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## Water Availability Analysis



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# Water Availability Analysis Report

## for the proposed

## Promise Winery

2004 Sage Canyon Road  
St. Helena, CA 94574  
APN: 032-520-009

Prepared By:

CMP Civil Engineering & Land Surveying Inc.  
1607 Capell Valley Road  
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Date: 12/6/2023  
Rev 1: 4/29/2024  
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Project # 00170



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<b>Contact Information</b>	
Property Owner:	Promise Wine, LLC
Owner Address:	2004 Sage Canyon Road St. Helena, CA 94574
Owner Phone:	(707) 260-9094

### **Site Map:**

Please refer to the attached Well Location Map for the Promise Winery. The Well Location Map shows the proposed water source (existing well) and its proximity to other water sources.

### **Narrative:**

This water availability analysis has been prepared to support a use permit application for a proposed winery located on one parcel totaling 62.56 acres at 2004 Sage Canyon Road in Napa County. The property is currently developed with one main residence and one second dwelling unit, along with 3.56 net acres of vineyard which are currently under development. The proposed winery will be developed in two phases and will ultimately have a permitted annual wine production of 30,000 gallons, serve up to 15 daily visitors, and employ two full-time and three part-time employees. Irrigation water for the vineyard and domestic water for the second dwelling unit is provided by an existing well (Well #1) located near the existing barn. Domestic water for the main residence is provided by an existing well (Well #2) located near the main residence.

The existing barn is proposed to be converted to a winery and the existing second dwelling unit is proposed to be converted to a tasting room. Additionally, a new winery cave is also proposed. The proposed winery, cave, and tasting room, along with the vineyard, will be served by the existing Well #1 (Project Well).

A geotechnical report on file with Napa County and dated February 1, 2016 reports a "Likely Spring Source" along with two "Spring Tanks". At the time of the water source mapping for this report the "Likely Spring Source" was not locatable and the "Spring Tanks" did not exist. The current property owner was questioned about the said spring and had no knowledge of it and confirmed that if a spring exists on the property it is not being used as a water source for any existing or proposed improvements. Because of the above discussion and the lack of a spring box, spring tanks or other infrastructure generally required to develop a possible spring into a water source, the un-locatable "Likely Spring Source" listed in the said report is not being analyzed in this report.

### **Tier 1: Water Use Criteria**

#### **Existing Water Use:**

The site's existing water use has been estimated using information provided by the client, observations made during site visits, and the methodology presented in the current Napa County Water Availability Guidance Document.

**Vineyard Water Use:** The 3.56 acre vineyard under development is estimated to use 0.5 acre-feet of irrigation water per acre per year, resulting in 1.78 acre-feet of water use annually.

**Residential Water Use:** The existing main residence is estimated to use 0.75 acre-feet of water per year and the existing second dwelling unit (SDU) is estimated to use 0.5 acre-feet of water per year. Of the

said 0.5 acre feet of water the existing SDU is estimated to use, it is estimated that 0.1 acre feet of this is for the approximate 3000 square feet of existing landscaping around the said SDU.

In total, the existing water use for the site is estimated to be 3.03 acre-feet per year, with 1.25 acre-feet per year attributable to residential use and 1.78 acre-feet per year attributable to agricultural use. Refer to Appendix A for detailed calculations of the site's existing water use.

#### Proposed Water Use:

The project's proposed water use has been estimated using information provided by the client and the methodology presented in the current Napa County Water Availability Guidance Document.

**Residential Water Use:** There are no changes proposed to the existing main residence and its water use will remain at 0.75 acre-feet per year. The existing second dwelling unit is proposed to be converted to a tasting room, and the existing 0.5 acre-feet per year of water use associated with that residence will be eliminated. Therefore, the project's proposed residential water use will be decreased to 0.75 acre-feet per year.

**Vineyard Water Use:** There are no proposed changes to the existing vineyard, and therefore the project's proposed vineyard water use remains at 1.78 acre-feet per year.

**Process Water Use:** The proposed 30,000 gallon-per-year winery is estimated to use 6 gallons of process water per gallon of wine produced, resulting in 0.55 acre-feet per year of process water use. All of the winery process wastewater will be collected and treated within a closed on-site treatment system. The treated process wastewater will be stored in on-site tanks and beneficially reused for vineyard irrigation, resulting in no net increase in site water use attributable to winemaking activities.

**Domestic Water Use:** The proposed winery's domestic water use includes that of employees, daily visitors and event attendees. At full capacity, the proposed winery will have a staff of up to two full-time employees and three part-time employees. With water-use factors of 15 gallons per day for full-time employees and 8 gallons per day for part-time employees, the annual domestic water use associated with employees is 19,710 gallons. The proposed tasting room will host up to 15 daily visitors (105 per week), with a maximum of 5,460 tasters per year. With a water use factor of 3 gallons per visitor, the annual domestic water use associated with daily visitation is 16,380 gallons. The proposed winery will host up to seven catered marketing events per year, including six 25-person events and one 100-person event, resulting in a total of 250 annual event attendees. Utilizing a water use factor of 5 gallons per attendee, the annual domestic water use associated with marketing events is 1,250 gallons. In total, the proposed winery's annual domestic water use is estimated to be 37,340 gallons, or 0.11 acre-feet.

**Winery Landscape Water Use:** The existing second dwelling unit has approximately 3,000 square feet of non-xeriscape landscaping which is estimated to use 0.1 acre-feet per year of irrigation water in accordance with Appendix B of the Napa County Water Availability Guidance Document. The proposed tasting room will continue to utilize this existing landscaping and therefore the proposed landscape water use will remain at 0.1 acre-feet per year.

Accounting for all proposed water uses, including residential (0.75 acre-feet), vineyard (1.78 acre-feet), process (0.55 acre-feet), domestic (0.11 acre-feet), and landscape (0.10 acre-feet), and including the beneficial reuse of treated process wastewater (-0.55 acre-feet), the site's total annual proposed water use is estimated to be 2.74 acre-feet. Compared to the site's existing total estimated annual water use

of 3.03 acre-feet, the proposed winery project results in a net reduction of 0.29 acre-feet of groundwater use per year. Refer to Appendix A for detailed calculations of the site's proposed water use.

#### Estimated Recharge:

The subject property is located outside of the areas in which the Napa County Water Availability Analysis Guidance Document provides pre-defined groundwater recharge rates. As such, a groundwater recharge analysis was conducted in order to establish the annual groundwater recharge rate attributable to the project parcel. This analysis quantifies the amount of average annual rainfall infiltrating to the underlying aquifer based on the most recent, stable 10-year precipitation data provided by the Oregon State University PRISM Climate Group, estimated losses to runoff, and estimated losses to evapotranspiration. The calculations supporting this analysis are included in this report. The calculated groundwater recharge rate for this property is 0.80 acre-feet of water per acre of land. Given that this parcel is 62.56 acres, the maximum allowable water use for the parcel is 50.05 acre-feet per year. Refer to Appendix B for detailed recharge calculations.

#### **Tier 2: Well and Spring Interference**

##### Project Well Data:

The project proposes to utilize the existing well (Well #1) currently used to supply irrigation for the vineyard and domestic water for the second dwelling unit. The well has a casing diameter of 6" with an annular seal depth of 32 feet. The well was completed to a depth of 290 feet in May 1988. At the time of completion, an air yield test resulted in 20 gallons per minute for four hours. Refer to Appendix C for additional project well data.

##### Neighboring Wells and Springs:

The latest Interim Napa County Well Permit Standards and WAA Requirements require an interference analysis for any proposed increase in groundwater use occurring from project wells within 500 feet of any off-site well or 1,500 feet from any off-site spring. Of the project parcel's 3.03 acre-feet per year of existing groundwater use, 2.28 acre-feet per year is provided from the project well. Of the project parcel's 2.74 acre-feet per year of proposed groundwater use, 1.99 acre-feet per year will be provided by the project well, resulting in a net decrease of 0.29 acre-feet per year of groundwater pumped from the project well. Due to the proposed reduction in groundwater use from the project well, the Tier 2 criteria is met with no further analysis required.

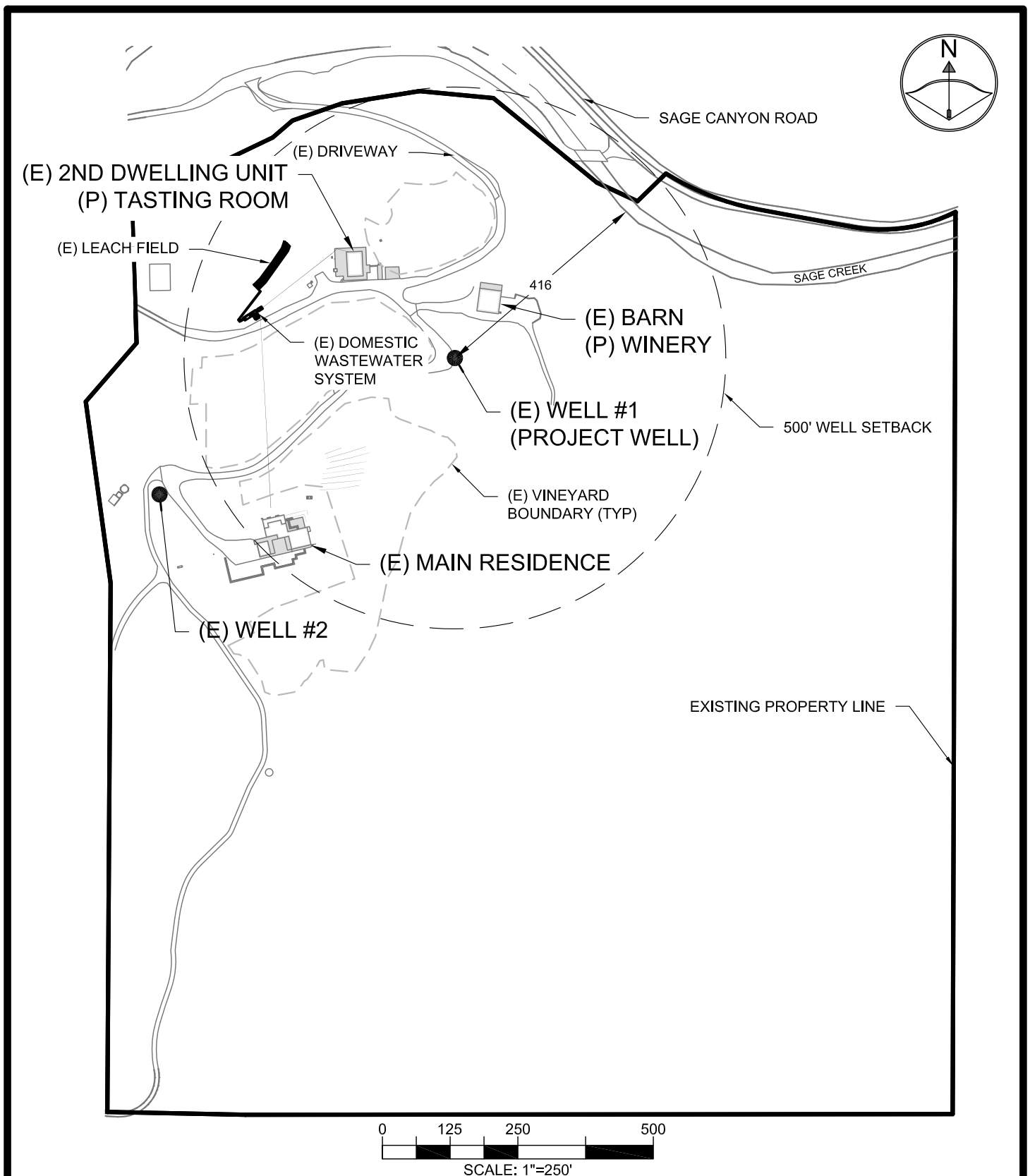
#### **Tier 3: Groundwater/Surface Water Interaction**

##### Surface Water Interaction:

The latest Interim Napa County Well Permit Standards and WAA Requirements require an analysis of potential groundwater to surface water interaction for new, altered, or increased groundwater use occurring from project wells within 1,500 feet of any County-identified Significant Stream inside the Napa River Watershed. The nearest Significant Stream to the project well is Sage Creek, which is approximately 416 feet from the well. However, a stream interference analysis is not required if modifications to the location, construction, or operation of the project well are made to reduce any assumed harm relative to current conditions. In the case of this project, there are no proposed modifications to the location, construction or pumping rate of the existing project well. However, the project is proposing a reduction in overall groundwater use through the removal of an existing residential use and the recycling of winery process wastewater for supplemental vineyard irrigation. Through these changes in operation, the project will reduce overall well pumping time, and will therefore reduce any assumed harm relative to current conditions.

**Summary and Conclusions:**

The proposed winery will utilize an existing 20 gallon per minute on-site well capable of supplying groundwater in excess of the proposed demand. When considering all existing and proposed groundwater uses on the subject parcel, the proposed winery project results in a net decrease in parcel groundwater use of 0.29 acre-feet per year. Comparing the proposed total groundwater use of 2.74 acre-feet per year to the calculated parcel groundwater recharge rate of 50.05 acre-feet per year, it is clear that the parcel has adequate water available to serve the proposed use, and therefore passes the Tier 1 screening criteria. Since there is a proposed net decrease in groundwater use from the existing project well, the project passes the Tier 2 and Tier 3 criteria without further analysis required. In conclusion, the subject parcel has adequate, sustainable groundwater resources available to support the proposed winery project, while reducing any assumed existing harm to Sage Creek from the existing project well.



## WELL LOCATION MAP

SHEET: 1 OF 1

### PROJECT INFO:

PROMISE WINERY  
2004 SAGE CANYON ROAD  
ST. HELENA, CA 94574  
APN: 032-520-009

### PREPARED BY:

CMP CIVIL ENGINEERING &  
LAND SURVEYING INC.  
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P #: 00170

DATE: 10/17/23



# **Appendix A**

## Water Use Calculations



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## **Project-Specific Water Use Factors**

Appendix B of the WAA Guidance Document provides guidelines and use factors for estimating site water use. These guidelines provide a good starting point for developing a project-specific water use estimate and are typically utilized in the calculations supporting this analysis. However, each project has unique characteristics which occasionally necessitate the use of factors not provided in Appendix B of the WAA Guidance Document. This project-specific analysis utilizes three use factors which do not appear in the WAA Guidance Document, and they are described in detail below:

**Winery Process Water Use:** While no external water is introduced directly to the wine fermentation process, considerable water use does occur within a winery. Process water is used extensively throughout the winery, including in the washing of grapes, cleaning of hoses, tanks, pumps, equipment, and building floors, and the preparation and washing of barrels, along with various other activities such as bottling. Winery process water use is generally expressed as a ratio of water used to wine produced. There are no standards which provide definitive water use guidelines for a given winery. The 2019 Administrative Draft of the Statewide General Waste Discharge Requirements for Winery Process Water Treatment Systems estimated that winery process water is used at a ratio of 5:1. The March 2024 Napa County Water Conservation Workplan suggests that a typical winery uses process water at a ratio of 6:1. The 2015 Napa County WAA Guidance Document provides a guideline ratio of 7:1. Data obtained within the winemaking industry suggests that winery process water use ratios range from 1.5:1 to 12:1, with a range of 3:1 to 6:1 typical of modern water-efficient facilities of the size and scope proposed in this Use Permit application. As such, this analysis assumes a process water ratio of 6:1 as a reasonable estimate specific to this project.

**Part-time Employee Water Use:** The WAA Guidance Document provides an estimated use factor of 15 gallons per shift for all employees and does not differentiate between full-time and part-time employees. It is assumed that part-time employees will use water for restroom breaks, drinking, and other incidental uses. New restroom facilities use approximately 1.28 gallons per flush and 0.17 gallons for hand washing, resulting in a total of 1.45 gallons per restroom break. OSHA suggests that employees typically take three restroom breaks per eight-hour shift, resulting in a total of 4.35 gallons per shift of restroom water. Rounding up to 5 gallons per shift for restroom use and allowing for an additional 3 gallons per shift for other uses, we arrive at an estimated use factor of 8 gallons per part-time employee shift as a reasonable estimate for the purpose of this analysis.

**Marketing Event Water Use:** The WAA Guidance Document does not provide an estimated water use factor for marketing events utilizing off-site catering and portable restroom facilities, such as the events

proposed in this Use Permit application. The utilization of off-site catering means that all food preparation and dish washing activities will occur off-site, resulting in no on-site water use attributable to those activities. The utilization of portable restroom facilities presumably results in no on-site water use attributable to the restrooms, however some portable facilities require a site-supplied water connection to provide sink and toilet flush functionality. Additionally, it is reasonable to assume that the preparation and cleanup of the event space might result in some incidental water use. As such, this analysis applies a use factor of five gallons per event attendee as a reasonable estimate to account for the potential water use associated with marketing events.



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# Water Availability Analysis Calculations for the proposed Promise Winery

Located at:  
2004 Sage Canyon Road  
St. Helena, CA 94574

Date: 12/6/2023  
Rev 1: 4/18/2024

Project # 00170

<u>Legend</u>
Requires Input
Automatically Calculates
Important Value Automatically Calculates
Important Value Requires Input

Hit ctrl+alt+shift+F9 when finished to recalc all formulas

<b>WATER AVAILABILITY ANALYSIS - TIER ONE STUDY</b>				
<b>WATER USE CALCULATIONS FOR EXISTING USE</b>				
<b>RESIDENTIAL</b>	<b>#</b>	<b>FACTOR</b>	<b>AF/YR</b>	
PRIMARY RESIDENCES=	1	0.75	0.75	
SECONDARY RESIDENCES=	1	0.5	0.5	
FARM LBR DWELLING (# OF PPL) =	0	0.06	0	
		SUB TOTAL=	1.25	
<b>NON- RESIDENTIAL GUIDELINES</b>				
<b>AGRICULTURAL</b>	<b># ACRE</b>	<b>FACTOR</b>	<b>AF/YR</b>	
VINEYARD IRRIGATION ONLY=	3.56	0.5	1.78	
VINEYARD HEAT PROTECTION=	0	0.25	0.00	
VINEYARD FROST PROTECTION=	0	0.25	0.00	
IRRIGATED PASTURE=	0	4	0.00	
ORCHARDS=	0	4	0.00	
LIVESTOCK (SHEEP/COWS)=	0	0.01	0.00	
		SUB TOTAL=	1.78	
<b>WINERY</b>	<b># GAL</b>	<b>FACTOR</b>	<b>AF/YR</b>	
PROCESS WATER=	0	See WW Calc	0.00	
EMPLOYEES=	0	See WW Calc	0.00	
DAILY VISITATION=	0	See WW Calc	0.00	
MARKETING EVENTS=	0	See WW Calc	0.00	
LANDSCAPING=	0	0.000003069	0.00	
		SUB TOTAL=	0.00	
<b>INDUSTRIAL</b>	<b># EMPL</b>	<b>FACTOR</b>	<b>AF/YR</b>	
FOOD PROCESSING=	0	31	0	
PRINTING/ PUBLISHING=	0	0.6	0	
		SUB TOTAL=	0	
<b>COMMERCIAL</b>	<b># EMPL</b>	<b>FACTOR</b>	<b>AF/YR</b>	
OFFICE SPACE=	0	0.01	0	
WAREHOUSE=	0	0.05	0	
		SUB TOTAL=	0	
<b>EXISTING USE TOTALS</b>				
RESIDENTIAL=	1.25	AF/YR		
AGRICULTURAL=	1.78	AF/YR		
WINERY=	0.00	AF/YR		
INDUSTRIAL=	0.00	AF/YR		
COMMERCIAL=	0.00	AF/YR		
OTHER USAGE (LIST BELOW)				
		AF/YR		
		AF/YR		
		AF/YR		
		AF/YR		
		AF/YR		
<b>TOTAL EXISTING WATER USE=</b>	<b>987261</b>	<b>G/YR</b>		
<b>TOTAL EXISTING WATER USE=</b>	<b>3.03</b>	<b>AF/YR</b>		

WATER AVAILABILTY CALCULATIONS FOR EXISTING USE			
WELL NUMBER	Q - GPM	AF/YR	
1	20	32.26	
2	1	1.61	
3		0.00	
4		0.00	
5		0.00	
TOTAL=	21	33.88	
SPRING NUMBER	Q - GPM	AF/YR	
1		0.00	
2		0.00	
3		0.00	
4		0.00	
5		0.00	
TOTAL=	0	0.00	
TANK #	GAL	AF	
1		0.00	
2		0.00	
3		0.00	
4		0.00	
5		0.00	
TOTAL=	0	0.00	
RESERVOIR #	GAL	AF	
1		0	
2		0	
3		0	
4		0	
5		0	
TOTAL=	0	0	
GROUND WATER RECHARGE	AF/YR/ACRE	PARCEL AC	AF/YR
Recharge rate =	0.80	62.56	50.05
<b>TOTAL AVAILABLE WATER =</b>	<b>16307080</b>	<b>G/YR</b>	
<b>TOTAL AVAILABLE WATER =</b>	<b>50.05</b>	<b>AF/YR</b>	
<b>TOTAL EXISTING WATER USE=</b>	<b>3.03</b>	<b>AF/YR</b>	
<b>REMAINING AVAILABLE WATER =</b>	<b>47.02</b>	<b>AF/YR</b>	

WATER USE CALCULATIONS FOR PROPOSED USE			
<b>RESIDENTIAL</b>	<b>#</b>	<b>FACTOR</b>	<b>AF/YR</b>
PRIMARY RESIDENCES=	1	0.75	0.75
SECONDARY RESIDENCES=	0	0.5	0
FARM LBR DWELLING (# OF PPL) =	0	0.06	0
		SUB TOTAL=	0.75
<b>NON- RESIDENTIAL GUIDELINES</b>			
<b>AGRICULTURAL</b>	<b># ACRE</b>	<b>FACTOR</b>	<b>AF/YR</b>
VINEYARD IRRIGATION ONLY=	3.56	0.5	1.78
VINEYARD HEAT PROTECTION=	0	0.25	0.00
VINEYARD FROST PROTECTION=	0	0.25	0.00
IRRIGATED PASTURE=	0	4	0.00
ORCHARDS=	0	4	0.00
LIVESTOCK (SHEEP/COWS)=	0	0.01	0.00
		SUB TOTAL=	1.78
<b>WINERY</b>	<b># GAL</b>	<b>FACTOR</b>	<b>AF/YR</b>
PROCESS WATER=	180000	See WW Calc	0.55
EMPLOYEES=	19710	See WW Calc	0.06
DAILY VISITATION=	16380	See WW Calc	0.05
MARKETING EVENTS=	1250	See WW Calc	0.00
LANDSCAPING=	32583	0.000003069	0.10
		SUB TOTAL=	0.77
<b>INDUSTRIAL</b>	<b># EMPL</b>	<b>FACTOR</b>	<b>AF/YR</b>
FOOD PROCESSING=	0	31	0
PRINTING/ PUBLISHING=	0	0.6	0
		SUB TOTAL=	0
<b>COMMERCIAL</b>	<b># EMPL</b>	<b>FACTOR</b>	<b>AF/YR</b>
OFFICE SPACE=	0	0.01	0
WAREHOUSE=	0	0.05	0
		SUB TOTAL=	0
<b>PROPOSED USE TOTALS</b>			
RESIDENTIAL=	0.75	AF/YR	
AGRICULTURAL=	1.78	AF/YR	
WINERY=	0.77	AF/YR	
INDUSTRIAL=	0.00	AF/YR	
COMMERCIAL=	0.00	AF/YR	
OTHER USAGE (LIST BELOW)			
RECYCLED PROCESS WATER	-0.55	AF/YR	
		AF/YR	
		AF/YR	
		AF/YR	
		AF/YR	
<b>TOTAL PROPOSED WATER USE=</b>	<b>894270</b>	<b>G/YR</b>	
<b>TOTAL PROPOSED WATER USE=</b>	<b>2.74</b>	<b>AF/YR</b>	

WATER AVAILABILTY CALCULATIONS FOR PROPOSED USE			
WELL NUMBER	Q - GPM	AF/YR	
1	20	32.26	
2	1	1.61	
3		0.00	
4		0.00	
5		0.00	
TOTAL=	21	33.87	
SPRING NUMBER	Q - GPM	AF/YR	
1		0.00	
2		0.00	
3		0.00	
4		0.00	
5		0.00	
TOTAL=	0	0.00	
TANK #	GAL	AF	
1		0.00	
2		0.00	
3		0.00	
4		0.00	
5		0.00	
TOTAL=	0	0.00	
RESERVOIR #	GAL	AF	
1		0	
2		0	
3		0	
4		0	
5		0	
TOTAL=	0	0	
GROUND WATER RECHARGE	AF/YR/ACRE	PARCEL AC	AF/YR
Recharge rate =	0.80	62.56	50.05
<b>TOTAL WATER AVAILABLE =</b>	<b>16307080</b>	<b>G/YR</b>	
<b>TOTAL WATER AVAILABLE =</b>	<b>50.05</b>	<b>AF/YR</b>	
<b>TOTAL PROPOSED WATER USE=</b>	<b>2.74</b>	<b>AF/YR</b>	
<b>REMAINING AVAILABLE WATER =</b>	<b>47.30</b>	<b>AF/YR</b>	



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## Winery Wastewater Flow Calculations for Phase 2 of the proposed Promise Winery

Located at:  
2004 Sage Canyon Road  
St. Helena, CA 94574

Date: 12/6/2023

Project # 00170

### Legend

Requires Input
Automatically Calculates
Important Value Automatically Calculate
Important Value Requires Input

Hit ctrl + alt + shift + F9 when finished to recalc all formulas

## Winery Waste Flow Summary

These wastewater calculations are for the second phase of a proposed winery. The calculations are to establish the expected peak process and domestic daily flows. They also estimate the annual domestic and process water use.

### Winery Proposed Peak Process Wastewater Flows

Wine Production =	30000	gal/yr
Crush Duration =	45	days (30 -60)
Peak Process Waste Flows During Crush =	1000.00	gal/day ((1.5 x production)/crush days)
Average Process Flows (non crush) =	493.15	gal/day ((6 x production)/days in yr)
Additional Process Flow =	0.00	gal/day (usually 0)
<b>Winery Peak Process Waste Flows =</b>	<b>1000.00</b>	<b>gal/day</b>

### Proposed Domestic Peak Wastewater Flows

Number of FT Employees =	2	#
Number of PT Employees =	3	#
Number of daily visitors =	15	#
Event people count serviced by this system =	25	#
FT employee daily domestic waste flow =	30.00	gal/day (15 g/p)
PT employee daily domestic waste flow =	24.00	gal/day (8 g/p)
Visitor daily domestic waste flow =	45.00	gal/day (3 g/p)
Event daily domestic waste flow =	125.00	gal/day (5 g/p)

<b>Winery Peak Domestic Wasteflows =</b>	<b>224.00</b>	<b>gal/day</b>
--	---------------	----------------

## Combined Winery Waste Annual Volume Calculations

### Winery Annual Combined Process & Domestic Waste Flows

Number of FT Employees =	2	#
Number of PT Employees =	3	#
FT employee daily domestic waste flow =	30	gal/day (15 g/p)
PT employee daily domestic waste flow =	24	gal/day (8 g/p)
Number of Employee Flow Days =	365	days/yr
Annual employee domestic waste flow =	19710	gal/yr
Number of annual visitors =	5460	#
Annual visitor domestic waste flow =	16380	gal/yr (3 g/p)

<b>Special Event Visitor Volumes</b>	visitors	days/yr	g/p/day	gallons
Large Events = (served by portable restrooms)	100	1	5	500
Medium Events =	0	0	5	0
Small =	25	6	5	750
Very Small =	0	0	5	0

Total Annual Event Visitor Waste Volume =	1250	gal/year		
<b>Total annual domestic wastewater volume =</b>	<b>37340</b>	<b>gal/yr</b>	<b>0.11</b>	<b>af</b>
<b>Total annual process wastewater volume =</b>	<b>180000</b>	<b>gal/yr</b>	<b>0.55</b>	<b>af</b>
<b>Total Winery Wastewater Annual Vol =</b>	<b>217340</b>	<b>gal/yr</b>	<b>0.67</b>	<b>af</b>

# **Appendix B**

## **Groundwater Recharge Calculations**



**CMP Civil Engineering & Land Surveying Inc.**  
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# Ground Water Recharge Analysis for the Promise Winery Property

Located at:  
2004 Sage Canyon Road  
St. Helena, CA 94574

Date: 10/17/2023  
Rev 1: 4/15/2024

Project # 00170

<u>Legend</u>
Requires Input
Automatically Calculates
Important Value Automatically Calculates
Important Value Requires Input

Hit ctrl+alt+shift+F9 when finished.

GROUND WATER RECHARGE CALCULATIONS			
PARCEL VARIABLES			
Parcel size =	62.56	ac	
Average annual rainfall (P) =	30.72	in (from stable PRISM 10-yr Avg)	
Total parcel average rainfall volume =	160.14	ac-ft/yr	
EVAPOTRANSPIRATION (E)			
Crop Type	Area (ac)	E (ac-ft)	
Vineyard =	3.56	3.79	
Orchard =			
Hay =			
Other Crops =			
Totals =	3.56	3.79	
Native plants area =	59.00	ac	
Native plants estimated coefficient =	0.35	coefficient	
Plant density =	80%	percent	
Native Plant Growth Cycle Factor =	0.70	factor	
Grass reference ETo =	49.20	in (from Zone 8 ITRC value typ yr)	
Native plant ETc =	12.05	in	
Total annual native plant E =	47.41	ac-ft	
Total annual E for parcel =	51.20	ac- ft	
RUNOFF (R)			
Average runoff relief coefficient =	24%	%	
Average runoff soil coefficient =	8%	%	
Average runoff vegetation coefficient =	5%	%	
Average runoff surface coefficient =	9%	%	
Total Runoff Coefficient =	46%	%	
Average annual rainfall =	160.14	ac-ft	
Runoff producing rainfall =	80%	%	
Total Annual Runoff (R) =	58.93	ac-ft	
ANNUAL GROUND WATER RECHARGE STORAGE (S) = P-(R+E)			
Total Annaul Precipitation (P) =	160.14	ac-ft	
Total Annual Runoff (R) =	58.93	ac-ft	
Total Annual Evapotranpiration (E) =	51.20	ac-ft	
Total Annual Ground Recharge (S) =	50.01	ac-ft	
Annual Recharge Rate Per Acre =	0.80	ac-ft / yr / ac	

PRISM Time Series Data  
Location: Lat: 38.4896 Lon: -122.3358 Elev: 1007ft  
Climate variable: ppt  
Spatial resolution: 4km  
Period: 2013-11 - 2023-10  
Dataset: AN91m  
PRISM day definition: 24 hours ending at 1200 UTC on the day shown  
Grid Cell Interpolation: Off  
Time series generated: 2024-Apr-15  
Details: [http://www.prism.oregonstate.edu/documents/PRISM\\_datasets.pdf](http://www.prism.oregonstate.edu/documents/PRISM_datasets.pdf)

Date	ppt (inches)	
2013-11	1.03	<b>Annual Average = 30.72 (inches)</b>
2013-12	0.58	
2014-01	0.14	
2014-02	11.06	
2014-03	3.31	
2014-04	2.74	
2014-05	0.05	
2014-06	0	
2014-07	0	
2014-08	0	
2014-09	0.53	
2014-10	0.87	
2014-11	3.12	
2014-12	15.34	
2015-01	0.03	
2015-02	4.42	
2015-03	0.14	
2015-04	1.7	
2015-05	0.03	
2015-06	0.09	
2015-07	0.03	
2015-08	0	
2015-09	0.4	
2015-10	0.05	
2015-11	1.62	
2015-12	6.12	
2016-01	10.23	
2016-02	1.41	
2016-03	11.52	
2016-04	1.43	
2016-05	0.32	
2016-06	0	
2016-07	0	
2016-08	0	
2016-09	0	
2016-10	6.05	

CURRENT, STABLE 10-YEAR PRISM DATA
------------------------------------

2016-11	3.25
2016-12	7.34
2017-01	18.72
2017-02	14.83
2017-03	4.07
2017-04	3.65
2017-05	0.01
2017-06	0.39
2017-07	0
2017-08	0
2017-09	0.01
2017-10	0.27
2017-11	4.83
2017-12	0.07
2018-01	5.47
2018-02	0.21
2018-03	7.61
2018-04	3.41
2018-05	0.15
2018-06	0
2018-07	0
2018-08	0
2018-09	0
2018-10	0.85
2018-11	5.53
2018-12	3.25
2019-01	9.89
2019-02	17.55
2019-03	6.58
2019-04	0.92
2019-05	4.12
2019-06	0
2019-07	0
2019-08	0
2019-09	0.05
2019-10	0
2019-11	0.88
2019-12	8.5
2020-01	2.7
2020-02	0
2020-03	1.48
2020-04	1.28
2020-05	1.81
2020-06	0
2020-07	0
2020-08	0.04
2020-09	0

CURRENT, STABLE 10-YEAR PRISM DATA
------------------------------------

2020-10	0
2020-11	1.51
2020-12	2.19
2021-01	3.94
2021-02	1.54
2021-03	2.23
2021-04	0.17
2021-05	0
2021-06	0
2021-07	0
2021-08	0
2021-09	0.04
2021-10	10.13
2021-11	1.79
2021-12	8.43
2022-01	0.69
2022-02	0.05
2022-03	1.37
2022-04	2.35
2022-05	0.27
2022-06	0.45
2022-07	0
2022-08	0.02
2022-09	1.07
2022-10	0
2022-11	1.78
2022-12	9.81
2023-01	13.94
2023-02	4.01
2023-03	12.7
2023-04	0.55
2023-05	1.24
2023-06	0.01
2023-07	0
2023-08	0.01
2023-09	0.11
2023-10	0.7

**RUN-OFF PRODUCING CHARACTERISTICS OF WATERSHEDS SHOWING  
FACTORS FOR EACH CHARACTERISTIC FOR VARIOUS WATERSHED TYPES**

WATERSHED TYPES AND FACTORS				
Run-off Producing Features	Extreme	High	Normal	Low
Relief	0.28-0.36 Steep, rugged terrain, with average slopes above 30%.	0.20 - 0.28 Rolling, with average slopes of 10 to 30%.	0.14 - 0.20 Rolling, with average slopes of 5 to 10%.	0.08 - 0.14 Relatively flat land, with average slopes of 0 to 5%.
Soil Infiltration	0.12 - 0.16 No effective soil cover either rock or thin soil mantle of negligible infiltration capacity.	0.08 - 0.12 Slow to take up water; clay or shallow loam soils of low infiltration capacity imperfectly or poorly drained.	0.06 - 0.08 Normal; well drained light and medium textured soils sandy loams, silt, and silt loams.	0.04 - 0.06 High; deep sand or other soil that takes up water readily; very light, well drained soils.
Vegtal Cover	0.12-0.16 No effective plant cover; bare or very sparse cover.	0.08-0.12 Poor to fair; clean cultivation crops or poor natural cover; less than 20% of drainage area under good cover.	0.06-0.08 Fair to good; about 50% of area in good grassland or woodland; not more than 50% of area in cultivated crops.	0.04-0.06 Good to excellent; about 90% of drainage area in good grassland, woodland, or equivalent crop.
Surface	0.10-0.12 Negligible; surface depressions, few and shallow; drainageways steep and small; no marshes.	0.08 - 0.10 Low; well-defined system of small drainageways; no ponds or marsh.	0.06 - 0.08 Normal; considerable surface depression storage; lakes, ponds, and marshes	0.04 - 0.06 High; surface storage high; drainage system not sharply defined; large floodplain storage or large number of ponds or marshes.

THE RUNOFF FACTOR IS DETERMINED BY THE SUM OF THE FACTORS FOR RELIEF INFILTRATION, COVER, AND SURFACE. NOT APPLICABLE TO BUILT UP AREAS.

FIGURE 3

# Appendix C

## Project Well Data

# Environmental

## Cover Sheet

APN	032 - 520 - 007 - 000
Permit #	
Program	WELL
DocType	PMT
Street #	
Street Name	Sage Canyon Rd
Year	1988



FEE 79- DATE 5/31/88  
RECEIPT NO 21850 BY ml

NAPA COUNTY HEALTH DEPARTMENT  
DIVISION OF ENVIRONMENTAL HEALTH

32-520-07  
A.P. NO. 32-010-12

APPLICATION & PERMIT TO CONSTRUCT A WATER WELL

Highway Marker 1213 Highway 128  
Mail Box 2004

NAME JOHN CHASE ADDRESS SAGE CANYON RD. RUTHERFORD  
(Owner)  
NAME DEBIEB & GREGSON INC. ADDRESS 5365 NAPA VALLEY RD. MOY  
(Well Driller) DATE 5-31-88

TYPE OF WORK NEW WELL ☒ RECONDITIONING ☐ DEEPENING ☐  
TYPE I PERMIT ☒ DESTROY ☐ OTHER ☐  
TYPE II PERMIT ☐ TEST HOLE ☐

PROPOSED USE DOMESTIC ☒ IRRIGATION ☐ INDUSTRIAL ☐ MUNICIPAL ☐  
TEST WELL ☐ OTHER ☐ HOT WATER ☐

Sewage Disposal on site (existing or proposed) Public ☐ Individual ☒ Private ☐  
Distance from well to any part of nearest sewage disposal system 100+ feet.  
(Sketch of site to accompany application) County road setback 50+ feet from centerline.

TYPE OF EQUIPMENT TO BE USED: Rotary AIR Cable ☐ Hand Dug ☐ Other ☐

WORKER'S COMPENSATION COVERAGE: (Check one of the following)

- ☒ A certificate of current Worker's Compensation Insurance coverage is presently on file with this office.  
☐ A certificate of current Worker's Compensation Insurance is being filed with this application.  
☐ I certify that in the performance of the work for which this permit is issued I shall not employ any person in any manner so as to become subject to the Worker's Compensation laws in California.

Signature of Applicant

Date

FOR OFFICE USE ONLY

Date By Remarks

Pre-Inspection  
Class II Approval  
Permit Issued  
Const. Inspection  
Final Inspection  
Well Log Rec.

5/31/88	<u>D. W. Edwards</u>	
6/1/88	<u>SEA</u>	3" x 32' Annular Seal
6/6/88		

Old Wells to be Destroyed: \_\_\_\_\_

Other Remarks: \_\_\_\_\_

EH 91

Revised 12-80

White-Office

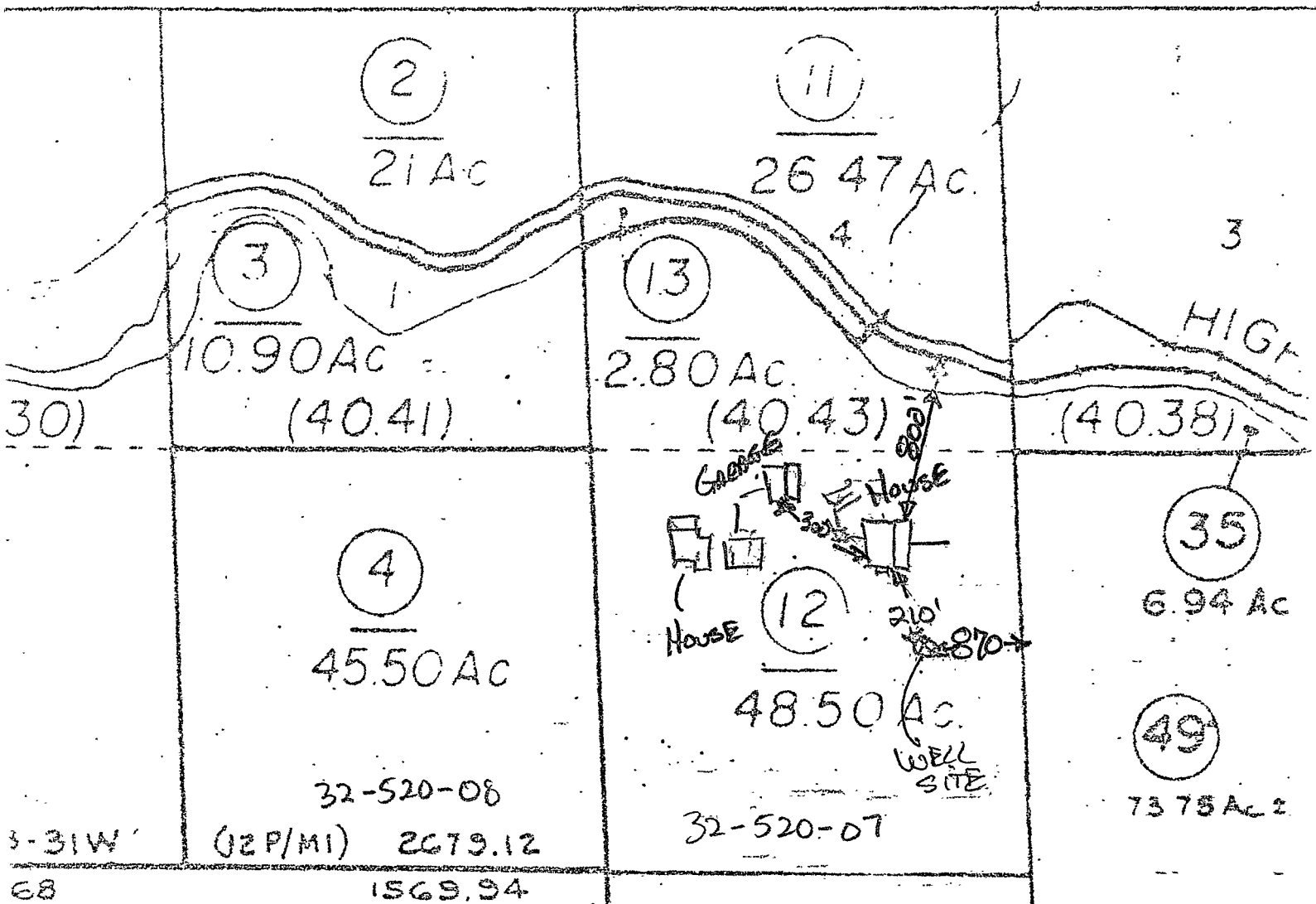
Yellow-Return to Office

Pink-Owner

Orange-Contractor

7749A

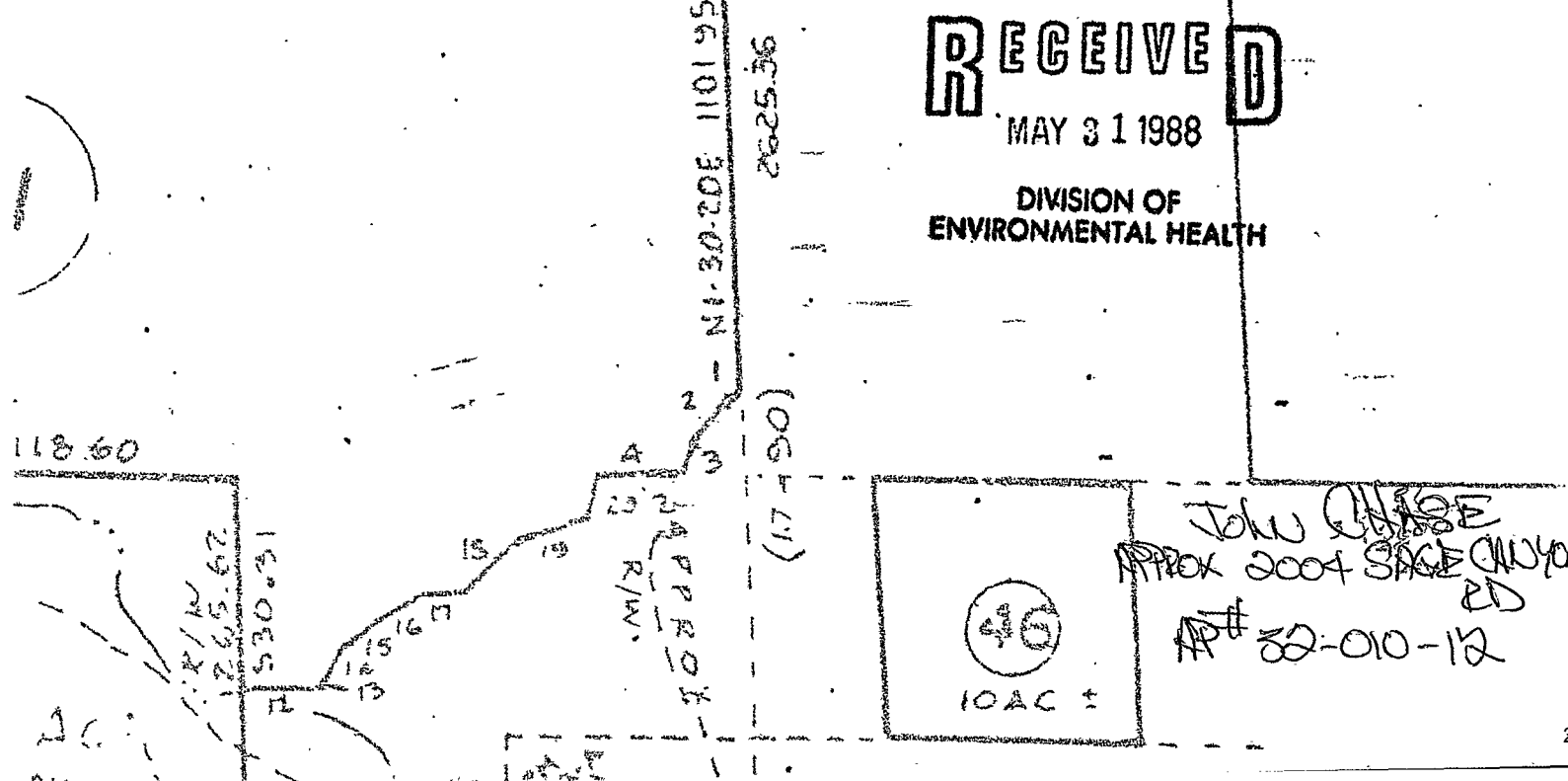
22° 20' 00"



**RECEIVED**  
MAY 31 1999

MAY 31 1988

# DIVISION OF ENVIRONMENTAL HEALTH



# Environmental

## Cover Sheet

APN	032 - 520 - 007 - 000
Permit #	
Program	WELL
DocType	WL
Street #	
Street Name	
Year	1988



32-520-007

**PLICATE**  
**wner's Copy**

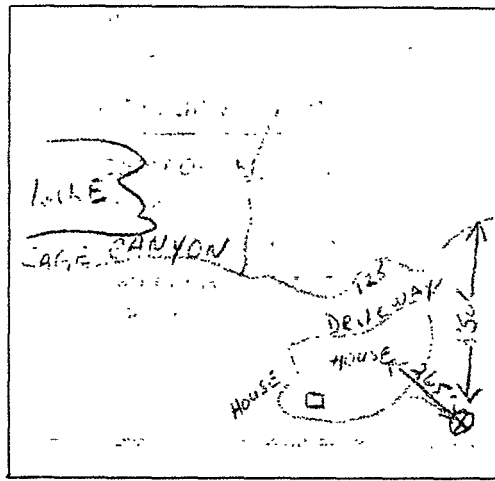
STATE OF CALIFORNIA  
THE RESOURCES AGENCY  
DEPARTMENT OF WATER RESOURCES  
**WATER WELL DRILLERS REPORT**

Do not fill in  
**No. 245573**

Notice of Intent No. \_\_\_\_\_  
Local Permit No. or Date \_\_\_\_\_

State Well No. \_\_\_\_\_  
Other Well No. \_\_\_\_\_

(1) **OWNER:** Name **John Chase**  
Address **P O Box 1043**  
City **Ross, Ca** Zip **94957**  
(2) **LOCATION OF WELL** (See instructions): **32-520-07**  
County **Napa** Owner's Well Number **32-010-12**  
Well address if different from above **Sage Canyon Road**  
Township \_\_\_\_\_ Range \_\_\_\_\_ Section \_\_\_\_\_  
Distance from cities, roads, railroads, fences, etc. \_\_\_\_\_



(3) **TYPE OF WORK:**  
New Well ☒ Deepening ☐  
Reconstruction ☐  
Reconditioning ☐  
Horizontal Well ☐  
Destruction ☐ (Describe destruction materials and procedures in Item 12)  
(4) **PROPOSED USE:**  
Domestic ☒  
Irrigation ☐  
Industrial ☐  
Test Well ☐  
Stock ☐  
Municipal ☐  
Other ☐

(12) **WELL LOG:** Total depth **290** ft. Depth of completed well **290** ft.  
from ft. to ft. Formation (Describe by color, character, size or material)  
**0 - 3 Topsoil**  
**3 - 20 Brown Sand stone**  
**20 - 35 Gray Clay**  
**35 - 40 Gray rock white ash**  
**40 - 55 Multi color rock soft**  
**55 - 85 Gray & black rock stringer red med**  
**85 - 100 Gray green black rock fract med**  
**100 - 145 Green gray black red rock fract**  
**145 - 175 Green black & lt. gray rock fract med**  
**175 - 205 dk & lt. gray & green rock fract med**  
**205 - 250 Black Gray white green rock fract med**  
**250 - 290 Lt. gray & black rock stringers gray shale**

**RECEIVED**  
**AUG 12 1988**

**DEPT. OF ENVIRONMENTAL MANAGEMENT**

(5) **EQUIPMENT:**  
Rotary ☐ Reverse ☐  
Cable ☐ Air ☒  
Other ☐ Bucket ☐  
(6) **GRAVEL PACK:**  
Yes ☒ No ☐ Size **Pea**  
Diameter of bore **9 7/8**  
Packed from **290** to **31** ft.  
(7) **CASING INSTALLED:**  
Steel ☐ Plastic ☒ Concrete ☐  
(8) **PERFORATIONS: Mech.**  
Type of perforation or size of screen  

From ft.	To ft.	Dia. in.	Gage or Wall	From ft.	To ft.	Slot size
<b>0</b>	<b>190</b>	<b>6</b>	<b>200</b>	<b>190</b>	<b>290</b>	<b>.032</b>

(9) **WELL SEAL:**  
Was surface sanitary seal provided? Yes ☒ No ☐ If yes, to depth \_\_\_\_\_ ft.  
Were strata sealed against pollution? Yes ☒ No ☐ Interval \_\_\_\_\_ ft.  
Method of sealing **Concrete & Bentinite Pellets**

(10) **WATER LEVELS:**  
Depth of first water, if known \_\_\_\_\_ ft.  
Standing level after well completion **85** ft.

(11) **WELL TESTS:**  
Was well test made? Yes ☒ No ☐ If yes, by whom? **Driller**  
Type of test Pump ☐ Bailer ☐ Air lift ☒  
Depth to water at start of test \_\_\_\_\_ ft. At end of test \_\_\_\_\_ ft.  
Discharge **20** gal/min after **4** hours Water temperature \_\_\_\_\_  
Chemical analysis made? Yes ☒ No ☐ If yes, by whom? **Caltest Lab**  
Was electric-log made? Yes ☐ No ☐ If yes, attach copy to this report.

Work started **5/25/88** Completed **5/31/88**  
**WELL DRILLER'S STATEMENT:**  
This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.  
SIGNED *Donald Gregson* (Well Driller)  
NAME **Doshier-Gregson, Inc.**  
(Person, firm, or corporation) (Typed or printed)  
Address **5365 Napa Vallejo Hwy**  
City **Vallejo** Zip **94589**  
License No. **258826** Date of this report **6/3/88**

# **Appendix D**

## **Interim Napa County Well Permit Standards and WAA Requirements – January 2024**

Interim Napa County Well Permit Standards and WAA Requirements - January 2024

WAA Tier 1: Groundwater Use for Napa County					WAA Tier 2: Well & Spring Interference	WAA Tier 3: Groundwater / Surface Water Interaction	
Napa County new regulatory requirements for the a Tier 1 analysis are pursuant to CEQA, Napa County's Water Availability Analysis (WAA) Guidelines, dated May 12, 2015, Napa County's Drought Emergency, Governor's Executive Order N-7-22/N-3-23, Napa Valley Subbasin Groundwater Sustainability Plan, Napa County Resolution 2022-178, Napa County Code Groundwater Conservation Ordinance - Chapter 13.15, recent court decisions, and pending State-litigation.					Tier 2 analysis is governed by the WAA and the Governor's Executive Order N-7-22/N-3-23. Tier 2 analysis must be performed by licensed professional retained by applicant or through County services and paid for by applicant.	Tier 3 analysis is governed by CEQA, the WAA, and the Public Trust Doctrine, and County Resolution 2022-178. Tier 3 analysis must be performed by licensed professional retained by applicant or through County services and paid for by applicant.	
Well Type	Groundwater Use	Inside Napa Valley Subbasin	Inside Napa County Groundwater Deficient Area (MST)	Outside Napa Valley Subbasin & MST	Less than 500-feet to neighboring well(s) and/or 1,500-feet to a natural spring(s)	Less than 1,500- feet to a Significant Stream <u>Inside</u> the Napa River Watershed	Less than 1,500- feet to a Significant Stream <u>Outside</u> the Napa River Watershed
NEW WELL	Domestic - Individual User	0.3 AF/acre <sup>2,3</sup>	0.6 AF/year	NA <sup>1</sup>	NA <sup>1,7</sup>	Tier 3 Required	NA <sup>1,7</sup>
	Commercial, Industrial, or Agricultural	0.3 AF/acre <sup>3</sup>	No Net Increase and 0.3 AF/acre	Parcel Specific Recharge <sup>4</sup>	Tier 2 Required	Tier 3 Required	Tier 3 Required
	Public Water System	0.3 AF/acre <sup>3</sup>	No Net Increase and 0.3 AF/acre	Parcel Specific Recharge <sup>4</sup>	NA <sup>7</sup>	Tier 3 Required	NA <sup>7</sup>
REPLACEMENT WELL	Domestic - Individual User	0.3 AF/acre <sup>3</sup>	No Net Increase	Parcel Specific Recharge <sup>1</sup>	NA <sup>1,7</sup>	Tier 3 Required <sup>6</sup>	NA <sup>1,7</sup>
	Commercial, Industrial, or Agricultural	0.3 AF/acre <sup>3</sup>	No Net Increase	Parcel Specific Recharge <sup>4</sup>	Tier 2 Required <sup>5</sup>	Tier 3 Required <sup>6</sup>	Tier 3 Required <sup>5</sup>
	Public Water System	0.3 AF/acre <sup>3</sup>	No Net Increase	Parcel Specific Recharge <sup>4</sup>	NA <sup>7</sup>	Tier 3 Required <sup>6</sup>	Tier 3 Required <sup>5</sup>
EXISTING WELL	New, Altered or Increased Water Use for Discretionary Project	0.3 AF/acre <sup>3</sup>	No Net Increase and 0.3 AF/acre	Parcel Specific Recharge <sup>4</sup>	Tier 2 Required <sup>8</sup>	Tier 3 Required <sup>6</sup>	Tier 3 Required <sup>8</sup>

NA = Not Applicable

<sup>1</sup> Assumes less than 2-acre-feet per year of groundwater for individual domestic users.

<sup>2</sup> Requirement can be met by submitting a "Water Use Declaration" that reflects the allowed water usage.

<sup>3</sup> Where existing groundwater use exceeds the 0.3 ac-ft/ac, No Net Increase in Groundwater use is required (Subject to change by the GSA), and shall be demonstrated through a water demand analysis.

<sup>4</sup> Where existing groundwater use exceeds the Parcel Specific Recharge, No Net Increase or reduction in Groundwater use is required, and shall be demonstrated through a water demand analysis.

<sup>5</sup> The analysis is not required when the replacement well is located further away from the neighboring well, natural spring, or Significant Stream and there is no increase in groundwater use.

<sup>6</sup> The analysis is not required if modifications to the location, construction, or operations of the project well(s) are made to reduce harm relative to current conditions based on the conclusions by a qualified professional.

<sup>7</sup> Unless associated with a Discretionary Project; and every effort should be made to locate the well as far as possible from neighboring wells and springs.

<sup>8</sup> The anlaysis is only required for an increase in groundwater use.