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Water Availability Analysis

AXR Napa Valley Winery Permit No. P22-00417-UP, P26-00045-VAR, & P26-00044-VIEW
Planning Commission Hearing – June 3, 2026

July 25, 2024

Don Van Laeken
3199 St. Helena Highway N.
St. Helena, CA 94574

SUBJECT: WATER AVAILABILITY ANALYSIS REPORT
3199 ST. HELENA HIGHWAY N.
ST. HELENA, CALIFORNIA
NAPA COUNTY APN 022-080-025
EBA Job No. 24-3556

Mr. Van Laeken,

EBA Engineering (EBA) is pleased to present this Water Availability Analysis (WAA) in connection with permitting services for the site located at 3199 St. Helena Hwy N. in St. Helena, California (herein referred to as the project site). The intent of this WAA is to provide required information to obtain a water use permit modification for the site in conformance to the requirements of Napa County's WAA Guidance Document, adopted May 12, 2015 (Napa County, 2015) and the Application of Public Trust Doctrine to Projects Dependent on Groundwater (Napa County, 2024).

This WAA concludes that site groundwater demands are less than the estimated volume of water available for groundwater recharge on the project site under average precipitation years. Further, the existing groundwater well at the project site, is located less than 500 feet to an existing nearby well(s), is located less than 1,500 feet to a nearby natural spring(s), and is located less than 1,500 feet to a nearby significant stream(s). As such, Tier 1, 2, and 3 analyses will be evaluated in conformance with the previously outlined Napa County permitting guidance documentation.

- Well Permit Standards – Applicable Tables available on the Napa County website on the Groundwater Sustainability page;

- *Draft GSA Response to the Governor's Emergency Executive Order*, prepared by Napa County, dated June 2, 2022; and

- *WAA Guidance Document,* prepared by Napa County, adopted May 12, 2015.

A Tier 1 document, entitled *Water Availability Analysis – AXR Napa Valley,* was prepared by Summit Engineering, Inc. in 2022 and submitted to the County of Napa for the project site. In response to this Tier 1, the County of Napa requested the following information outlined below. Summit Engineering, Inc. updated the Tier 1 for the project site in July 2024 and a copy can be found in Appendix D of this Report.

Water Availability Analysis

a. *Tier 1 - Provide a Parcel Specific Recharge analysis. If existing groundwater us exceeds parcel specific recharge, no net increase in groundwater use is required. Be sure to include all existing uses on the parcel, including vineyard and any residential use.*

b. *Tier 2 – Provide a Well and Spring Interference analysis, there appears to be at least 1 neighboring well within 500' of the project well.*

c. *Tier 3 – Project well is within 1,500' of a significant stream, please provide a Tier 3 Groundwater/Surface Water Interaction.*

1.0 BACKGROUND INFORMATION

1.1 Project Description

The project site is located on St. Helena Hwy N. approximately 2.5 miles northwest of St. Helena in Napa County (Figure 1, Appendix A). The project site is further identified by Napa County Assessor's Parcel Number (APN) 022-080-025 and is approximately 7.85-acres (AC) in size. Please refer to Appendix D of this report for a project site description and site plan illustration, provided in the July 2024 *Water Availability Analysis – AXR Napa Valley* prepared by Summit Engineering, Inc. Ground elevations across the project site range from approximately 300 to 360 feet above mean sea level (MSL). The project site is mapped as a Boomer-gravelly loam soil and a Perkins gravelly loam soil with hydrologic soil group ratings of C and B, respectively (NRCS, 2020).

There are three existing water supply wells on the project site, one of which currently supplies all water to the project site. This well that supplies water to the project site will herein be referred to as the project well. The project well is located in the southwest portion of the project site. The well located in the northwest portion of the project site is proposed to be destroyed with the acquisition of a well demolition permit from Napa County in accordance with Napa County Municipal Code Section 13.12, Article IV. The well in the eastern portion of the project site, adjacent to St. Helena Hwy., is proposed to remain as a backup well in accordance with Napa County Municipal Code Section 13.12.460.B, or be destroyed with the acquisition of a well demolition permit from Napa County. Please refer to Appendix D of this Report for the locations of the on-site wells provided in Summit's July 2024 *Water Availability Analysis.* A Well Completion Report

(WCR), archived by the California Department of Water Resources (DWR), was only found for the project well (WCR e0367373). The project well is completed to a depth of 699 feet below ground surface (BGS), had a depth-to-water (DTW) of 92 feet BGS and had a yield of 125 gallons per minute (GPM) at the time of well completion. During the June 25, 2024 site visit, DTW measurements were conducted on the project well and the well adjacent to St. Helena Hwy. DTW in the project well and the well adjacent to St. Helena Hwy. measured 122 feet and 69.93 feet below top of casing (TOC), respectively. A copy of the WCR for the project well can be found in Appendix B. Please refer to Figure 2 (Appendix A) for a map of the locations of the on-site wells.

The location of the project well (WCR e0367373), along with a 500-foot radius and a 1,500-radius around the well location, is shown in Figure 2 (Appendix A). EBA performed a literature search of WCRs archived by the California Department of Water Resources (DWR) and Environmental Permitting documentation archived within the Napa County Electronic Document Retrieval database. The scope of the research encompassed available records for wells located within a 500-foot radius of the project site. Publicly available septic system design drawings were used to further identify well locations on neighboring properties. After EBA personnel conducted a site visit and a literature search, two water supply wells were identified within 500 feet of the project well location. Please refer to Figure 2 (Appendix A) for an illustration of all identified well locations and Appendix B and C for the respective WCRs. A summary of well characteristics for neighboring wells within 500 feet of the project well is presented in Table 1.

TABLE 1 – SUMMARY OF WELL CHARACTERISTICS FOR NEIGHBORING WELLS WITHIN 500 FEET OF THE PROJECT WELL

Legacy WCR[1] Number	*Distance to existing well (feet)*	*Planned Use*	*Drilling Depth (feet BGS)*	*Static Water Level (feet BGS)*	*Estimated Yield (GPM)*
119541	345	Domestic	260	35	14
e0204390	395	Domestic/ Irrigation	579	110	120

[1] WCR: Well Completion Report

1.2 Hydrogeologic Setting

The Coast Ranges geomorphic province encapsulates the greater north bay area with northwest-trending ridges and valleys that run subparallel to the San Andreas Fault Zone. Regional geology surrounding the project site has been mapped to generally consist of Late Pleistocene to Holocene aged sedimentary deposits underlain by Pliocene to Miocene aged Sonoma Volcanics (United States Geological Survey [USGS], 2007). In the immediate vicinity of the project site, the surface geology has been mapped to consist predominantly of the Sonoma Volcanic unit described as

pumiceous ash-flow tuff (Tst). Please refer to Figure 3 (Appendix A) for a map of the geology in the vicinity of the project site.

Well Completion Reports maintained by DWR for nearby wells are consistent with mapped geology. While nearby wells are reportedly completed in primarily Sonoma Volcanics, one well (WCR 562078) is reportedly completed in predominantly sedimentary deposits. Wells completed in Sonoma Volcanics are logged as predominantly ash, clay, and embedded rock from the ground surface to the maximum depths explored. Water bearing zones for wells completed in Sonoma Volcanics are fractured rock, which are expected to be stochastically distributed and likely to have a wide range of transmissivity values depending on the extents of fracture networks. Reported well yields in nearby wells completed in Sonoma Volcanics range from 14 to 125 GPM. According to Bulletin 118-4 (CDWR, 1975 and 1982), Sonoma Volcanic formation groundwater yields range from slight to moderate and have specific yields ranging from 0 to 15 percent. Please refer to Figure 3 (Appendix A) for a map of the geology in the vicinity of the project site.

The lithology at the project site, observed by EBA during a recent site visit, was consistent with regional mapping.

A mapped significant stream, Hirsch Creek, is located approximately 400 feet to the northwest of the project well (WCR e0367373), at its closest point. Please refer to Figure 2 (Appendix A) for a map of the project site in relation with Hirsch Creek.

Natural springs were identified within the vicinity of the project site during EBA's literature search and site visit. The closest spring to the project well was identified as a historical water right for the project site. During the June 25, 2024 site visit, EBA located the source of the project site spring on the adjacent parcel at 3131 St. Helena Hwy. N. The project site spring was located approximately 600 feet west of the project well within Hirsch Creek. It is EBA's understanding that the spring is not in use. Please refer to Figure 2 (Appendix A) for a map of the project site in relation with the natural springs in the area.

1.3 Local Climate

Review of published data by the Parameter-Elevation Regressions on Independent Slopes Model (PRISM) Climate Group, indicates the 10-year (2012 – 2021) average annual rainfall in the vicinity of the project site as defined by correspondence with Napa County is 34.35 inches per year (Prism, 2023). EBA understands the 10-year rainfall is considered average as defined by correspondence with Napa County. The 10-year data were evaluated using the 4 km spatial resolution and the interpolate grid cell values function.

Mean annual potential evapotranspiration (ET_o) was estimated to be 45.02 inches per year based on reference ET_o tables for Oakville provided in the California Irrigation

Management Information System (CIMIS) Reference Evapotranspiration Website (CIMIS, 2023).

2.0 EXISTING AND PROPOSED ON-SITE GROUNDWATER DEMANDS

Please refer to Appendix D of this Report for the water demand estimates provided in Summit's July 2024 *Water Availability Analysis,* which will be used for the Tier 2 and 3 analyses herein. It is EBA's understanding that the existing and proposed groundwater demand for the project includes domestic use, landscape irrigation use, vineyard irrigation use, and winery use. Water supply for the existing and proposed groundwater demand for the project will be provided exclusively from the project well located on-site.

3.0 GROUNDWATER RECHARGE ANALYSES

3.1 Project Site Groundwater Recharge Methodology

EBA analyzed the project site groundwater budget by comparing estimated inflows and outflows from the fractured-rock aquifer complex. The volume available for recharge was estimated based on precipitation as the principal source of inflow while outflows were estimated based on run-off, evapotranspiration, canopy interception, and spring losses. While secondary sources of inflow (such as upgradient boundary flow), and secondary sources of outflow (such as downgradient boundary flow, and surface-water-groundwater interaction) potentially contribute to the groundwater budget, they are assumed to be equal and resultant in no net gain or loss. Based on this approach, the following equation was used to calculate potential volume of water available for recharge:

$$\textit{Volume of Water Available for Recharge} = P - (R + ET_a + E_{CI} + S)$$

where "P" is equal to precipitation (in acre-feet per year [AFY]), "R" is equal to run-off (in AFY), "ET_a" is equal to actual evapotranspiration (in AFY), "E_{CI}" is equal to evaporative losses related to canopy interception (in AFY) and "S" is equal to spring flow (in AFY). The groundwater recharge analysis was performed during average precipitation years (10-year period from 2012 to 2021). Details regarding the calculation of each of these variables are presented below.

Precipitation (P)

The total volume of precipitation that falls within the area of the project site was calculated by multiplying the average annual precipitation rate (34.35 inches per year) by the sum of the area of the project site (7.85 AC). The total annual precipitation over this area corresponds to approximately 22.47 AFY during average precipitation years.

Run-off (R)

The percentage of the total precipitation that results as outflow (i.e., run-off) was estimated by comparing the ground slopes within the project site to run-off coefficients (RCs) for various types of developed and natural settings (Napa County Road & Street Standards, 2021). In general, slope surfaces were separated by areas identified as "low" (0 to 5 percent), "normal" (5 to 10 percent), "high" (10 to 30 percent), and "extreme" (greater than 30 percent). In this regard, the relative percentages of slopes within the project site that align with these categories are approximately 48, 15, 36, and 0 percent, respectively. These areas, in turn, were further separated by the types of settings. Table 2 below provides a breakdown of the setting types and range of RCs used in the analysis:

TABLE 2 (PROJECT SITE)
RUNOFF COEFFICENTS AND AREAS

Land Type	*Area (AC)*	*Runoff Coefficient (RC)*
Oak Woodland	4.10	0.27 - 0.42
Seasonal Grasses	0.25	0.27
Vineyards	3.00	0.28 - 0.43
Resident	0.50	0.40 - 0.60
TOTAL	**7.85**	-

Using the aforementioned variables, the annual run-off volume for each area was calculated by multiplying the respective areas by the annual precipitation volume, followed by multiplying the corresponding products by the applicable RC. Please note that the acreages summarized in Table 2 correspond to existing land use of the project site parcel. The summation of all the area run-off volumes equates to the total annual run-off volume for the entire project site. The average annual run-off volume was calculated to be approximately 7.81 AFY during average precipitation years.

Actual Evapotranspiration (ET_a)

As previously noted in Subsection 1.3 (*Local Climate*), the annual potential evapotranspiration (ET_o) for the area is estimated to be 45.02 inches per year, which translates to a total ET_o volume of approximately 29.45 AFY within the area of the project site parcel. Actual Evapotranspiration (ET_a) in turn, was calculated using a Water Use Classification of Landscape Species (WUCOLS) site specific model as described in *A Guide to Estimating Irrigation Water Needs of Landscape Plantings in California* (UC Cooperative Extension, 2000). The WUCOLS model estimates ET_a for the native vegetation and landscaping. A review of aerial photography was utilized to determine appropriate species factors (K_S) and density factors (K_D) as outlined in the WUCOLS Guidance Documentation. A microclimate factor (K_{MC}) of 1 was selected based upon review of available climate data. Resulting landscape coefficients (K_L) were then multiplied by respective unit areas to determine an estimated ET_a for these vegetation types within the project site parcel.

Proposed vineyard ET_c (Crop Evapotranspiration) was calculated in general accordance with methodologies described in the *California Crop and Soil Evapotranspiration for Water Balances and Irrigation Scheduling/Design* (CDWR, 2003). A vineyard crop density of 60 percent cover was assumed. The reference crop evapotranspiration value for this crop type, crop cover, and region is 27.23 inches per year during typical years (Table 5, Zone 8). The evapotranspiration demand is provided by the evapotranspiration from effective precipitation in addition to evapotranspiration from applied water. As such, the amount of applied water reported for the vineyard (0.50 AFY per AC), was subtracted from the reference crop evapotranspiration value (CDWR, 2003) to yield a unit crop evapotranspiration value due to effective precipitation alone (unit ET_c). Note the unit ET_c equates to the volume of precipitation across the project site parcel that will be lost by evapotranspiration and not available for groundwater recharge. ET_a for existing vineyard was calculated by multiplying the unit ET_c by the associated acreage of vineyard. These calculations for vineyard ET_a were performed during average precipitation years.

The total ET_a within the project site parcel was then calculated to represent approximately 6.43 AFY during average precipitation years.

Canopy Interception (EC_I)

Canopy interception corresponds to the fraction of rainfall that is intercepted by the canopy of trees and shrubs and subsequently lost to evaporation. This fraction was estimated using equations developed by Helvey and Patric (Helvey & Patric, 1965) that utilize gross rainfall, throughput (i.e., rainfall that reaches the ground through spaces in the vegetative canopy and as drip from leaves, twigs, and stems), and stemflow (i.e., rainfall that is caught on the canopy and reaches the ground by running down stems) variables. The calculation excluded grassland, vineyard, surface water bodies, pavement, and roof areas as the fraction of canopy interception for these areas is assumed to be negligible or not applicable. All other areas within the project site covered by tree canopy (approximately 4.10 AC) were subjected to canopy interception losses. Canopy interception loses were calculated to be approximately 0.69 AFY during average precipitation years.

Springs (S)

Spring activity was found in the vicinity of the project site during EBA's literature search and during the June 2024 site visit. Therefore, five percent of rainfall was assumed as spring flow for the project site. Springs loses were calculated to be approximately 1.12 AFY during average precipitation years.

Water Budget Results

Using each of the calculated values in the groundwater recharge equation, the corresponding estimated volume of water available for groundwater recharge on the project site is approximately 6.42 AFY during average precipitation years. The existing groundwater demand for the project site is 2.998 AFY. Based on Summit's July 2024 WAA, which calculated an estimated groundwater demand of 2.998 AFY, this total

groundwater use equates to approximately 47 percent of the water available for recharge in the area of the project site during average precipitation years. Results from the project water budget analysis are summarized in Table 3 below.

TABLE 3
RESULTS FROM PROJECT SITE RECHARGE CALCULATIONS
AVERAGE RAINFALL YEAR

Description	*Inflow/Outflow*	*Volume (AFY)*
Precipitation	Inflow	+22.47
Run-off	Outflow	- 7.81
Actual Evapotranspiration	Outflow	- 6.43
Canopy Interception	Outflow	- 0.69
Springs	Outflow	- 1.12
TOTALS	**-**	***6.42***

AFY: Acre-Feet per year.

4.0 WELL INTERFERENCE

Tier 2, outlined in the *WAA Guidance document* and the *Well Permit Standards – Applicable Tables,* requires that a well interference evaluation be conducted for a project well, constructed less than 500 feet to nearby wells. The project well is located less than 500 feet to a nearby well(s). Therefore, the following Tier 2 evaluation to assess the potential drawdown in the nearby well(s) is described below in the following sections.

4.1 Drawdown Characteristics

There are three existing water supply wells on the project site, one of which currently supplies all water to the project site. However, since no observation well data exists, the distance-drawdown analysis will be performed using available data.

The nearest well (WCR 119541) to the project well is approximately 345 feet away and will be used for the Tier 2 analyses.

4.2 Daily Water Demand

In accordance with the estimates outlined in the July 2024 *Water Availability Analysis* (Appendix D), the projected total annual groundwater use for the project is 2.998 AFY. As described in *Section 2.0*, the existing and proposed groundwater demand for the project includes domestic use, landscape irrigation use, vineyard irrigation use, and winery use. The total annual groundwater use for the existing vineyard irrigation of

0.850 AFY (276,973 gallons), is equivalent to a maximum daily water demand of approximately 1,539 gallons per day (GPD), assuming a 180-day growing season. The maximum daily water demand of approximately 3,435 GPD for domestic water use was estimated in Table 3 of the July 2024 *Water Availability Analysis*. The total annual groundwater use for the landscape irrigation of 0.175 AFY (57,024 gallons), is equivalent to a maximum daily water demand of approximately 156 GPD, assuming a 365-day use frequency. Finally, the maximum daily water demand of approximately 1,148 GPD for winery process water was estimated in Table 1 of the July 2024 *Water Availability Analysis*. Therefore, the total annual groundwater use for the project site of approximately 2.998 AFY is equivalent to a maximum daily water demand of approximately 6,278 GPD.

4.3 Pumping Rate and Duration

As presented above, the daily water demand is approximately 6,278 GPD. Whereas the demand would likely occur intermittently throughout the day, the total volume was assumed to be pumped at one time as a conservative measure.

There are three existing water supply wells on the project site, one of which is currently active. The pumping duration required to meet the maximum daily water demand was estimated based on an average corrected yield (42 GPM) from the data collected from the WCRs of water supply wells located in close proximity to the project site. According to these WCRs, the majority of these wells appear to be completed in similar lithology as the project well. Please note that not all wells completed in similar lithology are screened at similar depths as the project well and do not have similar yields as the project well. Notable exceptions include wells identified by WCR numbers 119541, 34995, 813839, and 384931. These wells reported estimated yields of 14, 15, 15, and 25 GPM, respectively, at the time of well completion. These yields vary from the project well, which yielded 125 GPM at the time of well completion. The range in yields reported in the wells in close proximity to the project site demonstrates the variability of yields among wells completed in Sonoma Volcanic units (Napa County, 2022a). Please refer to Figure 2 (Appendix A) for the locations of the neighboring wells and their approximate distance from the project well.

At an average conservative pumping rate of 42 GPM, approximately 149 minutes (approximately 2.5 hours) of pumping is required to reach the maximum daily water demand. It should be noted that the analysis conducted herein regarding well interference and stream depletion assume that all groundwater will be pumped from the project well.

4.4 Aquifer Transmissivity

Determination of aquifer transmissivity was accomplished using available data from the WCRs of water supply wells screened in lithology the project site well is completed in. The average corrected yield (42 GPM) and average drawdown (369 feet) data recorded in the WCRs was used in empirical transmissivity equations published in the

Groundwater and Wells (Driscoll, 1986) and the *Manual of Applied Field Hydrogeology* (Weight & Sonderegger, 2001). The methods used to calculate transmissivity are presented below:

Method I:

$$\frac{Q}{s} = \frac{T}{2000}$$

for a confined aquifer, where "Q" is discharge rate (GPM), "s" is feet of drawdown in the well, and "T" is transmissivity (gallons per day per foot [GPD/ft]). For the purpose of this analysis, the aquifer is assumed to be partially confined based on the description given by the well driller at the time of well installation. Please note that an 80 percent multiplier was applied to the yield data to account for well inefficiency (assumed). The corresponding results from the calculation indicated a transmissivity value of 228 GPD/ft (30.5 square feet per day [ft^2/day]).

Method II:

$$T = 38.9(Sc)^{1.18}$$

where T = transmissivity (ft^2/day)
Sc = specific capacity (gallons per minute per foot)

The specific capacity was defined as the quotient of 42 GPM as the pumping rate and the measured drawdown of 369 feet. The corresponding results from the calculation indicated a transmissivity value of approximately 2.99 ft^2/day (22.4 GPD/ft).

Based on the methods used above, aquifer transmissivity estimated from water supply wells in the vicinity of the project site ranges between approximately 22.4 and 228 GPD/ft.

4.5 Well Interference Characteristics

The evaluation of well interference was conducted utilizing a distance-drawdown analytical computer model. Given a discharge rate and estimates of aquifer characteristics, the analytical model predicts groundwater drawdown as a function of distance from a pumping well. For this study, the classic nonequilibrium equation of Theis (1935) and the modified nonequilibrium equation of Jacob (1946) were used as the basis of our analysis.

Aquifer characteristics for the model were based on WCR data and literature values. As discussed previously in *Section 4.4*, a range of aquifer transmissivity values were calculated using available data from the WCRs and empirical transmissivity equations. A range of aquifer storage coefficient values were also calculated for the model, using available data from the WCR data and literature values. EBA calculated an approximate

range of aquifer storage coefficient values by multiplying the range of specific storage values (Fissured Rock, $1.0x10^{-6}$ to $2.1x10^{-5}$) provided on Table F-3 in Appendix F of the *WAA Guidance document* by the approximate saturated aquifer thickness in the project site area. The saturated aquifer thickness (635 feet) in the project site area was estimated based on the average static groundwater level and the maximum well completion depth from values recorded on WCRs of wells located in close proximity to the project site. This corresponds to storage coefficient values ranging from 0.00064 to 0.013. In an effort to further refine the estimated transmissivity and storage coefficient values, EBA integrated the ranges presented above into the Theis equation in order to further calibrate the transmissivity and storage coefficient as observed in the wells in the area.

The following input parameters were therefore used in the analytical model:

- *Pumping Rate:* 42 GPM
- *Aquifer Transmissivity:* 122 GPD/ft
- *Aquifer Storage Coefficient:* 0.013
- *Pumping Duration:* 149 minutes (approximately 2.5 hours)

According to Table 2B of the *WAA Guidance document* and the Napa County *Well Permit Standards – Applicability Tables,* any neighboring well(s) (≤6-inch diameter casing) within 500 feet of a project well, screened within the same aquifer as the project well, must have an estimated drawdown of 10 feet or less. EBA conducted the distance-drawdown analytical computer model for the project well, utilizing the aquifer transmissivity and aquifer storage coefficient provided above. Based on these aquifer characteristics and the pumping duration required to meet the proposed project maximum daily water demand (149 minutes), the analytical computer model predicts approximately ten feet of drawdown at a distance of 22 feet, and zero drawdown at 50 feet. As a conservative measure, EBA conducted a second distance-drawdown analytical computer model for the project well, utilizing the same model input parameters provided above. However, the second model assumed a conservative pumping duration of one day required to meet the project maximum daily water demand. Results from the second model predicts approximately ten feet of drawdown at a distance of 68 feet, approximately one foot of drawdown at a distance of 110 feet, and zero drawdown at 155 feet. Please note that the above calculations assume 95% recovery within the pumping well before beginning the next pumping cycle.

According to Table 2B of the *WAA Guidance document* and Napa County *Well Permit Standards – Applicability Tables,* any neighboring well(s) (≤6-inch diameter casing) within 500 feet of a project well, screened within the same aquifer as the project well, must have an estimated drawdown of 10 feet or less. As predicted by the distance-drawdown model presented above, the project well must be located no less than approximately 22 feet from any nearby groundwater well(s) to be in conformance with Napa County Guidelines (≤10 feet of drawdown). Thus, the location of the project well shown on Figure 2 (Appendix A), satisfies this 22-foot distance to a nearby well, and is therefore in conformance with Napa County Guidelines.

5.0 SURFACE WATER DEPLETION FROM GROUNDWATER PRODUCTION

Tier 3, outlined in the *WAA Guidance document* and the *Well Permit Standards – Applicability Tables,* requires that a groundwater/surface water interaction evaluation be conducted for a project well, located within 1,500 feet of surface waters. As previously mentioned, a mapped significant stream, Hirsch Creek, is located approximately 400 feet to the northwest of the project well (WCR e0367373), at its closest point.

According to the *WAA Guidance document,* "streamflow depletion will be calculated using industry standard methods appropriate to the aquifer under consideration; such methods include the Hantush Equation applicable for aquifers hydraulically connected with surface waters (Hantush, 1965)." EBA used the web-based United States Geological Survey (USGS) STRMDEPL08 tool to characterize streamflow depletion from a nearby pumping well (USGS, 2022). As outlined in *Section 4.0,* EBA refined the estimated transmissivity and storage coefficient values by integrating the ranges into the Theis equation to further calibrate the transmissivity and storage coefficient. Distance drawdown output results of the Theis Equation suggest that drawdown from the pumping of the project well should not extend past a linear distance of 155 feet when pumping at a rate of 42 GPM for approximately one day. Please refer to *Section 4.0* above for a description of the calculations for the model parameter values, storage coefficient, and transmissivity.

The following assumed parameter values were input into the model:

- Distance between the project well and Hirsch Creek (400 feet);
- Transmissivity value of 122 GPD/ft (16.3 ft^2/day);
- Storage coefficient value of 0.013;
- Streambed Leakance value of 100 feet;
- A pumping rate of 42 GPM, as per the average corrected yield from WCRs; and
- A pumping duration of 1 day.

EBA utilized the aquifer transmissivity of 16.3 ft^2/day and aquifer storage coefficient of 0.013 in the streamflow depletion model based on the calibration using the Theis Equation as outlined above. The results of the streamflow depletion model does not indicate stream depletion at a distance of 400 feet from the project well to Hirsch Creek.

Based on the aforementioned calculations, it is EBA's opinion that pumping from the project well will not contribute to streamflow depletion in Hirsch Creek using the variables and assumptions as noted above. It should also be noted that the distance drawdown calculation using the Theis Equation presented above suggests no drawdown from the pumping well at a distance of 155 feet which correlates with the Hantush Equation.

6.0 SPRING INTERFERENCE

As described previously in *Subsection 1.2*, the historical spring water right that exists for the project site was located approximately 600 feet west of the project well and was identified as within Hirsch Creek. This spring was the closest spring to the project well found during EBA's literature search and site visit. Given the lack of stream depletion in Hirsch Creek as a result of pumping from the project well for the proposed project, no spring interference is anticipated for any natural spring in the area. Further, it should be noted that the distance drawdown calculation using the Theis Equation presented above suggests no drawdown from the pumping well at a distance of 155 feet which correlates with no anticipated spring interference.

7.0 CONCLUSIONS

The results of the WAA have indicated that the groundwater demand associated with the project site (2.998 AFY) is not expected to have a significant impact on current and future groundwater availability, surface water, or neighboring wells under existing or foreseeable future use conditions. This conclusion is based on the following:

- According to the water recharge analyses conducted herein, the amount of water available for recharge over the project site area, during average precipitation years, was calculated to be approximately 6.42 AFY. Based on the estimated groundwater demand of 2.998 AFY, this total groundwater use equates to approximately 47 percent of the water available for recharge in the area of the project site during average precipitation years.

- Based on the analysis presented herein, it does not appear that pumping in the project well will be able to substantially influence any existing neighboring wells. As predicted by the distance-drawdown model presented herein, the project well must be located no less than approximately 22 feet from any nearby groundwater well(s) to be in conformance with Napa County Guidelines (≤10 feet of drawdown).

- With regards to the effects of groundwater pumping at the project site on flow of water in Hirsch Creek, surface water depletion as a result of on-site groundwater extraction is expected to be de minimis.

Based on the results of this evaluation, it is EBA's professional opinion that the Tier 1, 2, and 3 analyses are in conformance with the requirements outlined in Napa County's *WAA Guidance Document* and *Well Permit Standards*.

8.0 LIMITATIONS

This report was prepared in accordance with generally accepted standards of professional hydrogeologic and engineering principles and practices at the place and time this study was performed. This warranty is in lieu of all other warranties, either expressed or implied. The conclusions presented herein are based solely on information made available to us by others, and includes professional interpretations based on limited research and data. Based on these circumstances, the decision to conduct additional investigative work to substantiate the findings and conclusions presented herein is the sole responsibility of the Client. No guarantee is made that groundwater of sufficient quantity or quality will be found in any specific depth or interval nor that pumping will not affect quality nor quantity of water found and/or subsidence. This report has been prepared solely for the Client and any reliance on this report by third parties shall be at such party's sole risk.

9.0 CLOSING

EBA appreciates the opportunity to be of service on this project. If you should have any questions regarding the information contained herein, please do not hesitate to contact our office at (707) 544-0784.

Sincerely,
EBA ENGINEERING

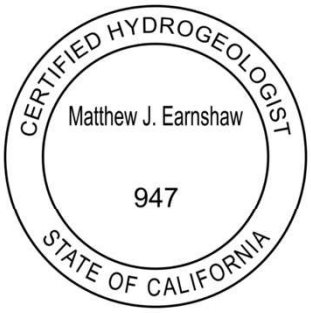
Prepared by

Ian Penn, G.I.T.
Project Geologist

Reviewed by

Matthew J Earnshaw Digitally signed by Matthew J Earnshaw
Date: 2024.07.25 16:18:08 -07'00'

Matthew Earnshaw, P.G., C.E.G., C.Hg., QSD
Vice President – Senior Hydrogeologist



Appendices: Appendix A: Figures
Appendix B: On-Site Well – Water Well Completion Report
Appendix C: Off-Site Wells – Water Well Completion Reports
Appendix D: Existing and Proposed Water Use

10.0 REFERENCES

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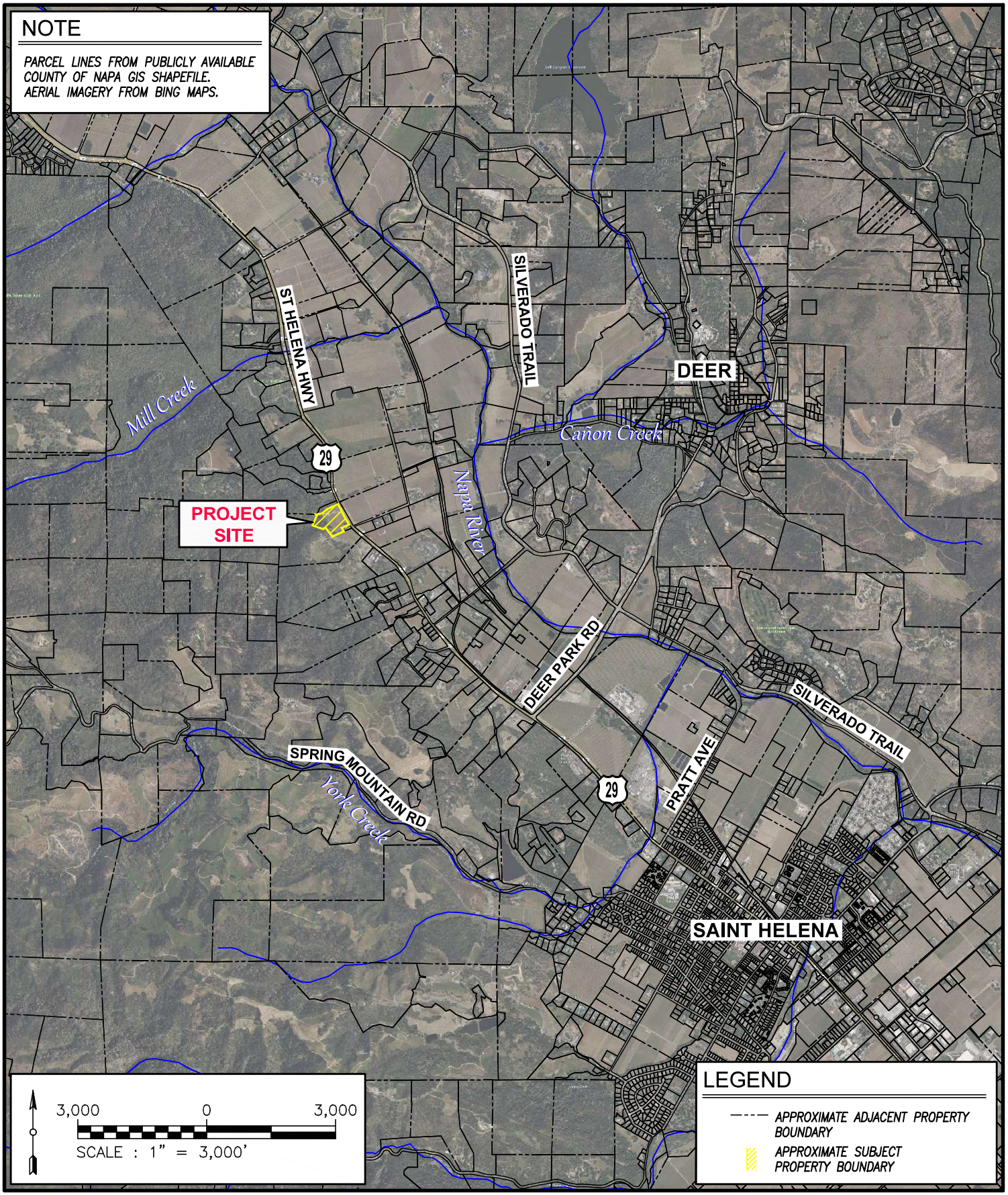
APPENDIX A

FIGURES



EBA ENGINEERING
825 SONOMA AVENUE
SUITE C
SANTA ROSA, CA 95404
TEL: (707) 544-0784

LOCATION MAP

3199 N ST HELENA HWY
SAINT HELENA, CA 94574-9507
APN 022-080-025

FIGURE
1
24-3556

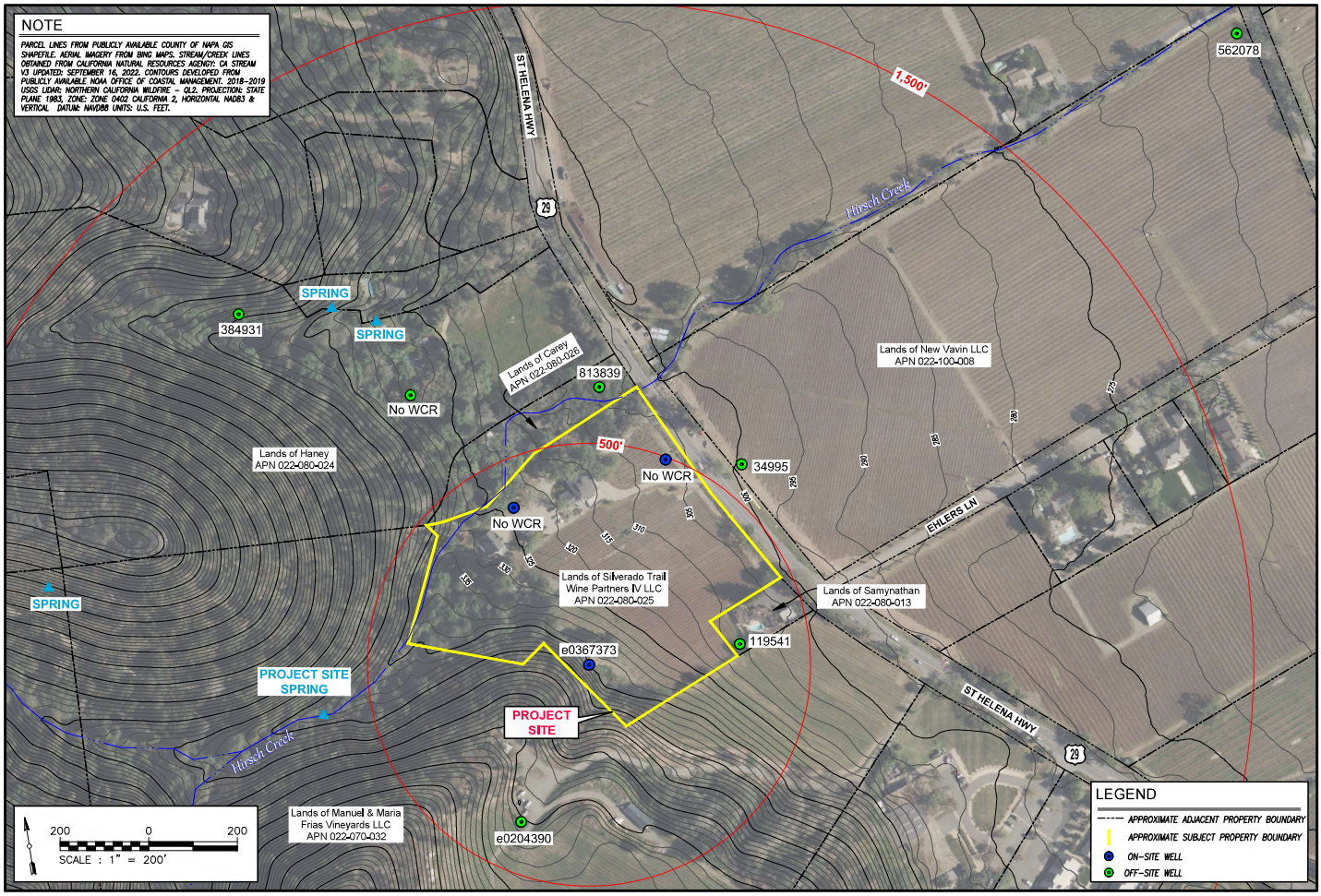


FIGURE 2
24-3556

WELL INTERFERENCE MAP

3199 N ST HELENA HWY
SAINT HELENA, CA 94574-9507
APN 022-080-025

EBA ENGINEERING
825 SONOMA AVENUE
SUITE C
SANTA ROSA, CA 95404
TEL: (707) 544-0784

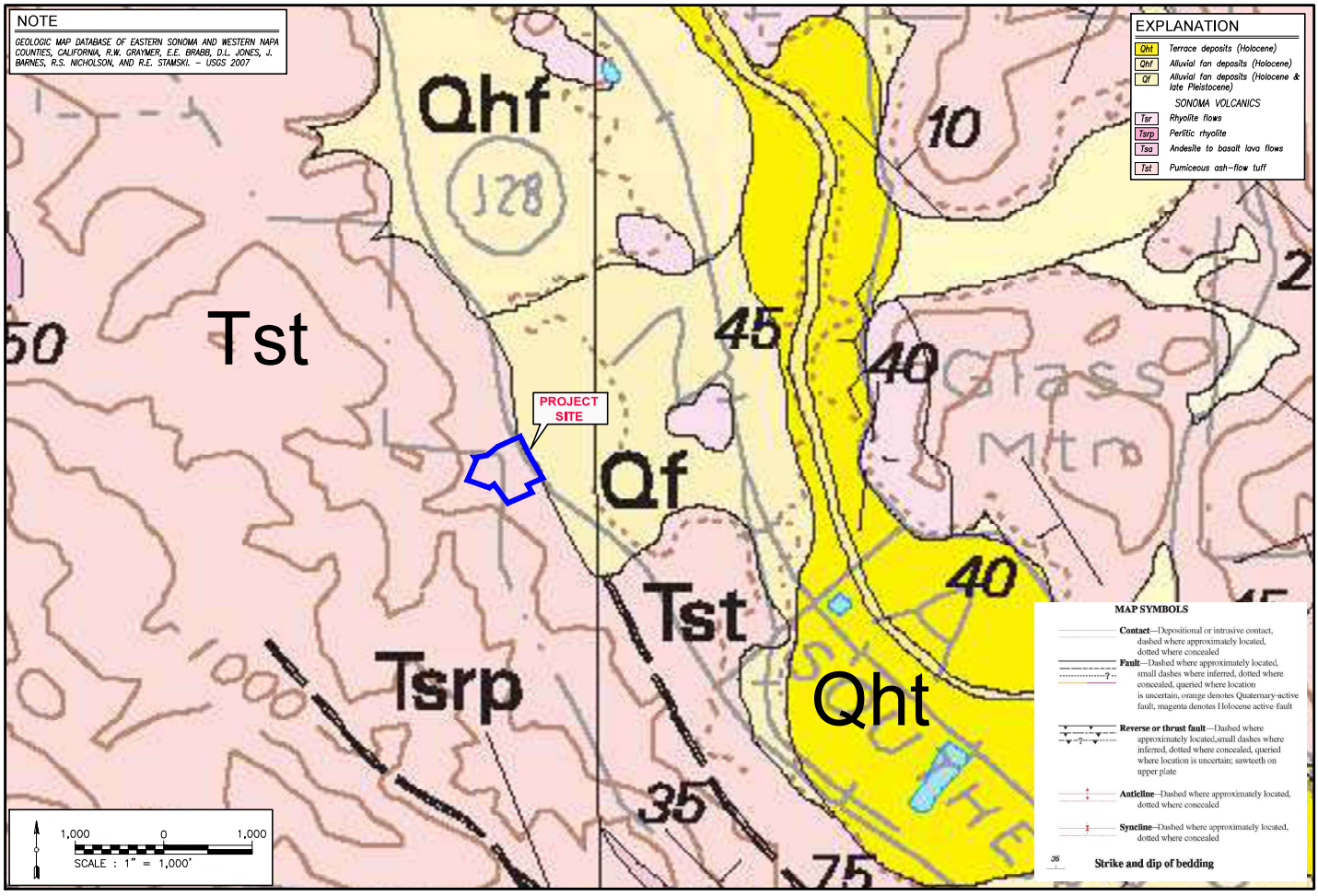


FIGURE 3

24-3556

GEOLOGIC MAP

3199 N ST HELENA HWY
SAINT HELENA, CA 94574-9507
APN 022-080-025

EBA ENGINEERING
825 SONOMA AVENUE
SUITE C
SANTA ROSA, CA 95404
TEL: (707) 544-0784

APPENDIX B

ON-SITE WELL

WATER WELL COMPLETION REPORT

E18-00508 WL

ORIGINAL
File with DWR

Page 1 of 1

STATE OF CALIFORNIA
WELL COMPLETION REPORT
Refer to Instruction Pamphlet

No. e0367373

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

Owner's Well No. 1-2018
Date Work Began 8/3/2018, Ended 9/6/2018
Local Permit Agency Napa County Environmental Mgmt
Permit No. E18-00508 Permit Date 6/19/2018

GEOLOGIC LOG

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

DEPTH FROM SURFACE Ft.	to Ft.	DESCRIPTION *Describe material, grain, size, color, etc.*
0	6	BOULDERS
6	15	TAN SANDY ASH
15	30	FRACTURED VOLCANIC ROCK
30	35	RED VOLCANIC ASH
35	40	HARD BLACK VOLCANICS
40	75	TAN VOLCANIC ASH
75	120	FRACTURED VOLCANIC ROCK
120	140	TAN SANDY ASH
140	190	LARGE FRACTURED VOLCANICS
190	245	TAN VOLCANIC ASH
245	335	FRACTURED MIXED VOLCANICS
335	375	MIXED VOLCANICS WITH ASH STRINGERS
375	380	HARD FRACTURED, RED VOLCANICS
380	435	MIXED VOLCANICS WITH ASH STRINGERS
435	440	HARD FRACTURED BLACK VOLCANICS
440	450	RED SANDY ASH
450	456	BLACK, RED VOLCANICS
456	475	RED, GRAY SANDY ASH
475	530	RED, GRAY VOLCANIC ASH
530	545	MIXED VOLCANIC SANDS
545	554	RED, GRAY VOLCANIC ASH
554	557	MIXED VOLCANIC SANDS
557	598	GRAY VOLCANIC ASH
598	688	FRACTURED BLACK VOLCANIC ROCK
688	700	GRAY VOLCANIC ASH
		CONTINUED CASING LAYOUT
539	559	SCREEN PVC 6" .032 SLOT
559	599	BLANK PVC 6"
599	689	SCREEN PVC 6" .032 SLOT
689	699	BLANK PVC 6"

TOTAL DEPTH OF BORING 700 (Feet)
TOTAL DEPTH OF COMPLETED WELL 699 (Feet)

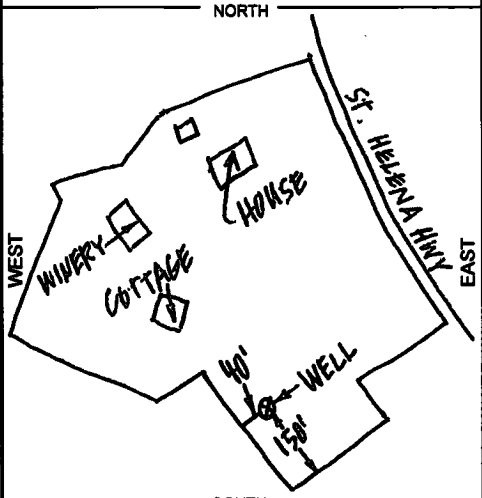
WELL OWNER

Name [redacted]
Mailing Address 31[redacted] St[redacted]
CITY [redacted] STATE [redacted] ZIP [redacted]

WELL LOCATION

Address 3199 St. Helena Hwy
City St. Helena CA
County Napa
APN Book 022 Page 080 Parcel 025
Township ____ Range ____ Section ____
Latitude ____ DEG. MIN. SEC. ____ DEG. MIN. SEC.

LOCATION SKETCH



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

ACTIVITY (✓)

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

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

WATER LEVEL & YIELD OF COMPLETED WELL

DEPTH TO FIRST WATER N/A (Ft.) BELOW SURFACE 1
DEPTH OF STATIC WATER LEVEL 92 (Ft.) & DATE MEASURED 9/6/2018
ESTIMATED YIELD * 125 (GPM) & TEST TYPE AIR LIFT
TEST LENGTH 2 (Hrs.) TOTAL DRAWDOWN N/A (Ft.)
May not be representative of a well's long-term yield.

CASING (S)

DEPTH FROM SURFACE Ft.	to Ft.	BORE-HOLE DIA. (Inches)	TYPE (✓) BLANK	SCREEN	CONDUCTOR	FILL PIPE	MATERIAL / GRADE	INTERNAL DIAMETER (Inches)	GAUGE OR WALL THICKNESS	SLOT SIZE IF ANY (Inches)
0	700	12								
0	239		✓				PVC F480	6	SDR-21	
239	399			✓			PVC F480	6	SDR-21	.032
399	419		✓				PVC F480	6	SDR-21	
419	479			✓			PVC F480	6	SDR-21	.032
479	539		✓				PVC F480	6	SDR-21	

ANNULAR MATERIAL

DEPTH FROM SURFACE Ft.	to Ft.	TYPE CEMENT (✓)	BENTONITE (✓)	FILL (✓)	FILTER PACK (TYPE/SIZE)
0	62	✓			10 SK SAND
62	699			✓	#6 SAND

ATTACHMENTS (✓)

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

CERTIFICATION STATEMENT

I, the undersigned, certify that this report is complete and accurate to the best of my knowledge and belief.
NAME HUCKFELDT WELL DRILLING, INC.
(PERSON, FIRM, OR CORPORATION) (TYPED OR PRINTED)
2110 Penny Lane ADDRESS Napa CITY CA STATE 94559 ZIP
Signed [signature] WELL DRILLER/AUTHORIZED REPRESENTATIVE
09/13/18 DATE SIGNED
439-746 C-57 LICENSE NUMBER

DWR 188 REV. 11-97

IF ADDITIONAL SPACE IS NEEDED, USE NEXT CONSECUTIVELY NUMBERED FORM

APPENDIX C

OFF-SITE WELLS

WATER WELL COMPLETION REPORTS

QUADRUPLICATE
Use to comply with local requirements

STATE OF CALIFORNIA
THE RESOURCES AGENCY
DEPARTMENT OF WATER RESOURCES

WATER WELL DRILLERS REPORT

Do not fill in

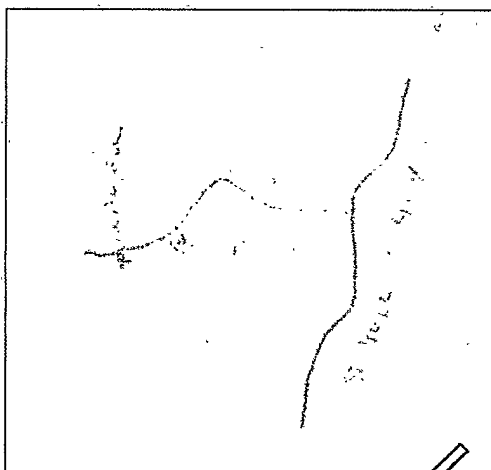
No. 119541

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

State Well No. ______
Other Well No. ______

(1) OWNER: Name [redacted]
Address [redacted]
City St. Helena, Ca Zip 94574

(2) LOCATION OF WELL (See instructions):
County Napa Owner's Well Number 22-080-13
Well address if different from above same
Township ______ Range ______ Section ______
Distance from cities, roads, railroads, fences, etc. ______



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 3/4
Diameter of bore 12¼"
Packed from 25 to 260 ft.

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

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

From ft.	To ft.	Dia. in.	Gage or Wall	From ft.	To ft.	Slot size
0	160	6	160	160	260	.040

(9) WELL SEAL:
Was surface sanitary seal provided? Yes ☒ No ☐ If yes, to depth 25 ft.
Were strata sealed against pollution? Yes ☐ No ☒ Interval ______ ft.
Method of sealing cement

(10) WATER LEVELS:
Depth of first water, if known 140' ft.
Standing level after well completion 35 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 35 ft. At end of test complete
Discharge 14 gal/min after ______ 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 260 ft. Depth of completed well 260 ft.

from ft.	to ft.	Formation (Describe by color, character, size or material)
0	6	soil & gravel
6	40	hard gray & brown rock
40	50	hard gray & black rock/str. red clay
50	60	sandy brown clay -soft
60	100	gray rock & clay stringers
100	140	soft red rock hard stringers red rock fractures
140	190	soft black rock
190	215	multi color rock fract
215	260	cemented gravel & coarse sand

CONFIDENTIAL NOT FOR PUBLIC USE WATER CODE SEC. 13752

RECEIVED AUG 1 1983 DIVISION OF ENVIRONMENTAL HEALTH

Work started 6/20 19 83 Completed 6/30 19 83

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 ______ (Well Driller)
NAME Doshier-Gregson Drilling, Inc (Person, firm, or corporation) (Typed or printed)
Address 5365 Napa Vallejo Hwy
City Vallejo, Ca Zip 94589-9679
License No. 294001 Date of this report 7/8/83

DWR 188 (REV. 7-76) IF ADDITIONAL SPACE IS NEEDED, USE NEXT CONSECUTIVELY NUMBERED FORM

ORIGINAL
File with DWR

Page 1 of 1

STATE OF CALIFORNIA
WELL COMPLETION REPORT
Refer to Instruction Pamphlet

No. e0204390

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

Owner's Well No. 1-2014
Date Work Began 5/27/2014, Ended 6/17/2014
Local Permit Agency Napa County Environmental Mgmt
Permit No. E14-00109 Permit Date 2/13/2014

GEOLOGIC LOG

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

DEPTH FROM SURFACE Ft.	to Ft.	DESCRIPTION *Describe material, grain, size, color, etc.*
0	35	BROWN CLAY
35	45	TAN VOLCANIC ASH
45	100	GRAY VOLCANIC ROCK
100	112	RED VOLCANICS
112	305	HARD FRACTURED MIXED VOLCANICS
305	320	MIXED VOLCANICS
320	370	70% BROWN ASH / 30% MIXED VOLCANICS
370	395	MIXED VOLCANICS
395	425	70% MIXED VOLCANICS / 30% GRAY ASH
425	450	GRAY VOLCANIC ASH
450	515	90% MIXED VOLCANICS / 10% GRAY ASH
515	520	GRAY ASH
520	525	MIXED VOLCANICS
525	532	GRAY ASH
532	565	MIXED VOLCANICS
565	585	50% MIXED VOLCANICS / 50% GREEN ASH
		CONTINUED CASING LAYOUT
439	519	SCREEN PVC 6" .032 SLOT
519	539	BLANK PVC 6"
539	569	SCREEN PVC 6" .032 SLOT
569	579	BLANK PVC 6"

RECEIVED
JUL 21 2014
Napa County Planning, Building & Environmental Services

TOTAL DEPTH OF BORING 585 (Feet)
TOTAL DEPTH OF COMPLETED WELL 579 (Feet)

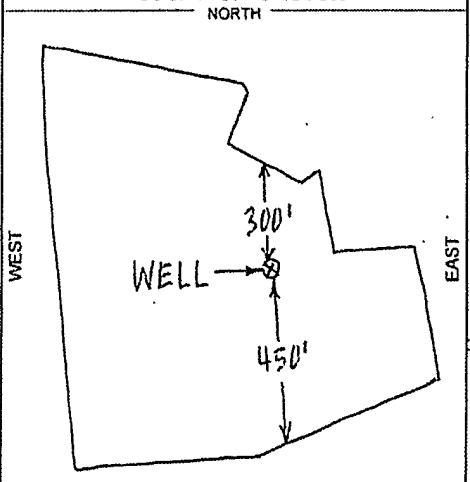
WELL OWNER

Name [redacted]
Mailing Address [redacted]
CITY [redacted] STATE [redacted] ZIP

WELL LOCATION

Address 3131 St. Helena Hwy
City St. Helena CA
County Napa
APN Book 022 Page 070 Parcel 032
Township ____ Range ____ Section ____
Latitude ____ DEG. MIN. SEC. ____ DEG. MIN. SEC.

LOCATION SKETCH



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

ACTIVITY (✓)

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

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

WATER LEVEL & YIELD OF COMPLETED WELL

DEPTH TO FIRST WATER N/A (Ft.) BELOW SURFACE
DEPTH OF STATIC WATER LEVEL 110 (Ft.) & DATE MEASURED 6/17/2014
ESTIMATED YIELD 120 (GPM) & TEST TYPE AIR LIFT
TEST LENGTH 2 (Hrs.) TOTAL DRAWDOWN N/A (Ft.)
May not be representative of a well's long-term yield.

CASING (S)

DEPTH FROM SURFACE Ft.	to Ft.	BORE-HOLE DIA. (Inches)	TYPE (✓) BLANK	SCREEN	CONDUCTOR	FILL PIPE	MATERIAL / GRADE	INTERNAL DIAMETER (Inches)	GAUGE OR WALL THICKNESS	SLOT SIZE IF ANY (Inches)
0	585	12								
0	159		✓				PVC F480	6	SDR-21	
159	319			✓			PVC F480	6	SDR-21	.032
319	339		✓				PVC F480	6	SDR-21	
339	419			✓			PVC F480	6	SDR-21	.032
419	439		✓				PVC F480	6	SDR-21	

ANNULAR MATERIAL

DEPTH FROM SURFACE Ft.	to Ft.	TYPE CEMENT (✓)	BENTONITE (✓)	FILL (✓)	FILTER PACK (TYPE/SIZE)
0	56	✓			10 SK SAND
56	579			✓	#6 SAND

ATTACHMENTS (✓)

— Geologic Log
— Well Construction Diagram
— Geophysical Log(s)
— Soil/Water Chemical Analysis
— Other ____

ATTACH ADDITIONAL INFORMATION, IF IT EXISTS.

CERTIFICATION STATEMENT

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

NAME HUCKFELDT WELL DRILLING, INC.
(PERSON, FIRM, OR CORPORATION) (TYPED OR PRINTED)
2110 Penny Lane ADDRESS Napa CITY CA STATE 94559 ZIP
Signed ____ WELL DRILLER/AUTHORIZED REPRESENTATIVE
06/18/14 DATE SIGNED
439-746- C-57 LICENSE NUMBER

DWR 188 REV 11-97

IF ADDITIONAL SPACE IS NEEDED, USE NEXT CONSECUTIVELY NUMBERED FORM

ORIGINAL

File with DWR

STATE OF CALIFORNIA
THE RESOURCES AGENCY
DEPARTMENT OF WATER RESOURCES

WATER WELL DRILLERS REPORT

022 100 008

E
M

Do not fill in

No. 34995

Notice of Intent No.

Local Permit No. or Date

State Well No.

Other Well No. 08N06W-23E

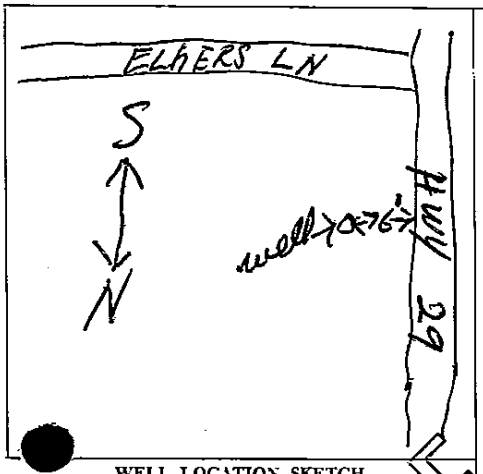
(2) LOCATION OF WELL (See instructions):

County Napa Owner's Well Number

Well address if different from above Same

Township 08 Range 06W Section 23E

Distance from cities, roads, railroads, fences, etc. 1/4 mi. North of Ehlers 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 ☐
Industrial ☐
Test Well X
Stock ☐
Municipal ☐
Other ☐

(5) EQUIPMENT:

Rotary ☐ Reverse ☐
Cable X Air ☐
Other ☐ Bucket ☐

(6) GRAVEL PACK:

Yes X No ☐ Size

Diameter of bore 10"

Packed from 60' to 20' ft.

(7) CASING INSTALLED:

Steel X Plastic ☐ Concrete ☐

From ft.	To ft.	Dia. in.	Gage or Wall
0	295	8	188

(8) PERFORATIONS:

Type of perforation or size of screen

From ft.	To ft.	Slot size
40	60	18×3"
255	295	18×3"

(9) WELL SEAL:

Was surface sanitary seal provided? Yes X No ☐ If yes, to depth 32 ft.

Were strata sealed against pollution? Yes ☐ No X Interval ft.

Method of sealing

(10) WATER LEVELS:

Depth of first water, if known 45 ft.

Standing level after well completion 35 ft.

(11) WELL TESTS:

Was well test made? Yes X No ☐ If yes, by whom? Driller

Type of test Pump ☐ Bailer X Air lift ☐

Depth to water at start of test 35 ft. At end of test 300 ft

Discharge 15 gal/min after 1½ 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 455 ft. Depth of completed well 455 ft.

from ft.	to ft.	Formation (Describe by color, character, size or material)
0	265	brown clay, boulders - gravel
265	300	green ash, boulders
300	360	brown ash, boulders
360	455	green ash, rock

Work started 8-5 19 79 Completed 9-5- 19 79

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

City Napa Zip 94558

License No. 348677 Date of this report 11-8-79

QUADRUPLICATE
For Local Requirements

Page 1 of 1

Owner's Well No. _____

Date Work Began 4/26/95, Ended 4/28/95

Local Permit Agency NAPA COUNTY ENVIRONMENTAL MANAGEMENT

Permit No. Record#5393/Receipt38750 Permit Date 4/7/95

#5393

STATE OF CALIFORNIA
WELL COMPLETION REPORT
Refer to Instruction Pamphlet
No. 562078

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

GEOLOGIC LOG

ORIENTATION (✓) X VERTICAL ___ HORIZONTAL ___ ANGLE ___ (SPECIFY)

DEPTH TO FIRST WATER ___ (Ft.) BELOW SURFACE

DEPTH FROM SURFACE Ft.	to Ft.	DESCRIPTION *Describe material, grain size, color, etc.*
0	2	Top soil
2	5	Sandy brown clays w/ cobbles
5	7	Sandy yellow clays w/ cobbles
7	17	Sandy brown clays w/ cobbles
17	24	Brown clays
24	29	Cemented multi-colored conglomerate
29	43	Boulders
46	63	Multi-colored clays w/ embedded rock
63	80	Sandy brown clay w/ small streaks of sand & gravel
80	87	Clayee blue sand & sandy blue clays
87	89	Cemented conglomerate
89	114	Sandy blue clays & clayee blue sands
114	132	Sandy blue clays w/ occasional streak of volcanic conglomerate
132	143	Sandy blue clays
143	162	Sandy blue clay w/ streaks of loose volcanic conglomerate
162	170	Volcanic conglomerate
170	172	Sandy blue clays
172	200	Volcanic conglomerate

TOTAL DEPTH OF BORING 200 (Feet)

TOTAL DEPTH OF COMPLETED WELL 199 (Feet)

WELL OWNER

Name [redacted]

Mailing Address [redacted]

City [redacted] STATE [redacted] ZIP

WELL LOCATION

Address 3220 St. Helena Hwy

City St.Helena, CA

County NAPA

APN Book 22 Page 100 Parcel 08

or Township ___ Range ___ Section ___

or Latitude ___ NORTH Longitude ___ WEST
DEG. MIN. SEC. DEG. MIN. SEC.

LOCATION SKETCH

NORTH

MAY 19 1995

OF
ENVIRONMENTAL HEALTH

WEST EAST

SOUTH

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

ACTIVITY (✓)

X NEW WELL

MODIFICATION/REPAIR

___ Deepen

___ Other (Specify)

___ DESTROY *(Describe Procedures and Materials Under "GEOLOGIC LOG")*

PLANNED USE(S) (✓)

___ MONITORING

WATER SUPPLY

X Domestic

___ Public

X Irrigation

___ Industrial

___ "TEST WELL"

___ CATHODIC PROTECTION

___ OTHER (Specify)

DRILLING METHOD Mud Rotary FLUID Poly Jel

WATER LEVEL & YIELD OF COMPLETED WELL

DEPTH OF STATIC WATER LEVEL 13 (Ft.) & DATE MEASURED 5/3/95

ESTIMATED YIELD* 55 (GPM) & TEST TYPE PUMP

TEST LENGTH 3 (Hrs.) TOTAL DRAWDOWN 173 (Ft.)

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

CASING(S)

DEPTH FROM SURFACE Ft.	to Ft.	BORE-HOLE DIA. (Inches)	TYPE (✓) BLANK	SCREEN	CONDUCTOR	FILL PIPE	MATERIAL/ GRADE	INTERNAL DIAMETER (Inches)	GAUGE OR WALL THICKNESS	SLOT SIZE IF ANY (Inches)
0	20	10 5/8								
20	200	9 7/8								
+1	199		X				PVC/480	6"	CL200	
139	199			X						.032

ANNULAR MATERIAL

DEPTH FROM SURFACE Ft.	to Ft.	TYPE CEMENT (✓)	BENTONITE (✓)	FILL (✓)	FILTER PACK (TYPE/SIZE)
0	27	X			
27	199			X	3/8 pea

ATTACHMENTS (✓)

___ Geologic Log

___ Well Construction Diagram

___ Geophysical Log(s)

___ Soil/Water Chemical Analyses

___ Other ___

ATTACH ADDITIONAL INFORMATION, IF IT EXISTS.

CERTIFICATION STATEMENT

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

NAME WEEKS DRILLING AND PUMP COMPANY by Ward Thompson
(PERSON, FIRM, OR CORPORATION) (TYPED OR PRINTED)

P.O. Box 176 Sebastopol CA 95473
ADDRESS CITY STATE ZIP

Signed [signature] 5/11/95 177681
WELL DRILLER/AUTHORIZED REPRESENTATIVE DATE SIGNED C-57 LICENSE NUMBER

DWR 188 REV. 7-90

IF ADDITIONAL SPACE IS NEEDED, USE NEXT CONSECUTIVELY NUMBERED FORM

QUADRUPLICATE
For Local Requirements

Page ___ of ___

Owner's Well No. ___

Date Work Began 12/14/99, Ended 12/21/99

Local Permit Agency Napa

Permit No. 96-11236 Permit Date 8-13-99

STATE OF CALIFORNIA
WELL COMPLETION REPORT
Refer to Instruction Pamphlet

No. 813839

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

GEOLOGIC LOG

ORIENTATION (✓) X VERTICAL ___ HORIZONTAL ___ ANGLE ___ (SPECIFY)
DRILLING METHOD Mud FLUID Betonite

DEPTH FROM SURFACE Ft	to Ft.	DESCRIPTION *Describe material, grain size, color, etc.*
0	2	Topsoil
2	20	boulders & brown clay
20	40	gray rock & boulders
40	60	boulders & brown sandy clay
60	70	brown sandy clay
70	90	gray rock stringers sandy gray clay
90	110	black&red rock stringers brown & red clay
110	130	reddish brown rock
130	150	reddish brown clay strimers black rock
150	170	gray & black rock
170	190	brown sandy clay
190	210	reddish brown sandy clay
210	230	gray brown & black rock
230	250	gray&black rock fract hard
250	270	gray brown&red rock soft
270	300	black&gray rock fract hard

TOTAL DEPTH OF BORING 300 (Feet)
TOTAL DEPTH OF COMPLETED WELL 300 (Feet)

WELL OWNER

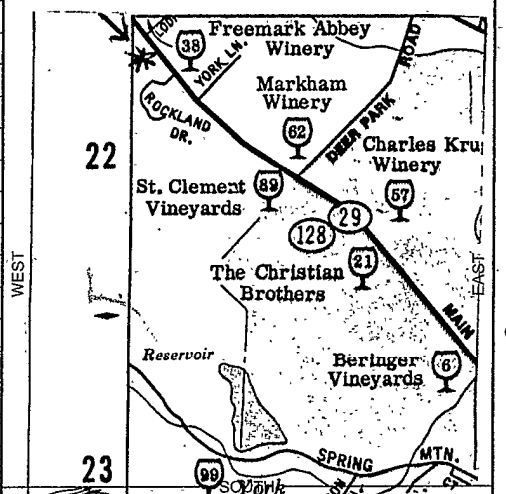
Name [redacted]
Mailing Address [redacted]
CITY [redacted] STATE ZIP

WELL LOCATION

Address 3225 St. Helena Hwy
City Napa
County Napa
APN Book 22 Page 020 Parcel 011
Township ___ Range ___ Section ___
Latitude ___ DEG. ___ MIN. ___ SEC. NORTH
Longitude ___ DEG. ___ MIN. ___ SEC. WEST

LOCATION SKETCH

NORTH



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

ACTIVITY (✓)

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

PLANNED USES (✓)

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

WATER LEVEL & YIELD OF COMPLETED WELL

DEPTH TO FIRST WATER ___ (Ft.) BELOW SURFACE
DEPTH OF STATIC WATER LEVEL 60 (Ft.) & DATE MEASURED 12-21-99
ESTIMATED YIELD * 15 (GPM) & TEST TYPE air
TEST LENGTH 3 (Hrs.) TOTAL DRAWDOWN 255 (Ft.)
** May not be representative of a well's long-term yield.*

CASING (S)

DEPTH FROM SURFACE Ft.	to Ft.	BORE-HOLE DIA. (Inches)	TYPE (✓) BLANK	SCREEN	CON-DUCTOR	FILL PIPE	MATERIAL / GRADE	INTERNAL DIAMETER (Inches)	GAUGE OR WALL THICKNESS	SLOT SIZE IF ANY (Inches)
0	60	9 7/8	X				F480	6"	200	
60	140	9 7/8		X			F480	6"	200	factory
140	200	9 7/8	X				F480	6"	200	
200	300	9 7/8		X			F480	6"	200	factory

ANNULAR MATERIAL

DEPTH FROM SURFACE Ft.	to Ft.	TYPE CE-MENT (✓)	BEN-TONITE (✓)	FILL (✓)	FILTER PACK (TYPE/SIZE)
0	57	X			
57	300			X	pea gravel

ATTACHMENTS (✓)

___ Geologic Log
___ Well Construction Diagram
___ Geophysical Log(s)
___ Soil/Water Chemical Analyses
___ Other ___

ATTACH ADDITIONAL INFORMATION, IF IT EXISTS.

CERTIFICATION STATEMENT

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

NAME McLean & Williams, Inc.
(PERSON, FIRM, OR CORPORATION) (TYPED OR PRINTED)

878 El Centro Ave. Napa CA 94558
ADDRESS CITY STATE ZIP

Signed [signature] 1/21/00 396352
WELL DRILLER/AUTHORIZED REPRESENTATIVE DATE SIGNED C-57 LICENSE NUMBER

DWR 188 REV 11-97

IF ADDITIONAL SPACE IS NEEDED, USE NEXT CONSECUTIVELY NUMBERED FORM

22-080-024

#4323

STATE OF CALIFORNIA
THE RESOURCES AGENCY
DEPARTMENT OF WATER RESOURCES

WATER WELL DRILLERS REPORT

QUADRUPLICATE
Use to comply with local requirements

Do not fill in

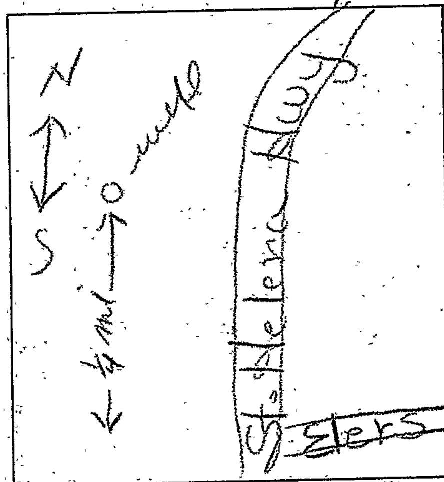
No. **384931**

State Well No. ______
Other Well No. ______

Notice of Intent No. ______
Local Permit No. or Date 31744

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

(2) LOCATION OF WELL (See instructions):
County 28 Owner's Well Number
Well address if different from above Same
Township 22 Range 80 Section 24
Distance from cities, roads, railroads, fences, etc. 1/4 mi. No. of Elers Lane on St. Helena Hwy.



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 [X]
Irrigation [X]
Industrial [ ]
Test Well [ ]
Municipal [ ]
Other [X]
(Describe)

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

(6) GRAVEL PACK:
Yes [X] No [X] Size Pea
Diameter of bore 9
Packed from 30 to 516 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	516	5	200	80	516	FACT PREF

(9) WELL SEAL:
Was surface sanitary seal provided? Yes [X] No [ ] If yes, to depth 30 ft.
Were strata sealed against pollution? Yes [X] No [ ] Interval 17-25 ft.
Method of sealing cement

(10) WATER LEVELS:
Depth of first water, if known 17 ft.
Standing level after well completion 350' 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 350 ft. At end of test 500 ft.
Discharge 25 gal/min after 4 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 516 ft. Completed depth 516 ft.
from ft. to ft. Formation (Describe by color, character, size or material)

0 - 17' Clay & rock
17 - 25' broken up rock
25 - 80' Clay & rock
80 - 120' broken up rock
120 - 340' Clay & rock
340 - 370' Clay, streaks of broken up rock
370 - 470' Clay & rock
470 - 510' Clay layers of broken up volcanic ash
510 - 516' clay

RECEIVED
JUN 21 1993
DEPT. OF ENVIRONMENTAL MANAGEMENT

Work started 10-19 1992 Completed 11-2

WELL DRILLER'S STATEMENT:
This well was drilled under my jurisdiction and this report is true best of my knowledge and belief.
Signed Bill Pulliam (Well Driller)
NAME Pulliam Well Drill (Person, firm, or corporation) (Typed or printed)
Address 2377 Piedmont Av
City Napa ZIP 94
License No. 248677 Date of this report 2

CONFIDENTIAL
NOT FOR PUBLIC USE
WATER CODE SEC. 13752

IF ADDITIONAL SPACE IS NEEDED, USE NEXT CONSECUTIVELY NUMBERED FORM

DWR 188 (REV. 12-86)

APPENDIX D

EXISTING AND PROPOSED WATER USE

WATER AVAILABILITY ANALYSIS

AXR Napa Valley

3199 St. Helena Highway

St. Helena, California, 94574

APN 022-080-025

SUMMIT

CIVIL STRUCTURAL WATER|WASTEWATER ELECTRICAL PLANNING

Project No. 2021183
Revised July 2024

TABLE OF CONTENTS

LIST OF ENCLOSURES

PROJECT OVERVIEW

AXR Napa Valley, located at 3199 St. Helena Highway in St. Helena, CA (APN 022-080-025), is applying for a use permit modification to the approved UP #P08-00099 to revise the entitled number of employees, daily visitors, marketing events, and wine production at the facility. The site is a 7.85-acre parcel located within the Napa Valley Floor. An overall site plan for the winery is provided in Enclosure A. Details of the proposed use permit modification are summarized below:

- Increase full-time employees (FTE) from two to twelve
- Increase part-time employees (PTE) from two to five
- Increase daily tasting visitors from 20 persons/day and 90/week to 60 persons/day and 420/week
- Revise marketing events (discussed in greater detail in subsequent sections of this report)
- Increase wine production from 20,000 gallons/year to 35,000 gallons/year

There is one active groundwater well that currently supplies all water to site. The well completion report for this well is provided in Enclosure B. The well has a completed depth of 699 feet, an annular seal depth of 62 feet, and a 6-inch casing. This well is anticipated to have sufficient capacity so satisfy the estimated future water demand for the winery.

Summit Engineering has prepared the following Water Availability Analysis (WAA) to demonstrate there is no net increase in water consumption associated with the proposed increase in wine production, employees, tasting visitation, and marketing events associated with the use permit modification application.

EXISTING WATER DEMAND

The existing water demand at site is documented in the WAA that was included in the 2004 use permit modification application (#P04-0541). This WAA is provided in Enclosure C and reflects an annual water usage of 3.62 acre-feet per year. The 2008 use permit modification (#P08-00099) did not impact water usage at site, and thus a WAA was not submitted as part of the application.

PROPOSED WATER DEMAND

Future water demands are anticipated for winery process, domestic, vineyard irrigation, and landscape irrigation demand. Estimates of each water demand are provided in the following sections.

Proposed Process Water Demand Projection

The proposed process water demand is calculated in Table 1.

Table 1: Estimate of proposed annual process water demand.

Parameter	Value	Units
Wine Production	35,000	gal wine / year
Water Demand for Wine Production (Note 1)	6.0	gal water / gal wine
Total Annual Process Water Demand	210,000	gal water / year
	0.644	acre-feet water / year
Average Daily Process Water Demand (Note 2)	575	gal water / year
Peak Daily Process Water Demand (Note 3)	1,148	gal water / day
Notes:		
1. Water demand for wine production is based on industry standard values.		
2. Assumes the total annual process water demand is spread evenly across 365 days.		
3. Assumes the peak Harvest month of September accounts for 16.4% of the annual process water demand. This assumption is based on data from wineries of similar size.		

Proposed Domestic Water Demand Projection

Domestic water use at the winery is determined based on the total number of employees, daily visitors, event guests, and the residential demand. Using Napa County standards, the proposed average and peak domestic water demands for the winery facility is estimated in Table 2:

Table 2: Estimate of proposed domestic water demand on an average weekend day.

Category	Number People / Day	Domestic Water Demand, gal/person	Total Domestic Water Demand, gal/day
Full-Time Employee	12	15	180
Part-Time Employee	5	15	75
Tasting Visitors (Note 1)	60	3	180
Residential (Note 2)	5	150	750
Total	—	—	1,185
Notes:			
1. Assumes full meals are not served to tasting visitors. Pre-packaged foods such as cookies and crackers may be available to tasting visitors.			
2. Residential demand is based on two 2-bedroom cottages (Cottage #4 and #8) and one 1-bedroom cottage (Cottage #7) onsite.			

The winery also proposes to host events. The events are proposed to be catered, with no food preparation occurring onsite. The size and frequency of proposed events are as follows:

- Event Type #1: 150 attendees max, 3 events per year
- Event Type #2: 75 attendees max, 4 events per year
- Event Type #3: 25 attendees max, 2 events per month (24 events per year)

The estimated domestic water demand on a day with a 150-person event is summarized in Table 3.

Table 3: Estimate of proposed domestic water demand on an event day.

Category	Number People / Day	Domestic Water Demand, gal/person	Total Domestic Water Demand, gal/day
Full-Time Employee	12	15	180
Part-Time Employee	5	15	75
Tasting Visitors (Note 1)	60	3	180
Event Guest (Note 2)	150	15	2,250
Residential (Note 3)	5	150	750
Total	—	—	3,435
Notes:			
1. Assumes full meals are not served to tasting visitors. Pre-packaged foods such as cookies and crackers may be available to tasting visitors.			
2. Events are assumed to be catered, with no food preparation occurring onsite.			
3. Residential demand is based on two 2-bedroom cottages (Cottage #4 and #8) and one 1-bedroom cottage (Cottage #7) onsite.			

The total annual domestic water demand is calculated in Table 4.

Table 4: Estimate of proposed annual domestic water demand.

Use Type	Number (persons/day)	Water Demand (gal/person)	Daily Demand (gal/day)	Frequency (days/year)	Annual Water Use (gal/year)
FTE (Note 1)	12	15	180	365	65,700
PTE (Note 2)	5	15	75	104	7,800
Tasting Visitors (Note 3)	60	3	180	365	65,700
Event Guests (Note 4)	—	—	—	—	—
Event, 150 Guests	150	15	2,250	3	6,750
Event, 75 Guests	75	15	1,125	4	4,500
Event, 25 Guests	25	15	375	24	9,000
Residential (Note 5)	5	150	750	365	273,750
Total Annual Winery Domestic Water Demand (Gallons)					433,200
Total Annual Winery Domestic Water Demand (acre-feet/year)					1.329
Notes:					
1. Maximum number of FTE's assumed every day to be conservative.					
2. PTE's assumed to work an average of two days a week.					
3. Tasting assumed to occur seven days per week. Assumes full meals are not served to tasting visitors. Pre-packaged foods such as cookies and crackers may be available to tasting visitors.					
4. Events are assumed to be catered, with no food preparation occurring onsite.					
5. Residential demand is based on two 2-bedroom cottages (Cottage #4 and Cottage #8) and one 1-bedroom cottage (Cottage #7) onsite.					

Proposed Vineyard Irrigation Water Demand Projection

The winery does not intend to plant any additional vineyard as part of the use permit modification. The vineyard water demand of 0.85 acre-feet/year presented in the 2004 use permit modification application is expected to remain valid. The Water Availability Analysis from the 2004 use permit modification application is provided in Enclosure C.

Proposed Landscape Water Demand Projection

The existing landscape and garden irrigation water demand at the winery is calculated according to the Guidelines for Estimating Non-Residential Water Usage in Napa County's Water Availability Analysis Guidance Document. There is no change in landscaping associated with the proposed increase in wine production and revised marketing plan. The expected water demand for all winery landscape irrigation is calculated in Table 5.

Table 5: Estimate of proposed landscaping water demand

Parameter	Value	Units
Proposed Annual Production	35,000	gal wine / year
Domestic and Landscaping Water Allocation (Note 1)	0.5	ac-ft / 100,000 gal wine
Total Annual Winery Landscape Water Demand	0.175	ac-ft / year
Notes:		
1. Demand based on Guidelines for Estimating Non-Residential Water Usage in Napa County's Water Availability Analysis Guidance Document.		

Proposed Total Water Demand Projection

The total estimated water demand projection is calculated in Table 6.

Table 6: Total estimated water demand.

Category	Estimated Water Demand (ac-ft/year)
Process Water	0.644
Domestic Water	1.329
Vineyard Irrigation Water	0.850
Landscaping Water	0.175
Total	2.998

CONCLUSION

The proposed total water demand of 2.998 ac-ft/year is less than the existing water demand of 3.62 ac-ft/year. There is no net increase in water demand associated with the use permit modification. Furthermore, the parcel-specific recharge calculations developed by EBA Engineering, Inc. estimate 6.42 ac-ft/year of groundwater available for recharge. The proposed water demand is less than the estimated parcel-specific recharge.

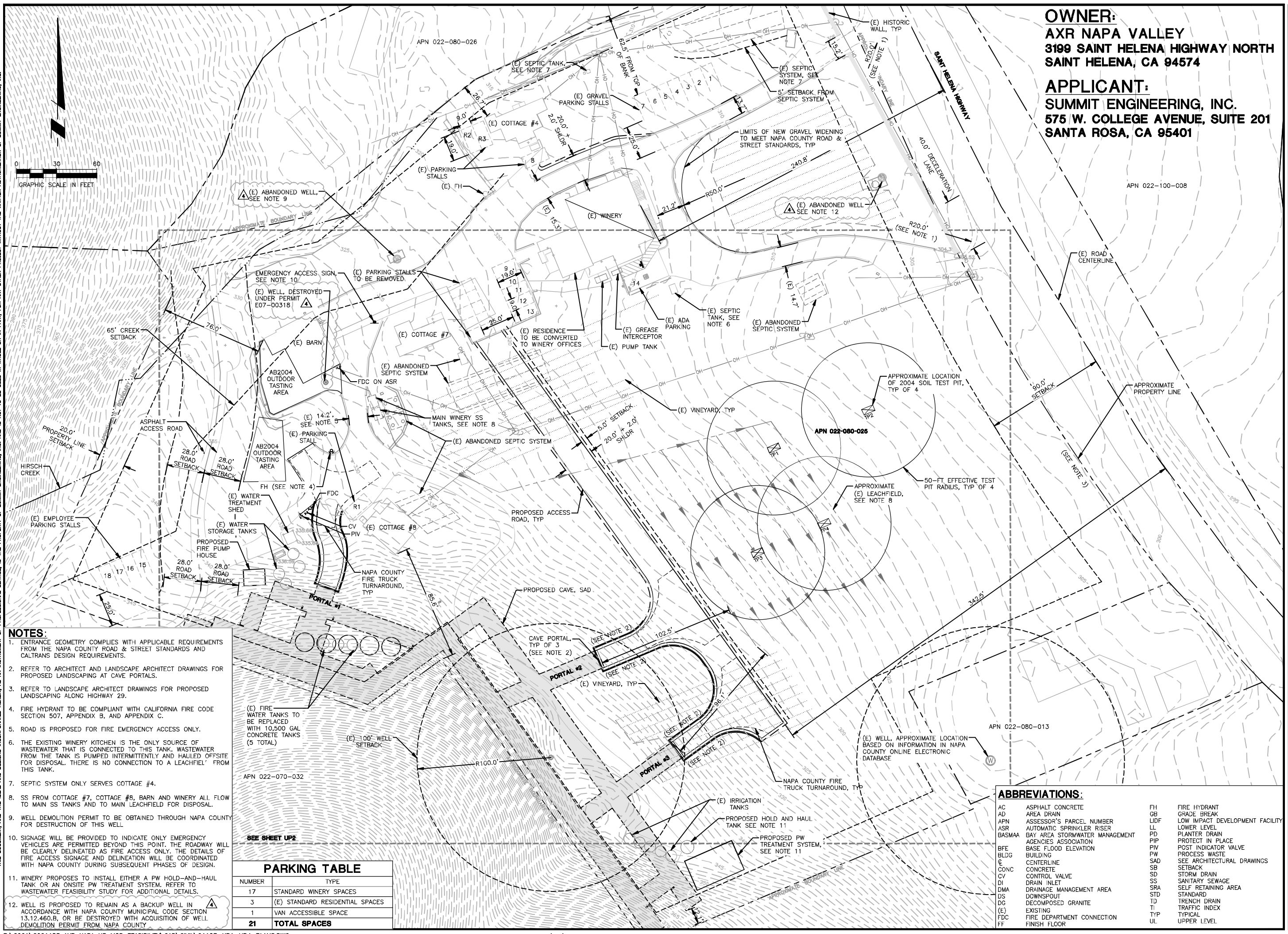
ENCLOSURE A
OVERALL SITE PLAN

OWNER:

AXR NAPA VALLEY
3199 SAINT HELENA HIGHWAY NORTH
SAINT HELENA, CA 94574

APPLICANT:

SUMMIT ENGINEERING, INC.
575 W. COLLEGE AVENUE, SUITE 201
SANTA ROSA, CA 95401



NOTES:

1. ENTRANCE GEOMETRY COMPLIES WITH APPLICABLE REQUIREMENTS FROM THE NAPA COUNTY ROAD & STREET STANDARDS AND CALTRANS DESIGN REQUIREMENTS.
2. REFER TO ARCHITECT AND LANDSCAPE ARCHITECT DRAWINGS FOR PROPOSED LANDSCAPING AT CAVE PORTALS.
3. REFER TO LANDSCAPE ARCHITECT DRAWINGS FOR PROPOSED LANDSCAPING ALONG HIGHWAY 29.
4. FIRE HYDRANT TO BE COMPLIANT WITH CALIFORNIA FIRE CODE SECTION 507, APPENDIX B, AND APPENDIX C.
5. ROAD IS PROPOSED FOR FIRE EMERGENCY ACCESS ONLY.
6. THE EXISTING WINERY KITCHEN IS THE ONLY SOURCE OF WASTEWATER THAT IS CONNECTED TO THIS TANK. WASTEWATER FROM THE TANK IS PUMPED INTERMITTENTLY AND HAULED OFFSITE FOR DISPOSAL. THERE IS NO CONNECTION TO A LEACHFIELD FROM THIS TANK.
7. SEPTIC SYSTEM ONLY SERVES COTTAGE #4.
8. SS FROM COTTAGE #7, COTTAGE #8, BARN AND WINERY ALL FLOW TO MAIN SS TANKS AND TO MAIN LEACHFIELD FOR DISPOSAL.
9. WELL DEMOLITION PERMIT TO BE OBTAINED THROUGH NAPA COUNTY FOR DESTRUCTION OF THIS WELL
10. SIGNAGE WILL BE PROVIDED TO INDICATE ONLY EMERGENCY VEHICLES ARE PERMITTED BEYOND THIS POINT. THE ROADWAY WILL BE CLEARLY DELINEATED AS FIRE ACCESS ONLY. THE DETAILS OF FIRE ACCESS SIGNAGE AND DELINEATION WILL BE COORDINATED WITH NAPA COUNTY DURING SUBSEQUENT PHASES OF DESIGN.
11. WINERY PROPOSES TO INSTALL EITHER A PW HOLD-AND-HAUL TANK OR AN ONSITE PW TREATMENT SYSTEM. REFER TO WASTEWATER FEASIBILITY STUDY FOR ADDITIONAL DETAILS.
12. WELL IS PROPOSED TO REMAIN AS A BACKUP WELL IN ACCORDANCE WITH NAPA COUNTY MUNICIPAL CODE SECTION 13.12.460.B, OR BE DESTROYED WITH ACQUISITION OF WELL DEMOLITION PERMIT FROM NAPA COUNTY (4)

PARKING TABLE

NUMBER	TYPE
17	STANDARD WINERY SPACES
3	(E) STANDARD RESIDENTIAL SPACES
1	VAN ACCESSIBLE SPACE
21	**TOTAL SPACES**

ABBREVIATIONS:

AC	ASPHALT CONCRETE
AD	AREA DRAIN
APN	ASSESSOR'S PARCEL NUMBER
ASR	AUTOMATIC SPRINKLER RISER
BASMAA	BAY AREA STORMWATER MANAGEMENT AGENCIES ASSOCIATION
BFE	BASE FLOOD ELEVATION
BLDG	BUILDING
℄	CENTERLINE
CONC	CONCRETE
CV	CONTROL VALVE
DI	DRAIN INLET
DMA	DRAINAGE MANAGEMENT AREA
DS	DOWNSPOUT
DG	DECOMPOSED GRANITE
(E)	EXISTING
FDC	FIRE DEPARTMENT CONNECTION
FF	FINISH FLOOR
FH	FIRE HYDRANT
GB	GRADE BREAK
LIDF	LOW IMPACT DEVELOPMENT FACILITY
LL	LOWER LEVEL
PD	PLANTER DRAIN
PIP	PROTECT IN PLACE
PIV	POST INDICATOR VALVE
PW	PROCESS WASTE
SAD	SEE ARCHITECTURAL DRAWINGS
SB	SETBACK
SD	STORM DRAIN
SS	SANITARY SEWAGE
SRA	SELF RETAINING AREA
STD	STANDARD
TD	TRENCH DRAIN
TI	TRAFFIC INDEX
TYP	TYPICAL
UL	UPPER LEVEL

P:\2021\2021183 AXR NAPA UP MOD FEASIBILITY\CAD\CIVIL\21183-UP1-UP4-PLANS.DWG

PLOTTED ON: 7/25/2024 2:59 PM

SUMMIT
Summit Engineering, Inc
575 W College Ave., Suite 201 • Santa Rosa, CA 95401
707-527-0775 • www.summit-sr.com

AXR NAPA VALLEY
3199 ST HELENA HIGHWAY NORTH
SAINT HELENA, CA 94574
APN 022-080-025

USE PERMIT MODIFICATION

OVERALL SITE PLAN

	2022-12-13 USE PERMIT APPLICATION
	2023-04-13 USE PERMIT RESUBMITTAL
	2023-12-11 USE PERMIT RESUBMITTAL
3	2024-03-19 USE PERMIT RESUBMITTAL
4	2024-07-25 USE PERMIT RESUBMITTAL

DATE:	2024-03-19
JOB NO:	2021183
SCALE:	AS SHOWN
DRAWN:	JH
CHECKED:	TCS
SHEET	UP1 1OF 5

ENCLOSURE B
WELL COMPLETION REPORT

E18-00508 WL

ORIGINAL
File with DWR

Page 1 of 1

STATE OF CALIFORNIA
WELL COMPLETION REPORT
Refer to Instruction Pamphlet

No. e0367373

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

Owner's Well No. 1-2018
Date Work Began 8/3/2018, Ended 9/6/2018
Local Permit Agency Napa County Environmental Mgmt
Permit No. E18-00508 Permit Date 6/19/2018

GEOLOGIC LOG

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

DEPTH FROM SURFACE Ft.	to Ft.	DESCRIPTION *Describe material, grain, size, color, etc.*
0	6	BOULDERS
6	15	TAN SANDY ASH
15	30	FRACTURED VOLCANIC ROCK
30	35	RED VOLCANIC ASH
35	40	HARD BLACK VOLCANICS
40	75	TAN VOLCANIC ASH
75	120	FRACTURED VOLCANIC ROCK
120	140	TAN SANDY ASH
140	190	LARGE FRACTURED VOLCANICS
190	245	TAN VOLCANIC ASH
245	335	FRACTURED MIXED VOLCANICS
335	375	MIXED VOLCANICS WITH ASH STRINGERS
375	380	HARD FRACTURED, RED VOLCANICS
380	435	MIXED VOLCANICS WITH ASH STRINGERS
435	440	HARD FRACTURED BLACK VOLCANICS
440	450	RED SANDY ASH
450	456	BLACK, RED VOLCANICS
456	475	RED, GRAY SANDY ASH
475	530	RED, GRAY VOLCANIC ASH
530	545	MIXED VOLCANIC SANDS
545	554	RED, GRAY VOLCANIC ASH
554	557	MIXED VOLCANIC SANDS
557	598	GRAY VOLCANIC ASH
598	688	FRACTURED BLACK VOLCANIC ROCK
688	700	GRAY VOLCANIC ASH
		CONTINUED CASING LAYOUT
539	559	SCREEN PVC 6" .032 SLOT
559	599	BLANK PVC 6"
599	689	SCREEN PVC 6" .032 SLOT
689	699	BLANK PVC 6"

TOTAL DEPTH OF BORING 700 (Feet)
TOTAL DEPTH OF COMPLETED WELL 699 (Feet)

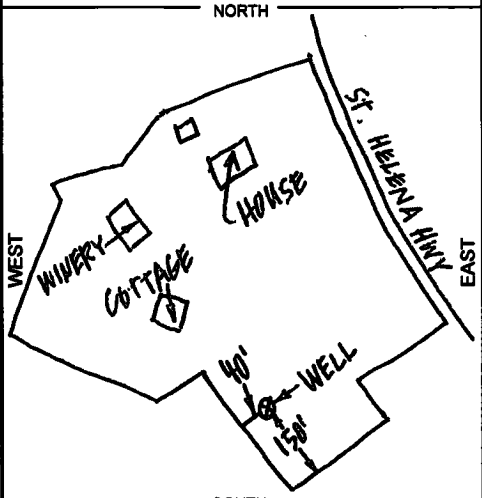
WELL OWNER

Name [redacted]
Mailing Address 31[redacted] St[redacted]
CITY [redacted] STATE [redacted] ZIP [redacted]

WELL LOCATION

Address 3199 St. Helena Hwy
City St. Helena CA
County Napa
APN Book 022 Page 080 Parcel 025
Township ____ Range ____ Section ____
Latitude ____ DEG. MIN. SEC. ____ DEG. MIN. SEC.

LOCATION SKETCH



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

ACTIVITY (✓)

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

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

WATER LEVEL & YIELD OF COMPLETED WELL

DEPTH TO FIRST WATER N/A (Ft.) BELOW SURFACE 1
DEPTH OF STATIC WATER LEVEL 92 (Ft.) & DATE MEASURED 9/6/2018
ESTIMATED YIELD * 125 (GPM) & TEST TYPE AIR LIFT
TEST LENGTH 2 (Hrs.) TOTAL DRAWDOWN N/A (Ft.)
May not be representative of a well's long-term yield.

CASING (S)

DEPTH FROM SURFACE Ft.	to Ft.	BORE-HOLE DIA. (Inches)	TYPE (✓) BLANK	SCREEN	CONDUCTOR	FILL PIPE	MATERIAL / GRADE	INTERNAL DIAMETER (Inches)	GAUGE OR WALL THICKNESS	SLOT SIZE IF ANY (Inches)
0	700	12								
0	239		✓				PVC F480	6	SDR-21	
239	399			✓			PVC F480	6	SDR-21	.032
399	419		✓				PVC F480	6	SDR-21	
419	479			✓			PVC F480	6	SDR-21	.032
479	539		✓				PVC F480	6	SDR-21	

ANNULAR MATERIAL

DEPTH FROM SURFACE Ft.	to Ft.	TYPE CEMENT (✓)	BENTONITE (✓)	FILL (✓)	FILTER PACK (TYPE/SIZE)
0	62	✓			10 SK SAND
62	699			✓	#6 SAND

ATTACHMENTS (✓)

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

CERTIFICATION STATEMENT

I, the undersigned, certify that this report is complete and accurate to the best of my knowledge and belief.
NAME HUCKFELDT WELL DRILLING, INC.
(PERSON, FIRM, OR CORPORATION) (TYPED OR PRINTED)
2110 Penny Lane ADDRESS Napa CITY CA STATE 94559 ZIP
Signed [signature] WELL DRILLER/AUTHORIZED REPRESENTATIVE
09/13/18 DATE SIGNED
439-746 C-57 LICENSE NUMBER

DWR 188 REV. 11-97

IF ADDITIONAL SPACE IS NEEDED, USE NEXT CONSECUTIVELY NUMBERED FORM

ENCLOSURE C
WATER AVAILABILITY ANALYSIS FOR EXISTING ENTITLEMENT

NAPA COUNTY

DEPARTMENT OF PUBLIC WORKS

1195 THIRD STREET • ROOM 201 • NAPA, CALIFORNIA 94559-3092
PHONE 707-253-4351 • FAX 707-253-4627
www.co.napa.ca.us/PublicWorks/Default.htm

ROBERT J. PETERSON
Director of Public Works
County Surveyor-County Engineer
Road Commissioner

WATER AVAILABILITY ANALYSIS

PHASE 1 STUDY

Introduction: As an applicant for a permit with Napa County, It has been determined that Chapter 13.15 of the Napa County Code is applicable to approval of your permit. One step of the permit process is to adequately evaluate the amount of water your project will use and the potential impact your application might have on the static groundwater levels within your neighborhood. The public works department requires that a Phase 1 Water Availability Analysis (WAA) be included with your application. The purpose of this form is to assist you in the preparation of this analysis. You may present the analysis in an alternative form so long as it substantially includes the information required below. Please include any calculations you may have to support your estimates.

reason for the WAA is for you, the applicant, to inform us, to the best of your ability, what changes in water use will occur on your property as a result of an approval of your permit application. By examining the attached guidelines and filling in the blanks, you will provide the information we require to evaluate potential impacts to static water levels of neighboring wells.

Step #1:

Provide a map and site plan of your parcel(s). The map should be an 8-1/2"x11" reproduction of a USGS quad sheet (1:24,000 scale) with your parcel outlined on the map. Include on the map the nearest neighboring well. The site plan should be an 8-1/2"x11" site plan of your parcel(s) with the locations of all structures, gardens, vineyards, etc in which well water will be used. If more than one water source is available, indicate the interconnecting piping from the subject well to the areas of use. Attach these two sheets to your application. If multiple parcels are involved, clearly show the parcels from which the fair share calculation will be based and properly identify the assessors parcel numbers for these parcels. Identify all existing or proposed wells.

Step #2: Determine total parcel acreage and water allotment factor.

Determine the allowable water allotment for your parcels:

Parcel Location Factors

allowable allotment of water is based on the location of your parcel. There are 3 different location classifications. Valley floor areas include all locations that are within the Napa Valley, Pope Valley and Carneros Region, except for areas specified as groundwater deficient areas. Groundwater deficient areas are areas that have been determined by the public works department as having a history of problems with

groundwater. All other areas are classified as Mountain Areas. Please circle your location classification below (Public Works can assist you in determining your classification if necessary):

Valley Floor	1.0 acre feet per acre per year
Mountain Areas	0.5 acre feet per acre per year
MST Groundwater Deficient Area	0.3 acre feet per acre per year

Assessors Parcel Number(s)	Parcel Size (A)	Location Factor (B)	Allowable Water Allotment (A) X (B)
022-080-025-000	7.85	1.0	7.85
		TOTAL	7.85

Step #3:

Using the guidelines in Attachment A, tabulate the existing and projected future water usage on the parcel(s) in acre-feet per year (af/yr). Transfer the information from the guidelines to the table below.

Existing Usage:		**Future Usage:**	
Residential	2.34 af/yr	Residential	2.34 af/yr
Farm Labor Dwelling	— af/yr	Farm Labor Dwelling	— af/yr
Winery	.43 af/yr	Winery	.43 af/yr
Commercial	— af/yr	Commercial	— af/yr
Vineyard	.85 af/yr	Vineyard	.85 af/yr
Other Agriculture	— af/yr	Other Agriculture	— af/yr
Landscaping	af/yr	Landscaping	af/yr
Other Usage	— af/yr	Other Usage	— af/yr
TOTAL:	3.62 af/yr	TOTAL:	3.62 af/yr
TOTAL:	1,179,472 gallons*	TOTAL:	1,179,472 gallons*

$\left(\frac{20,000\ gal}{100,000\ gal}\right) \times 2.15$

*To determine your existing and proposed total water use in gallons, multiply the totals (in acre- feet) by 325,821 gal/AF.

Is the estimated future usage less than the "allowable" (✓) Yes ( ) No
If no, is the future usage less than the existing usage ( ) Yes ( ) No ( ) Equal

Step #4:

Provide any other information that may be significant to this analysis. For example, any calculations supporting your estimates, well test information including draw down over time, historical water data, visual observations of water levels, well drilling information, changes in neighboring land uses, the usage if other water sources such as city water or reservoirs, the timing of the development, etc. Use additional sheets if necessary.

Main well in front is 150' feet deep 26 gpm - 30 gpm
Second well in back is 5 gpm
Parcel has first deeded access to offsite spring (since 19th century)
Xeriscaping is planned where possible

nclusion: Congratulations! Just sign the form and you are done! Public works staff will now compare your projected future water usage with a threshold of use as determined for your parcel(s) size, location, topography, rainfall, soil types, historical water data for your area, and other hydrogeologic information. They will use the above information to evaluate if your proposed project will have a detrimental effect on groundwater levels and/or neighboring well levels. Should that evaluation result in a determination that your project may adversely impact neighboring water levels, a phase two water analysis may be required. You will be advised of such a decision.

Signature: _____ **Date:** 12-1-04 **Phone:** 914-698-1538

Pauline C. Tilley 12/1/04

FOR STAFF ONLY:
Phase 1 complete? ____Yes ____ No Phase 2 Required? ____ Yes ____ No
Additional Information required to complete this application:_____

Attachment A: Guidelines For Estimating Water Usage:

Residential Guidelines-part I: Indoor use

1.Determine the number of potential bedrooms.
2. Assume 2 people /bedroom
3. Add 0.2 people for employees not living on site
4. Multiply the total number of people by a factor of 0.084 AF.

Calculations:

A	B	C	D	E	F
Potential Bedrooms	People per Bedroom [2 x A]	Number of Employees	Additional people [0.2 x C]	Total Number of people [B + D]	Total Estimated Indoor Water Use (AF) [E x 0.084]

Residential-part II: Additional Annual Water Use

Determine if you will be using passive or active water saving techniques on your parcel. Passive techniques will require that all appliances and fixtures be of the low flow water saving type. It will also require that the area of your lawn be of drought tolerant turf and be no larger that the square footage of your house. If there is a pool, it must be covered whenever it is not in use to prevent evaporation. Active techniques will require that all appliances and fixtures be of the low flow water saving type. The lawn area cannot exceed 1000 square feet of drought tolerant turf, xeriscape landscaping techniques must be employed. All plant watering will be accomplished through drip irrigation. No swimming pools are allowed.

Passive water use factor = 0.08 per person.
Active water use factor = 0.04 per person.
No water saving techniques = 0.14 per person.

G	H	I
Total Number of People [From E above]	Water Use Factor Active: 0.08 Passive: 0.04 Unlimited: 0.14	Total Additional Water Use (AF) [G x H]

Other Usage To Be Added

1. Add an additional 0.1 acre-feet of water for each additional 1000 square feet of drought tolerant lawn or 2000 square feet of non-xeriscape landscaping above that already counted above.
2. Add an additional 0.05 acre-feet of water for a pool with a pool cover.
3. Add an additional 0.1 acre-feet of water for a pool without a cover.

I	J	K
Total Additional Water Use (AF) (from above)	Other water use to be added	Total Water Use (AF) [I + J]

If you have very limited outdoor irrigation and feel the "additional" or "other" water use included above is not relative to your property, you must submit evidence in the form of pictures or a site plan of existing/proposed landscaping (or other indication of vegetation or lack thereof) on the property. The department of public works will evaluate the evidence and a lesser number may be allowed. On the contrary, if there is extensive landscaping and outdoor irrigation, you must account for this additional irrigation as noted below

The total above (**K**) from above should be transferred to page 2. Do a similar exercise for any other residential use (second dwelling, guest house, etc.).

Typical Water Use Guidelines:

Primary Residence	0.5 to 1.5 acre-feet per year (includes landscaping)
Secondary Residence	0.25 to 1.0 acre-feet per year
Farm Labor Dwelling	1.0 acre-feet per year (six people)

Non-Residential Guidelines:

Agricultural:

Vineyards	
Irrigation only	0.2 to 0.5 acre-feet per acre per year
Heat Protection	0.25 acre feet per acre per year
Frost Protection	0.25 acre feet per acre per year
Farm Labor Dwelling	1.0 acre-feet per year (6 people)
Irrigated Pasture	4.0 acre-feet per acre per year
Orchards	4.0 acre-feet per acre per year
Livestock (sheep or cows)	0.01 acre-feet per acre per year

Winery:

Process Water	2.15 acre-feet per 100,000 gal. of wine
Domestic and Landscaping	0.50 acre-feet per 100,000 gal. of wine

Industrial:

Food Processing	31.0 acre-feet per employee per year
Printing/Publishing	0.60 acre-feet per employee per year

Commercial:

Office Space	0.01 acre-feet per employee per year
Warehouse	0.05 acre-feet per employee per year

SUMMIT ENGINEERING, INC.
575 W. College Ave., Suite 201
Santa Rosa, CA 95401
707 527-0775
Contact: SFO@summit-sr.com