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Water Availability Analysis

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TIER 1 WATER AVAILABILITY ANALYSIS

FOR THE

A & B VINEYARDS LLC WINERY
USE PERMIT MODIFICATION

LOCATED AT:
5215 Solano Avenue
Napa, CA 94558
Napa County APN 034-190-040

PREPARED FOR:
A & B Vineyards LLC
Care Of: Steve Contursi
1042 North Coast Highway
Laguna Beach, CA 92651

PREPARED BY:

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Job Number: 20-139

Michael R. Muelrath — 7/7/2025

Michael R. Muelrath R.C.E. 67435 — Date

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INTRODUCTION

A & B Vineyards LLC is applying for a Use Permit Modification to change the entitlements for their existing winery facility located at 5215 Solano Avenue in Napa County, California. The subject property is located just north of the intersection of Solano Avenue and Oak Knoll Avenue and is also known as Napa County Assessor's Parcel Number 034-190-040.

Figure 1: Location Map

The Use Permit Modification application under consideration proposes to increase production and visitation to the following levels:

- Wine Production:
  - 45,000 gallons of wine per year
  - Crushing, fermenting, aging and bottling

- Employees:
  - 5 total employees

- Marketing Plan:
    - Daily Tours and Tastings by Appointment
        - 34 visitors per day maximum
    - Marketing Events Type #1
        - 12 per year
        - 30 guests maximum
        - Food prepared offsite by catering company
    - Marketing Events Type #2
        - 2 per year
        - 125 guests maximum
        - Food prepared offsite by catering company
        - Portable toilets used for restrooms

Existing development on the property includes approximately six acres of vineyards, two wells, access roads, winery buildings and the related access and utility infrastructure typical of this type of agricultural and winery development. Water for the winery will be provided by the existing Winery Well located on the subject property. Please see the A & B Vineyards LLC Use Permit Modification Conceptual Site Improvement Plans for approximate locations of existing and proposed features.

Groundwater is currently used for vineyard irrigation and to support the existing A & B Vineyards LLC Winery. Groundwater will continue to be used for these activities moving forward including the proposed winery use modifications.

The second well on the property is used exclusively by the adjoining winery, Silenus Vintners, located on APN 034-212-035. According to the property owner, this well supplies water for the existing winery and vineyards and the residential uses on the property are supplied by the City of Napa water system.

A & B Vineyards LLC has requested that Applied Civil Engineering Incorporated (ACE) prepare a Tier 1 Water Availability Analysis in accordance with the Water Availability Analysis (WAA) – Guidance Document adopted by the Napa County Board of Supervisors on May 12, 2015. The remainder of this report describes the estimated groundwater demand on the subject property for existing and proposed conditions and compares that to the prescribed water use screening criteria.

ESTIMATED GROUNDWATER DEMAND

Groundwater is currently used to irrigate approximately six acres of vineyard and support the existing A & B Vineyards LLC Winery on the subject property and approximately six acres of vineyard and the existing Silenus Vintners Winery on the adjacent property (via a well easement) as shown in Figure 2.

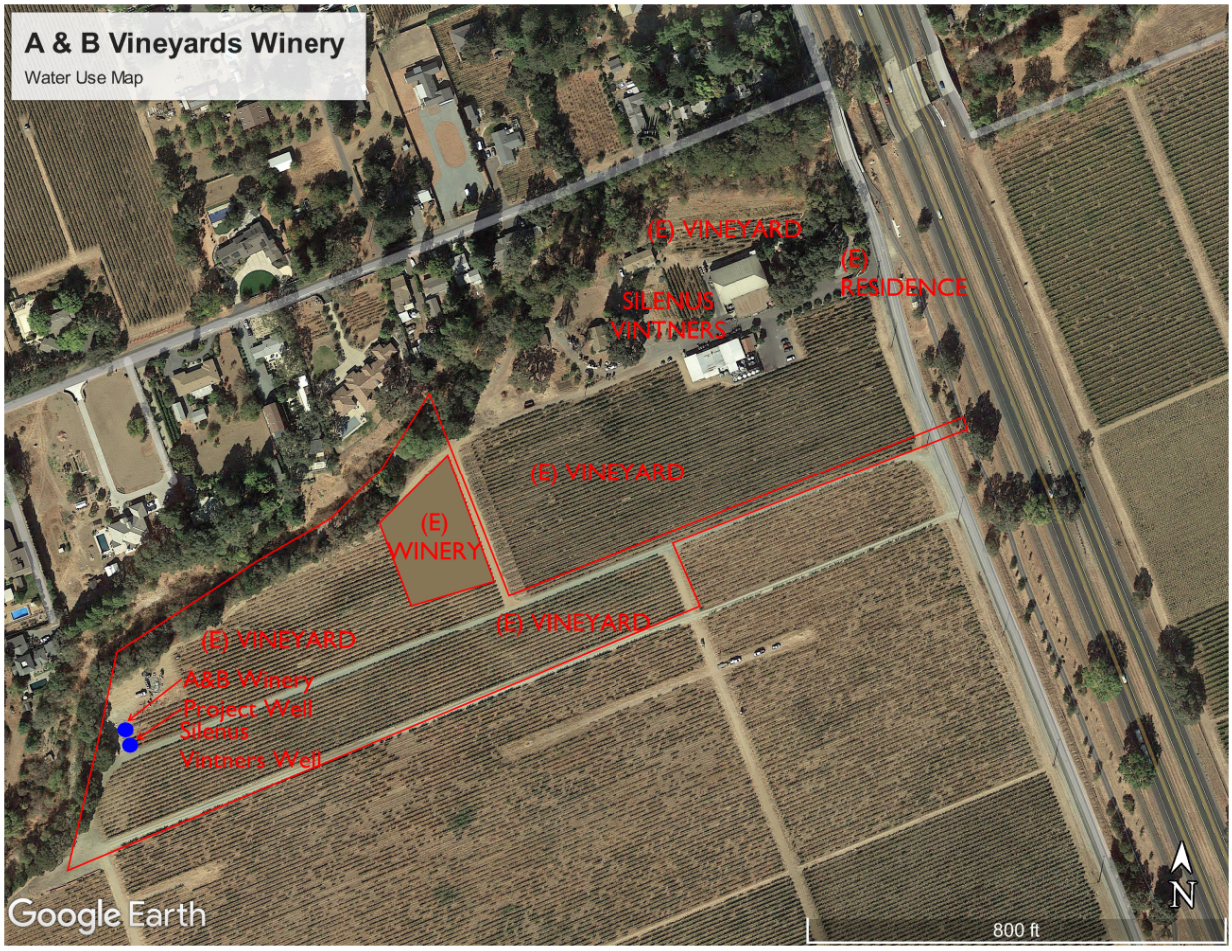

Figure 2: Water Use Map

Proposed water use will include the A & B Vineyards Winery's increased production and visitation plan and all other existing demands for the subject and adjacent Silenus Vintners property.

The estimated groundwater demand, broken down by parcel, is summarized in the tables below and details of the calculations supporting these estimates are included in the Water Use Estimate Supporting Calculations in Appendix 1.

Table 1: Estimated Groundwater Demand – A & B Vineyards LLC Winery Property

	Existing (ac-ft/yr)	Proposed (ac-ft/yr)
Residential	0	0
Winery	0.77	1.18
Vineyard Irrigation	3.00	3.00
Landscape Irrigation	0.2	0.2
Total	3.97	4.38

Table 2: Estimated Groundwater Demand – Silenus Vintners Winery Property

	Existing (ac-ft/yr)	Proposed (ac-ft/yr)
Residential	0	0
Winery	2.00	2.00
Vineyard Irrigation	3.00	3.00
Landscape Irrigation	0.36	0.36
Total	5.36	5.36

Table 3: Estimated Groundwater Demand

A & B Vineyards LLC Winery & Silenus Vintners Winery Properties Combined

	Existing (ac-ft/yr)	Proposed (ac-ft/yr)
Residential	0	0
Winery	2.77	3.18
Vineyard Irrigation	6.00	6.00
Landscape Irrigation	0.56	0.56
Total	9.33	9.74

It should be noted that while both properties have a City of Napa water service for vineyard irrigation the service is not guaranteed (in fact no water was provided in 2022) and therefore it is assumed for this analysis that all vineyard irrigation will come from groundwater.

WATER USE SCREENING CRITERIA

According to the WAA - Guidance Document properties located in the Napa Valley Floor area are subject to a Water Use Screening Criteria of 1.0 acre-feet of water per acre of land per year. A project complies with the requirements of the Tier 1 WAA if the total water use on the property is less than 1.0 acre-feet per acre per year. If the Tier 1 Water Use Screening Criteria is met and the property is located in the Napa Valley Floor area Tier 2 and Tier 3 Analyses are not required unless substantial evidence exists in the record that indicates a potential significant impact from the project.

Furthermore, Napa County is now also requiring that properties in the Napa Valley Floor area limit groundwater use to a Reduced Water Use Screening Criteria of 0.3 acre-feet per acre per year due to extended drought conditions except on properties where current use is more than 0.3 acre-feet per year in which case no-net increase in water use beyond existing baseline conditions is the applicable screening criteria.

The subject property is located in the Napa Valley Floor area and the geology is mapped as Qhy & Qha (alluvium) on the USGS geology maps as shown in Figure 3.

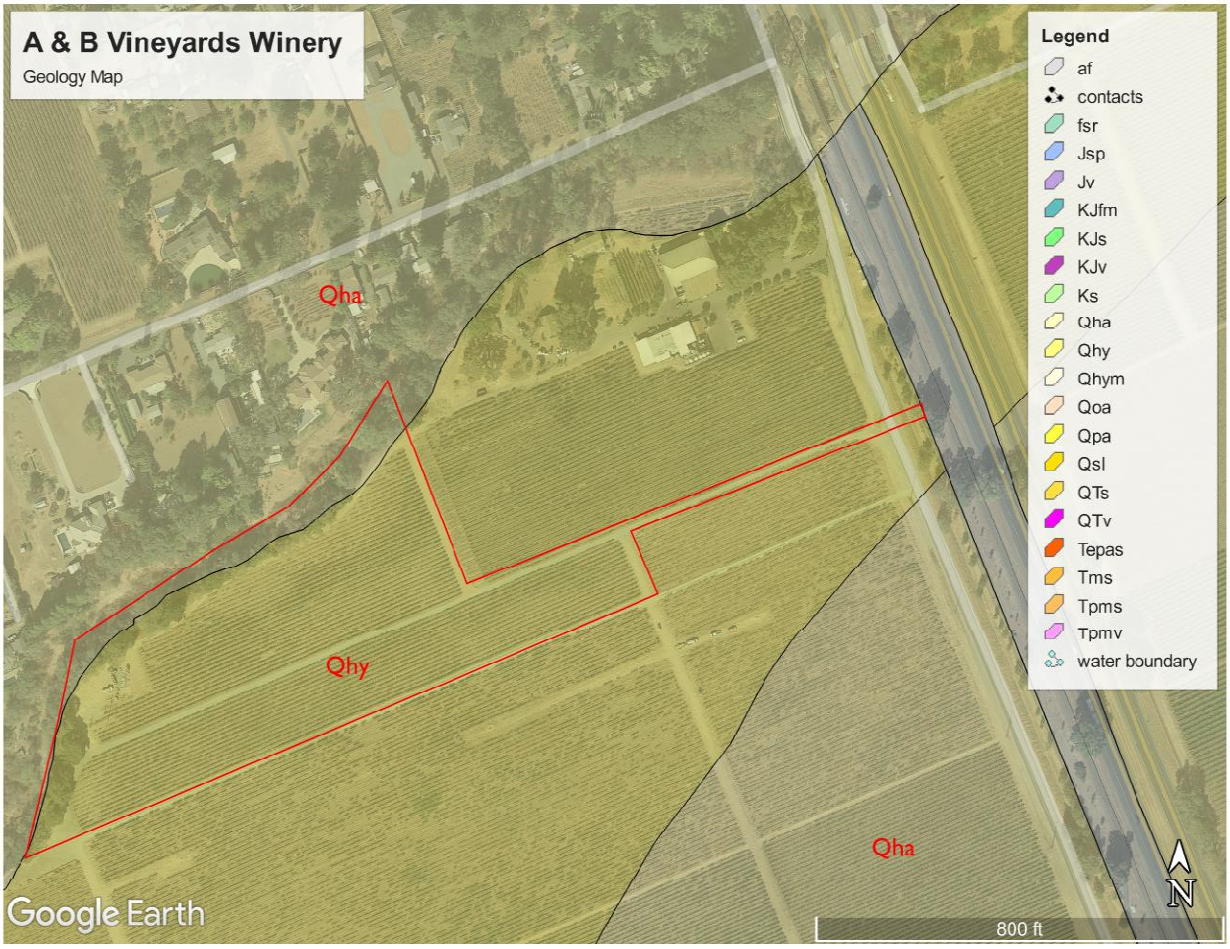

Figure 3: Geology Map Created with Google Earth Pro
(Source USGS Scientific Investigations Map 2918)

Since all groundwater extraction is from the Napa Valley Floor area we have evaluated the screening criteria associated with the Napa Valley Floor.

The parcel size is approximately10.09 acres and therefore the water use screening criteria is calculated as follows:

WAA Guidance Document Water Use Screening Criteria = 10.09 acres x 1.0 acre-foot per acre per year

WAA Guidance Document Water Use Screening Criteria = 10.09 acre-feet per year

Reduced Water Use Screening Criteria = 10.09 acres x 0.3 acre-feet per acre per year

Reduced Water Use Screening Criteria = 3.03 acre-feet per year

Note that these threshold conservatively exclude any allowance associated with the Silenus Vintners property.

ANALYSIS

The total Estimated Water Use for existing conditions for both parcels combined (9.33 ac-ft/yr) and proposed conditions (9.74 ac-ft/yr) are both less than the WAA Water Use Screening Criteria (10.09 ac-ft/yr) and both are more than the Reduced Water Use Screening Criteria (3.03 ac-ft/yr).

Since the existing property water use is already above the Reduced Water Use Screening Criteria the project must comply with the no net increase criteria and the proposed water use must be the same or less than the current water use (9.33 ac-ft/yr).

RECOMMENDATIONS

In order to comply with the established 9.33 ac-ft/yr threshold the proposed project must reduce water use at the A & B Vineyards LLC Winery from the estimated 4.38 ac-ft/yr by 0.41 ac-ft/yr feet per year to match existing water use conditions. This can be done by implementing a process wastewater treatment and recycling system to offset vineyard and landscaping irrigation demand. Up to 0.97 ac-ft/yr can be reclaimed by this method and only 0.41 ac-ft/yr of offset is needed. The revised water use estimates utilizing a 0.41 ac-ft/yr offset are outlined below:

Table 2: Estimated Groundwater Demand With Process Wastewater Recycling

	Existing (ac-ft/yr)	Proposed (ac-ft/yr)
Residential	0	0
Winery	2.77	3.18
Vineyard Irrigation	6.00	6.00
Landscape Irrigation	0.56	0.56
Irrigation Offset Using Recycled Process Water	0	-0.41
Total	9.33	9.33

CONCLUSION

The project complies with the WAA Water Use Screening Criteria of 1.0 acre foot per acre per year of groundwater use but this criteria has been superseded by a new Reduced Water Use Screening Criteria. The groundwater extraction on the property is currently more than the Reduced Water Use Screening Criteria of 0.3 acre-feet per year and therefore the proposed project must not increase water use beyond current levels. By implementing the recommendations outlined above and re-using winery process wastewater for irrigation the proposed project complies with the Napa County's current requirements. A Tier 2 Analysis is not required according to the WAA – Guidance Document and current practice since no increase of groundwater use is associated with this project. A separate Tier 3 Analysis has been prepared by Richard Slade and Associates to address the well's proximity to Dry Creek, a mapped significant stream.

APPENDIX 1: Water Use Estimate Supporting Calculations

APPLIED CIVIL ENGINEERING INCORPORATED

A&B Vineyards Winery

Groundwater Use Estimate

	Estimated Water Use (Acre-Feet / Year)		
	Existing		Proposed
Residential Water Use			
Primary Residence[1] - Not Applicable	0.000		0.000
Pool[1A] - Not Applicable	0.000		0.000
Second Dwelling Unit - Not Applicable	0.000		0.000
Guest Cottage - Not Applicable	0.000		0.000
Total Residential Domestic Water Use	0.000		0.000
Winery Domestic & Process Water Use			
Winery - Daily Visitors[2][3]	0.050		0.114
Winery - Events with Meals Prepared Onsite[2][4]	0.000		0.000
Winery - Events with Meals Prepared Offsite[2][5]	0.003		0.009
Winery - Employees[2][6]	0.067		0.084
Winery - Event Staff[2][6]	0.001		0.003
Winery - Process[2][7]	0.645		0.968
Total Winery Water Use	0.767		1.178
Irrigation Water Use			
Lawn[8]	0.000		0.000
Other Landscape[9]	0.200		0.200
Vineyard - Irrigation[10]	3.000		3.000
Vineyard - Frost Protection - Not Applicable	0		0
Vineayrd - Heat Protection - Not Applicable	0		0
Total Irrigation Water Use	3.200		3.200
Total Combined Water Use	3.97		4.38

Estimates per Napa County Water Availability Analysis - Guidance Document, May 12, 2015 unless noted

[1]0.5 to 0.75 ac-ft/yr for Primary Residence, includes some landscaping per Napa County WAA Guidance Document

[1A]0.1 ac-ft/yr for pool without cover per Napa County WAA Guidance Document

[2] See attached Winery Production, Guest, Employee and Event Staff Statistics

[3] 3 gallons of water per guest per Napa County WAA Guidance Document

[4] 15 gallons of water per guest per Napa County WAA - Guidance Document

[5] 5 gallons of water per guest used because all food preparation, dishwashing, etc. to occur offsite

[6]15 gallons per shift per Napa County WAA - Guidance Document

[7]2.15 ac-ft/yr per 100,000 gallons wine per Napa County WAA - Guidance Document

[8]0.1 ac-ft/yr per 1,000 sf of lawn per Napa County WAA - Guidance Document - 0 sf lawn

[9]Estimate provided by Landscape Architect based on planting design

[10] 0.5 ac-ft/ac/yr per Napa County WAA - Guidance Document - 6+/- acres of vineyard

APPLIED CIVIL ENGINEERING INCORPORATED

A&B Vineyards Winery

Existing Winery Production, Visitor, Employee & Event Staff Statistics

Winery Production[1]		30,000	gallons per year
Tours and Tastings by Appointment[1]			
Monday through Thursday	15 guests max per day		
Friday through Sunday	15 guests max per day		
Total Guests Per Year		5,460	
Events - Meals Prepared Offsite[1]			
7 per year	30 guests max	210	
0 per year	0 guests max	0	
0 per year	0 guests max	0	
Total Guests Per Year		210	
Events - Meals Prepared Onsite[1]			
0 per year	0 guests max	0	
0 per year	0 guests max	0	
0 per year	0 guests max	0	
Total Guests Per Year		0	
Winery Employees[2]			
4 employees	1 shift per day		
Total Employee Shifts Per Year		1,460	
Event Staff[3]			
7 per year, 30 guests	3 event staff	21	
0 per year, 125 guests	0 event staff	0	
0 per year, 0 guests	0 event staff	0	
Total Event Staff Per Year		21	

[1] Winery production, tours and tasting and event guest statistics per Winery Use Permit Modification Applicat

[2] Employee counts per Winery Use Permit Application

[3] Assumes 1 event staff per 10 guests (in addition to regular winery employees)

APPLIED CIVIL ENGINEERING INCORPORATED

A&B Vineyards Winery

Proposed Winery Production, Visitor, Employee & Event Staff Statistics

Winery Production[1]		45,000	gallons per year
Tours and Tastings by Appointment[1]			
Monday through Thursday	34 guests max per day		
Friday through Sunday	34 guests max per day		
Total Guests Per Year		12,376	
Events - Meals Prepared Offsite[1]			
12 per year	30 guests max	360	
2 per year	125 guests max	250	
0 per year	0 guests max	0	
0 per year	0 guest max	0	
Total Guests Per Year		610	
Events - Meals Prepared Onsite[1]			
0 per year	0 guests max	0	
0 per year	0 guests max	0	
0 per year	0 guests max	0	
Total Guests Per Year		0	
Winery Employees[2]			
5 employees	1 shift per day		
Total Employee Shifts Per Year		1,825	
Event Staff[3]			
12 per year, 30 guests	3 event staff	36	
2 per year, 125 guests	13 event staff	26	
0 per year, 0 guests	25 event staff	0	
0 per year, 0 guests	50 event staff	0	
Total Event Staff Per Year		62	

[1] Winery production, tours and tasting and event guest statistics per Winery Use Permit Modification Applicat

[2] Employee counts per Winery Use Permit Modification Application

[3] Assumes 1 event staff per 10 guests (in addition to regular winery employees)

APPLIED CIVIL ENGINEERING INCORPORATED

Silenus Vintners Winery

Groundwater Use Estimate

	Estimated Water Use (Acre-Feet / Year)		
	Existing		Proposed
Residential Water Use			
Primary Residence[1] - Not Applicable	0.000		0.000
Pool[1A] - Not Applicable	0.000		0.000
Second Dwelling Unit - Not Applicable	0.000		0.000
Guest Cottage - Not Applicable	0.000		0.000
Total Residential Domestic Water Use	0.000		0.000
Winery Domestic & Process Water Use			
Winery - Daily Visitors[2][3]	0.235		0.235
Winery - Events with Meals Prepared Onsite[2][4]	0.000		0.000
Winery - Events with Meals Prepared Offsite[2][5]	0.026		0.026
Winery - Employees[2][6]	0.185		0.185
Winery - Event Staff[2][6]	0.008		0.008
Winery - Process[2][7]	1.548		1.548
Total Winery Water Use	2.001		2.001
Irrigation Water Use			
Lawn[8]	0.000		0.000
Other Landscape[8]	0.360		0.360
Vineyard - Irrigation[9]	3.000		3.000
Vineyard - Frost Protection - Not Applicable	0		0.000
Vineayrd - Heat Protection - Not Applicable	0		0.000
Total Irrigation Water Use	3.360		3.360
Total Combined Water Use	5.36		5.36

Estimates per Napa County Water Availability Analysis - Guidance Document, May 12, 2015 unless noted

(1)All residential water supplied by City of Napa according to owner.

[1A]0.1 ac-ft/yr for pool without cover per Napa County WAA Guidance Document

[2] See attached Winery Production, Guest, Employee and Event Staff Statistics

[3] 3 gallons of water per guest per Napa County WAA Guidance Document

[4] 15 gallons of water per guest per Napa County WAA - Guidance Document

[5] 5 gallons of water per guest used because all food preparation, dishwashing, etc. to occur offsite

[6]15 gallons per shift per Napa County WAA - Guidance Document

[7]2.15 ac-ft/yr per 100,000 gallons wine per Napa County WAA - Guidance Document

[8] 0.5 ac-ft/yr per 100,000 gallons wine per Napa County WAA - Guidance Document

[9] 0.5 ac-ft/ac/yr per Napa County WAA - Guidance Document - 6+/- acres of vineyard

APPLIED CIVIL ENGINEERING INCORPORATED

Silenus Vintners

Existing Winery Production, Visitor, Employee & Event Staff Statistics (No Change Proposed)

Winery Production[1]		72,000	gallons per year
Tours and Tastings by Appointment[1]			
Monday through Thursday	70 guests max per day		
Friday through Sunday	70 guests max per day		
Total Guests Per Year		25,480	
Events - Meals Prepared Offsite[1]			
Total Guests Per Year		1,680	
Events - Meals Prepared Onsite[1]			
0 per year	0 guests max	0	
0 per year	0 guests max	0	
0 per year	0 guests max	0	
Total Guests Per Year		0	
Winery Employees[2]			
11 employees	1 shift per day		
Total Employee Shifts Per Year		4,015	
Event Staff[3]			
Total Event Staff Per Year		168	

[1] Winery production, tours and tasting and event guest statistics per Napa County Winery Database

[2] Employee counts per Napa County Winery Database

[3] Assumes 1 event staff per 10 guests (in addition to regular winery employees)

RICHARD C. SLADE & ASSOCIATES LLC
CONSULTING GROUNDWATER GEOLOGISTS

REVISED MEMORANDUM

July 8, 2025

RCS Job No. 821-NPA01

To: A & B Vineyards LLC
c/o Mr. Steve Contursi
Sent via email: steve@arrowandbranch.com

CC: Mr. Mike Muelrath of Applied Civil Engineering
Sent via email: mike@appliedcivil.com
&
Ms. Donna Olford of Plans4Wine
Sent via email: dboldford@aol.com

From: Anthony Hicke and Edward Linden
Richard C. Slade & Associates LLC (RCS)

Re: Revised Results of Tier 3 Napa County Water Availability Analysis for a Winery Use Permit Modification at the A & B Vineyards Property
Napa County APN 034-190-040
5125 Solano Avenue, Napa County, CA

Executive Summary

Arrow & Branch Vineyards is applying for a Winery Use Permit Modification for the subject property, and a Tier 3 Water Availability Analysis (WAA) is required for the proposed project. A Tier 3 WAA is required because the subject project is supplied with groundwater from a well (the Project Well) that is within 1,500 feet of a portion of Dry Creek that has been identified by the County as a "Significant Stream". Napa County personnel have also requested that the subject Tier 3 WAA also consider the onsite Easement Well. Groundwater accessible to the Project Well and the Easement Well is not hydraulicly connected to the proximal portion of Dry Creek. This lack of connection is demonstrated by several factors, including:

- Recent available groundwater depth measurements in the Project Well and the Easement Well have been much lower in elevation than the bed elevation of Dry Creek near these wells, despite water in the Creek frequently being present.
- The Project Well is constructed with a deep surface seal and a screen depth that begins below the bottom of the entire alluvial aquifer system, whereas the Easement Well is constructed with a shallower surface seal and all of its screens below the shallow alluvial aquifer system. Between the bed of Dry Creek and the deeper aquifer materials accessible to these wells, multiple low permeability strata exist. These low permeability strata provide a natural separation, or impediment, between the creek and the aquifers accessed by the onsite wells; this results in a disconnection of these aquifers from the overlying shallow sediments upon which the creek flows. Pumping of the Project Well for the proposed project or pumping of the Easement Well for the uses of its water will thus not impact surface water flow in the proximal portions of Dry Creek, because surface water in Dry Creek is hydrogeologically disconnected from

groundwater accessible to the Project Well and the Easement Well in the vicinity of the subject property.

- Pumping of the Project Well and the Easement Well will also not directly influence flows in the proximal portion of Dry Creek because:

  1) surface and subsurface data collected by others (LSCE, 2016 & 2022) demonstrate that groundwater in the deeper portion of the alluvial aquifer system and deeper formations is not directly connected to overlying surface water flows in Dry Creek;

  2) additional low-permeability strata exist above and below the lowest screened section of a nearby groundwater monitoring well, and above the screened sections of the Project Well and the Easement Well; and

  3) the Project Well and the Easement Well, as constructed, can only extract groundwater from earth materials beneath most, if not all, of those additional low-permeability strata.

According to the WAA Guidance document (Napa County, 2015), the Tier 3 analysis has been satisfied because a lack of hydraulic connection has been demonstrated between the Project & Easement Wells and the Significant Stream within 1,500 feet (ft) of these wells.

Introduction

This Memorandum presents the key findings and conclusions by Richard C. Slade & Associates LLC, Consulting Groundwater Geologists (RCS) regarding a Tier 3 Water Availability Analysis (WAA) for a proposed Winery Use Permit Modification at the A & B Vineyards Property, on the parcel identified by Napa County Assessor's Parcel Number (APN) 034-190-040 (referred to herein as the "subject parcel". The parcel boundaries presented herein were derived from publicly available parcel data (Napa County, 2024b). This Memorandum has been prepared to evaluate the effects, if any, that pumping the Project Well or the Easement Well might impart on surface water flows in the nearby Significant Stream.

Background

RCS prepared this document to provide conformance with Napa County Tier 3 WAA requirements (Napa County, 2015 & 2024a) following a 2022 Tier 1 WAA report prepared by the project engineer, Applied Civil Engineering Incorporated (ACE). ACE prepared that Tier 1 WAA to facilitate acquisition of a Winery Use Permit Modification for the permitted onsite winery, titled "Tier 1 Water Availability Analysis for the A & B Vineyards LLC Winery Use Permit Modification", dated January 6, 2022 (ACE, 2022). Although RCS relied on data contained within the Tier 1 WAA by ACE for the subject Tier 3 WAA Memorandum, RCS does not opine herein on that Tier 1 WAA work by ACE, and RCS does not augment or confirm that Tier 1 WAA work.

A Tier 3 WAA is required for the subject Use Permit Modification because the Project Well that will be used to supply groundwater to the subject winery lies within a County-defined Significant Stream 1,500-foot buffer area (PBES & LSCE, 2023b). Another active water well exists onsite, referred to herein as the Easement Well. RCS understands that groundwater extracted from the Easement Well is solely provided to an adjacent parcel. Groundwater pumped from the Easement Well is not currently used to meet any onsite demands, and it will not be used to meet any onsite

demands in the future. However, Napa County personnel have requested that the Easement Well also be considered in the subject Tier 3 WAA.

Description of Subject Property

Figure 1, "Regional Map" shows the subject property on a small scale basemap of the area. Key features shown in the view of Figure 1 include the boundary of the subject parcel (Napa County, 2024b), the location of the Project Well, the location of the Easement Well, the State Department of Water Resources Bulletin 118 boundary of the local groundwater basin (DWR, 2021a), the locations of County-identified Significant Streams (PBES & LSCE, 2023a), and the 1,500-foot (ft) buffers around County-identified Significant Streams (PBES & LSCE, 2023b). The 1,500-ft Significant Stream buffer that encompasses the subject property was generated by the County around Dry Creek. Surface water in the portion of Dry Creek near the subject property flows, when present, along a northeasterly path towards the confluence with Hopper Creek. Near that junction, Dry Creek gradually curves southward until it ultimately discharges into the Napa River, more than two miles downstream from the Project & Easement Wells.

Figure 2, "Property Map", and Figure 3, "Geologic Map", show several of the same data depicted on Figure 1, with some additional features that include: the approximate locations of several known or possible nearby offsite wells owned by others with available driller's logs; the location of a nested monitoring well associated with the Napa Valley Subbasin GSP (Groundwater Sustainability Plan) (LSCE, 2022); a nearby stream gaging station on Dry Creek for which data are available from Napa OneRain (Contrail, 2024); the alignment of a hydrogeologic cross section prepared by RCS for this Memorandum; and the alignments of two geologic cross sections prepared by others (LSCE & MBK, 2013; LSCE, 2022) that were used for reference, but not reproduced herein. The known and possible offsite wells with driller's logs shown on these Figures were identified based on various sources, including a search of available records on the Napa County electronic document retrieval website (PBES, 2024). Among the documents used to help locate these known and possible offsite wells were State Well Completion Reports (WCRs, or "driller's logs"), Napa County driller's logs, and Napa County well permits.

Creek Flow Characteristics

RCS reviewed detailed data records found on the Napa OneRain website (Contrail, 2024) for flows in Dry Creek that occurred between April 2013 and May 2024. These flows were recorded by a stream gaging station known as "Dry Creek at Hwy 29" that is located about 2,100 ft northeast of the Project Well, where Dry Creek flows under State Highway 29. Twelve years[1] of flow data (May 2013 – April 2024) are summarized on Figure 4, below. The percentages shown atop each data column in Figure 4 represent the proportion of average annual flow that occurred during a given month, on average, during the period of record.

[1] Incomplete months at the beginning (April 2013) and end (May 2024) of the period of record are not included in the summarized data shown on Figure 4.

Figure 4: Average Monthly Flow in Dry Creek at Highway 29 (May 2013 - April 2024)

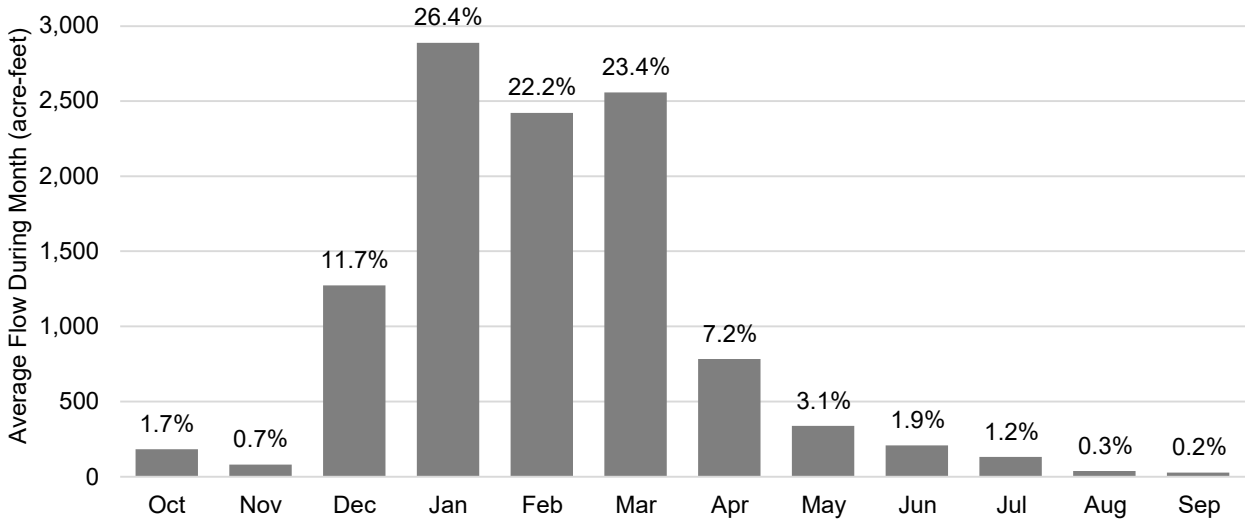

Figure 4 demonstrates that the vast majority of flow (nearly 84%) in Dry Creek near the subject property tends to occur between December and April, coinciding with the strong seasonality of regional precipitation. It is important to note that this section of the creek is shown as "intermittent" in the National Hydrographic Dataset (USGS, 2023). Therefore, while Figure 4 above shows that, on average, minor flows have occurred in Dry Creek in the summer and fall, the Creek is generally expected to be dry (not flowing) during the drier months of any given year. Significant flow was observed in the creek near the Project Well and the Easement Well by an RCS geologist during the March 19, 2024, visit to the subject property. However, only ponded water was reported in the creek near these wells by ACE personnel during their July 7, 2025, visit to the subject property.

Hydrogeology

Hydrogeologic Setting

Groundwater basin boundaries in California are defined and designated by the State Department of Water Resources (DWR) in data found in their Bulletin 118, "California's Groundwater" (2021a). Those DWR groundwater basin boundaries are the same as those used to define groundwater basin boundaries for the purposes of Groundwater Sustainability Plan (GSP) preparation for basins throughout the State, including for the Napa Valley Subbasin (LSCE, 2022). The entire subject property, including the location of the Project & Easement Wells, is within the boundaries of the Napa-Sonoma Valley Subbasin, which is a subbasin of the Napa-Sonoma Valley Groundwater Basin (see Figure 1).

A regional geologic map by Wagner & Gutierrez (2017) is available from the California Geological Survey (CGS) and was adapted to create Figure 3. As shown on Figure 3, most of the ground surface of the subject property, including the locations of the Project Well and the Easement Well, was mapped by others as younger Alluvial Fan Deposits (Qhfy). The other geologic units at ground surface within the boundary of the subject property are Stream Channel Deposits (Qhc) and older Alluvial Fan Deposits (Qhf). Qhc deposits are often found along the beds of active alluvial stream channels, as they are within the subject property. Qhf are located to the northwest

of the Qhc deposits at ground surface, horizontally separating the more westerly volcanics within the map area from the Qhc deposits.

Interpreted to underlie the alluvial deposits beneath the subject property, but not shown in the surficial mapping of Wagner & Gutierrez (2017), is a deposit of sands and clays likely derived from reworked volcanic ash (Tss/h) associated with the Sonoma Volcanics (LSCE, 2016). LSCE & MBK (2013) describe Tss/h as a "sedimentary rock" that is comprised of "Sand & Clay"; this unit is shown on Cross Section D-D' of LSCE & MBK, and on Cross Section 2A-2A' of LSCE (2022).

In the higher elevation western portion of the Figure 3 map area, various rocks of the Sonoma Volcanics have been mapped at ground surface separated from the subject property by several northerly trending geologic faults associated with the West Napa fault zone. These rocks are shown as Andesite Flow Breccia of Stags Leap (Psvbsl) in the highest-elevation, most western portion of the map area, and Rhyolite to Dacite Flows and Tuff (Tsvr) immediately east of the Psvbsl exposure. Tsvr is interpreted to directly underlie the Tss/h deposits proximal to and beneath the subject property. At great depth beneath Tsvr, geologically ancient basement rocks of Cretaceous to Jurassic age are known to exist. However, none of the boreholes of the wells shown on Figure 5 (discussed further below) are likely to have encountered those basement rocks, and those ancient rocks are not shown on Cross Section D-D' of LSCE & MBK or on Cross Section 2A-2A' of LSCE (2022). Therefore, those geologically ancient rocks do not play a direct role in groundwater availability to either the Project Well or the Easement Well, and they are thus not discussed further herein.

Hydrogeologic Cross Section and Well Construction

Figure 5, "Cross Section A-A'", a scaled schematic illustration, was created to show the subsurface hydrogeologic conditions along the alignment of the section, as interpreted by RCS. The alignment of Cross Section A-A' can be viewed on Figures 2 & 3; this alignment was configured such that it passes through the Project Well and the mapped location of Dry Creek (LSCE & PBES, 2023a) along the shortest straight-line distance between the two. It was extended beyond these features so that additional information could also be included on Figure 5.

Hydrogeologic interpretations shown on Figure 5 were made, primarily, based on: the geologic mapping by others described above; Cross Section D-D' in LSCE & MBK (2013; orange line on Figure 3) and Cross Section 2A-2A' in Section 5 of the local GSP (LSCE, 2022; pink line on Figure 3); and RCS interpretation of the driller's descriptions of drill cuttings reported on driller's logs for the wells shown on Figure 5. The driller's logs for the onsite wells were provided by ACE, whereas the driller's logs for the offsite wells were acquired from DWR (2021b) and Napa County PBES (2024).

Figure 5 shows the locations and key construction details of several wells along Cross Section A-A' (referred to as A-A' herein) for which driller's logs were available, including the onsite Project Well, the onsite Easement Well, and several nearby offsite wells. The wells shown on Figure 5 that did not directly intersect with the alignment of A-A' were projected onto A-A' at their respective ground surface elevations[2]; the distance and direction of projection are shown for each of those wells, as applicable. Figure 5 is also notated with several surface

[2] The datum for all of the elevations reported in this document is the North American Vertical Datum of 1988 (NAVD88).

features that intersect with A-A', including: the nearby Significant Stream location as derived from the Napa County data set (PBES & LSCE, 2023a), the topographic low[3] in which Dry Creek actually flows, and the subject property boundaries. The data source for the ground surface elevations on Figure 5 was a high-resolution digital elevation model (DEM) with a one-meter horizontal resolution (USGS, 2020b). Also shown on A-A' are the available water level depth measurements for the wells shown on the section, as derived from measurements shown on the respective driller's logs, from pumping test data for the Project Well, from the March 19, 2024, RCS site visit, and from the July 7, 2025, ACE site visit.

Review of driller's logs for the wells shown on Figure 5 revealed the presence of abundant fine-grained, low-permeability clay-rich deposits between the bed of Dry Creek and the deeper portion of Sonoma Volcanics (Tsvr) along A-A'. Those driller's logs are included in the Appendix to this Memorandum, with the fine-grained material interpretations highlighted thereon. RCS interprets these clay-rich, fine-grained deposits to comprise a substantial portion of the Qhfy, Qhf, and Tss/h deposits beneath the subject property. However, based on review of the driller's logs alone, it is difficult to accurately determine the contact depth between Qhfy, Qhf, and Tss/h for any of the wells shown on Figure 5. The lithologies of these three units are somewhat similar, and driller's log descriptions tend not to provide the detail or consistent descriptions of drill cuttings of the earth materials that are encountered in boreholes that are necessary for accurate interpretation. Fortunately, two nearby geologic cross sections by LSCE & MBK (2013) and LSCE (2022) are available (alignments shown on Figure 3), upon which the subsurface interpretations and subsurface contact patterns on Figure 5 were augmented; these two sections were used to help estimate a contact depth between the finer grained, shallower deposits and the deeper Tsvr materials. Furthermore, a detailed geologic log (LSCE, 2016) for the nearby monitoring well borehole that contains the GSP nested monitoring well completions "216s-swgw2" and "217d-swgw2" also supports the presence of abundant clay-rich deposits between the bed of Dry Creek and the underlying Tsvr materials. For example, in the borehole of the 216s-swgw2 and 217d-swgw2 completions, between the depths of 51 ft and 73.5 ft bgs (below ground surface), the geologic log by others shows the earth materials to be clays that are composed of ">95% medium plastic fines". In that same borehole, clay with at least 80% medium plastic fines was reported over the depth intervals of 7-16 ft bgs, 47-49.5 ft bgs, 73.5-77 ft bgs, 79-79.5 ft bgs, and 81-100 ft bgs. RCS synthesized data presented on those cross sections by others with the driller's logs for the wells shown on Figure 5 and the above-mentioned GSP monitoring well borehole log into the interpretations of subsurface materials by RCS that are discussed herein and shown on Figure 5.

The topmost screened section of the Project Well reportedly begins at a depth of 95 ft bgs (elevation of 17.13 ft NAVD88). This depth is well within the RCS-interpreted depth range of the volcanic materials along Section A-A', and nearly entirely within the deeper portion of the Sonoma

[3] The alignment of Dry Creek in the Significant Streams dataset is approximately 56 ft farther from the Project Well along A-A' than the DEM-derived topographic low in which Dry Creek actually flows. Review of aerial imagery generally agrees with the DEM-derived alignment of Dry Creek near the subject property better than it does with the County's Significant Streams alignment of Dry Creek. Furthermore, the ground surface elevation of the Significant Streams location of Dry Creek along A-A' is about 14-ft higher than the elevation of the topographic low along A-A'. If the elevation comparisons presented herein were based on the elevation where A-A' intersects the Significant Streams version of Dry Creek, larger differences would result for these comparisons. To present a more conservative analysis, all elevation comparisons to Dry Creek have been made with respect to the topographic low along A-A', rather than to the elevation of the Significant Streams alignment (PBES & LSCE, 2023a) of Dry Creek along A-A'.

Volcanics (Tsvr). As noted above, abundant fine-grained materials have been reported in the nearby alluvium and in the shallower portions of the volcanic sedimentary materials (Tss/h). Based on that relatively deep screen top-depth in the Project Well, its 50-ft deep sanitary seal, and the presence of low permeability strata between the bed of Dry Creek and the top of Tsvr beneath the subject property, Dry Creek is geologically "separated" from groundwater accessible to the Project Well.

The topmost screened section of the Easement Well reportedly begins at a depth of 40 ft bgs (elevation of 71.92 ft NAVD88). This depth is immediately above the RCS-interpreted contact between Qhf and Tss/h, but still below significant fine-grained deposits described in the boreholes of both the Easement Well and the nearby GSP monitoring wells. Based on the presence of low permeability sediments that exist between the bed of Dry Creek and the top of the shallowest screened section of the Easement Well, Dry Creek is geologically "separated" from groundwater accessible to the Easement Well.

Abundant fine-grained, clay-rich deposits exist in the Qhfy, Qhf, and Tss/h deposits that provide a separation between the groundwater accessible by the Project & Easement Wells, and any surface water that may be present in Dry Creek near the subject property. Dry Creek is not connected to groundwater accessible to the Project & Easement Wells because these onsite wells are primarily screened against (derive groundwater from) the deeper rocks of the Sonoma Volcanics (Tsvr), far below the overlying, vertically isolated shallow alluvial deposits over which Dry Creek flows. Thus, pumping of the Project Well for the project, or pumping of the Easement Well for the offsite demands that it provides, will not impact surface water flow in the proximal portions of Dry Creek, because surface water in Dry Creek is hydrogeologically disconnected to groundwater accessible to the Project & Easement Wells in the vicinity of the subject property.

Groundwater Levels

Review of the water levels that have been measured in the Project & Easement Wells, and their relationship to the elevation of the nearby creek bed, demonstrates further evidence in support of a hydraulic disconnect between groundwater accessible to these wells and surface flows in Dry Creek (see Figure 5). The water level data shown on Figure 5 were derived from the driller's logs for the depicted wells, from water levels measured in the onsite wells by an RCS groundwater geologist during the site visit on March 19, 2024, and from water level measurements in the onsite wells by ACE during their July 7, 2025, visit to the subject property.

The elevation of the water level measured in the Project Well in March 2024 was 87 ft below the bed of Dry Creek along A-A' (the "topographic low"), whereas the water level elevation preceding the post-construction pumping test in the Project Well reported for November 2020 was 72 ft below the bed of Dry Creek along A-A'. These measurements were made at the end of the wet season (March) and at the end of the dry season (November), respectively. ACE attempted to measure an additional water level in the Project Well during their July 2025 site visit, near the middle of the dry season. However, ACE were unable to obtain a measurement because an obstruction was encountered in the well at a depth of approximately 181 ft bgs (168 ft below the elevation of the bed of Dry Creek along A-A') that prevented their manual water level sounder from contacting the groundwater surface in the well. Therefore, the water level in the Project Well on July 7, 2025, must have been more than 168 ft lower in elevation than the bed of Dry Creek along A-A'. Despite the differing hydrologic conditions under which the three available water level

depth measurements were obtained, the water surface in the Project Well has consistently been much lower in elevation than the bed of Dry Creek along A-A', by at least 72 ft. If Dry Creek was hydraulically connected to the groundwater accessible to the Project Well, the elevation of the water in the well would be expected to be at or near the elevation of the Creek when the Creek was observed to be flowing, but that is not the case. Dry Creek was indeed observed to be flowing near the Project Well at the time of the March 2024 water level measurement, but only ponded water (i.e., no-flow conditions) was reported in Dry Creek by ACE during their July 2025 site visit. Thus, comparison of available water level data for the Project Well to the bed elevation of Dry Creek where it is intersected by A-A' shows that surface water in this portion of Dry Creek, when present, is disconnected from the groundwater accessible to the Project Well.

The first known water level measured in the Easement Well was obtained shortly after the well was completed, in June 1990, per the corresponding WCR. The elevation of that water level was 7 ft below the bed elevation of Dry Creek where it is intersected by A-A'. Creek flow observations are not available for that time, so a comparison with creek flow conditions is not possible. However, it is the experience of RCS that initial the post-construction water level reported on a WCR can be shallower than the actual static water level in the well, which may only be revealed after initial pumping development operations remove remnant drilling fluids and allow the water column in the well to equilibrate with the screened aquifer system(s). It is also likely that the regional groundwater level was much shallower in 1990 than under present conditions because of the voluminous groundwater extractions that have occurred regionally over the years. In contrast, the water level measured by the RCS geologist in March 2024 in the Easement Well was 154 ft below the bed elevation of Dry Creek. Similarly, the July 2025 water level in the Easement Well by ACE was 150 ft below the bed elevation of Dry Creek.

The elevation of the water level measured by the RCS geologist in March 2024 in the Easement Well was considerably deeper than the water level measured in the Project Well that day, whereas the July 2025 measurements by ACE revealed the opposite relationship between the water level elevations in these onsite wells. The causes for these water level differences between the onsite wells are not immediately apparent, but it is important to note that all of the recent water level measurements in the onsite wells have been far lower in elevation than the nearby bed of Dry Creek. The Project Well is screened from 95-535 ft bgs, whereas the Easement Well is screened over two separate intervals: from 40-50 ft bgs and from 140-340 ft bgs (see Figure 5). One possibility is that the differences in water levels between the onsite wells in both pairs of measurements were caused by recent pumping activity in the wells. For the March 2024 measurements, the Easement Well may have been pumped not long before the measurement was taken, whereas the Project Well may have been pumped not long before the July 2025 measurement was taken. For the July 2025 measurements, it is also possible that both the Project & Easement Wells had been pumped shortly before the measurements were made, thereby lowering the water levels in both wells. However, it is additionally possible that a confined portion of the Tsvr aquifer that is accessible to the Project Well, but not the shallower Easement Well, could produce the observed difference in water levels in March 2024, and that the piezometric surface of the portion of the Tsvr aquifer is penetrated by only the Project Well had fallen by the time of the July 2025 measurements.

Despite the considerable variation between the June 1990 and more recent (i.e., March 2024 and July 2025) water levels in the Easement Well, the Easement Well is effectively hydraulically disconnected from flows in Dry Creek because, as described by the well driller on the Easement

Well's WCR, the upper 15 ft of the borehole were "clay". Furthermore, the available water level measurements in the Easement Well have consistently been lower in elevation than the nearby bed of Dry Creek; particularly so for the recent March 2024 and July 2025 measurements. Thus, based on water level elevation differences and the presence of fine-grained materials, groundwater accessible to the Easement Well is disconnected from surface water flows in Dry Creek.

Napa Valley Subbasin Groundwater Sustainability Plan

Groundwater/Surface Water Interactions

The Napa Valley Subbasin Groundwater Sustainability Plan (GSP) presents data and analysis regarding interactions between groundwater and surface water, evaluated at various locations along watercourses within and tributary to the Napa Valley (LSCE, 2022). One of the stations used by the local Groundwater Sustainability Agency (GSA) to monitor those interactions is a dual-completion nested monitoring well, referred to therein as "Site 2 at Dry Creek". The location of that nested monitoring well is shown on Figures 2 & 3 of this Memorandum as "216s-swgw2" and "217d-swgw2" for the shallow and deep completions, respectively.

According to the 2022 Napa Valley Subbasin GSP: "*Data collected from Site 2 at Dry Creek show groundwater levels in both the shallow and deep casings are below the stream thalweg elevation during a majority of the monitoring period, indicating this location as a predominantly perennially losing stream (Figure 6-15). The USGS has mapped Dry Creek as an intermittent stream, therefore, recharge to the groundwater system is likely to occur at this location during the periods that water is flowing at this site.*" (LSCE, 2022)

The section of Dry Creek proximal to the subject property is reported to be predominantly a losing stream relative to the alluvial aquifer system (LSCE, 2022), and a downward gradient from the shallow to deep completions was always present during the study period within the 80-ft portion of alluvium monitored by the wells at "Site 2 at Dry Creek".

Based on the detailed geologic logging of the borehole into which 216s-swgw2 and 217d-swgw2 were constructed, and on RCS's interpretation of several other driller's logs drilled proximal to the subject property (for wells shown on Figure 5) abundant fine-grained materials are present beneath the subject property. This is true in both the alluvial sediments (Qhfy and Qhf) and the underling Tss/h materials. These fine-grained materials likely act as aquitards, significantly reducing the potential for connectivity and vertical flow between surface water in Dry Creek and groundwater in the aquifer systems beneath the subject property. Monitoring data for the "Site 2 at Dry Creek" well completions in LSCE (2016 & 2022) demonstrates that Dry Creek is predominantly a losing stream, and those data demonstrate clear evidence of a disconnection between groundwater in the deeper alluvium accessed by "217d-swgw2" and groundwater in the shallower alluvium accessed by "216s-swgw2". In particular, temperature data on Figure 6-112 of the GSP show that the temperature of deeper alluvial groundwater does not apparently fluctuate, whereas the temperature of shallow alluvial groundwater appears to fluctuate slightly in response to the influence of surface water. Similarly, specific conductance data on Figure 4.6 of LSCE (2016) show likely influence of shallow alluvial groundwater by surface water, but little to no direct influence on deeper alluvial groundwater due to the effects of surface water.

Furthermore, according to the Napa County Groundwater Sustainability Annual Report – Water Year 2019: "*Given that most groundwater withdrawals in Napa Valley occur from depths greater*

than 50 feet, the groundwater level data at Site 2 indicate how reductions in groundwater levels in deeper aquifer zones do not always result in equivalent water level reductions at the water table, where stream aquifer interactions can occur. Data collected at Site 2 show that this is true even at times of the year when the streambed is dry and groundwater recharge is not occurring along the stream." LSCE (2020)

The bottom-depth of the screened section of the deeper nested well completion at "Site 2 at Dry Creek" only extends to a depth of 81 ft (elevation of 22.4 ft NAVD88), which is shallower than the top-elevation of the uppermost screen section of the Project Well (17.1 ft NAVD88), although it is deeper than the top-elevation of the uppermost screened section of the Easement Well (71.9 ft NAVD88). Furthermore, no portion of the screened section of the Project Well is set against alluvial materials (i.e., Qhc, Qhfy, Qhf), and very little, if any, of the screened section of the Easement Well is set against alluvial materials. In contrast, the entire screened section of "217d-swgw2" is reportedly within alluvial materials. Pumping of the Project & Easement Wells will therefore not directly influence flows in the proximal portion of Dry Creek because: 1) the data in LSCE (2016 & 2022) demonstrate that the deeper portion of the alluvial aquifer system is never directly connected to overlying surface water flows in Dry Creek; 2) additional low-permeability strata exist above and below the screened sections of "217d-swgw2", and above the screened sections of the Project & Easement Wells; and 3) the Project & Easement Wells can only extract groundwater from earth materials beneath most, if not all, of those additional low-permeability strata.

In the Napa Valley GSP (LSCE, 2022), a discussion of the potential hydraulic connection between groundwater and creeks within and tributary to the Napa Valley is presented, as simulated by computer modeling. Figure 6-123b therein shows the "average annual hydraulic connection" of various watercourses in the region. On that Figure, the portion of Dry Creek near the subject property is shown to possibly undergo up to "> 13 weeks – 26 weeks" of average annual hydraulic connectivity, suggesting that surface water flows in this portion of Dry Creek may be connected to underlying shallow groundwater within the alluvial aquifer for up to 50% of the year. However, other evidence and discussion by LSCE in the GSP help to clarify that the connection is to shallower alluvial deposits only, and that a connection does not extend to deeper alluvial and Sonoma Volcanics deposits below the shallow alluvium. As discussed above, the screened sections of the Project & Easement Wells are disconnected from the shallow alluvium that LSCE (2016 & 2022) showed to be seasonally connected to the overlying surface water in Dry Creek. This is yet another piece of evidence that shows how the groundwater accessible to the Project & Easement Wells is disconnected from surface water flows in Dry Creek in the vicinity of the subject property.

As demonstrated above, both water level data and geologic data support the assertion that surface water flow in the portion of Dry Creek that is proximal to the subject property is hydraulically disconnected from the relatively deep groundwater accessible to the Project & Easement Wells. As shown on the Figure F-2 "Decision Tree" in the County's WAA Guidance Document (Napa County, 2015), and as described in the Guidance Document text, the "Groundwater/Surface Water Evaluation is complete", because the Project & Easement Wells are not hydraulically connected to surface water(s).

REVISED MEMORANDUM

Conclusion

Groundwater accessible to the Project & Easement Wells is not hydraulicly connected to, and will not directly affect surface water flows in, the proximal portion of Dry Creek. This lack of connection is demonstrated by several factors, including:

- Available groundwater depth measurements in the Project Well have been at least 72 ft lower in elevation than the bed of Dry Creek, as measured along Cross Section A-A'. In March 2024, despite flow being present in the proximal portion of Dry Creek, the water level in the Project Well was 89 ft below the bed of the creek. In July 2025, the water level in the Project Well was more than 168 ft lower in elevation then the bed of Dry Creek, and ponded water was present in the nearby portion of the creek.
- Available groundwater depth measurements in the Easement Well have been at least 7 ft lower in elevation than the bed of Dry Creek, as measured along Cross Section A-A', and more recent water levels have been much deeper. In March 2024, despite flows being present in the proximal portion of Dry Creek, the water level in the Easement Well was 153 ft below the bed of the creek. In July 2025, the water level in the Easement Well was 150 ft below the bed of Dry Creek, and ponded water was present in the nearby portion of the creek.
- The Project Well is constructed with a 50-foot-deep surface seal and a screen depth that begins below the bottom of the alluvial aquifer system. Between the bed of Dry Creek and the deeper aquifer materials accessible to the Project & Easement Wells (primarily Tsvr), low permeability strata have been documented in, and inferred from, various data sources. Therefore, Dry Creek is not connected to groundwater accessible to the Project & Easement Wells. Pumping of the Project Well for the proposed project will not impact surface water flow in the proximal portions of Dry Creek because surface water in the creek is hydrogeologically disconnected from groundwater accessible to the Project Well in the vicinity of the subject property. Similarly, pumping of the Easement Well to meet its existing demands will not impact surface water flow in the proximal portions of Dry Creek because surface water in the creek is hydrogeologically disconnected from groundwater accessible to the Easement Well in the vicinity of the subject property.
- Pumping of the Project & Easement Wells will not directly influence flows in the proximal portion of Dry Creek because: 1) surface and subsurface data collected by others (LSCE, 2016 & 2022) demonstrate that groundwater in the deeper portion of the alluvial aquifer system (and therefore also the underlying earth materials) is not directly connected to overlying surface water flows in Dry Creek; 2) additional low-permeability strata exist above and below the screened sections of "217d-swgw2", and above the screened sections of the Project & Easement Wells; and 3) the Project & Easement Wells, as constructed, can only extract groundwater from earth materials beneath most, if not all, of those additional low-permeability strata.

According to the WAA Guidance document (Napa County, 2015), the Tier 3 analysis has been satisfied because a lack of hydraulic connection between the Project & Easement Wells and the Significant Stream within 1,500 feet of these wells has been demonstrated.

REVISED MEMORANDUM

Closure/Disclaimer

This Memorandum regarding a Tier 3 WAA for a Winery Use Permit Modification at the A & B Vineyards property located at 5125 Solano Avenue, in Napa County, CA (APN 034-190-040) has been prepared for A & B Vineyards and applies only to the evaluation of the subject property for the requirements discussed herein. This Memorandum has been prepared in accordance with the care and skill generally exercised by reputable professionals, under similar circumstances, and in this or similar localities. No other warranty, either express or implied, is made to the calculations, conclusions, or professional advice presented herein.

REVISED MEMORANDUM

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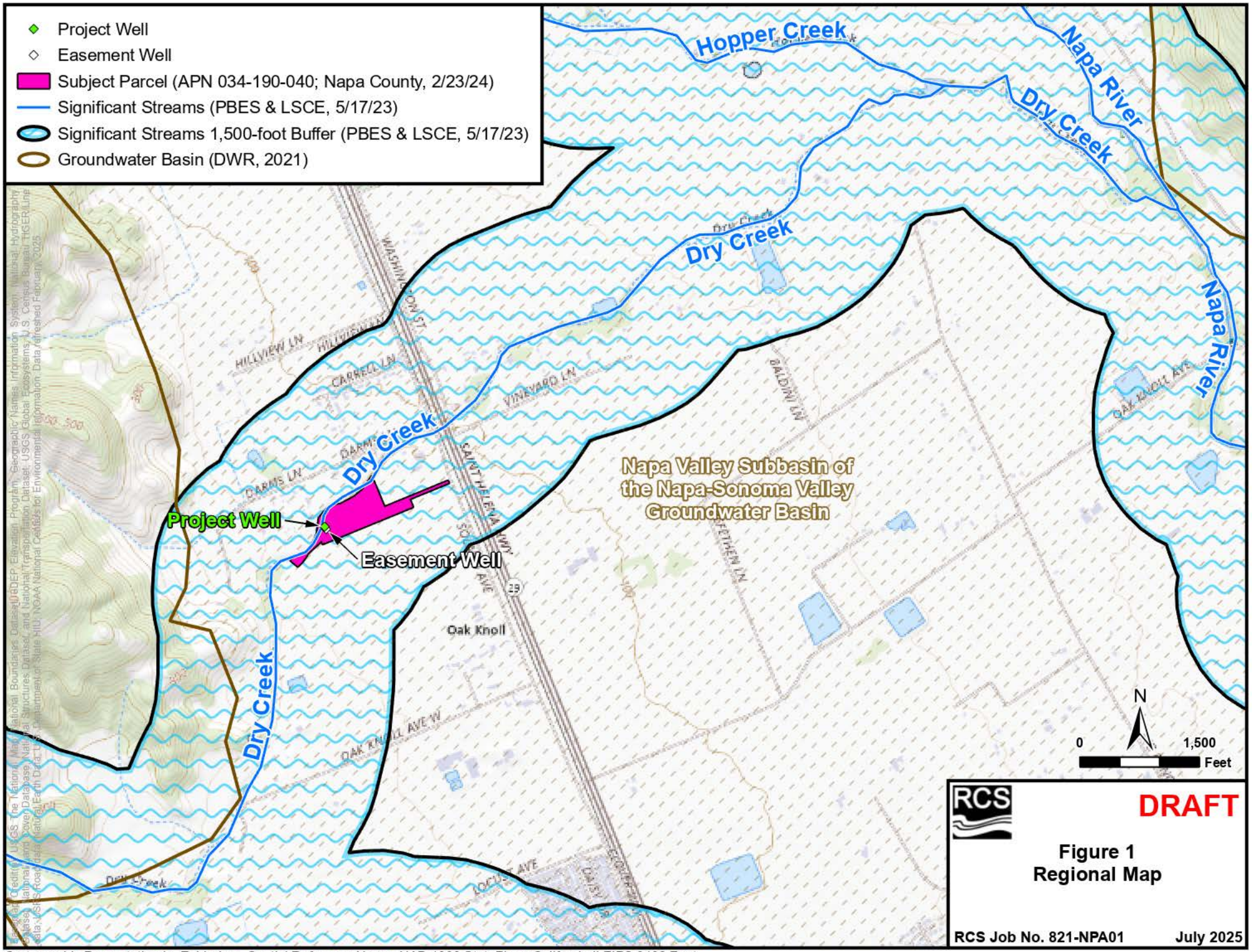

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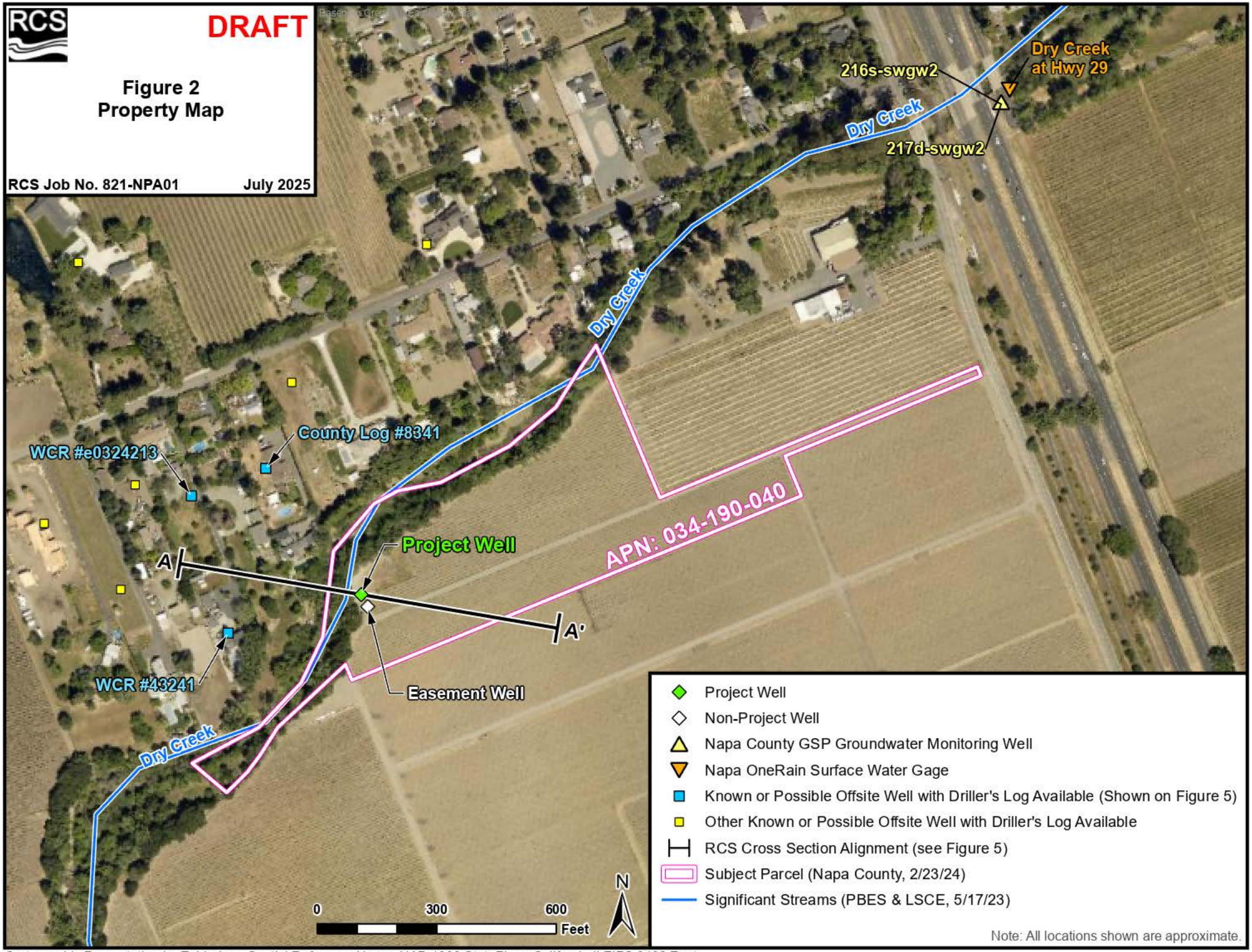

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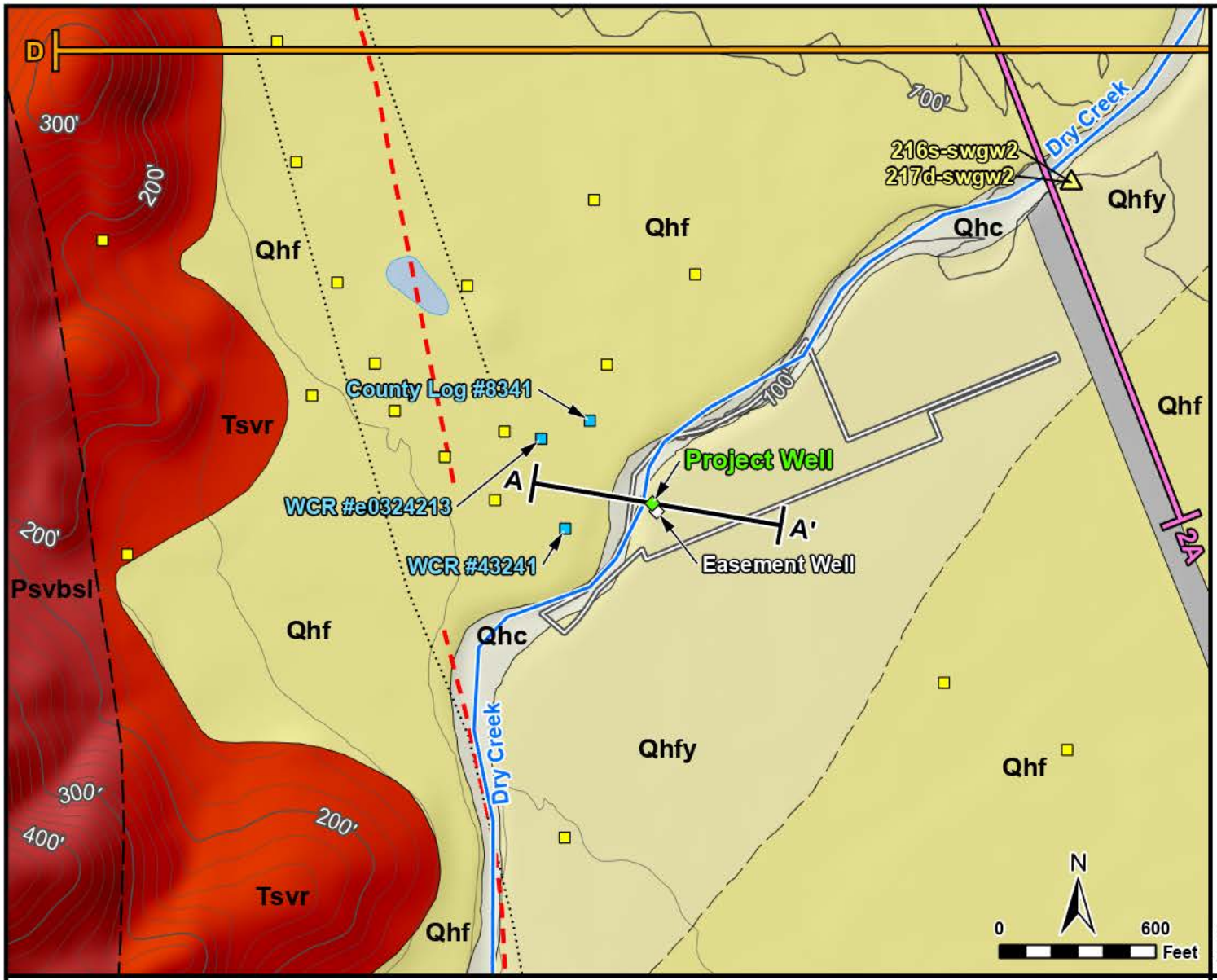


GEOLOGIC LEGEND

Alluvial Deposits

- Qhc — Stream channel deposits (late Holocene)
- Qhfy — Alluvial fan deposits (latest Holocene)
- Qhf — Alluvial fan deposits (Holocene)

Sonoma Volcanics

- Psvbsl — Andesite flow breccia of Stags Leap (Pliocene)
- Tsvr — Rhyolite to dacite flows and tuff (Pliocene, Miocene)

- Geologic contact, approximately located
- Geologic contact, certain
- Fault, approximately located
- Fault, concealed

Quaternary Faults (USGS, 2020c)

- Moderately constrained location

Elevation Contours (Derived from USGS DEM, 2020a)

- 100-foot Contour (NAVD 88)
- 20-foot Contour (NAVD 88)

Geologic map adapted from: Wagner, D.L., & Gutierrez, C.I. (2017). Preliminary Geologic Map of the Napa and Bodega Bay 30' x 60' Quadrangles, California. California Geological Survey.

- Napa County GSP Groundwater Monitoring Well
- Approximate Cross Section Alignment (LSCE & MBK, 2013)
- Approximate Cross Section Alignment (LSCE, 2022)
- Project Well
- Non-Project Well
- Known or Possible Offsite Well with Driller's Log Available (Shown on Figure 5)
- Other Known or Possible Offsite Well with Driller's Log Available
- RCS Cross Section Alignment (see Figure 5)
- Significant Streams (PBES & LSCE, 5/17/23)
- Subject Parcel (APN 034-190-040; Napa County, 2/23/24)

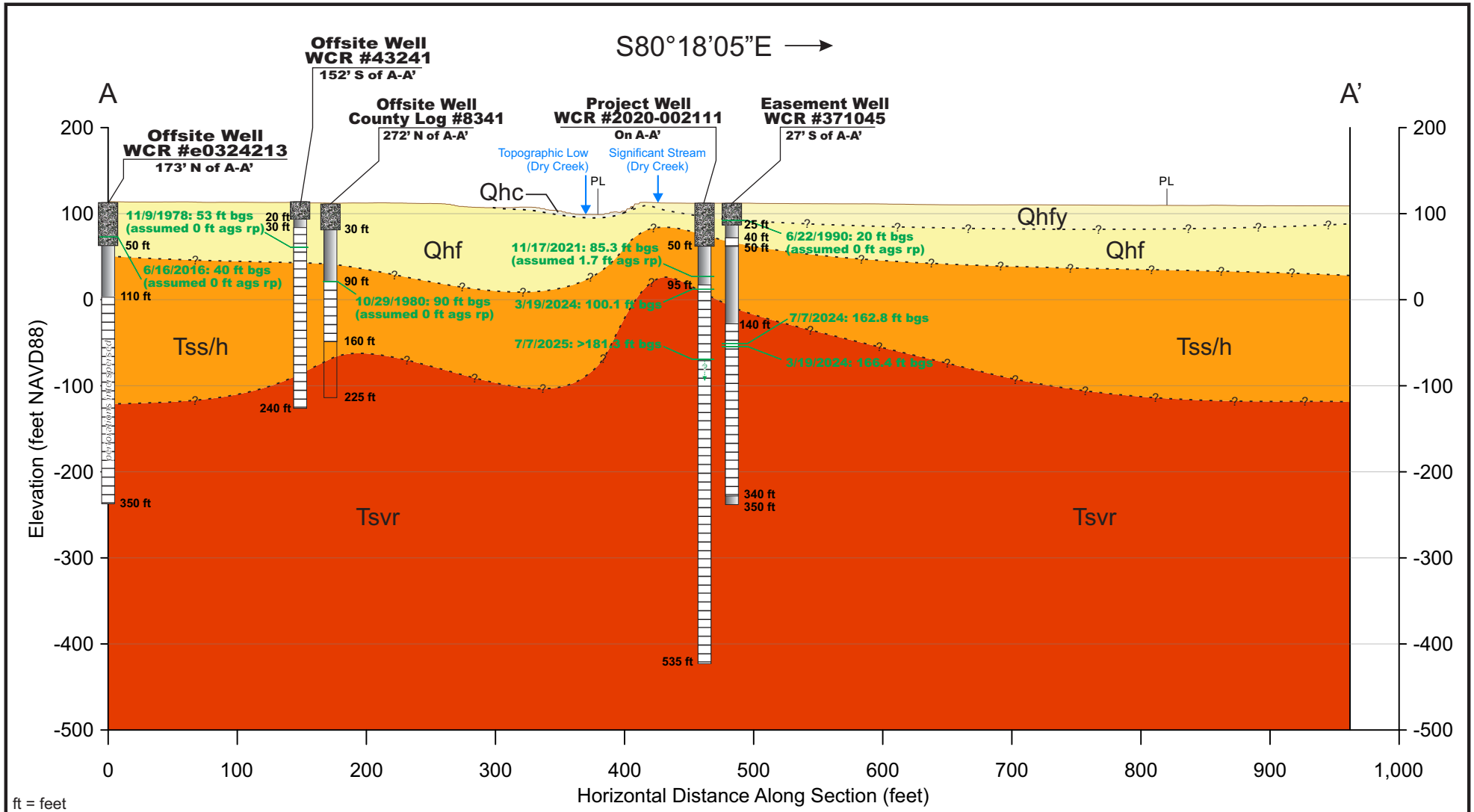
Notes: Hillshade basemap derived from USGS DEM (2020a). All locations shown are approximate.

Cartographic Presentation by E. Linden. Spatial Reference Name: NAD 1983 StatePlane California II FIPS 0402 Feet.

RCS

Figure 3
Geologic Map

RCS Job No. 821-NPA01 **July 2025**



ft = feet

rp = reference point ags = above ground surface 1.5x Vertical Exaggeration Elevation profile derived from USGS DEM (2020b)

bgs = below ground surface WCR = State Well Completion Report Horizontal alignment of Section shown on Figure 3 Cross section based on Wagner & Gutierrez (2017)

ft = Well Construction Depth Below Ground Surface in Feet
(as Reported on Driller's Logs for Completed Wells)

ft bgs = Depth to Static Water Level Measurement
(feet below ground surface)

= Sanitary Seal = Perforated Casing = Blank Casing

= Open Borehole

- - - - Geologic Contact, Inferred

- - ? - - Geologic Contact, Queried

Qhc	Stream channel deposits (late Holocene)
Qhfy	Alluvial fan deposits (latest Holocene)
Qhf	Alluvial fan deposits (Holocene)
Tss/h	Sands and Clays (Tertiary) of LSCE & MBK (2013)
Tsvr	Rhyolite to dacite flows and tuff (Pliocene, Miocene)

RCS

DRAFT

Figure 5
Cross Section A-A'

Job No. 821-NPA01 July 2025

APPENDIX

Driller's Logs for Wells on RCS Cross Section A-A' (Figure 5)

State of California

Well Completion Report

Form DWR 188 Submitted 2/13/2020

WCR2020-002111

Owner's Well Number: 2020-1 | Date Work Began: 12/19/2019 | Date Work Ended: 02/04/2020

Local Permit Agency: Napa County Planning Building and Environmental Services

Secondary Permit Agency: | Permit Number: E19-00681 | Permit Date: 12/16/2019

Well Owner (must remain confidential pursuant to Water Code 13752)

Name: IDEOLOGY CELLARS,

Mailing Address: 5225 Solano Ave

City: Napa | State: CA | Zip: 94558

Planned Use and Activity

Activity: New Well

Planned Use: Water Supply Irrigation - Landscape

Well Location

Address: 5151 Solano AVE

City: Napa | Zip: 94559 | County: Napa

	Deg.	Min.	Sec.		
Latitude	38	21	41.7974	N	
Longitude	-122	20	11.8352	W	

Dec. Lat.: 38.3616104 | Dec. Long.: -122.3366209

Vertical Datum: | Horizontal Datum: WGS84

Location Accuracy: | Location Determination Method:

APN: 034-190-040

Township: 06 N

Range: 04 W

Section: 18

Baseline Meridian: Mount Diablo

Ground Surface Elevation:

Elevation Accuracy:

Elevation Determination Method:

Borehole Information

Orientation: Vertical | Specify:

Drilling Method: Direct Rotary | Drilling Fluid: Other - Mud

Total Depth of Boring: 545 Feet

Total Depth of Completed Well: 535 Feet

Water Level and Yield of Completed Well

Depth to first water: (Feet below surface)

Depth to Static Water Level: (Feet) | Date Measured: 02/04/2020

Estimated Yield*: 150 (GPM) | Test Type: Air Lift

Test Length: 4 (Hours) | Total Drawdown: 525 (feet)

*May not be representative of a well's long term yield.

Geologic Log - Free Form

Depth from Surface Feet to Feet		Description	
0	4	Top soil rocky	
4	10	Gravel	
10	23	Clay tan	Fine-grained materials
23	25	River rock	
25	30	Clay	
30	35	Gray clay and sandstone	Fine-grained materials
35	50	Clay	
50	60	Rock and fractured	
60	65	Green clay and gravel mix	
65	80	Tan clay	Fine-grained materials
80	90	Blue clay and gravel mix	
90	105	Cemented gravel	
105	130	Rock and clay green	
130	135	Rock and clay layers	
135	143	Clay and rock layers	

143	150	Fractured rock
150	153	Clay
153	170	Clay and rock
170	205	Sandstone layers and clay
205	230	Sandstone and black rock layers
230	290	Sandstone and clay layers
290	300	Clay
300	320	Rock and clay layers
320	325	Clay and rock layers
325	340	Fractured greenstone
340	347	Greenstone and clay
347	360	Fractured greenstone
360	363	Clay and rock
363	370	Fractured rock black
370	400	Fractured rock and clay layers
400	410	Black rock and clay layers
410	430	Clay and rock layers
430	450	Fractured sandstone with clay layers
450	470	Multi color volcanic rock fractured up
470	490	Black rock and red clay layers
490	507	Rock and clay layers
507	515	Fractured black rock
515	530	Clay and rock layers
530	545	Rock and clay layers

Casings

Casing #	Depth from Surface Feet to Feet		Casing Type	Material	Casings Specificatons	Wall Thickness (inches)	Outside Diameter (inches)	Screen Type	Slot Size if any (inches)	Description
1	0	95	Blank	PVC	OD: 8.625 in. | SDR: 17 | Thickness: 0.508 in.	0.508	8.625			
1	95	535	Screen	PVC	OD: 8.625 in. | SDR: 17 | Thickness: 0.508 in.	0.508	8.625	Milled Slots	0.032	

Annular Material

Depth from Surface Feet to Feet		Fill	Fill Type Details	Filter Pack Size	Description
0	3	Cement	Other Cement		
3	50	Bentonite	Other Bentonite		
50	545	Filter Pack	8 x 16		

Other Observations:

Borehole Specifications

Depth from Surface Feet to Feet		Borehole Diameter (inches)
0	50	15
50	545	14

Certification Statement

I, the undersigned, certify that this report is complete and accurate to the best of my knowledge and belief

Name: LES PETERSEN DRILLING & PUMP INC
Person, Firm or Corporation

5434 OLD REDWOOD HWY	SANTA ROSA	CA	95403
Address	City	State	Zip

Signed *electronic signature received*	02/13/2020	261084
C-57 Licensed Water Well Contractor	Date Signed	C-57 License Number

DWR Use Only

CSG #	State Well Number	Site Code	Local Well Number

				N						W
Latitude Deg/Min/Sec					Longitude Deg/Min/Sec					

TRS:

APN:

parcel #34-212-30

ORIGINAL
File with DWR

STATE OF CALIFORNIA
THE RESOURCES AGENCY
DEPARTMENT OF WATER RESOURCES

WATER WELL DRILLERS REPORT

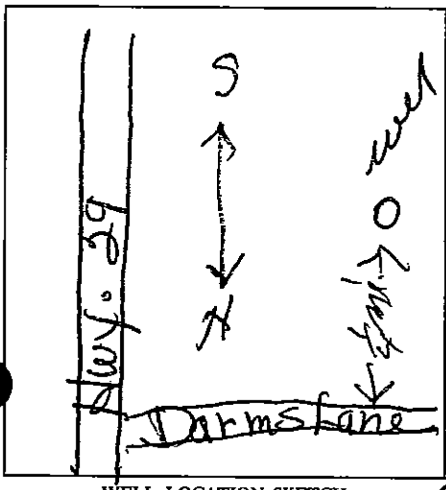
Do not fill in

No. 371045

Notice of Intent No. ______
Local Permit No. or Date 26445

State Well No. ______
Other Well No. 06N04W12

(2) LOCATION OF WELL (See instructions):
County 28 Owner's Well Number ______
Well address if different from above Same
Township ______ Range ______ Section ______
Distance from cities, roads, railroads, fences, etc. 1/4 mi. So. of Darms Lane on Hwy. 29



WELL LOCATION SKETCH

(3) TYPE OF WORK:
New Well [X] Deepening [ ]
Reconstruction [ ]
Reconditioning [ ]
Horizontal Well [ ]
Destruction [ ] (Describe destruction materials and procedures in Item 12)

(4) PROPOSED USE:
Domestic [ ]
Irrigation [X]
Industrial [ ]
Test Well [ ]
Municipal [ ]
Other [ ]
(Describe)

(5) EQUIPMENT:
Rotary [X] Reverse [ ]
Cable [ ] Air [ ]
Other [ ] Bucket [ ]

(6) GRAVEL PACK:
Yes [X] No [ ] Size PEA
Diameter of bore 10"
Packed from 25 to 350 ft.

(7) CASING INSTALLED:
Steel [ ] Plastic [X] Concrete [ ]

(8) PERFORATIONS:
Type of perforation or size of screen

From ft.	To ft.	Dia. in.	Gage or Wall	From ft.	To ft.	Slot size
0	350	6	160	40	50	1/8 x 3
				140	340	SCREEN

(9) WELL SEAL:
Was surface sanitary seal provided? Yes [X] No [ ] If yes, to depth 25 ft.
Were strata sealed against pollution? Yes [X] No [ ] Interval 15-19 ft.
Method of sealing cement

(10) WATER LEVELS:
Depth of first water, if known 15 ft.
Standing level after well completion 20 ft.

(11) WELL TESTS:
Was well test made? Yes [X] No [ ] If yes, by whom? Driller
Type of test Pump [ ] Bailer [ ] Air lift [X]
Depth to water at start of test 20 ft. At end of test 200 ft.
Discharge 120 gal/min after 5 hours Water temperature ______
Chemical analysis made? Yes [ ] No [X] If yes, by whom? ______
Was electric log made Yes [ ] No [X] If yes, attach copy to this report

(12) WELL LOG: Total depth 410 ft. Completed depth 350 ft.

from ft	to ft.	Formation (Describe by color, character, size or material)
0	15'	Clay
15	19'	sandy clay, boulders and gravel
19	40'	clay
40	50'	sandy clay, boulders and gravel
50	75'	clay
75	120'	hard clay & rock
120	340'	hard volcanic ash & rock
340	410	hard volcanic clay

Work started 5-25 1990 Completed 6-22 1990

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 Bill Pulliam (Well Driller)
NAME Pulliam Well Drilling
(Person, firm, or corporation) (Typed or printed)
Address 2877 Piedmont Ave
City Napa ZIP 94558
License No. 548677 Date of this report 7-3-90

DWR 188 (REV. 12-86) IF ADDITIONAL SPACE IS NEEDED, USE NEXT CONSECUTIVELY NUMBERED FORM 86 96355

Environmental

Cover Sheet

APN	034 - 212 - 006 - 000
Permit #	
Program	Well
DocType	WL
Street #	1123
Street Name	Darms Ln
Year	

TRIPLICATE
Owner's Copy

STATE OF CALIFORNIA
THE RESOURCES AGENCY
DEPARTMENT OF WATER RESOURCES

WATER WELL DRILLERS REPORT

TRS 6-4-18
8-35-240

Do not fill in

No. 43241

Notice of Intent No. ______
Local Permit No. or Date ______

State Well No. ______
Other Well No. ______

(1) OWNER: Name [redacted]
Address [redacted]
City [redacted] Zip [redacted]

(2) LOCATION OF WELL (See instructions):
County Napa Owner's Well Number ______
Well address if different from above ______
Township ______ Range ______ Section ______
Distance from cities, roads, railroads, fences, etc. ______

A.P. # 34-212-06

WELL LOCATION SKETCH

(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 ☐

(5) EQUIPMENT:
Rotary ☒ Reverse ☐
Cable ☐ Air ☐
Other ☐ Bucket ☐

(6) GRAVEL PACK:
Yes ☒ No ☐ Size Birds Eye
Diameter of bore 6"
Packed from 20 to 240 ft.

(7) CASING INSTALLED:
Steel ☒ Plastic ☐ Concrete ☐

From ft.	To ft.	Dia. in.	Gage or Wall
0	240	4"	12 ga.

(8) PERFORATIONS:
Type of perforation or size of screen

From ft.	To ft.	Slot size
30	240	1/8 x 3

(9) WELL SEAL:
Was surface sanitary seal provided? Yes ☒ No ☐ If yes, to depth 20 ft.
Were strata sealed against pollution? Yes ☐ No ☒ Interval ______ ft.
Method of sealing neat cement

(10) WATER LEVELS:
Depth of first water, if known -- ft.
Standing level after well completion 53 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 35 gal/min after 4 hours Water temperature ______
Chemical analysis made? Yes ☐ No ☐ If yes, by whom? ______
Was electric log made? Yes ☐ No ☒ If yes, attach copy to this report

(12) WELL LOG: Total depth 240 ft. Depth of completed well 240 ft.

Fine-grained materials

from ft.	to ft.	Formation (Describe by color, character, size or material)
0	100	Original well
100	140	Blue clay
140	170	Blue clay w/cemented gravel
170	200	Blue clay
200	240	Hard volcanic rock

CONFIDENTIAL
NOT FOR PUBLIC USE
WATER CODE SEC. 13752

RECEIVED
DEC 15 1978
DIVISION OF ENVIRONMENTAL HEALTH

Work started 11-6 1978 Completed 11-9 1978

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 Erwin C. Grove r.g.
(Well Driller)

NAME American Well & Pump Service
(Person, firm, or corporation) (Typed or printed)
Address 23002 Arnold Dr.
City Sonoma Zip 95476
License No. 246342 Date of this report 11-20-78

DWR 188 (REV. 7-76) IF ADDITIONAL SPACE IS NEEDED, USE NEXT CONSECUTIVELY NUMBERED FORM 43816-950 7-76 50M QUAD OSP

HEALTH DEPT. USE ONLY

FEE ______

DATE ______

RECEIPT NO. ______

BY ______

A.P. No. ______

RECEIVED

DEC 15 1978

DIVISION OF ENVIRONMENTAL HEALTH

NAPA COUNTY HEALTH DEPARTMENT
DIVISION OF ENVIRONMENTAL HEALTH

APPLICATION & PERMIT TO CONSTRUCT A WATER WELL

NAME [redacted] (OWNER) ADDRESS [redacted] (JOB LOCATION) DATE ______

NAME ______ (WELL DRILLER) ADDRESS ______

TYPE OF WORK

NEW WELL ______	RECONDITIONING ______	DEEPENING ✓
TEST HOLES ______	DESTROYING ______	OTHER ______
TYPE I PERMIT ______	TYPE II PERMIT ______	FEE ______

PROPOSED USE

DOMESTIC ✓ IRRIGATION ______ INDUSTRIAL ______ MUNICIPAL ______
TEST WELL ______ OTHER ______

Sewage disposal on site (existing or proposed) Public ______ Individual ______ Private ______
Distance from well to any part of nearest sewage disposal system 50 feet
(Sketch of site to accompany application.)

TYPE OF EQUIPMENT TO BE USED

Rotary X Cable ______ Hand Dug ______ Other ______

CONSTRUCTION PROPOSED

Diameter of casing 4" Material steel Annular Space: Size 2"
Sealed with: Concrete ______ Grout ______ Neat Cement X Puddled Clay ______ Other ______
Conductor Casing: Yes ______ No X Material ______
Chlorination by: Owner ______ Pump Co. ______ Driller ______
Gravel Pack: Yes ___ No ___

______ (SIGNATURE OF APPLICANT) ______ (DATE)

CASING

CONSTRUCTION

Total Depth 240 Ft.
Surface Seal to 20 Ft.
Any stratas sealed: Yes ___ No X
If yes, depth of stratas:
From ___ Ft. to ___ Feet
From ___ Ft. to ___ Feet

Perforations:
From 30 Ft. to 240 Feet
From ___ Ft. to ___ Feet
From ___ Ft. to ___ Feet

WATER LEVELS

First water at – ? Feet
Static level at 53 Feet

WELL TESTS

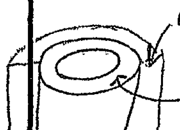
How performed Air Lift
Yield 35 GPM with ___ Feet
Drawdown ___ Ft. after 4 Hrs.

WELL LOG

(Formation; describe by color, size of material, structure)

Ft. to Ft.

Existing seal



Repair job - had existing seal
Annular Space Depth [20'] Thickness [2"]
Our seal to 20' (neat cement)

0-100' Original Well
100-140' Blue Clay
140-170' Blue clay w/cemented gravel
170-200' Blue clay
200-240' Hard volcanic rock

Signed Erwin C. Gross [illegible]
License No. 246342

I, Erwin C. Gross, contractor for the above work, hereby certify that the above work was installed according to all applicable rules and regulations covered by this permit, and that the information is true and correct to the best of my knowledge.

Erwin C. Gross, C.G.

Contractor's Signature

Environmental

Cover Sheet

APN	034 - 212 - 009 - 000
Permit #	
Program	Well
DocType	WL
Street #	1107
Street Name	Darms Ln
Year	1980

TRS 6-4-18
B-20-225

FEE 40 DATE 11-3-80
RECEIPT NO. 1341 BY WC

A.P. NO. 34-112-09

NAPA COUNTY HEALTH DEPARTMENT
DIVISION OF ENVIRONMENTAL HEALTH

APPLICATION & PERMIT TO CONSTRUCT A WATER WELL

NAME [redacted] (Owner) ADDRESS [redacted]

NAME Bill Pullman (Well Driller) ADDRESS 3877 Piedmont Ave (Job Location) DATE 10-27-80

TYPE OF WORK
NEW WELL X RECONDITIONING ____ DEEPENING ____
TYPE I PERMIT X DESTROY ____ OTHER ____
TYPE II PERMIT ____

PROPOSED USE
DOMESTIC X IRRIGATION ____ INDUSTRIAL ____ MUNICIPAL ____
TEST WELL ____ OTHER ____

Sewage Disposal on site (existing or proposed) Public ____ Individual ____ Private X
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 X 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 Cpmpensation 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.

Bill Pullman — Signature of Applicant

10-29-80 — Date

CASING

CONSTRUCTION:
Total Depth 225 Ft. Depth of Casing 160
Surface Seal to 30 Ft.
Any Stratas Sealed: Yes ____ No X
If yes, depth of stratas: ____
From ____ Ft. to ____ Ft./From ____ Ft. to ____ Ft.
Perforations:
From 90 Ft. to 160 Ft./From ____ Ft. to ____ Ft.
From ____ Ft. to ____ Ft.

WATER LEVELS

First Water at ____ Ft. Static level at 90 Ft.

WELL TESTS

How performed Bail
Yield 20 GPM with 90 Ft. Drawdown after 1½ Hrs.
Annular space depth 27 Ft./Thickness 3 in. Diameter of casing 6 Material PLASTIC
Gravel Pack: Yes X No ____ Conductor Casing:
Yes ____ No X Sealed with: Concrete X
Grout ____ Neat Cement ____ Pudd. Clay ____
Other ____ Chlorination by: Owner X
Pump Co. ____ Driller ____

WELL LOG

(Formation; described by color, size of material, structure)

Ft.	to	Ft.
0-35	clay	
35-38	clay, gravel	
38-53	clay	
53-56	clay, gravel	
56-70	clay	
70-180	green ash, black rock	
180-225	black rock	

Fine-grained materials

CONTRACTOR'S STATEMENT: I, Bill Pullman, contractor for the above work, hereby certify that the above was installed according to all applicable rules and regulations covered by this permit, and that the information is true and correct to the best of my knowledge.

Bill Pullman
Contractor's Signature

E-69

034-212-008

E15-00963

File Original with DWR

Page 1 of 3

Owner's Well Number #2

Date Work Began 06/09/2016 Date Work Ended 6/16/2016

Local Permit Agency Napa County Environmental Health

Permit Number E15-00963 Permit Date 12/15/15

State of California

Well Completion Report

No. e0324213

DWR Use Only – Do Not Fill In

State Well Number/Site Number

Latitude N Longitude W

APN/TRS/Other

Geologic Log

Orientation ◉ Vertical ○ Horizontal ○ Angle Specify ____

Drilling Method Direct Rotary Drilling Fluid Fresh Water

Depth from Surface Feet to	Feet	Description (Describe material, grain size, color, etc)
0	7	Clay and gravel
7	32	Big gravel
32	54	Brown clay and gravel
54	62	Gravel, some clay
62	120	Green volcanics with streaks of ash and clay
120	150	Harder volcanics green
150	186	Clayey volcanics and ash
186	201	Green clay embedded volcanics
201	234	Ashy volcanics, some clay
234	243	Volcanics
243	257	White clay and volcanics
257	270	Harder volcanics
270	336	Clay and volcanic rock ashy
336	346	Fractured volcanics
346	350	Clayey volcanics

Fine-grained materials

RECEIVED
... 2016
Napa County ... Building
& Environmental ...

Total Depth of Boring 350 Feet

Total Depth of Completed Well 350 Feet

Well Owner

Name Gail Conrads

Mailing Address 1125 Darms Lane

City Napa State Ca Zip 94558

Well Location

Address 1125 Darms Lane

City Napa County Napa

Latitude 38 Deg. 21 Min. 45 Sec. N Longitude 122 Deg. 20 Min. 41 Sec. W

Datum ____ Decimal Lat. ____ Decimal Long. ____

APN Book 034 Page 212 Parcel 005

Township 6N Range 4W Section 18

Location Sketch

(Sketch must be drawn by hand after form is printed.)

North / West / East / South

Illustrate or describe distance of well from roads, buildings, fences, rivers, etc. and attach a map. Use additional paper if necessary. Please be accurate and complete.

Activity

◉ New Well
○ Modification/Repair
○ Deepen
○ Other ____
○ Destroy
Describe procedures and materials under "GEOLOGIC LOG"

Planned Uses

◉ Water Supply
☑ Domestic ☐ Public
☐ Irrigation ☐ Industrial
○ Cathodic Protection
○ Dewatering
○ Heat Exchange
○ Injection
○ Monitoring
○ Remediation
○ Sparging
○ Test Well
○ Vapor Extraction
○ Other ____

Water Level and Yield of Completed Well

Depth to first water ____ (Feet below surface)

Depth to Static Water Level 40 (Feet) Date Measured 06/16/2016

Estimated Yield * 150 (GPM) Test Type Air Lift

Test Length 1.0 (Hours) Total Drawdown 260 (Feet)

*May not be representative of a well's long term yield.

Casings

Depth from Surface Feet to	Feet	Borehole Diameter (Inches)	Type	Material	Wall Thickness	Outside Diameter (Inches)	Screen Type	Slot Size if Any (Inches)
0	50	11						
50	120	9 7/8						
120	350	8						
0	110		Blank	PVC Sch. 40	SDR21	5		
110	130		Screen	PVC Sch. 40	SDR21	5	Milled Slots	0.032
130	150		Blank	PVC Sch. 40	SDR21	5		

Annular Material

Depth from Surface Feet to	Feet	Fill	Description
0	50	Cement	
50	350	Filter Pack	#6 Sand

Attachments

☐ Geologic Log
☐ Well Construction Diagram
☐ Geophysical Log(s)
☐ Soil/Water Chemical Analyses
☑ Other Site Map

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 Weeks Drilling & Pump Company
Person, Firm or Corporation

P.O. Box 176 (Address) Sebastopol (City) CA (State) 95473 (Zip)

Signed [signature] C-57 Licensed Water Well Contractor

9/26/16 Date Signed

177681 C-57 License Number

DWR 188 REV. 1/2006

File Original with DWR

Page 2 of 3

Owner's Well Number #2

Date Work Began 06/09/2016 Date Work Ended 6/16/2016

Local Permit Agency Napa County Environmental Health

Permit Number E15-00963 Permit Date 12/15/15

State of California

Well Completion Report

No. e0324213

DWR Use Only – Do Not Fill In

State Well Number/Site Number

N Latitude Longitude W

APN/TRS/Other

Geologic Log

Orientation ⊙ Vertical ○ Horizontal ○ Angle Specify

Drilling Method Direct Rotary Drilling Fluid Fresh Water

Depth from Surface Feet	to Feet	Description Describe material, grain size, color, etc
0	7	Clay and gravel
7	32	Big gravel
32	54	Brown clay and gravel
54	62	Gravel, some clay
62	120	Green volcanics with streaks of ash and clay
120	150	Harder volcanics green
150	186	Clayey volcanics and ash
186	201	Green clay embedded volcanics
201	234	Ashy volcanics, some clay
234	243	Volcanics
243	257	White clay and volcanics
257	270	Harder volcanics
270	336	Clay and volcanic rock ashy
336	346	Fractured volcanics
346	350	Clayey volcanics

Total Depth of Boring 350 Feet

Total Depth of Completed Well 350 Feet

Well Owner

Name Gail Conrads

Mailing Address 1125 Darms Lane

City Napa State Ca Zip 94558

Well Location

Address 1125 Darms Lane

City Napa County Napa

Latitude 38 Deg. 21 Min. 45 Sec. N Longitude 122 Deg. 20 Min. 41 Sec. W

Datum Decimal Lat. Decimal Long.

APN Book 034 Page 212 Parcel 005

Township 6N Range 4W Section 18

Location Sketch

(Sketch must be drawn by hand after form is printed.)

North

West East

South

Illustrate or describe distance of well from roads, buildings, fences, rivers, etc. and attach a map. Use additional paper if necessary. Please be accurate and complete.

Activity

⊙ New Well

○ Modification/Repair

○ Deepen

○ Other

○ Destroy

Describe procedures and materials under "GEOLOGIC LOG"

Planned Uses

⊙ Water Supply

☑ Domestic ☐ Public

☐ Irrigation ☐ Industrial

○ Cathodic Protection

○ Dewatering

○ Heat Exchange

○ Injection

○ Monitoring

○ Remediation

○ Sparging

○ Test Well

○ Vapor Extraction

○ Other

Water Level and Yield of Completed Well

Depth to first water (Feet below surface)

Depth to Static Water Level 40 (Feet) Date Measured 06/16/2016

Estimated Yield * 150 (GPM) Test Type Air Lift

Test Length 1.0 (Hours) Total Drawdown 260 (Feet)

*May not be representative of a well's long term yield.

Casings

Depth from Surface Feet	to Feet	Borehole Diameter (Inches)	Type	Material	Wall Thickness (Inches)	Outside Diameter (Inches)	Screen Type	Slot Size If Any (Inches)
150	170		Screen	PVC Sch. 40	SDR21	5	Milled Slots	0.032
170	190		Blank	PVC Sch. 40	SDR21	5		
190	210		Screen	PVC Sch. 40	SDR21	5	Milled Slots	0.032
210	230		Blank	PVC Sch. 40	SDR21	5		
230	250		Screen	PVC Sch. 40	SDR21	5	Milled Slots	0.032
250	270		Blank	PVC Sch. 40	SDR21	5		

Annular Material

Depth from Surface Feet	to Feet	Fill	Description
0	50	Cement	
50	350	Filter Pack	#6 Sand

Attachments

☐ Geologic Log

☐ Well Construction Diagram

☐ Geophysical Log(s)

☐ Soil/Water Chemical Analyses

☑ Other Site Map

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 Weeks Drilling & Pump Company
Person, Firm or Corporation

P.O. Box 176 Address Sebastopol City CA State 95473 Zip

Signed [signature] C-57 Licensed Water Well Contractor

9/26/16 Date Signed

177681 C-57 License Number

DWR 188 REV. 1/2006

File Original with DWR

Page 3 of 3

Owner's Well Number #2

Date Work Began 06/09/2016 Date Work Ended 6/16/2016

Local Permit Agency Napa County Environmental Health

Permit Number E15-00963 Permit Date 12/15/15

State of California

Well Completion Report

No. e0324213

DWR Use Only – Do Not Fill In

State Well Number/Site Number

N Latitude W Longitude

APN/TRS/Other

Geologic Log

Orientation ◉ Vertical ○ Horizontal ○ Angle Specify

Drilling Method Direct Rotary Drilling Fluid Fresh Water

Depth from Surface Feet	to Feet	Description Describe material, grain size, color, etc
0	7	Clay and gravel
7	32	Big gravel
32	54	Brown clay and gravel
54	62	Gravel, some clay
62	120	Green volcanics with streaks of ash and clay
120	150	Harder volcanics green
150	186	Clayey volcanics and ash
186	201	Green clay embedded volcanics
201	234	Ashy volcanics, some clay
234	243	Volcanics
243	257	White clay and volcanics
257	270	Harder volcanics
270	336	Clay and volcanic rock ashy
336	346	Fractured volcanics
346	350	Clayey volcanics

Total Depth of Boring 350 Feet

Total Depth of Completed Well 350 Feet

Well Owner

Name Gail Conrads

Mailing Address 1125 Darms Lane

City Napa State Ca Zip 94558

Well Location

Address 1125 Darms Lane

City Napa County Napa

Latitude 38 Deg. 21 Min. 45 Sec. N Longitude 122 Deg. 20 Min. 41 Sec. W

Datum Decimal Lat. Decimal Long.

APN Book 034 Page 212 Parcel 005

Township 6N Range 4W Section 18

Location Sketch

(Sketch must be drawn by hand after form is printed.)

North

West East

South

Illustrate or describe distance of well from roads, buildings, fences, rivers, etc. and attach a map. Use additional paper if necessary. Please be accurate and complete.

Activity

◉ New Well

○ Modification/Repair

○ Deepen

○ Other

○ Destroy

Describe procedures and materials under "GEOLOGIC LOG"

Planned Uses

◉ Water Supply

☑ Domestic ☐ Public

☐ Irrigation ☐ Industrial

○ Cathodic Protection

○ Dewatering

○ Heat Exchange

○ Injection

○ Monitoring

○ Remediation

○ Sparging

○ Test Well

○ Vapor Extraction

○ Other

Water Level and Yield of Completed Well

Depth to first water (Feet below surface)

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Test Length 1.0 (Hours) Total Drawdown 260 (Feet)

*May not be representative of a well's long term yield.

Casings

Depth from Surface Feet	to Feet	Borehole Diameter (Inches)	Type	Material	Wall Thickness (Inches)	Outside Diameter (Inches)	Screen Type	Slot Size if Any (Inches)
270	290		Screen	PVC Sch. 40	SDR21	5	Milled Slots	0.032
290	310		Blank	PVC Sch. 40	SDR21	5		
310	350		Screen	PVC Sch. 40	SDR21	5	Milled Slots	0.032

Annular Material

Depth from Surface Feet	to Feet	Fill	Description
0	50	Cement	
50	350	Filter Pack	#6 Sand

Attachments

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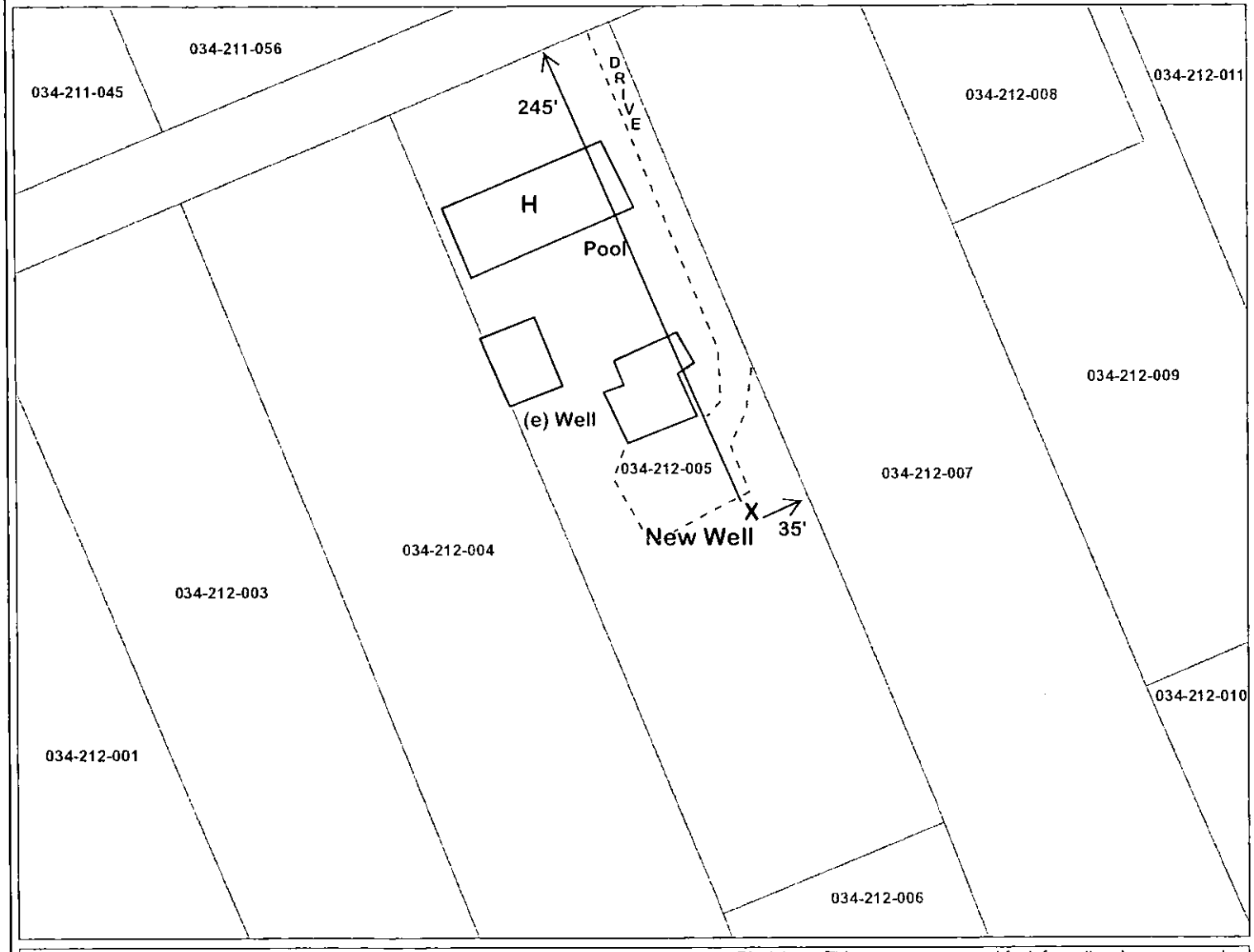
9/26/16 Date Signed

177681 C-57 License Number

DWR 188 REV. 1/2006

1125 Darms Lane, Napa

APN #034-212-005



Legend

- Parcels
- County Boundary

188.1 0 94.04 188.1 Feet

Disclaimer: This map was prepared for informational purposes only.
No liability is assumed for the accuracy of the data delineated hereon.

This map was printed on 9/27/2016

Notes