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Water Availability Analysis

Kitoko Winery P17-00373-UP
Planning Commission Hearing – October 16, 2019

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Water Availability Analysis

Kitoko Vineyards Winery
3189 Atlas Peak Road
Napa, California 94558

Philippe Langner

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Introduction

The applicant, Philippe Langner, is seeking permits from the County of Napa to establish a winery on the subject property, 3201 Atlas Peak Road (Napa County APN 033-010-034), which is located approximately one mile northwest of Milliken Reservoir (Figure 1). The proposed winery will have an annual production of approximately 40,000 gallons (16,667 cases) and will be supplied with groundwater from a newly completed on-site well. There are no existing or planned vineyards on the property and the grapes used by the proposed winery will be sourced from offsite.

This Water Availability Analysis (WAA) was developed based on the guidance provided in the Napa County Department of Planning, Building, & Environmental Services' Water Availability Analysis Guidance Document formally adopted by the Napa County Board of Supervisors in May 2015. The WAA includes the following elements: estimates of existing and proposed water uses within the project recharge area, compilation of drillers' logs from the area and characterization of local hydrogeologic conditions, analyses to estimate groundwater recharge relative to proposed uses (Tier 1), and a screening analysis of the potential for well interference at neighboring wells located within 500-ft of the project well (Tier 2).

Limitations

Groundwater systems of Napa County and the Coast Range are typically complex, and available data rarely allows for more than general assessment of groundwater conditions and delineation of aquifers. Hydrogeologic interpretations are based on the drillers' reports made available to us through the California Department of Water Resources, available geologic maps and hydrogeologic studies, and professional judgment. This analysis is based on limited available data and relies significantly on interpretation of data from disparate sources of disparate quality.

Given the significant depths to water in the project well (339-ft), the relationship between groundwater recharge generated within the project parcel area and groundwater availability at the project well is not expected to be very tightly coupled. It is likely that water flowing to the project wells is primarily supplied by groundwater inflows from surrounding areas rather than from recharge occurring on the overlying landscape. Analysis of the age and sources of the deep groundwater occurring beneath the project parcel is beyond the scope of this study.

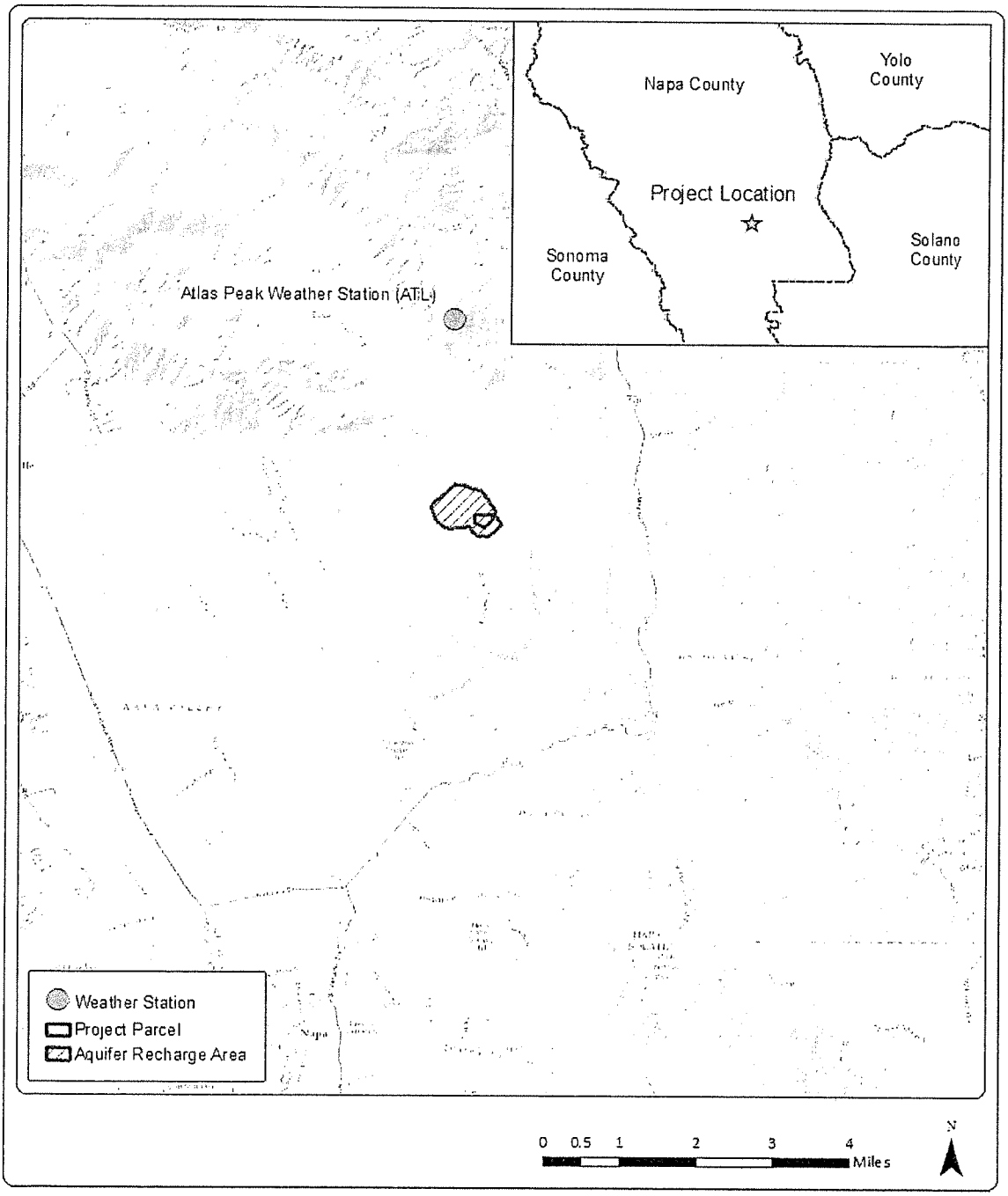


Figure 1: Project location map.

Hydrogeologic Conditions

The project is located in the mountains east of the Napa Valley northwest of Milliken Reservoir, between Milliken Canyon and Soda Canyon. The area on and surrounding the project parcel is underlain by two units of the Sonoma Volcanics (Figure 2). The project parcel and the lower-elevation areas to the east are underlain by the Pliocene aged Andesite Lava Flows from the Stags Leap Volcanic Center (map unit Psvasl). The higher elevation areas west of the project parcel are capped by a large unit of Pliocene aged Dacite from the Mount George area (map unit Psvdg), which is underlain at varying depths by map unit Psvasl (Wagner & Gutierrez, 2010). While there are isolated areas of Quaternary-aged alluvium (map unit Qa) and late-Miocene and early-Pliocene aged Ash Flow Tuff of Milliken Dam (map unit Psvrt), these blocks are relatively small and distant from the project parcel.

In general, the bedrock units of the Sonoma Volcanics have very low primary porosity and groundwater occurs primarily in fractures resulting in great variability in production of wells intersecting these materials. The Dacite of Mount George consists of flows, domes, and shallow intrusions of strongly banded grey to tan porphyritic dacite (Wagner, Gutierrez 2010). The andesitic unit was described by Weaver (1949) as comprised of individual lava flows displaying great variability in thickness and texture over short distances. Given this heterogeneity it can be expected that hydrogeologic conditions exhibit similar spatial variability and LSCE (2013) reported that wells completed within the bedrock units of the Sonoma Volcanics have yields ranging from low to as high as several hundred gpm.

The project well is also located approximately 1.9 miles northwest of the main trace of the Green Valley Fault. Other smaller fault contacts are located south and east of the project well. The closest of these, a north to south trending fault parallel with the eastern side of Milliken Canyon, is approximately 0.7 miles east of the project well. Given the distance of these faults from the project well and the continuity of geologic units across the faults, these faults are not anticipated to substantially impact hydrogeologic conditions in the vicinity of the project well.

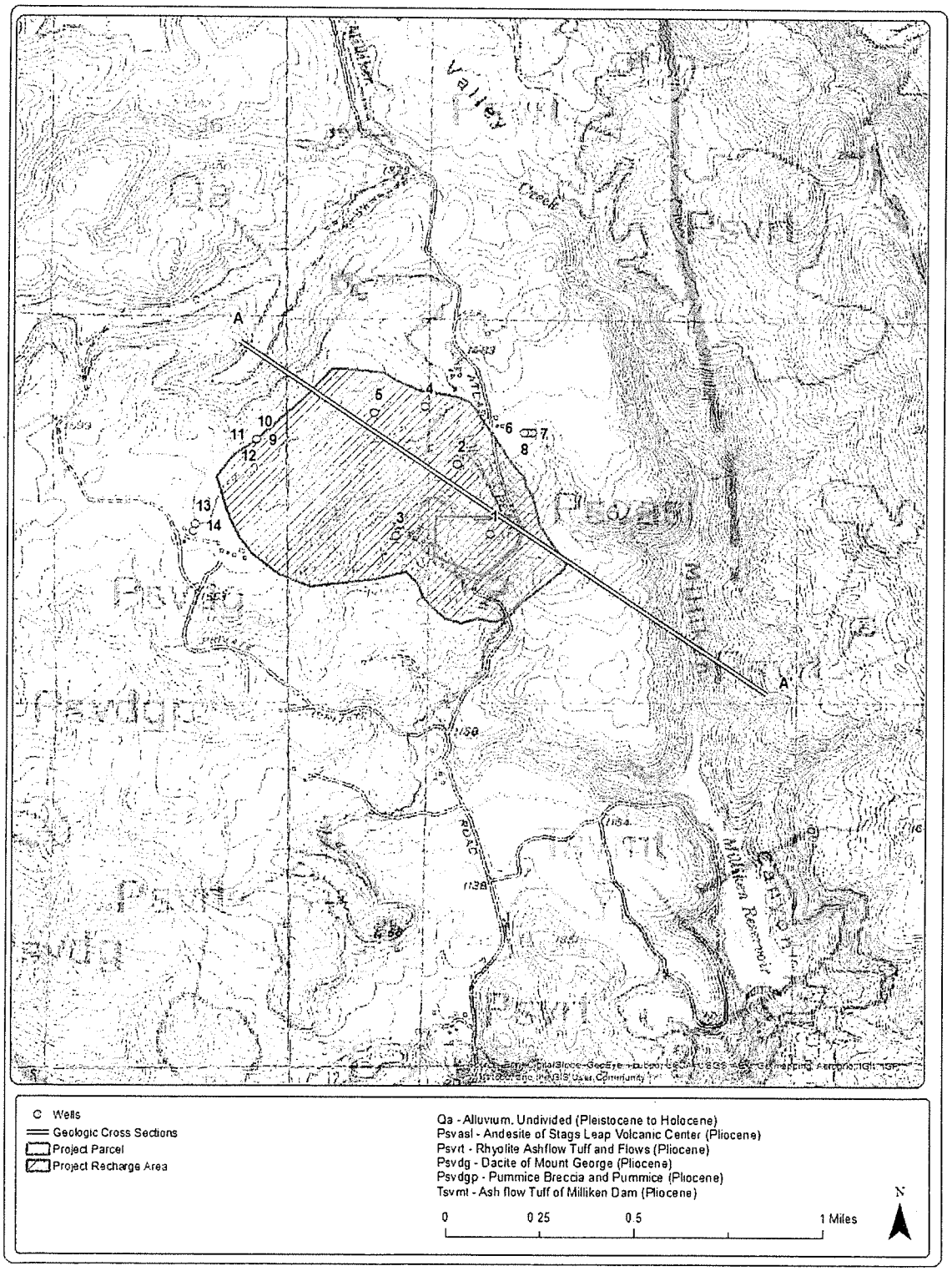


Figure 2: Surficial geology and locations of wells in the vicinity of the project parcel. Surficial geology based on data from the Geologic Map of the Napa Quadrangle (Wagner & Gutierrez, 2010).

Well Data

Well completion reports for wells within the vicinity of the project parcel were obtained through the California Department of Water Resources (DWR). Reports were available for 19 wells within the project vicinity; of these, 13 could be located with reasonable accuracy. This search did not yield a well completion report for the project well. Instead, information about the project well was gathered from a report prepared by the company that drilled the well, MacLean and Williams, and from additional information provided by the applicant. Applicable well information was compiled (see Appendix A) and georeferenced based on parcel and location sketch information.

The project parcel contains one active well (Well 1) located on a ridgetop between two small creeks, approximately 400 feet west of Atlas Peak Road (Figure 2). This well was completed in 2014 to a depth of 339 ft. The static water level at the time of completion was 248 ft and the estimated yield was 11.7 gpm after 3 hours of pumping. This test resulted in 24 ft of drawdown, yielding an estimated Specific Capacity (S_c) of 0.49 gpm/ft of drawdown (Table 1).

Thirteen wells have been identified and located within the vicinity of the project parcel (Wells 2 – 14). These wells are relatively deep with depths ranging from 360 (Well 8) to 810 ft (Well 13). Static water levels at the time of completion ranged from 189 (Well 8) to 400 ft (Well 10). Well yield varied substantially from 5 (Well 2) to 200 gpm (Wells 10 and 11). Based on the available pump test information, S_c values for these wells is estimated to range across several orders of magnitude, from 0.07 (Well 13) to 2.0 gpm/ft of drawdown (Well 10). The four wells on top of the ridge northwest of the project parcel (Wells 9 – 12) had the highest S_c values and S_c at the remaining wells ranged from from 0.37 to 0.49 gpm/ft of drawdown with the exception of Well 13 which had an anomalously low S_c (Table 1). There are no California Statewide Groundwater Elevation Monitoring System (CASGEM) or other agency monitoring wells within the project vicinity with which to investigate long-term trends in groundwater elevations.

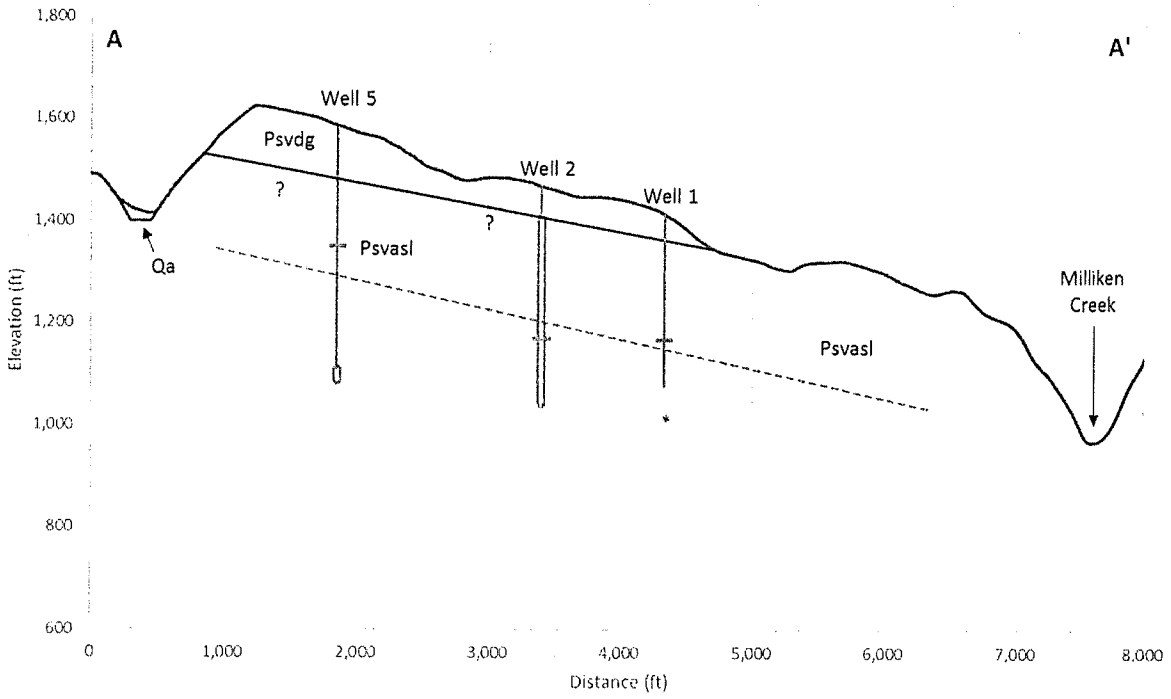
The rock descriptions on the well completion reports indicate a wide variety of rock types, with the most common being hard, red, black, grey, and green volcanic rocks. In some wells, especially those with higher yields, there are reports of thick layers of multicolored volcanic ash and of volcanic gravels. Most rock descriptions indicate that wells are screened either within these ash and gravel layers or within layers of hard fractured black rocks. None of the reports obtained as part of this study indicate the presence of "dry-holes". It should also be noted that no wells were identified within 500 feet of the project well; the nearest identified well (Well 2) is approximately 1,100 ft to the northwest (Figure 2).

Table 1: Well completion details for the project well (Well 1) and wells on nearby parcels (Wells 2-14).

Well ID	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Year Completed	2014	1979	1997	1988	2001	1983	1974	1966	1978	2010	2010	1994	2005	2005
Depth (ft)	339	430	420	400	500	575	400	360	800	700	650	540	810	535
Static Water Level (ft)	248	300	256	230	237	285	300	189	300	400	350	290	230	240
Top of Screen (ft)	Unk.	60	260	280	118	315	Unk.	Unk.	700	500	450	260	230	240
Bottom of Screen (ft)	Unk.	426	410	400	478	575	Unk.	Unk.	800	700	650	540	810	510
Pumping Rate (gpm)	11.7	5	60	100	85	20	15	15	20	200	200	100	40	100
Drawdown (ft)	24	75	154	Unk.	203	Unk.	Unk.	31	Unk.	100	150	110	570	270
Test Length (hrs)	3	1.5	2	4	3.5	Unk.	3	6	Unk.	2	2	4	3	3
Specific Capacity (gpm/ft)	0.49	Unk.	0.39	Unk.	0.42	Unk.	Unk.	0.48	Unk.	2	1.33	0.91	0.07	0.37
Geologic Unit	Psvasl	Psvdg	Psvdg	Psvdg	Psvdg	Psvasl	Psvasl	Psvasl	Psvdg	Psvdg	Psvdg	Psvdg	Psvdg	Psvdg
Casing Diameter (in)	Unk.	6	6	6	12	6	6	6	6	12	6	6	6	8

Geologic Cross Section

A geologic cross section oriented northwest by southeast is shown in Figure 3 (see Figure 2 for location). This cross-section transects the ridge that the project well and the majority of the neighboring wells are located on. Elevations range from above 1,600 ft at the ridgeline to below 1,000 feet at Milliken Creek. Based on geologic contacts from Wanger and Gutierrez, (2010), the Dacite of Mount George (map unit Psvdg) is relatively shallow. Estimated thickness ranges from tens of feet up to approximately 150 feet. As a result, all wells in the vicinity, even those penetrating the Dacite of Mount George, are likely screened within the Andesite Lava Flows (map unit Psvasl) or other underlying units. Reported static water elevations indicate a northwest to southeast gradient in groundwater elevation. The groundwater table is at a depth of approximately 200 to 300 feet and appears to mimic the surface topography.



***Screened interval unknown for project well (Well 1)**

Well

Ground surface

Groundwater Elevation

Screened Section of Well

Geologic Contact (Uncertain)

Figure 3: Hydrogeologic cross section A -A' through the vicinity of the project parcel (see Figure 2 for location)

Project Aquifer

The project well is located on a ridge between two small creeks. Because the groundwater table appears to closely follow surficial topography, the area drained by these two creeks was considered to represent the project recharge area. The total project recharge area is 255 acres of which 27% is underlain by the Andesite Lava Flows of the Sonoma Volcanics (map unit Psvasl) and 73% is underlain by Dacite of the Sonoma Volcanics (map unit Psvdg). Depths to groundwater are relatively deep which indicates that confined or semi-confined aquifer conditions are likely.

Water Demand

Existing Use

Existing condition water use in the project recharge area consists of residential use, irrigation use for vineyards, and winery use. Existing uses were determined using satellite photo interpretation to determine the number and size of residences and publicly available vineyard and winery data from the County of Napa to determine vineyard acreage and winery production. Annual rates for the various uses have been estimated primarily based on Napa County's Water Availability Analysis Guidance Document, dated May 2015 (Napa County, 2015). The existing residential use is estimated to total 9.65 acre-ft/yr, the existing irrigation use is estimated to total 56.00 acre-ft/yr, the existing winery use is estimated to total 0.27 ac-ft/yr, and the existing employee use is estimated to total 0.02 ac-ft/yr. The total estimated existing use is 65.94 acre-ft/yr (Tables 2 through 6). Approximately 0.75 acre-ft/yr or 1.1% of the total existing condition use is associated with the project parcel which accounts for about 7.1% of the project recharge area.

Within the project recharge area, it is estimated that there are nine main residences, six secondary residences, and three uncovered pools. The project parcel contains one of these primary residences. A large parcel to the northwest of the project parcel also contains a 6,000 ft^2 lawn. There are three existing vineyards within the project recharge area, totaling 109.6 acres of vines. While portions of the large vineyard at the western edge of the project recharge area (APN 039-010-003) are located outside of the recharge area, this vineyards' main wells appear to be located within the recharge area; therefore, the total acreage of this vineyard was included in the water use calculations. One of the existing vineyards (APN 039-010-008) also contains a small winery. Based on publicly available winery data, this winery has an annual production of approximately 10,000 gallons and employs two full time employees. This winery does not have tastings or other guest events.

Table 2: Existing and proposed groundwater uses within the project recharge area.

	Irrigation Use (acre-ft/yr)	Residential Use (acre-ft/yr)	Winery Use (acre-ft/yr)	Employee Use (acre-ft/yr)	Total Use (acre-ft/yr)
Existing Use	56.00	9.65	0.27	0.02	**65.94**
Proposed Use	56.00	9.65	1.41	0.09	**67.15**

Table 3: Calculation of existing and proposed Residential Use within the project recharge area.

Use Category	# of Units	Use per Unit (ac-ft/yr)	Use per 1,000 square feet above first 1,000	Annual Water Use (ac-ft/yr)
Main Residence	9	0.75		6.75
Secondary Residences	6	0.35		2.10
Uncovered Pools	3	0.10		0.30
Lawn	6,000		0.10	0.50
TOTAL				**9.65**

Table 4: Calculation of existing and proposed Irrigation Use within the project recharge area.

Use Category	Number of Acres	Use per Acre (ac-ft/yr)	Annual Water Use (ac-ft/yr)
Vineyard Irrigation	109.6	0.50	54.80
Orchard Irrigation	0.3	4.00	1.20
TOTAL			**56.00**

Table 5: Calculation of existing Winery Use within the project recharge area.

Use Category	Annual Production (gal/yr)	Use per 100,000 gal of production	Annual Water Use (ac-ft/yr)
Winery Process Use	10,000	2.15	0.22
Winery Domestic and Landscaping Use	10,000	0.50	0.05
Winery Guest Use			0.00
TOTAL			**0.27**

Table 6: Calculation of existing Employee use within the project recharge area.

Work Category	# of Employees	# Work Days per Year	Use per Employee (gal/day)	Annual Water Use (ac-ft/yr)
Full-time	2	260	15	0.024
Part-time	0	130	15	0.000
Event Staff	0	1	15	0.000
TOTAL				**0.024**

Proposed Use

In the proposed condition, a winery will be constructed on the project parcel. Based on water use estimates prepared by Applied Civil Engineering and provided by the client, this winery will have an annual production of approximately 40,000 gallons per year, increasing total winery production within the project recharge area to approximately 50,000 gallons per year. The proposed winery will also have approximately 0.5 acres of landscaping. Tours and tastings will be offered to a maximum of 20 guests per day, seven days a week, totaling a maximum of 7,300 tours and tastings per year. The winery will also host several annual events totaling an additional 400 annual guests; food for these events will be prepared off-site. During normal operations, the winery will have four full-time and three part-time employees. Additional workers will be on-site during special events, equivalent to an additional 40 days of full time work per year.

Including the above referenced uses, the estimated proposed condition water use is 67.15 acre-ft/yr. Winery production and guest use will increase by 1.14 acre-ft/yr to 1.41 acre-ft/yr and employee use will increase from 0.02 acre-ft/yr to 0.09 acre-ft/yr (Tables 7 through 9). 1.96 acre-ft/yr or 2.9% of the proposed water use will occur on the 18.3 acre project parcel which accounts for about 7.1% of the project recharge area.

Table 7: Calculation of proposed Winery Use within the project recharge area (includes both the existing winery and the proposed new winery).

Use Category	Annual Production (gal/yr)	Use per 100,000 gal of production	Annual Water Use (ac-ft/yr)
Winery Process Use	50,000	2.15	1.08
Winery Domestic and Landscaping Use	50,000	0.50	0.25
Winery Guest Use			0.09
TOTAL			**1.41**

Table 8: Calculation of proposed Winery Guest Use within the project recharge area (includes only the proposed winery, the existing winery does not have visitation).

	Annual Frequency	Maximum # of Guests per Event	Annual Visitors	Use per Visitor (gallons)	Annual Guest Use (Acre-ft/yr)
Daily Tours and Tastings	365	20	7300	3	0.067
Events (Small, Offsite Catering)	10	30	300	15	0.014
Events (Large, Offsite Catering)	1	100	100	15	0.005
TOTAL					**0.086**

Table 9: Calculation of proposed Employee Use within the project recharge area (includes both the existing winery and the proposed new winery).

Work Category	# of Employees	# Work Days per Year	Use per Employee	Annual Water Use (ac-ft/yr)
Full-time	6	260	15	0.072
Part-time	3	130	15	0.018
Event Staff	1	40	15	0.002
TOTAL				**0.092**

Groundwater Recharge Analysis

The Soil Water Balance (SWB) model developed by the U.S. Geological Survey (Westenbroek et al., 2010) was used to produce a spatially distributed estimate of annual recharge in the vicinity of the project parcel defined by the project recharge area. This model operates on a daily timestep and calculates runoff based on the Natural Resources Conservation Service (NRCS) curve number approach and Actual Evapotranspiration (AET) and recharge based on a modified Thornthwaite-Mather soil-water-balance approach (Westenbroek et al., 2010).

This approach simulates potential recharge from infiltration of precipitation and does not account for the capacity of the project aquifer materials to accept recharge. As discussed above under Limitations, groundwater occurring at significant depths may not be directly related to the recharge generated on the overlying landscape. Significant additional recharge may occur through streambed infiltration, and/or groundwater inflows from outside the defined project recharge area, however quantifying these recharge components is beyond the scope of this analysis.

Model Development

The project recharge area is 255.0 acres and is underlain by Andesite Lava Flows and Dacite of the Sonoma Volcanics. The model was developed using a 10-meter resolution rectangular grid and water budget calculations were made on a daily time step. Key spatial inputs included a flow direction map developed from the USGS 10-meter resolution Digital Elevation Model (DEM), a land cover dataset developed from the U.S. Forest Service (USFS) CALVEG dataset and modified based on the Napa County shapefile of agricultural areas and interpretation of 2016 aerial photography (Figure 4), a distribution of Hydrologic Soil Groups (A through D classification from lowest to highest runoff potential; Figure 5), and Available Water Capacity (AWC) developed from the NRCS Soil Survey Geographic Database (SSURGO).

A series of model parameters were assigned for each land cover type/soil group combination including a curve number, dormant and growing season interception storage values, and a rooting depth (Table 2). Curve numbers were assigned based on standard NRCS methods. Interception storage values and rooting depths were assigned based on literature values and previous modeling experience. Infiltration rates for hydrologic soil groups A through D were applied based on Cronshey et al. (1986) (Table 3) along with default soil-moisture-retention relationships based on Thornthwaite and Mather (1957) (Figure 6).

Daily precipitation and daily minimum and maximum air temperature data were compiled for the Atlas Peak weather station which is located approximately 4.5 miles north-northeast of the project parcel (Figure 1). This station was selected because it represents the best available weather station to the project site in terms of proximity, elevation, and exposure.

Based on the PRISM dataset which describes the spatial variations in long-term precipitation for the continental U.S., the 1980 to 2010 mean annual precipitation at the Atlas Peak weather station was 40.0 inches versus 37.0 inches for the project recharge area (PRISM, 2010). The precipitation data was scaled down by a factor of 0.92 to account for the difference in precipitation between the station location and the project recharge area. Water Year 2010 was selected to represent average water year conditions for the analysis because it represents a recent year with near long-term average precipitation conditions (36.1 inches at the scaled Atlas Peak station). The model was also evaluated for water year 2014 to represent drought conditions. Water year 2014 precipitation at the scaled Atlas Peak station was 18.6 inches or approximately 50% of long-term average conditions.

A 20-day period of missing temperature data at the start of the 2010 water year was replaced with temperature data from the Angwin weather station, which is located approximately 14 miles north of and at a similar elevation to the Atlas Peak station. Despite the distance between these two stations, these two stations have very similar temperature records. For the 2014 water year, a year for which full temperature records were available for both gages, the average maximum temperature at the Atlas Peak station was 72.5°F compared to 72.4°F at the Angwin station. Similarly, the average minimum temperature at the Atlas Peak station was 48.9°F compared to 50.5°F at the Angwin station.

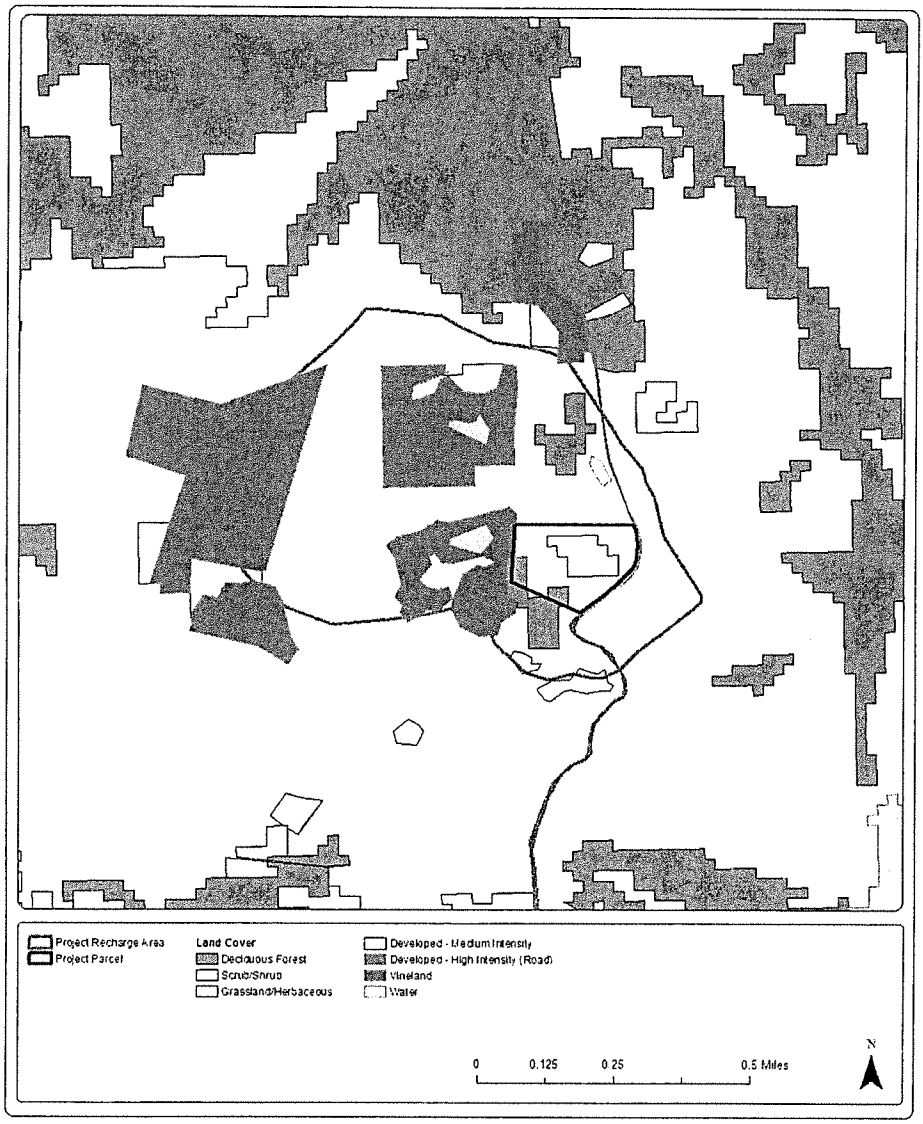


Figure 4: Land cover map used in the SWB model.

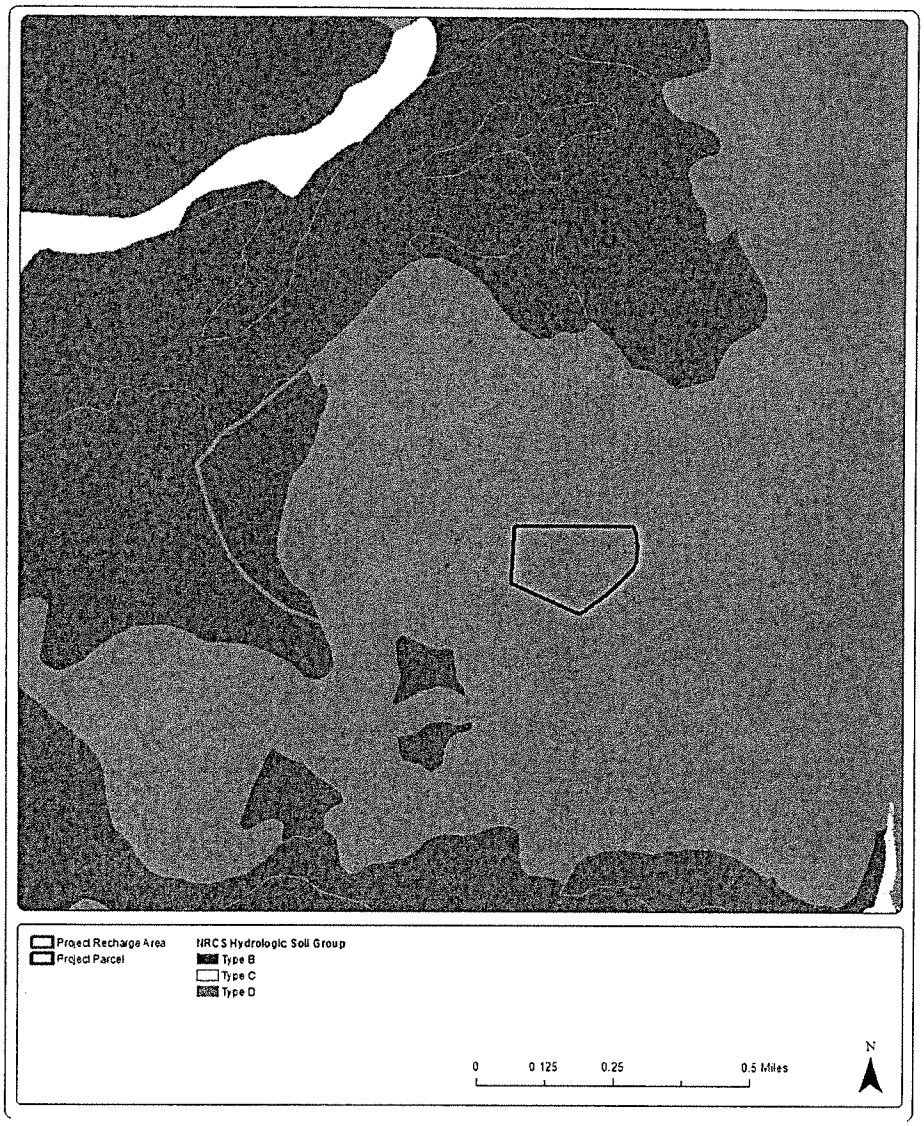


Figure 5: Soil map used in the SWB model.

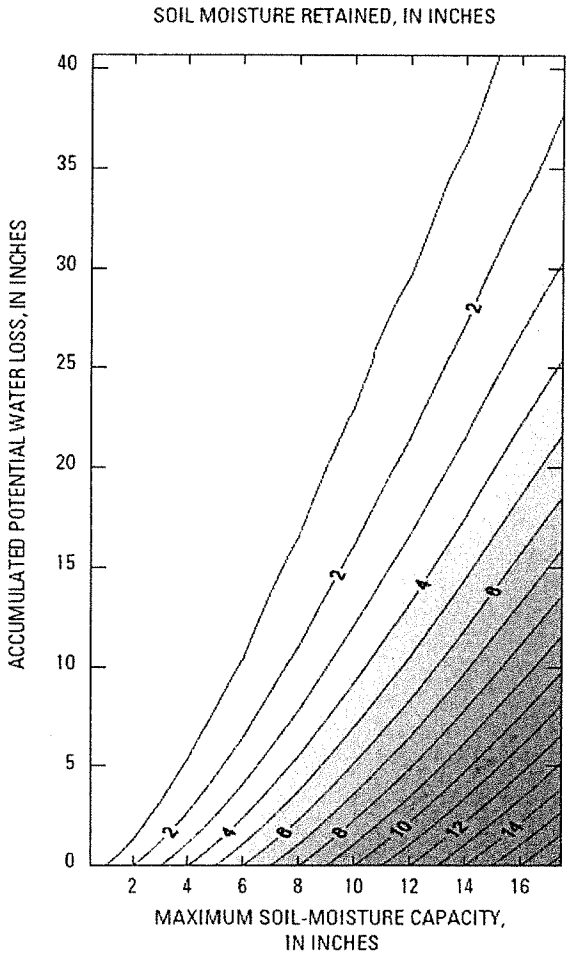


Figure 6 : Soil-moisture-retention table (Thornthwaite and Mather, 1957).

Table 10: Soil and land cover properties used in the SWB model

	Interception Storage Values		Curve Number			Rooting Depth (ft)		
Land Cover	Growing Season	Dormant Season	B Soils	C Soils	D Soils	B Soils	C Soils	D Soils
Developed - Medium Intensity	0.005	0.002	75	83	83	2.1	2.0	1.8
Grassland/Herbaceous	0.005	0.004	58	71	78	1.1	1.0	1.0
Deciduous Forest	0.050	0.020	55	70	77	5.1	4.9	4.7
Scrub/Shrub	0.080	0.015	48	65	73	2.8	2.7	2.6
Vineyard	0.080	0.015	61	75	81	2.1	2.0	1.9
Water	0.000	0.000	100	100	100	0.0	0.0	0.0

Table 11: Infiltration rates for NRCS hydrologic soil groups (Cronshey et al., 1986)

Soil Group	Infiltration Rate (in/hr)
A	> 0.3
B	0.15 - 0.3
C	0.05 - 0.15
D	<0.05

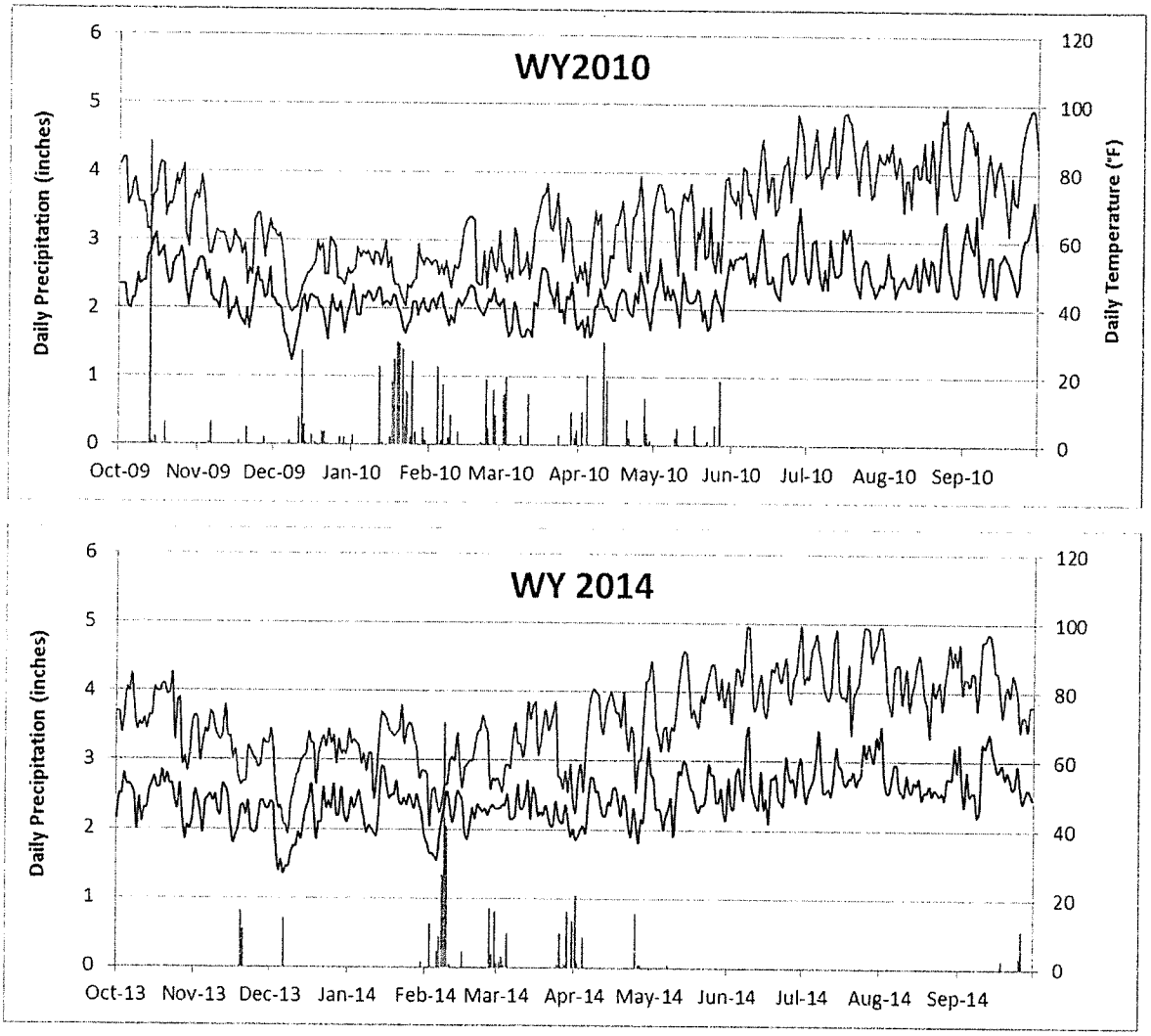


Figure 7: Daily precipitation (blue bars) and minimum (black lines) and maximum (red lines) air temperature used in the SWB model.

Results

The simulated Water Year 2010 (average water year) recharge results indicate that recharge varied across the project recharge area from 3.6 to 7.9 inches, excluding areas classified as water where the model assumes zero recharge (Figure 8 and Table 12). Spatially averaged over the project recharge area, the 36.1 inches of precipitation was partitioned as follows: Actual Evapotranspiration (AET) = 17.3 inches, Runoff = 13.0 inches, and Recharge = 5.8 inches (Table 12).

The simulated water year 2014 (dry water year) recharge results indicate that recharge varied across the project recharge area from near zero to 6.1 inches (Figure 9 and Table 9). Spatially averaged over the project recharge area, only 3.4 of the 18.6 inches of precipitation was recharged (Table 12).

Recharge as a percentage of annual precipitation ranged from 16% in the average water year to 18% in the dry water year. Runoff as a percentage of annual precipitation was lower in the dry water year (13%) compared to the average water year (36%).

Groundwater recharge estimates can also be expressed as a total volume by multiplying the calculated recharge by the project aquifer recharge area of 255 acres. This calculation yields an estimate of total recharge of 72.3 ac-ft during the drought conditions of water year 2014 and of 123.3 ac-ft for the average water year of 2010. Representative estimates of recharge rates on the project parcel are 5.2 ac-ft/yr for dry water years and 8.8 ac-ft/yr for average water years in proportion to the size of the project parcel (18.3 acres) relative to the simulated recharge area.

The project recharge area lies within the Milliken Creek watershed, and a water budget estimate is available for this watershed from LSCE (2013). The AET for 2010 modeled using the SWB model prepared in support of this report and the average AET modeled by LSCE are very similar (48% and 49% of total precipitation respectively). The SWB model produced lower estimates of runoff and higher estimates of recharge relative to the LSCE study. For average water year conditions, SWB indicated that runoff was 36% of precipitation and recharge was 16% of precipitation compared to 51% and 8% from the LSCE study.

One would not expect precise agreement between the two estimates given that the project recharge area includes only a small subset of the larger Milliken Creek watershed represented by the LSCE estimates. Variations in topography, soil types, land cover, and precipitation between the project recharge area and the larger Milliken Creek watershed likely account for much of the differences in the water balance. The estimates produced from this study using SWB are reasonable and fall within the range of estimated recharge for watersheds in the county primarily underlain by Sonoma Volcanics (Milliken Creek, Tulucay Creek, Conn Creek and Napa River above Calistoga) where LSCE (2013) estimated that annual recharge ranges from 5 to 21% of annual precipitation.

Table 12: Summary of water balance results from the SWB model.

	2010 Normal Year		2014 Dry Year	
	inches	% of precip	inches	% of precip
Precipitation	36.1		18.6	
AET	17.3	48%	12.7	68%
Runoff	13.0	36%	2.5	13%
Recharge	5.8	16%	3.4	18%

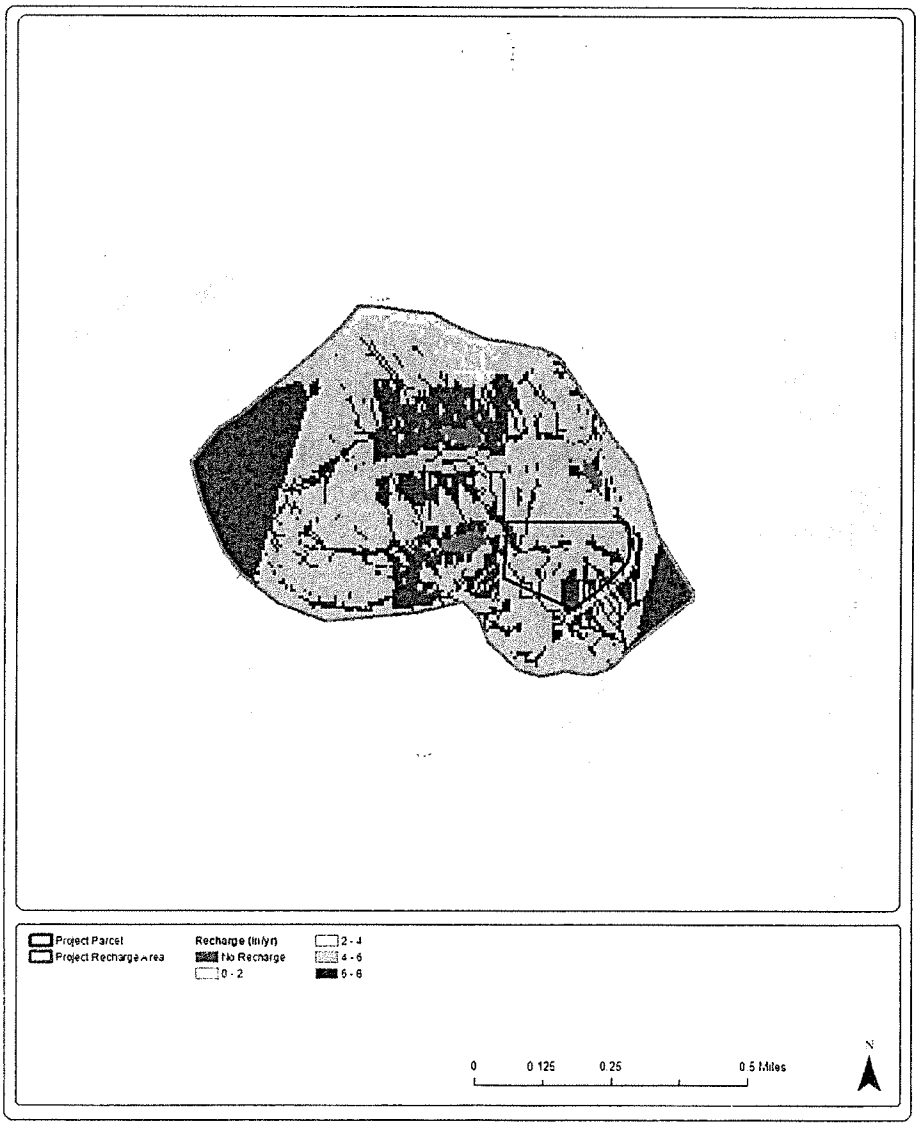


Figure 8: WY 2010 recharge simulated with the SWB model.

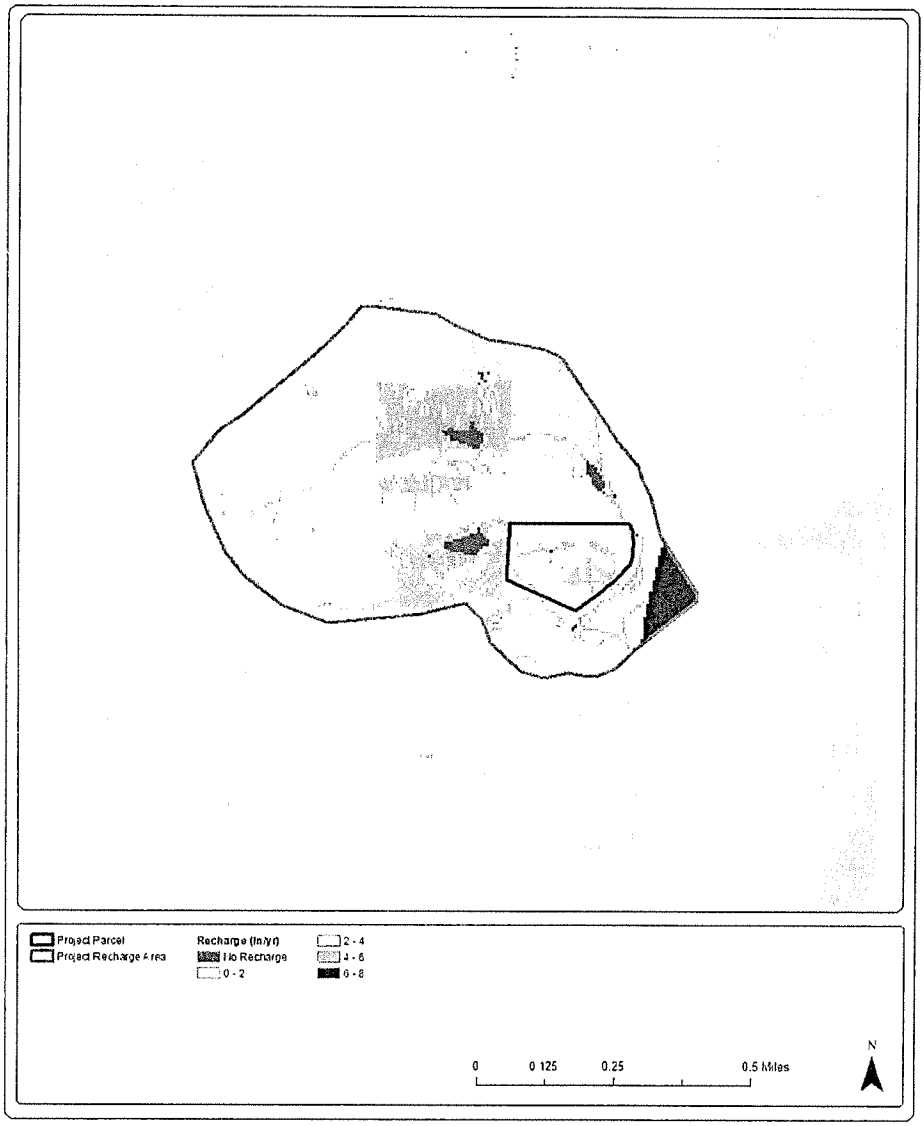


Figure 9: WY 2014 recharge simulated with the SWB model.

Comparison of Water Demand and Groundwater Recharge

The total proposed groundwater use for the project recharge area is estimated to be 67.2 ac-ft/yr and the total proposed groundwater use on the project parcel is about 2.0 ac-ft/yr. Groundwater use in the project recharge area is equivalent to 54% of the estimated average water year groundwater recharge of 123.3 ac-ft/yr and 93% of the estimated dry water year recharge of 72.3 ac-ft/yr (Table 13). When this comparison is restricted to the project parcel only, these percentages decrease to 23% and 38% for average and dry water years respectively

indicating that the proposed water use for the project parcel is less intensive than the use within the recharge area as a whole. These comparison indicates that there is a substantial surplus of groundwater resources in terms of estimated annual groundwater recharge during average water year conditions. Given the magnitude of this surplus, the 1.21 acre-ft/yr increase in water use associated with the proposed Kitoko Vineyards Winery project is highly unlikely to result in reductions in groundwater levels or depletion of groundwater resources over time.

Table 13: Comparison of proposed water use to average and dry year groundwater recharge in the project recharge area and on the project parcel.

		Average Water Year (2010)			Dry Water Year (2014)		
	Total Proposed Demand (ac-ft/yr)	Recharge (ac-ft/yr)	Recharge Surplus (ac-ft/yr)	Demand as % of Recharge	Recharge (ac-ft/yr)	Recharge Surplus (ac-ft/yr)	Demand as % of Recharge
Project Recharge Area	67.2	123.3	56.1	54%	72.3	5.1	93%
Project Parcel Only	2.0	8.8	6.8	23%	5.2	3.2	38%

Well Interference Analysis

There are no non-project wells within 500 feet of the project well; the closest non-project well (Well 2) is located approximately 1,100 feet north-northwest of the project well. Based on the WAA guidance document, a Tier 2 well interference analysis is not required given that non-project wells are located greater than 500-feet from the project wells.

Summary

Application of the Soil Water Balance (SWB) model to the project recharge area revealed that average water year recharge was approximately 5.8 inches/yr or 123.3 acre-ft/yr. During drought conditions, recharge was significantly lower at 3.4 inches/yr or 72.3 acre-ft/yr. The total proposed Water Use for the project aquifer recharge area is estimated to be 67.2 acre-ft/yr. This represents about 54% of the mean annual recharge indicating that the project is unlikely to result in declines in groundwater elevations or depletion of groundwater resources over time. The nearest neighboring well is located more than 500-ft from the project well indicating that a Tier 2 well interference analysis is not required.

References

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TRANSIENT NON-COMMUNITY WATER SYSTEM INFORMATION

FOR THE

KITOKO VINEYARDS WINERY

LOCATED AT:
3201 Atlas Peak Road
Napa, CA 94558
NAPA COUNTY APN 033-010-034

PREPARED FOR:
Kitoko Vineyards LLC
Care Of: Philippe Langner
3201 Atlas Peak Road
Napa, CA 94558
Telephone: (707) 255-1256

PREPARED BY:

APPLIED
CIVIL ENGINEERING
INCORPORATED

2074 West Lincoln Avenue
Napa, California 94558
Telephone: (707) 320-4968
www.appliedcivil.com

Job Number: 17-107

Michael R. Muelrath
Michael R. Muelrath R.C.E. 67435

2/23/2018
Date

TABLE OF CONTENTS

LIST OF APPENDICES

INTRODUCTION

Kitoko Vineyards LLC is applying for a Use Permit to construct and operate a new winery at their property located at 3201 Atlas Peak Road in Napa County, California. The subject property, known as Napa County Assessor's Parcel Number 033-010-034, is located along the west side of Atlas Peak Road approximately 4.3 miles north of the intersection of Atlas Peak Road and Hardman Avenue.

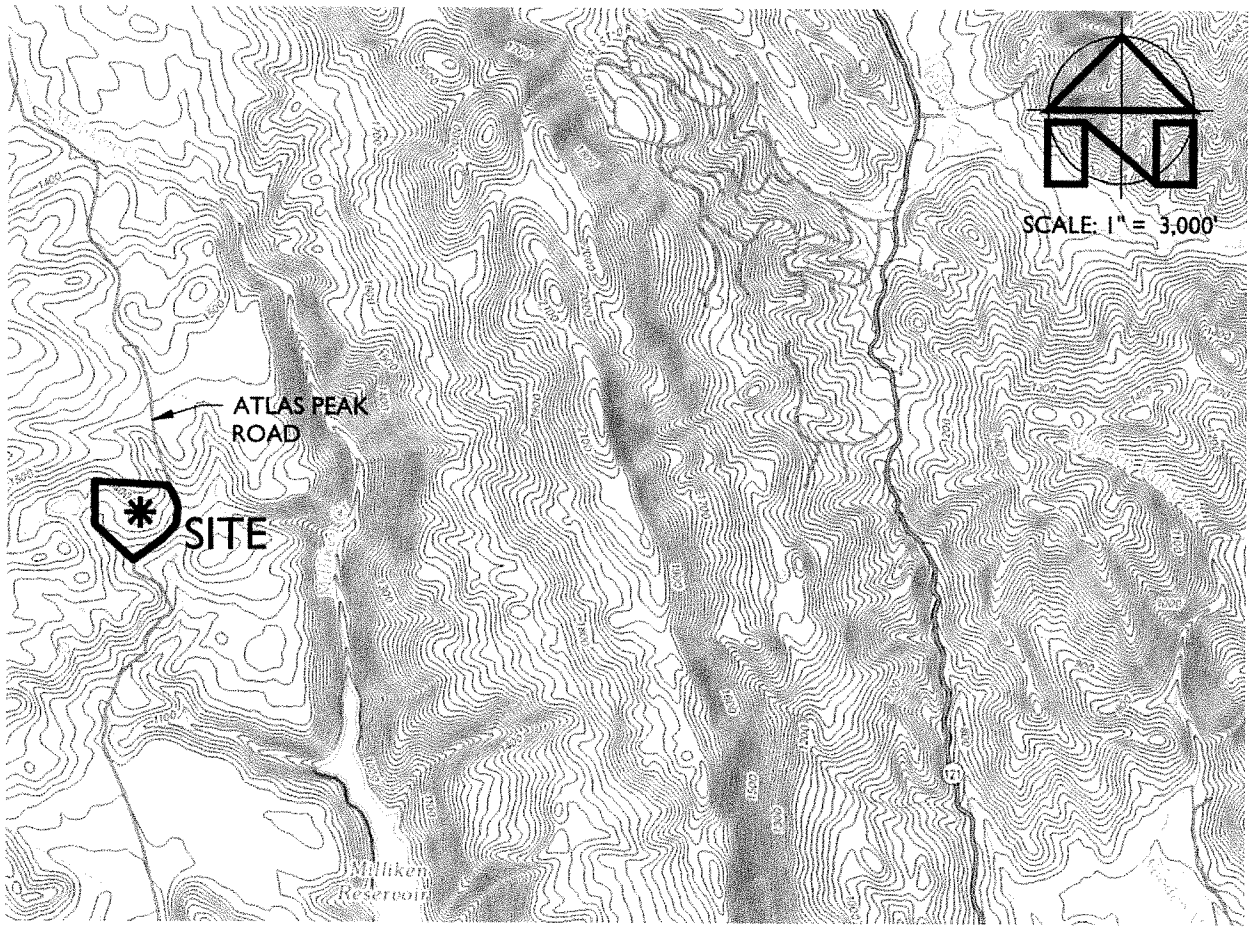


Figure 1: Location Map

The Use Permit application under consideration proposes the construction and operation of a new winery with the following characteristics:

- Wine Production:
  - 40,000 gallons of wine per year
  - Crushing, fermenting, aging and bottling

- Employees:
  - 4 full time employees
  - 3 part time employees

- Marketing Plan:
  - Daily Tours and Tastings by Appointment
    - 20 visitors per day maximum
  - Smaller Marketing Events
    - 10 per year
    - 30 guests maximum
    - Food prepared offsite by catering company
  - Larger Marketing Events
    - 1 per year
    - 100 guests maximum
    - Food prepared offsite by catering company
    - Portable toilets brought in for guest use

Existing development on the property includes a single-family residence (recently burned), a shop a groundwater well and the access and utility infrastructure typical of this type of rural residential and agricultural development. Please see the Kitoko Vineyards Winery Use Permit Conceptual Site Plans for approximate locations of existing and proposed features.

Since the number of employees plus the number of visitors is expected to exceed 24 for 60 or more days out of the year, the project will be required to implement a Transient Non-Community Public Water System.

Kitoko Vineyards has requested that Applied Civil Engineering Incorporated (ACE) prepare a brief report outlining the anticipated technical, managerial and financial aspects of the water system that will be required to serve the proposed winery to accompany the winery Use Permit application as required by Napa County.

WATER SYSTEM NAME

The water system will be known as the "Kitoko Vineyards Winery Water System".

NAME OF PERSON WHO PREPARED THIS REPORT

This report was prepared by Michael Muelrath, PE of Applied Civil Engineering Incorporated. Information regarding the parameters of the subject Use Permit application were provided by Kitoko Vineyards.

TECHNICAL CAPACITY

System Description

Water for the existing residence and landscape irrigation is currently provided by an existing groundwater well. The existing well does not have the required 50 foot deep, 3 inch wide annular seal and thus a new well will be required to serve the public water system. It is planned that the new well will be drilled in the vicinity of the new winery development as illustrated on the Kitoko Vineyards Winery Use Permit Conceptual Site Plans.

The new well must be constructed per Napa County standards and treatment must be provided as required to meet applicable local, state and federal water quality requirements. Detailed plans for the water treatment system will be prepared and presented to Napa County for review during the building permit and water system permit stage, after the new well is drilled and the required yield and water quality testing is performed.

Water Demand Projection

Napa County Water Availability Analysis Guidelines were used to estimate the annual water demand for an existing residence and the proposed winery and associated landscaping water use. The total proposed water use is estimated to be 2.8 acre-feet per year. Using the projected annual domestic water demand of 2.8 acre-feet per year, we have calculated an average daily demand of approximately 2,500 gallons and a maximum daily demand (MDD) of approximately 5,625 gallons (calculated using a peaking factor of 2.25 per California Waterworks Standards Section 64554b.3.(C)).

Source Adequacy

The new well must be constructed with a minimum 50 foot deep, 3 inch wide concrete annular seal to meet the requirements for public water systems. A copy of the Well Completion Report providing information about the new well will be included with the water system application with the winery building permit application package to document adequacy of the seal.

Water Supply Capacity

Assuming a conservative well pumping cycle of 12 hours per day the new well must be capable of producing at least 7.8 gallons per minute to meet the water system's MDD. We believe it is feasible to develop a well with at least this capacity on the subject property. The existing well has an estimated capacity of more than 11 gallons per minute accordingly to a pumping test that was performed at the request of the Applicant.

Furthermore, the project hydrogeologist has prepared a water availability analysis confirming that the projected aquifer extraction is less than expected aquifer recharge for both normal and dry years and therefore long term supply should be sufficient to meet the needs of the public water system.

It will be the Applicant's responsibility to locate and develop the new water source that meets this minimum capacity requirement. The yield of the new well must be verified by pumping and measuring drawdown in accordance with California Waterworks Standards Section 64554 prior to submittal of the water system permit application package.

Once the water system is permitted and constructed we recommend that the water level, yield and drawdown in the well be monitored on an ongoing basis to detect any trends in changing water table levels and well yield so that alternate sources can be developed if needed.

The water system must also include a new storage tank that can store at least the MDD (5,625 gallons).

Water Quality Characterization

Since a new well will be drilled it will be necessary to perform a full panel of water quality testing, including chemical and bacteriological analysis, upon completion of the new well. The water treatment system must then be designed to reduce all required contaminant levels to below the regulatory maximum contaminant level (MCL) for each constituent, as applicable. Based on preliminary testing of existing onsite wells and experience with other wells in the project area we judge that it will be feasible to provide treatment as needed to meet water quality requirements for the new public water system.

Consolidation Analysis

We have reviewed the California Environmental Health Tracking Program Water System Map Viewer (http://www.cehtp.org/page/water/water_system_map_viewer) and found two systems identified on the map that are located within 3 miles of the subject property:

1)City of Napa

2)Circle Water District

We have reviewed possibility of connecting to one of these existing systems with the Napa County Local Agency Formation Commission and have determined that it is not feasible to connect to an existing water system due to the fact that the property is outside of the service areas and also outside of the sphere of influence of all public water systems in the vicinity of the project area (see correspondence in Appendix 2).

MANAGERIAL

Organization

Management and routine operation of the water system will be performed by the winery staff. One staff member will be responsible for performing sampling, reporting and keeping up to date records onsite in accordance with Napa County requirements. The winery staff person in charge of the water system will consult with water system specialists as needed if issues arise with any components of the water system. The water system manager will report directly to the property owner, Kitoko Vineyards LLC.

Land Ownership

The new well, storage tank and piping will all be located on the same property as the proposed winery and residence that it will serve. This property is owned by Kitoko Vineyards LLC (see ownership documents in Appendix 4). Since the well and all water system components are planned to be located on the winery property, no access or maintenance easements will be required.

Water Rights

The Kitoko Vineyards Winery Water System will use groundwater from a non-adjudicated groundwater basin exclusively and is therefore not subject to water rights through the State Water Resources Control Board.

FINANCIAL

There will be no revenue generated by the water system.

The expected expenses for the water system can be broken down into initial startup cost and ongoing operational cost as shown below.

Startup Cost

Startup cost includes the new well and pump for the new well, water transmission piping, water storage tank(s), water treatment system equipment, booster pump(s) and installation. The water treatment and storage equipment will be designed based on a full panel of water quality test results that will be performed on water from the new well. Based on previous experience we estimate that the cost for the well, well pump, water transmission piping, water storage tank, booster pump, water treatment system equipment and installation will be approximately $126,000 (see budget spreadsheet in Appendix 3).

Actual costs will be dependent upon the location of the new well, tank and other water system components as well as results of the water quality testing and design of the water treatment system.

Annual Operating Cost

Annual operating cost for the water system will include a portion of one employee's salary, cost for performing quarterly and annual water quality testing, equipment maintenance, replacement of consumable items, electrical service charges, professional fees and capital replacement allowance. The actual cost to operate and maintain the water system will be dependent on the final design of the water system. We estimate that the annual cost associated with operating and maintaining the water system will be approximately $20,000 per year (see budget spreadsheet in Appendix 3).

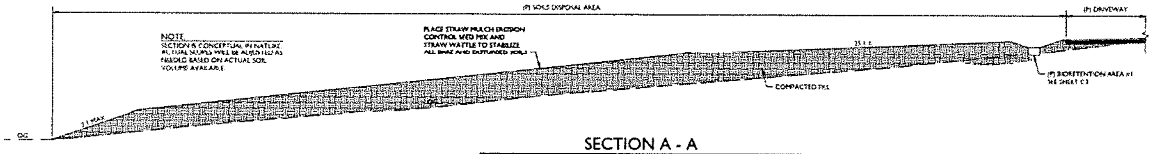
Funding

The startup cost will be financed along with the construction of the winery. The winery's annual budget must include a line item for water system operation and maintenance expenses to ensure finances are available to operate and maintain the water system throughout the life of the winery.

APPENDIX 1: Kitoko Vineyards Winery Use Permit Conceptual Site Plans
(Reduced to 8.5" x 11")

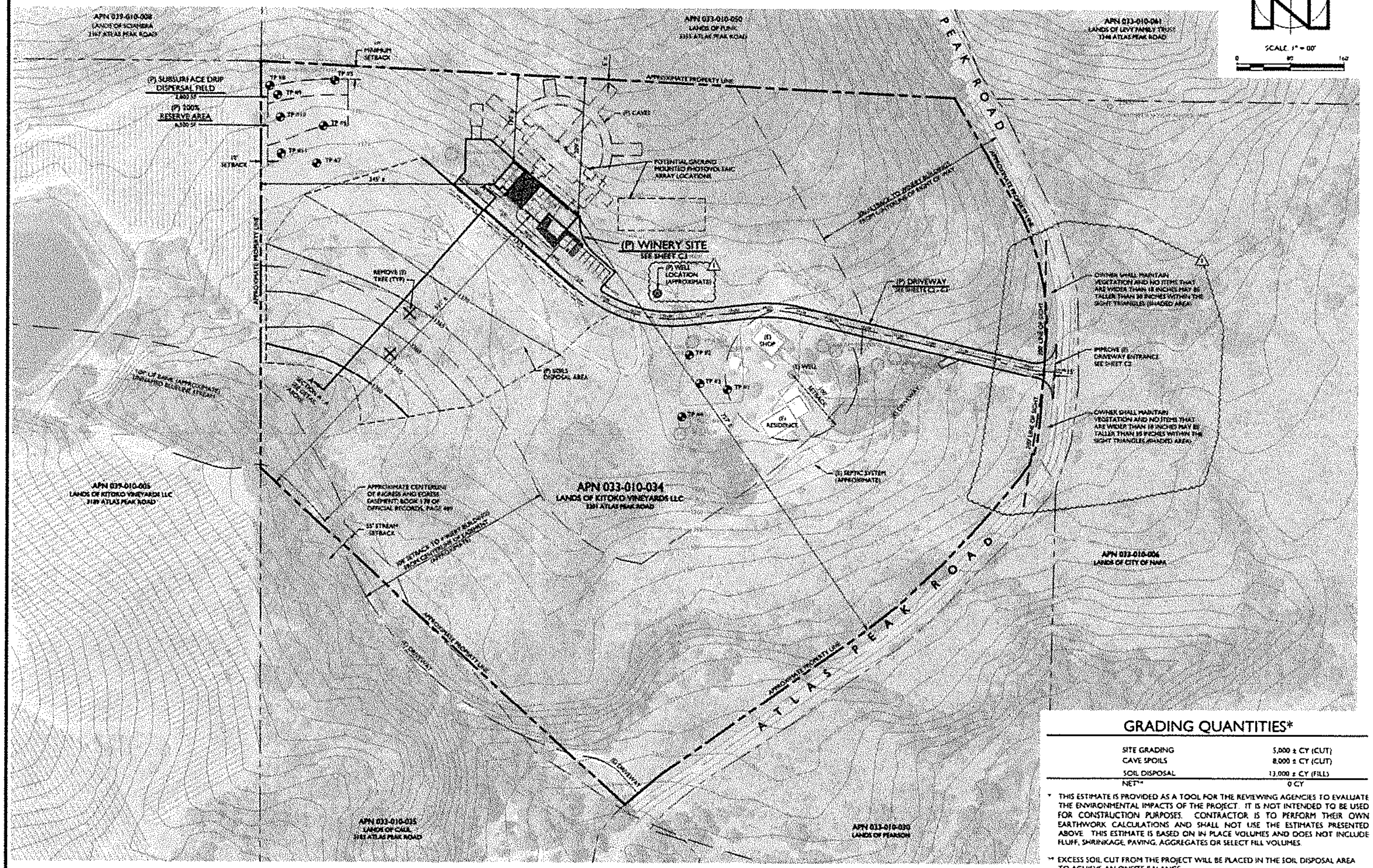
KITOKO VINEYARDS WINERY

USE PERMIT CONCEPTUAL SITE PLANS



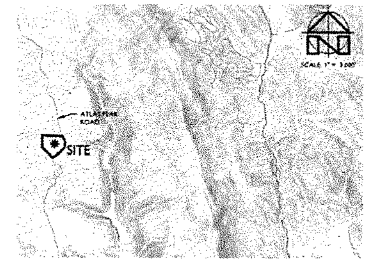
SECTION A - A

SCALE: 1" = 20'



OVERALL SITE PLAN

SCALE: 1" = 60'



LOCATION MAP

SCALE: 1" = 3,000'

PROJECT INFORMATION:

PROPERTY OWNER & APPLICANT:
KITOKO VINEYARDS LLC
3201 ATLAS PEAK ROAD
NAPA, CA 94558

SITE ADDRESS:
3201 ATLAS PEAK ROAD
NAPA, CA 94558

ASSESSOR'S PARCEL NUMBER:
033-010-034

PARCEL SIZE:
20 ± ACRES

PROJECT SIZE:
3 ± ACRES

ZONING:
AGRICULTURAL WATERSHED (AW)

DOMESTIC WATER SOURCE:
WELL

FIRE PROTECTION WATER SOURCE:
STORAGE TANK

WASTEWATER DISPOSAL:
ONSITE TREATMENT AND DISPERSAL

SHEET INDEX:

C1	COVER SHEET AND OVERALL SITE PLAN
C2	CONCEPTUAL PLAN AND PROFILE STA 10+00 TO STA 15+50
C3	CONCEPTUAL WINERY SITE PLAN AND PROFILE STA 15+50 TO STA 20+00
C4	IMPERVIOUS SURFACE EXHIBIT
C5	STORMWATER CONTROL PLAN

FLOOD HAZARD NOTE:

ACCORDING TO THE FEDERAL EMERGENCY MANAGEMENT AGENCY (FEMA) FLOOD INSURANCE RATE MAP (FIRM) MAP NUMBER 06055C0440E, EFFECTIVE SEPTEMBER 26, 2008, THE PROJECT SITE IS NOT LOCATED IN A SPECIAL FLOOD HAZARD AREA.

NOTES:

1. FADED BACKGROUND REPRESENTS EXISTING TOPOGRAPHIC FEATURES. TOPOGRAPHIC INFORMATION ON SHEETS C2 - C3 & C5 WAS TAKEN FROM THE "MAP OF TOPOGRAPHY OF A PORTION OF THE LANDS OF KITOKO VINEYARDS" PREPARED BY ALBION SURVEYS, INC., DATED MARCH 23, 2017, UPDATED APRIL 18, 2017. TOPOGRAPHIC INFORMATION ON SHEETS C1 & C4 WAS TAKEN FROM THE NAPA COUNTY GEOGRAPHIC INFORMATION SYSTEM DATABASE. APPLIED CIVIL ENGINEERING INCORPORATED ASSUMES NO LIABILITY REGARDING THE ACCURACY OR COMPLETENESS OF THE TOPOGRAPHIC INFORMATION.
2. AERIAL PHOTOGRAPH WAS OBTAINED FROM THE SAN FRANCISCO ESTUARY INSTITUTE (SFEI) SAN FRANCISCO BAY AREA ORTHOPHOTOS DATABASE, DATED JUNE 2014 AND MAY NOT REPRESENT CURRENT CONDITIONS.
3. CONTOUR INTERVAL:
   SHEET C1 & C4: FIVE (5) FEET, HIGHLIGHTED EVERY TWENTY FIVE (25) FEET.
   OTHER SHEETS: ONE (1) FOOT, HIGHLIGHTED EVERY FIVE (5) FEET.
4. BENCHMARK: NAVD 88
5. THE PROPERTY LINES SHOWN ON THESE PLANS DO NOT REPRESENT A BOUNDARY SURVEY. THEY ARE APPROXIMATE AND ARE PROVIDED FOR INFORMATIONAL PURPOSES ONLY.

TEST PIT NOTES:

1. TEST PITS ONE THROUGH ELEVEN (TP #1 - TP #11) WERE EXCAVATED BY McCOLLUM GENERAL ENGINEERING AND WERE WITNESSED BY MIKE MUELRATH OF APPLIED CIVIL ENGINEERING INCORPORATED AND REBECCA SETLIFF OF THE NAPA COUNTY PLANNING, BUILDING AND ENVIRONMENTAL SERVICES DEPARTMENT - ENVIRONMENTAL HEALTH DIVISION ON MAY 11, 2017

GRADING QUANTITIES*

SITE GRADING	5,000 ± CY (CUT)
CAVE SPOILS	8,000 ± CY (CUT)
SOIL DISPOSAL	13,000 ± CY (FILL)
NET**	0 CY

* THIS ESTIMATE IS PROVIDED AS A TOOL FOR THE REVIEWING AGENCIES TO EVALUATE THE ENVIRONMENTAL IMPACTS OF THE PROJECT. IT IS NOT INTENDED TO BE USED FOR CONSTRUCTION PURPOSES. CONTRACTOR IS TO PERFORM THEIR OWN EARTHWORK CALCULATIONS AND SHALL NOT USE THE ESTIMATES PRESENTED ABOVE. THIS ESTIMATE IS BASED ON IN PLACE VOLUMES AND DOES NOT INCLUDE FLUFF, SHRINKAGE, PAVING, AGGREGATES OR SELECT FILL VOLUMES.

** EXCESS SOIL CUT FROM THE PROJECT WILL BE PLACED IN THE SOIL DISPOSAL AREA TO ACHIEVE AN ONSITE BALANCE.

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www.appliedcivil.com

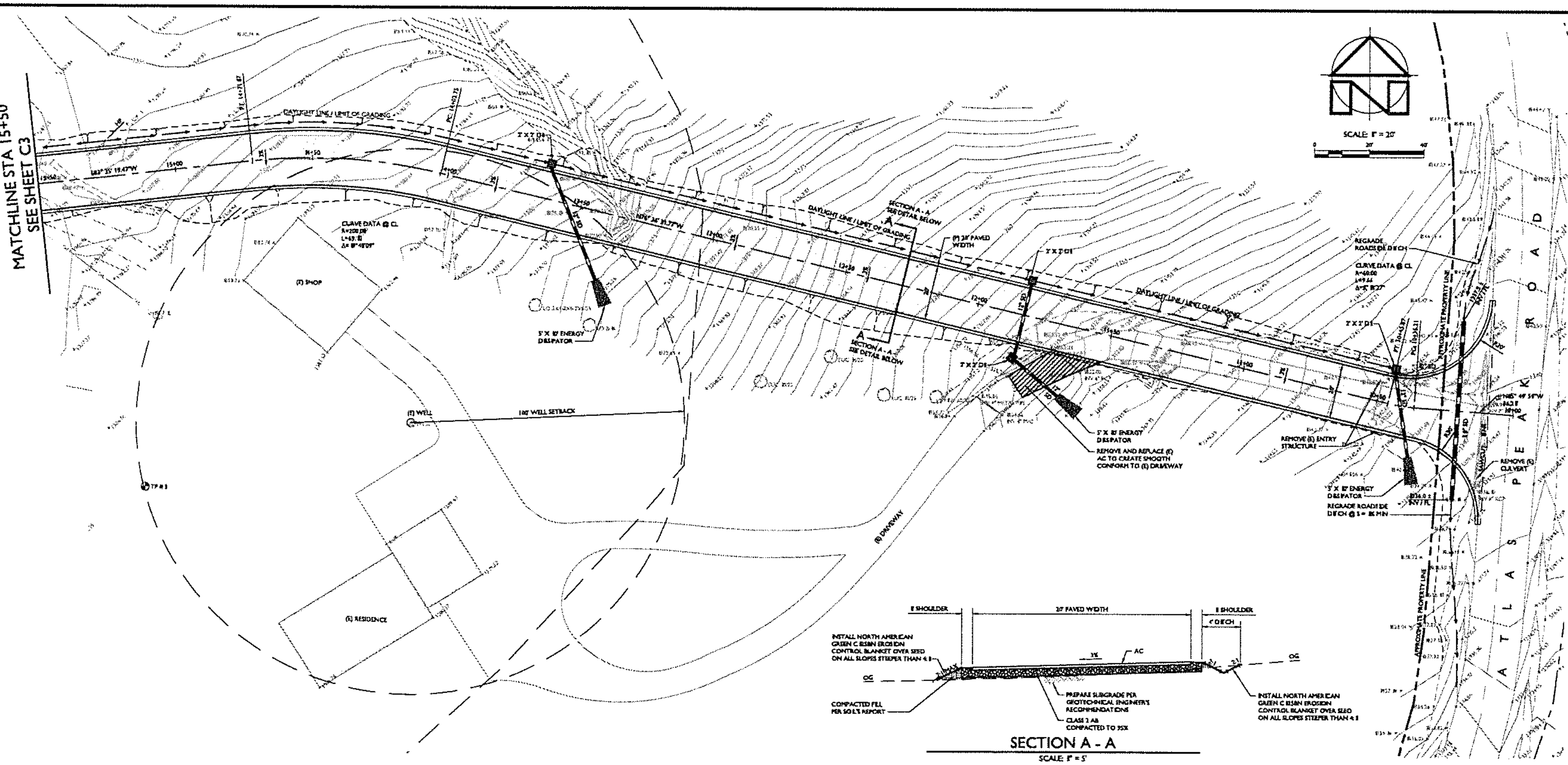
KITOKO VINEYARDS WINERY
USE PERMIT CONCEPTUAL SITE PLANS
OVERALL SITE PLAN

PREPARED UNDER THE DIRECTION OF:

DRAWN BY: PowerCAD
CHECKED BY: MRM
DATE: FEBRUARY 23, 2018

REVISIONS:	BY:
7/21/2017 USE PERMIT SUBMITTAL	YMS
2/23/2018 PLAN CHECK REVISIONS	TMS

JOB NUMBER: 17-107
FILE: 17-107CONC.DWG
ORIGINAL SIZE: 24" X 36"
SHEET NUMBER: C1 OF 5



DRIVEWAY PLAN
STA 10+00 TO STA 15+50
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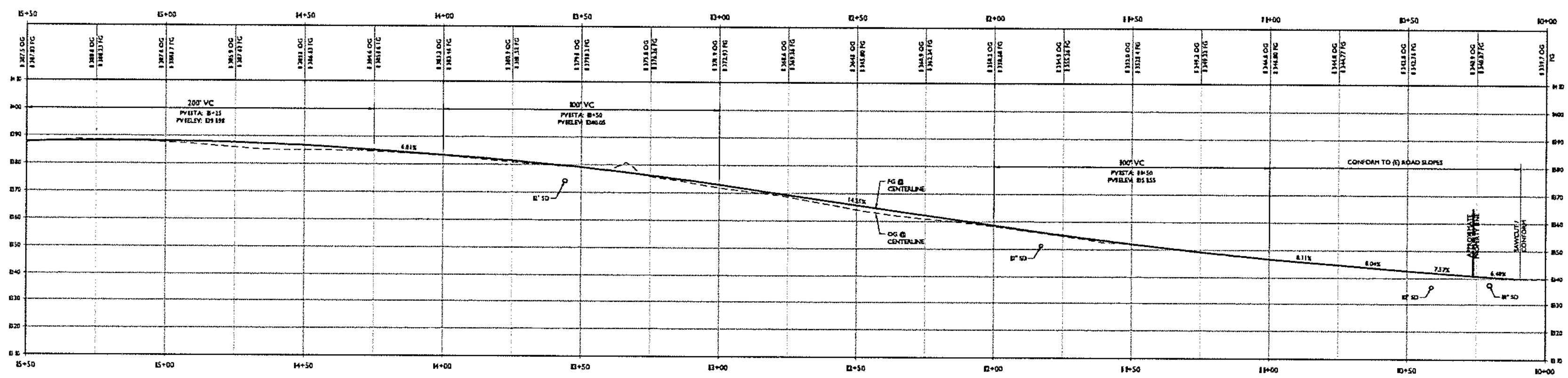

DRIVEWAY PROFILE
STA 10+00 TO STA 15+50
SCALE: 1" = 20'

APPLIED
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Napa, CA 94558
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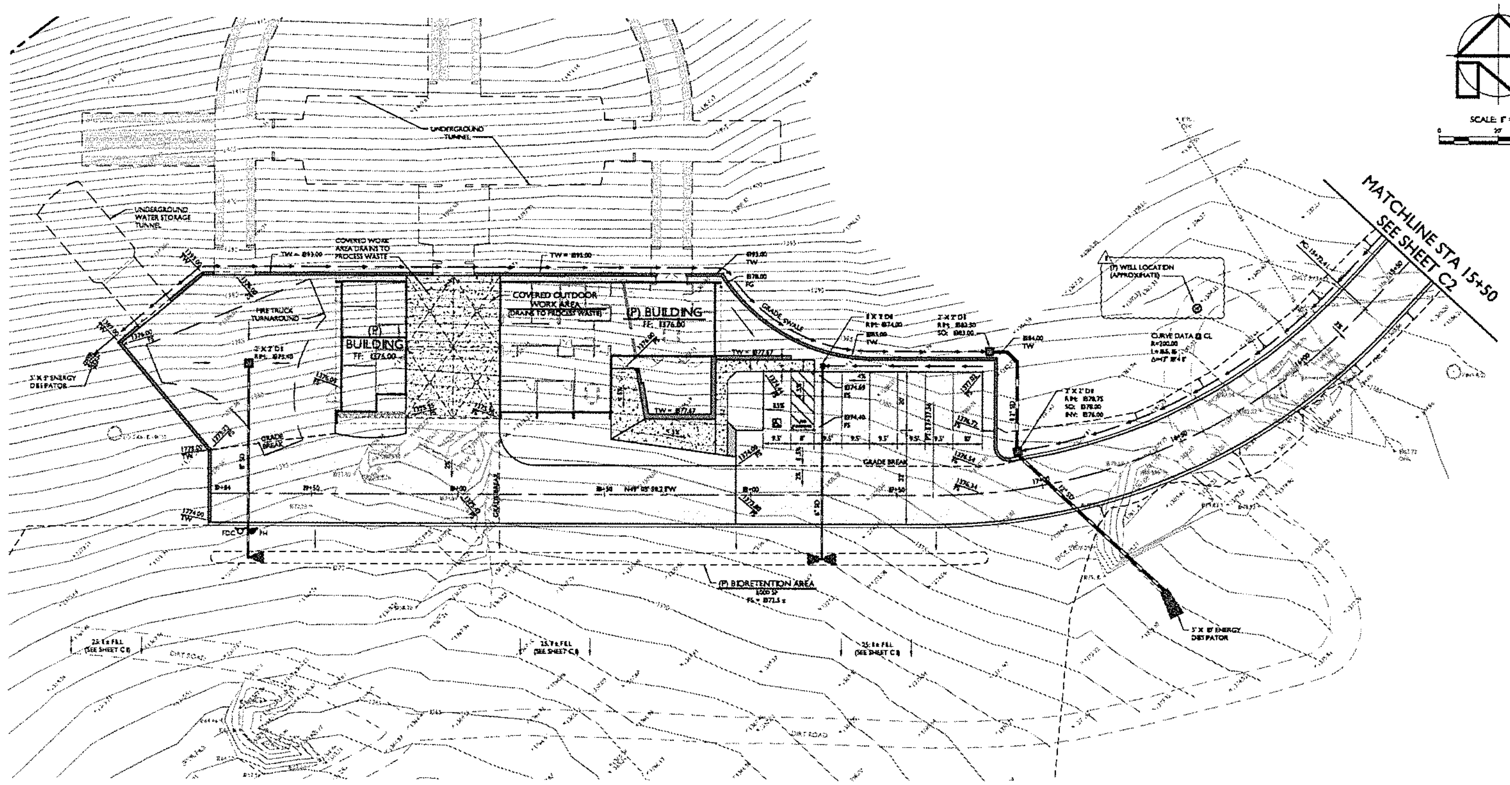
KITOKO VINEYARDS WINERY
USE PERMIT CONCEPTUAL SITE PLANS
CONCEPTUAL PLAN AND PROFILE STA 10+00 TO STA 15+50

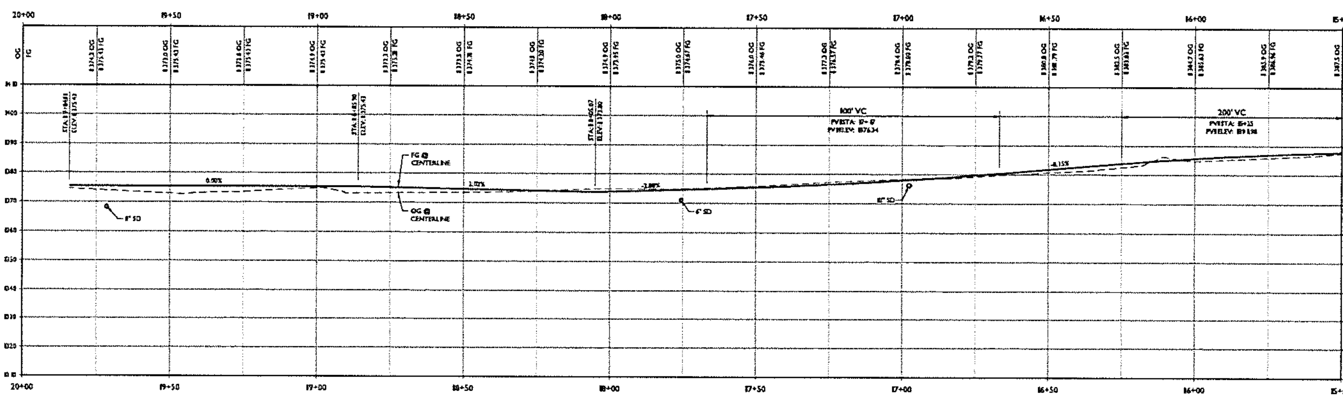
PREPARED UNDER THE DIRECTION OF:

DRAWN BY: PowerCAD
CHECKED BY: MRM
DATE: FEBRUARY 23, 2018
REVISIONS: BY:
7/31/2017 USE PERMIT SUBMITTAL YHS
2/23/2018 PLAN CHECK REVISIONS YHS
JOB NUMBER: 17-107
FILE: 17-107CONC.DWG
ORIGINAL SIZE: 24" X 36"
SHEET NUMBER: C2 OF 5



CONCEPTUAL WINERY SITE PLAN

SCALE: 1" = 20'



DRIVEWAY PROFILE
STA 15+50 TO STA 20+00

SCALE: 1" = 20'

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Napa, CA 94558
(707) 320-4968 (707) 320-2395 Fax
www.appliedcivil.com

KITOKO VINEYARDS WINERY

USE PERMIT CONCEPTUAL SITE PLANS

CONCEPTUAL WINERY SITE PLAN AND PROFILE STA 15+50 TO STA 20+00

PREPARED UNDER THE DIRECTION OF:

DRAWN BY: PowerCAD

CHECKED BY: MRM

DATE: FEBRUARY 23, 2018

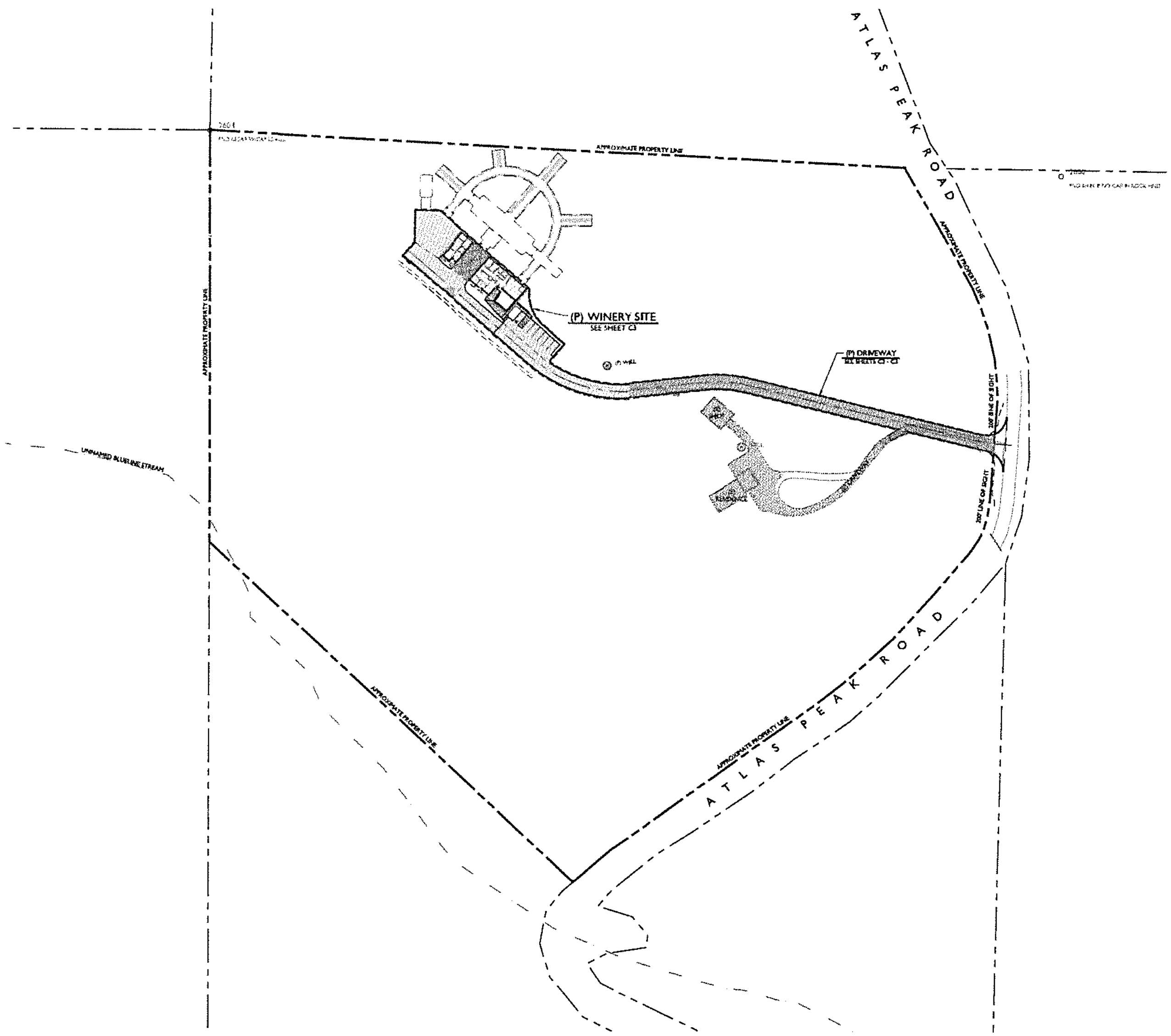
REVISIONS:	BY:
7/28/2017 USE PERMIT SUBMITTAL	YMS
2/23/2018 PLAN CHECK REVISIONS	YMS

JOB NUMBER: 17-107

FILE: 17-107CONC.DWG

ORIGINAL SIZE: 24" X 36"

SHEET NUMBER: C3 OF 5



IMPERVIOUS SURFACE EXHIBIT

SCALE: 1" = 80'

IMPERVIOUS SURFACE SUMMARY

	PRE-PROJECT AREA (SF)	NEW AREA (SF)	RECONSTRUCTED AREA (SF) A*	RECONSTRUCTED AREA (SF) B**	TOTAL NEW AND RECONSTRUCTED AREA (SF)
TOTAL AREA OF IMPERVIOUS SURFACE	[illegible]	[illegible]	[illegible]	100	34,900

*RECONSTRUCTED AREAS (A) ARE EXISTING IMPERVIOUS SURFACES THAT ARE BEING REPLACED WITH NEW IMPERVIOUS SURFACES.

**RECONSTRUCTED AREAS (B) ARE EXISTING IMPERVIOUS SURFACES THAT ARE BEING COMPLETELY REMOVED AND ARE NOT BEING REPLACED WITH NEW IMPERVIOUS SURFACES.

27,307 ± SF — WINERY COVERAGE AREA

6,270 ± SF — WINERY DEVELOPMENT AREA

APPLIED
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Napa, CA 94558
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www.appliedcivil.com

KITOKO VINEYARDS WINERY

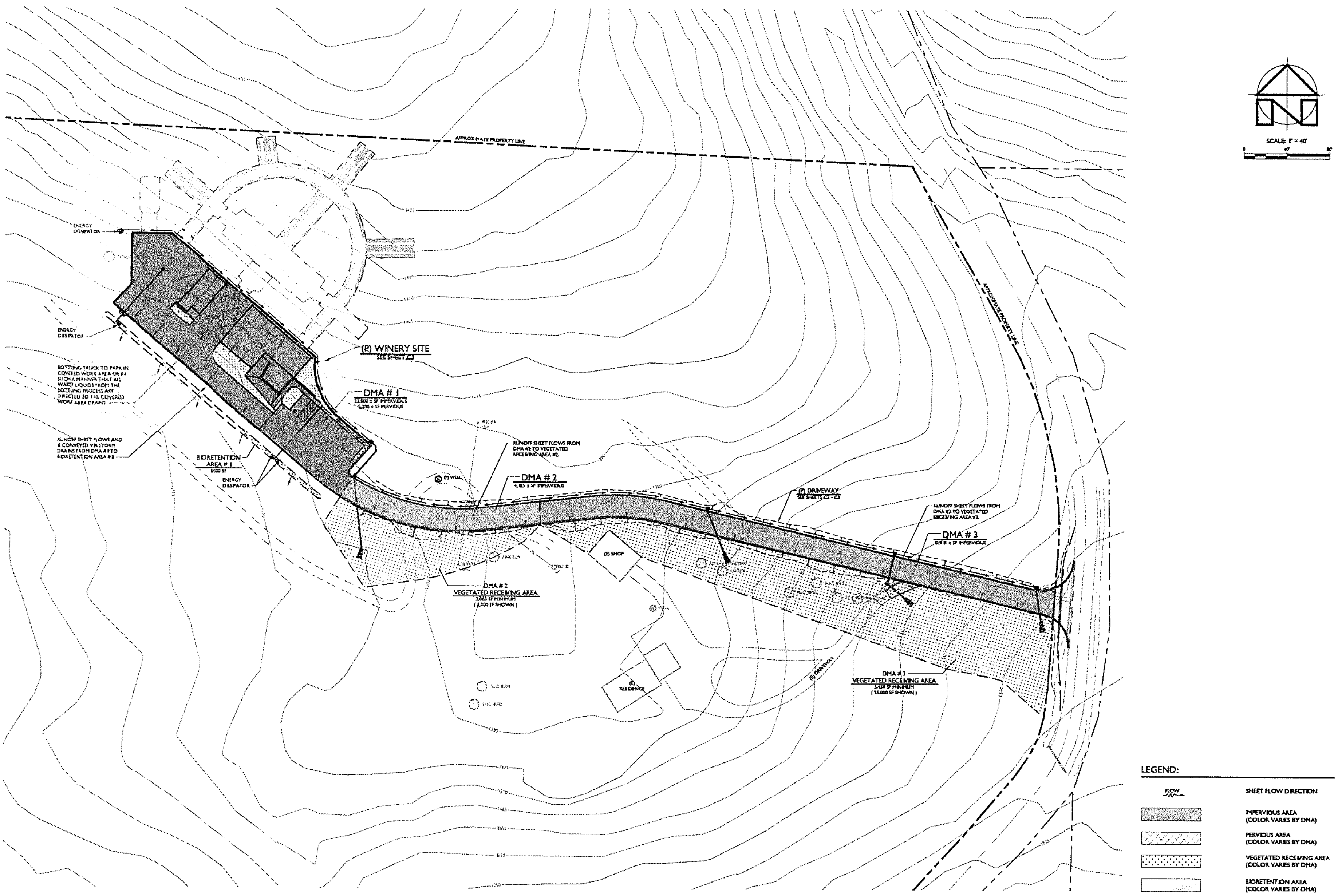
USE PERMIT CONCEPTUAL SITE PLANS
IMPERVIOUS SURFACE EXHIBIT

PREPARED UNDER THE DIRECTION OF:

DRAWN BY: PowerCAD
CHECKED BY: MAM
DATE: FEBRUARY 23, 2018

REVISIONS:	BY:
7/13/2017 USE PERMIT SUBMITTAL	YMS
△ 2/23/2018 PLAN CHECK REVISIONS	YMS

JOB NUMBER: 17-107
FILE: 17-107CONC.DWG
ORIGINAL SIZE: 24" X 36"
SHEET NUMBER: C4 OF 5



STORMWATER CONTROL PLAN

SCALE: 1" = 40'

APPLIED CIVIL ENGINEERING INCORPORATED
2074 West Lincoln Avenue
Napa, CA 94558
(707) 320-4968 (707) 320-2395 Fax
www.appliedcivil.com

KITOKO VINEYARDS WINERY

USE PERMIT CONCEPTUAL SITE PLANS

STORMWATER CONTROL PLAN

PREPARED UNDER THE DIRECTION OF:

DRAWN BY: PowerCAD

CHECKED BY: MRM

DATE: FEBRUARY 23, 2018

REVISIONS:	BY:
7/31/2017 USE PERMIT SUBMITTAL	YMS
2/23/2018 PLAN CHECK REVISIONS	YMS

JOB NUMBER: 17-107

FILE: 17-107CONC.DWG

ORIGINAL SIZE: 24" X 36"

SHEET NUMBER: C5 OF 5

APPENDIX 2: Correspondence with LAFCO

Mike Muelrath

From: Freeman, Brendon <bfreeman@napa.lafco.ca.gov>
Sent: Friday, February 23, 2018 9:40 AM
To: Mike Muelrath
Subject: Water Service at 3201 Atlas Peak Road

Mike,

I am confirming that we spoke on the telephone about the proposed winery water system located at 3201 Atlas Peak Road in unincorporated Napa County.

3201 Atlas Peak Road is located outside the jurisdictional boundaries and spheres of influence for all local municipal water service providers (cities and special districts). Annexing the property to a municipal water service provider is only possible if the property is located within the sphere of influence of a municipal water service provider. Toward this end, it is unlikely the property will be included within the sphere of influence of a municipal water service provider within the foreseeable future.

Further, pursuant to CA Government Code Section 56133, a city or special district can only provide public water service outside its jurisdictional boundary and sphere of influence in response to a documented threat to public health and safety. Absent an existing threat to public health and safety, LAFCO cannot legally approve an outside service extension request for this property.

With all of this in mind, LAFCO cannot authorize a municipal water service provider (city or special district) to provide public water service to 3201 Atlas Peak Road.

Please let me know if you have any additional questions or if there is anything else I can provide that may be helpful.

Thank you,

Brendon Freeman, Executive Officer
Local Agency Formation Commission of Napa County
1030 Seminary Street, Suite B
Napa, California 94559
Office: (707) 259-8645
Mobile: (707) 363-1783
www.napa.lafco.ca.gov

APPENDIX 3: Budgeting Spreadsheets

SIMPLIFIED CAPITAL IMPROVEMENT PLAN (CIP)

Date: 2/23/2018
System ID No.: TBD
System Name: Kitoko Vineyards Winery Water System
Service Connections: 1

*Enter information only in YELLOW shaded cells

QTY	COMPONENT		UNIT COST	INSTALLED COST	AVG LIFE, YEARS	ANNUAL RESERVE	MONTHLY RESERVE	MONTHLY RESERVE PER CUSTOMER
1	Drilled Well, 6", steel casing	Depth: 400	80	32000	25	1280.00	106.67	106.67
0	Drilled Well, 8", steel casing	Depth: 0	130	0	25	0.00	0.00	0.00
0	Drilled Well, 12", steel casing	Depth:	200	0	25	0.00	0.00	0.00
1	Wellhead Electrical Controls		700	700	25	28.00	2.33	2.33
0	Submersible Pump, 20 HP		9000	0	7	0.00	0.00	0.00
0	Submersible Pump, 3 HP		2000	0	7	0.00	0.00	0.00
1	Submersible Pump, 5 HP		3500	3500	7	500.00	41.67	41.67
1	Booster Pump Station, 10 HP, complete		14000	14000	5	2800.00	233.33	233.33
1	Booster Pump Station Electrical Controls		5000	5000	5	1000.00	83.33	83.33
0	Pressure Tank	Gallons:	1.5	0	10	0.00	0.00	0.00
1	Pressure Tank	Gallons: 80	1.5	120	10	12.00	1.00	1.00
0	Storage Tank, Plastic	Gallons: 5000	0.5	0	10	0.00	0.00	0.00
0	Storage Tank, Redwood	Gallons:	1.3	0	40	0.00	0.00	0.00
0	Storage Tank, Redwood	Gallons:	1.3	0	40	0.00	0.00	0.00
0	Storage Tank, Steel	Gallons: 12,445	1.2	0	50	0.00	0.00	0.00
0	Storage Tank, Steel	Gallons:	1.2	0	50	0.00	0.00	0.00
0	Storage Tank, Steel	Gallons:	1.2	0	50	0.00	0.00	0.00
1	Storage Tank, Concrete	Gallons: 10000	1.5	15000	80	187.50	15.63	15.63
3	Master Meter, 2"		450	1350	10	135.00	11.25	11.25
0	Master Meter, 3"		800	0	10	0.00	0.00	0.00
0	Master Meter, 4"		2500	0	10	0.00	0.00	0.00
0	Hypochlorinator w/ Tank & Pump, Complete		800	0	10	0.00	0.00	0.00
0	Pipe w/ sand bedding, 1" (Enter linear feet for quantity)		20	0	50	0.00	0.00	0.00
1500	Pipe w/ sand bedding, 2" (Enter linear feet for quantity)		25	37500	50	750.00	62.50	62.50
0	Pipe w/ sand bedding, 3" (Enter linear feet for quantity)		30	0	50	0.00	0.00	0.00
0	Pipe w/ sand bedding, 4" (Enter linear feet for quantity)		35	0	50	0.00	0.00	0.00
0	Pipe w/ sand bedding, 6" (Enter linear feet for quantity)		50	0	50	0.00	0.00	0.00
0	Standpipe Hydrant, 1-1/2"		700	0	20	0.00	0.00	0.00
0	Standpipe Hydrant, 2-1/2"		900	0	20	0.00	0.00	0.00
0	Customer Meter w/ Box & Shutoff, Complete		250	0	20	0.00	0.00	0.00
10	Distribution Valve, 2"		150	1500	10	150.00	12.50	12.50
0	Distribution Valve, 3"		250	0	10	0.00	0.00	0.00
0	Distribution Valve, 4"		600	0	20	0.00	0.00	0.00
0	Distribution Valve, 6"		850	0	20	0.00	0.00	0.00
1	Air & Vacuum Relief Valve, Typical		375	375	20	18.75	1.56	1.56
1	Calcite Filter and Softening		7500	7500	20	375.00	31.25	31.25
1	UV		7500	7500	20	375.00	31.25	31.25
	OTHER ITEM			0	1	0.00	0.00	0.00
	SUBTOTAL Existing CIP Costs			$126,045.00		$7,611.25	$634.27	$634.27
	NEW Project CIP Costs							
	OTHER ITEM			0	1	0.00	0.00	0.00
	OTHER ITEM			0	1	0.00	0.00	0.00
	OTHER ITEM			0	1	0.00	0.00	0.00
	OTHER ITEM			0	1	0.00	0.00	0.00
	OTHER ITEM			0	1	0.00	0.00	0.00
	OTHER ITEM			0	1	0.00	0.00	0.00
	OTHER ITEM			0	1	0.00	0.00	0.00
	OTHER ITEM			0	1	0.00	0.00	0.00
	SUBTOTAL New Project CIP Costs			$0.00		$0.00	$0.00	$0.00
	TOTAL Existing and New Project CIP:			$126,045.00		$7,611.25	$634.27	$634.27

Report Prepared by (Title): ______________________ Date: ____________

NOTE: Installed costs are averages and include all materials and contracted labor and equipment.

NOTES:

FIVE YEAR BUDGET PROJECTION (Small Community Water System)

INSTRUCTIONS: Yellow-shaded cells are for data entry; all other cells are locked except line item descriptions which can be changed if needed. Years 2 through 5 will be compounded automatically by the inflation factor in Cell G6.

System Name: Kitoko Vineyards Winery Water System

Inflation Factor (%): 3.0

System ID Number: TBD

LINE		EXPENSES AND SOURCE OF FUNDS	2018	2019	2020	2021	2022
1		**OPERATIONS AND MAINTENANCE (O&M) EXPENSES**					
2		Salaries and Benefits	6,240.00	6,427.20	6,620.02	6,818.62	7,023.17
3		Contract Operation and Maintenance	0.00	0.00	0.00	0.00	0.00
4		Power and Other Utilities	2,500.00	2,575.00	2,652.25	2,731.82	2,813.77
5		Fees Regulatory	674.00	694.22	715.05	736.50	758.59
6		Treatment Chemicals	0.00	0.00	0.00	0.00	0.00
7		Coliform Monitoring	240.00	247.20	254.62	262.25	270.12
8		Chemical Monitoring	50.00	51.50	53.05	54.64	56.28
9		Transportation	0.00	0.00	0.00	0.00	0.00
10		Materials, Supplies, and Parts	500.00	515.00	530.45	546.36	562.75
11		Office Supplies	100.00	103.00	106.09	109.27	112.55
12		Miscellaneous	500.00	515.00	530.45	546.36	562.75
13		Additional O&M for New Project	0.00	0.00	0.00	0.00	0.00
14		**Total O&M Expenses:**	10,804.00	11,128.12	11,461.96	11,805.82	12,160.00
16		**GENERAL AND ADMINISTRATIVE EXPENSES**					
17		Engineering and Professional Services	680.00	700.40	721.41	743.05	765.35
18		Depreciation and Amortization	0.00	0.00	0.00	0.00	0.00
19		Insurance	0.00	0.00	0.00	0.00	0.00
20		Existing Contribution to CIP (From CIP J48)	7,611.25	7,611.25	7,611.25	7,611.25	7,611.25
21		O&M Reserve	0.00	0.00	0.00	0.00	0.00
22		Other Reserves	0.00	0.00	0.00	0.00	0.00
23		Miscellaneous	100.00	103.00	106.09	109.27	112.55
24	**	New Funding Project Costs	0.00	0.00	0.00	0.00	0.00
25		Additional New Project Contribution to CIP (From CIP J59)	0.00	0.00	0.00	0.00	0.00
26	**	Debt Service	0.00	0.00	0.00	0.00	0.00
27		**Total General and Administrative Expenses:**	8,391.25	8,414.65	8,438.75	8,463.58	8,489.15
28		**TOTAL EXPENSES (Line 14+ Line 27):**	19,195.25	19,542.77	19,900.72	20,269.40	20,649.14
30		**REVENUES RECEIVED**					
31		Cash Revenues (Water Rates)	0.00	0.00	0.00	0.00	0.00
32	**	Depreciation Reserves	0.00	0.00	0.00	0.00	0.00
33	**	Fees and Services	0.00	0.00	0.00	0.00	0.00
34	**	Hookup Charges	0.00	0.00	0.00	0.00	0.00
35	**	Withdrawal from CIP or Other Reserves	0.00	0.00	0.00	0.00	0.00
36	**	Other Fund Sources: Interest, Etc.	0.00	0.00	0.00	0.00	0.00
37	**	Grants	0.00	0.00	0.00	0.00	0.00
38	**	SRF Loan	0.00	0.00	0.00	0.00	0.00
39	**	Business Loans	0.00	0.00	0.00	0.00	0.00
40		**TOTAL REVENUE (Lines 31 through 39):**	0.00	0.00	0.00	0.00	0.00
41		**NET LOSS OR GAIN:**	-19,195.25	-19,542.77	-19,900.72	-20,269.40	-20,649.14

Report Prepared by (Name and Title): _____ Date: _____

(** Inflation factor not applied to future year projections)

	2018	2019	2020	2021	2022
Number of Customers:	1	1	1	1	1
Average Monthly Revenue Needed Per Customer:	1599.60	1628.56	1658.39	1689.12	1720.76

(total expenses ÷ # of customers ÷ 12)

APPENDIX 4: Ownership Documents

RECORDING REQUESTED BY

First American Title Company of Napa

AND WHEN RECORDED MAIL TO
Dickenson Peatman and Fogarty
1455 FIRST STREET, SUITE 301
NAPA, CA 94559

Order No. 00300305

2016-0029601

Recorded Official Records County of Napa JOHN TUTEUR Assessor-Recorder-Cou	REC FEE	19.00
	TAX	1760.00
08:00AM 18-Nov-2016	EV Page 1 of 2	

SPACE ABOVE THIS LINE FOR RECORDER'S USE

GRANT DEED

THE UNDERSIGNED GRANTOR(s) DECLARE(s)
APN(S) 033-010-034

Documentary Transfer Tax is **$1,760.00**
☑ computed on full value of interest or property conveyed, or
☐ full value less value of liens or encumbrances remaining at the time of sale

FOR A VALUABLE CONSIDERATION, receipt of which is hereby acknowledged,

RONALD J. TROUP AND MARSHA A. TROUP, TRUSTEES OF THE TROUP FAMILY TRUST DATED DECEMBER 4, 2015, AND DALE A. TROUP, A MARRIED MAN, AS HIS SOLE AND SEPARATE PROPERTY

hereby GRANT(s) to

KITOKO VINEYARDS, LLC, A CALIFORNIA LIMITED LIABILITY COMPANY

the following real property in the unincorporated area of the County of Napa, State of California:

A portion of Lot 2 of the Southwest quarter Section 6, Township 6 North, Range 3 West, M.D.B. & M. described as follows:

Commencing at the Northwest corner of Lot 2 above referred to and running thence South, along the Western line thereof, 613 feet to a point; thence Southwesterly, in a direct line to that point on the Western line of the County Road known as Atlas Peak Road that is 1090 feet Southerly, right angle measurement, from the Northern line of Lot 2 above referred to; thence Northerly, along the Western line of Atlas Peak Road, to the Northern line of Lot 2; thence Westerly, along the Northern line of Lot 2, to the point of commencement.

MAIL TAX STATEMENTS AS DIRECTED ABOVE

Dated: November 16, 2016

END OF DOCUMENT

RONALD J. TROUP, TRUSTEE

MARSHA A. TROUP, TRUSTEE

DALE A. TROUP

A notary public or other officer completing this certificate verifies only the identity of the individual who signed the document to which this certificate is attached, and not the truthfulness, accuracy, or validity of that document.

STATE OF CALIFORNIA }
COUNTY OF NAPA }ss

On 11-16-16, before me, LARRY S FRATTINI, Notary Public, personally appeared Ronald J. Troup and Marsha A. Troup and Dale A. Troup who proved to me on the basis of satisfactory evidence to be the person(s) whose name(s) is/are subscribed to the within instrument and acknowledged to me that he/she/they executed the same in his/her/their authorized capacity(ies), and that by his/her/their signature(s) on the instrument the person(s), or entity upon behalf of which the person(s) acted, executed the instrument.

I certify under PENALTY OF PERJURY under the laws of the State of California that the foregoing paragraph is true and correct.

WITNESS my hand and official seal.

LARRY S. FRATTINI
COMM. #2020758
Notary Public - California
Napa County
My Comm. Expires May 2, 2017

Notary Public

APPLIED
CIVIL ENGINEERING
INCORPORATED

March 14, 2018

Job No. 17-107

Sheri Miller
District 3 - Mendocino
State Water Resources Control Board
50 D Street, Suite 200
Santa Rosa, CA 95404

Re: Preliminary Technical Report for New Transient Non-Community Water System for Kitoko Vineyards Winery located at 3201 Atlas Peak Road, Napa County, CA 94558

Dear Ms. Miller:

Attached to this letter please find the Transient Non-Community Water System Information for the Kitoko Vineyards Winery. This information is being submitted for your review concurrent with the use permit being reviewed by Napa County.

We have also enclosed a copy of the "Preliminary Technical Report Guidance" document with notes regarding where the various pieces of information that are required can be found in our above referenced and attached report.

Please feel free to contact us at (707) 320-4968 if you have any questions.

Sincerely,

Applied Civil Engineering Incorporated
By:

Michael R. Muelrath

Michael R. Muelrath, Principal

Copy:
Kim Withrow, Napa County
Philippe Langner, Kitoko Vineyards

Preliminary Technical Report Guidance

This guidance is intended to assist applicants in completing the preliminary technical report required in the California Health and Safety Code (CHSC), Section 116527 for all new public water systems that are not subject to the exemptions specified in Section 116527(h). Section 116527(h) provides exemptions under the following conditions: (1) domestic water supply applications deemed complete prior to January 1, 2017, (2) extension of, or annexation to, an existing public water system, or (3) building construction applicants that certify they will not rely on the establishment of a new public water system. In accordance with Section 116527(b), this report is **required to be completed 6 months before doing water-related construction for a new public water system.**

This guidance provides a comprehensive summary of the elements that may be necessary to consider in completing a preliminary technical report. However, all the elements included in this guidance will not apply to all proposed public water systems. The applicant for each proposed public water system must evaluate the elements included in this guidance for its applicability for his or her project. Throughout this guidance sections of the California Health and Safety Code and the California Code of Regulations (CCR) are provided as a reference for the requirements included. This guidance also includes a description at the end of the requirement for a new public water system to demonstrate adequate financial, managerial, and technical capacity to ensure delivery of pure, wholesome, and potable drinking water to enable the State Board to issue it a domestic water supply permit.

A MAJORITY OF THE INFORMATION REQUIRED IN THIS REPORT HAS BEEN INCLUDED IN THE TRANSIENT NON-COMMUNITY WATER SYSTEM INFORMATION FOR THE KITOKO VINEYARDS WINERY (A REPORT PREPARED FOR NAPA COUNTY IN THE USE PERMIT REVIEW PROCESS). THE REPORT IS INCLUDED AS AN ATTACHMENT AND SUPPLEMENTAL INFORMATION NOT FOUND IN THAT REPORT IS PROVIDED BELOW.

Section I. Applicant General Information:

Name of applicant: KITOKO VINEYARDS LLC

Phone number of applicant: (707) 255-1256

Email address of applicant: PHILIPPE@HESPERIANWINES.COM

Name of engineering consultant responsible for the project:

Phone number of engineering consultant: MICHAEL R. MUELRATH, RCE 67435

Email of engineering consultant: MIKE@APPLIEDCIVIL.COM

Have you applied to be a public water system previously for this property? ☐Yes ☒No

Who is the legal owner of the property? (Proof of ownership of any water treatment facilities and well sites must be documented.) SEE WATER SYSTEM INFORMATION REPORT - PAGE 5 & APPENDIX 4

Section II. General Information on the Proposed Water System

County of proposed new public water system: NAPA

Assessor's Parcel Number(s) or address of proposed new public water system: 033-010-034

Number of proposed connections (e.g. buildings, homes, etc.) the new public water system would serve: 1 WINERY & 1 RESIDENCE

Number of people the new public water system would serve: 7 EMPLOYEES, 20 DAILY VISITORS & 4 RESIDENTS (EST.)

Number of days per year the new public water system will serve water (e.g. 365): 365

What are the sources of water for the proposed public water system (mark all that apply, note: more detailed source information is required in Section VI):

☐Lake or Pond	☐River/Stream	☐Creek
☐Spring	☒Well	☐Multiple Wells
☐Well within 100 feet of a lake, river, or creek		☐Unknown/source does not exist yet

What type of properties will be served, indicate all that are applicable, or provide a copy of the use permit:

☐Residential community	☐Businesses	☐ Industrial Park	☐ Schools/Daycares
☒ Winery	☐Restaurant	☐ Park/Recreation	☐ Mobile Home Park
☐Other:			

If the proposed water source is surface water (e.g. lake, river, creek, well near river, etc.) do you currently possess water rights to the source? ☐Yes ☐No (Surface water rights must be documented.)
N/A

Is any treatment known to be required for the source water? If yes, explain.
UNKNOWN

Provide a summary description of the proposed water system (physical facilities, type of legal entity it will be, who it will serve, who will manage it, existing facilities that will be incorporated, any contamination in the local area that could impact the water quality, other pertinent factors).
PHYSICAL SYSTEM - WELL, PIPING TO TANK, BOOSTER PUMP AND PIPING TO BUILDINGS.

SYSTEM WILL BE OWNED AND OPERATED BY KITOKO VINEYARDS LLC

A map of the proposed boundaries of the new public water system will be required.

SEE MAP IN APPENDIX 1 OF WATER SYSTEM INFORMATION REPORT. SERVICE AREA WILL BE THE ONE PARCEL AND ONLY THE ONE PARCEL.

Section III. Discussion of the Potential for the Proposed Water System to be served by an Existing Water System:

List the names of all public water systems with boundaries within a 3-mile distance from the proposed public water system's service below. CHSC (116527(c)(1)

Ways to find nearby public water systems include:

A list and phone numbers of all public water systems by county can be found on our website at: https://sdwis.waterboards.ca.gov/PDWW/

Please do not consider those water systems with a status of "I", which means they are inactive.

A map showing the locations of some, but not all, public water systems can be found on the following website: http://cehtp.org/page/water/water_system_map_viewer. We are currently in the process of collecting data for this website, so it is not yet a complete list of public water systems.

If you are still unable to find a nearby public water system using these tools, please contact our District Offices and verify that none exist in the 3-mile radius. A map of the contact numbers for our District Offices can be found on the following website:
http://www.waterboards.ca.gov/drinking_water/programs/documents/ddwem/DDWdistrictofficesmap.pdf

Public Water Systems in 3-mile Radius

1. SEE WATER SYSTEM INFORMATION REPORT - PAGE 4
2.
3.
4.
5.
6.

(add additional systems, if present in the 3-mile radius)

Is the proposed water system in the County Local Area Formation Commission's (LAFCo) sphere of influence boundary for any city or municipal water service? CHSC 116527(c)(9) ☐Yes ☒No

Attach a feasibility report evaluating the possibility of obtaining water supply from each public water system listed above and the estimated costs. The report should include dates of contact with the public water systems, the names and titles of all parties involved as well as phone numbers and email addresses of all parties, and a summary of their responses. All actions taken to obtain service for the proposed new public water system's service area must be provided. The report must also include all information provided by each identified public water system regarding the feasibility of annexing, connecting or otherwise supplying domestic water to the proposed service area. The feasibility report should include dates of contact with the County Local Area Formation Commission's (LAFCo) executive officer and/or staff regarding identified public water systems. Also include any other actions taken to obtain water supply from an existing public water system. CHSC 116527(c)(2)

Please note: If as a result of this process you decide to be served by another public water system and not become a new public water system, write a letter to the State Water Resource Control Board, Division of Drinking Water and the County building/planning department indicating that it is your intent. Provide the name and contact of the water system that will be supplying water service to your development and begin the process of obtaining water service.

SEE WATER SYSTEM INFORMATION REPORT - PAGE 4. CONSOLODATION IS NOT FEASIBLE.

Section IV. Managerial Consolidation

If physically connecting to another water system appears unfeasible, submit a discussion of all actions taken by the applicant to pursue a contract for managerial or operational oversight from the identified public water systems in Section III. This should include a summary of names, dates and contact information of those individuals you have interacted with as well as their responses. CHSC 116527(c)(7)

THE OTHER EXISTING WATER SYSTEMS IN THE AREA DO NOT MANAGE OR OPERATE WATER SYSTEMS THAT THEY DO NOT OWN.

Section V. Cost of Proposed New Public Water System

We recommend that you review the "Drinking Water Related Regulations" related to operating a public water system. The regulations are located on the State Water Resource Control Board website:

http://www.waterboards.ca.gov/drinking_water/certlic/drinkingwater/Lawbook.shtml

Please attach a report on the proposed cost to construct, operate, and maintain the proposed new public water system for 20 years. The report must also include a discussion of the proposed rates based on the costs. CHSC 116527(c)(5) We recommend this report be prepared by an engineer who is knowledgeable regarding the legal requirements for public water systems, typically an engineer that has experience in working on public water systems. The new water system should consider the following costs listed below, as they would apply to the proposed water system. Other costs may also be applicable, particularly those with other regulatory agencies, such as Division of Water Rights, LAFCo, Public Utilities Commission, business licenses, etc. To facilitate review of each cost, the section from the CCR Title 22, Division 5 discussing the specific requirements is included in parentheses. If the requirement comes from another regulatory section, the location is noted.

- System engineering and design costs for construction and permitting (§64552), including pump tests (§64554), two water supply well sources for communities (§64554c and §64561), a 50-foot source protection zone around wells (§64560), and initial monitoring costs
- Construction costs, backup electricity for pumps to maintain 40 pounds per square foot (psi) minimum pressure at all times (§64602), proper construction of distribution systems (§64570-64580), installation of meters (§64561), adequate storage capacity (§64554 and 64585) and fire capacity (contact local fire official)
- Monthly electricity costs for pumps, other utilities, interest on any debt service
- Cost of as-built maps (§64604)
- Annual water-treatment quality chemical costs (§64590), and equipment for distribution monitoring of any added chemical treatment (dependent on the type of needed treatment)
- Ongoing raw water chemical monitoring sampling and analysis costs (§64431-64445.2)
- Ongoing bacteriological monitoring sampling and analysis costs for untreated water (§64430)
- Ongoing bacteriological monitoring sampling and analysis costs for treated water (§64421-64430, Table 64423-A)
- Maintenance of bacteriological plans (§64422) and emergency notification plans for notification of water quality emergencies (§64463-64466)

- Required lead and copper monitoring sampling and analysis costs and maintenance of lead and copper plan (§64670-64690.80, Table 64675-A)

- Required disinfection byproducts monitoring costs and maintenance of associated plan (§64530-64537.6, Table 64534.2-A)

- Customer water quality complaint program (§64470)

- Flushing (§64575), valve and meter maintenance (§64600), and maintaining maps (§64604)

- Cross connection program and annual backflow device testing and maintenance (from Title 17, §7583-7605)

- Salary for licensed operator staff costs, including time for reports and inspections required by Division of Drinking Water staff (§64413.1-64413.7)

- The cost to maintain written procedures for system maintenance, for example main line breaks procedures, etc. (§64580, 64582, and 64583)

- Source capacity planning studies and permit amendments for any additional growth (§64558 and §64556)

- Annual Consumer Confidence Report preparation and distribution costs (§64480-64483)

- Annual electronic Report to State Water Resource Control Board-Division of Drinking Water (Health and Safety Code §116530)

- Records of the estimated life of all pumps, treatment, storage, and distribution system and an annual capital improvement plan to fund replacement

- Metering and billing staff costs

- Emergency reserve costs for drought, regulatory changes, public notice of bacteriological or chemical failures, etc.

- Maintaining of business licenses and paying annual permit fees (Ca Health and Safety Code §116565) and any State enforcement fees for actions resulting from water system non-compliance (Ca Health and Safety Code §116577)

- Appropriate workspace to house staff, records (§64470, §64423.1), and appropriate containment of chemicals

- Insurance and liability for staff, for duties including climbing tanks, handling hazardous chemicals, if appropriate.

- Knowledgeable management staff costs to coordinate the above and maintain financial controls (per Corporation Code and Government Code requirements and Health and Safety Code §116540) and office supplies

- If the source is surface water (lake, stream, pond, etc.), additional costs should be considered for the following:

    - A water treatment plant meeting all the requirements of the Surface Water Treatment Rule (§64650 through §64666)

- Continuous operator supervision of the water treatment plant when operating (§64660)
- Chemical monitoring equipment, at minimum turbidity and chlorine (§64655-64656.5, §64659)
- Operations Plan (§64661)
- Alarms (§64659)
- Monthly monitoring reports to the Division of Drinking Water (§64662-64664.2)
- Additional raw water sampling requirements (§64654.8)
- Watershed Sanitary Survey, every five years (§64665), and
- Engineering Report after one year of operation for system optimization for alternative technologies (§64653 (i)).

Resources to help with cost analyses:

Rural community assistance corporation (RCAC) provides FREE live and online classes on water system financial management, budgeting, rate setting, board training, as well as a host of other water system related classes. Training schedules can be found on their website at www.rcac.org.

SEE WATER SYSTEM INFORMATION REPORT - PAGES 5 & 6 AND APPENDIX 3.

Section VI. 20 Year Evaluation of Proposed New Public Water System's Supply Capacity CHSC 116527(c)(8)

Submit an analysis of the proposed new public water systems' total projected water supplies available during normal, single dry, or multiple dry water years to meet current demand, and any anticipated growth, for the next 20 years. If a source has not yet been constructed (e.g. a well) an engineer shall evaluate demands required under these scenarios. Please be aware that for a community water system using wells, it will be required to have at least two well sources and must be capable of meeting the maximum day demand with the highest-capacity source off-line, prior to being granted an initial domestic water supply permit, per Section 64554(c).

SEE WATER SYSTEM INFORMATION REPORT - PAGE 3. MAX DAY DEMAND IS EXPECTED TO REQUIRE 7.8 GPM AND NO GROWTH IS ANTICIPATED IN THE NEXT 20 YEARS.

THE SYSTEM WILL NOT BE A COMMUNITY SYSTEM SO ONLY ONE SOURCE IS REQUIRED TO BE DEVELOPED.

Section VII. Cost-Comparison CHSC 116527(c)(6)

Submit an analysis comparing the estimated costs associated with the construction, operation and maintenance of the proposed new public water system to the costs associated with providing water through connecting to an existing public water system. Also, compare the long-term sustainability of each water system, including but not limited to local groundwater contamination migration, global climate change, and potential treatment needs.

Some water systems will require proposed water system to annex or enter into an out-of-area service agreement to obtain water. These identified water systems may not be excluded from cost comparison evaluation due to the need for annexation or out-of-area agreements.

SEE WATER SYSTEM INFORMATION REPORT - PAGES 5 & 6 AND APPENDIX 3. SINCE CONNECTING TO AN EXISTING PUBLIC WATER SYSTEM IS NOT FEASIBLE THE COST OF CONNECTING HAS NOT BE CALCULATED.

Submit the COMPLETED Preliminary Technical Report to:

State Water Resource Control Board, Division of Drinking Water's District Office

The report should be addressed to the District Engineer for the County where the water system will be located. Their name and address can be found on the following website at:

http://www.waterboards.ca.gov/drinking_water/programs/documents/ddwem/DDWdistrictofficesmap.pdf

In the following Counties, an additional copy must be submitted to the County's Small Water System Program, typically found in the Environmental Health Department. If you have any questions as to who to address in these Counties, you may also contact Wendy Killou at (916) 449-5158 or via email at DDW-PLU@waterboards.ca.gov for more information.

1. Alpine
   http://www.alpinecountyca.gov/index.aspx?NID=304
2. Amador
   http://www.co.amador.ca.us/departments/environmental-health/small-public-water-systems
3. Butte
   http://www.buttecounty.net/publichealth/EnvironmentalHealth/DrinkingWater/PublicWater.aspx
4. Calaveras
   http://envhmgmt.calaverasgov.us/
5. Contra Costa
   http://cchealth.org/eh/small-water/
6. El Dorado
   https://www3.edcgov.us/EMD/EnvironmentalHealth/Small_Water_System_Program.aspx
7. Inyo
   http://www.inyocounty.us/EnvironmentalHealth/drinking_water.html
8. Kings
   https://www.kingcounty.gov/depts/health/environmental-health.aspx
9. Los Angeles
   http://www.publichealth.lacounty.gov/eh/EP/dw/dw_small_water.htm
10. Madera
    http://www.madera-county.com/index.php/envprograms/drinking-water-program
11. Mono
    http://monohealth.com/environmental-health/page/about-environmental-health
12. Monterey
    http://www.co.monterey.ca.us/government/departments-a-h/health/environmental-health/drinking-water-protection
13. Napa
    http://www.countyofnapa.org/PBES/Environmental/
14. Nevada
    https://www.mynevadacounty.com/nc/cda/eh/Pages/Small-Water-System-Program.aspx
15. Placer
    http://www.placer.ca.gov/departments/environmental-health/small-water-systems
16. Plumas
    http://www.plumascounty.us/index.aspx?NID=280
17. Riverside
    http://www.rivcoeh.org/Programs/water
18. Sacramento
    http://www.emd.saccounty.net/EC/Pages/Smallwater.aspx
19. San Bernardino
    http://www.sbcounty.gov/dph/dehs/Depts/EnvironmentalHealth/BusinessServices/water_liquid_waste_land_use.aspx
20. San Diego
    http://www.sandiegocounty.gov/content/sdc/deh/lwqd/lu_sws.html
21. San Joaquin
    http://www.sjcehd.com/Programs/Consumer_Protection/small_public_water_systems_monitoring.htm
22. San Luis Obispo
    http://www.slocounty.ca.gov/health/publichealth/ehs/services/water/watersystems.htm

23. Santa Barbara
    http://cosb.countyofsb.org/phd/environmentalhealth.aspx?id=20066&pghead=18958&footer=18960&menu2id=174
24. Santa Cruz
    http://scceh.com/Home/Programs/WaterResources/WaterSupply/PrivateandSmallWaterSystems.aspx
25. Shasta
    http://www.co.shasta.ca.us/index/drm_index/eh_index/ehd_programs/wells.aspx
26. Stanislaus
    http://www.stancounty.com/er/environmentalhealth/water-program.shtm
27. Tehama
    http://www.co.tehama.ca.us/env-health-header/environmental-health
28. Yolo
    http://www.yolocounty.org/community-services/environmental-health-services/land-environmental-protection/drinking-water-program
29. Yuba
    http://www.co.yuba.ca.us/Departments/Community%20Development/EH/
30. Imperial
    http://www.icphd.com/environmental-health/drinking-water

Technical, Managerial, and Financial (TMF) Capacity - CHSC 116540(a)(1)

Please note that if both physical and managerial consolidations are unfeasible, you will be asked to submit additional information regarding the technical, managerial and financial capacity of the proposed water system in order for the proposed water system to be issued a domestic water supply permit. This is one of the initial permit requirements for all new public water systems. If the Division and/or County Environmental Health deem that the required TMF components are adequate, the project proponent may submit a permit application. A permit application will include items such as initial water monitoring, and a permit engineering report containing detailed plans and specifications, etc. The details of the permit application will be provided separately.

For a proposed water system with existing infrastructure, TMF Instructions and forms can be found on our website at:

http://www.waterboards.ca.gov/drinking_water/certlic/drinkingwater/TMF.shtml

For a proposed community water system with no existing infrastructure please provide the following:

1. A copy of the deed of trust for the location where water treatment facilities, including any wells, are proposed to be located.
2. An organizational chart and description of what organization will own and operate the water system.
3. List the median household income(s) of the zip code(s) in the area to be served by the public water system based on the most recent year available from the U.S. census. Median household incomes can be found on the following website: https://www.census.gov/quickfacts/table/PST045216/06
4. Calculate the average annual rate per customer needed to support the water costs previously calculated in Section V, including depreciation and replacement of all infrastructure based on its usable life over a 20-year time period.

   Average usable life of typical water treatment equipment can be found on our website at: http://www.waterboards.ca.gov/drinking_water/certlic/drinkingwater/documents/tmfplanningandreports/Typical_life.pdf.

   A sample excel spreadsheet for budgeting can be found on our website at: http://www.waterboards.ca.gov/drinking_water/certlic/drinkingwater/TMF.shtml

5. Is the annual rate per customer greater than 1.5% of the surrounding median household income?