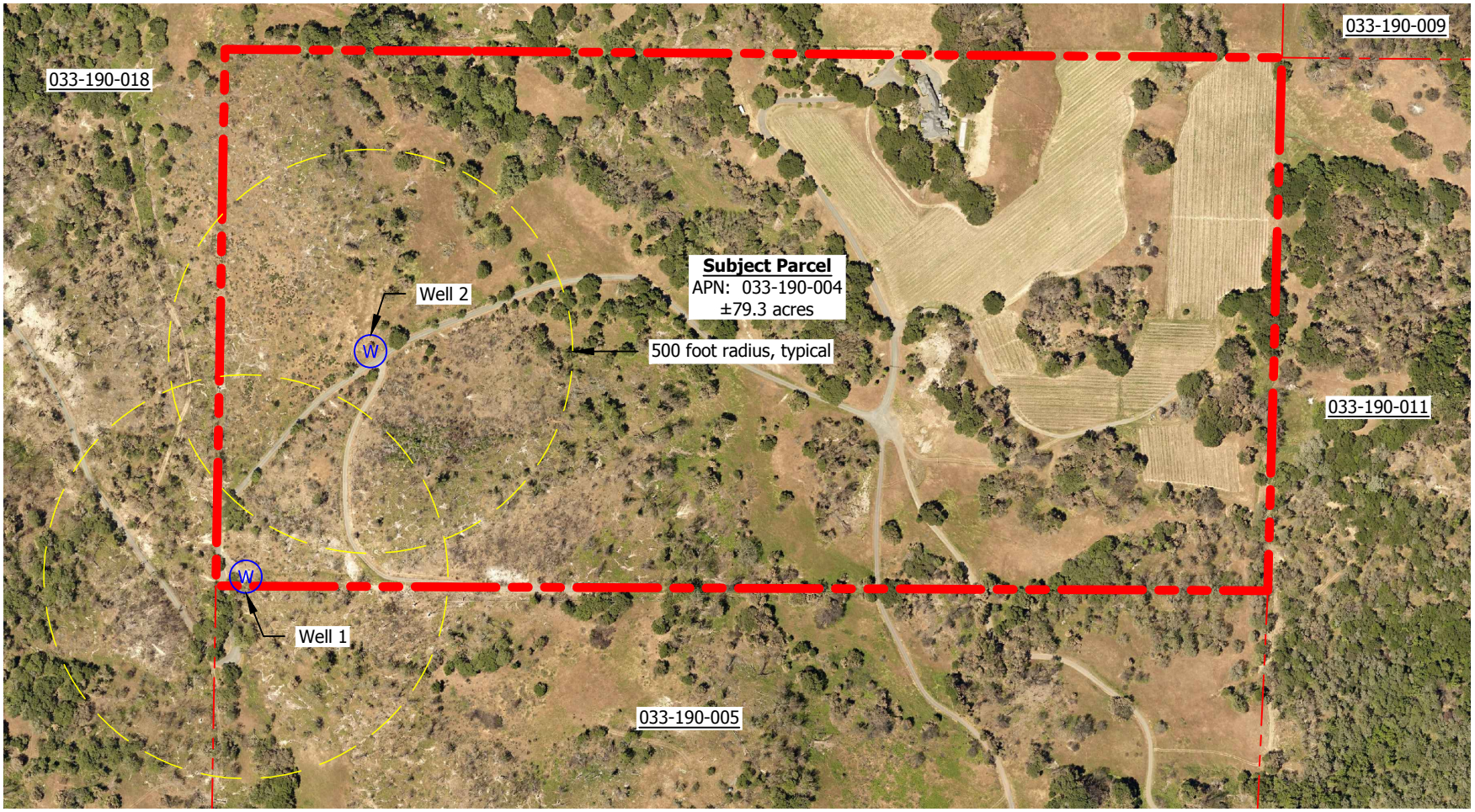
Notes:

1. Magnetic declination is approximately 13° east of true north at this location.

N

True

0' 300'



Site Plan
Scale: 1" = 400'

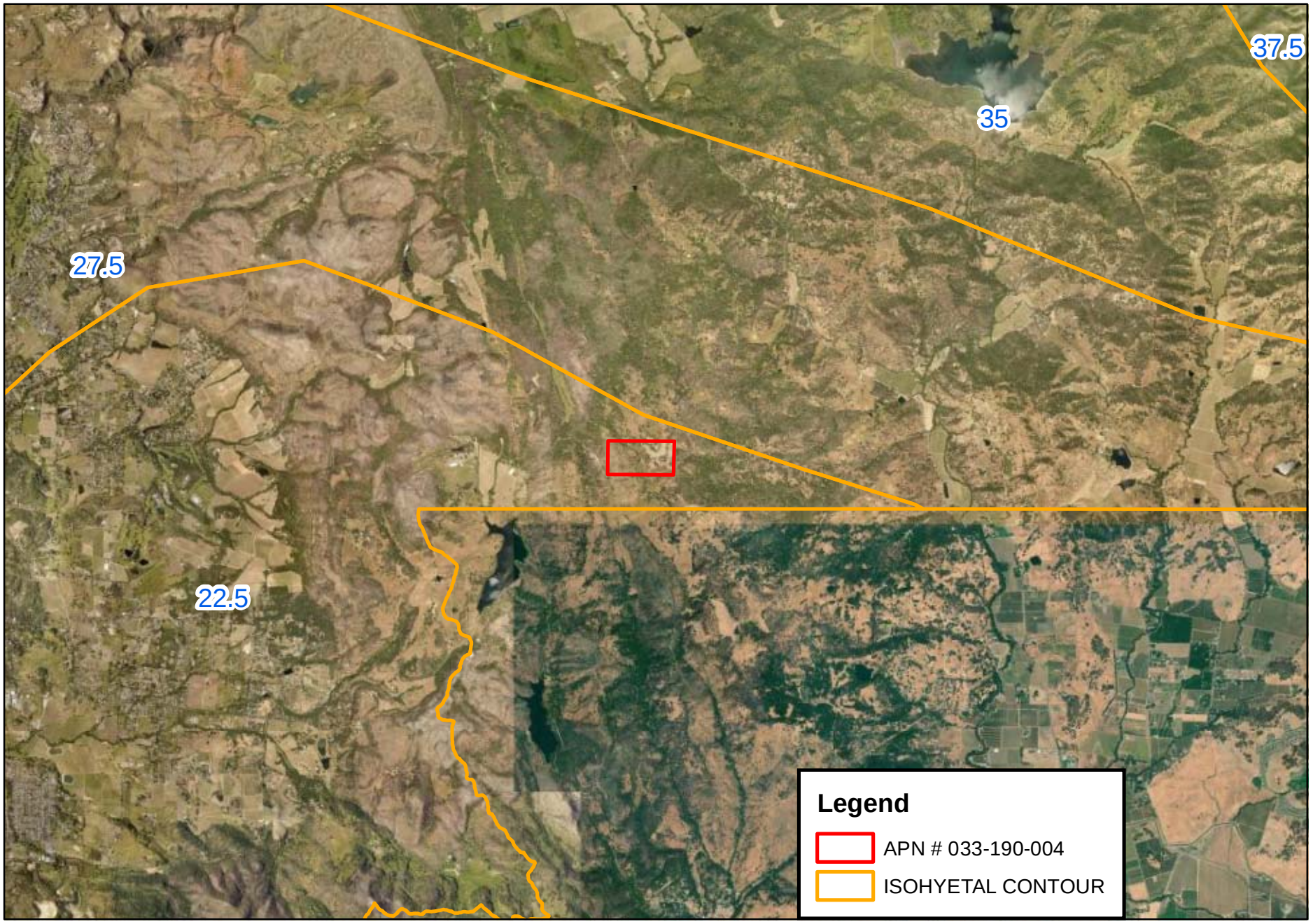
DESIGNED BY OR
DRAWN BY OR
CHECKED BY OR

ACME Engineering Incorporated
www.acmeng.com
1700 Soscol Avenue
Ste. 9, Napa, CA 94559
707-253-ACME

LYONS VINEYARDS
WELL LOCATION SITE PLAN

PROJECT NO.	180802-0122
DRAWING NO.	01 01
SCALE	1" = 400'
DATE	11/27/2019

SHEET 1 OF 1



ISOHYETAL OF NAPA COUNTY
ANNUAL PRECIPITATION

IMBODEN PUMP
SINCE 1946
1030 PUEBLO AVENUE • NAPA, CALIFORNIA 94558
(707) 252-6493 • LIC. # 404594
FAX (707) 226-1580

WELL TEST & REPORT

DATE: 05/08/19

OWNER: LYONS RANCH

ADDRESS: 8280 WILD HORSE VALLEY ROAD

WELL LOCATION:

PARCEL#:

WELL DEPTH: 438' **DIAMETER: 8"& 13"** **CASING:**

PUMP SETTING: 300' **PUMP HP: 10** **DROP PIPE: 2" PVC SCH 120**

POWER & VOLTAGE: 460 **DROP CABLE: 10-4**

PUMP MODEL: 75GS100 GOULDS

TANK SIZE & MODEL:

WATER LEVEL AT START OF TEST: 93' **GPM: 100**

WATER LEVEL AT END OF TEST: 152' **GPM: 85**

LENGTH OF TEST: 3 HOUR 0 MINUTES

****THIS TEST IS BASED ON THE WELL PRODUCTION AS OF THE DAY OF THE TEST ONLY. THE WELL MAY PRODUCE MORE OR LESS WATER THROUGHOUT THE YEAR.****

RESPECTFULLY,
IMBODEN PUMP

DATE: 05/08/19

OWNER: LYONS RANCH

ADDRESS: 8280 WILDHORSE VALLEY ROAD

TIME	WATER LEVEL	BACK PRESSURE	WATER COLOR	SAND	GPM
10:50am	93’	0psi	DIRTY	NO	100
10:55am	145’	0psi	DIRTY	NO	100
11:00am	156’	0psi	DIRTY	NO	93.75
11:05am	151’	25psi	DIRTY	NO	85
11:15am	151’	25psi	DIRTY	NO	85
11:30am	151.6’	25psi	DIRTY	NO	85
11:45am	152’	25psi	DIRTY	NO	85
12:00pm	152’	25psi	CLOUDY	NO	85
12:15pm	152’	25psi	CLOUDY	NO	85
12:30pm	152’	25psi	LITTLE CLOUDY	NO	85
12:45pm	152’	25psi	LITTLE CLOUDY	NO	85
01:00pm	152’	25psi	LITTLE CLOUDY	NO	85
01:15pm	152’	25psi	LITTLE CLOUDY	NO	85
01:30pm	152’	25psi	CLEAN	NO	85
01:50pm	152’	25psi	CLEAN	NO	85

REMARKS: