COUNTY OF NAPA
PLANNING, BUILDING & ENVIRONMENTAL SERVICES DEPARTMENT
1195 THIRD ST., SUITE 210, NAPA, CA 94559
(707) 253-4416

Initial Study Checklist
(form updated September 2010)

REVISED JULY 14, 2015; THIS INITIAL STUDY SUPERCEEDS AND REPLACES THE INITIAL STUDY CIRCULATED ON NOVEMBER 26, 2014

1. **Project Title:** Girard Winery Use Permit P14-00053

2. **Property Owner:** Vintage Wine Estates , 205 Concourse Blvd Santa Rosa, CA 95403; (877) 289-9463

3. **Project Sponsor's Name and Address**: Pat Roney, 205 Concourse Blvd Santa Rosa, CA 95403; (707) 289-9463

4 **Representative**: Heather McCollister, 1512 D Street, Napa, CA 94559, (707) 287-5999; bhmccolli@sbcglobal.net.

5. **County Contact Person, Phone Number and email:** Wyntress Balcher; (707) 299-1351; wyntress.balcher@countyofnapa.org

6. **Project Location and APN:** The project is located on a 26.53 acre parcel on the east side of Dunaweal Lane, approximately 1000 feet south of its intersection with Silverado Trail, within the AP (Agricultural Preserve) Zoning District; 1077 Dunaweal Lane; Calistoga, CA 94515, APN: 020-150-017.

7. **General Plan description:** Agricultural Resource (AR) Designation.

8. **Zoning:** Agricultural Preserve (AP) District.

9. **Background/Project history:** The existing parcel is 26.53 acres in area and includes an existing storage building, three ponds for the wastewater processing system, water well, and associated infrastructure that is currently serving Clos Pegase Winery(200,000 gallons), also owned by the applicant, located directly across the street at 1060 Dunaweal Lane (APN: 020-150-012). There are currently 12±acres of vineyards planted on the property, but there has been a history of a total of 18 acres of vineyard, of which 6± acres is now fallow. There are no other improvements on the property. Based upon comments received during the public hearing on the project, the circulated initial study was referred back to staff, additional studies regarding the groundwater and traffic information were requested and was obtained to address the issues presented. It was then determined that the revised initial study/proposed negative declaration document should be recirculated.

10. **Project Description**: **Request:** Approval of a Use Permit to establish a new winery with an annual production capacity of 200,000 gallons as follows:

    A. Construction of new winery building, totaling 32,771 sq.ft. in area to include: 28,955 sq.ft. production area (crush area, fermentation and barrel storage, restrooms); ±3,816 sq.ft of accessory use area (offices, tasting rooms, retail storage, catered food prep area, and visitor restrooms), maximum building height 33.5 ft., with 15 ft. tall decorative cupolas to 45 ft. In addition, a ±2,560 sq. ft. covered veranda; and a ±2,871 sq. ft. covered work area;
    B. Hosted daily tours and tastings for wine trade personnel and consumers by appointment only for a maximum of 75 persons per weekday (Monday-Friday); maximum of 90 persons per weekend day (Saturday-Sunday);
    C. Hours of operation: 8:00 AM to 6:00 PM (production hours, except during harvest) and 10:00 AM to 6:00 PM (visitation hours), 7-days a week;
    D. Employment of: 11 employees (8 full time; 3 part-time) non harvest; 19 additional employees (12 full time and 7 part time) during harvest, for a total maximum of 30;
    E. Employee hours: production, 7:00 AM to 3:00 PM; hospitality/ tasting room, 9:30 AM to 6:30 PM;
    F. Construction of twenty-two (22) parking spaces;
    G. Installation of landscaping, entry gate and a winery sign;

H. Establish a Marketing Program as follows:

   i. Four (4) events per year with a maximum of 75 guests;
   ii. Four (4) events per year with a maximum of 200 guests;
   iii. One (1) Harvest event per year with a maximum of 500 guests;
   iv. All food to be catered utilizing a ±184 sq. ft. small prep/staging area;

I. On-premise consumption of the wines produced on-site, consistent with Business and Professions Code §§23356, 23390, and 23396.5 (also known as AB 2004 (Evans 2008 or the Picnic Bill) within the tasting rooms (±2,320 sq. ft.), covered porch(±2,560 sq. ft.), and within a 4,000 sq. ft. portion of the front entry landscaped winery garden;

J. Construct a new 24-ft. wide winery access driveway from Dunaweal Lane to the winery;

K. Construction of additional piping and service connections to the existing Clos Pegase water system on the site, and update the existing Clos Pegase Transient Non-Community Water System contract to include Girard Winery;

L. Installation of on-site sanitary disposal improvements and installation of connections into the existing on-site winery wastewater processing ponds serving Clos Pegase Winery (APN:020-150-012); and,

M. Installation of ±45,000 gallon water storage tank (±30 ft. diameter; ±12 ft. height).

11. **Environmental setting and surrounding land uses:**

The 26.53 acre parcel is relatively flat at the 330± elevation. The property has frontage on the east side of Dunaweal Lane (classified as a local road by the General Plan). There are hills to the east and south with elevations of 550'± and mountains starting to the north along Silverado Trail, reaching the 3,000'± elevation. Currently, approximately 12 acres of the 26.53 acres is planted in vineyard. Native vegetation in the area consists of Valley Oak Savanna, with most of the Oaks scattered on the small hills and along the banks of the Napa River. The geology of the land is Quaternary surficial deposits overlain by Holocene alluvium, undifferentiated and the majority of the soils on site are Bale loam (0 to 2 percent slopes), with Cole silt loam (0 to 2% slopes); and Clear lake clay, drained along the most easterly side of the parcel near the base of the hill. The property is located within the Napa River Watershed, located approximately 1200 feet south of the parcel, outside of the 100 year flood hazard zone, but a portion is within the 500-year flood hazard zone.

The property is located within an area delineated by the California Department of Fish and Wildlife Natural Diversity Maps as a potential community of the Calistoga Popcornflower, Jepsons's leptosiphon, Baker's navarretia papose tarplant, narrow-anthered brodiaea, and pallid bat.

In addition to the existing 12± acres of vineyards, the parcel is developed with an irrigation pond and a wastewater processing system (its two wastewater processing ponds use the existing irrigation pond) serving the Clos Pegase Winery, an agricultural storage building; and water well with associated infrastructure. Clos Pegase Winery is located directly across from the subject parcel. The well on the subject property is included in the existing transient non-community water system, "Clos Pegase Water System", owned by the applicant, which serves the Clos Pegase Winery plus a residence located on the Clos Pegase Winery property (also owned by the applicant). The surrounding land uses include vineyards, wineries (Clos Pegase; Sterling Vineyards, Twohey Cellars, Paoletti Estates Winery) and residential development on large parcels. The nearest residence is over 400 feet from the winery building site. The City of Calistoga waste processing facilities are located approximately 600 feet south of the winery property, on the west side of Dunaweal Lane.

Other agencies whose approval is required (e.g., permits, financing approval, or participation agreement).
The project would also require various ministerial approvals by the County, including but not limited to building permits, grading permits, and waste disposal permits, in addition to CalFire. Permits may also be required by the Department of Alcoholic Beverage Control and Bureau of Alcohol, Tobacco, & Firearms.

Responsible (R) and Trustee (T) Agencies
None Required.

Other Agencies Contacted
Federal Trade and Taxation Bureau
Department of Alcoholic Beverage Control

ENVIRONMENTAL IMPACTS AND BASIS OF CONCLUSIONS:

The conclusions and recommendations contained herein are professional opinions derived in accordance with current standards of professional practice. They are based on a review of the Napa County Environmental Resource Maps, the other sources of information listed in the file, and the comments received, conversations with knowledgeable individuals; the preparer's personal knowledge of the area; and, where necessary, a visit to the site. For further information, see the environmental background information contained in the permanent file on this project.

On the basis of this initial evaluation:

☒ I find that the proposed project COULD NOT have a significant effect on the environment, and a NEGATIVE DECLARATION will be prepared.

☐ I find that although the proposed project could have a significant effect on the environment, there will not be a significant effect in this case because revisions in the project have been made by or agreed to by the project proponent. A MITIGATED NEGATIVE DECLARATION will be prepared.

☐ I find that the proposed project MAY have a significant effect on the environment, and an ENVIRONMENTAL IMPACT REPORT is required.

☐ I find that the proposed project MAY have a "potentially significant impact" or "potentially significant unless mitigated" impact on the environment, but at least one effect 1) has been adequately analyzed in an earlier document pursuant to applicable legal standards, and 2) has been addressed by mitigation measures based on the earlier analysis as described on attached sheets. An ENVIRONMENTAL IMPACT REPORT is required, but it must analyze only the effects that remain to be addressed.

☐ I find that although the proposed project could have a significant effect on the environment, because all potentially significant effects (a) have been analyzed adequately in an earlier EIR or NEGATIVE DECLARATION pursuant to applicable standards, and (b) have been avoided or mitigated pursuant to that earlier EIR or NEGATIVE DECLARATION, including revisions or mitigation measures that are imposed upon the proposed project, nothing further is required.

Wyntress Balcher, Planner II
Napa County Planning, Building, and Environmental Services

7/14/2015
Date

		Potentially Significant Impact	Less Than Significant With Mitigation Incorporation	Less Than Significant Impact	No Impact
I.	**AESTHETICS.** Would the project:				
	a) Have a substantial adverse effect on a scenic vista?	☐	☐	☒	☐
	b) Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?	☐	☐	☒	☐
	c) Substantially degrade the existing visual character or quality of the site and its surroundings?	☐	☐	☒	☐
	d) Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?	☐	☐	☒	☐

Discussion:

a-c Visual resources are those physical features that make up the environment, including landforms, geological features, water, trees and other plants, and elements of the human cultural landscape. A scenic vista, then, would be a publicly accessible vantage point such as a road, park, trail, or scenic overlook from which distant or landscape-scale views of a beautiful or otherwise important assembly of visual resources can be taken-in. Dunaweal Lane (a scenic roadway) is defined by a mix of vineyards, wineries, residential uses, flat land trending toward small tree-covered minor ridgelines then to the tall distant mountain ridgelines. The proposed 31' tall winery building (with two, 45' tall decorative cupolas) will settle against the immediate small hills backdrop and will not obstruct the scenic distant ridgelines. The project would not result in substantial damage to scenic resources or substantially degrade the visual character or quality of the site and its surroundings since the proposed building will be located ±560 feet from the road; the design of the buildings will utilize earth tones and stone textures, with a low angle roofline; a smaller scale hospitality building is placed at the front of the winery building; and the frontage/entrance of the building will include attractive garden landscaping. This development will be located in the middle of the parcel, surrounded by vineyard designed to complement the surrounding distant mountain views, hillside vineyards and tree-covered knolls. There are no rock outcroppings visible from the road or other designated scenic resources on the property.

d. The construction of winery uses will result in the installation of additional lighting that may have the potential to impact nighttime views. The installation of new sources of nighttime lights may affect nighttime views. Pursuant to standard Napa County conditions of approval for wineries, outdoor lighting will be required to be shielded and directed downwards, with only low level lighting allowed in parking areas. As designed, and as subject to the standard condition of approval, below, the project will not have a significant impact resulting from new sources of outside lighting.

> *All exterior lighting, including landscape lighting, shall be shielded and directed downward, shall be located as low to the ground as possible, and shall be the minimum necessary for security, safety, or operations and shall incorporate the use of motion detection sensors to the greatest extent practical. No flood-lighting or sodium lighting of the building is permitted, including architectural highlighting and spotting. Low-level lighting shall be utilized in parking areas as opposed to elevated high-intensity light standards. Lighting utilized during harvest activities is not subject to this requirement. Prior to issuance of any building permit for construction of the winery, two (2) copies of a detailed lighting plan showing the location and specifications for all lighting fixtures to be installed on the property shall be submitted for Planning Division review and approval. All lighting shall comply with California Building Code.*

Mitigation Measures: None required.

		Potentially Significant Impact	Less Than Significant With Mitigation Incorporation	Less Than Significant Impact	No Impact
II.	**AGRICULTURE AND FOREST RESOURCES.**[1] Would the project:				
	a) Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Important (Farmland) as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?	☐	☐	☐	☒
	b) Conflict with existing zoning for agricultural use, or a Williamson Act contract?	☐	☐	☐	☒
	c) Conflict with existing zoning for, or cause rezoning of, forest land as defined in Public Resources Code Section 12220(g), timberland as defined in Public Resources Code Section 4526, or timberland zoned Timberland Production as defined in Government Code Section 51104(g)?	☐	☐	☐	☒
	d) Result in the loss of forest land or conversion of forest land to non-forest use in a manner that will significantly affect timber, aesthetics, fish and wildlife, biodiversity, water quality, recreation, or other public benefits?	☐	☐	☐	☒
	e) Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland to non-agricultural use?	☐	☐	☐	☒

Discussion:

a. Based on a review of Napa County environmental resource mapping (Department of Conservation Farmlands, 2012 layer), the site is classified as "Prime Farmland". General Plan Agricultural Preservation and Land Use policies AG/LU-2 and AG/LU-13 recognize wineries, and any use consistent with the Winery Definition Ordinance and clearly accessory to a winery, as agriculture. As a result, this application will not result in the conversion of special status farmland to a non-agricultural use.

b. The property is zoned Agricultural Preserve (AP) but is not subject to a Williamson Act contract. Since agricultural activities will occur on the site, there will be no resulting conflict with the zoning within which the subject property is located.

c/d. The project site is zoned AP (Agricultural Preserve), which allows wineries upon grant of a use permit. The project site does not contain woodland or forested areas, and thus would not result in the loss of or conversion of forest lands to a non-forest use.

e. As discussed in item "a.", above, the winery and winery accessory uses are defined as agricultural by the Napa County General Plan and are allowed under the parcels' AP (Agricultural Preserve) zoning. Neither this project, nor any foreseeable consequence thereof, would result in changes to the existing environment which would result in the conversion of special status farmland to a non-agricultural use.

Mitigation Measures: None required.

[1] "Forest land" is defined by the State as "land that can support 10-percent native tree cover of any species, including hardwoods, under natural conditions, and that allows for management of one or more forest resources, including timber, aesthetics, fish and wildlife, biodiversity, water quality, recreation, and other public benefits." (Public Resources Code Section 12220(g)) The Napa County General Plan anticipates and does not preclude conversion of some "forest land" to agricultural use, and the program-level EIR for the 2008 General Plan Update analyzed the impacts of up to 12,500 acres of vineyard development between 2005 and 2030, with the assumption that some of this development would occur on "forest land." In that analysis specifically, and in the County's view generally, the conversion of forest land to agricultural use would constitute a potentially significant impact only if there were resulting significant impacts to sensitive species, biodiversity, wildlife movement, sensitive biotic communities listed by the California Department of Fish and Wildlife, water quality, or other environmental resources addressed in this checklist.

		Potentially Significant Impact	Less Than Significant With Mitigation Incorporation	Less Than Significant Impact	No Impact
III.	**AIR QUALITY.** Where available, the significance criteria established by the applicable air quality management or air pollution control district may be relied upon to make the following determinations. Would the project:				
	a) Conflict with or obstruct implementation of the applicable air quality plan?	☐	☐	☒	☐
	b) Violate any air quality standard or contribute substantially to an existing or projected air quality violation?	☐	☐	☒	☐
	c) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state Ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors)?	☐	☐	☒	☐
	d) Expose sensitive receptors to substantial pollutant concentrations?	☐	☐	☒	☐
	e) Create objectionable odors affecting a substantial number of people?	☐	☐	☒	☐

Discussion:

a-c. On June 2, 2010, the Bay Area Air Quality Management District's Board of Directors unanimously adopted thresholds of significance to assist in the review of projects under the California Environmental Quality Act (CEQA). The thresholds were designed to establish the level at which the District believed air pollution emissions would cause significant environmental impacts under CEQA and were posted on the Air District's website and included in the Air District's May 2011 updated CEQA Guidelines.

On March 5, 2012 the Alameda County Superior Court issued a judgment finding that the Air District had failed to comply with CEQA when it adopted the thresholds. However, on August 31, 2013, the Court of Appeal reinstated the Air District's thresholds of significance provided in Table 3-1 (Criteria Air Pollutants & Precursors Screening Levels Sizes) which are applicable for evaluating projects in Napa County.

Over the long term, emission sources for the proposed project will consist primarily of mobile sources including vehicles visiting the site. The Air District's threshold of significance provided in Table 3-1 has determined that similar projects such as a quality restaurant that do not exceed a threshold of 47,000 sq. ft. will not significantly impact air quality and do not require further study (BAAQMD CEQA Guidelines, May 2011 Pages 3-2 & 3-3.). Given the size of the entire project, which is approximately 32,771 sq. ft. of enclosed floor area including about 2,320 sq. ft. of floor area for tasting/hospitality uses compared to the BAAQMD's screening criterion of 47ksf (high quality restaurant) and 541ksf (general light industry) for NO_x (oxides of nitrogen), the project would contribute an insignificant amount of air pollution and would not result in a conflict or obstruction of an air quality plan. (Please note: a high quality restaurant is considered comparable to a winery tasting room for purposes of evaluating air pollutant emissions, but grossly overstates emissions associated with other portions of a winery, such as office, barrel storage and production, which generate fewer vehicle trips. Therefore, a general light industry comparison has also been used for other such uses.)

The proposed project would not conflict with or obstruct the implementation of any applicable air quality plan. Wineries as proposed here are not producers of air pollution in volumes substantial enough to result in an air quality plan conflict. The project site lies within the Napa Valley, which forms one of the climatologically distinct sub-regions (Napa County Sub region) within the San Francisco Bay Area Air Basin. The topographical and meteorological features of the Valley create a relatively high potential for air pollution. Over the long term, emissions resulting from the proposed project would consist primarily of mobile sources, including production-related deliveries and visitor and employee vehicles traveling to and from the winery. The resulting busiest day plus marketing total is well below the threshold of significance. The proposed project would not result in a cumulatively considerable net increase in any criteria pollutant for which the project region is in non-attainment under an applicable federal or state Ambient air quality standard.

d. In the short term, potential air quality impacts are most likely to result from earthmoving and construction activities required for project construction. Earthmoving and construction emissions would have a temporary effect; consisting mainly of dust generated during grading and other construction activities, exhaust emissions from construction related equipment and vehicles, and relatively minor emissions from paints and other architectural coatings. The Air District recommends incorporating feasible control measures as a means of addressing construction impacts. If the proposed project adhere to these relevant best management practices identified by the Air District and the County's standard conditions of project approval, construction-related impacts are considered less than significant:

The permittee shall comply during all construction activities with the Bay Area Air Quality Management District Basic Construction Mitigation Measures as provided in Table 8-1, May 2011 Updated CEQA Guidelines.

Furthermore, while earthmoving and construction on the site will generate dust particulates in the short-term, the impact would be less than significant with dust control measures as specified in Napa County's standard condition of approval relating to dust:

Water and/or dust palliatives shall be applied in sufficient quantities during grading and other ground disturbing activities on-site to minimize the amount of dust produced. Outdoor construction activities shall not occur during windy periods.

e. While the Air District defines public exposure to offensive odors as a potentially significant impact, wineries are not known operational producers of pollutants capable of causing substantial negative impacts to sensitive receptors. The closest residence is over 400 ft. from the winery building site. Construction-phase pollutants will be reduced to a less than significant level by the above-noted standard condition of approval. The project will not create pollutant concentrations or objectionable odors affecting a substantial number of people.

Mitigation Measures: None required.

		Potentially Significant Impact	Less Than Significant With Mitigation Incorporation	Less Than Significant Impact	No Impact
IV.	**BIOLOGICAL RESOURCES.** Would the project:				
a)	Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?	☐	☐	☒	☐
b)	Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the California Department of Fish and Game or US Fish and Wildlife Service?	☐	☐	☒	☐
c)	Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, Coastal, etc.) through direct removal, filling, hydrological interruption, or other means?	☐	☐	☐	☒
d)	Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?	☐	☐	☐	☒
e)	Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?	☐	☐	☒	☐
f)	Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?	☐	☐	☐	☒

Discussion:

a/b. According to the Napa County Environmental Resource Maps (based on the following layers - plants CNPS points & polygons, plant surveys, red legged frog core area and critical habitat, vernal pools & vernal pool species, Spotted Owl Habitat – 1.5 mile buffer and known fish presence and California Department of Fish and Wildlife Natural Diversity Map) the project site is located within an area delineated as a potential community of the Calistoga Popcornflower, Jepsons's leptosiphon, Baker's navarretia papose tarplant, narrow-anthered brodiaea, and pallid bat. A Biological Resource Survey by Kjeldsen Biological Consulting, dated July 2014, was prepared to identify any biological resources that may be affected by the proposed project. Field work in the proposed project envelope, the property, and the adjoining environment was conducted in accordance with accepted protocols.

The Biologist's report found that the project footprint is within a developed landscape; that the project as proposed will not have any direct impacts to Federal or State protected wetlands as defined by Section 404 of the Clean Water Act; and that the proposed project will not significantly reduce habitat for or have the potential to negatively impact any special-status plans or animals. No sensitive plants, sensitive plant habitat, or special-status plant species were identified on the property or on the project site. The biologist stated that it is unlikely that the proposed project would impact any of the special-status species known for the Quadrangle or the region based on their fieldwork, the habitat present and historic use within and associated with the project footprint. In addition, the project site has been developed in agriculture for decades.

The report further concluded that no sensitive animals, sensitive wildlife habitat, or special-status animal species was identified on the project site, and found that it is unlikely that the proposed project would impact any of the special-status animals known for the Quadrangle or the region based upon their fieldwork, the habitat present and historic use within and associated with the project footprint. The biologist observed a

juvenile western pond turtle on the bank of one the existing wastewater processing ponds; however, the biologist determined that it is unlikely that turtles would move in the area proposed for the winery site since the disturbed area and vineyard do not provide potential nesting habitat, due to soil compaction and dry ground with no cover or vegetated cover. The biologist stated that the turtles most likely have moved in from the adjacent pond southeast of the property. No raptor activity or nests were observed; no indication of the presence of sensitive natural communities regulated by the California Department of Fish and Wildlife or US Fish and Wildlife was found within or directly associated with the project footprint. The project proposal and associated construction are minimal with no significant grading required. The removal of trees is limited to five non-native walnut trees planted along the road for the access driveway. Furthermore, the footprint of the project will not significantly contribute to habitat loss or habitat fragmentation.

The report finds that the historic use of the property and the project site conditions are such that there is no reason to expect any impact to special-status species on site or off-site provided standard construction practices area utilized. The project must comply with the Napa County SWPP (storm water protection plan) requirements to ensure that best management practices are adopted in order to minimize the amount of sediment and other pollutants leaving the site during construction activities. The following condition regarding stormwater control, which will require the incorporation of BMP's during development, is a standard site improvements and engineering services-specific condition that will applied to the project:

STORM WATER CONTROL
The permittee shall comply with all construction and post-construction storm water pollution prevention protocols as required by the County Engineering Services Division, and the State Regional Water Quality Control Board (SRWQCB).

The project would have a less than significant impact on biological resources with the implementation of Best Management Practices required by the conditions of approval.

c/d. According to the Biological Survey prepared for the project, there are no wetlands on the property or on neighboring properties that would be affected by this project. Therefore, the project activities will not interfere with the movement of any native resident or migratory fish or wildlife species or with their corridors or nursery sites, because no sensitive natural communities have been identified on the property and the project as proposed would have no impact to biological resources.

e/f. This project would not interfere with any ordinances protecting biological resources. With the exception of the ten introduced trees along the road (where five are proposed for removal), there are no trees on the property. There are no tree preservation ordinances in effect in the County. The proposed project would not conflict with the provisions of an adopted Habitat Conservation Plans, Natural Community Conservation Plans or other approved local, regional or state habitat conservation plans.

Mitigation Measures: None required.

		Potentially Significant Impact	Less Than Significant With Mitigation Incorporation	Less Than Significant Impact	No Impact
V.	**CULTURAL RESOURCES.** Would the project:				
a)	Cause a substantial adverse change in the significance of a historical resource as defined in CEQA Guidelines §15064.5?	☐	☐	☐	☒
b)	Cause a substantial adverse change in the significance of an archaeological resource pursuant to CEQA Guidelines§15064.5?	☐	☐	☐	☒
c)	Directly or indirectly destroy a unique paleontological resource or site or unique geological feature?	☐	☐	☐	☒
d)	Disturb any human remains, including those interred outside of formal cemeteries?	☐	☐	☐	☒

Discussion:

a-c. According to the Napa County Environmental Resource Maps (based on the following layers – Historical sites points & lines, Archaeology surveys, sites, sensitive areas, and flags) an archaeological study was prepared on the subject property for the proposed Clos Pegase wastewater processing ponds and recorded on April 7, 1987, by Archaeological Services. No archaeological or ethnographic sites were identified on the property and no archaeological sites were found during the surficial survey. Based on the proposed project plans, there would be no impact to cultural resources. However, if resources are found during any earth disturbing activities associated with the project, construction of the project is required to cease, and a qualified archaeologist will be retained to investigate the site in accordance with the following standard condition of approval:

"In the event that archeological artifacts or human remains are discovered during any subsequent construction in the project area, work shall cease in a 50-foot radius surrounding the area of discovery. The permittee shall contact the Planning, Building, and Environmental Services Department for further guidance, which will likely include the requirement for the permittee to hire a qualified professional to analyze the artifacts encountered and to determine if additional measures are required. If human remains are encountered during the development, all work in the vicinity must be, by law, halted, and the Napa County Coroner informed so that the Coroner can determine if an investigation of the cause of death is required, and if the remains are of Native American origin. If the remains are of Native American origin, the nearest tribal relatives as determined by the State Native American Heritage Commission shall be contacted by the permittee to obtain recommendations for treating or removal of such remains, including grave goods, with appropriate dignity, as required under Public Resources Code Section 5097.98."

d. No human remains have been encountered on the property and no information has been encountered that would indicate that this project would encounter human remains. However, if resources are found during grading of the project, construction of the project is required to cease, and a qualified archaeologist will be retained to investigate the site in accordance with standard condition of approval noted above.

Mitigation Measures: None required.

	Potentially Significant Impact	Less Than Significant With Mitigation Incorporation	Less Than Significant Impact	No Impact
VI. **GEOLOGY AND SOILS.** Would the project:				
a) Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving:				
i) Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42.	☐	☐	☒	☐
ii) Strong seismic ground shaking?	☐	☐	☒	☐
iii) Seismic-related ground failure, including liquefaction?	☐	☐	☒	☐
iv) Landslides?	☐	☐	☒	☐
b) Result in substantial soil erosion or the loss of topsoil?	☐	☐	☒	☐
c) Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse?	☐	☐	☒	☐
d) Be located on expansive soil creating substantial risks to life or property? Expansive soil is defined as soil having an expansive index greater than 20, as determined in accordance with ASTM (American Society of Testing and Materials) D 4829.	☐	☐	☒	☐
e) Have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water?	☐	☐	☒	☐

Discussion:

a.

i.) There are no known faults on the project site as shown on the most recent Alquist-Priolo Earthquake Fault Zoning Map. As such, the proposed project would result in a less than significant impact with regards to rupturing a known fault.

ii.) All areas of the Bay Area are subject to strong seismic ground shaking. Construction of the project will be required to comply with all the latest building standards and codes, including the California Building Code that would reduce any potential impacts to a less than significant level.

iii.) No subsurface conditions have been identified on the project site that indicated a susceptibility to seismic-related ground failure or liquefaction. Compliance with the latest editions of the California Building Code for seismic stability would result in less than significant impacts.

iv.) According to the Napa County Environmental Resource Maps (Landslides line, polygon, and geology layers) there are no landslide deposits in the proposed development area.

b. The proposed development is minimal and will occur on slopes 0% to 1%. Based upon the Soil Survey of Napa County, prepared by the United States Department of Agriculture (USDA), the soils on site are comprised of Bale loam (0 to 2 percent slopes), with Cole silt loam (0 to 2% slopes); and Clear lake clay, drained. The Bale loams and Cole silt loams are somewhat poorly drained, with a low runoff classification; the Clear lake clay is poorly drained, but medium runoff classification. The project will require incorporation of best management practices and will be subject to the Napa County Stormwater Ordinance which addresses sediment and erosion control measures and dust control, as applicable.

c/d. According to preliminary geologic mapping of the Calistoga Quadrangle performed by the California Geologic Survey (CGS-2004), the geology of the land is Quaternary surficial deposits overlain by Holocene alluvium, undifferentiated. Based on the Napa County Environmental Sensitivity Maps (liquefaction layer) the project site has medium susceptibility for liquefaction. Development will be required to comply with all the latest building standards and codes, including the California Building Code that would reduce any potential impacts to the maximum extent possible.

e. The Use Permit Wastewater Feasibility Study prepared for the project by Always Engineering, dated May 5, 2014 indicates that a site evaluation was performed on November 14, 2013 and test pits displayed a sandy clay loam surface soil which ranged from 36" to 56". However, at the time of preparation of the study, there had not been sufficient rainfall to perform groundwater monitoring, and therefore made an assumption that a minimum of 24" of suitable soil is available for septic system design. In the event that groundwater monitoring cannot occur prior to the application for construction permits, an irrigation reuse alternative system is included in the feasibility study for the ability to provide a pretreatment and irrigation reuse system. If the alternative system is proposed, the project must first obtain approval from the San Francisco Bay Regional Water Quality Control Board (RWQCB) for its use.). If future groundwater monitoring cannot occur in a time schedule appropriate for building permits or does not provide at least 24 inches of separation to groundwater, treatment, irrigation, and reuse will be required for the project. In this event, RWQCB must also grant system approval prior to building permit issuance. With the proposed installation of a new sanitary management system, as discussed in the report, the site is capable of supporting the proposed sanitary sewage loads. With the proposed installation of additional aerators and a collection system and pump station, the existing aerated facultative pond system is sufficient for the proposed winery process wastewater flows in addition to the existing Clos Pegase process wastewater flows.

Mitigation Measures: None required.

	Potentially Significant Impact	Less Than Significant With Mitigation Incorporation	Less Than Significant Impact	No Impact
VII. **GREENHOUSE GAS EMISSIONS.** Would the project:				
a) Generate a net increase in greenhouse gas emissions in excess of applicable thresholds adopted by the Bay Area Air Quality Management District or the California Air Resources Board which may have a significant impact on the environment?	☐	☐	☒	☐
b) Conflict with a county-adopted climate action plan or another applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?	☐	☐	☒	☐

Discussion:

a/b. Overall increases in Greenhouse Gas (GHG) emissions in Napa County were assessed in the Environmental Impact Report (EIR) prepared for the Napa County General Plan Update and certified in June 2008. GHG emissions were found to be significant and unavoidable in that document, despite the adoption of mitigation measures incorporating specific policies and action items into the General Plan.

Consistent with these General Plan action items, Napa County participated in the development of a community-wide GHG emissions inventory and "emission reduction framework" for all local jurisdictions in the County in 2008-2009. This planning effort was completed by the Napa County Transportation and Planning Agency in December 2009, and served as the basis for development of a refined inventory and emission reduction plan for unincorporated Napa County.

In 2011, the Bay Area Air Quality Management District (BAAQMD) released California Environmental Quality Act (CEQA) Project Screening Criteria and Significance of Thresholds [1,100 metric tons per year (MT) of carbon dioxide and carbon dioxide equivalents (CO_2e)]. This threshold of significance is appropriate for evaluating projects in Napa County.

During our ongoing planning effort, the County requires project applicants to consider methods to reduce GHG emissions consistent with Napa County General Plan Policy **CON-65(e)**. (Note: Pursuant to State CEQA Guidelines Section 15183, because this initial study assesses a project

that is consistent with an adopted General Plan for which an environmental impact report (EIR) was prepared, it appropriately focuses on impacts which are "peculiar to the project," rather than the cumulative impacts previously assessed.)

The applicant proposes to incorporate GHG reduction methods including but not limited to: alternative fuel and electrical vehicles in fleet; build to CALGREEN Tier 2; new vegetation plantings; VMT reduction plan; energy conserving lighting; connection of winery wastewater recycling processing system to the existing Clos Pegase system, minimizing the amount of new mechanical required for processing; water efficient landscaping and shade trees; limiting the amount of grading and tree removal; composting; sustainable purchasing and shipping programs; electrical vehicle charging stations; bicycle incentives; and education of staff and visitors on sustainable practices.

The proposed project has been evaluated against the BAAQMD thresholds and determined that the project would not exceed the 1,100 MT/yr of CO_2e. GHG Emission reductions from local programs and project level actions, such as application of the Cal Green Building Code, tightened vehicle fuel efficiency standards, and more project-specific on-site programs including those winery features noted above would combine to further reduce emissions below BAAQMD thresholds.

The increase in emissions expected as a result of the project will be relatively modest and the project is in compliance with the County's efforts to reduce emissions as described above. For these reasons, project impacts related to GHG emissions are considered less than significant.

Mitigation Measures: None required.

		Potentially Significant Impact	Less Than Significant With Mitigation Incorporation	Less Than Significant Impact	No Impact
VIII.	**HAZARDS AND HAZARDOUS MATERIALS.** Would the project:				
a)	Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?	☐	☐	☒	☐
b)	Create a significant hazard to the public or the environment through reasonable foreseeable upset and accident conditions involving the release of hazardous materials into the environment?	☐	☐	☒	☐
c)	Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?	☐	☐	☐	☒
d)	Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?	☐	☐	☐	☒
e)	For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard for people residing or working in the project area?	☐	☐	☐	☒
f)	For a project within the vicinity of a private airstrip, or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard for people residing or working in the project area?	☐	☐	☐	☒
g)	Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?	☐	☐	☐	☒
h)	Expose people or structures to a significant risk of loss, injury or death involving wild-land fires, including where wild-lands are adjacent to urbanized areas or where residences are intermixed with wild-lands?	☐	☐	☐	☒

Discussion:

a. The proposed project will not involve the transport of hazardous materials other than those small amounts normally used in winery operations. A Business Plan will be filed with the Environmental Health Division should the amount of hazardous materials reach reportable levels. However, in the event that the proposed use or a future use involves the use, storage or transportation of greater the 55 gallons or 500 pounds of hazardous materials, a use permit and subsequent environmental assessment would be required in accordance with the Napa County Zoning

Ordinance prior to the establishment of the use. During construction of the project some hazardous materials, such as building coatings/ adhesives/ etc., will be utilized. However, given the quantities of hazardous materials and the limited duration, they will result in a less-than-significant impact.

b. The project would not result in the release of hazardous materials into the environment.

c. There are no schools located within one-quarter mile from the proposed project site.

d. The proposed site is not included on the Cortese List prepared in compliance with Government Code Section 65962.5.

e. The project site is not located within two miles of any public airport.

f. The project site is not located within the vicinity of any private airports.

g. The proposed driveway of project has direct access to and will not cause obstruction of public roads or highways and will therefore not impair the implementation of or physically interfere with an adopted emergency response plan or evacuation plan.

h. The project would not increase exposure of people and/or structures to a significant loss, injury or death involving wild land fires.

Mitigation Measures: None required.

		Potentially Significant Impact	Less Than Significant With Mitigation Incorporation	Less Than Significant Impact	No Impact
IX.	**HYDROLOGY AND WATER QUALITY.** Would the project:				
	a) Violate any water quality standards or waste discharge requirements?	☐	☐	☒	☐
	b) Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted)?	☐	☐	☒	☐
	c) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on- or off-site?	☐	☐	☒	☐
	d) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or Amount of surface runoff in a manner which would result in flooding on- or off-site?	☐	☐	☒	☐
	e) Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff?	☐	☐	☒	☐
	f) Otherwise substantially degrade water quality?	☐	☐	☒	☐
	g) Place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map?	☐	☐	☐	☒
	h) Place within a 100-year flood hazard area structures which would impede or redirect flood flows?	☐	☐	☐	☒
	i) Expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam?	☐	☐	☒	☐
	j) Inundation by seiche, tsunami, or mudflow?	☐	☐	☐	☒

Discussion:

a. The proposed project will not violate any known water quality standards or waste discharge requirements. Based upon public concerns and comments regarding ground water, the applicant requested that O'Connor Environmental, Inc. prepare an extended Phase II WAA report on the groundwater in the area ("Girard Winery Water Availability Analysis", dated 3/26/2015) which included discussion regarding the known boron and arsenic concentrations in the Calistoga area's water. Elevated concentrations of arsenic and boron have been document at wells located north of the project parcels and concerns were raised that the proposed pumping could result in contaminant migration. These elevated concentrations do not appear to extend as far south as the project parcels as evidenced by the water quality analyses available for the Clos Pegase well and by Luhdorff and Scalmanini (2011) for nearby wells. The findings indicate that the proposed pumping is significantly less than the mean annual recharge and that long-term reduction in groundwater elevations are unlikely to occur as a result of the project pumping. Even short-term reductions in elevations associated with pumping do not extend far enough away from the project wells to intersect areas documented as having elevated concentrations of arsenic and boron. Given the limited effects of pumping on groundwater elevations, it is highly unlikely that the proposed pumping would affect contaminant migration or water quality. The project will connect to the "Clos Pegase Water System", regulated by the County PBES Department. Required water quality analyses performed on the water system (March 2009, Brelje and Race Laboratories) found the water met all primary standard maximum contaminant levels (MCL). Arsenic concentrations were below the MCL. Arsenic concentrations in the three closest wells to the project site complied by Luhdorff and Scalmanini (2011) indicated concentrations well below the MCL. The project will connect to the existing on-site process wastewater system used by the Clos Pegase Winery (1060 Dunaweal Lane, APN: 020-150-012) and will require the installation of a new sanitary sewage system to serve the project winery employees, visitors and events. The "Use Permit Wastewater Feasibility Study" prepared by Always Engineering, Inc. (dated 2/20/2014, revised 5/5/2014), has been reviewed by Napa County Division of Environmental Health and recommends approval as conditioned. Additionally, any earth disturbing activities would be subject to the County's Stormwater Ordinance which would include measures to prevent erosion, sediment, and waste materials from entering waterways both during and after any construction activities. Given the County's Best Management Practices, which comply with RWQCB requirements, the project does not have the potential to significantly impact water quality and discharge standards.

On January 14, 2014 Governor Jerry Brown declared a drought emergency in the state of California. The declaration stopped short of imposing mandatory conservation measures statewide. Mandatory water restrictions are being left to individual jurisdictions. On April 1, 2015, Governor Brown issued Executive Order B-29-15 imposing restrictions to achieve a wide 25% reduction in potable urban water usage through February 28, 2016. However, such restrictions were not placed on private well users in rural areas. At this time the County of Napa has not adopted or implemented mandatory water use restrictions. The County requires all Use Permit applicants to complete necessary water analyses in order to document that sufficient water supplies are available for the proposed project.

To better understand groundwater resources, on June 28, 2011 the Board of Supervisors approved creation of a Groundwater Resources Advisory Committee (GRAC). The GRAC's purpose was to assist County staff and technical consultants with recommendations regarding groundwater, including data collection, monitoring, well pump test protocols, management objectives, and community support. The County retained Luhdorff and Scalmanini who completed a county-wide assessment of groundwater resources (Napa County Groundwater Conditions and Groundwater Monitoring Recommendations Report (Feb. 2011)); developed a groundwater monitoring program (Napa County Groundwater Monitoring Plan 2013 (Jan. 2013)) and also completed a 2013 Updated Hydrogeologic Conceptualization and Characterization of Groundwater Conditions (Jan. 2013).

Groundwater Sustainability Objectives were recommended by the GRAC and adopted by the Board of Supervisors which acknowledged the important role of monitoring as a means to achieving groundwater sustainability and the principles underlying the sustainability objectives. In 2009 Napa County began a comprehensive study of its groundwater resources to meet identified action items in the County's 2008 General Plan update. The study, by Luhdorff and Scalmanini Consulting Engineers (LSCE), emphasized developing a sound understanding of groundwater conditions and implementing an expanded groundwater monitoring and data management program as a foundation for integrated water resources planning and dissemination of water resources information. The 2011 baseline study by LSCE, which included over 600 wells and data going back over 50 years, concluded that "the groundwater levels in Napa County are stable, except for portions of the MST district". Most wells elsewhere within the Napa Valley Floor with a sufficient record indicate that groundwater levels are more affected by climatic conditions, are within historical levels, and seem to recover from dry periods during subsequent wet or normal periods. The LSCE Study also concluded that, on a regional scale, there appear to be no current groundwater quality issues except north of Calistoga (mostly naturally occurring boron and trace metals) and in the Carneros region (mostly salinity). LSCE prepared the 2014 Annual Groundwater Monitoring Report, presented to the Napa County Board of Supervisors on March 3, 2015, which clearly states that, based on the network of monitored groundwater level in the area, the groundwater levels in the area south of Calistoga are stable, even in context of the current drought. The subject property is located within Napa Valley Floor, Calistoga area.

Minimum thresholds for water use have been established by the Napa County Department of Public Works, using reports by the United States Geological Survey (USGS), the GRAC recommendations, and the LSCE reports. These reports are the result of water resources investigations performed by the USGS in cooperation with the Napa County Flood Control and Water Conservation District and LSCE. LSCE concluded that the 1.0 acre-ft/acre criteria on the Valley Floor have proven to be both scientifically and operationally adequate. Any project which reduces water usage or any water usage which is at or below the established threshold is assumed not to have a significant effect on groundwater levels.

Vintage Wine Estates owns and operates the existing "Clos Pegase Water System", serving Clos Pegase Winery, across the street from the proposed Girard Winery parcel. The system currently serves Clos Pegase Winery and the residence located at 1060 Dunaweal Lane. The water system is currently regulated as a Transient Non-Community water system (Always Engineering, Inc. Water System Feasibility Report, 3/26/15), and the existing water system consists of: one active onsite well (Well #2), pressure tanks, sediment filer, softeners, located at 1077 Dunaweal Lane; and, a second active well (Well #1), 58,000 gallon storage tank, ultraviolet disinfection treatment and potable use located at 1060 Dunaweal Lane. Both wells are supplying the currently permitted transient community water system. Vintage Wine Estates is applying for a use permit to establish a new winery (the proposed Girard Winery) and the "Clos Pegase Water System" will be updated to include additional piping, a new 25,000 gallon storage tank, and service connections for the proposed Girard Winery. The public water system documents must be updated as a result.

A Water Availability Analysis-Phase One Study was prepared by Always Engineering, Inc. (dated 2/18/14, revised 3/26/15, Supplemented 6/18/15) for the proposed Girard Winery on the 26.53 acre parcel and for the Clos Pegase Winery property, a 20.39 acre parcel. Both parcels are located on the Valley Floor. As stated above, any project which reduces water usage or any water usage which is at or below the established threshold is assumed not to have a significant effect on groundwater levels, and since the project is located on the Valley Floor in an area that has an established acceptable water use criteria of 1.0 acre foot per acre per year, the Allowable Water Allotment for the Girard project property **26.53 af/yr** and the Allowable Water Allotment for the Clos Pegase Winery is **20.39 af/yr**. These allotments were determined by multiplying the acreage of each parcel by the one af/yr/acre fair share water use factor.

To meet the requirements of a Phase II Water Availability Analysis, O'Connor Environmental, Inc. (OEI) prepared the Girard Winery Water Availability Analysis" report, dated March 26, 2015. Analysis of the Clos Pegase Winery property was also included in the report. The report included an examination of the surficial geology of the project site, evaluated recent available long-term hydrographs for the Napa Valley Floor – Calistoga subarea, and conducted aquifer testing. Analysis of the resulting time/drawdown data provides a way of estimating aquifer properties, evaluating the extent of lateral drawdown away from the wells, and determining the relative sufficiency of the well for meeting expected water demands. The report concluded that the proposed Girard Winery combined with the existing Clos Pegase Winery would have an approximately 8.23 af/yr total annual water demand. This demand represents only 24% of the parcel-based mean annual groundwater recharge for both parcels, and only ~0.3% of the total recharge to the tuffaceous aquifer up-gradient of the project parcels. Given that mean annual recharge is significantly higher than the proposed demand, it is highly unlikely that the proposed pumping would result in long-term declines in groundwater elevations or depletion of groundwater resources.

The OEI report further concludes that the expected magnitudes of drawdown associated with the proposed pumping are reasonably small and the spheres of influence associated with pumping at the required rates and durations needed to meet the demands do not extend far enough away from the project wells to intersect neighboring wells or the Napa River. These findings coupled with the fact that the project wells draw water from the tuffaceous rocks of the Sonoma Volcanics rather than from the alluvial aquifer (the primary aquifer providing water to many of the wells in the area and the material responsible for baseflow discharge to the Napa River) indicate that the proposed pumping is highly unlikely to result in interference to neighboring wells or impacts to river baseflows.

The OEI report was referred to the Napa County Department of Public Works for review. The Department, concluded that: 1) the groundwater table in the area shows a long term stable trend; 2) Impact on neighboring wells or the Napa River are not anticipated; and 3) The project is unlikely to cause directional flow changes which would draw chemicals from Calistoga into the area.

Clos Pegase Winery is a 200,000 gallon winery, with 10 employees (total 30 employees during harvest), visitation with an average of 725 per week and 24 events per year. The Phase I study indicates that the existing total water demand by the Clos Pegase winery is 4.79 af/yr, which is well below the 20.39 af/yr allowable water allotment. The winery uses/demands are outlined below:

EXISTING CLOS PEGAS WINERY WATER DEMAND	
	Acre feet/year
Winery Processing	2.93
Employees (30 full-time/harvest; 10 full time/non-harvest)	.251
Tasting Visitors (725/52 weeks)	.347
Event Visitors (150/24 events/year)	.0552
Residence	1.21
4 acres Vineyard – Irrigation, frost protection and heat protection, sourced by process wastewater ponds	[3.00]
TOTAL	4.79

The Phase I report was revised to indicate that while analyzing the existing Clos Pegase Winery and the existing Girard process operations for the wastewater feasibility study, the engineer calculated approximately 4.78 gallons of water were used per gallon of wine produced. The engineer had originally completed the Water Availability Analysis form utilizing the County Estimated Water Use Guidelines, 2.15 acre-feet per 100,000 gallons of wine. The 4.78 gallons of water/gallon of wine figure was used for the preparation of the revised projected water demand in

lieu of the estimated figures supplied by the County. Therefore, in the revised water availability analysis for the Clos Pegase Winery, the engineers determined that approximately 2.93 af/yr is required for processing the wine and a demand of .65 af/yr is projected for employees and visitors. Further, the residential landscaping and pool were added to the residence demands resulting in the residence's need of 1.21 af/yr. The 4 acres of vineyards and the landscaping on the Clos Pegase parcel utilize the processed wastewater from the ponds that are located on the Girard Winery parcel for irrigation, and are therefore not included in the total water demand, but provided for informational purposes only. Frost and heat protection demand will also utilize the processed wastewater.

The proposed Girard Winery is a 200,000 gallon winery, 11 employees (additional 19 during harvest for total 30 during harvest), a maximum of 75 weekday visitors/90 weekend visitors, and 9 events, the largest with a maximum 500 people. As discussed above, the revised study utilized the current water use data from the existing Girard processing facility, located in Sonoma County, when the wastewater feasibility study was prepared. In that analysis, it was estimated that approximately 4.78 gallons of water were used per gallon of wine produced. Projecting the ultimate production levels of 200,000 gallons, the projected water use estimate for the winery processing was 2.93 af/yr. The projected water demand by employees is .185 af/yr; tasting visitors, .29 af/yr; and event use, .03 af/yr. The projected water demand from the proposed Girard Winery is 3.43 af/yr, which is well below the 26.53 af/yr allowable water allotment. The winery uses/demands are outlined below:

PROPOSED GIRARD WINERY WATER DEMAND	
	Acre feet/year
Winery Processing	2.93
Employees	---
Harvest (12 full time)	.05
Harvest (7 part time)	.015
Non-Harvest (8 full time)	.10
Non-Harvest (3 part time)	.02
Visitors	---
Weekday (75, 4 days/week)	.15
Weekend (100, 3 days/week)	.14
Event (Large – 500 people 1/year)	.01
Event (Medium - 200 people 4/year)	.01
Event (Small – 75 people 4/year)	.01
Landscaping Irrigation, frost protection and heat protection, sourced by process wastewater ponds	[1.0]
14.53 acres Vineyard – Irrigation, frost protection (no heat protection) Irrigation, frost protection and heat protection, sourced by process wastewater ponds	[10.89]
TOTAL	3.43

The water availability analysis report states that the total water demands of the Girard Winery project plus the "Clos Pegase Water System" on the Girard parcel would be 8.22 af/yr. The Water Availability Analysis report further indicates that currently, all vineyard irrigation (both parcels) and all winery landscaping is and will be provided for using the existing process wastewater irrigation pond located on the Girard winery property. The project will be conditioned to ensure that no groundwater is used for landscape or vineyard irrigation. The existing irrigation pond is supplied by rainwater, vineyard subdrain collection water, and treated process wastewater. No well water has been used to irrigate the existing vineyards and the existing landscaping. In addition, the proposed Girard Winery will contribute additional process wastewater into the reclaimed wastewater irrigation system. Even with the drought conditions occurring over the last several years, the ponds have had sufficient water to accommodate these uses.

In summary, the overall water use for the proposed Girard Winery and the existing Clos Pegase would be 8.22 af/yr. The total Allowable Water Allotment for the two parcels would be 46.92 af/yr. The alternate water source of processed winery wastewater for the irrigation of vineyards and landscaping, and for frost and heat protection significantly reduces the water demand on groundwater.

Winery Groundwater Demand		Vineyard Irrigation, Frost and Heat Protection Demand
Clos Pegase Winery	4.79 af/yr	3.0 af/yr
Girard Winery	3.43 af/yr	10.8975 af/yr
Total Demand	8.22 af/yr	13.8975 af/yr

Based on these figures and the associated water reuse system which would eliminate the vineyard irrigation demands, the proposed project will not result in a substantial increase the demand on ground water supplies or interfere with groundwater recharge or lowering of the local groundwater level. As indicated in the OEI analysis, the demand from the two wineries represents only 24% of the parcel-based mean annual groundwater recharge and only 0.3% of the total recharge to the tuffaceous aquifer up-gradient of the project parcels. Given that mean annual recharge is significantly higher than the proposed demand, it is highly unlikely that the demand of the proposed winery would result in long-term

declines in groundwater elevations or depletion of groundwater resource. According to Napa County Environmental Resource Mapping (*Water Deficient Areas/Storage Areas*), the project site is not located within a water deficient area, and the project would have a less than significant impact on the hydrology of the area.

c.-e. The proposed project will not substantially alter the drainage pattern on the site nor cause a significant increase in erosion or siltation on or off site. There are no existing or planned stormwater systems that would be affected by this project. Because the project disturbs more than one acre of land, the permittee will be required to comply with the requirements of the Regional Water Quality Control Board addressing stormwater pollution during construction activities. The project site includes vineyards, landscaping and other pervious areas that have the capacity to absorb runoff.

f. The OEI report, "Girard Winery Water Availability Analysis", dated March 26, 2015, included an analysis of the project's potential impact to groundwater quality. The report cites the water quality analysis compiled for various wells in the Calistoga area as part of a 2011 evaluation of groundwater conditions (Luhdorff and Scalmanini, 2011). Most of the poor quality groundwater was found to occur north of Calistoga. Elevated concentrations of arsenic and boron were found in the wells north of the project parcels, but these elevated concentrations do not appear to extend as far south as the project parcels, as evidenced by the water quality analyses available for the Clos Pegase well and supported by Luhdorff and Scalmanini (2011) for nearby wells. The report further concludes that the proposed pumping is significantly less than the mean annual recharge and that long-term reductions in groundwater elevations are unlikely to occur as a result of the project pumping. The report further states that even short-term reductions in elevations associated with pumping do not extend far enough away from the project wells to intersect areas documented as having elevated concentrations of arsenic and boron. Given the limited effects of pumping on groundwater elevations, it is highly unlikely that the proposed pumping would affect contaminant migration or water quality. As discussed in greater detail at, "a.," above, the Division of Environmental Health has reviewed the sanitary wastewater proposal and has found the proposed system adequate to meet the facility's septic needs as conditioned. There is nothing included in this proposal that would otherwise substantially degrade water quality. As discussed in greater detail at, "a.," above, the Division of Environmental Health has reviewed the sanitary wastewater proposal and has found the proposed system adequate to meet the facility's septic needs as conditioned.

g.-i. The project does not include the placement of new housing on the property. According to Napa County Environmental Resource Mapping (*Floodplain* and *DAM Levee Inundation* layers), the parcel is located outside the 100-year flood zone, but a small portion of the property falls within the 500-year flood zone. The winery site, however, is well outside any area of potential flooding. The project would not impede or redirect flood flows, does not propose any housing or expose structures or people to flooding. The project site is not located within a dam or levee failure inundation zone.

j. In coming years, higher global temperatures are expected to raise sea level by expanding ocean water, melting mountain glaciers and small ice caps, and causing portions of Greenland and the Antarctic ice sheets to melt. The Intergovernmental Panel on Climate Change estimates that the global average sea level will rise between 0.6 and 2 feet over the next century (IPCC, 2007). However, the project area is located at approximately 330-ft. above mean sea level and there is no known history of mud flow in the vicinity. The project will not subject people or structures to a significant risk of inundation from tsunami, seiche, or mudflow.

Mitigation Measures: None required.

		Potentially Significant Impact	Less Than Significant With Mitigation Incorporation	Less Than Significant Impact	No Impact
X.	**LAND USE AND PLANNING.** Would the project:				
	a) Physically divide an established community?	☐	☐	☐	☒
	b) Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect?	☐	☐	☐	☒
	c) Conflict with any applicable habitat conservation plan or natural community conservation plan?	☐	☐	☐	☒

Discussion:

a-c. The project would not occur within an established community, nor would it result in the division of an established community. The project complies with the Napa County Code and all other applicable regulations. The subject parcel is located in the AP (Agricultural Preserve) zoning district, which allow wineries and uses accessory to wineries subject to use permit approval. The proposed project is in compliance with the physical limitations of the Napa County Zoning Ordinance. The County has adopted the Winery Definition Ordinance (WDO) to protect agriculture and open space and to regulate winery development and expansion in a manner that avoids potential negative environmental effects.

Agricultural Preservation and Land Use Policy AG/LU 1 of the 2008 General Plan states that the County shall, "preserve existing agricultural land uses and plan for agriculture and related activities as the primary land uses in Napa County." The property's General Plan land use designation is AR (Agricultural Resource), which allow "agriculture, processing of agricultural products, and single-family dwellings." More specifically, General Plan Agricultural Preservation and Land Use Policy AG/LU-2 recognizes wineries and other agricultural processing facilities, and any use clearly accessory to those facilities, as agriculture. The project would allow for the continuation of agriculture as a dominant land use within the county and is fully consistent with the Napa County General Plan.

The proposed use of the property for the "fermenting and processing of grape juice into wine" (NCC §18.08.640) supports the economic viability of agriculture within the county consistent with General Plan Agricultural Preservation and Land Use Policy AG/LU-4 ("The County will reserve agricultural lands for agricultural use including lands used for grazing and watershed/ open space...") and General Plan Economic Development Policy E-1 (The County's economic development will focus on ensuring the continued viability of agriculture...).

The General Plan includes two complimentary policies requiring wineries to be designed generally of a high architectural quality for the site and its surroundings. The proposed winery will convey the required permanence and improving the buildings overall attractiveness. There are no applicable habitat conservation plans or natural community conservation plans applicable to the property.

Mitigation Measures: None required.

		Potentially Significant Impact	Less Than Significant With Mitigation Incorporation	Less Than Significant Impact	No Impact
XI.	**MINERAL RESOURCES.** Would the project:				
a)	Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?	☐	☐	☐	☒
b)	Result in the loss of availability of a locally-important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan?	☐	☐	☐	☒

Discussion:

a/b. Historically, the two most valuable mineral commodities in Napa County in economic terms have been mercury and mineral water. More recently, building stone and aggregate have become economically valuable. Mines and Mineral Deposits mapping included in the Napa County Baseline Data Report (*Mines and Mineral Deposits*, BDR Figure 2-2) indicates that there are no known mineral resources nor any locally important mineral resource recovery sites located on or near the project site.

Mitigation Measures: None required.

		Potentially Significant Impact	Less Than Significant With Mitigation Incorporation	Less Than Significant Impact	No Impact
XII.	**NOISE.** Would the project result in:				
a)	Exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?	☐	☐	☒	☐
b)	Exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels?	☐	☐	☐	☒
c)	A substantial permanent increase in Ambient noise levels in the project vicinity above levels existing without the project?	☐	☐	☒	☐
d)	A substantial temporary or periodic increase in Ambient noise levels in the project vicinity above levels existing without the project?	☐	☐	☒	☐

	Potentially Significant Impact	Less Than Significant With Mitigation Incorporation	Less Than Significant Impact	No Impact
e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?	☐	☐	☐	☒
f) For a project within the vicinity of a private airstrip, would the project expose people residing or working in the project area to excessive noise levels?	☐	☐	☐	☒

Discussion:

a/b. The project will result in a temporary increase in noise levels during the brief construction of the project. Construction activities will be limited to daylight hours using properly muffled vehicles. Given the proximity to the neighbors, the closest of whom is located over 400 feet away from the winery building site, there is a relatively low potential for significant adverse impacts related to construction noise. To control noise from construction activities, the County has established noise limits for construction activities and all construction activities will be conducted in compliance with the Napa County Noise Ordinance (Napa County Code Chapter 8.16). Construction activities are limited to the period of 7AM-7PM on weekdays, during normal hours of human activity and avoiding noise sensitive hours. Further, conditions of approval would require construction activities to be limited to daylight hours, vehicles to be muffled, and backup alarms adjusted to the lowest allowable levels. Compliance with the regulations will ensure that the proposed project will not result in long-term significant construction noise impacts.

c/d. Wineries are the predominant non-residential land uses within the County. Noise from winery operations is generally limited and intermittent, meaning the sound level can vary over the course of the year, depending on the activities at the winery. The primary noise-generating activities are equipment associated with wineries include refrigeration equipment, bottling equipment, barrel washing, de-stemmer and press activities occurring during the harvest crush season, and delivery and delivery trucks and other vehicles. Community noise is commonly described in terms of the "ambient" noise level which is defined as the all-encompassing noise level associated with a given noise environment. The Napa County General Plan EIR indicates the average, or equivalent, sound level (L_{eq}) for winery activities is 51dBA in the morning and 41dBA in the afternoon. Audibility of a new noise source and/or increase in noise levels within recognized acceptable limits are not usually considered to be significant noise impacts, but these concerns should be addressed and considered in the planning an environmental review processes.

The standard conditions of approval require that any exterior winery equipment be enclosed or muffled and maintained so as not to create a noise disturbance in accordance with the Napa County Code. The applicant has indicated that the winery equipment such as crusher or de-stemmer (60-67 dBA average at 70 feet), will be located within the indoor crush area of the winery building. With the location of the equipment within the building and the distance between the equipment and the receptors, the potential noise impacts will not reach a level of significance. The proposed marketing activities could create additional noise impacts, with the submitted marketing plan including a number of events on a weekly, monthly and annual basis, one of which would include up to 500 visitors (1 per year). The Napa County Noise Ordinance, which was adopted in 1984, sets the maximum permissible received sound level for a residence in a rural area as 45 dBA between the hours of 10 p.m. and 7 a.m.; While the 45 dBA limitation is strict (45 dBA is roughly equivalent to the sound generated by a quiet conversation), the area surrounding the subject property is developed, with a scattering of homes located in the immediate vicinity and directly adjacent to the site with the nearest residences located about 400 feet from winery building site. The potential for the creation of significant noise from visitation is significantly reduced, since the tasting areas are predominantly within the winery itself, and large gatherings for events will occur indoors within the barrel areas of the winery. Continuing enforcement of Napa County's Noise Ordinance by the Division of Environmental Health and the Napa County Sheriff, including the prohibition against amplified music, should further ensure that marketing events and other winery activities do not create a significant noise impact. Events and non-amplified music are required to finish by 10:00 p.m. every evening.

e/f. The project site is not located within an airport land use plan or within two miles of a public airport or within the vicinity of a private airstrip.

Mitigation Measures: None required.

	Potentially Significant Impact	Less Than Significant With Mitigation Incorporation	Less Than Significant Impact	No Impact
XIII. **POPULATION AND HOUSING.** Would the project:				
a) Induce substantial population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?	☐	☐	☐	☒

	Potentially Significant Impact	Less Than Significant With Mitigation Incorporation	Less Than Significant Impact	No Impact
b) Displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere?	☐	☐	☐	☒
c) Displace substantial numbers of people, necessitating the construction of replacement housing elsewhere?	☐	☐	☐	☒

Discussion:

a. Staffing for the winery would include a maximum 11 employees eight (8 full time and 3 part-time), plus an additional 19 employees during harvest. The Association of Bay Area Governments' *Projections 2003* figures indicate that the total population of Napa County is projected to increase some 23% by the year 2030 (*Napa County Baseline Data Report,* November 30, 2005). Additionally, the County's *Baseline Data Report* indicates that total housing units currently programmed in county and municipal housing elements exceed ABAG growth projections by approximately 15%. The eleven positions which are part of this project will most likely lead to some population growth in Napa County. However, relative to the County's projected low to moderate growth rate and overall adequate programmed housing supply, that population growth does not rise to a level of environmental significance. In addition, the project will be subject to the County's housing impact mitigation fee, which provides funding to meet local housing needs.

   Cumulative impacts related to population and housing balance were identified in the 2008 General Plan EIR. As set forth in Government Code §65580, the County of Napa must facilitate the improvement and development of housing to make adequate provision for the housing needs of all economic segments of the community. Similarly, CEQA recognizes the importance of balancing the prevention of environment damage with the provision of a "decent home and satisfying living environment for every Californian." (See Public Resources Code §21000(g).) The 2008 General Plan sets forth the County's long-range plan for meeting regional housing needs, during the present and future housing cycles, while balancing environmental, economic, and fiscal factors and community goals. The policies and programs identified in the General Plan Housing Element function, in combination with the County's housing impact mitigation fee, to ensure adequate cumulative volume and diversity of housing. Cumulative impacts on the local and regional population and housing balance will be less than significant.

b/c. This application will not displace a substantial volume of existing housing or a substantial number of people and will not necessitate the construction of replacement housing elsewhere.

Mitigation Measures: None required.

	Potentially Significant Impact	Less Than Significant With Mitigation Incorporation	Less Than Significant Impact	No Impact
XIV. **PUBLIC SERVICES.** Would the project result in:				
a) Substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the public services:				
Fire protection?	☐	☐	☒	☐
Police protection?	☐	☐	☒	☐
Schools?	☐	☐	☒	☐
Parks?	☐	☐	☒	☐
Other public facilities?	☐	☐	☒	☐

Discussion:

a. Public services are currently provided to the project site and the additional demand placed on existing services would be marginal. Fire protection measures are required as part of the development pursuant to Napa County Fire Marshall conditions and there will be no foreseeable impact to emergency response times with the adoption of standard conditions of approval. The Fire Department and Engineering Services Division have reviewed the application and recommend approval as conditioned. School impact mitigation fees, which assist local school districts with capacity building measures, will be levied pursuant to building permit submittal. The proposed project will have little to no impact on

public parks. County revenue resulting from any building permit fees, property tax increases, and taxes from the sale of wine will help meet the costs of providing public services to the property. The proposed project will have a less than significant impact on public services.

Mitigation Measures: None required.

		Potentially Significant Impact	Less Than Significant With Mitigation Incorporation	Less Than Significant Impact	No Impact
XV.	**RECREATION.** Would the project:				
	a) Increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?	☐	☐	☐	☒
	b) Does the project include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment?	☐	☐	☐	☒

Discussion:

a/b. The project would not significantly increase the use of recreational facilities, nor does the project include recreational facilities that may have a significant adverse effect on the environment.

Mitigation Measures: None required.

		Potentially Significant Impact	Less Than Significant With Mitigation Incorporation	Less Than Significant Impact	No Impact
XVI.	**TRANSPORTATION/TRAFFIC.** Would the project:				
	a) Cause an increase in traffic which is substantial in relation to the existing traffic load and capacity of the street system and/or conflict with General Plan Policy CIR-16, which seeks to maintain an adequate Level of Service (LOS) at signalized and unsignalized intersections, or reduce the effectiveness of existing transit services or pedestrian/bicycle facilities?	☐	☐	☒	☐
	b) Conflict with an applicable congestion management program, including, but not limited to level of service standards and travel demand measures, or other standards established by the Napa County Transportation and Planning Agency for designated roads or highways?	☐	☐	☒	☐
	c) Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks?	☐	☐	☐	☒
	d) Substantially increase hazards due to a design feature, (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?	☐	☐	☒	☐
	e) Result in inadequate emergency access?	☐	☐	☒	☐
	f) Conflict with General Plan Policy CIR-23, which requires new uses to meet their anticipated parking demand, but to avoid providing excess parking which could stimulate unnecessary vehicle trips or activity exceeding the site's capacity?	☐	☐	☐	☒
	g) Conflict with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities?	☐	☐	☐	☒

Discussion:

a/b. The subject 26.53 acre parcel is located on the east side of Dunaweal Lane, designated a local road by the General Plan, between State Highway 29 and Silverado Trail. Access to the proposed winery would be from both directions of Dunaweal Lane, via a 24 ft. wide driveway. The intersections with State Highway 29 and Silverado Trail are unsignalized; southbound traffic on State Highway 29 has a southbound left turn lane. There are no other wineries pending or unbuilt on Dunaweal Lane and there are three existing wineries located on Dunaweal Lane:

Clos Pegase Winery, Sterling Vineyards, and Twomey Cellars. The project proposes to establish a 200,000 gallon/year winery. The project proposes 22 on-site parking spaces with 2 loading areas (15 visitor spaces and 7 employee spaces) to serve the facility. The parking area also proposes to include an electric vehicle charging station space and one visitor clean air vehicle space. The proposed maximum daily visitation will be 75 persons; 90 persons on weekends. There will be 25 or greater on-site employees (production and hospitality): 8 full-time and 3 part-time, but will increase during harvest to 20 full-time and 10 part-time. Nine (9) marketing events per year are proposed: four (4) events with maximum 75 guests; four (4) events with a maximum 200 guests; and one (1) harvest event with a maximum 500 guests.

As part of the project, the project proposes to minimize the peak hour employee trips by scheduling production employee shifts daily from 7:00 AM to 3:00 PM and scheduling the hospitality staff daily from 9:30 AM to 6:30 PM in a transportation demand management program, removing the employee trips generated during the PM peak period. The proposed employee shift scheduling will be included as a condition of approval for the project. The resulting weekday PM peak hour trips will be associated with tasting visitors only, where based upon the County trip generation sheet would be 16 vehicles, 6 inbound and 10 outbound. The report identified administrative employees scheduled to leave during the PM peak hour, however, the applicant advised that no administrative personnel would be located at this winery.

Traffic conditions on roads and at intersections are generally characterized by their "level of service" or LOS. LOS is a convenient way to express the ratio between **volume** and **capacity** on a given link or at a given intersection, and is expressed as a letter grade ranging from LOS A through LOS F. Each level of service is generally described as follows:

LOS A- Free-flowing travel with an excellent level of comfort and convenience and freedom to maneuver.
LOS B- Stable operating conditions, but the presence of other road users causes a noticeable, though slight, reduction in comfort, convenience, and maneuvering freedom.
LOS C- Stable operating conditions, but the operation of individual users is substantially affected by the interaction with others in the traffic stream.
LOS D- High-density, but stable flow. Users experience severe restrictions in speed and freedom to maneuver, with poor levels of comfort and convenience.
LOS E- Operating conditions at or near capacity. Speeds are reduced to a low but relatively uniform value. Freedom to maneuver is difficult with users experiencing frustration and poor comfort and convenience. Unstable operation is frequent, and minor disturbances in traffic flow can cause breakdown conditions.
LOS F- Forced or breakdown conditions. This condition exists wherever the volume of traffic exceeds the capacity of the roadway. Long queues can form behind these bottleneck points with queued traffic traveling in a stop-and-go fashion. (2000 Highway Capacity Manual, Transportation Research Board)

General Plan Policy CIR-16 states that "The County will seek to maintain an arterial Level of Service D or better on all County roadways, except where maintaining this level of service would require the installation of more travel lanes than shown on the Circulation Map." State Highway 29 and Silverado Trail are listed as two-lane Rural Throughways on the General Plan Circulation Map. A one percent criteria for the threshold of significance is used for analysis because it is well within the range of daily variation in traffic as well as within the range of the accuracy of travel demand forecasts and therefore not likely to be noticeable to drivers.

A focused traffic analysis addressing potential traffic impacts and access needs for the proposed Girard winery was prepared by W-Trans ("Traffic Impact Study for the Girard Winery Project", dated 12/18/2014). Then, in response to public comments, a supplemental traffic analysis was submitted ("Response to Comments on the Traffic Impact Study for the Girard Winery Project," dated 4/9/15). The report stated that mechanical tube counts were collected for three consecutive days (Thursday through Saturday) in March 2014 and then intersection counts were taken during the PM Peak period in September 2014 at the Silverado Trail/Dunaweal Lane and the State Route 29/Dunaweal intersections. The total volume of traffic on Dunaweal ranged from 1,484 vehicles (NB 828/SB 746) on a Thursday, to 1,691 vehicles (NB 880/SB 811) on Saturday. Using the turning movement data collected at the two intersections together with the current configurations, existing operating conditions at each intersection were evaluated. The report concluded that both intersections are currently operating at LOS A or B overall and on all approaches. With all approaches at LOS A or B, the current operation of both intersections would be considered acceptable. While weekend operation was not evaluated, given the similarity of volumes on a weekday versus a weekend day together with the very low average delays currently being encountered, the report found that it appears reasonable to conclude that operation during the weekend peak period is also low and therefore acceptable.

The County of Napa's Winery Traffic Information /Trip Generation sheet was used for the report to determine the anticipated traffic generation. The anticipated daily trip generation and the PM peak hour generation (4:00 PM – 6:00 PM) for the project, winery plus tasting room, is projected as follows:

		Trip Generation	Trip Generation
Weekday employees	8 full-time 3/part-time	24/6 trips	26 weekday PM peak hour 29 weekend PM peak hour
Weekend employees	2 full/4 part-time	6/8 trips	
Visitors	52 weekday/62 weekend	40/44 trips	
Truck trips	---	4 trips	

+Harvest Saturday	20 full/10 part-time/62 visitors/ truck trips	61/19/44/4 trips	142 daily trips
Event staff	30	60 trips	20 Additional trips
Event trucks	10	20 trips	
Event Guests	500	357 trips	

The applicant proposes to enact transportation demand management (TDM) program to eliminate adding **any** peak hour trips; the evaluated conditions would only occur if there were employee and visitor trips as estimated without the benefit of the TDM program. Given that it is relatively easy for employee and visitor trips to be managed, it appears reasonable to accept this TDM plan as a realistic and feasible option for addressing potential traffic impacts, even if they would be less than significant. However, based on the most conservative analysis it was determined that even without the TDM program, the projects trips would result in less than significant impacts.

This analysis indicates that the added volume is so small as to result in no discernable change to the operation of State Highway 29 from what would occur without the project. A review of the traffic volumes on State Highway 29 and added by the project indicates that the number of project-generated trips is one percent or less of existing volumes (The project adds 2 peak hour trips south of Dunaweal to the State Highway 29 volumes of 194 PM trips and 396 weekend trips, and 2:00 PM and 1:00 PM weekend trips, respectively, added to the 262 and 612 existing trips north of Dunaweal).

The traffic consultant concluded that upon adding project-generated trips to existing volume, both the Dunaweal Lane/State Highway 29 and the Dunaweal Lane/Silverado Trail intersections are expected to continue operating at LOS A or B overall, as well as, on all approaches.

In the April 9, 2015 supplement to the W-Trans Traffic Impact Study, an analysis was performed to determine the project's potential impact on the operation of State Highway 29 under the projected Future 2030 PM peak hour volumes. Both with the maximum estimated project volumes added to anticipated 2030 volumes and without, operation would remain at LOS E both north and south of Dunaweal Lane, with no change in the volume-to-capacity (v/c) ratios. The two study intersections are expected to operate acceptably. Based upon the projected 2030 future volumes, the two intersections are expected to operate acceptably overall, though the northbound Dunaweal Lane approach to Silverado Trail is expected to operate at LOS E and the southbound Dunaweal Lane approach to State Highway 29 is expected to operate at LOS F at the PM Peak Hour,

The report addresses the future projected traffic volumes, using the joint Napa County/Solano County 2010-2030 Travel Demand Forecasting Model. The data used included directional segment volumes along State Highway 29 and Silverado Trail for the PM peak hour. Using the 2030 and 2010 model volumes, a growth factor of 1.45 was determined for State Highway 29. This growth factor was applied to turning movements to and from Dunaweal Lane and the remainder of the future increase was added to the volumes for the through movements. The report notes that the projected 78 vehicle trips added to Dunaweal Lane during the PM peak hour would adequately represent increases associated with three new wineries or expansions to existing along Dunaweal Lane.

c. This proposed project would not result in any change to air traffic patterns. The project does not propose the construction of significantly tall structures.

d-e. Access to the proposed winery will be via a 24-ft wide driveway from Dunaweal Lane, onto the site and would meet County Road and Street Standards. The traffic impact study indicates that the calculated collision rate for Dunaweal lane at .090 collision/million vehicle miles (c/mvm) is lower than the statewide average for similar facilities. The project will not require any changes to the existing roadway or introduce incompatible roadway use. The entrance driveway is not adequate to allow on-pavement parking and therefore the driveway will remain open and will not interfere with emergency access. Dunaweal Lane is relatively flat and straight and the sight distances are more than adequate and meet the recommended distance for the posted 45 MPH speed limit. It has been determined that the installation of a left turn pocket into the project is not warranted.

f. General Plan Policy CIR-23 states that new uses shall provide adequate parking to meet their anticipated parking demand and shall not provide excess parking that could stimulate unnecessary vehicle trips or commercial activity exceeding the site's capacity. The project proposes the construction of 22 parking places (15 visitors, 7 employees) and one loading zone. Based upon estimates of 2.6 visitors/vehicle on weekday (20± vehicles) and 2.8 visitors/vehicle on weekends (22± vehicles) the parking demand per day would be satisfied by the 22 parking spaces. The parking demand generated from nine marketing events (179± vehicles at largest event) will exceed the number of parking spaces available in the parking lot. Additional parking in the paved area at the rear of the winery can be utilized during events (approximately 20,000 sq. ft. at 180 sq.ft/car =±111 cars) or shuttling from an off-site parking lot. The applicant proposes Best Management Practices to encourage a reduction of vehicle miles traveled with priority parking for efficient transportation and to use bus transportation for large marketing events. The applicant owns the winery property across the street and event guests can be shuttled over from there. No parking will be permitted within the right-of-way of Dunaweal Lane or on the entrance driveway, which is too narrow to accommodate parking.

g. There is no aspect of this proposed project that would conflict with any adopted policies, plans or programs supporting alternative transportation. Route 10 of the Vine transit system travels between the Cities of Napa and Calistoga, with a stop located on Dunaweal Lane.

Bicycle carriers are also included on the buses. Dunaweal Lane is also included on the City of Calistoga Bike Map. The paved access driveway and adequate sight distances would not interfere with bicycle use on Dunaweal Lane.

		Potentially Significant Impact	Less Than Significant With Mitigation Incorporation	Less Than Significant Impact	No Impact
XVI.	**UTILITIES AND SERVICE SYSTEMS.** Would the project:				
a)	Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board?	☐	☐	☒	☐
b)	Require or result in the construction of a new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?	☐	☐	☒	☐
c)	Require or result in the construction of a new storm water drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?	☐	☐	☒	☐
d)	Have sufficient water supplies available to serve the project from existing entitlements and resources, or are new or expanded entitlements needed?	☐	☐	☒	☐
e)	Result in a determination by the wastewater treatment provider which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?	☐	☐	☒	☐
f)	Be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs?	☐	☐	☒	☐
g)	Comply with federal, state, and local statutes and regulations related to solid waste?	☐	☐	☒	☐

Discussion:

a. The project will not exceed wastewater treatment requirements of the Regional Water Quality Control Board and will not result in a significant impact.

b. The project will connect to an existing water treatment system, and will not require construction of any new water treatment facilities that will result in a significant impact to the environment. Water will be provided by an existing well. A new sanitary wastewater system will be constructed on site. The system will be designed by a licensed engineer and will be reviewed and approved by the Division of Environmental Health.

c. The project will not require or result in the construction of new storm water drainage facilities or expansion of existing facilities, which will cause a significant impact to the environment.

d. As discussed in **Section IX** above, the total County allowable water allotment for the Clos Pegase Winery property (APN: 020-150-012) is 20.39 af/yr and 26.53 af/yr for the proposed Girard Winery property (APN: 020-150-017). The Revised Phase 1 Study (Always Engineering, dated 3/26/15; supplemented 6/18/2015) consolidated the all-total allowable water allotment (46.92 af/yr) and analyzed all of the demand of the water resources on the proposed Girard Winery parcel. The two wineries will have an interrelationship resulting from the consolidation of the transient non-community water system and from the shared used process wastewater system utilizing the irrigation pond located on the proposed Girard Winery parcel. The vineyards and landscaping will be irrigated from the recycled processed wastewater, therefore, the primary demand for groundwater will come from the winery processing, domestic needs (employees, visitors, and the residence), which can be accommodated well within the allowable water allotment for either parcel: Clos Pegase, total 3.58 af/yr; the residence, 1.21 af/yr; Girard Winery 3.43 af/yr; total 8.22 af/yr. In summary, the existing yield will be sufficient to serve all uses on the property and the existing wastewater processing system ponds serve to eliminate vineyard and landscaping demands. As previously discussed, any project which reduces water usage or any water usage which is at or below the established threshold is assumed not to have a significant effect on groundwater levels.

e. Wastewater will be treated on-site and will not require a wastewater treatment provider.

f. The project will be served by a landfill with sufficient capacity to meet the projects demands. No significant impact will occur from the disposal of solid waste generated by the project.

g. The project will comply with federal, state, and local statutes and regulations related to solid waste.

Mitigation Measures: None required.

		Potentially Significant Impact	Less Than Significant With Mitigation Incorporation	Less Than Significant Impact	No Impact
XVII.	**MANDATORY FINDINGS OF SIGNIFICANCE**				
a)	Does the project have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory?	☐	☐	☒	☐
b)	Does the project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects)?	☐	☐	☒	☐
c)	Does the project have environmental effects that will cause substantial adverse effects on human beings, either directly or indirectly?	☐	☐	☐	☒

Discussion:

a. The project as proposed will not degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory. The project will be located on lands that have been historically developed in agriculture, and there are existing wastewater ponds and an irrigation reservoir on the property.

b. The project does not have impacts that are individually limited, but cumulatively considerable. Potential air quality, greenhouse gas emissions, hydrology, and traffic impacts are discussed in the respective sections above. The project would also increase the demands for public services to a limited extent, increase traffic and air pollutions, all of which contribute to cumulative effects when future development in Napa Valley is considered. Cumulative impacts of these issues are discussed in previous sections of this Initial Study, wherein the impact from an increase in air pollution is being addressed as discussed in the project's Greenhouse Gas Voluntary Best Management Practices including but not limited to use of alternative fuel and electrical vehicles in their operational fleet; vehicle miles travelled reduction plan through priority parking for efficient transportation; bus transportation for large marketing events; bicycling incentives; and installation of an electrical vehicle charging station. Potential impacts are discussed in the respective sections above. The project trip generation was calculated from winery operations, where the calculated trips reflect total visitation, on-site employees and wine production trips generated by the winery. Under the Napa County General Plan, traffic volumes are projected to increase and will be caused by a combination of locally generated traffic as well as general regional growth. The General Plan EIR indicates that much of the forecasted increase in traffic on the arterial roadway network will result from traffic generated outside of the county, however the project will contribute a small amount toward the general overall increase. The Traffic Impact Study prepared for the project concluded that under future plus project conditions, the overall operation at the State Highway 29/Dunaweal Lane intersection for the southbound (Dunaweal) approach is projected to be reduced to a LOS F.

General Plan Policy CIR-16 states that "The County will seek to maintain an arterial Level of Service D or better on all County roadways, except where maintaining this level of service would require the installation of more travel lanes than shown on the Circulation Map." State Highway 29 and Silverado Trail are listed as two-lane Rural Throughways on the General Plan Circulation Map. As discussed above under **Section XVI Transportation**, implementation of mitigation measures to eliminate the project's additional traffic at the PM peak hours will help to delay the expected future deterioration of the level of service on Highway 29 to LOS F at PM Peak Hour.

c. There are no environmental effects caused by this project that would result in substantial adverse effects on human beings, whether directly or indirectly. No hazardous conditions resulting from this project have been identified. The project would not have any environmental effects that would result in significant impacts.

Mitigation Measures: None required

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Division of Public Works

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Steven E. Lederer
Director

April 3, 2015

From: Steve Lederer, Director, Napa County Department of Public Works
To: Planning, Building & Environmental Services

Subject: Girard Water Use Analysis, Girard Winery Use Permit (#P14-00053-UP)

Planning, Building, and Environmental Services (PBES) requested Public Work's review and analysis regarding water availability and water quality concerns raised during the processing of Girard Winery Use Permit (#P14-00053-UP).

Evidence offered in opposition to the project is primarily contained in:

1) Norma Tofanelli letter, dated January 21, 2015, which includes an attachment entitled "Dunaweal Area Well Records", dated 1987), and
2) Tom Myers Technical Memorandum (TM), dated January 20, 2015

Summarizing these concerns from the Myers TM (bold font added by this author):

1) "The proposed expansion of pumping for the Girard Winery project could possibly have two potentially significant impacts. First, the pumping could **unacceptably lower the groundwater levels** because there is not as much recharge on the area as the county assumes. This memorandum considers the river base flow and suggests that existing recharge estimates may be too high. **Pumping could also draw water from the Napa River.**
2) Second, the **pumping could affect groundwater flow directions and cause boron and arsenic plumes** to expand through a larger portion of the Calistoga area. There are very high concentrations of each contaminant northwest of the project site and along the base of the mountains south of the site. The project pumping, especially if it causes substantial drawdown due to too little recharge, could create a drawdown which pulls contaminants toward the project."

Analysis of Applicant Response

In response to these concerns, the applicant has offered a revised Water Availability Analysis (WAA) dated March 26, 2015. The key points covered in this revised WAA are as follows:

1) **Groundwater Levels:** While disagreeing with the analysis Myers conducted of earlier groundwater monitoring reports, the revised Girard WAA also now includes in this project record (by reference), the 2014 Annual Groundwater Monitoring Report, which clearly states

that, based on the network of monitored groundwater levels in the area, the groundwater levels in the area south of Calistoga are stable, even in the context of the current drought. (The 2014 Annual Report was not available to either party until it was presented to the Board of Supervisors at their March 3, 2015 meeting). The WAA continues by comparing proposed groundwater use on the parcels (8.23 acre-ft/year for both wineries combined) to a calculated recharge number (34.5 acre-ft/year), and found that the proposed use is only some 25% of the recharge rate. The Myers report also calculated a recharge rate, but then compared it to a use of 29 acre-ft/year, their presumed maximum use of the well if it was operated on a full basis. That assumption of 100% well run time is not contained in the project proposal. This substantial evidence provided by the Girard WAA indicates that the Myers report is not factually supported by evidence.

Drawing Water From The Napa River: While the Myers report presents this hypothesis, the Girard WAA (under response to concerns), points out, among other site specific facts, that the project wells are approximately 1500 feet from the Napa River (the normal distance limit beyond which this issue is not a concern), and that the groundwater level in this area is below the level of the riverbed, meaning that the river and the groundwater are likely not hydraulically connected.

2) **Drawing Arsenic and Boron Into the Area:** The revised WAA provides water quality data from the project well, showing that arsenic above Maximum Contaminant Levels (MCLs) has not been found in samples from the project well, and that water quality sampling from 3 nearby wells tested for boron found levels below the State Notification Level (Boron does not have an MCL). The WAA continues (under response to concerns) calculating reasonably expected drawdown and cones of depression expected from project pumping, and finds that the proposed pumping is "highly unlikely" to result in contaminant migration.

Public Works Review

While the Applicant's submittal provides substantial evidence, Public Works (PW) conducted its own review and evaluation of available evidence as well. This review included input and discussions with Vicki Kretsinger, who was the lead licensed professional in producing the various LSCE reports referenced herein.

Public Works comments to the Myers report are as follows:

1) Recharge and Groundwater Levels:
    a. The suggested impact relating to recharge is technically unsupported. Groundwater levels in the Calistoga area are stable based on hydrographs that have been updated in the 2014 Annual Report.
    b. Myers discusses the recharge analyses conducted by LSCE & MBK (2013) and goes on to describe why he believes recharge is overestimated. However, his analysis relies on very generalized application of base flow separation techniques which do not account for climatic variation or other factors that could affect base flow.
    c. There is no basis in the data presented to support his opinion that groundwater extraction is exceeding the rate of recharge to the aquifer system. On the contrary, groundwater levels for representative wells in the area suggest otherwise.

2) Myers states that "drawdown will eventually change the flow gradient for discharge to the Napa River and pumping will affect the river."
    a. There is no technical basis provided to justify this conclusion. Pumping of a well for some unspecified period of time at an uncertain rate from a well constructed in uncertain geologic conditions is not evidence that the gradient will change. He actually says "treating the aquifer as confined is preferable based on the low conductivity clay in the upper part of the log." This does not support his hypothesis relating to eventual change in the flow gradient for discharge to the River, since a confined aquifer would, by definition, be physically separated from surface waters by a confining geologic unit.
    b. From a practical standpoint, the existing conditions surrounding the property argue against the hypothesis of this project causing a flow gradient change. The two wells involved are both existing (constructed in 1971 and 1985). In addition, according to the December 17, 2014 staff report, there are 10 other wineries operating within one mile of the proposed project, along with numerous residences and vineyards, all with their own groundwater wells. Given this existing network of groundwater wells, data indicating a stable water table, and the small increase in pumping associated with the proposed project, it is simply not credible in the eyes of this engineer that this small percentage of additional pumping is likely to change the direction of the flow gradient.

3) Myers describes use of the standard Theis equation to assess potential drawdown.
    a. Drawdown calculations conducted by the Girard WAA, and admittedly quick computations by LSCE using variables cited by Myers, came to an entirely different conclusion relating to drawdown. Drawdown estimates that we arrived at are a couple of orders of magnitude lower than what Myers shows in plots. There does not appear to be factually supported evidence that there would be a significant effect on wells in the vicinity of the project.

To further investigate the condition of the area, PW requested that PBES query their permit database for new wells constructed within 1500 feet of the subject parcel. The database produced records for 7 new wells since 2004. While the reason for new wells is not formally tracked, information provided by Kim Withrow (who has been in the Department this whole time period and is the current supervisor of the section responsible for well permits) indicates that only one of the 7 wells was drilled to replace an existing well, and that that was done because the existing well was located too close to a septic system, not because of water quantity issues. While PW appreciates the 1987 well data supplied by Ms. Tofanelli, we consider the well data from the past 10 years to be more relevant.

PW also requested water quality data from Ms. Withrow on the existing project wells. Her response is as follows:

> "The well serving the Clos Pegase water system was tested for arsenic in 2009 and the result was 4.1 ug/L. The MCL for arsenic in drinking water is 10 ug/L. Clos Pegase isn't required to sample for arsenic on a regular basis because of their permit type. Sterling sampled one of their wells in 2014 and the result for arsenic was 2.1 ug/L. Another of the wells was sampled in 2010 and the level of arsenic was 5.6 ug/L. Sterling had some elevated sample results in one well (I believe in 2009) for arsenic (16 ug/L), zinc (7200 ug/L), mercury (8.3 ug/L) and aluminum (4600 ug/L). Sample results from 2014 indicated arsenic at 2.1 ug/L, aluminum at 230 ug/L and zinc at 4800 ug/L in the same well."

This information is consistent with that provided in the Girard WAA, indicating that naturally occurring arsenic (but not above the MCL level) is already chronic in the area, but there is no evidence to support the hypothesis that there are, or will be, increasing levels from Calistoga. (Please note that the 2009 Sterling sample was most likely a result of laboratory contamination as it is inconsistent with all other sampling data in the area, but it is nonetheless reported here for full disclosure purposes).

Ms. Tofanelli offered anecdotal reports of water problems on neighbor lands, as well as certain parties trucking in water. In the interest of full disclosure this information is repeated here, though we have no additional information to corroborate or investigate this.

Summary and Recommendations

In summary, the substantial evidence in the record indicates that:

1) The groundwater table in the area shows a long term stable trend;
2) Impacts on neighboring wells or the Napa River are not anticipated;
3) The project is unlikely to cause directional flow changes with would draw chemicals from Calistoga into the area.

Public Works does recommend that the Planning Commission include the following conditions of approval if the permit is approved:

1) The permittee shall be required for the life of the project to monitor and maintain records of water volumes pumped from the two wells. This data will be made available to the County upon request.
2) If combined water use from the wells exceeds 10 acre-ft. in a given calendar year, the permittee shall proactively notify the county, providing
    a. water volume used,
    b. the reason for increased use,
    c. the plan the winery has for reducing water use, and
    d. other information which may be affecting water use as reasonably requested by the County.
3) The permittee shall be required to include either or both wells into the County's Groundwater Monitoring program if the county requests that they do so.

Girard Winery Water Availability Analysis

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March 26, 2015

Contents

Introduction

The proposed Girard Winery is planned to be located at 1077 Dunaweal Lane, Calistoga, CA (APN 020-150-017). The proposal consists of construction of a new winery with a production capacity of 200,000 gallons of wine per year and associated site improvements, tasting room, and hospitality events.

In February 2014, Vintage Wine Estates filed a Use Permit Application and proposed Negative Declaration pursuant to the provisions of the California Environmental Quality Act (CEQA) for the proposed Girard Winery. As part of the application process a Phase I Water Availability Analysis was performed according to Napa County guidelines. The Phase I study included an estimate of the current and proposed water use and a determination of the "allowable water allotment".

In January 2015, comments were submitted to the county by Shute, Mihaly, and Weinberger LLP on behalf of the Tofanelli family. These comments included a hydrologic report prepared by Tom Meyers which claimed that the project could have significant impacts on water supply and water quality conditions. In response to these comments, Napa County directed the applicant to conduct a Phase II Water Availability Analysis. This document describes the analyses conducted to meet the Phase II requirements as well as additional analyses which have been conducted to address the various concerns raised about the project.

Project Description

The proposed Girard Winery to be located at 1077 Dunaweal Lane, Calistoga lies within the Napa Valley floor. The project proposes to utilize an existing water system (ID #28-01007) which is shared with an adjacent property (APN 020-150-012) where the existing Clos Pegase winery is located. The water system is supplied by two wells: the Clos Pegase Well (Well #1) which was drilled in July of 1985 and the Girard Well (Well #2) which was drilled in June of 1971 (Figure 1; Table 1). The water system consists of the two wells, pressure tanks, a water treatment system (sediment filters, water softeners, ultraviolet disinfection), and a 58,000 gallon storage tank. An existing irrigation storage pond supplied by vineyard field sub-drains is used to supply water for vineyard and landscape irrigation and frost protection.

Table 1: Water supply wells.

Well Details	Well #1 Clos Pegase	Well #2 Girard
Date Drilled	Jul-85	Jun-91
Depth (ft)	185	220
Screened Interval (ft)	80 - 185	80 - 220

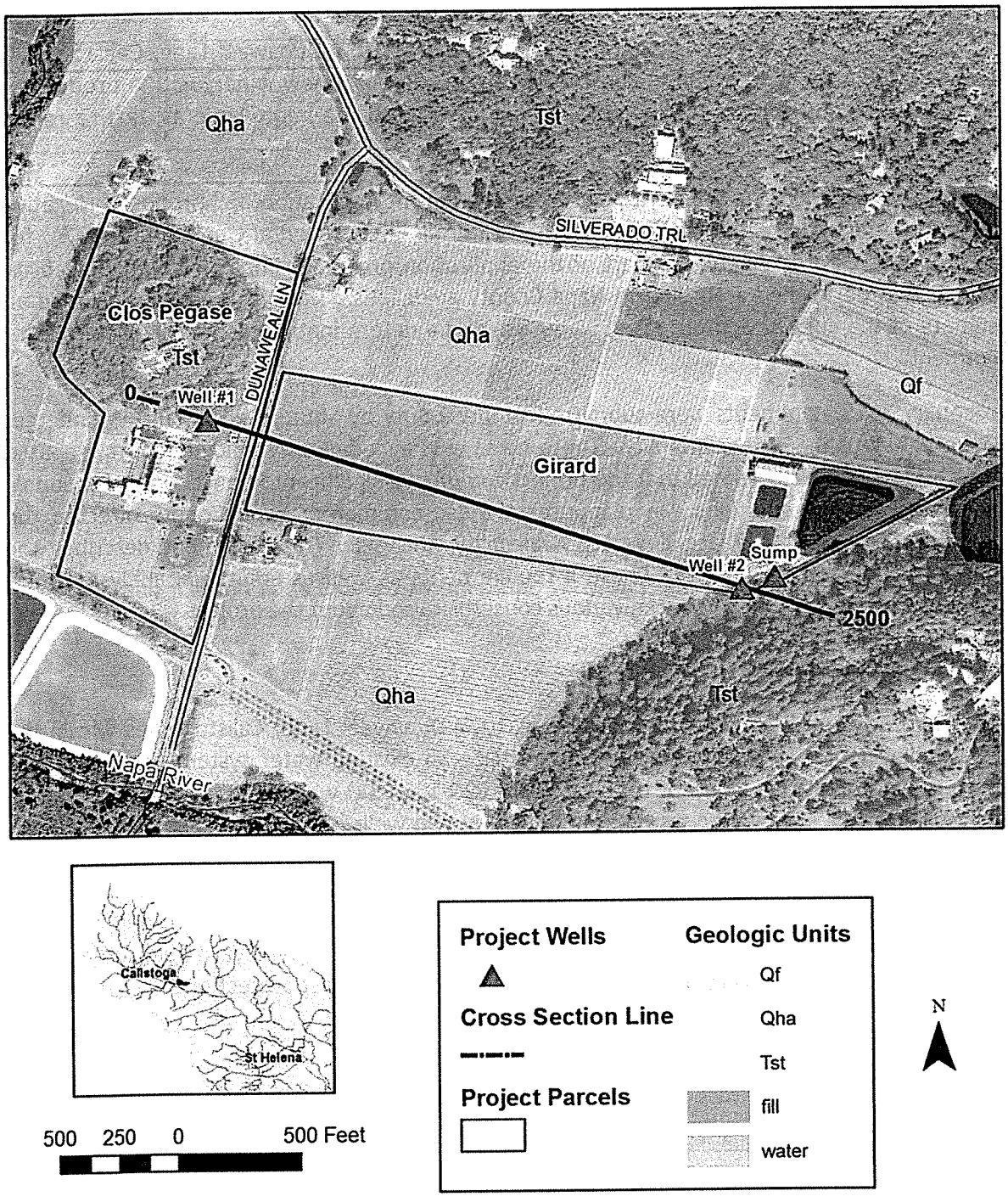


Figure 1: Project parcel map indicating well locations and primary geologic units.

Hydrogeology

The Clos Pegase and Girard parcels are located within the Napa Valley floor about 1500 ft east of the Napa River and about one mile south of Calistoga. The surficial geology is primarily Holocene Alluvium (Qha) with the tuffaceous member of the Sonoma Volcanics (map unit Tst) forming the hills on the northern portion of the Clos Pegase parcel and to the east and southeast of the Girard parcels (Figure 1). A small portion of the northeast corner of the Girard parcel is mapped as Quaternary Alluvial Fan Deposits (Qf). The Clos Pegase well (Well #1) is drilled completely within the tuff and the Girard well (Well #2) penetrates some 90-ft through the alluvium and into the underlying tuff. The Girard well is screened almost entirely within the tuff and the portion of the screened interval within the alluvium is indicated as clay on the driller's log; hence the well is effectively isolated from the alluvium. Given that both wells penetrate the tuff and that the tuff is also exposed in the hills both west and east of the valley at this location, it is reasonable to assume that the tuff underlies all of both parcels. A conceptual geologic cross section through the two wells is presented in Figure 2.

Alluvium

The alluvium within the north Napa Valley consists of lenticular, unconsolidated, poorly sorted deposits of gravel, sand, silt, and clay. Individual lenses are generally not more than 10-ft thick but may be laterally extensive (Faye, 1973). The alluvium is considered one of the principle water-bearing units in the area and well yields can vary substantially from 50 to 3,000 gal/min depending on the number and thickness of gravel and sand lenses penetrated by a particular well. Groundwater is generally unconfined though confined conditions are possible locally. Faye (1973) found that both the thickness and hydraulic conduictivity (K) of the alluvium increases from north to south and from the edges of the valley towards the Napa River. In the vicinity of the project parcels, the alluvium is estimated to be less than 100-ft thick and the K is estimated to be between 30 and 50 ft/day (Faye, 1973). DHI (2006) also estimated the thickness of the alluvium as part of the development of a distributed surface water/groundwater model based on the data from Faye (1973) and interpretation of additional driller's logs. In that study, the alluvial thickness was estimated to be on the order of 70-ft in the vicinity of the project parcels.

Sonoma Volcanics

The Sonoma Volcanics consist of a thick and highly variable series of volcanic rocks including basalt, andesite, and rhyolite lava flows, tuff, tuff breccia, agglomerate, scoria, and their sedimentary derivatives (Kunkel and Upson, 1960). The tuffaceous, scoriaceous, and sedimentary units are the principle water-bearing units whereas the lava flows generally yield little to no water (Kunkel and Upson, 1960; Faye, 1973).

Many wells in the Calistoga area are relatively shallow and tap water within the alluvium. The deeper wells draw water from the underlying Sonoma Volcanics. Water in the Sonoma Volcanics is commonly confined though few wells completed in the unit are artesian. The

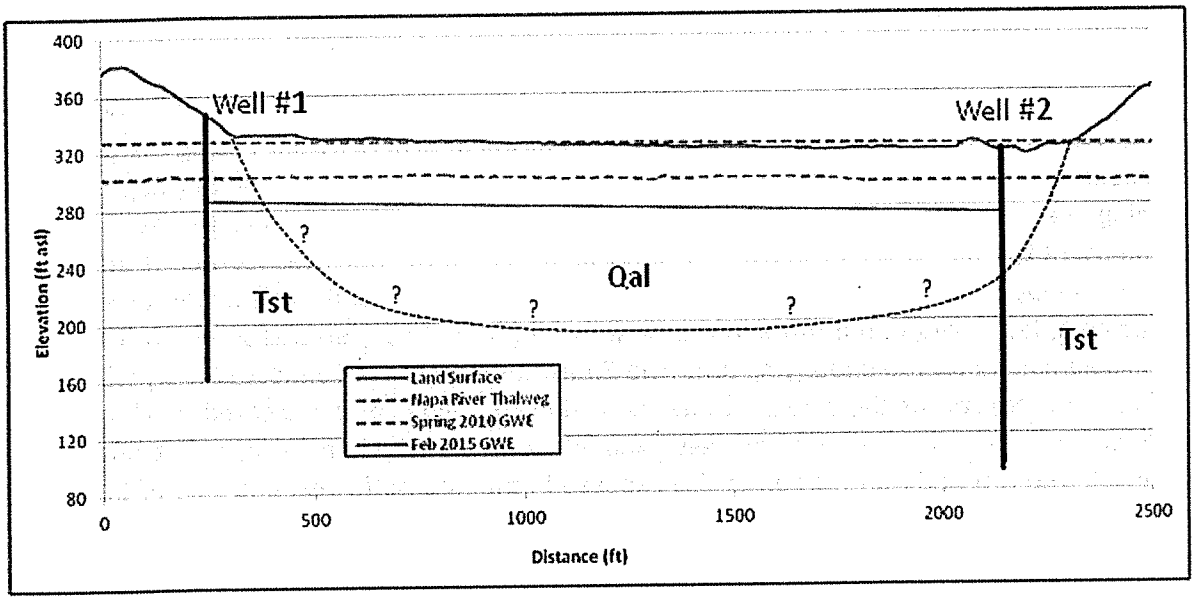


Figure 2: Geologic cross section through the project wells.

artesian wells are generally deep and screened entirely within the Sonoma Volcanics supporting the notion of confined conditions (Kunkel and Upson, 1960). Faye (1973) estimated that the hydraulic conductivity (K) of the permeable units within the Sonoma Volcanics is on the order of 0.01 to 0.1 ft/day. Well yields are generally less than for the alluvium and average 32 gpm based on sample of 140 wells (Faye, 1973).

Groundwater Elevations

Luhdorff and Scalmanini (2011) compiled available long-term groundwater elevation hydrographs for various subareas within Napa County. Groundwater levels within the Napa Valley Floor - Calistoga subarea indicate that groundwater levels have generally been stable since at least 1950 and that no significant long-term trends in groundwater elevation occur. Short-term declines in elevation associated with periods of below average precipitation (such as the 1976-1977 drought) do occur, however elevations recover to near pre-drought conditions within a few years. Depths to groundwater are generally shallow (less than 10-ft in the Spring) and seasonal fluctuations are relatively small and generally less than 10-ft (Luhdorff and Scalmanini, 2011). Data compiled for a recent annual report on the county's groundwater monitoring program confirmed the long-term stability of groundwater elevations in the Calistoga area (Luhdorff and Scalmanini, 2015). Data for the four wells with long-term monitoring data that are closest to the project parcels are reproduced from Luhdorff and Scalmanini (2011) in Figure 3.

Luhdorff and Scalmanini (2013) presented groundwater elevation contours from Spring of 2008 and Spring of 2010 which indicate that the general direction of groundwater flow is roughly parallel to the valley axis in the northern Napa Valley. The underlying well data is insufficient to provide details at finer spatial scales other than to note that groundwater elevations were on

the order of 315 to 325 ft asl in the vicinity of the project parcels. These elevations are within a few feet of land surface, suggesting that groundwater likely occurs at very shallow depths beneath the low-lying portions of the project parcels.

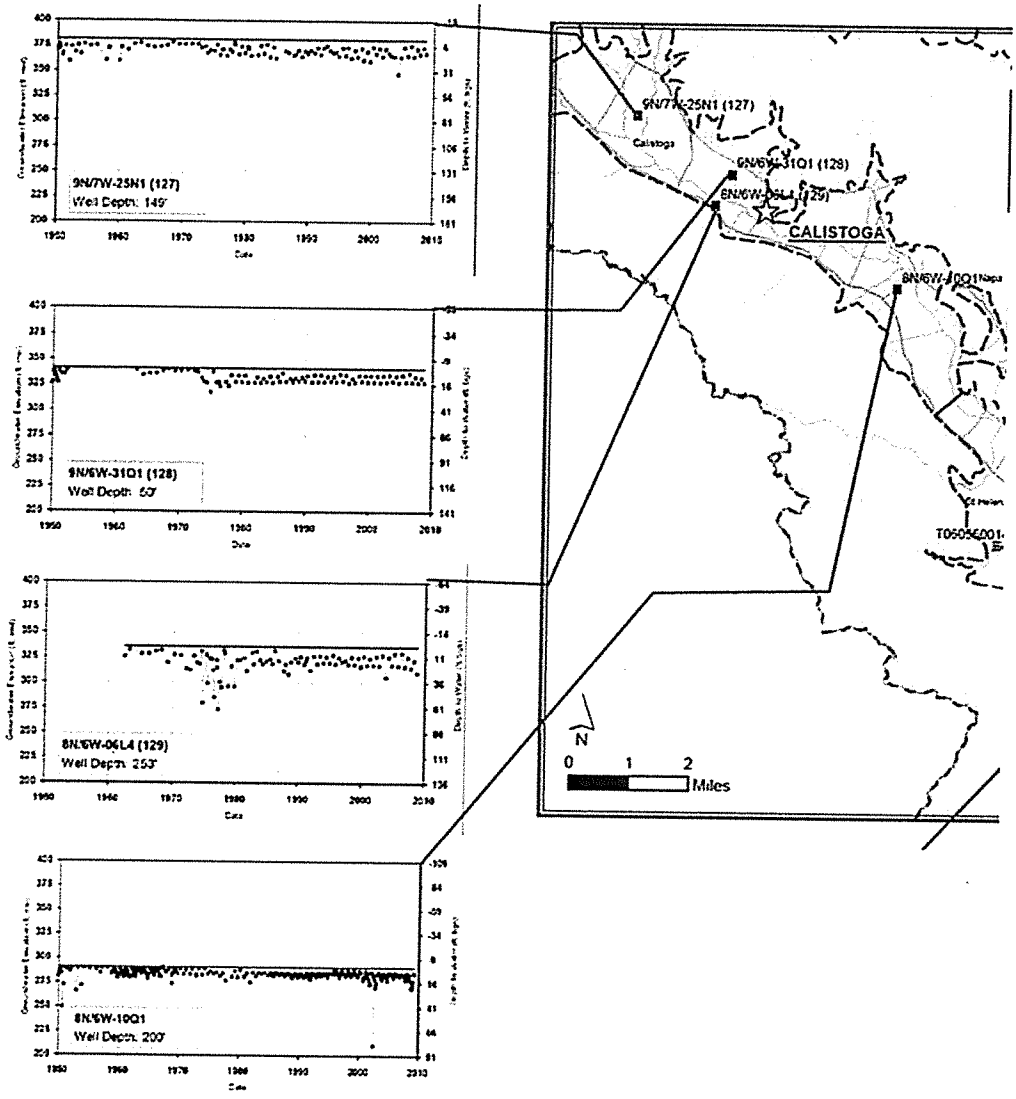


Figure 3: Groundwater elevation data for wells in the Calistoga area reproduced from Luhdorff and Scalmanini (2011); the yellow star indicates the location of the project parcels.

Interpretation of the well hydrographs and elevation contour maps is complicated by the fact that many of the wells likely penetrate both the alluvium and the underlying Sonoma Volcanics. Given the consistently shallow depths to groundwater, it is reasonable to assume that most of the wells are perforated within the alluvium and many are likely also perforated within the underlying tuffaceous rocks.

In prior groundwater investigations of regional hydrogeology, there was no attempt to isolate wells completed entirely within the Sonoma Volcanics in the Calistoga area in order to characterize the confined volcanic aquifer beneath the alluvium. Thus little is known about the potentiometric surface of the Sonoma Volcanics in this area and its relationship to the water table in the overlying alluvium. The two project wells are, however, completed almost entirely within the volcanic rocks. Water level measurements at the project wells in February 2015 indicate static depths to groundwater are on the order of 35 to 50-ft, some 30 to 40-ft below regional groundwater elevations (Figure 2). This observation supports the notion that the project wells are abstracting groundwater from the volcanic aquifer underlying the alluvium and that this groundwater occurs under confined conditions.

Groundwater Quality

Water quality analyses were compiled for various wells in the Calistoga area as part of a 2011 evaluation of groundwater conditions (Luhdorff and Scalmanini, 2011). Boron concentrations ranged from non-detected to 14,000 ug/L, substantially higher than the 1,000 ug/L drinking water standard. Arsenic concentrations ranged from non-detected to 85 ug/L, also substantially higher than the 10 ug/L maximum contaminant level (MCL). Most of the poor quality groundwater was found to occur north of Calistoga.

Water quality analyses were performed on a sample from the Clos Pegase Well (Well #1) in March 2009 and analyzed by Brelje and Race Laboratories. The water was found to meet all primary standard MCLs and secondary levels were exceeded for iron and manganese (Figure 4). Arsenic concentrations measured at 4.1 ug/L were below the MCL. The sample was not analyzed for Boron, however the three closest wells to the project site that were compiled by Luhdorff and Scalmanini (2011) indicate concentrations ranging from 120 to 200 ug/L (well below the MCL).

Water Demand

Existing water uses that rely on the groundwater-supplied water system include Winery Process Use, Winery Domestic Use, and Residential Use associated with the Clos Pegase parcel. Proposed water uses include Winery Process Use and Winery Domestic Use associated with the Girard parcel. The existing vineyards on both the Clos Pegase and Girard parcels rely entirely on water from the irrigation pond located on the Girard parcel. The existing landscape irrigation on the Clos Pegase parcel as well as the proposed landscape irrigation on the Girard parcel will also rely entirely on the irrigation pond. This pond is filled from direct precipitation, shallow groundwater inflows, and shallow subsurface drainage from an existing vineyard sub-drain system. The pond has proved sufficient for meeting all irrigation, landscaping, and frost protection demands consistently over the past 15 years of operations (Jason Duval, Clos Pegase Winery, personal communication).

Existing Conditions

As part of a 2011 Due Diligence Report for the Clos Pegase Winery, the average annual Process Wastewater (PW) from 2009 through 2011 was found to be 512,000 gallons or 1.57 ac-ft/yr (Summit Engineering, 2011). Actual wine production over this period was 107,100 gallons; significantly less than the approved 200,000 gal/yr capacity. Assuming production were to be increased to the approved capacity, the existing Winery Process Use is on the order of 2.93 ac-ft/yr. This is significantly less than the Napa County Phase I Water Availability guideline of 2.15

Chemical Group: 64432 – Primary – Inorganics			
Chemical	Last Results	Units	MCL
Aluminum	<50	µg/L	1000
Antimony	<6.0	µg/L	6
Arsenic	4.1	µg/L	50
Barium	<100	µg/L	1000
Beryllium	<1.0	µg/L	4
Cadmium	<1.0	µg/L	5
Chromium	<1.0	µg/L	50
Fluoride	0.33	mg/L	2
Mercury	<1.0	µg/L	2
Nickel	<10	µg/L	100
Selenium	<5.0	µg/L	50
Thallium	<1.0	µg/L	2

Chemical Group: 64449-A&B – Secondary Standards			
Chemical	Last Results	Units	MCL
Bicarbonate	49	mg/L	
Calcium	16	mg/L	
Carbonate	<1.0	mg/L	
Hydroxide	<1.0	mg/L	
Iron	18000	µg/L	300
Magnesium	4	mg/L	
Manganese	1100	µg/L	50
Sodium	18	mg/L	
Total Alkalinity (as $CaCO_3$)	40	mg/L	
Total Hardness	58	mg/L	
pH	5.9		

Figure 4: Water quality analyses from a sample collected from the Clos Pegase Well (Well #1) in March of 2009.

ac-ft/yr per 100,000 gallons of wine indicating that the existing Clos Pegase operations are effectively conserving water relative to industry standards.

The per capita use assumptions, number of employees, and an estimate of the number of tasting visitors, and event visitors for the Clos Pegase Winery are presented in Tables 2 and 3. The Winery Domestic Use can be estimated as the sum of Employee Use (0.26 ac-ft/yr), Tasting Visitor Use (0.35 ac-ft/yr), and Event Use (0.06 ac-ft/yr) yielding an estimate of the total Winery Domestic Use of 0.67 ac-ft/yr.

Table 2: Calculation of Employee Use for the Clos Pegase Winery (Always Engineering, 2014).

Work Category	# of Employees	# Work Days per Year	Use per Employee (gal/day)	Annual Water Use (ac-ft/yr)
Full-time Harvest Period	30	91	15	0.13
Part-time Harvest Period	0	0	7.5	0.00
Full-time Non-harvest Period	10	273	15	0.13
Part-time Non-harvest Period	0	0	7.5	0.00
TOTAL				**0.26**

Table 3: Calculation of Event and Tasting Room Visitor Use for the Clos Pegase Winery (Always Engineering, 2014).

Visitor Category	# of Vistors	# Days per Year	Use per Visitor (gal/day)	Annual Water Use (ac-ft/yr)
Medium Event	150	24	5	0.06
Tasting Room	105	365	3	0.35
TOTAL				**0.41**

The Clos Pegase parcel has one residence. The Napa County Phase I Water Availability guidelines suggest a base Residential Use value of 0.50 to 0.75 ac-ft/yr plus an additional 0.10 ac-ft/yr for an uncovered pool. The residence has approximately 0.15 acres of landscaping which is primarily grass. Based on the CIMIS ETo data for Oakville, the irrigation demand for this landscaping is approximately 0.36 ac-ft/yr. The total Residential Use can be approximated by summing the base use (0.75 ac-ft/yr), the pool use (0.10 ac-ft/yr), and the landscape use (0.36 ac-ft/yr) yielding an estimate of the total Residential Use of approximately 1.21 ac-ft/yr.

The total Existing Demand is the sum of the Winery Process Use (2.93 ac-ft/yr), Winery Domestic Use (0.67 ac-ft/yr), and Residential Use (1.21 ac-ft/yr) and is estimated to be 4.81 ac-ft/yr (Table 4).

Proposed Conditions

As discussed above for Existing Conditions, the average annual Process Use for the Clos Pegase Winery is on the order of 4.78 gallons per gallon of wine produced. Assuming a similar level of use for the Girard Winery, the proposed 200,000 gallons of wine production per year will require approximately 2.93 ac-ft/yr.

Table 4: Water Use by Use Category for the Clos Pegase Winery.

Use Category	Annual Water Use (ac-ft/yr)
Winery Process Use	2.93
Winery Domestic Use	0.67
Residential Use	1.21
TOTAL	**4.81**

Table 5: Calculation of Employee Use for the Girard Winery (Always Engineering, 2014).

Work Category	# of Employees	# Work Days per Year	Use per Employee (gal/day)	Annual Water Use (ac-ft/yr)
Full-time Harvest Period	1	91	15	0.05
Part-time Harvest Period	7	91	7.5	0.01
Full-time Non-harvest Period	8	273	15	0.10
Part-time Non-harvest Period	3	273	7.5	0.02
TOTAL				**0.18**

Table 6: Calculation of Event and Tasting Room Visitor Use for the Girard Winery (Always Engineering, 2014).

Visitor Category	# of Vistors	# Days per Year	Use per Visitor (gal/day)	Annual Water Use (ac-ft/yr)
Large Event	500	1	5	0.01
Medium Event	200	4	5	0.01
Small Event	75	4	5	0.01
Weekday Tasting Room	75	208	3	0.14
Weekend Tasting Room	100	157	3	0.14
TOTAL				**0.31**

The per capita use assumptions, number of employees, and an estimate of the number of tasting visitors, and event visitors for the Girard Winery are presented in Tables 5 and 6. The Winery Domestic Use can be estimated as the sum of Employee Use (0.18 ac-ft/yr), Tasting Visitor Use (0.28 ac-ft/yr), and Event Use (0.03 ac-ft/yr) yielding an estimate of the total Winery Domestic Use of 0.49 ac-ft/yr.

The total Proposed Demand is the sum of the Winery Process Use (2.93 ac-ft/yr) and Winery Domestic Use (0.49 ac-ft/yr), and is estimated to be 3.42 ac-ft/yr (Table 7).

Table 7: Water Use by Use Category for the Girard Winery.

Use Category	Annual Water Use (ac-ft/yr)
Winery Process Use	2.93
Winery Domestic Use	0.49
TOTAL	**3.42**

Total Proposed Demand

The total Proposed Demand is the sum of the Existing Demand for the Clos Pegase Winery (4.81 ac-ft/yr) and the Proposed Demand for the Girard Winery (3.42 ac-ft/yr), and is estimated to be 8.23 ac-ft/yr (Table 8). If water use is allocated uniformly throughout the year, this would be equivalent to a mean daily demand of 7,347 gal/day. For the purposes of determining the sufficiency of the project wells to meet the demand it is useful to consider the peak daily demand. Peak water demand occurs during the harvest period. Assuming that 50% of the total annual Process Use occurs during the three month harvest period and that the other water use components during this period are equivalent to mean daily demands indicates that peak daily demand is on the order of 12,608 gal/day.

It is important to note that the water use estimates presented here have been refined significantly since the Phase I Water Availability Analysis was conducted. The previous estimates were based largely on default values in order to be conservative (tend towards over-estimating) whereas the estimates presented here, while still conservative, have been developed based on the best available information about the subject parcels and the past and expected future winery operations.

Table 8: Summary of Existing and Proposed Water Demand.

Use Category	Annual Water Use (ac-ft/yr)
Existing Use	4.81
Proposed Use	3.42
TOTAL	**8.23**

Groundwater Recharge

Previous Estimates

The relatively high permeabilities of the alluvium within the Napa Valley Floor permit significant groundwater recharge to occur through both precipitation and seepage from streams (Faye, 1973; Luhdorff and Scalmanini 2013). Much of the stream seepage occurs along the valley margins where tributary streams leave older impermeable rocks and cross over permeable alluvium or tuff.

Luhdorff and Scalmanini (2013) noted that water recharged through the exposures of tuff in the mountains west and east of the valley eventually flows towards the tuff that is concealed by alluvium along the Napa Valley floor. This is consistent with Kunkel and Upson (1960) who found that most of the water in the Sonoma Volcanics in the Calistoga area is derived from infiltration of precipitation and seepage from streams within the outcrop areas bordering the valley.

Recharge processes within the tuffaceous units of the Sonoma Volcanics have been studied fairly extensively in the MST basin northeast of the City of Napa in contrast to the Calistoga area where they have not been studied in detail. Johnson (1977) and Farrar and Metzger (2003) performed a series of seepage experiments on the major creeks in the MST basin. Johnson (1977) concluded that infiltration from precipitation and runoff was greatest where the tuffs were exposed or underlying shallow Quaternary deposits and that the dominant source of recharge was from streambed infiltration where streams come into contact with the tuff directly.

Faye (1973) performed a water balance estimate for the north Napa Valley Groundwater Basin for an average water year (1963) and a dry water year (1931). Recharge was estimated to vary from ~2,606 ac-ft/yr during dry water years to ~17,013 ac-ft/yr during average water years. These volumes are equivalent to ~0.8 to 5.3 inches/yr, and the average year recharge is equivalent to approximately 12% of the precipitation. During average water years, approximately 53% of the recharge was derived from infiltration of precipitation, 45% was from tributary seepage, and 2% was from subsurface inflows.

Another estimate of the water balance for the north Napa Valley Groundwater Basin was performed for the period from 1962 through 1989 (Montgomery Consulting Engineers, 1991). That study estimated that that mean annual recharge was on the order of 26,800 ac-ft/yr which is equivalent to 9.2 inches/yr or ~26% of the mean annual precipitation over the same period.

DHI (2006) developed a distributed surface water/groundwater numerical model and presented water balance results for a series of sub-basins throughout the county. Results for the Napa River - Larkmead Reach sub-basin (which contains the project parcels) indicates that between 2000 and 2003 mean annual recharge was ~26% of mean annual precipitation.

Luhdorff and Scalmanini (2013) applied a Root Zone Water Balance approach utilizing observed streamflow data from the USGS Napa River at Calistoga gauging station which was active from 1976 to 1983. This analysis revealed that mean annual recharge varied substantially from ~2,000 ac-ft/yr in the extremely dry year of 1977 to ~17,200 ac-ft/yr in the wet year of 1983. These volumes are equivalent to approximately ~8.8 inches/yr or ~19% of mean annual precipitation. While this estimate did account for the spatial variations in land cover and soil characteristics, the results represent the average or lumped water balance for the entire watershed area above the gauging location including areas with high and low recharge potential whereas the earlier estimates focus on the valley floor where recharge potential is expected to be high.

Project Aquifer

The four previous estimates of recharge discussed above suggest that mean annual groundwater recharge within the northern Napa Valley is equivalent to approximately 12% to 26% of the mean annual precipitation. For the purposes of estimating recharge to the project aquifer, we selected the Luhdorff and Scalmanini (2013) values since they represent the most recent water balance work in the area and the estimates lie in the middle of the range between the low and high end estimates.

Normalizing the Luhdorff and Scalmanini (2013) recharge estimates by drainage area reveals that the average annual recharge over the 1976 - 1983 period was 8.8 inches and varied substantially from 1.7 inches in the extremely dry year of 1977 to 14.8 inches in the wet year of 1983. Applying these watershed-averaged rates to the project parcel areas suggests that ~6.7 to 57.6 ac-ft/yr of recharge occurs on the project parcels with a mean value of 34.5 ac-ft/yr.

While a parcel-based approach to estimating recharge is useful, it greatly simplifies the spatial complexities of recharge processes. The project wells are completed almost entirely within the tuffaceous unit of the Sonoma Volcanics. As described in previous studies, most recharge to this unit is derived from infiltration of precipitation and seepage from streams within the outcrop areas bordering the valley. Examination of the surficial geology reveals that approximately 4,010 acres of this material is exposed within the watershed area upstream of the project parcels (Figure 5). Several tributary streams including Cyrus Creek (totaling 6.4 miles of stream length) flow over the areas of exposed tuff, and recharge from seepage through the streambed in these areas is expected to be an important component of the total recharge (Figure 5) following the findings of Johnson (1977) and Farrar and Metzger (2005) from the MST basin. Applying the watershed-averaged recharge rates to the area of exposed tuff suggests that total recharge to the exposed tuff is on the order of 575 to 4,943 ac-ft/yr.

The tuff is also present along the valley flow where it is overlain by shallow alluvium. The degree of connectivity between the tuff and the overlying alluvium is poorly understood, however a potentially significant additional source of recharge is seepage between the

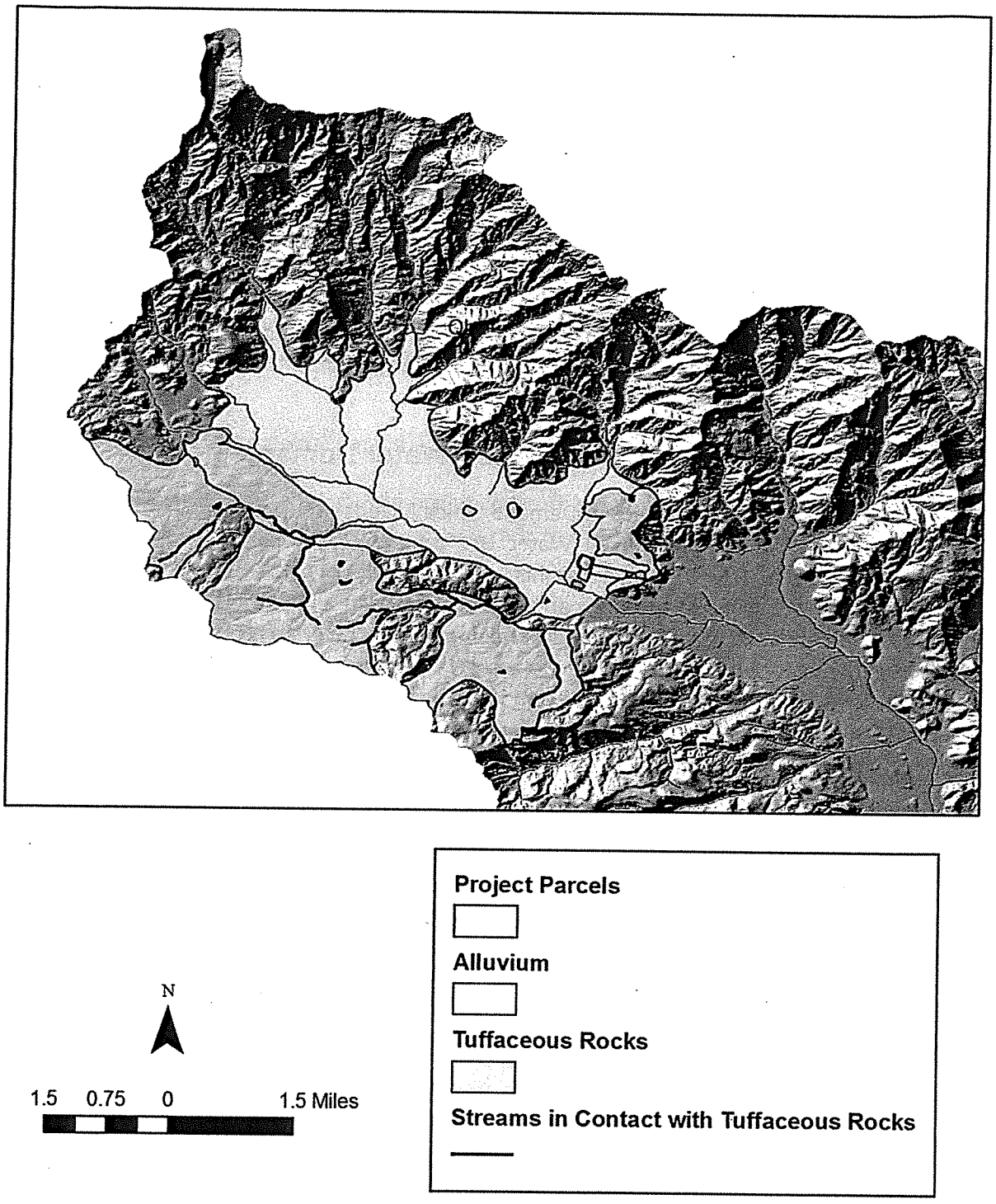


Figure 5: Extent of exposures of tuffaceous rocks and alluvium up-gradient of the project parcels.

saturated alluvium and the underlying tuff. Applying the watershed-averaged recharge rates to the area of exposed alluvium within the watershed area upstream of the project parcels (3,750 acres) suggests that total recharge to the alluvium is on the order of 538 to 4,627 ac-ft/yr (Figure 5); an unknown portion of that recharge likely percolates to the underlying tuff.

While the recharge estimates presented here are realistic, they most likely under-estimate the actual recharge. First, as acknowledged in the report, Luhdorff and Scalmanini (2013) included all gauged flow in their calculation of runoff from the Napa River at Calistoga gauge record whereas a portion of the flow represents baseflow rather than runoff. This would tend to over-predict runoff and thus under-predict recharge. Secondly, the Luhdorff and Scalmanini (2013) estimate is a watershed-wide estimate which includes a diverse area underlain by areas of both high and low recharge potential and those estimates have been applied here to areas underlain entirely by units of high recharge potential where recharge would be expected to be higher than the watershed average rates.

Comparison of Recharge and Proposed Water Demand

As discussed above, the Total Proposed Demand which includes the Existing Water Use on the Clos Pegase parcel and the Proposed Water Use on the Girard parcel is expected to be approximately 8.23 ac-ft/yr. This represents approximately 24% of the 34.5 ac-ft/yr mean annual recharge as calculated using a parcel-based approach and the total combined parcel area of 46.92 acres. The average annual recharge is generally taken to represent the volume up to which groundwater pumping is unlikely to result in reduced water availability over time. As discussed above, recharge can vary widely and in wet years the demand could be as low as 14% of recharge and as high as 123% of recharge during extremely dry years.

For additional perspective, it is useful to note that based on the Phase I Water Availability Analysis guidelines for the Napa Valley, the Allowable Water Allotment for the combined parcel area would be 46.9 ac-ft/yr, and the actual Total Proposed Demand represents only 18% of this Phase I allotment value.

Another useful way to evaluate the Total Proposed Demand is to compare it to the total aquifer recharge up-gradient of the project parcels. This comparison reveals that the Total Proposed Demand represents less than 0.3% of the mean annual recharge to the tuffaceous aquifer up-gradient of the project parcels and less than 0.2% of the mean annual recharge to the tuffaceous and alluvial aquifers up-gradient of the project parcels.

Given that the proposed water demands are significantly less that the mean annual recharge, the proposed pumping is unlikely to result in reduced water availability over time. On shorter time-scales such as during drought conditions when recharge rates are substantially reduced, demands in excess of recharge can result in temporary reductions in groundwater storage. This occurred during the 1976-1977 drought as evidenced by the lower groundwater elevations recorded during this period at wells throughout the Napa Valley. Importantly, groundwater

elevations recovered within a few years indicating that there is overall stability in water availability conditions.

Table 9: Comparison of proposed demand and recharge.

	Volume (ac-ft/yr)	Recharge Surplus (ac-ft/yr)	Demand as % of Recharge
Total Proposed Demand	8.2		
Parcel-based Mean Annual Recharge	34.5	26.3	23.9%
Aquifer-based Mean Annual Recharge	2938.0	2929.8	0.3%

Aquifer Testing

Overview

A pressure transducer (Solonist Troll 700s) was deployed in the Girard project well to automatically record water levels every two minutes between February 12th and 23rd, 2015. Manual water level measurements were taken periodically using an electronic sounder to validate the transducer data. A staff plate was also installed in the sump located southeast of the Girard Well. The sump is open to the shallow aquifer material and staff-plate readings were observed periodically.

A constant rate 24-hr pump test with a pump rate of 5.37 gal/min was performed on the Girard Well beginning on February 18th. Analysis of the resulting time/drawdown data provides a means of estimating aquifer properties, evaluating the extent of lateral drawdown away from the wells, and determining the relative sufficiency of the well for meeting expected water demands. No observation wells located reasonably close to the Girard Well could be identified and given the lack of observation well data, the time/drawdown data is useful for estimating the aquifer Transmisivity (T) but not the Storage Coefficient (S).

Test Results

Groundwater levels at the Girard Well show a general trend of increasing elevations over the data collection period with a total increase of ~10-ft over the 11-day observation period indicating that the aquifer is receiving recharge. The effects of four short-duration pumping events can be seen between 2/13/15 and 2/17/15 (Figure 6). The observations over this period are helpful in that they indicate the aquifer response to typical pumping operations. The drawdown associated with the constant rate pump test can be seen beginning 2/18/15 and the data from 2/19/15 to 2/23/15 show the well recovery data following the test (Figure 6). Water levels in the sump were relatively constant throughout the observation period and did not show a response to pumping at Well #2 (Figure 5).

The water level data for the aquifer test on Well #2 was detrended in order to remove the background trend of increasing water levels and establish a time/drawdown relationship solely

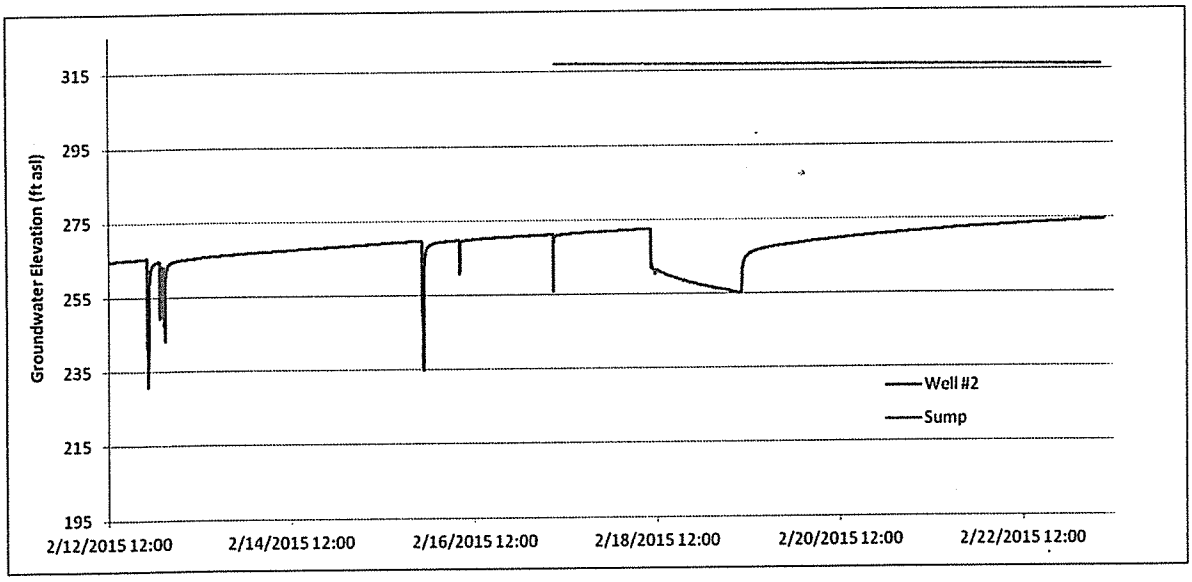


Figure 6: Hydrographs of groundwater elevations at Well #2 and the sump for the 2/12/2015 to 2/23/2015 observation period.

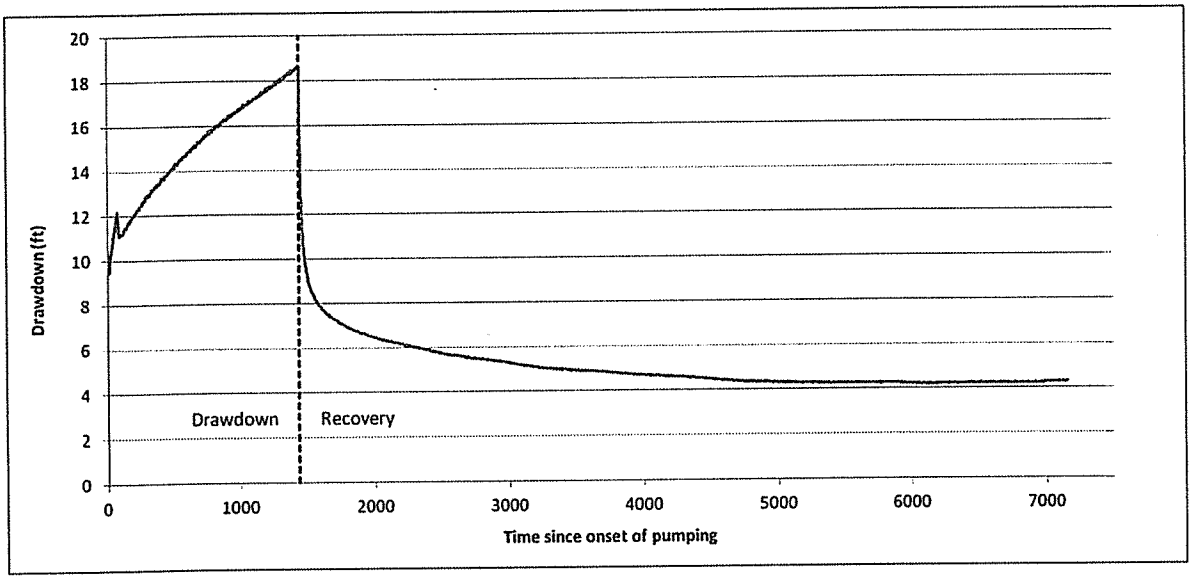


Figure 7: Time/drawdown data for the aquifer test conducted at Well #2.

representative of the drawdown due to pumping (Figure 7). The aquifer test data were analyzed using AQTESOLV and a type curve matching approach was used to analyze the aquifer test data and estimate aquifer properties. Four mathematical solutions were applied, the Theis (1935), Cooper-Jacob (1946), and Papadopulos-Cooper (1967) methods for confined aquifers and the Hantush-Jacob (1955) method for a leaky confined aquifer. No previous estimates of the Storage Coefficient for the Sonoma Volcanics in the Calistoga area are available, however Johnson (1977) estimated that the Storage Coefficient (S) was between 0.0001 and 0.001 for the tuffaceous units of the Sonoma Volcanics in the MST groundwater basin. Each solution was employed to estimate Transmisivity (T) for both the low and high end reported S values.

The T estimates resulting from the aquifer test analyses range from 25.9 to 105.1 ft^2/day with a median value of 73.2 ft^2/day (Table 10). The median estimate of S and T and Equation 1 (Driscoll, 1995) were used to estimate the location and extent of the cone of depression resulting from 24-hours of continuous pumping at Well #2 at a constant pumping rate of 5.37 gal/min:

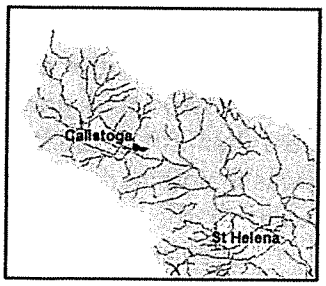
$$S = 2.25Tt / r_0^2 \quad \text{(Equation 1)}$$

where S is the Storage Coefficient, T is Transmisivity (ft^2/day), t is time, and r_0 is the distance (ft). Maximum drawdown at Well #2 was 18.7 ft which diminished quickly with distance from the well to less than 5-ft at a radius of 60-ft, less than 1-ft at a radius of 404-ft, and zero at a radius of 547-ft (Figure 8). Although an aquifer test was not performed on the Clos Pegase well, the well is completed to a similar depth in the same aquifer material so the results from the aquifer test at the Girard well can reasonably be applied to both project wells.

Equation 1 can also be solved to estimate the duration of continuous pumping that would be necessary for the associated cone of depression to reach various points of interest. The location of wells on neighboring properties is unknown. Wells are often located close to the residences they serve so the distance from each project well to the five closest residences was tabulated and the duration of pumping that would result in the cone of depression reaching each residence was calculated (Tables 11 and 12). This exercise reveals that between 1.0 and 3.5 days of continuous pumping would be required for the cone of depression associated with the Clos Pegase well to reach neighboring residences. At the Girard well between 1.9 and 11.6 days of pumping would be required (Table 12). Continuous pumping of 7.2 and 7.7 days from the Clos Pegase and Girard wells respectively would be required for drawdown to intersect the Napa River (Tables 11 and 12).

Table 10: Results of the aquifer test conducted at Well #2.

Solution	Transmisivity ft^2/d (T)	Storage Coefficient (S)	Notes
Theis	64.3	0.001	Drawdown and Recovery
Theis	77.6	0.0001	Drawdown and Recovery
Hantush-Jacob	65.0	0.001	Drawdown and Recovery
Hantush-Jacob	78.5	0.0001	Drawdown and Recovery
Papadopulos-Cooper	25.9	0.001	Drawdown and Recovery
Papadopulos-Cooper	35.9	0.0001	Drawdown and Recovery
Cooper_Jacob	68.8	0.001	Drawdown Only
Cooper_Jacob	82.2	0.0001	Drawdown Only
Cooper_Jacob	88.6	0.001	Recovery Only
Cooper_Jacob	105.1	0.0001	Recovery Only
MEDIAN	**73.2**	**0.00055**	



500 250 0 500 Feet

Project Wells

Project Parcels

Drawdown < 1ft

Drawdown 1 - 5 ft

Drawdown 5 - 10 ft

Drawdown > 10 ft

N

Figure 8: Drawdown resulting from 24 hours of continuous pumping at Well #2 at 5.47 gpm.

Table 11: Estimated duration of pumping required at Well #1 for the cone of depression to reach neighboring residences and the Napa River.

Location	Distance from Well (ft)	Time (days)
APN 020-150-046	541	1.0
APN 020-150-028	772	2.0
APN 020-150-031	957	3.1
APN 020-150-011	998	3.3
APN 020-150-027	1,018	3.5
Napa River	1,470	7.2

Table 12: Estimated duration of pumping required at Well #2 for the cone of depression to reach neighboring residences and the Napa River.

Location	Distance from Well (ft)	Time (days)
APN 020-150-053	747	1.9
APN 020-150-052	912	2.8
APN 020-150-025	1,306	5.7
APN 020-150-046	1,480	7.3
APN 020-150-028	1,867	11.6
Napa River	1,515	7.7

The results of the aquifer test indicate that the magnitude of drawdown associated with pumping the Girard well diminishes quickly with distance away from the well. Pumping durations in excess of one day are not necessary or recommended but for illustrative purposes if one assumes 10 days of continuous pumping at 5.37 gal/min, the associated drawdown would be less than 5-ft at a distance of 186-ft from the well and less than 2-ft at a distance of 740-ft. This hypothetical exercise illustrates that even if pumping was maintained long enough for the cone of depression to reach one or more neighboring wells or the Napa River, the magnitudes of drawdown would be minimal. It is also important to recognize that many wells in the area extract water from the over-lying alluvium in addition to or instead of from the underlying tuffaceous aquifer. The hypothetical drawdown discussed above represents conditions in the tuffaceous aquifer and given the lack of hydraulic connection observed between the Girard Well and the nearby sump it is unlikely that drawdown in the tuffaceous aquifer would have any direct or significant influence on groundwater elevations in the overlying alluvial aquifer.

cone of depressions associated with the proposed pumping relative to the separation between the project wells and the river all suggest that it is highly unlikely that the proposed pumping could influence baseflow conditions in the Napa River.

The time/drawdown plots presented in the Tom Meyers study greatly over-state the expected drawdown. The value of Transmisivity (T) used to produce these plots is significantly higher than the actual T as determined by the aquifer test at the Girard Well. Additionally, the durations shown in the plots are extremely large relative to the durations that are required to meet the peak project demands. As discussed above under Water Supply Sufficiency, pumping durations are never expected to exceed one day.

Elevated concentrations of arsenic and boron have been documented at wells located north of the project parcels and concerns have been raised that the proposed pumping could results in contaminant migration. These elevated concentrations do not appear to extend as far south as the project parcels as evidenced by the water quality analyses available for the Clos Pegase well and reported by Luhdorff and Scalmanini (2011) for nearby wells. If the proposed pumping were to result in a significant long-term lowering of groundwater elevations extending for some distance beyond the project parcels it is possible that this could affect water quality conditions and contaminant migration. Our findings indicate, however, that the proposed pumping is significantly less that the mean annual recharge and that long-term reductions in groundwater elevations are unlikely to occur as a result of the project pumping. Even short-term reductions in elevations associated with pumping do not extend far enough away from the project wells to intersect areas documented as having elevated concentrations of arsenic and boron. Given the limited effects of pumping on groundwater elevations it is highly unlikely that the proposed pumping would affect contaminant migration or water quality.

Conclusions

The proposed Girard Winery and the existing Clos Pegase Winery are expected to have an annual water demand of approximately 8.2 ac-ft/yr. These demand represents only 24% of the parcel-based mean annual groundwater recharge and only ~0.3% of the total recharge to the tuffaceous aquifer up-gradient of the project parcels. Given that mean annual recharge is significantly higher than the proposed demand, it is highly unlikely that the proposed pumping would result in long-term declines in groundwater elevations or depletion of groundwater resources.

The expected magnitudes of drawdown associated with the proposed pumping are reasonably small and the spheres of influence associated with pumping at the required rates and durations needed to meet demands do not extend far enough away from the project wells to intersect neighboring wells or the Napa River. These findings coupled with the fact that the project wells draw water from the tuffaceous rocks of the Sonoma Volcanics rather than from the alluvial aquifer (the primary aquifer providing water to many of the wells in the area and the material responsible for baseflow discharge to the Napa River) indicate that the proposed pumping is highly unlikely to result in interference to neighboring wells or impacts to river baseflows.

Water Supply Sufficiency

The total proposed demand for both parcels is approximately 8.23 ac-ft/yr and the peak daily demand is on the order of 12,608 gal/day. At the pumping rate of 5.37 gal/min used during the aquifer test, it would require that both project wells operate ~20 hrs/day in order to meet the peak daily demand. In order to avoid long-duration pumping and provide time for recovery it would be preferable to pump at a higher rate for a shorter duration. If a pumping rate of 10 gal/min were used, a schedule of 10.5 hours on and 13.5 hours off could be employed for both wells in order to meet the peak daily demand.

Evaluation of the drawdown associated with this pumping schedule reveals that the maximum drawdown at the well would be on the order of 29.4-ft diminishing to less than 5-ft at a distance of 125-ft and less than 2-ft at a distance of 280-ft. Longer recovery periods could be incorporated by buffering the demand using the available storage from the two (one existing and one proposed) 58,000 gallon storage tanks. This could be accomplished by pumping at somewhat higher rates or longer durations to fill the tanks and then relying on these stored water to provide water during recovery periods.

Response to Concerns

Several concerns about the potential impacts of the project were raised in a recent Technical Memorandum prepared by Tom Meyers. The first concern suggests that the proposed pumping could unacceptably lower groundwater levels because actual recharge is less than the assumed value of 12 inches per year used by Napa County in Phase I Water Availability Analyses to determine allotments for the Napa Valley Floor. Our findings confirm that actual recharge is likely lower than 12 inches per year and is probably closer to 8.8 inches per year on a mean annual basis. The proposed water use for the project, however, is equivalent to only ~24% of the mean annual recharge computed using a parcel-based approach and only 0.3% of the total mean annual recharge to the tuffaceous aquifer up-gradient of the project site. Given that the proposed water use is significantly less than recharge it is highly unlikely that the proposed pumping would significantly lower groundwater levels on a long-term basis.

Another concern raised is that the proposed pumping could affect baseflow discharges in the Napa River. A comparison between groundwater elevations in the project wells and the elevations of the thalweg of the Napa River reveals that groundwater elevations in the tuffaceous aquifer at the project wells are some 15 to 20-ft below the riverbed (Figure 2). This separation suggests that the Napa River is not directly connected to the groundwater system within the Sonoma Volcanics. As evidenced by the lack of response in the alluvial aquifer at the sump during the pump test, withdrawals from the tuffaceous aquifer do not directly affect water levels in the overlying alluvial aquifer which would be the only mechanism for potential impacts to the river. Additionally, the project wells are located some 1,470 to 1,515-ft away from the river and the extent of the cone of depression associated with the proposed pumping only extends some 387 to 547-ft away from the wells. The vertical separation between groundwater elevations in the Sonoma Volcanics and riverbed elevations, the lack of response of the alluvial aquifer to pumping the underlying volcanic aquifer, and the limited extent of the

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Napa County Department of Planning, Building,
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1195 3rd Street, Room 210
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Project: Girard Winery Use Permit Application
Phase 1 Water Availability – Process Water Use Clarification
APN: 020-150-017

Dear Wyntress,

As requested, this letter is provided to clarify the process water use assumptions and associated groundwater use requirements for the proposed Girard Winery and existing Clos Pegase Winery located on Dunaweal Lane in Calistoga, Napa County.

When the Clos Pegase property was for sale, Summit Engineering was engaged to prepare the *Due Diligence Report for Clos Pegase Winery, 1060 Dunaweal Lane, Calistoga, Ca 94515*, dated November 7, 2011. In that document, it states, "Between 2009-2011, the amount of annual water use averaged 4.6 gallons of water per gallon of wine produced, which is slightly lower than the standard of 6 gallons of water per gallon. Based on this water use rate at a production level of 107,100 gallons of wine per year, the average monthly water use was estimated to be 41,000 gallons per month," and, "Average Process Wastewater generation from 2009-2011 was 512,000 gallons per year (41,000 gallon per month average)."

Although the *Due Diligence* report states a water use rate of 4.6 gallons Process water (PW) per gallon of wine produced, actual calculations using 512,000 gallons of PW and 107,100 gallons of wine produced indicates a generation rate of 4.78 gallons PW per gallon of wine. This value is used to project ultimate water use at 200,000 gallons of wine production for Clos Pegase on page 5 of the Phase 1 Water Availability Analysis dated March 26, 2015, prepared by Always Engineering.

To evaluate the proposed water use from the Girard Winery, water use data from the existing production operations for Girard at a warehouse in the Town of Sonoma were reviewed. For the peak harvest month of October 2013, process water use averaged 4,999 gallons per day with a monthly total of 154,969 gallons. The production for 2013 at Girard's Sonoma operation was 1,584 tons which equates to a production of 237,600 gallons of wine for the vintage of 2013 (150 gal finished wine per ton).

Based on water use data averaged from multiple wineries, it is determined that approximately 30% of the annual process water use occurs during the peak processing period of September and

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October. Approximately 16.5% of the annual water use occurs in the peak month. Therefore, using the Clos Pegase values of 4.78 gal PW/gal wine and a production of 200,000 gallons, the average flow of the peak month at Clos Pegase ultimate production is estimated as follows:

200,000 gallons wine x 4.78 gal pw/gal wine x 16.5%= 157,740 gallons/peak month

The average for this month is determined by dividing by 31 days of processing for an average flow of the peak month of 5,088 gallons PW per day. Because at ultimate production levels, the peak monthly water use for Girard is within 1.8% of the peak monthly water use from Clos Pegase, and the existing Girard water use is actually less for a greater production, it is assumed that process water use for the two site will be the same to err on the side of conservatism. Because of this, the same 4.78 gallons PW per gallon of wine water use rate is also applied to the proposed Girard operations, as stated on Page 2 and 3 of the Girard Winery Phase 1 Water Availability Analysis.

We trust that this letter sufficiently explains the basis of the winery process water use estimates provided in the Phase 1 Water Availability Analysis. Please feel free to contact me if there are additional questions.

Sincerely,

Ben Monroe, P.E., QSD/QSP
PROJECT MANAGER
Always Engineering, Inc.

REGISTERED PROFESSIONAL ENGINEER
BENJAMIN W. MONROE
No. 70012
Exp.
CIVIL
STATE OF CALIFORNIA

cc: Pat Roney (Vintage Wine Estates)

Phase 1 Water Availability Analysis
12530_Girard Winery
February 18, 2014
Revised: March 26, 2015

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John McDowell
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Project: Girard Winery
Use Permit Application
Phase 1 Water Availability
APN: 020-150-017 (Girard Winery Use Permit)
APN: 020-150-012 (Clos Pegase Winery)

Dear Mr. McDowell,

This correspondence is provided to clarify and supplement the Phase One Groundwater Water Availability prepared and originally submitted with the Girard Winery Use Permit. As required by the Napa County Department of Public Works, this letter provides the Phase 1 Water Availability Analysis as a supplement to the Girard Winery Use Permit application. The following information is provided to meet this requirement.

SITE PLAN

The Use Permit Site Plan has been provided and is attached. This site plan provides the existing and proposed site conditions for Girard winery. The site consists of existing vineyards, open space, waste water treatment ponds, an agricultural building, and infrastructure. Also provided is a portion of the USGS quad map indicating location of the project parcel and approximate well locations. There is also included two additional site plans; one displaying the existing groundwater supply system components, and one displaying the existing vineyards associated with the two parcels.

PROJECT DESCRIPTION

Girard Winery, located at 1077 Dunaweal Ln, Calistoga, California (APN 020-150-017) is applying for a use permit to construct a new winery on this parcel.

It is proposed to construct a new winery with a production of 200,000 gallons of wine per year. Also includes associated site improvements, tasting room, and hospitality events.

On the project parcel, there is an existing well which currently serves the Clos Pegase Winery, which is located across the street at 1060 Dunaweal Lane, Calistoga (APN: 020-150-012). This analysis will take into account both parcels' water use. There is a second well, located on the Clos Pegase parcel also

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supplies water for the permitted public water system. Groundwater for the project will be supplied by both wells.

GIRARD ALLOWABLE WATER ALLOTMENT

The proposed parcel is 26.53 acres and located in the valley floor

Parcel acreage	=	26.53 acres
Parcel Location Factor	=	1.0 ac-ft/ac-yr (Valley Floor)
Allowable Water Allotment	=	26.53 ac-ft/yr

Based on Step #2 of the Water Availability Study, the allowable water allotment for the site is 26.53 ac-ft/yr.

GIRARD WATER CONSUMPTION

Presented below, and in the attached spreadsheets, are the calculations used to complete the Phase One Study with the assumed Napa County values.

Girard Vineyard Use

14.53 acres x 0.5 ac-ft/ac-yr (irrigation)	=	7.265 ac-ft/yr
14.53 acres x 0.25 ac-ft/ac-yr (frost protection)	=	3.6325 ac-ft/yr
14.53 acres x 0.0 ac-ft/ac-yr (heat protection)	=	0 ac-ft/yr
Total Vineyard Use	=	**10.8975 ac-ft/yr**

The total amount of vineyard water use on the Girard parcel is estimated to be 10.8975 ac-ft/yr using the Napa County Public Works values. It should be noted that this value includes irrigation and frost protection. No heat protection occurs at this site. It should also be noted that all vineyard irrigation is supplied by the irrigation reservoir on the Girard parcel. This pond is filled solely with rainwater, vineyard subdrain water, and treated winery process wastewater. This pond is the sole source of irrigation for all vineyards and landscape on the Girard and Clos Pegase parcels. Vineyard irrigation demand has been included in this analysis to show that the use is below the County threshold, should well water be required in an extremely dry year, which has not been needed to date.

Girard Winery Process Use

Process water demand is estimated using the factors in the Napa County Phase One form.

200,000 gallons wine/yr x 2.15 ac-ft/100,000 gallons wine = 4.3 ac-ft/yr

Additionally, water use data for the existing Clos Pegase and Girard process operations was reviewed for the wastewater feasibility study preparation and also during Due Diligence of the property acquisition. In that analysis, it was estimated that approximately 4.78 gallons of water were used per

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CLOS PEGASE ALLOWABLE WATER ALLOTMENT

The existing Clos Pegase Winery parcel (APN 020-150-012) is 20.39 acres and located in the valley floor

Parcel acreage	=	20.39 acres
Parcel Location Factor	=	1.0 ac-ft/ac-yr (Valley Floor)
Allowable Water Allotment	=	20.39 ac-ft/yr

Based on Step #2 of the Water Availability Study, the allowable water allotment for Clos Pegase Winery is 20.39 ac-ft/yr. however, potable water for the site is provided by a well on the Girard Winery parcel and will be reviewed later in this document under the combined analysis. In addition, all of the landscape and vineyard irrigation on the Clos Pegase parcel is provide by the irrigation reservoir on the Girard parcel. That reservoir is filled solely with vineyard subdrain water, rain water, and treated process wastewater and therefore should not present a demand on groundwater.

CLOS PEGASE WATER CONSUMPTION

Presented below are the calculations used to complete the Phase One Study with the assumed Napa County values.

Clos Pegase Vineyard Use

4.0 acres x 0.5 ac-ft/ac-yr (irrigation)	=	2.0 ac-ft/yr
4.0 acres x 0.25 ac-ft/ac-yr (frost protection)	=	1.0 ac-ft/yr
4.0 acres x 0 ac-ft/ac-yr (heat protection)	=	0 ac-ft/yr
Total Vineyard Use	=	**3.0 ac-ft/yr**

The total amount of vineyard water use on the Clos Pegase parcel is estimated to be 3.0 ac-ft/yr using the Napa County Public Works values. As noted above, this value includes irrigation and frost protection. No heat protection occurs at this site. Also noted above is that all vineyard irrigation is supplied by the irrigation reservoir on the Girard parcel. This pond is filled solely with rainwater, vineyard subdrain water, and treated winery process wastewater. This pond is the sole source of irrigation for all vineyards and landscape on the Girard and Clos Pegase parcels. Because no groundwater is used for vineyard irrigation, it is not addressed any further in this groundwater analysis.

Clos Pegase Winery Process Use

Process water demand is estimated using the factors in the Napa County Phase One form.

200,000 gallons wine/yr x 2.15 ac-ft/100,000 gallons wine = 4.30 ac-ft/yr

Additionally, water use data for the existing Clos Pegase and Girard process operations was reviewed for the wastewater feasibility study preparation and also during Due Diligence of the property

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gallon of wine produced. Projecting to ultimate production levels, the water use is estimated as follows:

200,000 gallons wine produced x 4.78 gallons water/gal wine = 956,000 gallons

956,000 gallons x 1 ac-ft/325,851 gallons = 2.93 ac-ft/yr.

Therefore, it is estimated that approximately 2.93 ac-ft/yr will be required for processing of wine.

Girard Winery Domestic Use

In the attached spreadsheets, domestic water use for the site has been estimated. This estimate has been prepared using peak and average employee, tasting visitor, and event use numbers for the site. Detailed calculations are shown in the spreadsheets with a summary below:

Employee Use	=	0.184 ac-ft/yr
Tasting Visitor Use	=	0.287 ac-ft/yr
Event Use	=	0.025 ac-ft/yr
Total Domestic Use	=	0.496 ac-ft/yr

A total of 0.496 ac-f/yr is estimated for domestic uses. This value assumes that employees will be onsite 7 days a week and 52 weeks a year. It also assumes maximum tasting room weekday and weekend visitation and therefore is likely conservative in the value generated.

Girard Winery Landscape Use

Landscape irrigation for the Girard project will be provided entirely by water from the irrigation pond, which does not receive groundwater supplies. Therefore, landscape use is not accounted for in this groundwater analysis.

Total Girard Winery Use

Process Use	=	2.93 ac-ft/yr
Domestic Use	=	0.496 ac-ft/yr
Total Winery Use	=	**3.43 ac-ft/yr**

The total Girard Winery water use is estimated to be 3.43 ac-ft/yr.

Total Girard Water Use

The **total estimated water demand** from the project is the sum of all the winery uses and is estimated as **3.43 ac-ft/yr.** This is less than the parcel threshold of 26.53 ac-ft per year and represents approximately 13% of the threshold for additional analysis.

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acquisition. In that analysis, it was estimated that approximately 4.78 gallons of water were used per gallon of wine produced. Projecting to ultimate production levels, the water use is estimated as follows:

200,000 gallons wine produced x 4.78 gallons water/gal wine = 956,000 gallons

956,000 gallons x 1 ac-ft/325,851 gallons = 2.93 ac-ft/yr.

Therefore, it is estimated that approximately 2.93 ac-ft/yr will be required for processing of wine.

Winery Domestic Use

In the attached spreadsheets, domestic water use for the site has been estimated. This estimate has been prepared using peak and average employee, tasting visitor, and event use numbers for the site. Detailed calculations are shown in the spreadsheets with a summary below:

Employee Use	=	0.251 ac-ft/yr
Tasting Visitor Use	=	0.347 ac-ft/yr
Event Use	=	0.0552 ac-ft/yr
Total Domestic Use	=	0.6537 ac-ft/yr

A total of 0.6537 ac-f/yr is estimated for domestic uses. This value assumes that employees will be onsite 7 days a week and 52 weeks a year. It also assumes maximum tasting room weekday and weekend visitation and therefore is likely conservative in the value generated.

Clos Pegase Winery Landscape Use

Landscape irrigation for the existing Clos Pegase landscape is provided entirely by water from the irrigation pond, which does not receive groundwater supplies. Therefore, landscape use is not accounted for in this groundwater analysis.

Clos Pegase Residential Use

The Close Pegase Parcel has an existing residence onsite. A residence water use is estimated as follows:

Primary Residence x 0.75 ac-ft/yr = 0.75 ac-ft/yr

In addition to the residence domestic uses, there is a pool which is assigned 0.1 ac-ft/yr for evaporation and approximately 0.15 acres of landscaping. Based on the California Irrigation Management and Information System (CIMIS), reference evapotranspirtation rate (ETo) data for the Oakville field station projects approximately 0.36 ac-ft/yr for landscape demand. The total residential demand is estimated by summing these values for a total demand of 1.21 ac-ft/yr.

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Total Clos Pegase Parcel Use

Process Use	=	2.93 ac-ft/yr
Domestic Use	=	0.6537 ac-ft/yr
Residential Use	=	1.21 ac-ft/yr.
Total Winery Use	=	**4.79 ac-ft/yr**

The total winery water use is estimated to be 4.79 ac-ft/yr.

Total Clos Pegase Water Use

The total estimated water demand from the project is the sum of the winery use (3.58 ac-ft/yr), and residence use (1.21 ac-ft/yr) and is estimated to be 4.79 ac-ft/yr. This value is approximately 23% of the parcel's threshold.

COMBINED ALLOWABLE WATER ALLOTMENT

The combined acreage of the parcel is 46.92 acres and located in the valley floor. Combined allowable threshold is calculated as follows:

Parcel acreage	=	46.92 acres
Parcel Location Factor	=	1.0 ac-ft/ac-yr (Valley Floor)
Allowable Water Allotment	=	46.92 ac-ft/yr

Based on Step #2 of the Water Availability Study, the allowable water allotment for the combined parcels is 46.92 ac-ft/yr.

COMBINED WATER CONSUMPTION/DEMAND

Presented below is a summary of the groundwater demands estimated in previous sections of this report and used to complete the Phase One Study.

Girard Winery Total Demand	=	3.43 ac-ft/yr
Clos Pegase Winery Total Demand	=	4.79 ac-ft/yr.
Total Combined Water Demand	=	8.22 ac-ft/yr.

A summary of these demands is presented in a comparison table in the summary and conclusions below.

EXISTING WATER SUPPLY SYSTEM

The existing potable water system consists of the onsite wells and treatment which also serves Clos Pegase Winery, under the same ownership across Duvaweal Ln. There is a storage tank on the Clos

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Pegase parcel. A new tank will be provided for Girard Winery. All vineyard and landscape irrigation is provided with the onsite reservoir which is supplied by rain, vineyard subdrain water, and treated process wastewater only.

CURRENT GROUNDWATER CONDITIONS

The report titled, *Napa County Groundwater Conditions and Groundwater Monitoring Recommendations,* dated February 2011 by Luhdorf & Scalmanini Consulting Engineers was obtained and reviewed in light of current groundwater conditions, specifically in the project vicinity. Appendix A of the report provides groundwater hydrographs showing historical groundwater depth for the wells on record. Copies of the groundwater depth graphs for the Calistoga area has been attached to this report. With the exception of the late 1970s (historical drought) and few well readings circa 2004, groundwater elevations in the Calistoga area are typically between 5 and 20 feet below existing grade. The existing well for the site had static water levels at approximately 25 feet deep in June of 1991. This is deeper than the wells on record, but should be assumed to be consistent with the groundwater table in the area. Therefore, sufficient supply appears to be available. There is no record of a depleted groundwater table in the project vicinity.

Additionally, on March 3, 2015, Luhdorff & Scalmanini Consulting Engineers issued the *Napa County Comprehensive Groundwater Monitoring Program 2014 Annual Report and CASGEM Update.* On page 35, section 5.1.1 of this report, it presents Groundwater Level Trends and Flow Directions for the Calistoga and St. Helena Subareas. In light of data review from 1970 to present, the professional opinion of L&S is that "Groundwater levels have been generally stable over time in the Calistoga Subarea...Minor seasonal declines of about 10 feet occur in the fall....However, in every year since 1970, including 2014, groundwater levels returned to within 10 feet of the ground surface." Coupled with the historical trouble-free operation of the onsite water supply system, this statement suggests that the project should not have problem providing water for the project without impacting groundwater levels outside the project area.

A Phase 2 Water Availability Analysis was also performed on Well #2 by O'Conner Environmental which was also submitted in support of the Use Permit application. The findings of that report also indicate that there is more than sufficient groundwater available to supply the project.

SUMMARY AND CONCLUSIONS

As presented above, the overall water use for the proposed Girard Winery and existing Clos Pegase Winery is expected to be 8.22 ac-ft/yr combined, which presents approximately 31% of the Girard parcel allotment, 40% of the Clos Peagse parcel allotement, and 17.5% of the allotment for both parcels combined. Therefore, the Phase 1 study should be sufficient to satisfy the requirements of the Public Works Department.

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PARCEL	ALLOTMENT (AC-FT/YR)	DEMAND (AC-FT/YR) (without irrigation)	IS DEMAND GREATER THAN ALLOTMENT?
GIRARD WINERY APN: 020-150-017	26.53	3.43	NO
CLOS PEGASE WINERY APN: 020-150-012	20.39	4.79	NO
COMBINED APN: 020-150-017 & 020-150-012	46.92	8.22	NO

It should be reiterated that all of the vineyard and landscape irrigation needs will be met by reusing treated process waste effluent from the wastewater pond system as well as the collection of vineyard subdrain water and rain water in the irrigation reservoir.

In summary, this project should not pose a burden to groundwater supplies and should be approved for the following reasons:

- The Girard Winery project does not exceed the groundwater threshold for the parcel it is proposed on.
- The combined Girard Winery and Close Pegase Winery projects do not exceed the groundwater threshold for the Girard parcel, nor the Clos Pegase Parcel and are substantially below the combined threshold of both parcels.

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If there are questions regarding that presented, please feel free to contact me.

Sincerely,

Ben Monroe, P.E.
Always Engineering, Inc.

cc: Heather McCollister

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Department of Public Works

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Donald G. Ridenhour, P.E.
Director

WATER AVAILABILITY ANALYSIS - PHASE ONE 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.

The 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 assessor's parcel numbers for these parcels. Identify all existing or proposed wells

Step #2: Determine total parcel acreage and water allotment factor. If your project spans multiple parcels, please fill a separate form for each parcel.

Determine the allowable water allotment for your parcels:

Parcel Location Factors

The 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 underline 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**

Assessor's Parcel Number(s)	Parcel Size (A)	Parcel Location Factor (B)	Allowable Water Allotment (A) X (B)
020-150-017	26.53	1.0	1.0 AC-FT/AC-YR

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 USE:		PROPOSED USE:	
Residential	0 af/yr	Residential	0 af/yr
Farm Labor Dwelling	0 af/yr	Farm Labor Dwelling	0 af/yr
Winery	0 af/yr	Winery	3.43 af/yr
Commercial	0 af/yr	Commercial	0 f/yr
Vineyard*	0 af/yr	Vineyard*	0 af/yr
Other Agriculture	0 af/yr	Other Agriculture	0 af/yr
Landscaping	0 af/yr	Landscaping	0 af/yr
Other Usage (List Separately):		Other Usage (List Separately):	
_____	_____ af/yr	_____	0 af/yr
_____	_____ af/yr	_____	0 af/yr
_____	_____ af/yr	_____	0 af/yr
TOTAL:	0 af/yr	TOTAL:	3.43 af/yr TOTAL:
	0 gallons**	TOTAL:	1,117,669 gallons**

Is the proposed use less than the existing usage? [ ] Yes [X] 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.

SEE ATTACHED REPORT

Conclusion: 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: 3/26/15 Phone: 707-542-8795 X 17

Attachment A: Estimated Water Use Guidelines

Typical Water Use Guidelines:

Primary Residence	0.5 to 0.75 acre-feet per year (includes some landscaping)
Secondary Residence	0.20 to 0.30 acre-feet per year
Farm Labor Dwelling	0.06 to 0.10 acre-feet per person per year

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	0.06 to 0.10 acre-feet per person per year
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

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Step #1:

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Step #2: Determine total parcel acreage and water allotment factor. If your project spans multiple parcels, please fill a separate form for each parcel.

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Please underline 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**

Assessor's Parcel Number(s)	Parcel Size (A)	Parcel Location Factor (B)	Allowable Water Allotment (A) X (B)
020-150-012	20.39	1.0	20.39 AC-FT/YR

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 USE:		PROPOSED USE:	
Residential	1.21 af/yr	Residential	1.21 af/yr
Farm Labor Dwelling	0 af/yr	Farm Labor Dwelling	0 af/yr
Winery	3.58 af/yr	Winery	3.58 af/yr
Commercial	0 af/yr	Commercial	0 f/yr
Vineyard*	0 af/yr	Vineyard*	0 af/yr
Other Agriculture	0 af/yr	Other Agriculture	0 af/yr
Landscaping	0 af/yr	Landscaping	0 af/yr
Other Usage (List Separately):		Other Usage (List Separately):	
_____	_____ af/yr	_____	_____ af/yr
_____	_____ af/yr	_____	_____ af/yr
_____	_____ af/yr	_____	_____ af/yr
TOTAL:	4.79 af/yr	TOTAL:	4.79 af/yr TOTAL:
	1,560,826 gallons**	TOTAL:	1,560,826 gallons**

Is the proposed use less than the existing usage? [ ] Yes [ ] No [X] 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.

SEE ATTACHED REPORT.

Conclusion: 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: 3/26/15 Phone: 707-542-8795 X 17

Attachment A: Estimated Water Use Guidelines

Typical Water Use Guidelines:

Primary Residence	0.5 to 0.75 acre-feet per year (includes some landscaping)
Secondary Residence	0.20 to 0.30 acre-feet per year
Farm Labor Dwelling	0.06 to 0.10 acre-feet per person per year

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	0.06 to 0.10 acre-feet per person per year
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

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The 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 assessor's parcel numbers for these parcels. Identify all existing or proposed wells

Step #2: Determine total parcel acreage and water allotment factor. If your project spans multiple parcels, please fill a separate form for each parcel.

Determine the allowable water allotment for your parcels:

Parcel Location Factors

The 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 underline 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**

Assessor's Parcel Number(s)	Parcel Size (A)	Parcel Location Factor (B)	Allowable Water Allotment (A) X (B)
020-150-017 & 020-150-012	46.92	1.0	46.92 AC-FT/YR.

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 USE:		PROPOSED USE:	
Residential	1.21 af/yr	Residential	1.21 af/yr
Farm Labor Dwelling	0 af/yr	Farm Labor Dwelling	0 af/yr
Winery	3.58 af/yr	Winery	7.01 af/yr
Commercial	0 af/yr	Commercial	0 f/yr
Vineyard*	0 af/yr	Vineyard*	0 af/yr
Other Agriculture	0 af/yr	Other Agriculture	0 af/yr
Landscaping	0 af/yr	Landscaping	0 af/yr
Other Usage (List Separately):		Other Usage (List Separately):	
_____	_____ af/yr	_____	_____ af/yr
_____	_____ af/yr	_____	_____ af/yr
_____	_____ af/yr	_____	_____ af/yr
TOTAL:	4.79 af/yr	TOTAL:	8.22 af/yr TOTAL:
	1,560,826 gallons"	TOTAL:	2,678,495 gallons"

Is the proposed use less than the existing usage? [ ] Yes [X] 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.

SEE ATTACHED REPORT

Conclusion: 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: 3/26/15 Phone: 707-542-8795 X 17

Attachment A: Estimated Water Use Guidelines

Typical Water Use Guidelines:

Primary Residence	0.5 to 0.75 acre-feet per year (includes some landscaping)
Secondary Residence	0.20 to 0.30 acre-feet per year
Farm Labor Dwelling	0.06 to 0.10 acre-feet per person per year

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	0.06 to 0.10 acre-feet per person per year
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

PHASE ONE WATER AVAILABILITY
GIRARD WINERY USE PERMIT
Date: 11/24/2014
Revised: 03/26/2015

GROUNDWATER ALLOTMENT

GIRARD WINERY (APN 020-150-017)		
PARCEL SIZE	26.53 ACRES	
PARCEL LOCATION FACTOR	1 AC-FT/AC-YR	(VALLEY FLOOR)
GROUNDWATER ALLOWABLE WATER ALLOTMENT	**26.53 AC-FT/YR**	

CLOS PEGASE WINERY (APN 020-150-012)		
PARCEL SIZE	20.39 ACRES	
PARCEL LOCATION FACTOR	1 AC-FT/AC-YR	(VALLEY FLOOR)
GROUNDWATER ALLOWABLE WATER ALLOTMENT	**20.39 AC-FT/YR**	

GROUNDWATER DEMAND

GIRARD WINERY (APN 020-150-017)	
GROUNDWATER USE	DEMAND (AC-FT/YR.)
WINERY PROCESS USE	2.9300
DOMESTIC USE	0.4961
RESIDENCE	0.0000
TOTAL CALCULATED DEMAND	3.4261

CLOS PEGASE WINERY (APN 020-150-012)	
GROUNDWATER USE	DEMAND (AC-FT/YR.)
WINERY PROCESS USE	2.9300
DOMESTIC USE	0.6537
RESIDENCE (DOMESTIC, LANDSCAPE, & POOL)	1.2100
TOTAL CALCULATED DEMAND	4.7937

1. Currently, all vineyard irrigation is provided using the irrigation pond. The existing irrigation pond is filled with rainwater, vineyard subdrain collection water, and treated process wastewater. No well has been used to irrigate the existing vineyards and landscape at the site.

PHASE ONE WATER AVAILABILITY - DEMAND/ALLOTMENT SUMMARY (WITHOUT VINEYARD IRRIGATION)

PARCEL	ALLOTMENT (AC-FT/YR)	DEMAND ON GIRARD PARCEL (AC-FT/YR)	DEMAND ON CLOS PEGASE PARCEL (AC-FT/YR)
GIRARD WINERY (APN: 020-150-017)	26.53	3.4261	3.4261
CLOS PEGASE WINERY (020-150-012)	20.39	4.7937	4.7937
COMBINED (APN: 020-150-018 & 020-150-012)	46.92	8.2198	8.2198

PHASE ONE WATER AVAILABILITY
GIRARD WINERY USE PERMIT
Date: 11/24/2014
Revised: 03/26/2015

GIRARD DOMESTIC USE

EVENTS

EVENT SIZE	# OF EVENT VISITORS	FLOW PER VISITOR	DAYS PER YEAR OCURRED	WATER USE PER YEAR (GAL/YEAR)	(AC-FT/YR)
LARGE	500	5	1	2,500	0.0077
MEDIUM	200	5	4	4,000	0.0123
SMALL	75	5	4	1,500	0.0046
			SUTOTAL	8,000	0.0246

TASTING VISITORS

DAY	# OF EVENT VISITORS	FLOW PER VISITOR	DAYS PER WEEK	WEEKS PER YEAR	WATER USE PER YEAR (GAL/YEAR)	(AC-FT/YR)
WEEKDAY	75	3	4	52	46,800	0.1436
WEEKEND	100	3	3	52	46,800	0.1436
				SUTOTAL	93,600	0.2872

EMPLOYEES

TIME PERIOD	# OF EMPLOYEES	FLOW PER EMPLOYEE	DAYS PER WEEK	WEEKS PER YEAR	WATER USE PER YEAR (GAL/YEAR)	(AC-FT/YR)
HARVEST FULL-TIME)	12	15	7	13	16,380	0.0503
HARVEST (PART-TIME)	7	7.5	7	13	4,778	0.0147
NON-HARVEST (FULL-TIME)	8	15	7	39	32,760	0.1005
NON-HARVEST (PART-TIME)	3	7.5	7	39	6,143	0.0189
				SUTOTAL	60,060	0.1843

GIRARD DOMESTIC TOTAL	**161,660**	**0.4961**

PHASE ONE WATER AVAILABILITY
GIRARD WINERY USE PERMIT
Date: 11/24/2014
Revised: 03/26/2015

CLOS PEGASE DOMEESTIC USE

EVENTS

EVENT SIZE	# OF EVENT VISITORS	FLOW PER VISITOR	DAYS PER YEAR OCURRED	WATER USE PER YEAR (GAL/YEAR)	(AC-FT/YR)
AVERAGE	150	5	24	18,000	0.0552
			SUTOTAL	18,000	0.0552

TASTING VISITORS

DAY	# OF EVENT VISITORS	FLOW PER VISITOR	WEEKS PER YEAR	WATER USE PER YEAR (GAL/YEAR)	(AC-FT/YR)
PEAK WEEK	725	3	52	113,100	0.3471
			SUTOTAL	113,100	0.3471

EMPLOYEES

TIME PERIOD	# OF EMPLOYEES	FLOW PER EMPLOYEE	DAYS PER WEEK	WEEKS PER YEAR	WATER USE PER YEAR (GAL/YEAR)	(AC-FT/YR)
HARVEST FULL-TIME)	30	15	7	13	40,950	0.1257
HARVEST (PART-TIME)	0	7.5	7	13	0	0.0000
NON-HARVEST (FULL-TIME)	10	15	7	39	40,950	0.1257
NON-HARVEST (PART-TIME)	0	7.5	7	39	0	0.0000
				SUTOTAL	81,900	0.2513

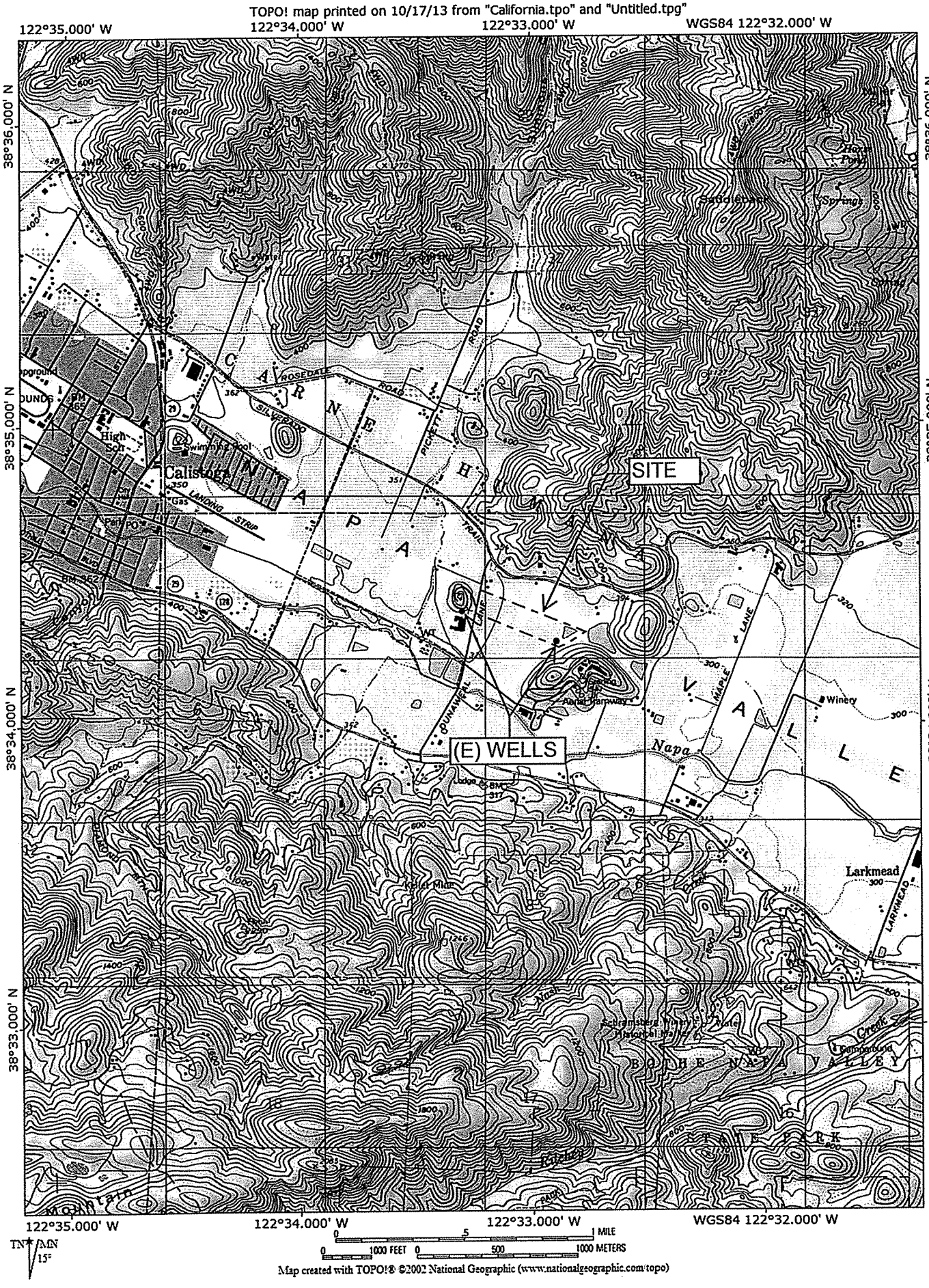
CLOS PEGASE DOMESTIC TOTAL 213,000 0.6537

PHASE ONE WATER AVAILABILITY
GIRARD WINERY USE PERMIT
Date: 11/24/2014
Revised: 03/26/2015

WINERY PROCESSING
GROUNDWATER USE

GIRARD WINERY			
PRODUCTION	=	200,000	GALLONS WINE PER YEAR
PHASE 1 WAA WATER USE RATE	=	2.15	AC-FT/YR PER 100,000 GALLONS WINE PRODUCED
PHASE 1 WAA PROCESS USE	=	4.3	AC-FT/YEAR
PROJECTED PROCESS USE	=	**2.93**	**AC-FT/YR.** (BASED ON WATER USE AT EXISTING GIRARD OPERATION) (NUMBER CONSISTENT WITH WASTEWATER FEASIBLITY STUDY)

CLOS PEGASE WINERY			
PRODUCTION	=	200,000	GALLONS WINE PER YEAR
PHASE 1 WAA WATER USE RATE	=	2.15	AC-FT/YR PER 100,000 GALLONS WINE PRODUCED
PHASE 1 WAA PROCESS USE	=	4.3	AC-FT/YEAR
PROJECTED PROCESS USE	=	**2.93**	**AC-FT/YR.** (BASED ON WATER USE AT EXISTING CLOS PEGASE OPERATION) (NUMBER CONSISTENT WITH WASTEWATER FEASIBLITY STUDY)


TOPO! map printed on 10/17/13 from "California.tpo" and "Untitled.tpg"
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122°34.000' W
122°33.000' W
WGS84 122°32.000' W
38°36.000' N
38°35.000' N
38°34.000' N
38°33.000' N
SITE
(E) WELLS
Calistoga
High Sch
Swimming Pool
Fair PO
Gas
Aerial Tramway
Winery
Larkmead
Napa
Ridge
Mountain
MILE
1000 FEET
500
1000 METERS
TN
MN
15°
Map created with TOPO!® ©2002 National Geographic (www.nationalgeographic.com/topo)

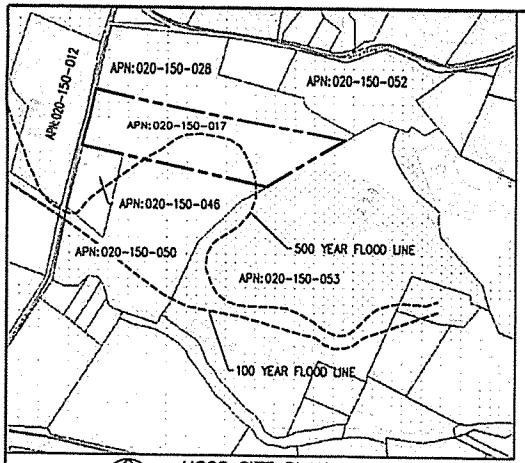
GIRARD WINERY

1077 Dunaweal Ln.

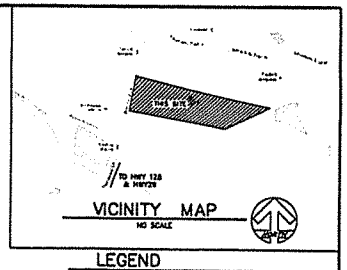
Calistoga, California 94515

APN 022-150-017

USE PERMIT APPLICATION



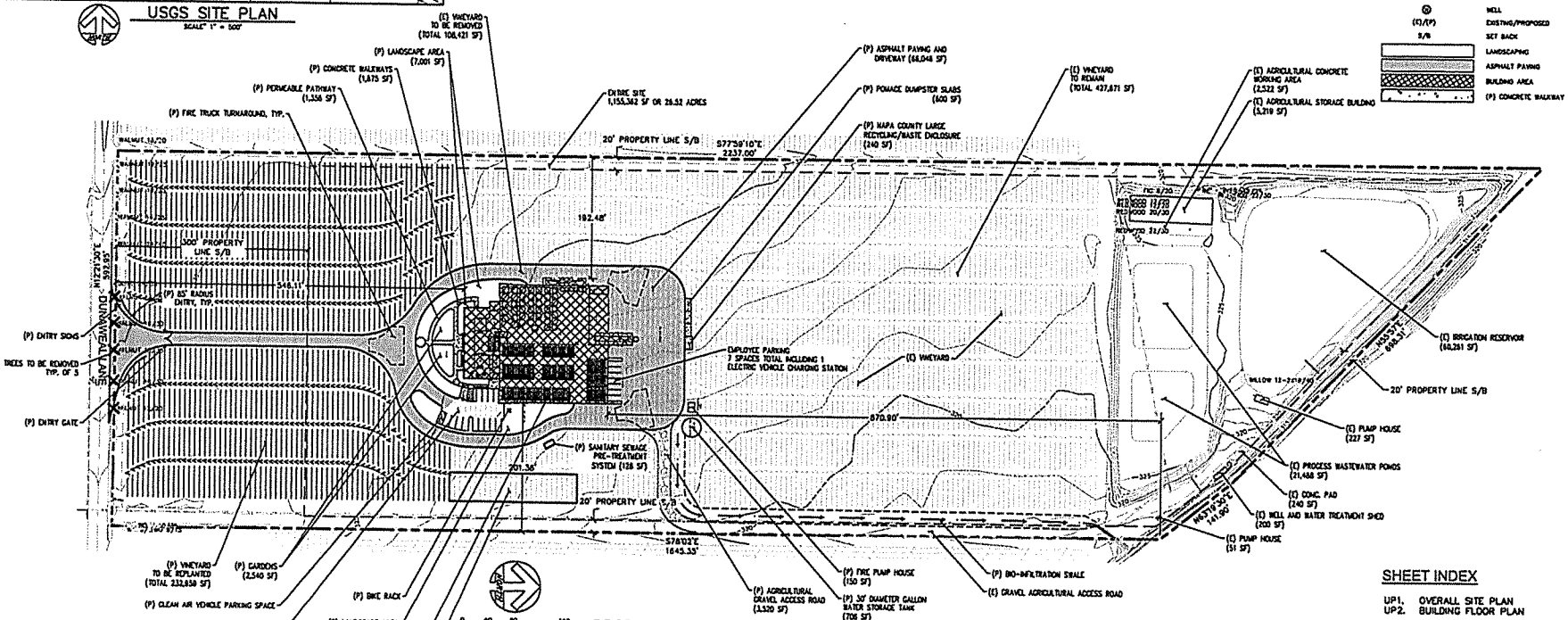
USGS SITE PLAN
SCALE: 1" = 500'



VICINITY MAP
NO SCALE

LEGEND

- APPROXIMATE PROPERTY LINE
- FENCE
- EDGE OF PAVEMENT
- EDGE OF GRAVEL DRIVEWAY
- DRAINAGE COURSE FLOWLINE
- WINDROW
- OVERHEAD UTILITIES
- SETBACK
- 100 YEAR FLOOD PLAIN
- 500 YEAR FLOOD PLAIN
- 5 FOOT INDEX 1' INTERVAL CONTOURS
- WELL
- (E)/(P) EXISTING/PROPOSED
- S/B SET BACK
- LANDSCAPING
- ASPHALT PAVING
- BUILDING AREA
- (P) CONCRETE WALKWAY



PROPOSED OVERALL SITE PLAN
SCALED 1" = 80'

OWNER/APPLICANT
VINTAGE WINE ESTATES
205 CONCOURSE BLVD.
SANTA ROSA, CA 95403
CONTACT: PAT ROney
PH. (877) 288-9463

ARCHITECT
DEL STARRETT ARCHITECT
181 CONCOURSE BLVD., SUITE A
SANTA ROSA, CA 95403
CONTACT: DEL STARRETT
PH. (707) 528-8643

LANDSCAPE ARCHITECT
PARKER SMITH LANDSCAPE ARCHITECT
1845 PIMER RD. #23
SANTA ROSA, CA 95403
PH. (707) 477-7502

ARCHITECT
ALWAYS ENGINEERING INC.
131 STONY CIRCLE, SUITE 1000
SANTA ROSA, CA 95401
CONTACT: BEN MONROE
PH. (707) 542-8795

Grading Quantities:
Site Grading is based upon subgrade to existing grade. No account has been taken for stripping, expansion or contraction. Volumes should be verified and determined independently by the Contractor.

	CUT:	ENGINEERED FILL:	NET:
TOTAL EARTHWORK:	2,172 CY	4,034 CY	1,863 CY (FILL)

TOTAL DISTURBED AREA = 3.59 ACRES

Note: Excess spoils will be disposed of in a county approved site or spread in onsite vineyards. Temporary grading spoils will be stockpiled onsite in the unplanted vineyard area until ready for use.

SHEET INDEX

REGISTERED PROFESSIONAL ENGINEER BENJAMIN MONROE No. 084428 STATE OF CALIFORNIA CIVIL

NO.	REVISION	DESCRIPTION	BY	DATE

Always Engineering, Inc.
Civil Engineering & Topographic Surveying
131 Stony Circle, Suite 1000
Santa Rosa, CA 95401
Ph. (707) 542-8795
www.alwaysengr.com JasonH@Alwaysengr.com

Prepared for: GIRARD WINERY
1077 DUNAWEAL LN., CALISTOGA, CA

Prepared on: February 13, 2014

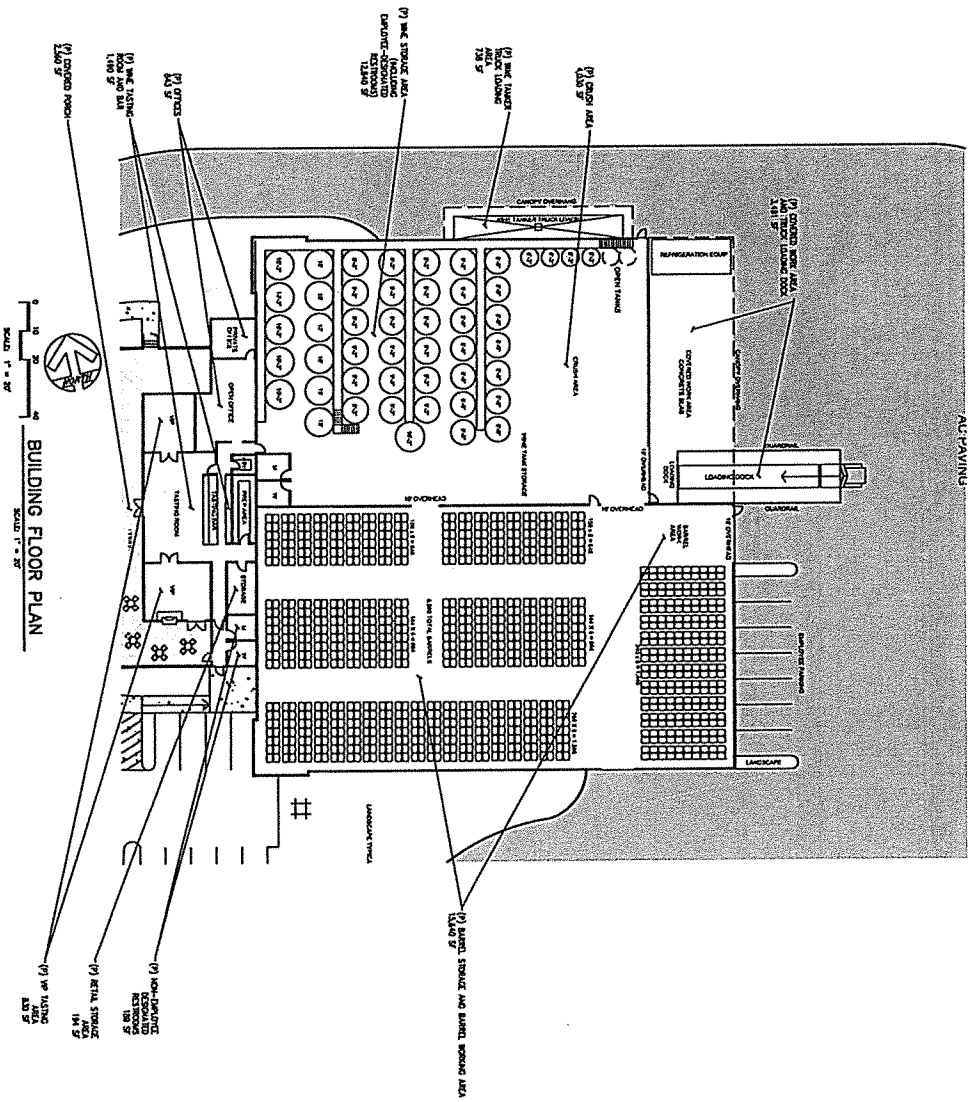
USE PERMIT
OVERALL SITE PLAN
1077 DUNAWEAL LN., CALISTOGA, CA
APN:020-150-017

JOB# 13530

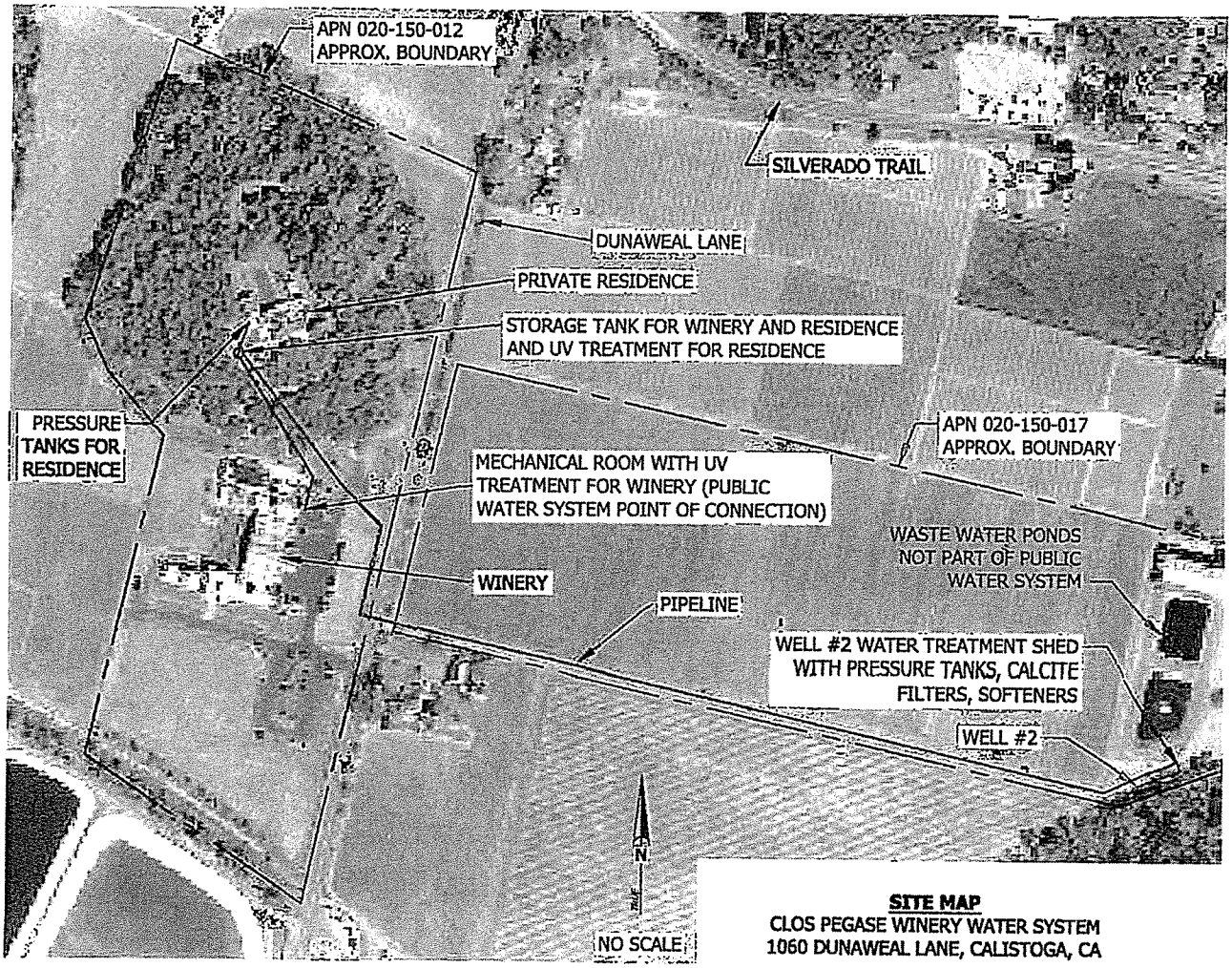
SHEET UP1 OF UP2

Plotted: Feb 13, 2014 - 1:32:48PM By: jasonh File: UP-130212.dwg

 When printed: Feb 13, 2014 – 1:32:16PM File=UP-140122.dwg



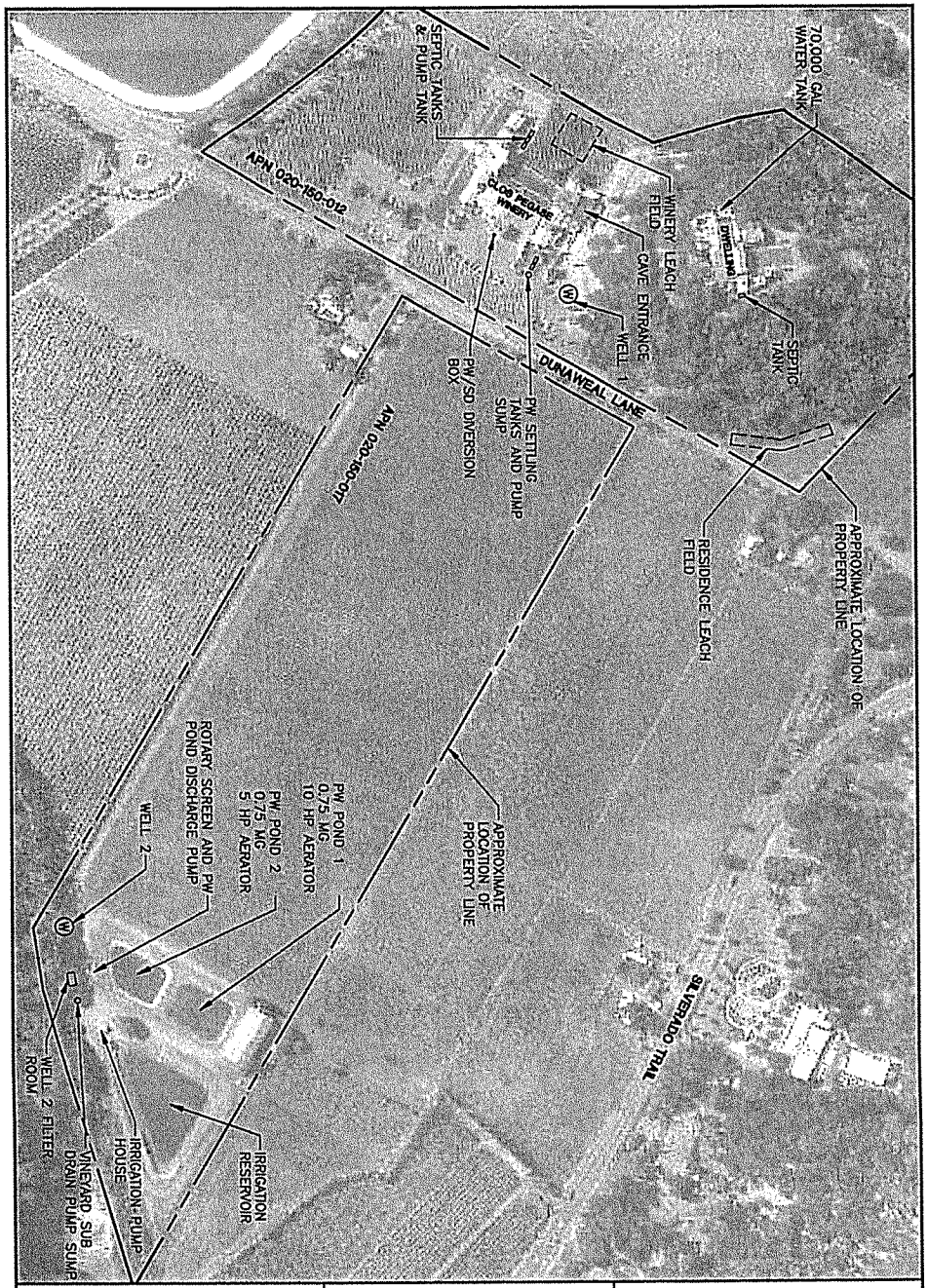
SHEET UP2 OF UP2	USE PERMIT BUILDING FLOOR PLAN 1077 DUNAWEAL LN., CALISTOGA, CA APN:020-150-017	Prepared for: GIRARD WINERY 1077 DUNAWEAL LN., CALISTOGA, CA Prepared on: February 13, 2014	Always Engineering, Inc. Civil Engineering & Topographic Surveying 131 Stony Circle, Suite 1000 (707) 542-8795 Santa Rosa, CA 95401 Fax (707) 542-8798 www.alwayseng.com JasonH@alwayseng.com	REVISION / DESCRIPTION / BY / DATE	



SITE MAP
CLOS PEGASE WINERY WATER SYSTEM
1060 DUNAWEAL LANE, CALISTOGA, CA

PLOTTED ON: 11/7/2011 2:59 PM

P:\PROJECT\2011\2011136 CLOS PEGASE WINERY-- DUE DILIGENCE\CAD\WWWATER\OVERALL SITE PLAN.DWG



CLOS PEGASE WINERY **1060 DUNAWEAL LANE** **CALISTOGA, CA 94515** **APN: 020-150-012, 017**	**OVERALL SITE PLAN** PROJECT NO 2011136 DATE 11-07-2011 BY KQ CHK AS SHT NO 1 OF 1	SUMMIT ENGINEERING INC. 463 AVIATION BLVD. STE 200 SANTA ROSA, CA 95403 www.summit-er.com • 707.527.0775

FEE 120
RECEIPT NO. 28489
BY PB

A.P.# 20-150-17
RECORD # 3328

NAPA COUNTY
DEPT. OF ENVIRONMENTAL MANAGEMENT
APPLICATION & PERMIT TO CONSTRUCT A WATER WELL

NAME Clos Pegase Winery (Owner) ADDRESS 1060 Dunaweal (Job Location)

NAME Pulliam Well Drilling (Well Driller) PHONE # 224 9396 ADDRESS

TYPE OF WORK
New Class I PERMIT ____ Test Hole Date Called In 4/30/91 /5/7/91
New Class II PERMIT X U.S.G.S. Map Received
Well Reconstruction ____ Well Deepening ____ Horizontal Well ____
Well Destruction ____ High Hazard ____ Low Hazard ____ Hand Dug ____

PROPOSED USE
DOMESTIC ____ IRRIGATION ____ INDUSTRIAL X (MW) MUNICIPAL ____
TEST WELL ____ HOT WATER ____ (D.O.G. Clearance ____) OTHER ____

Sewage Disposal System (existing or proposed) Public ____ Individual ____ Private X
Distance from well to any part of nearest sewage disposal system Septic System Location Determined By: Well Driver - Ponte 150 LF feet.
Plot plan of well location received Yes County road setback 210 ft. from centerline.

WORKER'S COMPENSATION COVERAGE: (Check one of the following)
____ A certificate of current Worker's Compensation Insurance coverage is presently on file with this office.
I A certificate of current Worker's Compensation Insurance is being filed with this application.
____ I certify that in the performance of the work for which this permit is issued, I shall not employ any person in any manner so as to become subject to the Worker's Compensation laws in California.

****

TERMS OF PERMIT

) Call at least 24 hours in advance to schedule an inspection.
) Prior to receiving a Final Clearance on the well, a copy of the Department of Water Resources "Water Well Drillers Report" (DWR-188) must be returned to our Department.
ld Wells to be Destroyed:
ther Remarks:

Bret Pulliam
Signature of Applicant

Date

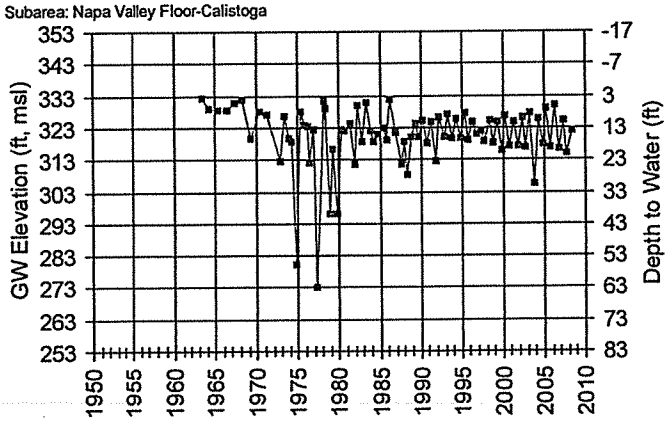
****

FOR OFFICE USE ONLY

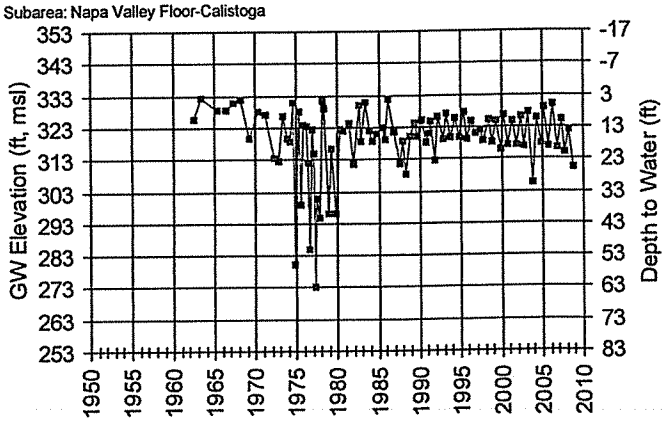
	Date	By	Remarks
City Clearance			
Pub. Works Clearance			
Pre-Inspection			
Class II Approval	5/2/91		See attached Cat. Exemption from Planning
Permit Issued	5/7/91		"
Const. Insp.	5/10/91		Completed 12" hole, 5" casing. Seal to 54.3' OK annular seal
Well Log Rec.			
Final Insp.			

White-Office Yellow-Owner Pink-Contractor
EHM Form Letter#6 / 12-14-88

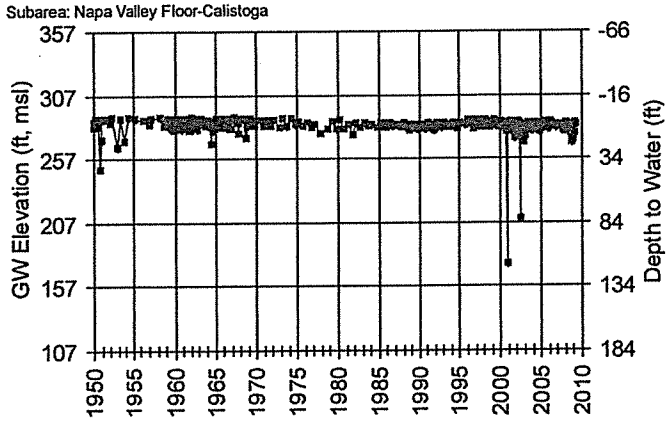
WellID: 08N06W06L004M RPE: 336 ft, msl
SWN: 008N006W06L004M Source: DWR
Subarea: Napa Valley Floor-Calistoga



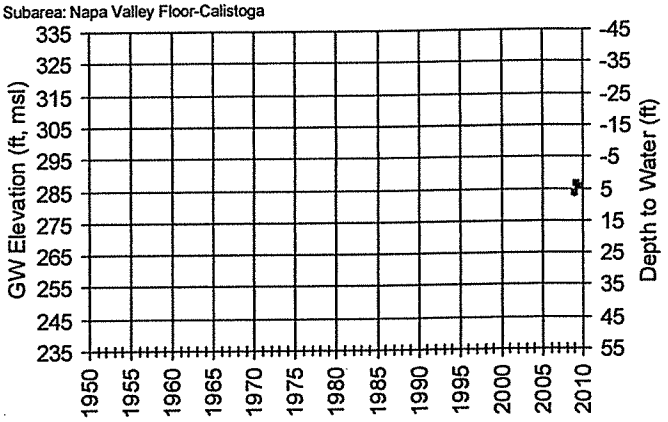
WellID: NapaCounty-129 RPE: 336 ft, msl
SWN: 008N006W06L004M Source: NapaCounty
Subarea: Napa Valley Floor-Calistoga



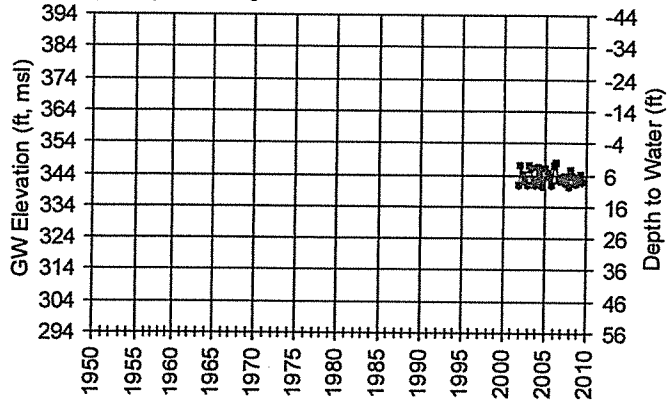
WellID: 08N06W10Q001M RPE: 290.6 ft, msl
SWN: 008N006W10Q001M Source: DWR
Subarea: Napa Valley Floor-Calistoga



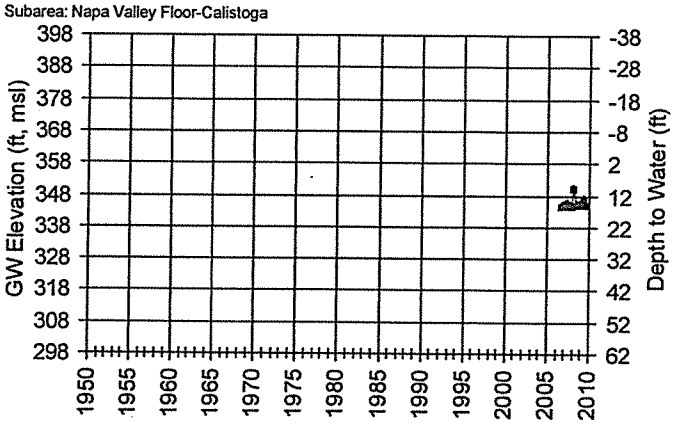
WellID: T0605500272MW-2 RPE: 289.79 ft, msl
SWN: Unknown Source: Geotracker
Subarea: Napa Valley Floor-Calistoga



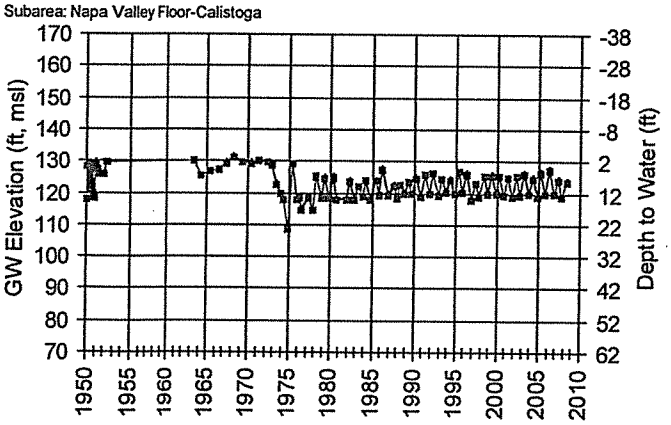
WellID: T0605500136MW-10 RPE: 349.54 ft, msl
SWN: Unknown Source: Geotracker
Subarea: Napa Valley Floor-Calistoga



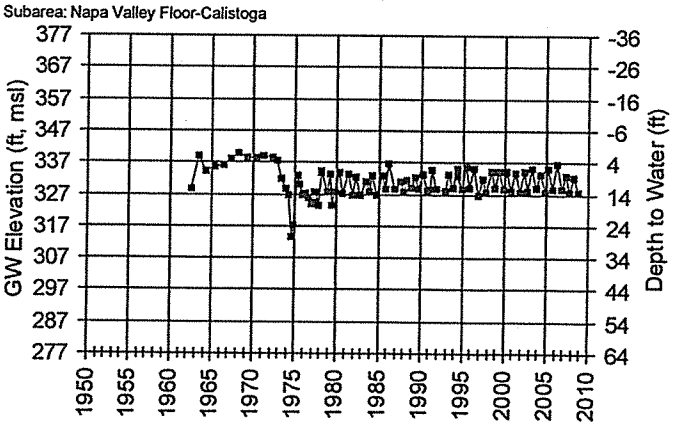
WellID: T0605500250MW-6 RPE: 360.46 ft, msl
SWN: Unknown Source: Geotracker
Subarea: Napa Valley Floor-Calistoga



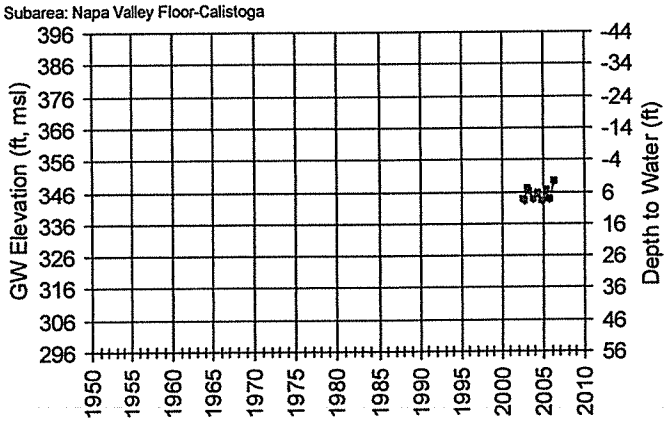
WellID: 09N06W31Q001M RPE: 132.2 ft, msl
SWN: 009N006W31Q001M Source: DWR
Subarea: Napa Valley Floor-Calistoga



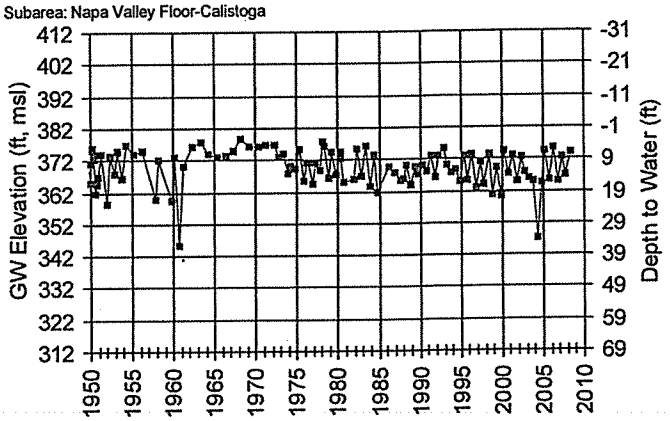
WellID: NapaCounty-128 RPE: 341 ft, msl
SWN: 009N006W31Q001M Source: NapaCounty
Subarea: Napa Valley Floor-Calistoga



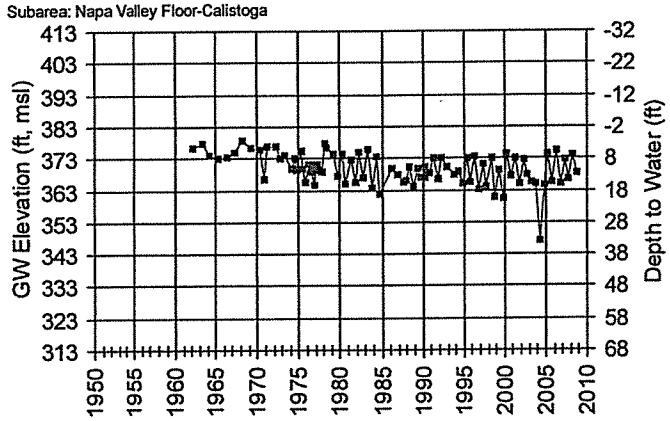
WellID: T0605500029MW-3 RPE: 351.6 ft, msl
SWN: Unknown Source: Geotracker
Subarea: Napa Valley Floor-Calistoga



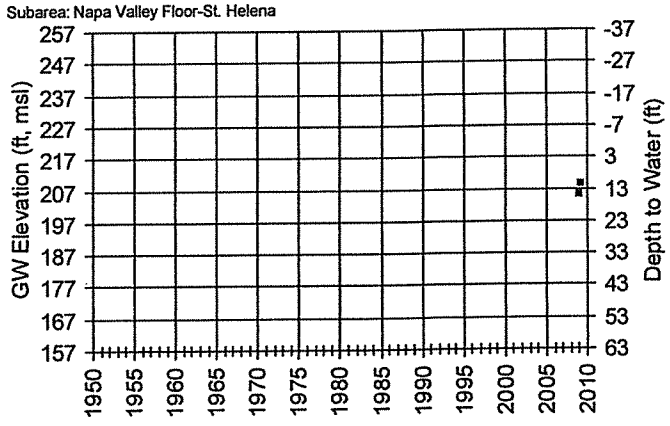
WellID: 09N07W25N001M RPE: 381 ft, msl
SWN: 009N007W25N001M Source: DWR
Subarea: Napa Valley Floor-Calistoga



WellID: NapaCounty-127 RPE: 381 ft, msl
SWN: 009N007W25N001M Source: NapaCounty
Subarea: Napa Valley Floor-Calistoga



WellID: SL0605506371MW-4 RPE: 219.87 ft, msl
SWN: Unknown Source: Geotracker
Subarea: Napa Valley Floor-St. Helena



13530.0 Girard Winery
Winery Use Permit
Water System Feasibility
February 21, 2014
Revised: March 26, 2015

Always Engineering, Inc.
Civil Engineering & Topographic Surveying
131 Stony Circle, Suite 1000 (707) 542-8795
Santa Rosa, CA 95401 Fax (707) 542-8798
www.alwayseng.com JasonH@alwayseng.com

Stacey Harrington
Napa County Planning, Building, and Environmental Services
Department of Environmental Management
1195 3rd St. Room 101
Napa, Ca

Project: Girard Winery – New Winery and Tasting Room Use Permit
Water System Feasibility
1077 Dunaweal Lane
Calistoga, CA 94515
APN: 020-150-017

Stacey,

This letter is provided in support of the Girard Winery Use Permit application to construct a new onsite winery and tasting room. Specifically, this letter shall provide preliminary information with respect to the Technical, Managerial and Financial Capacity of the winery to operate the proposed system.

PROJECT AND SITE BACKGROUND

Vintage Wine Estates owns and operates the existing "Clos Pegase" water system (ID # 28-01007) located at 1060 Dunaweal Ln in Calistoga, Ca (APN: 020-150-017). The system is currently regulated as a Transient Non-Community water system. Attached please find the cover page of the most recent water system permit application dated February 3, 2014.

Vintage Wine Estates is applying for a Use Permit to construct a new winery and tasting room onsite; the Girard Winery. With the Use Permit, it is proposed to also serve water to the proposed Girard Winery using the same system. A new supply main, storage tank, booster pump, and distribution system will be required.

The existing water system permit will need to be updated to include additional piping and service connections for the Girard Winery, as well as any additional documents which must be updated as a result.

WATER SYSTEM NAME

The water system shall be known as:

The Clos Pegase and Girard Wineries Water System

REPORT PREPARATION

Always Engineering, Inc.
Civil Engineering & Topographic Surveying
131 Stony Circle, Suite 1000 (707) 542-8795
Santa Rosa, CA 95401 Fax (707) 542-8798
www.alwayseng.com JasonH@alwayseng.com

This report was prepared for Girard Winery by Ben Monroe, P.E. of Always Engineering, Inc. Questions or comments regarding the content of this report should be directed to:

Ben Monroe
Always Engineering, Inc.
131 Stony Circle, Suite 1000
Santa Rosa, Ca 95401
Office: (707) 542-8795 x17
Cell: (707) 318-7099
BenM@alwayseng.com

TECHNICAL CAPACITY

A. System Description

The existing water system for Clos Pegase Winery consists of the following features; one active onsite well on the Girard parcel (Well #2), and one active well on the Cls Pegase parcel (Well #1), pressure tanks, sediment filter, softeners, 58,000 gallon storage tank, pressure tanks, ultraviolet disinfection, and potable use. Well #2 is located on 1077 Dunaweal Lane, Calistoga (APN: 020-150-012). Well #1 is located on 1060 Dunaweal Lane, Calistoga (APN 020-150-017). Both wells supply the currently permitted water system.

A water system schematic is attached.

B. Source Adequacy Assessment and Evaluation

The Clos Pegase and Girard Wineries Water System is sized for ultimate build-out of the parcel and therefore the supply and demand, and infrastructure is expected to be sufficient for at least the next 10 to 20 years. In order to determine the adequacy of the water system, the volume of supply from each source and demand from each use is estimated and evaluated on the following pages:

a. Supply Capacity Assessment

The proposed source for the Water System is as follows:

- Source 1: Well #2
- Source 2: Well #1

Well #2 produces approximately 23 gpm per the well logs, but the current pump supplies 18 gpm. Well #1 produces approximately 5 gpm. A copy of the well log are on file with the County and can be provided upon request. There is one additional onsite well which is not used. No surface water is used in the system and therefore the Surface Water Treatment Rule does not apply.

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Therefore, the current available supply for the domestic uses onsite is approximately 23 gpm. Evaluating just Well #2, an 18 gpm supply is sufficient to supply 1,080 gallons an hour which is sufficient to supply 8,640 gallons over 8 hours or 25,920 gallons operating for 24 hours a day. This is capable of producing 9,460,800 gallons when operating for 24 hours a day, for 365 days a year.

b. *Demand Assessment*

Onsite water use demand from the system is from the following uses:

Clos Pegase and Girard Wineries

- Winery Processing
- Winery Employees
- Wine Tasting
- Wine Events

All vineyard irrigation is provided by the onsite reservoir pond. Wells No.1 and No. 2 are dedicated to potable uses only.

Demand from each winery is presented below:

Clos Pegase

Winery Process Amended Permit Application

Annual Use	=	920,000 gal/year
Peak Harvest Day	=	5,759 gpd

Winery and Residence Domestic Use

Annual Use (assumes peak day 365 days/year)	=	651,702 gal/year
Peak Day	=	1,785 gpd

Therefore the total water demand for the Clos Pegase is calculated:

Peak Daily Demand

Winery PW + Winery Domestic + Residence	=	7,544 gpd

Annual Demand

Winery PW + Winery Domestic + Residence	=	1,517,702 gal

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Girard Winery

Winery Process

Annual Use	=	920,000 gal/year
Peak Harvest Day	=	5,759 gpd

Winery Domestic

Peak Day	=	1,675 gpd
Annual Use	=	611,375 gal/year

Therefore the total water demand for the Girard Winery is calculated:

Peak Daily Demand		
Winery PW + Winery Domestic	=	7,434 gpd
Annual Demand		
Winery PW + Winery Domestic	=	2,183,077 gal

Landscape Irrigation

Landscape Irrigation is provided by irrigation reservoir which is supplied by treated process wastewater, rainwater, and vineyard sub drain water, and therefore does not impact the public water system demands.

TOTAL WATER DEMAND

For the purposes of simplifying this analysis, all peak water uses are assumed to occur on the same day. This is not the case, as peak winery use only occurs during the months of harvest (Sept – Oct) and typically does not overlap with events. Given the above water demands, the peak water use for the Clos Pegase and Girard Wineries is estimated as follows:

Peak Daily Water Demand

Peak flows are estimated as follows:

Peak Daily Demand for Clos Pegase + Peak Daily Demand for Girard =

7,544 gpd	+	7,434 gpd	=	14,978 gpd

As demonstrated above, the Well No. 2 can produce 25,920 gpd alone and is more than sufficient to supply water to meet the peak onsite daily uses. The well will only have to operate for 832 minutes (13.8 hours) to provide this volume of water for the peak day. A storage tank

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of sufficient volume will be provided for the proposed Girard Winery. A booster pump system will meet the peak hourly use from this tank.

Annual Water Demand

Annual demand for the Clos Pegase and Girard Wineries is the summation of all onsite annual average use and is calculated as follows:

Winery PW + Winery Domestic +Residential	=	
1,840,000 gal + 1,263,077 gal + 325,851 gal	=	3,428,928 gal

The well only needs to operate for a period of approximately 125 days (3,020 hours) in order to supply water for the entire year.

This analysis assumes winery peak domestic uses occur 365 days a year, which will not be the case.

c. Water Quality Assessment

Previous testing indicates that the water is of good quality. Sediment filters, pH adjustment, water softening, and Ultraviolet disinfection are the only treatment components provided. The existing Wells have been sampled and only requires treatment to remove hardness. If required, a current sample will be collected and submitted for testing.

A review of all parcels within 500' of the property line has been done to identify any potential hazardous spills. A map is provided to demonstrate this. There are no spills within 500' on any adjacent parcels

d. Consolidation Feasibility

It is proposed to connect to the Clos Pegase Winery to supply Girard Winery, as described in this report.

MANAGERIAL CAPACITY

A. Ownership

The parcel and water system is owned by a Vintage Wine Estates, with Pat Roney being the corporate officer. A copy of the Deed of Trust for the parcel can be submitted to the County to document this. Vintage Wine Estates also owns and operates the existing public water system

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for Clos Pegase Winery, Cosentino Winery, Viansa Winery, and Ray's Station Winery among others.

B. Organization

The Clos Pegase and Girard Wineries Water System will be operated by Eric Pilotti, the Clos Pegase Water System Manager. Mr. Pilotti reports directly to the Clos Pegase General Manager, Samantha Rudd. Ms. Rudd reports directly to Mr. Roney. Mr. Pilotti has experience operating the water system at the Clos Pegase water system for 28 years. In the event that Mr. Pilotti is not available during a water system emergency, Glen Hugo the Girard winemaker shall be responsible for water system operation. Vintage Wine Estates will contract out for all legal, engineering, and maintenance of the water system.

C. Water Rights

The Owner's water rights to the groundwater sources have been demonstrated by a copy of the Deed of Trust for the Parcel on file at the County. The parcel is not located within a groundwater basin that has been classified as being in overdraft, or subject to groundwater adjudication procedures.

D. Emergency/Disaster Response Plan

A complete Emergency/Disaster Response Plan has been submitted to the Napa County office of Environmental Management (NCEM) for the Clos Pegase Winery Water System. An updated plan will be generated when the Girard Winery Water System is designed

FINANCIAL CAPACITY

A. Budget Projection

Vintage Wine Estates, Clos Pegase, and Girard Wineries are not currently encumbered by any judgments, liens, or other financial liability that would prevent operation of the Clos Pegase and Girard Wineries Water System. The majority of the system components are already installed with the exception of the new storage tank, booster pump, and distribution to Girard. Purchase and installation of these components for the system is projected to cost approximately $50,000. Replacement of the entire treatment system is also expected to cost approximately $15,000. Approximately $6,000 per year and $30,000 for the first five years will be required for operation of the Clos Pegase and Girard Wineries Water System. The costs of system maintenance and replacement will be covered by wholesale and retail wine sales.

We trust that this letter and attachments is sufficient to allow processing of the Girard Winery Use Permit for a new winery and tasting room. Please feel free to contact us with any additional questions, comments, or requirements.

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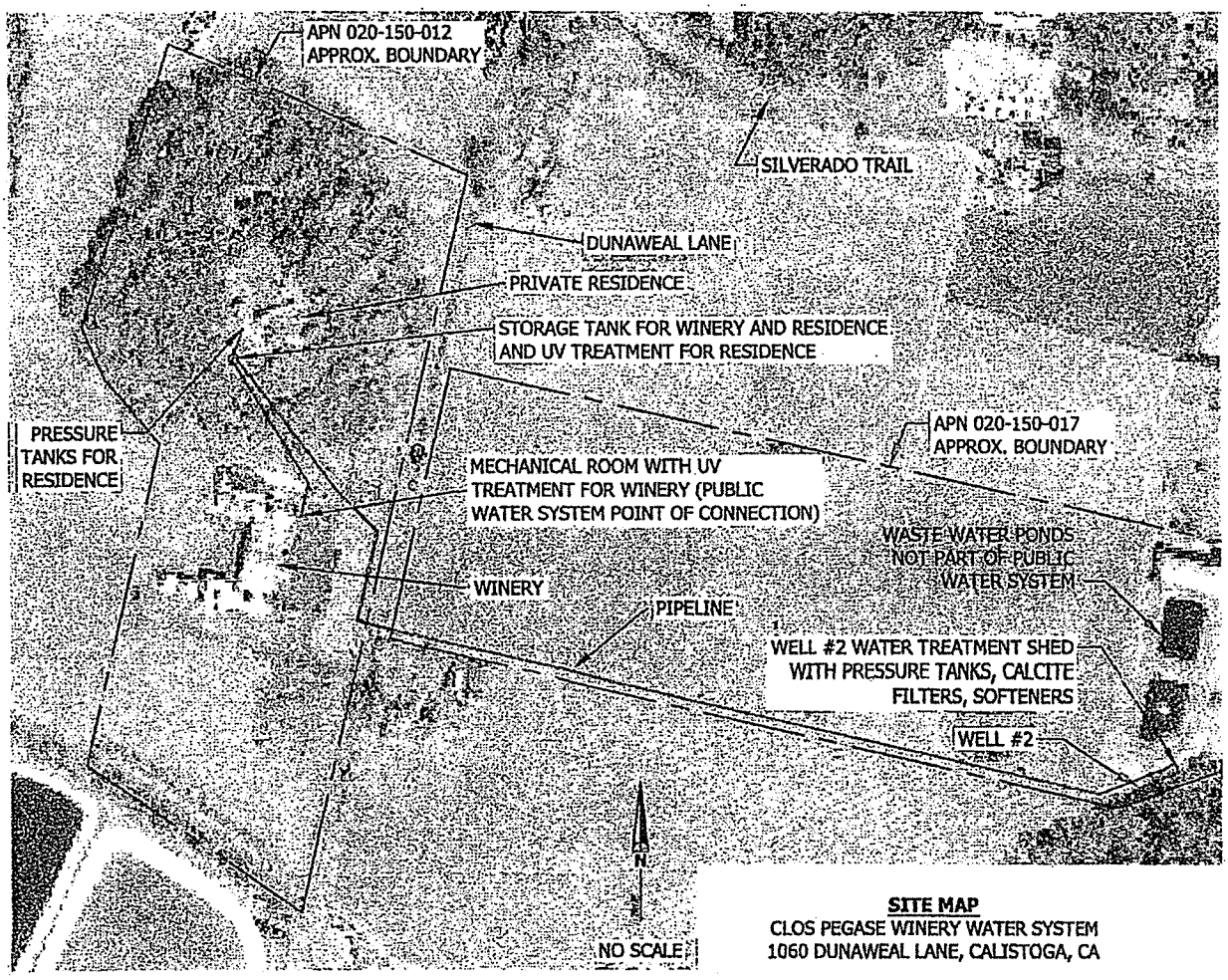
Sincerely,

Ben Monroe, P.E., QSD/QSP
ALWAYS ENGINEERING, INC.
Project Manager

Enclosures

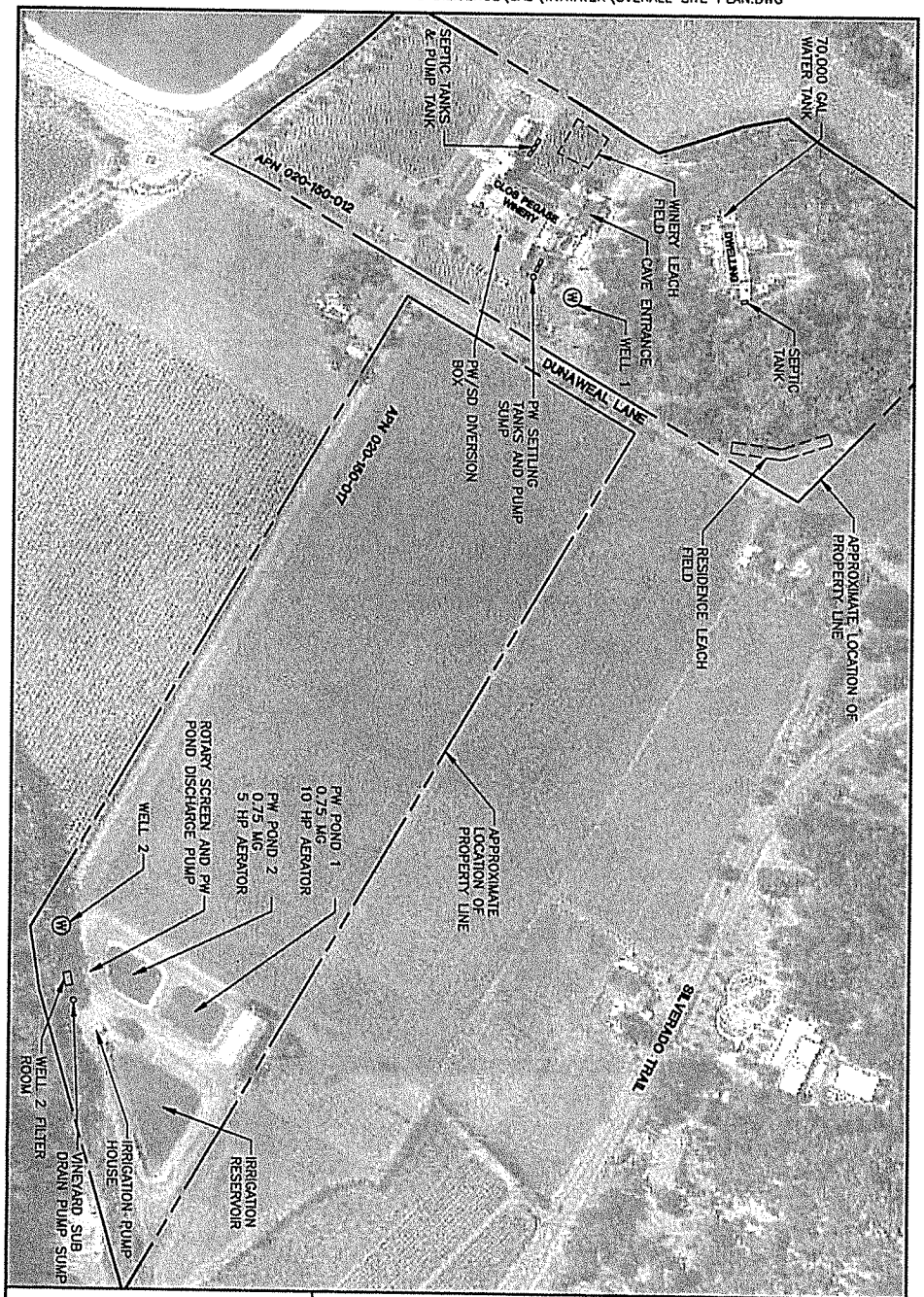
cc: Heather McCollister
Pat Roney (Vintage Wine Estates)



SITE MAP
CLOS PEGASE WINERY WATER SYSTEM
1060 DUNAWEAL LANE, CALISTOGA, CA

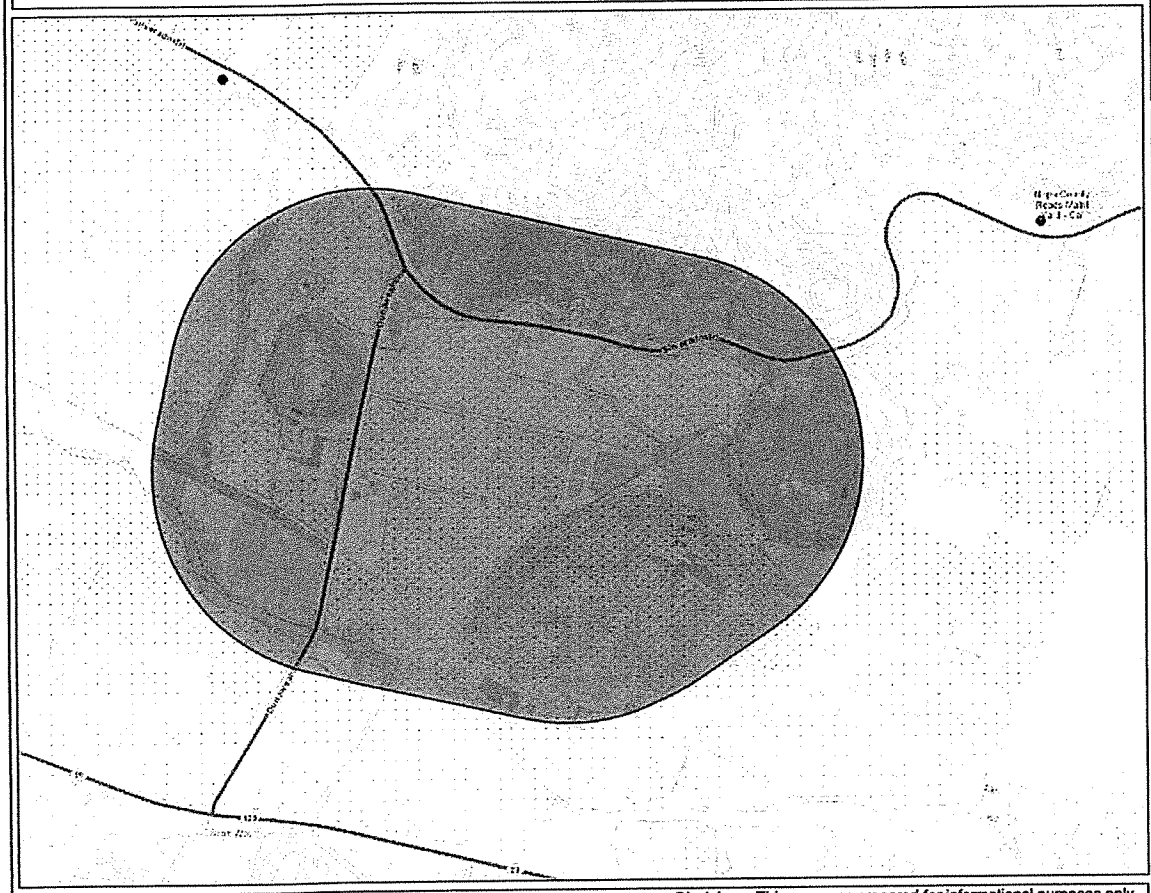
PLOTTED ON: 11///2011 2:39 PM

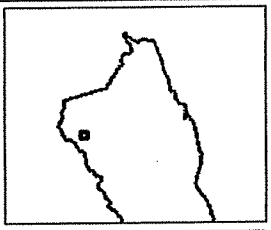
P:\PROJECT\2011\2011136 CLOS PEGASE WINERY- DUE DILIGENCE\CAD\WWWATER\OVERALL SITE PLAN.DWG



CLOS PEGASE WINERY **1060 DUNAWEAL LANE** **CALISTOGA, CA 94515** **APN: 020-150-012, 017**	**OVERALL SITE PLAN** PROJECT NO. 2011136 DATE 11-07-2011 BY KO CHK AS SHT NO 1 OF 1	SUMMIT ENGINEERING INC. 463 AVIATION BLVD. STE 200 SANTA ROSA, CA 95403 www.summit-er.com • 707.527.0775

County of Napa GIS





Legend

- HazMat Spills (LOP)
- HazMat Spills (Non-LOP)
- Corner Records
- County Boundary

2,572.3 0 1,286.15 2,572.3 Feet

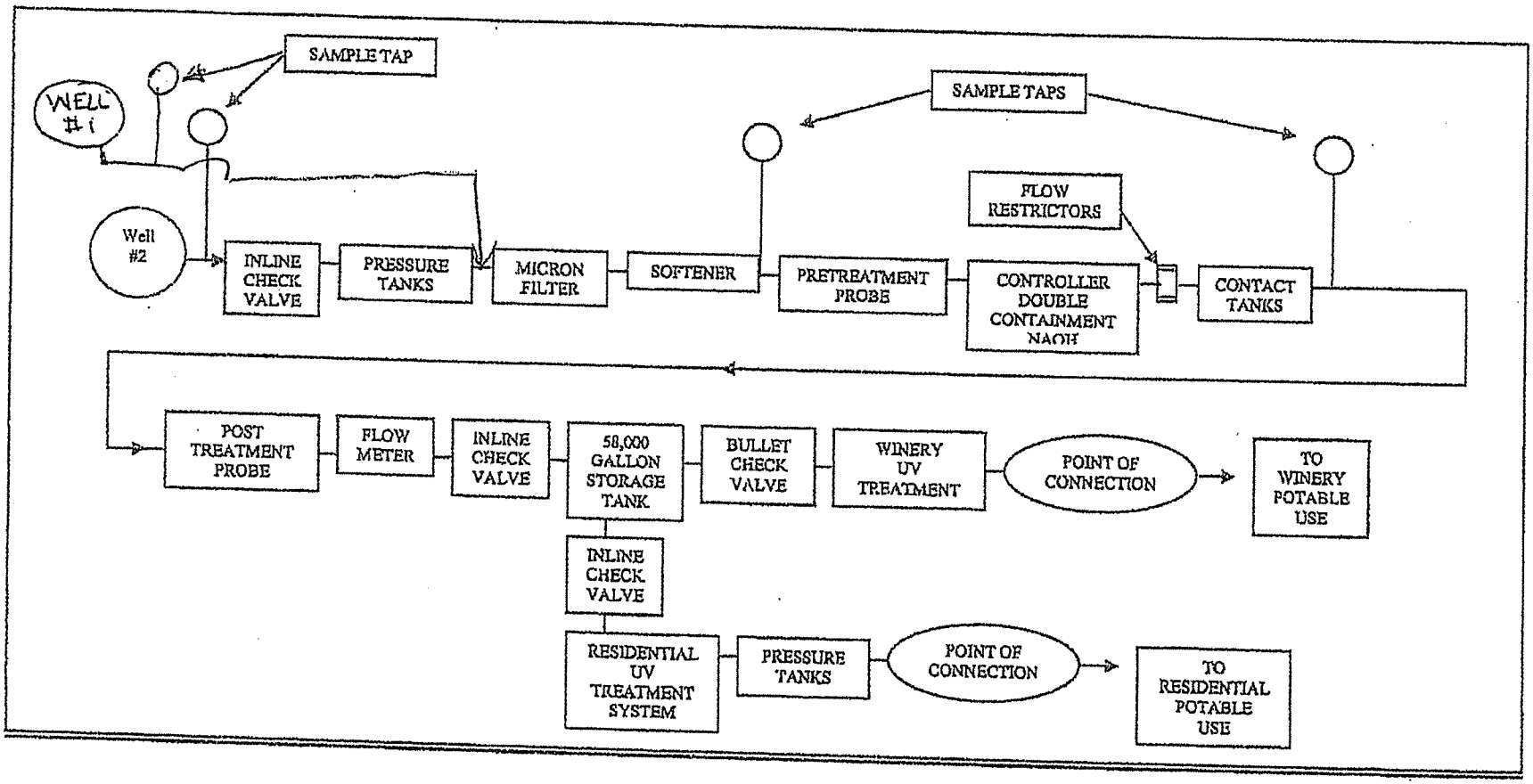
Disclaimer: This map was prepared for informational purposes only.
No liability is assumed for the accuracy of the data delineated hereon.

This map was printed on 11/6/2013

Notes

CLOS PEGASE WINERY WATER SYSTEM

SYSTEM SCHEMATIC



Planning, Building & Environmental Services

1195 Third Street, Suite 210
Napa, CA 94559
www.countyofnapa.org

Hillary Gitelman
Director

A Tradition of Stewardship
A Commitment to Service

March 22, 2013

CLOS PEGASE WINERY
JASON DUVAL
1060 DUNAWEAL LANE
CALISTOGA, CA 94515

Dear Water Purveyor,

Subject: Clos Pegase Water System Amendment (WS/484/PMT)

On March 7, 2013 an application was submitted for an amendment to the Clos Pegase Winery Water System located at 1060 Dunaweal Lane, Calistoga, CA 94515. At this time the application has been ***approved***. The permit to operate has been attached, please read the permit in its entirety and note that this permit amendment is an addendum to the previously issued permit and all conditions noted therein.

Please feel free to contact me if you have questions or comments regarding this notice at (707)251-1072.

Regards,

Jahniah McGill
Registered Environmental Health Specialist

STATE OF *CALIFORNIA*

DOMESTIC WATER SUPPLY PERMIT

Issued To

Clos Pegase Winery

28-01007

By

The Environmental Health Division of Planning, Building, and Environmental Services

PERMIT NO.: *484*

EFFECTIVE DATE: *3/21/2013*

WHEREAS:

1. ***Jason Duval*** on behalf of ***Clos Pegase Winery Water System*** submitted an application to the Division of Environmental Health on *3/7/ 2013* for an amendment to the Domestic Water Supply Permit issued to the ***Clos Pegase Winery Water System.***

2. The purpose of the amendment, as stated in the application, is to allow the ***Clos Pegase Winery Water System*** to make the following modifications to the public water system:

   *a) **Add sodium hydroxide injection for pH adjustment***
   *b) **Remove the Calcite filters***
   *c) **And a kinetic softener***

3. The ***Clos Pegase Winery Water System*** has submitted all of the supporting information required to evaluate the application.

4. The Division of Environmental Health has evaluated the application and the supporting material and has determined that the proposed modifications comply with all applicable State drinking water requirements.

THEREFORE:

1. The Napa County Department of Environmental Management hereby approves the application submitted by the ***Clos Pegase Winery Water System*** for a permit amendment. The Domestic Water Supply Permit issued to the ***Clos Pegase Winery Water System*** is hereby amended as follows:

   a) Sodium Hydroxide injection is approved for pH adjustment.

2. This permit amendment is subject to the following conditions:

   a) The only sources approved for potable water supply is as follows:

Source	PS Code	Status	Capacity	Comments
001	2801007-001	Disconnected	unknown	Well 1
003	2801007-003	Active	23 gpm	Well 2

Two-40 gallon Sanitron Ultra Violet water purifiers, both with 40 gpm flow restrictors, and an additional 40 gpm ultraviolet unit with a 20 gpm flow restrictor are approved as *precautionary* treatment for this water system. Replacement bulbs must be stored onsite at all times and an employee must be trained to replace the bulbs.

One sodium hydroxide injection unit using the filter cases for contact time to assist with pH adjustment

One Kinetico Softener is approved for the removal of iron and manganese.

A 58,000-gallon tank which is lined with a COOLPRO Polypropylene PP78 sanitary liner is approved for water storage.

b) Bacteriological and chemical tests shall be performed in compliance with the requirements of the California Drinking Water Standards, and the water system shall comply with all reporting requirements. See attached chemical testing schedules

Quarterly bacteriological reports from an approved lab must be submitted to this office no later than the 10th day following the end of the sampling period. The bacteriological samples shall be collected from the location specified on the Bacteriological Sample Siting Plan. The source chemical monitoring sampling must be completed as shown on the attached chemical testing schedule

c) The application states that the backwashing filter is plumbed to a sump which disposes to the processed wastewater ponds. This connection must be via an air gap to provide adequate backflow prevention.

d) The system is required to contact their local Pollution Prevention team and update the Hazardous Materials Business Plan (HMBP).

e) A pH sample must be submitted prior to treatment and post treatment to ensure that the pH levels are no longer corrosive in the distribution system.

f) No changes, additions, or modifications shall be made to the sources or treatment unless an amended water permit has first been obtained from the Department.

g) The **Clos Pegase Winery Water System** is operated and maintained in compliance with the California Safe Drinking Water Act.

h) This permit may be revoked or suspended for failure to comply with the California State Health and Safety Code, California Code of Regulations and Title 13 of the Napa County Code Relating to Wells and Water Supply Systems.

This permit supersedes all previous domestic water supply permits issued for this public water system and shall remain in effect unless and until it is amended, revised, reissued, or declared to be null and void by the Division of Environmental Health. This permit is non-transferable. Should the ***Clos Pegase Winery Water System*** undergo a change of ownership, the new owner must apply for and receive a new domestic water supply permit.

Any change in the source of water for the water system, any modification of the method of treatment as described in the Permit Report, or any addition of distribution system storage reservoirs shall not be made unless an application for such change is submitted to the Division of Environmental Health.

FOR THE Division of Environmental Health

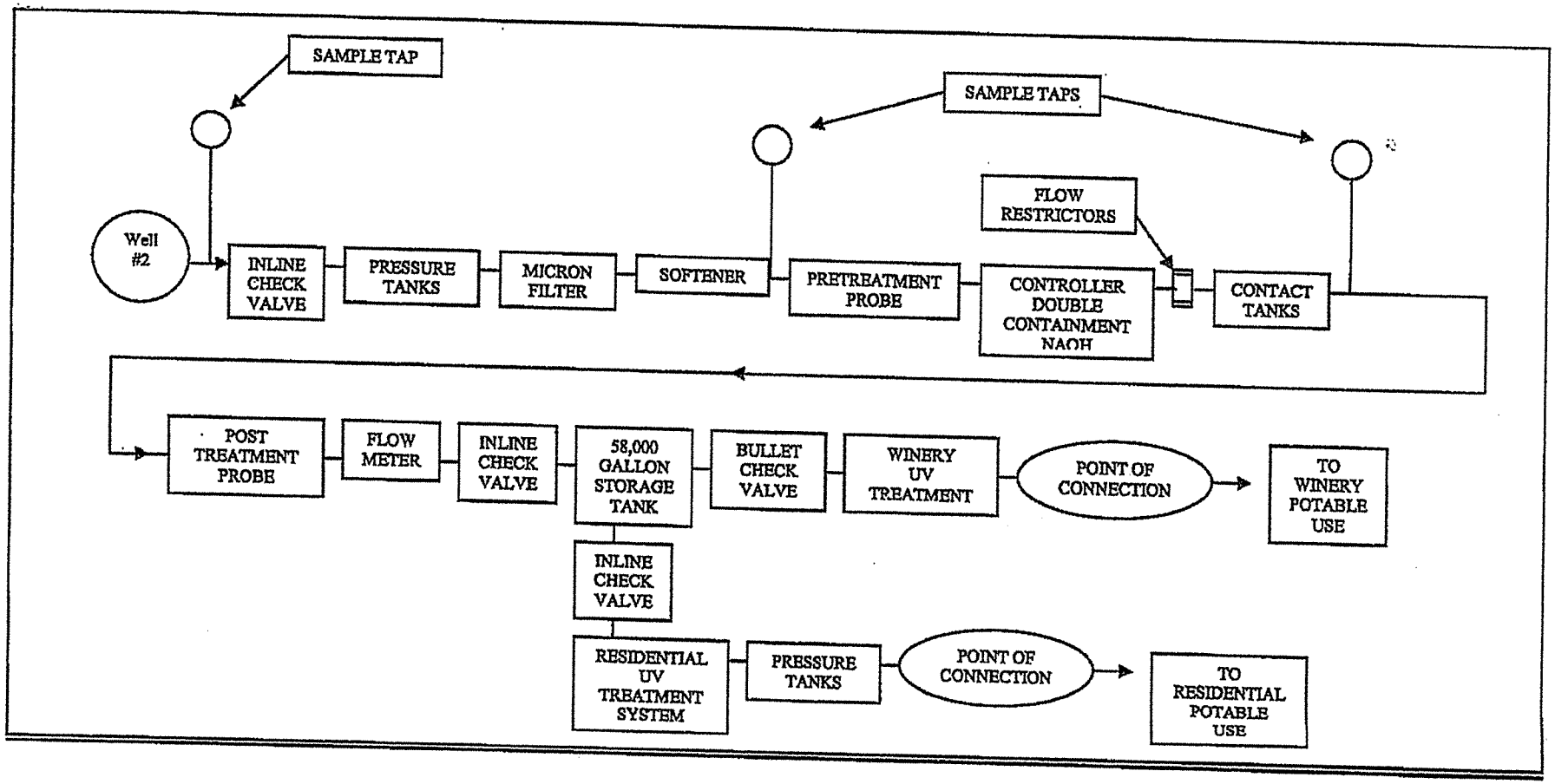
3/21/2013

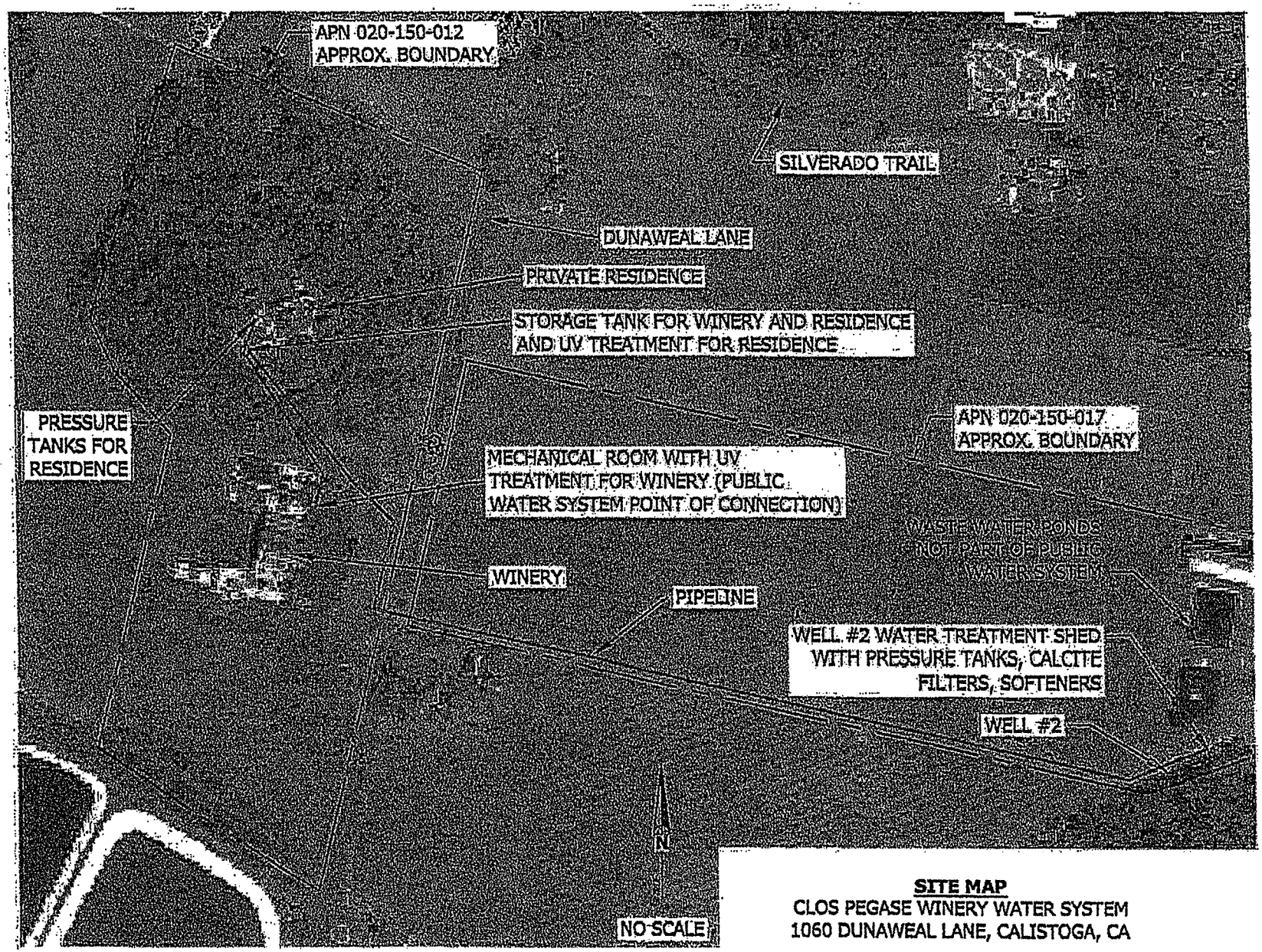
Date

Jahniah McGill, R.E.H.S.

CLOS PEGASE WINERY WATER SYSTEM

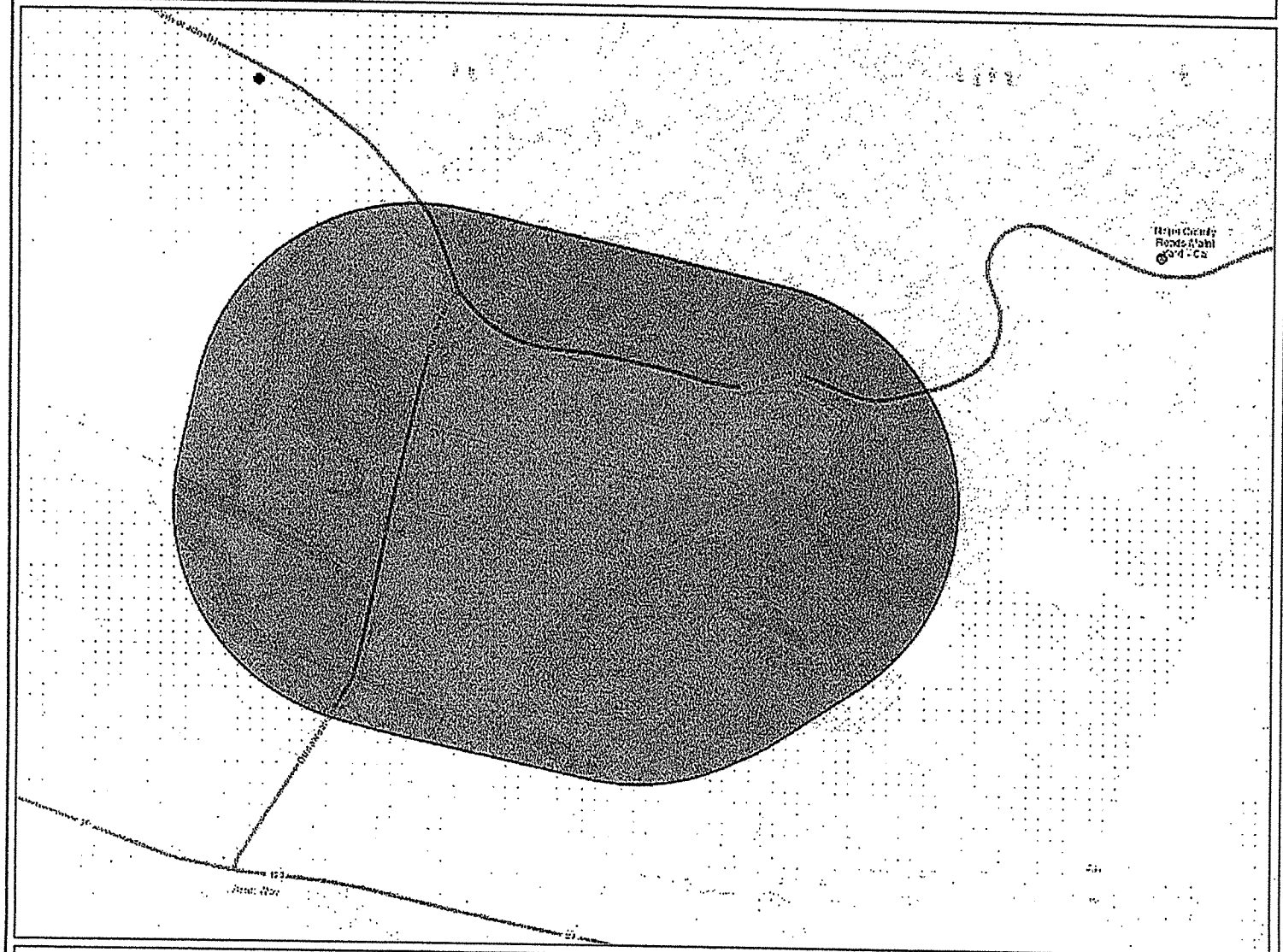
SYSTEM SCHEMATIC

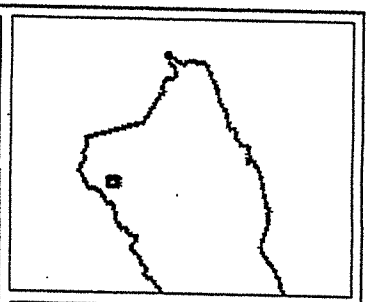




SITE MAP
CLOS PEGASE WINERY WATER SYSTEM
1060 DUNAWEAL LANE, CALISTOGA, CA

County of Napa GIS





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2,572.3 0 1,286.15 2,572.3 Feet

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This map was printed on 11/6/2013

Notes

DECLARATION

(Nontransient-Noncommunity)

I, PATRICK ROWE, declare that I understand the definition of a public
(name of owner or legally authorized representative)
water system, as defined in the California Health and Safety Code (CH&SC), Division 104, Part 12, Chapter 4 (California Safe Drinking Water Act), Article 1, Section 116275(h), to mean that a **public** water system is "a system for the provision of water for human consumption through pipes or other constructed conveyances that has 15 or more service connections or regularly serves at least 25 individuals daily at least 60 days out of the year."

Furthermore, I understand the definition of a nontransient-noncommunity water system, as defined in Section 116275(k), to mean "a public water system that is not a community water system and that regularly serves at least 25 of the same persons over 6 months per year."

Furthermore, I declare that I understand that Section 116275(e) defines human consumption as "the use of water for drinking, bathing or showering, hand washing, or oral hygiene."

Furthermore, I declare that I understand that Section 116725 of the CH&SC states that "Any person who knowingly makes any false statement or representation in any application, record, report, or other document submitted, maintained, or used for purposes or compliance with this chapter (California Safe Drinking Water Act (AB 2995)), may be liable for a civil penalty not to exceed five thousand ($5,000) for each separate violation or, for continuing violations, for each day that violation continues." In addition, Section 116730 of the CH&SC states that violators may be prosecuted in criminal court and upon conviction, be punished by a fine of not more than $25,000 for each day of violation, or by imprisonment in the county jail not to exceed one year, or by both the fine and imprisonment.

In recognition of the above, declaring that I understand the definition of a public water system and the penalty for giving false information, I declare that my facility, Clos Pegase and Girard Wineries Water System, does not meet the definition of a nontransient noncommunity water system because ***it does not serve more than 24 people more than 6 months out of the year.***

5/2/14
Date

Signature

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Girard Winery

1077 Dunaweal Ln., Calistoga, CA 94515
APN: 020-150-017

USE PERMIT
WASTEWATER FEASIBILITY STUDY

Project and Site Background

Vintage Wine Estates owns and operates the existing "Clos Pegase" Winery located at 1060 Dunaweal Ln in Calistoga, Ca (APN: 020-150-012). Vintage Wine Estates also owns the parcel across Dunaweal Ln., (1077 Dunaweal Ln., APN: 020-150-017), which has the existing process wastewater ponds and water well for Clos Pegase.

Vintage Wine Estates is proposing to construct a new winery and tasting room (the Girard Winery) on the above referenced parcel. A production capacity of 200,000 gal of wine annually is proposed for the new Girard Winery. With the Use Permit, it is proposed to also treat the process waste (PW) generated by Girard Winery using the existing Clos Pegase Pond Treatment system. A new collection system and transfer pump sump will be required for Girard Winery. A new aerator in the process waste ponds will also be required. A new sanitary sewage system on-site is proposed to accommodate the winery employees, visitors, and events.

The parcel consists of existing vineyards, water supply well and treatment, an agricultural storage building, 2 PW treatment ponds and an irrigation storage pond. The parcel is generally flat, with a small flow line along the southern property line.

A site plan is provided in Enclosure B displaying the existing site and proposed wastewater system improvements.

SANITARY SEWAGE (SS)

Existing Site Evaluation

A site evaluation was performed by Ben Monroe, P.E. of Always Engineering and Peter Ex of Napa County on November 14, 2013. A total of 16 soil profiles were evaluated and 6 were logged for use. Test pits displayed a sandy clay loam surface soil which ranged in depth from 36" to 56" in depth. Soils were underlain by a sandy loam or loamy sand for a total permeable depth ranging from 49" to 60" in depth. All soil displayed a moderate to strong sub-angular blocky structure. Faint mottling was observed to 24" deep, with increasing intensity with depth below that. Prominent mottling was observed below 48" in all test pits. Additional groundwater monitoring is required onsite to determine if the upper mottling is due to subsurface groundwater or heavy irrigation of the onsite vineyards. At the time of preparation of this study, there has not been sufficient rainfall

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to perform groundwater monitoring and therefore, it is assumed that a minimum of 24" suitable soil is available for septic system design. An interceptor drain is also proposed with this feasibility study to ensure we have the required separation to seasonal groundwater. The Napa County Site Evaluation procedures indicate a Sandy clay loam or sandy loam with moderate structure should be loading at 0.75 to 1.0 gpd using pretreated effluent.

Proposed Wastewater Flows

The proposed onsite sanitary wastewater flow rate is entirely associated with the proposed Girard Winery. The use permit is requesting a similar level of use as Clos Pegase; an average number of 10 employees (15 gpcd) along with 75 visitors (3gpcd), and a peak number of 30 employees (15 gpcd) along with 100 visitors (3 gpcd). There will be one large event per year which will have 500 attendees. Portable toilets will be used for this event. All events will have fully catered food with all preparation and cleanup occurring off site. The proposed wastewater flows are estimated as follows:

Average

Employees

8 FT employees	x	15 gpd/employee	=	120 gpd
3 PT employees	x	7.5 gpd/employee	=	22.5 gpd

Tasting Room

42 tasting visitors	x	3 gpd/visitor	=	126 gpd

Events

75 event visitors	x	5 gpd/visitor	=	375 gpd

TOTAL PROPOSED AVERAGE DESIGN FLOW	=	**643.5 GPD**

Peak

Employees

20 FT employees	x	15 gpd/employee	=	300 gpd
10 PT employees	x	7.5 gpd/employee	=	75 gpd

Tasting Room

100 tasting visitors	x	3 gpd/visitor	=	300 gpd

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Events

200 event visitors x	5 gpd/visitor	=	1,000 gpd

TOTAL PROPOSED PEAK DESIGN FLOW = **1,675 GPD**

Proposed Sanitary Sewage Loading

It is proposed to design a subsurface drip system to accommodate all sanitary sewage dispersal. Sizing as follows:

Proposed Septic System Design Flow: 1,675 gpd
Proposed Pretreated Effluent Loading Rate: 0.6 gpd/sf (Moderate -Strong Sandy Loam/Sandy Clay loam)

This loading rate is within the suitable range for pretreated effluent in the onsite soil types. Because there has not been sufficient rainfall to perform ground water monitoring

Proposed Sanitary Sewage Management System

With improvement to the site, the following tanks are proposed for the Girard Winery septic system. Because a pretreatment system is required for subsurface drip, a septic, recirculation, and sump tank are required for an AdvanTex pretreatment system. Other NSF Certified pretreatment systems may be reviewed at the time of Construction Drawings. Tank sizes are verified using the plumbing code commercial sizing formula.

V = 1,125 + 0.75 x Q
= 1,125 + 0.75 x 1,675 gpd
= 2,381.25 gallons

Septic Tank: 6,000 gallons (3.6 days retention time)
Recirculation Tank: 2,000 gallons (1.2 days retention time)
Sump/Dispersal Equalization Tank: 3,000 gallons (1.8 days retention time)

These tank volumes meet the minimum criteria for an AvanTex pretreatment system.

Leachfield Sizing

The area required for a primary sanitary sewer drip system is as follows:

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Santa Rosa, CA 95401 Fax (707) 542-8798
www.alwayseng.com JasonH@alwayseng.com

Area Required = Flow/Application Rate

= 1,675 gpd / 0.6 gpd/sf

= 2,792 sf

Reserve Area

200% reserve area, or 5,584 sf, is required for this site and is shown adjacneet to the primary septic area on the Use Permit Site Plan.

Irrigation Reuse Alternative

In the event that groundwater monitoring cannot occur prior to the application for construction permits, it is also desired to have the ability to provide a pretreatment and irrigation reuse system. The Lyve Wastewaer System has been used at Alpha Omega Winery to treat and reuse domestic wastewater for irrigation. Also, the Biomicrobics BioBarrier Membrane Bioreactor (MBR) is NSF 350 certified for reuse. A design for a BioBarrier MBR would include the following:

Septic Tank:	2,000 gallons
Processing Tank:	13,000 gallons
Treated Collection Sump:	1,500 gallons
Treated Storage Tank:	40,000 gallons

A storage tank would be provided for period in the winter when irrigation reuse cannot occur. As demonstrated in the process wastewater section of this study, more than sufficient vineyard is available onsite for irrigation dispersal of effluent. Approximately 3 acres is required for process wastewater and a total of 18 acres is available onsite.

If treatment, irrigation, and reuse is proposed for construction of this project, the project must first obtain approval from the San Francisco Bay Regional Water Quality Control Board (SFBREWQCB) for this use. Prior to issuance of building permits, the RWQCB will need to approve of the proposal, and issue Waste Discharge Requirements for the reuse of the sanitary sewage. If future groundwater monitoring cannot occur in a time schedule appropriate for building permits, or does not provide at least 24 inches of separation to groundwater, treatment, irrigation, and reuse will be required for the project. In this event, the RWQCB must also grant system approval prior to building permit issuance.

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Santa Rosa, CA 95401 Fax (707) 542-8798
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PROCESS WASTEWATER (PW)

Existing System

The existing on-site process wastewater system consists of 2 aerated facultative lagoons and an irrigation holding pond. This system is currently treating the process waste from the Clos Pegase winery located across Dunaweal Lane under the same ownership. No sanitary wastewater is discharged into the process wastewater system.

Before entering the process wastewater ponds, the entire flow of process wastewater is filtered through a rotary screen where suspended solids are collected and removed. Biological stabilization occurs in the facultative pond system. The total volume of the existing pond system is approximately 1.5 MG. There is a 10 hp aerator in Pond 1 and a 5 hp aerator in Pond 2. Clos Pegase is currently producing 200,000 gallons of wine with an average annual PW production of 920,000 gallons. This pond system is large enough to provide at least 200 days of retention time at current Clos Pegase average flow conditions. Treated PW is used for irrigation of the onsite vineyards.

Proposed System

The proposed PW system for the new Girard Winery will connect to the existing PW wastewater pond system. The new PW connection will include a pump sump and new aerators to accommodate the increase in flows.

Proposed Flow Calculations

The winery is currently proposing a production of 200,000 gallons of wine per year. Using a monthly PW distribution from multiple wineries and a PW generation rate of 4.6 gal PW per gal wine produced (from Clos Pegase data) flow rates are estimated as follows:

Winery Process Wastewater (PW)

Average Daily Flow	=	2,521 gal PW/day
Average Harvest Day	=	3,950 gal PW/day
Average Day, Peak Harvest Month	=	5,060 gal PW/day (See calculations spreadsheet)

The **design flow proposed** to the system is **10,120 gpd** (5,060 gpd from Girard and 5,060 gpd from Clos Pegase).

Aerator Sizing

The Aerators have been sized using a BOD mass loading and the Aqua-Jet Surface Mechanical Aerator brochure specifications. Calculations (attached) show that a total of 22.5 hp of aerators is required for both ponds. It is proposed to add a second 10 hp

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aerator to Pond 1 for a total of 20 hp in Pond 1. This results in a power to volume (P/V) ratio of 0.21 hp per 1000 ft3. This is sufficient for surface mixing and aeration in Pond 1. Pond 2 has an (E) 5 hp aerator. This provided a P/V ratio of 0.05 hp per 1000 ft3. This is sufficient for surface mixing and to prevent odors in Pond 2. No aeration should be required in the irrigation pond due to dilution, level of treatment exiting Pond 2, and natural aeration from algae. In addition, an Anti-Erosion Assembly is recommended for both aerators, to minimize sediment mixing during periods of low liquid levels in the ponds.

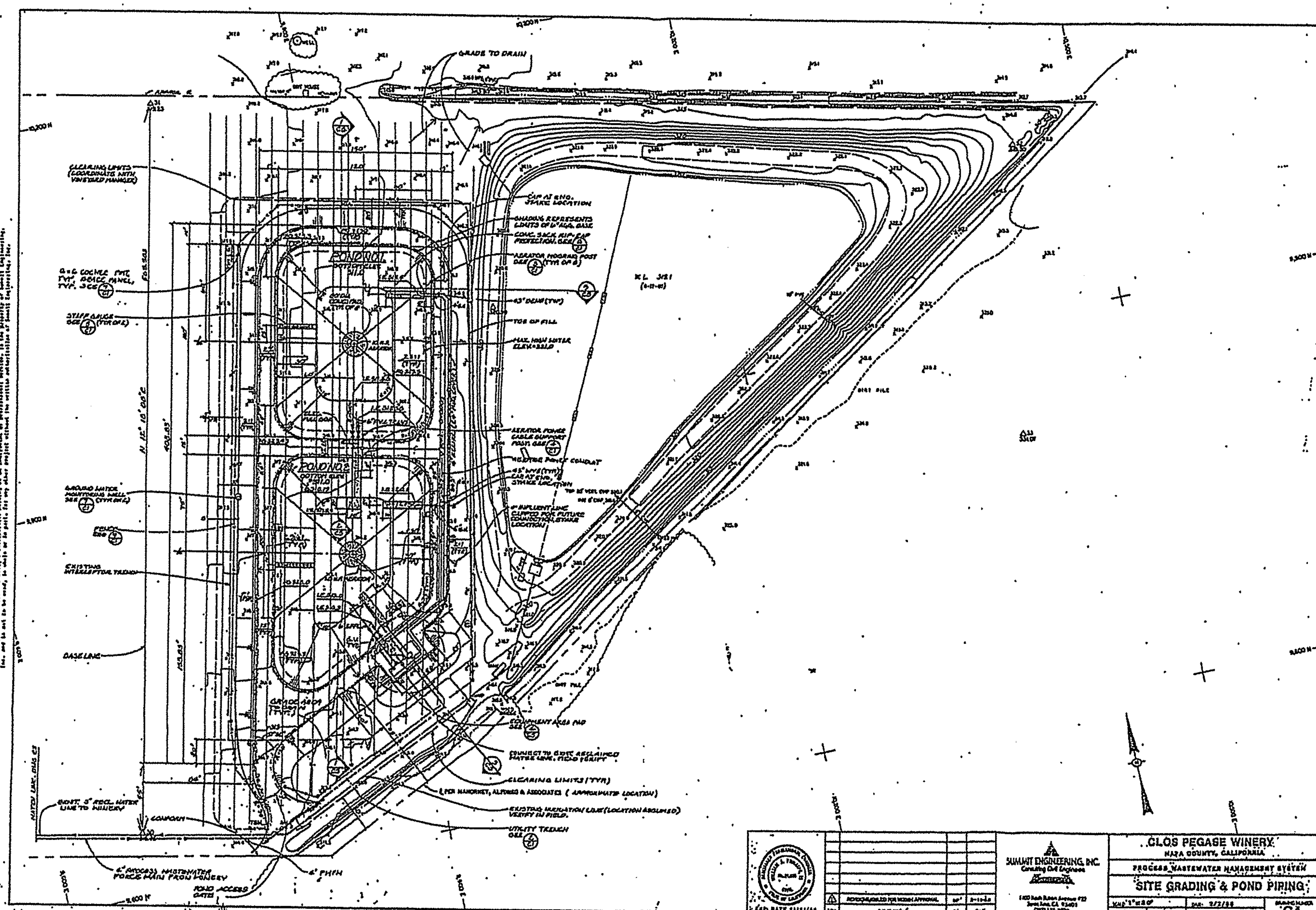
Pond Sizing
The facultative ponds combined volume is roughly 1.5 MG. This provides for a retention time of >140 days at peak month flows (see calculations spreadsheet). Facultative pond systems are sized with a minimum of 60 days in the entire system, and at least 45 days in the first pond. Therefore, this system will have sufficient contact time for treatment before discharge. During the rainy winter months when irrigation needs are low the existing irrigation pond will be used as a detention system to hold excess effluent until the spring months when increased irrigation loading is appropriate.

Irrigation Reserve/Dispersal
A total of 7.5 acres of vineyard is required for dispersal of effluent to avoid ponding and concentration.

SUMMARY AND CONCLUSIONS

Sanitary Wastewater
With the proposed installation of a new sanitary management system, as discussed in this report, the site is capable of supporting the proposed sanitary sewage loads.

Process Wastewater
With the proposed installation of additional aerators and a collection system and pump station, the existing aerated facultative pond system is sufficient for the proposed Girard Winery PW flows in addition to the existing Clos Pegase Winery PW flows.


GRADE TO DRAIN
CLEARING LIMITS (COORDINATE WITH VINEYARD MANAGER)
CAP AT END, STAKE LOCATION
SHADING REPRESENTS LIMITS OF 6" AGG. BASE
CONC. SACK RIP-RAP PROTECTION
AERATOR MOORING POST
POND NO. 1
POND NO. 2
STAFF GAUGE
45° ELBOW (TYP)
TOP OF FILL
MAX. HIGH WATER ELEV.
AERATOR POWER CABLE SUPPORT POST
4" INFLUENT LINE CAPPED FOR FUTURE CONNECTION, STAKE LOCATION
GROUND WATER MONITORING WELL
EXISTING INTERCEPTOR TRENCH
BASE LINE
N 12° 10' 00" E
408.83'
153.83'
EQUIPMENT AREA PAD
CONNECT TO EXIST. RECLAIMED WATER LINE, FIELD VERIFY
CLEARING LIMITS (TYP)
EXISTING IRRIGATION LINE (LOCATION ASSUMED) VERIFY IN FIELD.
UTILITY TRENCH
EXIST. 3" RECL. WATER LINE TO WINERY
CONFORM
4" PROCESS WASTEWATER FORCE MAIN FROM WINERY
POND ACCESS GATES
MATCH LINE, DWG C3
CLOS PEGASE WINERY
NAPA COUNTY, CALIFORNIA
PROCESS WASTEWATER MANAGEMENT SYSTEM
SITE GRADING & POND PIPING
SUMMIT ENGINEERING, INC.
Consulting Civil Engineers
C4

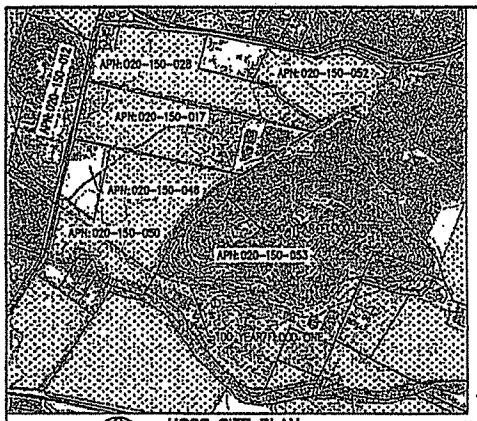
GIRARD WINERY

1077 Dunaweal Ln.

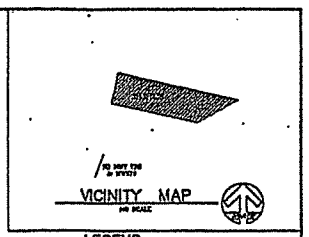
Calistoga, California 94515

APN 022-150-017

USE PERMIT APPLICATION

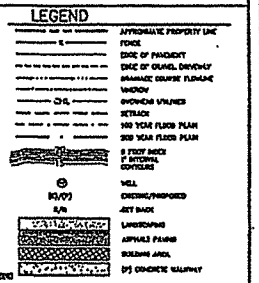


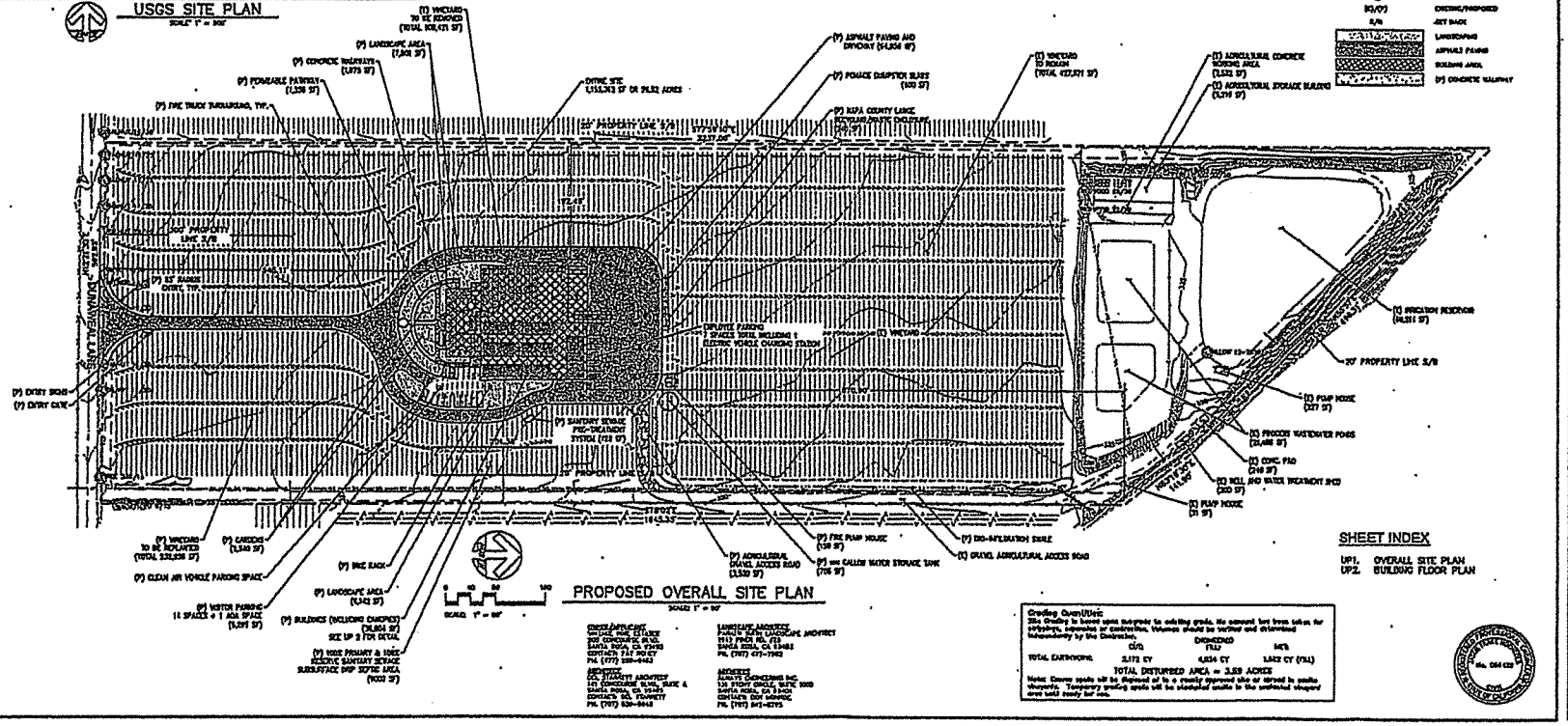
USGS SITE PLAN



VICINITY MAP

LEGEND





PROPOSED OVERALL SITE PLAN

SHEET INDEX

Grading Quantities

	CUT	DISPOSED FILL	IMPORT
TOTAL EARTHWORK	2,172 CY	4,834 CY	1,662 CY (FILL)

TOTAL DISTURBED AREA = 3.69 ACRES

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Santa Rosa, California 95403
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www.AlwaysEng.com

GIRARD WINERY
1077 DUNAWEAL LN, CALISTOGA, CA

February 4, 2014

USE PERMIT
OVERALL SITE PLAN
1077 DUNAWEAL LN., CALISTOGA, CA
APN:020-150-017

Job # 13530
SHEET
UP1 OF UP2

Date: 02/20/2014 Designed By: BM/RO - Always Engineering, Inc.
Project: Girard Winery Use Permit

Girard Winery

Annual Process Wastewater Flow = 920,000 gallons PW/year
*Refer to the design calculations report for additional flow estimates.

Month	Percentage of Annual Flow (%)	Monthly Flow (MGal)	Days
January	6.50%	0.060	31
February	7.00%	0.064	28
March	8.00%	0.074	31
April	7.00%	0.064	30
May	6.50%	0.060	31
June	5.50%	0.051	30
July	6.00%	0.055	31
August	10.50%	0.097	31
September	16.50%	0.152	30
October	12.50%	0.115	31
November	7.50%	0.069	30
December	6.50%	0.060	31
Total	100.00%	0.920	365

Date: 02/20/2014
Project: Girard Winery Use Permit

Designed By: BM/RO - Always Engineering, Inc.

Girard Winery
PROCESS WASTEWATER

Annual Volume

Annual Production (projected)				=	1,212 ton/year
Wine Generation Rate (assumed)[a]				=	165 gal wine/ton
Wine Produced	1,212 ton/year	x	165 gal wine/ton	=	200,013 gal wine/year
Process Wastewater (PW) Generation Rate[b]	(assumed)			=	4.60 gal PW/gal wine
Annual PW Flow	200,013 gal wine/year	x	4.60 gal PW/gal wine	=	***920,060 gal PW/year***

Average Day Flow

	920,060 gal PW/year	÷	365 days	=	***2,521 gal PW/day***

Average Harvest Day

Total Harvest Flow[c]	920,060 gal PW/year	x	39.5%	=	363,424 gal PW/harvest
Average Harvest Flow (3 month harvest)	363,424 gal PW/harvest	÷	92 days	=	***3,950 gal PW/day***

Average Day, Peak harvest Month - Pond Design

Total Peak Month Flow[c]	920,060 gal PW/year	x	16.5%	=	151,810 gal PW/month
Average Day, Peak Month Flow	151,810 gal PW/month	÷	30 days	=	***5,060 gal PW/day***

a. 165 Gal wine per ton of grapes is used as a wine industr standard
b. 4.6 gal of PW per gallon wine prodcued over the course of 1 year is based on hisotrical data from Clos Pegase and existing Griard operations.
c. Percentage of PW prodcued during each month is based on the average flow distirubtion from 16 wineries

Date: 02/20/2014
Project: Girard Winery Use Permit

Designed By: BM/RO - Always Engineering, Inc.

Clos Pegase Winery

Annual Process Wastewater Flow = 920,000 gallons PW/year

*Refer to the design calculations report for additional flow estimates.

Month	Percentage of Annual Flow (%)	Monthly Flow (MGal)	Days
January	6.50%	0.060	31
February	7.00%	0.064	28
March	8.00%	0.074	31
April	7.00%	0.064	30
May	6.50%	0.060	31
June	5.50%	0.051	30
July	6.00%	0.055	31
August	10.50%	0.097	31
September	16.50%	0.152	30
October	12.50%	0.115	31
November	7.50%	0.069	30
December	6.50%	0.060	31
Total	100.00%	0.920	365

Date: 02/20/2014 Designed By: BM/RO - Always Engineering, Inc.
Project: Girard Winery Use Permit

Clos Pegase Winery
PROCESS WASTEWATER

Annual Volume

Annual Production (projected)				=	1,212 ton/year
Wine Generation Rate (assumed)[a]				=	165 gal wine/ton
Wine Produced	1,212 ton/year	x	165 gal wine/ton	=	200,013 gal wine/year
Process Wastewater (PW) Generation Rate[b]	(assumed)			=	4.60 gal PW/gal wine
Annual PW Flow	200,013 gal wine/year	x	4.60 gal PW/gal wine	=	***920,060 gal PW/year***

Average Day Flow

	920,060 gal PW/year	÷	365 days	=	***2,521 gal PW/day***

Average Harvest Day

Total Harvest Flow[c]	920,060 gal PW/year	x	39.5%	=	363,424 gal PW/harvest
Average Harvest Flow (3 month harvest)	363,424 gal PW/harvest	÷	92 days	=	***3,950 gal PW/day***

Average Day, Peak harvest Month - Pond Design

Total Peak Month Flow[c]	920,060 gal PW/year	x	16.5%	=	151,810 gal PW/month
Average Day, Peak Month Flow	151,810 gal PW/month	÷	30 days	=	***5,060 gal PW/day***

a. 165 Gal wine per ton of grapes is used as a wine industr standard
b. 4.6 gal of PW per gallon wine prodcued over the course of 1 year is based on hisotrical data from Clos Pegase and existing Grlard operations.
c. Percentage of PW prodcued during each month is based on the average flow distirubtion from 16 wineries

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Date: 02/20/2014
Project: Girard Winery Use Permit

Designed By: BM/RO - Always Engineering, Inc.

Climate Data

Month	Days	Reference Evapotranspiration[1] (inches)	Pan Evaoporation (inches)	Lake Evaporation (inches)	Average Precipitation (inches)	10-Year Precipitation (inches)	100-Year Precipitation (inches)
January	31	1.0	1.5	1.2	9.0	12.9	17.6
February	28	1.5	2.2	1.7	5.6	8.0	11.0
March	31	2.9	3.8	2.9	5.7	8.1	11.2
April	30	4.7	5.8	4.5	2.6	3.7	5.1
May	31	5.8	8.9	6.9	0.6	0.9	1.2
June	30	6.9	11.0	8.5	0.2	0.3	0.4
July	31	7.2	13.2	10.2	0.1	0.1	0.2
August	31	6.4	12.1	9.3	0.2	0.3	0.4
September	30	4.9	8.7	6.7	0.3	0.4	0.6
October	31	3.5	5.7	4.4	2.4	3.4	4.7
November	30	1.6	2.5	1.9	6.8	9.7	13.3
December	31	1.2	1.7	1.3	8.2	11.7	16.1
TOTAL	365.0	47.7	77.0	59.3	41.7	59.6	81.8

1 Reference Evapotranspiration data is for the Angwin FS obtained from the California Irrigation Management Information System
See http://wwwcimis.water.ca.gov/cimis/monthlyEToReport.do
2 Average Monthly Pan Evaopration Rates observed at Berryessa Lake, Ca between 1957 and 1970.
3 Lake evaopration is pan evaporation multiplied by a 0.77 factor.
4 Average precipitation data is from TheWeatherChannel.com for Calistoga, CA
See http://www.weather.com/weather/wxclimatology/monthly/94515

Date: 02/20/2014
Project: Girard Winery Use Permit
Pond 1 Balance

Designed By: BM/RO - Always Engineering, Inc.

Month	Start Volume (Mgal)	Input: Process Wastewater In (Mgal)	Input: 10 Year Precipitation (Mgal)	Output: Pond Evaporation* (Mgal)	Output: Discharge to Pond 2 (Mgal)	Volume at end of Month (Mgal)	Water Depth at end of month (feet)	Volume Change (Mgal)
January	0.300	0.120	0.173	0.009	0.000	0.593	8.7	0.293
February	0.593	0.129	0.108	0.015	0.100	0.730	10.0	0.137
March	0.730	0.147	0.110	0.027	0.257	0.730	10.0	0.000
April	0.730	0.129	0.050	0.042	0.179	0.730	10.0	0.000
May	0.730	0.120	0.012	0.061	0.231	0.630	9.1	-0.100
June	0.630	0.101	0.004	0.070	0.261	0.524	8.0	-0.106
July	0.524	0.110	0.002	0.072	0.312	0.324	5.7	-0.200
August	0.324	0.193	0.004	0.059	0.197	0.324	5.7	0.000
September	0.324	0.304	0.006	0.042	0.309	0.324	5.7	0.000
October	0.324	0.230	0.046	0.027	0.300	0.300	5.4	-0.024
November	0.300	0.138	0.131	0.012	0.269	0.300	5.4	0.000
December	0.300	0.120	0.158	0.008	0.278	0.300	5.4	0.000
Total		1.840	0.803	0.444	2.643			0.000

Date: 02/20/2014
Project: Girard Winery Use Permit
Pond 2 Balance

Designed By: BM/RO - Always Engineering, Inc.

Month	Start Volume (Mgal)	Input: Process Wastewater In From Pond 1 (Mgal)	Input: 10 Year Precipitation (Mgal)	Output: Pond Evaporation* (Mgal)	Output: Discharge to Irrigation Pond (Mgal)	Volume at end of Month (Mgal)	Water Depth (feet)	Volume Change (Mgal)
January	0.530	0.000	0.175	0.011	0.000	0.705	9.1	0.175
February	0.705	0.100	0.109	0.017	0.000	0.915	10.8	0.209
March	0.915	0.257	0.111	0.031	0.450	0.833	10.2	-0.082
April	0.833	0.179	0.051	0.044	0.400	0.662	8.7	-0.170
May	0.662	0.231	0.012	0.062	0.300	0.605	8.2	-0.057
June	0.605	0.211	0.004	0.073	0.300	0.520	7.4	-0.085
July	0.520	0.312	0.002	0.082	0.400	0.434	6.5	-0.086
August	0.434	0.197	0.004	0.068	0.300	0.335	5.4	-0.099
September	0.335	0.309	0.006	0.047	0.300	0.350	5.6	0.015
October	0.350	0.300	0.047	0.031	0.350	0.347	5.5	-0.003
November	0.347	0.269	0.133	0.013	0.450	0.299	5.0	-0.049
December	0.299	0.278	0.160	0.010	0.206	0.530	7.5	0.231
Total		2.643	0.813	0.489	3.456			0.000

Date: 02/20/2014
Project: Girard Winery Use Permit

Landscape	0.5 a
Vineyard =	2.5 a
Pasture =	0 a
Soil perc rate =	1 I

Month	Days	Reference Evapotranspiration[1] (inches)	ersal Capacity		Treated Effluent to Irrigation Pond		Residual Capacity[7] (Mgal)
			i)	(Mgal)	(in)	(Mgal)	
January	31	1.0	)	0.000	0.000	0.000	0.000
February	28	1.6	)	0.000	0.000	0.000	0.000
March	31	3.0	3	0.474	0.460	0.450	0.024
April	30	4.6	0	0.848	0.409	0.400	0.448
May	31	6.0	3	1.373	0.307	0.300	1.073
June	30	7.0	0	1.543	0.307	0.300	1.243
July	31	8.0	6	2.594	0.409	0.400	2.194
August	31	7.0	1	2.619	0.307	0.300	2.319
September	30	5.2	5	2.457	0.307	0.300	2.157
October	31	3.4	2	1.073	0.358	0.350	0.723
November	30	1.4	)	0.541	0.460	0.450	0.091
December	31	0.9	)	0.000	0.211	0.206	-0.206
TOTAL	365.0	49.1	:2	13.520	3.536	3.456	10.064

1 Average monthly reference evapotranspra
2 Pasture coefficient from Table 5-1, "Irrigat
3 Vineayrd coefficient from Table 5-12, "Irrig
4 Crop coefficient times the reference evapo
5 Precipitation for a 10-yr event, refer to the
6 Irrigation demand is the evapotrasnpiratio
7 Residual capacity estimates irrigation/perc

Date: 02/20/2014
Project: Girard Winery Use Permit

Designed By: BM/RO - Always Engineering, Inc.
Aeration Calculations

Design Flow	= Estimated Average Daily Flow							
	= [redacted] gal/day							
	= 0.010 Mgal/day							
	= 38 m^3/day							
	= 38,294 liters/day							

BOD MASS LOADING - Amount of Biochemical Oxygen Demand (BOD) Based on Amount of Organics in Wastewater

BOD into Pond	= [redacted] mg/L	(Table 4-12 & 4-14 of *Small and Decentralized Wastewater Management Systems)*						
BOD Mass Load	= 38 m^3/day	x	7700 mg BOD/L	x	1000 ml/m^3	x	0.000001 kg/mg	
	= 294.9 kg BOD/day							
	= 648.7 lb BOD/day							

OXYGEN REQUIREMENTS - The amount of oxygen requiremed to breakdown the waste in the water

O2 Requirement	= 648.7 lb BOD/day	x	1.5 lbs O2/lb BOD					
	= 973.1 lbs O2/day							

HORSEPOWER REQUIREMENTS - The horsepower of aeration required to provide the necessary amount of oxygen

Oxygen Transfer Efficiency	= [redacted] lbs O2/Hp*hr (3.4 assumes a VBT aerator , model 100)							
Horsepower Requirement	= 973.1 lbs O2/day	÷	1.8 lbs O2/Hp*hr	÷	24 hr/day			
	= 22.5 Hp required							

POWER TO VOLUME RATIO (Hp/10^3 ft^3) - This is used to estimate the amount of mixing which will occur in a pond due to aeration

Pond Volume	= 0.723 Mgal							
	= 722,797 gallons							
	= 96,631 ft^3							
Number if cells	= 2							
Ratio of first to second cell	= 2							
Volume in Pond 1	= 722,797 gallons							
	= 96,631 ft^3							
Volume in Pond 2	= 803,995 gallons							
	= 107,486 ft^3							
Horsepower in Pond 1; cell 1	= [redacted] Hp							
Pond 1 Power to Volume Ratio	= 20 Hp	x	1000 ft^3	÷	96,631 ft^3	÷	1000 ft^3	
	= 0.21 Hp/1000 ft^3							
Horsepower in Pond 1, cell 2	= [redacted] Hp							
Pond 2 Power to Volume Ratio	= 5 Hp	x	1000 ft^3	÷	107,486 ft^3	÷	1000 ft^3	
	= 0.05 Hp/1000 ft^3							
Complete Mix	= 0.75 - 1.5 Hp/1000 ft^3	(Page 463 of *Small and Decentralized Wastewater Management)*						
Partial Mix	= 0.4 - 0.75 Hp/1000 ft^3							
Facultative	= 0.1 - 0.4 Hp/1000 ft^3							

Pond 1
Retention Time (t)/ Estimated Effluent

Cn	= Effluent BOD	
Co	= 7700 mg/L	
n	= 1	for single cell pond
k	= 0.276 d^(-1)	
t	= 71.4 days	
Cn	= 372 mg/L	
Effluent BOD	= 372 mg/L	

Pond 2
Pond 1
Retention Time (t)/ Estimated Effluent

Cn	= Effluent BOD	
Co	= 372 mg/L	
n	= 1	for baffled pond
k	= 0.276 d^(-1)	
t	= 71.4 days	
Cn	= 18 mg/L	
Effluent BOD	= 18 mg/L	

Napa County Department of
Environmental Management

SITE EVALUATION REPORT

Please attach an 8.5" x 11" plot map showing the locations of all test pits triangulated from permanent landmarks or known property corners. The map must be drawn to scale and include a North arrow, surrounding geographic and topographic features, direction and % slope, distance to drainages, water bodies, potential areas for flooding, unstable landforms, existing or proposed roads, structures, utilities, domestic water supplies, wells, ponds, existing wastewater treatment systems and facilities.

Permit #: E13-00744
APN: 020-150-017
(County Use Only) Reviewed by: Date:

PLEASE PRINT OR TYPE ALL INFORMATION

Property Owner Vintage Wine Estates dba Girard Winery	x New Construction ☐ Addition ☐ Remodel ☐ Relocation ☐ Other:
Property Owner Mailing Address 205 Concourse Blvd	☐ Residential - # of Bedrooms: Design Flow : gpd
City State Zip Santa Rosa CA 95403	x Commercial – Type: Winery domestic Sanitary Waste: 500-1675 gpd Process Waste: 0 gpd
Site Address/Location 1077 Dunaweal Lane Calistoga, CA 94515	☐ Other: Sanitary Waste: gpd Process Waste: gpd

Evaluation Conducted By:

Company Name Always Engineering, Inc.	Evaluator's Name Ben Monroe, P.E. RCE 70012	Signature (Civil Engineer, R.E.H.S., Geologist, Soil Scientist)
Mailing Address: 131B Stony Circle, Sutie 1000		Telephone Number (707) 542-8795 x 17
City State Zip Santa Rosa, Ca 95401		Date Evaluation Conducted 11/14/2013

Primary Area	Expansion Area
Acceptable Soil Depth: 24-48 in. Test pit #'s: TP1-TP6	Acceptable Soil Depth: 24-48 in. Test pit #'s: TP1-TP6
Soil Application Rate (gal. /sq. ft. /day): 0.75 to 1.0 gpd/sf	Soil Application Rate (gal. /sq. ft. /day):0.75 to 1.0 gpd/sf
System Type(s) Recommended: PD, drip – pending gw	System Type(s) Recommended: PD, drip – pending gw
Slope: 3-5 %. Distance to nearest water source: 1000 ft.	Slope: 3-5 %. Distance to nearest water source: 1000 ft.
Hydrometer test performed? No	Hydrometer test performed? No
Bulk Density test performed? No	Bulk Density test performed? No
Percolation test performed? No	Percolation test performed? No
Groundwater Monitoring Performed? Pending Rain	Groundwater Monitoring Performed? Pending Rain

Site constraints/Recommendations:

- Existing well
- Groundwater monitoring to be performed to identify perched groundwater level due to presence of mottling at less than 24 inches deep.
- Interceptor drain and surface drainage to divert away from septic area recommended.
- Proposed drainage features and grading will need to avoid.
- Additional test pits near wastewater ponds showed signs of significant seasonal saturation and lesser depths of permeable soils. Pits on map but not logged due to time onsite.

Test Pit # 1

PLEASE PRINT OR TYPE ALL INFORMATION

Horizon Depth (Inches)	Boundary	%Rock	Texture	Structure	Consistence			Pores	Roots	Mottling
					Side Wall	Ped	Wet			
34	D/G	15-20	SCL	SAB,3	FR	S	S	3,C	1,M	1,VF
48	D/G	35	SCL	SAB,3	VF	S	SS	3,M	1,M	1,F
60+	----------	<10	SCL	SAB,2	D/L	M	M	1,VF	1,M	2,P

Test Pit #2

Horizon Depth (Inches)	Boundary	%Rock	Texture	Structure	Consistence			Pores	Roots	Mottling
					Side Wall	Ped	Wet			
24	D/G	15-20	SCL	SAB,3	FR	S	S	3,C	1,M	1,VF
56	D/G	35	SCL	SAB,3	VF	S	SS	3,M	1,M	1,F
65+	----------	<10	SCL	SAB,2	D/L	M	M	1,VF	1,M	2,P

Test Pit # 3

Horizon Depth (Inches)	Boundary	%Rock	Texture	Structure	Consistence			Pores	Roots	Mottling
					Side Wall	Ped	Wet			
28	D/G	15-20	SCL	SAB,3	FR	S	S	3,C	1,M	1,VF
60	D/G	15-20	SL/LS	SAB,3	F	M	SS	3,M/F	1,M	1,F
70+	----------	<10	SCL	SAB,2	D/L	M	M	1,VF	1,M	2,P

Test Pit # 4

PLEASE PRINT OR TYPE ALL INFORMATION

Horizon Depth (Inches)	Boundary	%Rock	Texture	Structure	Consistence			Pores	Roots	Mottling
					Side Wall	Ped	Wet			
24	D/G	15-20	SCL	SAB,3	FR	S	S	3,C	1,M	1,VF
49	D/G	25	SCL	SAB,3	FR	F	S	2,M	1,M	2,F
60+	----------	<10	SCL	SAB,2	D/L	L	M	1,VF	1,M	2,P

Test Pit #5

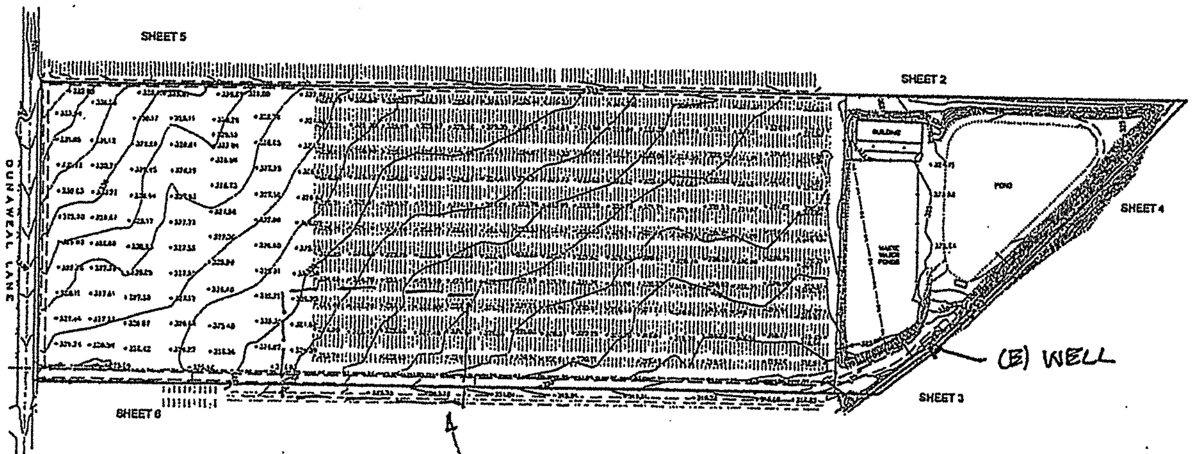
Horizon Depth (Inches)	Boundary	%Rock	Texture	Structure	Consistence			Pores	Roots	Mottling
					Side Wall	Ped	Wet			
24	D/G	15-20	SCL	SAB,3	FR	S	S	3,C	1,M	1,VF
49	D/G	25	SCL	SAB,3	F	M/FR	SS	2,F	1,F	1,F
54+		>50%								

Test Pit # 6

Horizon Depth (Inches)	Boundary	%Rock	Texture	Structure	Consistence			Pores	Roots	Mottling
					Side Wall	Ped	Wet			
36	D/G	15-20	SCL	SAB,3	FR	S	S	3,C	1,M	1,VF
55	D/G	25	SL	G/B,2	L	L	SS	2,C	1,M	1,D
70+		>50%								

SHEET 1 OF 2

"SITE EVALUATION
11/14/13
E13-00744



LEGEND:

ALBION SURVEYS, INC.

DRAWING NOTES

SITE INFORMATION

MAP OF TOPOGRAPHY

OF A PORTION OF THE LANDS OF

CLOS PEGASE

COUNTY OF NAPA STATE OF CALIFORNIA

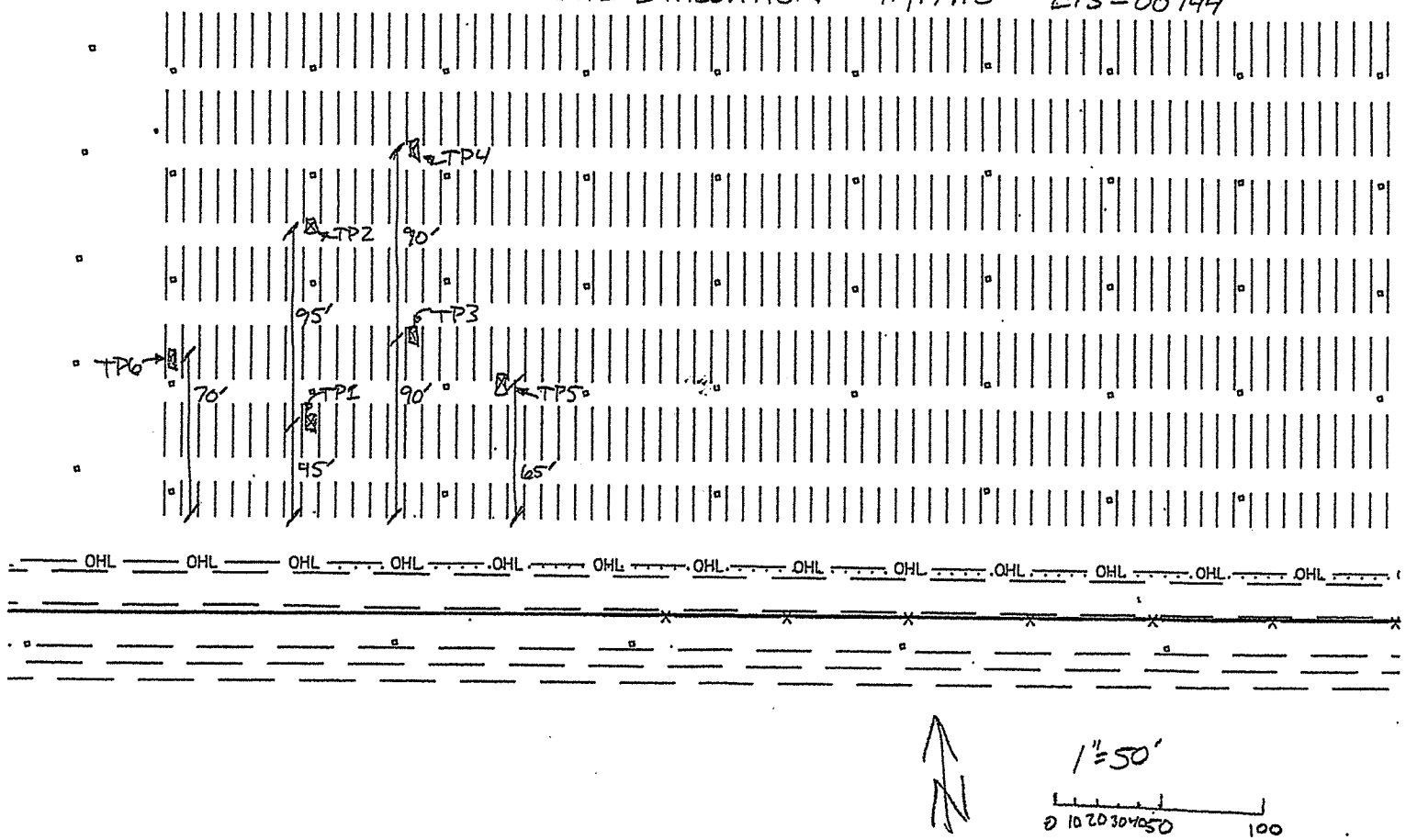
REVISIONS & ADDITIONS

ALBION REFERENCES

1077 DUNAWEAL LN
CALISTOGA, CA
APN: 020-150-017

SHEET 2 OF 2

SITE EVALUATION 11/14/13 E13-00744



13530.0 Vintage Wine Estates_Girard Winery
Wastewater Feasibility Study
February 20, 2014
Revised: May 5, 2014

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Girard Winery

1077 Dunaweal Ln., Calistoga, CA 94515
APN: 020-150-017

USE PERMIT
WASTEWATER FEASIBILITY STUDY

Project and Site Background

Vintage Wine Estates owns and operates the existing "Clos Pegase" Winery located at 1060 Dunaweal Ln in Calistoga, Ca (APN: 020-150-012). Vintage Wine Estates also owns the parcel across Dunaweal Ln., (1077 Dunaweal Ln., APN: 020-150-017), which has the existing process wastewater ponds and water well for Clos Pegase.

Vintage Wine Estates is proposing to construct a new winery and tasting room (the Girard Winery) on the above referenced parcel. A production capacity of 200,000 gal of wine annually is proposed for the new Girard Winery. With the Use Permit, it is proposed to also treat the process waste (PW) generated by Girard Winery using the existing Clos Pegase Pond Treatment system. A new collection system and transfer pump sump will be required for Girard Winery. A new aerator in the process waste ponds will also be required. A new sanitary sewage system on-site is proposed to accommodate the winery employees, visitors, and events.

The parcel consists of existing vineyards, water supply well and treatment, an agricultural storage building, 2 PW treatment ponds and an irrigation storage pond. The parcel is generally flat, with a small flow line along the southern property line.

A site plan is provided in Enclosure B displaying the existing site and proposed wastewater system improvements.

SANITARY SEWAGE (SS)

Existing Site Evaluation

A site evaluation was performed by Ben Monroe, P.E. of Always Engineering and Peter Ex of Napa County on November 14, 2013. A total of 16 soil profiles were evaluated and 6 were logged for use. Test pits displayed a sandy clay loam surface soil which ranged in depth from 36" to 56" in depth. Soils were underlain by a sandy loam or loamy sand for a total permeable depth ranging from 49" to 60" in depth. All soil displayed a moderate to strong sub-angular blocky structure. Faint mottling was observed to 24" deep, with increasing intensity with depth below that. Prominent mottling was observed below 48" in all test pits. Additional groundwater monitoring is required onsite to determine if the upper mottling is due to subsurface groundwater or heavy irrigation of the onsite vineyards. At the time of preparation of this study, there has not been sufficient rainfall

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to perform groundwater monitoring and therefore, it is assumed that a minimum of 24" suitable soil is available for septic system design. An interceptor drain is also proposed with this feasibility study to ensure we have the required separation to seasonal groundwater. The Napa County Site Evaluation procedures indicate a Sandy clay loam or sandy loam with moderate structure should be loading at 0.75 to 1.0 gpd using pretreated effluent.

Proposed Wastewater Flows

The proposed onsite sanitary wastewater flow rate is entirely associated with the proposed Girard Winery. The use permit is requesting a similar level of use as Clos Pegase; an average number of 10 employees (15 gpcd) along with 75 visitors (3gpcd), and a peak number of 30 employees (15 gpcd) along with 100 visitors (3 gpcd). There will be one large event per year which will have 500 attendees. Portable toilets will be used for this event. All events will have fully catered food with all preparation and cleanup occurring off site. The proposed wastewater flows are estimated as follows:

Average

Employees

8 FT employees	x	15 gpd/employee	=	120 gpd
3 PT employees	x	7.5 gpd/employee	=	22.5 gpd

Tasting Room

42 tasting visitors	x	3 gpd/visitor	=	126 gpd

Events

75 event visitors	x	5 gpd/visitor	=	375 gpd

TOTAL PROPOSED AVERAGE DESIGN FLOW	=	**643.5 GPD**

Peak

Employees

20 FT employees	x	15 gpd/employee	=	300 gpd
10 PT employees	x	7.5 gpd/employee	=	75 gpd

Tasting Room

100 tasting visitors	x	3 gpd/visitor	=	300 gpd

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Events

200 event visitors x	5 gpd/visitor	=	1,000 gpd

TOTAL PROPOSED PEAK DESIGN FLOW = **1,675 GPD**

Proposed Sanitary Sewage Loading

It is proposed to design a subsurface drip system to accommodate all sanitary sewage dispersal. Sizing as follows:

Proposed Septic System Design Flow: 1,675 gpd
Proposed Pretreated Effluent Loading Rate: 0.6 gpd/sf (Moderate -Strong Sandy Loam/Sandy Clay loam)

This loading rate is within the suitable range for pretreated effluent in the onsite soil types. Because there has not been sufficient rainfall to perform ground water monitoring

Proposed Sanitary Sewage Management System

With improvement to the site, the following tanks are proposed for the Girard Winery septic system. Because a pretreatment system is required for subsurface drip, a septic, recirculation, and sump tank are required for an AdvanTex pretreatment system. Other NSF Certified pretreatment systems may be reviewed at the time of Construction Drawings. Tank sizes are verified using the plumbing code commercial sizing formula.

$V = 1,125 + 0.75 \times Q$
$= 1,125 + 0.75 \times 1,675 \text{ gpd}$
$= 2,381.25 \text{ gallons}$

Septic Tank: 6,000 gallons (3.6 days retention time)
Recirculation Tank: 2,000 gallons (1.2 days retention time)
Sump/Dispersal Equalization Tank: 3,000 gallons (1.8 days retention time)

These tank volumes meet the minimum criteria for an AvanTex pretreatment system.

Leachfield Sizing

The area required for a primary sanitary sewer drip system is as follows:

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Area Required = Flow/Application Rate

= 1,675 gpd / 0.6 gpd/sf

= 2,792 sf

Reserve Area

200% reserve area, or 5,584 sf, is required for this site and is shown adjacneet to the primary septic area on the Use Permit Site Plan.

Irrigation Reuse Alternative

In the event that groundwater monitoring cannot occur prior to the application for construction permits, it is also desired to have the ability to provide a pretreatment and irrigation reuse system. The Lyve Wastewaer System has been used at Alpha Omega Winery to treat and reuse domestic wastewater for irrigation. Also, the Biomicrobics BioBarrier Membrane Bioreactor (MBR) is NSF 350 certified for reuse. A design for a BioBarrier MBR would include the following:

Septic Tank:	2,000 gallons
Processing Tank:	13,000 gallons
Treated Collection Sump:	1,500 gallons
Treated Storage Tank:	40,000 gallons

A storage tank would be provided for period in the winter when irrigation reuse cannot occur. As demonstrated in the process wastewater section of this study, more than sufficient vineyard is available onsite for irrigation dispersal of effluent. Approximately 3 acres is required for process wastewater and a total of 18 acres is available onsite.

If treatment, irrigation, and reuse is proposed for construction of this project, the project must first obtain approval from the San Francisco Bay Regional Water Quality Control Board (SFBREWQCB) for this use. Prior to issuance of building permits, the RWQCB will need to approve of the proposal, and issue Waste Discharge Requirements for the reuse of the sanitary sewage. If future groundwater monitoring cannot occur in a time schedule appropriate for building permits, or does not provide at least 24 inches of separation to groundwater, treatment, irrigation, and reuse will be required for the project. In this event, the RWQCB must also grant system approval prior to building permit issuance.

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PROCESS WASTEWATER (PW)

Existing System

The existing on-site process wastewater system consists of 2 aerated facultative lagoons and an irrigation holding pond. This system is currently treating the process waste from the Clos Pegase winery located across Dunaweal Lane under the same ownership. No sanitary wastewater is discharged into the process wastewater system.

Before entering the process wastewater ponds, the entire flow of process wastewater is filtered through a rotary screen where suspended solids are collected and removed. Biological stabilization occurs in the facultative pond system. The total volume of the existing pond system is approximately 1.5 MG. There is a 10 hp aerator in Pond 1 and a 5 hp aerator in Pond 2. Clos Pegase is currently producing 200,000 gallons of wine with an average annual PW production of 920,000 gallons. This pond system is large enough to provide at least 200 days of retention time at current Clos Pegase average flow conditions. Treated PW is used for irrigation of the onsite vineyards.

Proposed System

The proposed PW system for the new Girard Winery will connect to the existing PW wastewater pond system. The new PW connection will include a pump sump and new aerators to accommodate the increase in flows.

Proposed Flow Calculations

The winery is currently proposing a production of 200,000 gallons of wine per year. Using a monthly PW distribution from multiple wineries and a PW generation rate of 4.6 gal PW per gal wine produced (from Clos Pegase data) flow rates are estimated as follows:

Winery Process Wastewater (PW)

Average Daily Flow	=	2,521 gal PW/day
Average Harvest Day	=	3,950 gal PW/day
Average Day, Peak Harvest Month	=	5,060 gal PW/day (See calculations spreadsheet)

The **design flow proposed** to the system is **10,120 gpd** (5,060 gpd from Girard and 5,060 gpd from Clos Pegase).

Aerator Sizing

The Aerators have been sized using a BOD mass loading and the Aqua-Jet Surface Mechanical Aerator brochure specifications. Calculations (attached) show that a total of 22.5 hp of aerators is required for both ponds. It is proposed to add a second 10 hp

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aerator to Pond 1 for a total of 20 hp in Pond 1. This results in a power to volume (P/V) ratio of 0.21 hp per 1000 ft3. This is sufficient for surface mixing and aeration in Pond 1. Pond 2 has an (E) 5 hp aerator. This provided a P/V ratio of 0.05 hp per 1000 ft3. This is sufficient for surface mixing and to prevent odors in Pond 2. No aeration should be required in the irrigation pond due to dilution, level of treatment exiting Pond 2, and natural aeration from algae. In addition, an Anti-Erosion Assembly is recommended for both aerators, to minimize sediment mixing during periods of low liquid levels in the ponds.

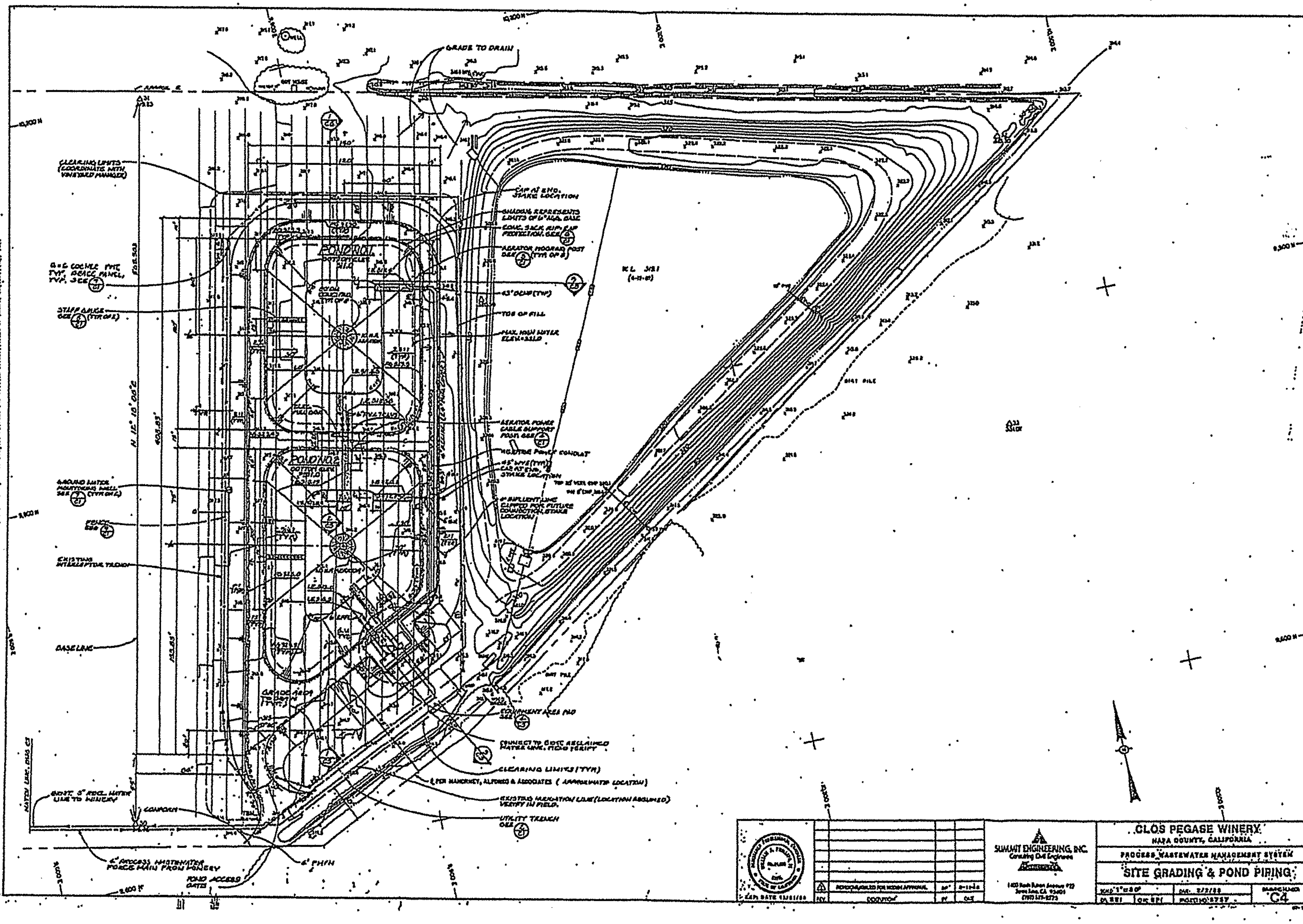
Pond Sizing
The facultative ponds combined volume is roughly 1.5 MG. This provides for a retention time of >140 days at peak month flows (see calculations spreadsheet). Facultative pond systems are sized with a minimum of 60 days in the entire system, and at least 45 days in the first pond. Therefore, this system will have sufficient contact time for treatment before discharge. During the rainy winter months when irrigation needs are low the existing irrigation pond will be used as a detention system to hold excess effluent until the spring months when increased irrigation loading is appropriate.

Irrigation Reserve/Dispersal
A total of 7.5 acres of vineyard is required for dispersal of effluent to avoid ponding and concentration.

SUMMARY AND CONCLUSIONS

Sanitary Wastewater
With the proposed installation of a new sanitary management system, as discussed in this report, the site is capable of supporting the proposed sanitary sewage loads.

Process Wastewater
With the proposed installation of additional aerators and a collection system and pump station, the existing aerated facultative pond system is sufficient for the proposed Girard Winery PW flows in addition to the existing Clos Pegase Winery PW flows.



CLOS PEGASE WINERY
NAPA COUNTY, CALIFORNIA
PROCESS WASTEWATER MANAGEMENT SYSTEM
SITE GRADING & POND PIPING
SUMMIT ENGINEERING, INC.
Consulting Civil Engineers
C4
POND NO. 1
POND NO. 2
GRADE TO DRAIN
CLEARING LIMITS (TYP.)
BASE LINE
EXISTING INTERCEPTOR TRENCH
UTILITY TRENCH
TOE OF FILL
CAP AT END, STAKE LOCATION

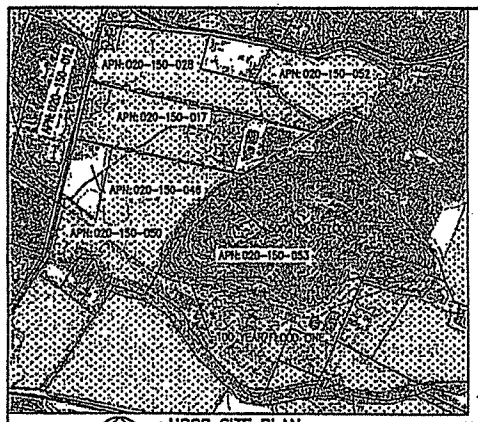
GIRARD WINERY

1077 Dunaweal Ln.

Calistoga, California 94515

APN 022-150-017

USE PERMIT APPLICATION



VICINITY MAP

LEGEND

USGS SITE PLAN

PROPOSED OVERALL SITE PLAN

SHEET INDEX

UP1. OVERALL SITE PLAN
UP2. BUILDING FLOOR PLAN

Always Engineering, Inc.

GIRARD WINERY
1077 DUNAWEAL LN., CALISTOGA, CA

February 4, 2014

USE PERMIT
OVERALL SITE PLAN
1077 DUNAWEAL LN., CALISTOGA, CA
APN:020-150-017

SHEET
UP1
OF
UP2

Date: 02/20/2014 Designed By: BM/RO - Always Engineering, Inc.
Project: Girard Winery Use Permit

Girard Winery

Annual Process Wastewater Flow = 920,000 gallons PW/year
*Refer to the design calculations report for additional flow estimates.

Month	Percentage of Annual Flow (%)	Monthly Flow (MGal)	Days
January	6.50%	0.060	31
February	7.00%	0.064	28
March	8.00%	0.074	31
April	7.00%	0.064	30
May	6.50%	0.060	31
June	5.50%	0.051	30
July	6.00%	0.055	31
August	10.50%	0.097	31
September	16.50%	0.152	30
October	12.50%	0.115	31
November	7.50%	0.069	30
December	6.50%	0.060	31
Total	100.00%	0.920	365

Date: 02/20/2014
Project: Girard Winery Use Permit

Designed By: BM/RO - Always Engineering, Inc.

Girard Winery

PROCESS WASTEWATER

Annual Volume

Annual Production (projected)				=	1,212 ton/year
Wine Generation Rate (assumed)[a]				=	165 gal wine/ton
Wine Produced	1,212 ton/year	x	165 gal wine/ton	=	200,013 gal wine/year
Process Wastewater (PW) Generation Rate[b]	(assumed)			=	4.60 gal PW/gal wine
Annual PW Flow	200,013 gal wine/year	x	4.60 gal PW/gal wine	=	***920,060 gal PW/year***

Average Day Flow

	920,060 gal PW/year	÷	365 days	=	***2,521 gal PW/day***

Average Harvest Day

Total Harvest Flow[c]	920,060 gal PW/year	x	39.5%	=	363,424 gal PW/harvest
Average Harvest Flow (3 month harvest)	363,424 gal PW/harvest	÷	92 days	=	***3,950 gal PW/day***

Average Day, Peak harvest Month - Pond Design

Total Peak Month Flow[c]	920,060 gal PW/year	x	16.5%	=	151,810 gal PW/month
Average Day, Peak Month Flow	151,810 gal PW/month	÷	30 days	=	***5,060 gal PW/day***

a. 165 Gal wine per ton of grapes is used as a wine industr standard
b. 4.6 gal of PW per gallon wine prodcued over the course of 1 year is based on hisotrical data from Clos Pegase and existing Griard operations.
c. Percentage of PW prodcued during each month is based on the average flow distirubtion from 16 wineries

Date: 02/20/2014 Designed By: BM/RO - Always Engineering, Inc.
Project: Girard Winery Use Permit

Clos Pegase Winery

Annual Process Wastewater Flow = 920,000 gallons PW/year
*Refer to the design calculations report for additional flow estimates.

Month	Percentage of Annual Flow (%)	Monthly Flow (MGal)	Days
January	6.50%	0.060	31
February	7.00%	0.064	28
March	8.00%	0.074	31
April	7.00%	0.064	30
May	6.50%	0.060	31
June	5.50%	0.051	30
July	6.00%	0.055	31
August	10.50%	0.097	31
September	16.50%	0.152	30
October	12.50%	0.115	31
November	7.50%	0.069	30
December	6.50%	0.060	31
Total	100.00%	0.920	365

Date: 02/20/2014 Designed By: BM/RO - Always Engineering, Inc.
Project: Girard Winery Use Permit

Clos Pegase Winery
PROCESS WASTEWATER

Annual Volume

Annual Production (projected)				=	1,212 ton/year
Wine Generation Rate (assumed)[a]				=	165 gal wine/ton
Wine Produced	1,212 ton/year	x	165 gal wine/ton	=	200,013 gal wine/year
Process Wastewater (PW) Generation Rate[b]	(assumed)			=	4.60 gal PW/gal wine
Annual PW Flow	200,013 gal wine/year	x	4.60 gal PW/gal wine	=	***920,060 gal PW/year***

Average Day Flow

	920,060 gal PW/year	÷	365 days	=	***2,521 gal PW/day***

Average Harvest Day

Total Harvest Flow[c]	920,060 gal PW/year	x	39.5%	=	363,424 gal PW/harvest
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c. Percentage of PW prodcued during each month is based on the average flow distirubtion from 16 wineries

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Date: 02/20/2014
Project: Girard Winery Use Permit

Designed By: BM/RO - Always Engineering, Inc.

Climate Data

Month	Days	Reference Evapotranspiration[1] (inches)	Pan Evaoporation (inches)	Lake Evaporation (inches)	Average Precipitation (inches)	10-Year Precipitation (inches)	100-Year Precipitation (inches)
January	31	1.0	1.5	1.2	9.0	12.9	17.6
February	28	1.5	2.2	1.7	5.6	8.0	11.0
March	31	2.9	3.8	2.9	5.7	8.1	11.2
April	30	4.7	5.8	4.5	2.6	3.7	5.1
May	31	5.8	8.9	6.9	0.6	0.9	1.2
June	30	6.9	11.0	8.5	0.2	0.3	0.4
July	31	7.2	13.2	10.2	0.1	0.1	0.2
August	31	6.4	12.1	9.3	0.2	0.3	0.4
September	30	4.9	8.7	6.7	0.3	0.4	0.6
October	31	3.5	5.7	4.4	2.4	3.4	4.7
November	30	1.6	2.5	1.9	6.8	9.7	13.3
December	31	1.2	1.7	1.3	8.2	11.7	16.1
TOTAL	365.0	47.7	77.0	59.3	41.7	59.6	81.8

1 Reference Evapotranspiration data is for the Angwin FS obtained from the California Irrigation Management Information System
See http://wwwcimis.water.ca.gov/cimis/monthlyEToReport.do
2 Average Monthly Pan Evaopration Rates observed at Berryessa Lake, Ca between 1957 and 1970.
3 Lake evaopration is pan evaporation multiplied by a 0.77 factor.
4 Average precipitation data is from TheWeatherChannel.com for Calistoga, CA
See http://www.weather.com/weather/wxclimatology/monthly/94515

Date: 02/20/2014
Project: Girard Winery Use Permit
Pond 1 Balance

Designed By: BM/RO - Always Engineering, Inc.

Month	Start Volume	Input		Output		Volume at end of Month	Water Depth at end of month	Volume Change
		Process Wastewater In	10 Year Precipitation	Pond Evaporation*	Discharge to Pond 2			
	(Mgal)	(Mgal)	(Mgal)	(Mgal)	(Mgal)	(Mgal)	(feet)	(Mgal)
January	0.300	0.120	0.173	0.009	0.000	0.593	8.7	0.293
February	0.593	0.129	0.108	0.015	0.100	0.730	10.0	0.137
March	0.730	0.147	0.110	0.027	0.257	0.730	10.0	0.000
April	0.730	0.129	0.050	0.042	0.179	0.730	10.0	0.000
May	0.730	0.120	0.012	0.061	0.231	0.630	9.1	-0.100
June	0.630	0.101	0.004	0.070	0.211	0.524	8.0	-0.106
July	0.524	0.110	0.002	0.072	0.312	0.324	5.7	-0.200
August	0.324	0.193	0.004	0.059	0.197	0.324	5.7	0.000
September	0.324	0.304	0.006	0.042	0.309	0.324	5.7	0.000
October	0.324	0.230	0.046	0.027	0.300	0.300	5.4	-0.024
November	0.300	0.138	0.131	0.012	0.269	0.300	5.4	0.000
December	0.300	0.120	0.158	0.008	0.278	0.300	5.4	0.000
Total		1.840	0.803	0.444	2.643			0.000

Date: 02/20/2014
Project: Girard Winery Use Permit
Pond 2 Balance

Designed By: BM/RO - Always Engineering, Inc.

Month	Start Volume (Mgal)	Input: Process Wastewater In From Pond 1 (Mgal)	Input: 10 Year Precipitation (Mgal)	Output: Pond Evaporation* (Mgal)	Output: Discharge to Irrigation Pond (Mgal)	Volume at end of Month (Mgal)	Water Depth (feet)	Volume Change (Mgal)
January	0.560	0.000	0.175	0.011	0.000	0.705	9.1	0.175
February	0.705	0.100	0.109	0.017	0.000	0.915	10.8	0.209
March	0.915	0.257	0.111	0.031	0.450	0.833	10.2	-0.082
April	0.833	0.179	0.051	0.044	0.400	0.662	8.7	-0.170
May	0.662	0.231	0.012	0.062	0.300	0.605	8.2	-0.057
June	0.605	0.211	0.004	0.073	0.300	0.520	7.4	-0.085
July	0.520	0.312	0.002	0.082	0.400	0.434	6.5	-0.086
August	0.434	0.197	0.004	0.068	0.300	0.335	5.4	-0.099
September	0.335	0.309	0.006	0.047	0.300	0.350	5.6	0.015
October	0.350	0.300	0.047	0.031	0.350	0.347	5.5	-0.003
November	0.347	0.269	0.133	0.013	0.450	0.299	5.0	-0.049
December	0.299	0.278	0.160	0.010	0.206	0.530	7.5	0.231
Total		2.643	0.813	0.489	3.456			0.000

Date: 02/20/2014
Project: Girard Winery Use Permit

Landscape	0.5 a
Vineyard =	2.5 a
Pasture =	0 a
Soil perc rate =	1 i

Month	Days	Reference Evapotranspiration[1] (inches)	ersal Capacity (Mgal)	Treated Effluent to Irrigation Pond (in)	Treated Effluent to Irrigation Pond (Mgal)	Residual Capacity[7] (Mgal)
January	31	1.0	0.000	0.000	0.000	0.000
February	28	1.6	0.000	0.000	0.000	0.000
March	31	3.0	0.474	0.460	0.450	0.024
April	30	4.6	0.848	0.409	0.400	0.448
May	31	6.0	1.373	0.307	0.300	1.073
June	30	7.0	1.543	0.307	0.300	1.243
July	31	8.0	2.594	0.409	0.400	2.194
August	31	7.0	2.619	0.307	0.300	2.319
September	30	5.2	2.457	0.307	0.300	2.157
October	31	3.4	1.073	0.358	0.350	0.723
November	30	1.4	0.541	0.460	0.450	0.091
December	31	0.9	0.000	0.211	0.206	-0.206
TOTAL	365.0	49.1	13.520	3.536	3.456	10.064

1 Average monthly reference evapotranspri
2 Pasture coefficient from Table 5-1, "Irrigati
3 Vineayrd coefficient from Table 5-12, "Irrig
4 Crop coefficient times the reference evapo
5 Precipitation for a 10-yr event, refer to the
6 Irrigation demand is the evapotrasnpiratio
7 Residual capacity estimates irrigation/perc

Date: 02/20/2014
Project: Girard Winery Use Permit

Designed By: BM/RO - Always Engineering, Inc.
Aeration Calculations

Design Flow	= Estimated Average Daily Flow							
	= 10,120 gal/day							
	= 0.010 Mgal/day							
	= 38 m^3/day							
	= 38,294 liters/day							

BOD MASS LOADING - Amount of Biochemical Oxygen Demand (BOD) Based on Amount of Organics in Wastewater

BOD into Pond	= 7700 mg/L	(Table 4-12 & 4-14 of *Small and Decentralized Wastewater Management Systems)*						
BOD Mass Load	= 38 m^3/day	x	7700 mg BOD/L	x	1000 ml/m^3	x	0.000001 kg/mg	
	= 294.9 kg BOD/day							
	= 648.7 lb BOD/day							

OXYGEN REQUIREMENTS - The amount of oxygen requiremed to breakdown the waste in the water

O2 Requirement	= 648.7 lb BOD/day	x	1.5 lbs O2/lb BOD					
	= 973.1 lbs O2/day							

HORSEPOWER REQUIREMENTS - The horsepower of aeration required to provide the necessary amount of oxygen

Oxygen Transfer Efficiency	= 1.8 lbs O2/Hp*hr (3.4 assumes a VBT aerator , model 100)							
Horsepower Requirement	= 973.1 lbs O2/day	÷	1.8 lbs O2/Hp*hr	÷	24 hr/day			
	= 22.5 Hp required							

POWER TO VOLUME RATIO (Hp/10^3 ft^3) - This is used to estimate the amount of mixing which will occur in a pond due to aeration

Pond Volume	= 0.723 Mgal							
	= 722,797 gallons							
	= 96,631 ft^3							
Number if cells	= 2							
Ratio of first to second cell	= 2							
Volume in Pond 1	= 722,797 gallons							
	= 96,631 ft^3							
Volume in Pond 2	= 803,995 gallons							
	= 107,486 ft^3							
Horsepower in Pond 1; cell 1	= 20 Hp							
Pond 1 Power to Volume Ratio	= 20 Hp	x	1000 ft^3	÷	96,631 ft^3	÷	1000 ft^3	
	= 0.21 Hp/1000 ft^3							
Horsepower in Pond 1, cell 2	= 5 Hp							
Pond 2 Power to Volume Ratio	= 5 Hp	x	1000 ft^3	÷	107,486 ft^3	÷	1000 ft^3	
	= 0.05 Hp/1000 ft^3							
Complete Mix	= 0.75 - 1.5 Hp/1000 ft^3	(Page 463 of *Small and Decentralized Wastewater Management)*						
Partial Mix	= 0.4 - 0.75 Hp/1000 ft^3							
Facultative	= 0.1 - 0.4 Hp/1000 ft^3							

Pond 1
Retention Time (t)/ Estimated Effluent

Cn	= Effluent BOD	
Co	= 7700 mg/L	
n	= 1	for single cell pond
k	= 0.276 d^(-1)	
t	= 71.4 days	
Cn	= 372 mg/L	
Effluent BOD	= 372 mg/L	

Pond 2
Pond 1
Retention Time (t)/ Estimated Effluent

Cn	= Effluent BOD	
Co	= 372 mg/L	
n	= 1	for baffled pond
k	= 0.276 d^(-1)	
t	= 71.4 days	
Cn	= 18 mg/L	
Effluent BOD	= 18 mg/L	

Napa County Department of
Environmental Management

SITE EVALUATION REPORT

Please attach an 8.5" x 11" plot map showing the locations of all test pits triangulated from permanent landmarks or known property corners. The map must be drawn to scale and include a North arrow, surrounding geographic and topographic features, direction and % slope, distance to drainages, water bodies, potential areas for flooding, unstable landforms, existing or proposed roads, structures, utilities, domestic water supplies, wells, ponds, existing wastewater treatment systems and facilities.

Permit #: E13-00744
APN: 020-150-017
(County Use Only) Reviewed by: Date:

PLEASE PRINT OR TYPE ALL INFORMATION

Property Owner Vintage Wine Estates dba Girard Winery	x New Construction ☐ Addition ☐ Remodel ☐ Relocation ☐ Other:
Property Owner Mailing Address 205 Concourse Blvd	☐ Residential - # of Bedrooms: Design Flow : gpd
City State Zip Santa Rosa CA 95403	x Commercial – Type: Winery domestic Sanitary Waste: 500-1675 gpd Process Waste: 0 gpd
Site Address/Location 1077 Dunaweal Lane Calistoga, CA 94515	☐ Other: Sanitary Waste: gpd Process Waste: gpd

Evaluation Conducted By:

Company Name Always Engineering, Inc.	Evaluator's Name Ben Monroe, P.E. RCE 70012	Signature (Civil Engineer, R.E.H.S., Geologist, Soil Scientist)
Mailing Address: 131B Stony Circle, Sutie 1000		Telephone Number (707) 542-8795 x 17
City State Zip Santa Rosa, Ca 95401		Date Evaluation Conducted 11/14/2013

Primary Area	Expansion Area
Acceptable Soil Depth: 24-48 in. Test pit #'s: TP1-TP6	Acceptable Soil Depth: 24-48 in. Test pit #'s: TP1-TP6
Soil Application Rate (gal. /sq. ft. /day): 0.75 to 1.0 gpd/sf	Soil Application Rate (gal. /sq. ft. /day):0.75 to 1.0 gpd/sf
System Type(s) Recommended: PD, drip – pending gw	System Type(s) Recommended: PD, drip – pending gw
Slope: 3-5 %. Distance to nearest water source: 1000 ft.	Slope: 3-5 %. Distance to nearest water source: 1000 ft.
Hydrometer test performed? No	Hydrometer test performed? No
Bulk Density test performed? No	Bulk Density test performed? No
Percolation test performed? No	Percolation test performed? No
Groundwater Monitoring Performed? Pending Rain	Groundwater Monitoring Performed? Pending Rain

Site constraints/Recommendations:

- Existing well
- Groundwater monitoring to be performed to identify perched groundwater level due to presence of mottling at less than 24 inches deep.
- Interceptor drain and surface drainage to divert away from septic area recommended.
- Proposed drainage features and grading will need to avoid.
- Additional test pits near wastewater ponds showed signs of significant seasonal saturation and lesser depths of permeable soils. Pits on map but not logged due to time onsite.

Test Pit # 1

PLEASE PRINT OR TYPE ALL INFORMATION

Horizon Depth (Inches)	Boundary	%Rock	Texture	Structure	Consistence			Pores	Roots	Mottling
					Side Wall	Ped	Wet			
34	D/G	15-20	SCL	SAB,3	FR	S	S	3,C	1,M	1,VF
48	D/G	35	SCL	SAB,3	VF	S	SS	3,M	1,M	1,F
60+	----------	<10	SCL	SAB,2	D/L	M	M	1,VF	1,M	2,P

Test Pit #2

Horizon Depth (Inches)	Boundary	%Rock	Texture	Structure	Consistence			Pores	Roots	Mottling
					Side Wall	Ped	Wet			
24	D/G	15-20	SCL	SAB,3	FR	S	S	3,C	1,M	1,VF
56	D/G	35	SCL	SAB,3	VF	S	SS	3,M	1,M	1,F
65+	----------	<10	SCL	SAB,2	D/L	M	M	1,VF	1,M	2,P

Test Pit # 3

Horizon Depth (Inches)	Boundary	%Rock	Texture	Structure	Consistence			Pores	Roots	Mottling
					Side Wall	Ped	Wet			
28	D/G	15-20	SCL	SAB,3	FR	S	S	3,C	1,M	1,VF
60	D/G	15-20	SL/LS	SAB,3	F	M	SS	3,M/F	1,M	1,F
70+	----------	<10	SCL	SAB,2	D/L	M	M	1,VF	1,M	2,P

Test Pit # 4

PLEASE PRINT OR TYPE ALL INFORMATION

Horizon Depth (Inches)	Boundary	%Rock	Texture	Structure	Consistence			Pores	Roots	Mottling
					Side Wall	Ped	Wet			
24	D/G	15-20	SCL	SAB,3	FR	S	S	3,C	1,M	1,VF
49	D/G	25	SCL	SAB,3	FR	F	S	2,M	1,M	2,F
60+	----------	<10	SCL	SAB,2	D/L	L	M	1,VF	1,M	2,P

Test Pit #5

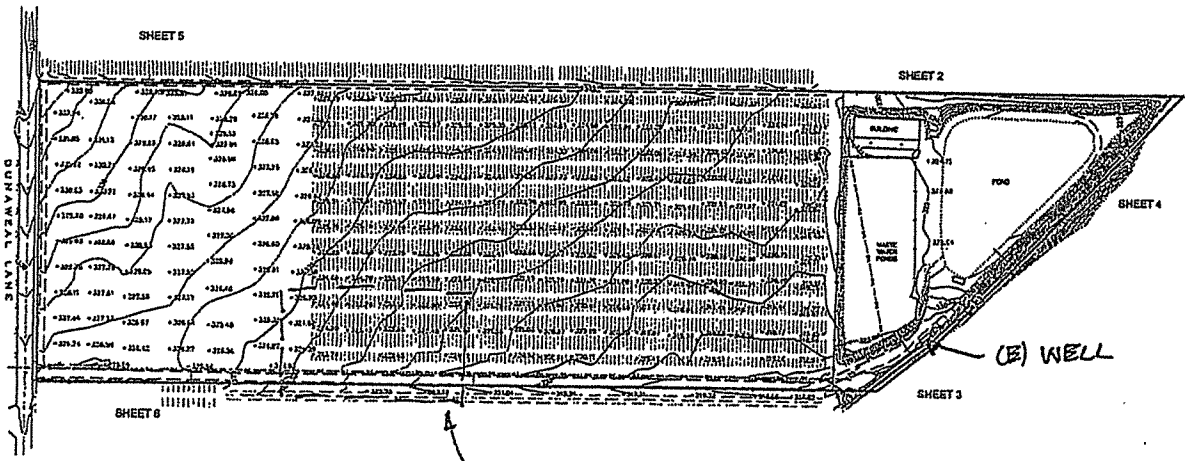
Horizon Depth (Inches)	Boundary	%Rock	Texture	Structure	Consistence			Pores	Roots	Mottling
					Side Wall	Ped	Wet			
24	D/G	15-20	SCL	SAB,3	FR	S	S	3,C	1,M	1,VF
49	D/G	25	SCL	SAB,3	F	M/FR	SS	2,F	1,F	1,F
54+		>50%								

Test Pit # 6

Horizon Depth (Inches)	Boundary	%Rock	Texture	Structure	Consistence			Pores	Roots	Mottling
					Side Wall	Ped	Wet			
36	D/G	15-20	SCL	SAB,3	FR	S	S	3,C	1,M	1,VF
55	D/G	25	SL	G/B,2	L	L	SS	2,C	1,M	1,D
70+		>50%								

SITE EVALUATION
11/14/13
E13-00744

GRAPHIC SCALE



SEE SHEET 2 FOR DETAIL

LEGEND:

ALBION SURVEYS, INC.
CIVIL ENGINEERING AND LAND SURVEYING
1414 JOHN AVENUE
EL NIDO, CA 94574
(707) 963-1317
FAX (707) 963-1829

DRAWING NOTES

SITE INFORMATION

APN: 039-180-017
ADDRESS: 1077 DUNAWAL LANE
CARNEROS, CA 94515

MAP OF TOPOGRAPHY
OF A PORTION OF THE LANDS OF
CLOS PEGASE
COUNTY OF NAPA STATE OF CALIFORNIA

REVISIONS & ADDITIONS

DATE	BY	DESCRIPTION
11-14-13	PS	ORIGINAL PLAN

ALBION REFERENCES

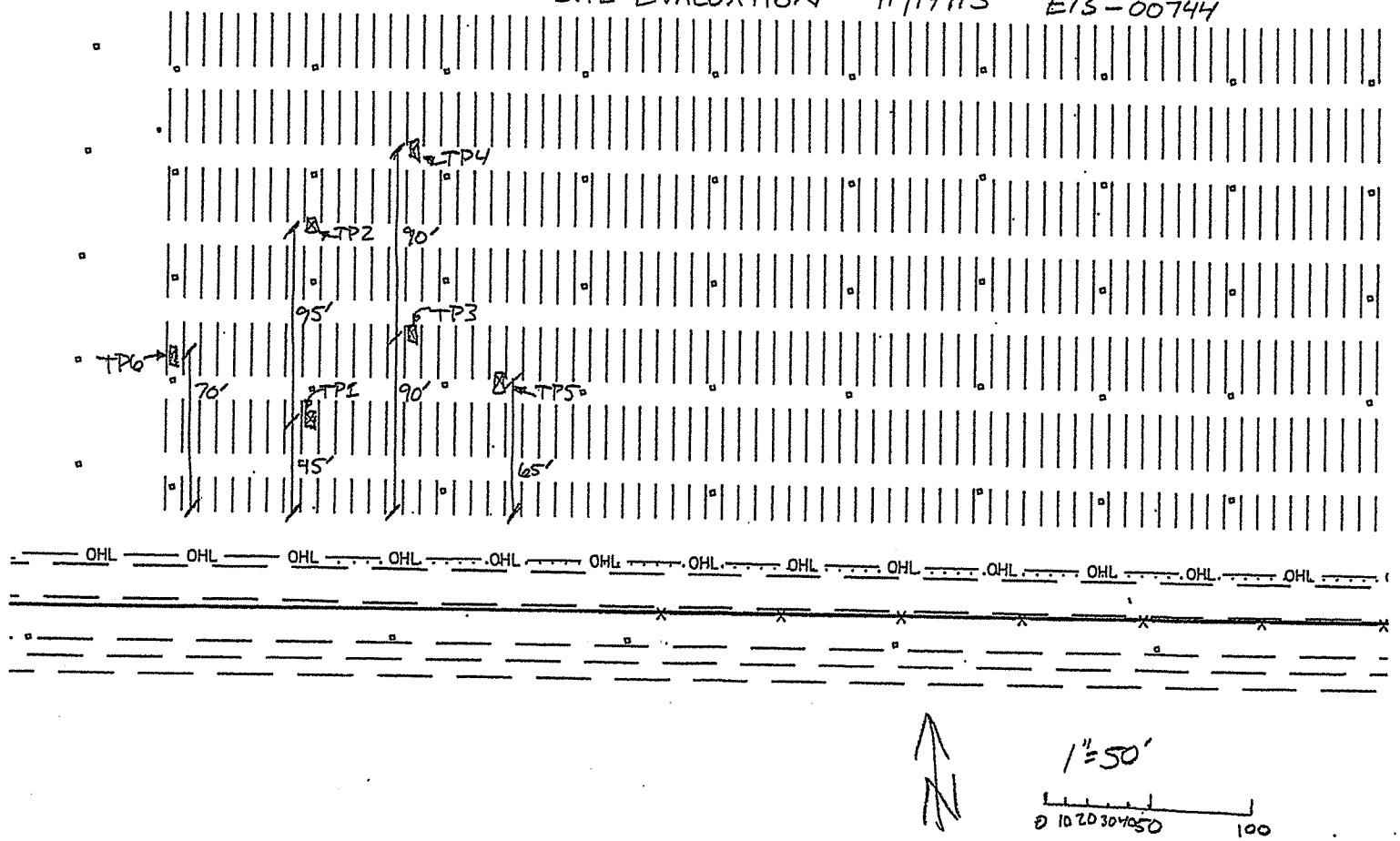
PROJECT NO. 2037
ASSOCIATED SURVEY
PROJECT MANAGER: A. SULLIVAN
DATE OF SURVEY: 11-21-2006

CONTOUR INTERVAL = 1'
VERTICAL DATUM BASED ON NAVD 88
DIRECTION OF NORTH BASED ON NAD 83 CALIFORNIA STATE PLANE ZONE 2

1077 DUNAWEAL LN
CALISTOGA, CA
APN: 020-150-017

SHEET 2 OF 2

SITE EVALUATION 11/14/13 E13-00744



13530.0 Dunaweal Winery
Storm Drainge for Use Permit
modification
April 28, 2014

Always Engineering, Inc.
Civil Engineering & Topographic Surveying
131 Stony Circle, Suite 1000 (707) 542-8795
Santa Rosa, CA 95401 Fax (707) 542-8798
www.alwayseng.com JasonH@alwayseng.com

Jeanette Doss
Napa County Department of Public Works
1195 3rd St., Room 201
Napa, CA 94555

Project: Use Permit Modification for Dunaweal Winery,
1077 Dunaweal Ln.
APN 020-150-017
File #14-00053

Jeannette,

This correspondence is provided to satisfy the requirements list in the Memorandum of Incompleteness dated April 3, 2013.

Vintage Wine Estates is proposing to construct the Girard Winery and associated improvements on the parcel located at 1077 Dunaweal Ln., Calistoga CA (APN 020-150-017). The parcel is currently a planted vineyard with a Waste Water Pond treatment system for process waste presently located in the rear of the parcel.

The proposed AC driveway, parking, and winery accessory structures will result in an increase in impervious area of approximately 130,803 sf (3.003 acres). Our preliminary calculations show this will result in an increase in the 2-yr 24-hr storm water runoff of approximately 16,722 cf. At this stage of design, we are anticipating utilizing a bio-retention swale with subsurface storage chambers totaling 910 LF. During detailed design, alternative methods such as pipes/chambers under paved areas or other acceptable retention methods may be used to provide the required volume retention.

The anticipated surface flow across the project site due to the 10-yr Storm is approximately 35.28 cfs. It is proposed to direct this flow around the project site using a grass lined trapezoidal swale 0.75' deep, 2' wide at the bottom, and 32' wide at the top which will accommodate 52.71 cfs.

The sizing of pipes was reviewed as well. Runoff from the entire site can be accommodated with a 30" pipe with a minimum 1% slope. However, the site will likely be split into multiple smaller drainage areas with multiple smaller pipes discharging into the proposed bioswale.

Always Engineering, Inc.
Civil Engineering & Topographic Surveying
131 Stony Circle, Suite 1000 (707) 542-8795
Santa Rosa, CA 95401 Fax (707) 542-8798
www.alwayseng.com JasonH@alwayseng.com

To assist with your review the following is attached:

- Stormwater Runoff Management Plan (SRMP)
- Ex 1: Hydrology Map
- Ex 2: NOAA Precipitation Data
- Ex 3: Drainage Area Calculations
- Ex 4: Composite C and CN Calculations
- Ex 5: Pre vs Post Runoff Calculations
- Ex 6: Swale Calculations and Pipe Sizes
- Ex 7: Precipitation Chart – Lower County
- Ex 8: Mean Annual Precipitation vs. 60 Minute Rainfall
- Ex 9: Intensity – Duration Chart
- Ex 10: Table of Runoff Curve Numbers
- Ex 11: NRCS Hydrologic Soil Group

Please feel free to contact me should you have any questions or require additional information.

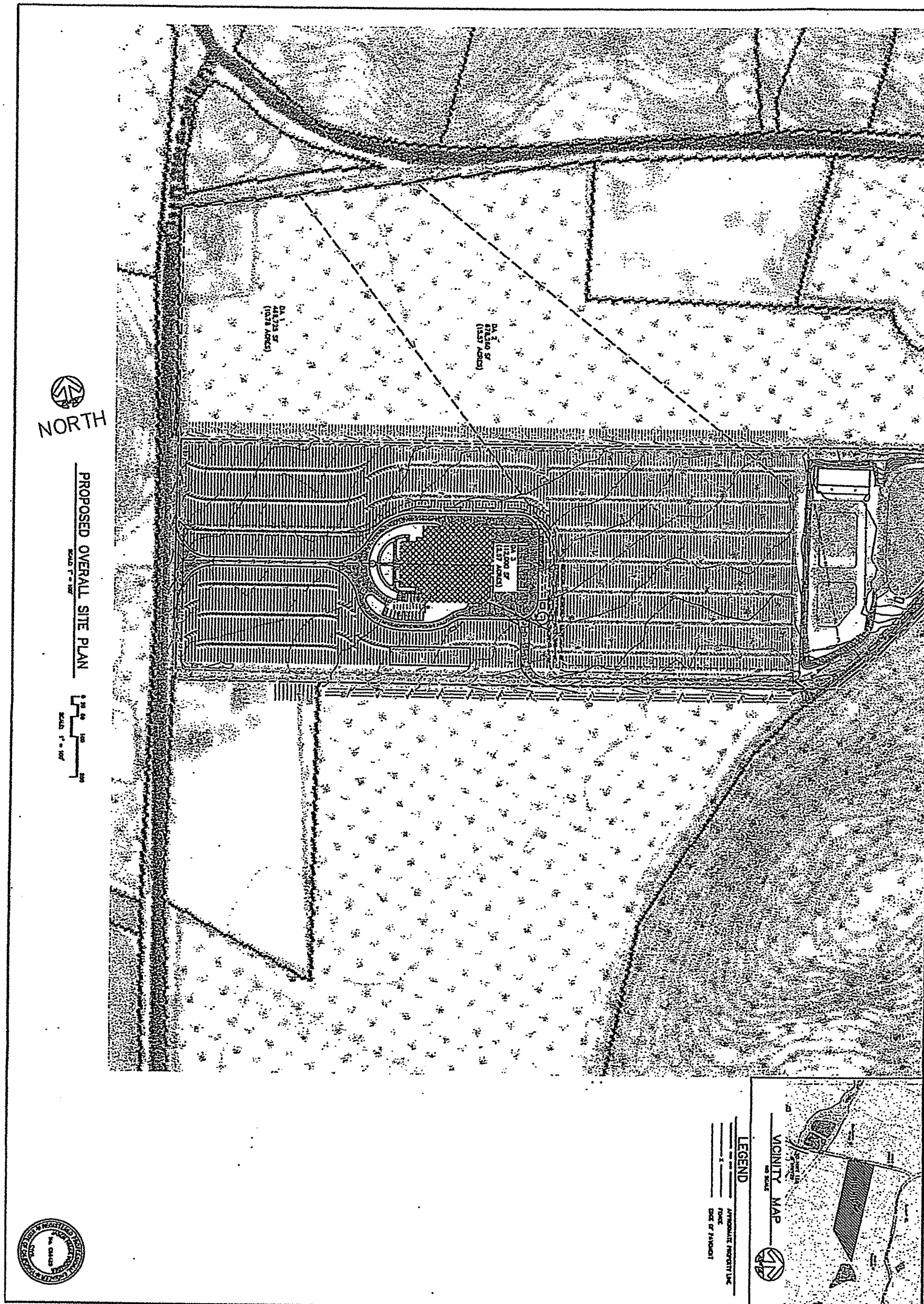
We trust that this letter sufficiently responds to the items of incompleteness. If you require clarification or have any questions, please feel free to contact us.

Sincerely,

Ben Monroe, P.E.
ALWAYS ENGINEERING, INC.
Project Manager

REGISTERED PROFESSIONAL ENGINEER
BENJAMIN W. MONROE
No. 70012
Exp. 9-30-14
CIVIL
STATE OF CALIFORNIA

cc: Heather McCollister
Amy Haedt (Vintage Wine Estates)



SHEET DA 1 OF DA 1	USE PERMIT EX 1: HYDROLOGY MAP 1077 DUNAWEAL LN., CALISTOGA, CA APN:020-150-017	Prepared for: GIRARD WINERY 1077 DUNAWEAL LN., CALISTOGA, CA Prepared on: April 25, 2014	Always Engineering, Inc. Civil Engineering & Topographic Surveying 131 Stony Circle, Suite 1000 (707) 542-8795 Santa Rosa, CA 95401 Fax (707) 542-8798 www.alwayseng.com JasonH@alwayseng.com

Ex 2: NOAA Precipitation Data
1077 Dunaweal Lane
April 25, 2014

Precipitation Frequency Data Server

NOAA Atlas 14, Volume 6, Version 2
Location name: Calistoga, California, US*
Latitude: 38.5725°, Longitude: -122.5537°
Elevation: 329 ft*
* source: Google Maps

POINT PRECIPITATION FREQUENCY ESTIMATES

Sanja Perica, Sarah Dietz, Sarah Heim, Lillian Hiner, Kazungu Maitaria, Deborah Martin, Sandra Pavlovic, Ishani Roy, Carl Trypaluk, Dale Unruh, Fenglin Yan, Michael Yekta, Tan Zhao, Geoffrey Bonnin, Daniel Brewer, Li-Chuan Chen, Tye Parzybok, John Yarchoan

NOAA, National Weather Service, Silver Spring, Maryland

PF_tabular | PF_graphical | Maps_&_aerials

PF tabular

PDS-based point precipitation frequency estimates with 90% confidence intervals (in inches)[1]

Duration	Average recurrence interval (years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	0.154 (0.137-0.175)	0.186 (0.165-0.211)	0.228 (0.202-0.260)	0.263 (0.231-0.303)	0.311 (0.263-0.373)	0.349 (0.288-0.428)	0.389 (0.311-0.490)	0.430 (0.334-0.560)	0.489 (0.362-0.667)	0.536 (0.381-0.760)
10-min	0.221 (0.196-0.251)	0.266 (0.236-0.303)	0.327 (0.289-0.373)	0.377 (0.331-0.434)	0.446 (0.377-0.534)	0.501 (0.413-0.614)	0.557 (0.446-0.703)	0.617 (0.479-0.803)	0.701 (0.519-0.956)	0.768 (0.547-1.09)
15-min	0.267 (0.237-0.303)	0.322 (0.286-0.366)	0.395 (0.350-0.451)	0.456 (0.400-0.525)	0.540 (0.455-0.646)	0.606 (0.499-0.743)	0.674 (0.540-0.850)	0.746 (0.579-0.971)	0.847 (0.627-1.16)	0.929 (0.661-1.32)
30-min	0.392 (0.348-0.445)	0.473 (0.420-0.538)	0.580 (0.514-0.662)	0.669 (0.587-0.771)	0.792 (0.669-0.949)	0.889 (0.732-1.09)	0.990 (0.793-1.25)	1.10 (0.850-1.43)	1.24 (0.921-1.70)	1.36 (0.971-1.94)
60-min	0.573 (0.509-0.650)	0.691 (0.614-0.786)	0.849 (0.751-0.968)	0.979 (0.859-1.13)	1.16 (0.978-1.39)	1.30 (1.07-1.59)	1.45 (1.16-1.82)	1.60 (1.24-2.09)	1.82 (1.35-2.48)	1.99 (1.42-2.83)
2-hr	0.871 (0.775-0.990)	1.05 (0.932-1.19)	1.28 (1.13-1.46)	1.47 (1.29-1.69)	1.72 (1.45-2.05)	1.91 (1.57-2.33)	2.10 (1.68-2.64)	2.29 (1.78-2.98)	2.55 (1.89-3.48)	2.76 (1.96-3.91)
3-hr	1.12 (0.997-1.27)	1.35 (1.20-1.54)	1.65 (1.46-1.88)	1.88 (1.65-2.16)	2.19 (1.85-2.62)	2.42 (1.99-2.97)	2.65 (2.12-3.34)	2.88 (2.24-3.76)	3.19 (2.36-4.36)	3.43 (2.44-4.86)
6-hr	1.70 (1.51-1.93)	2.06 (1.83-2.34)	2.51 (2.22-2.87)	2.87 (2.52-3.30)	3.33 (2.81-3.98)	3.67 (3.02-4.50)	4.00 (3.21-5.05)	4.33 (3.36-5.64)	4.77 (3.53-6.50)	5.09 (3.62-7.22)
12-hr	2.42 (2.16-2.75)	3.01 (2.68-3.43)	3.74 (3.31-4.27)	4.31 (3.78-4.96)	5.04 (4.25-6.03)	5.56 (4.58-6.82)	6.08 (4.87-7.67)	6.59 (5.11-8.57)	7.24 (5.36-9.88)	7.72 (5.50-11.0)
24-hr	3.38 (3.04-3.84)	4.32 (3.88-4.92)	5.49 (4.92-6.25)	6.39 (5.69-7.33)	7.55 (6.54-8.90)	8.39 (7.14-10.1)	9.21 (7.68-11.3)	10.0 (8.16-12.5)	11.1 (8.70-14.3)	11.8 (9.04-15.8)
2-day	4.45 (4.00-5.05)	5.70 (5.12-6.48)	7.29 (6.53-8.30)	8.54 (7.60-9.79)	10.2 (8.81-12.0)	11.4 (9.69-13.7)	12.6 (10.5-15.4)	13.8 (11.2-17.3)	15.3 (12.1-19.9)	16.5 (12.6-22.0)
3-day	5.17 (4.64-5.87)	6.62 (5.95-7.53)	8.49 (7.60-9.67)	9.97 (8.88-11.4)	11.9 (10.3-14.1)	13.4 (11.4-16.1)	14.9 (12.4-18.2)	16.4 (13.4-20.6)	18.4 (14.5-23.9)	19.9 (15.2-26.6)
4-day	5.76 (5.18-6.54)	7.39 (6.63-8.40)	9.48 (8.49-10.8)	11.1 (9.92-12.8)	13.4 (11.6-15.8)	15.1 (12.8-18.1)	16.8 (14.0-20.5)	18.5 (15.0-23.1)	20.8 (16.3-26.9)	22.5 (17.2-30.0)
7-day	7.12 (6.40-8.09)	9.11 (8.18-10.3)	11.7 (10.4-13.3)	13.7 (12.2-15.7)	16.4 (14.2-19.4)	18.5 (15.8-22.2)	20.6 (17.2-25.2)	22.7 (18.5-28.4)	25.5 (20.1-33.1)	27.7 (21.2-37.0)
10-day	8.10 (7.28-9.20)	10.4 (9.30-11.8)	13.2 (11.9-15.1)	15.5 (13.8-17.8)	18.6 (16.1-21.9)	20.8 (17.7-25.0)	23.1 (19.3-28.3)	25.4 (20.7-31.8)	28.4 (22.4-36.8)	30.7 (23.5-41.0)
20-day	10.7 (9.62-12.2)	13.7 (12.3-15.6)	17.4 (15.6-19.9)	20.3 (18.1-23.3)	24.0 (20.8-28.3)	26.7 (22.7-32.0)	29.3 (24.5-35.9)	31.9 (26.0-39.9)	35.2 (27.7-45.6)	37.6 (28.7-50.2)
30-day	12.9 (11.6-14.6)	16.5 (14.8-18.8)	20.9 (18.7-23.8)	24.2 (21.6-27.8)	28.4 (24.6-33.5)	31.4 (26.8-37.7)	34.3 (28.6-42.0)	37.1 (30.2-46.4)	40.5 (31.9-52.6)	43.0 (32.9-57.4)
45-day	15.8 (14.2-17.9)	20.1 (18.1-22.9)	25.3 (22.7-28.8)	29.1 (25.9-33.4)	33.9 (29.4-40.0)	37.3 (31.7-44.7)	40.4 (33.7-49.4)	43.4 (35.3-54.3)	47.0 (37.0-61.0)	49.6 (38.0-66.3)
60-day	18.8 (16.9-21.3)	23.7 (21.3-27.0)	29.6 (26.5-33.7)	33.9 (30.2-38.9)	39.2 (33.9-46.2)	42.8 (36.4-51.3)	46.2 (38.5-56.5)	49.4 (40.2-61.8)	53.3 (41.9-69.1)	56.0 (42.8-74.7)

[1] Precipitation frequency (PF) estimates in this table are based on frequency analysis of partial duration series (PDS).

Numbers in parenthesis are PF estimates at lower and upper bounds of the 90% confidence interval. The probability that precipitation frequency estimates (for a given duration and average recurrence interval) will be greater than the upper bound (or less than the lower bound) is 5%. Estimates at upper bounds are not checked against probable maximum precipitation (PMP) estimates and may be higher than currently valid PMP values.

Please refer to NOAA Atlas 14 document for more information.

Back to Top

Ex 3:Drainage Area Calculations
1177 Dunaweal Ln.
April 25, 2014

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Annual Average Rainfall = 38 Inches (FromNapa County Precipitation Chart - Lower County)
Time of concentration = 10 minutes (Minimum Pper Napa Road and Street Standards)

Drainage Area- per attached	Watershed Area (acres)	Discharge Rate (cfs) At Return Period (years) 10	25	100	Rainfall Intensity (I = in/hr) From Ex. 9 Intensity-Duration
		2.80		3.60	
	Runoff Coefficient (C) =	0.4			
DA 1	10.78	12.08		15.53	
	Runoff Coefficient (C) =	0.4			
DA 2	15.57	17.44		22.42	
	Runoff Coefficient (C) =	0.8			
DA 3	2.57	5.76		7.40	
TOTAL		35.28		45.35	

Ex 4:Composite C and CN Calculations
1077 Dunaweal Ln.
April 25, 2014

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			EXISTING					PROPOSED				
	Total Area (acre)	Desc.	(acre)	(SQ. FT.)	C Runoff 10 -Yr	C Runoff 85th %	CN group B from SCS	(acre)	(SQ. FT.)	C Runoff 10 -Yr	C Runoff 85th %	CN group B from SCS
DI #1	3.003	Vineyard	2.24	97,601	0.45	0.80	81	0.00	0	0.45	0.10	81
		AC/Roof	0.00	0	0.90	0.10	98	2.62	114,316	0.90	0.80	98
		Undeveloped	0.76	33,202	0.45	0.10	69	0.38	16,487	0.45	0.10	69
	TOTAL		3.00	130,803				3.00	130,803			
	c*a				112,542	81,401	10,196,619			110,304	93,102	12,340,571
	combined c				0.86	0.62	77.95			0.84	0.71	94.34
TOTALS:	3.00			130,803					130,803			
WEIGHTED AVERAGE:					0.86	0.62	77.95			0.84	0.71	94.34

Exhibit 5: Pre vs Post

Pre-Development Total Runoff Volume

NRCS Curve Number Procedure,

Weighted Average Volume Technique

Q=(P-0.2S)^2/(P+0.8S) where, S=1000/CN-10

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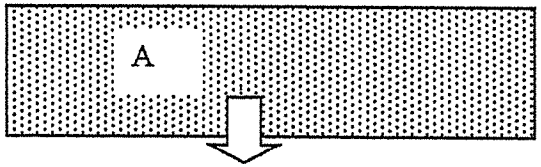
Vintage_ Dunaweal Winery
1077 Dunaweal Ln
Calistoga, CA 94515
APN: 020-150-017
25-Apr-14
Proposed Winery

NOAA 2-Year, 24-Hour Storm (Inches):
4.32

Hydrologic Condition and Direction of Runoff



Area ID	Area (Acres)	Land Use	Soil Group	Combined CN (Curve Number)	S	Q (Rainfall Excess, inches)	Runoff Volume (acre-feet)	Runoff Volume (cu ft)
DA1	3.003	Agricultural	B	77.95	2.83	2.141	0.536	23,339
						Total Runoff Volume	0.54	23,339

Exhibit 5: Pre vs Post

Post-Development Total Runoff Volume

NRCS Curve Number Procedure,

Weighted Average Volume Technique

Q=(P-0.2S)^2/(P+0.8S) where, S=1000/CN-10

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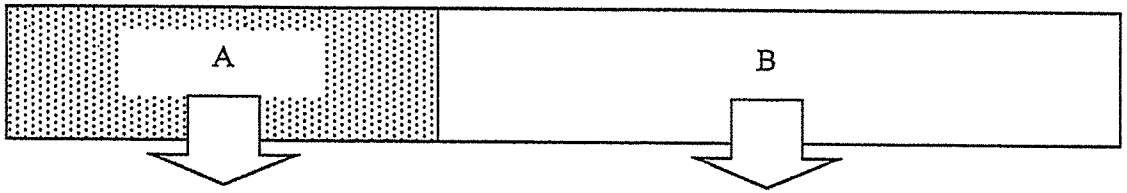
NOAA 2-Year, 24-Hour Storm (Inches):
4.32



Area ID	Area (Acres)	Land Use	Soil Group	CN (Curve Number)	S	Q (Rainfall Excess, inches)	Runoff Volume (acre-feet)	Runoff Volume (cu ft)
DA1	3.003	Agricultural	B	94.34	0.60	3.675	0.920	40061
						Total Runoff Volume	0.92	40,061

	acre-feet	cubic-feet
Total Pre-Project Runoff Volume	0.54	23,339
Total Post-Project Runoff Volume	0.92	40,061
Difference in Runoff Volume	0.38388	16,722
Percent Change	72%	72%

Bioretention Swale Linear Volume (cubic ft/ft)	18.41	ft^3/ft
Bioretention Swale Length (ft)	908	lf

Area of Development (Acres)	3.00
Percent of development needed for bioretention.	1%

Ex 6: Swale Calculations & Pipe Sizes
1077 Dunaweal Ln.
April 25, 2014

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Swale Capacity 0.75 ft n = .0275 short grass

OUTPUT INFORMATION

This report is for a channel running full.

The Flow Capacity is 52.71 cfs
The flow velocity is 4.134 fps

CHANNEL PROPERTIES

The friction factor 'n' = 0.0275
The channel slope = 0.0200 ft/ft

'Trapizoidal' Shaped Channel:

Width at top = 32.00ft
Width at bottom = 2.000ft
Height = 0.750ft
Flow Area = 12.75 sq-ft
Wetted perimiter = 32.04 ft
Hydraulic radius = 0.398 ft

Ex 6: Swale Calculations & Pipe
Sizes 1077 Dunaweal Ln.
April 25, 2014

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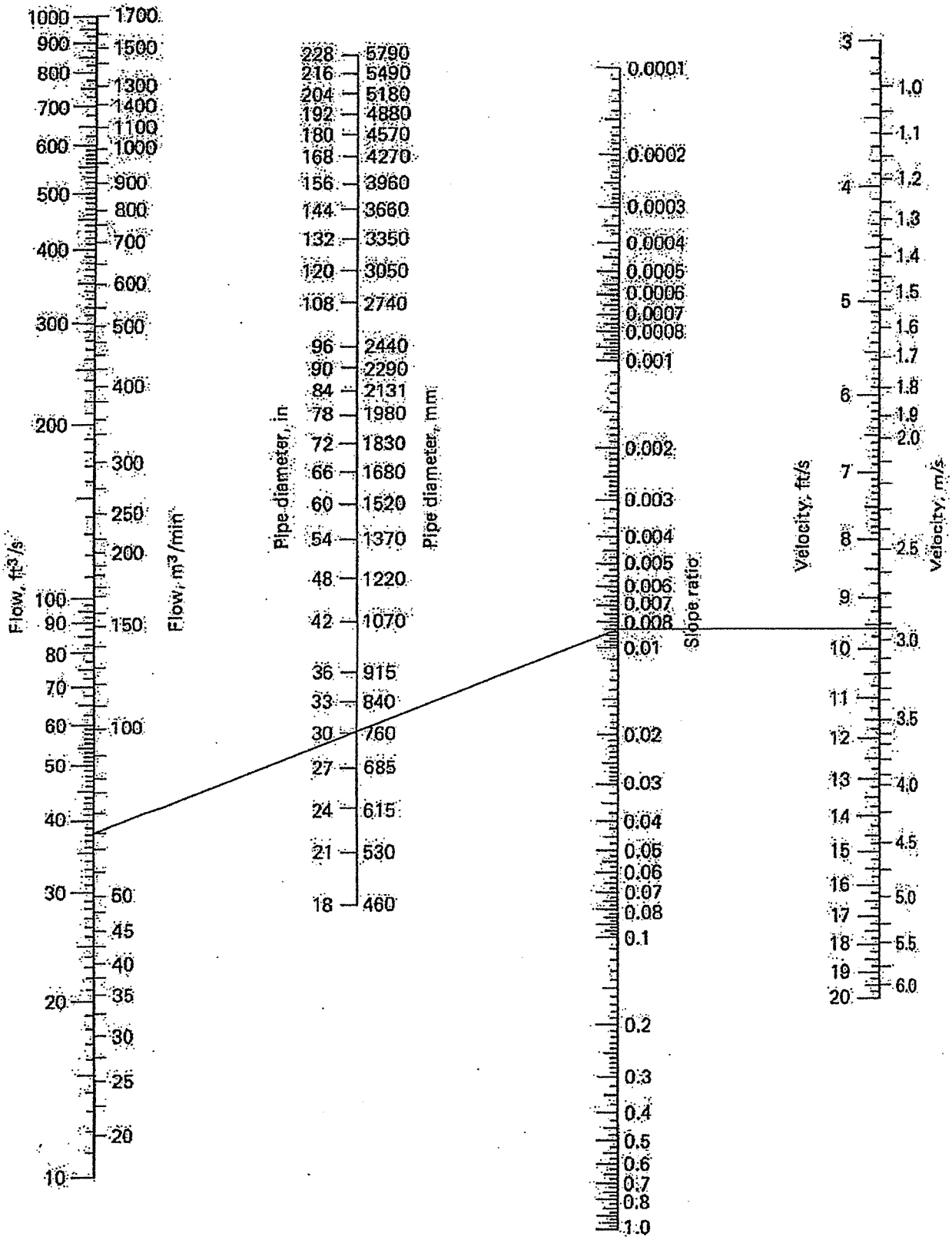


Nomogram for solution of Manning's equation for circular pipes flowing full (n = 0.013)

Exhibit 7: Precipitation Chart Lower County
1077 Dunaweal Ln.
April 25, 2014

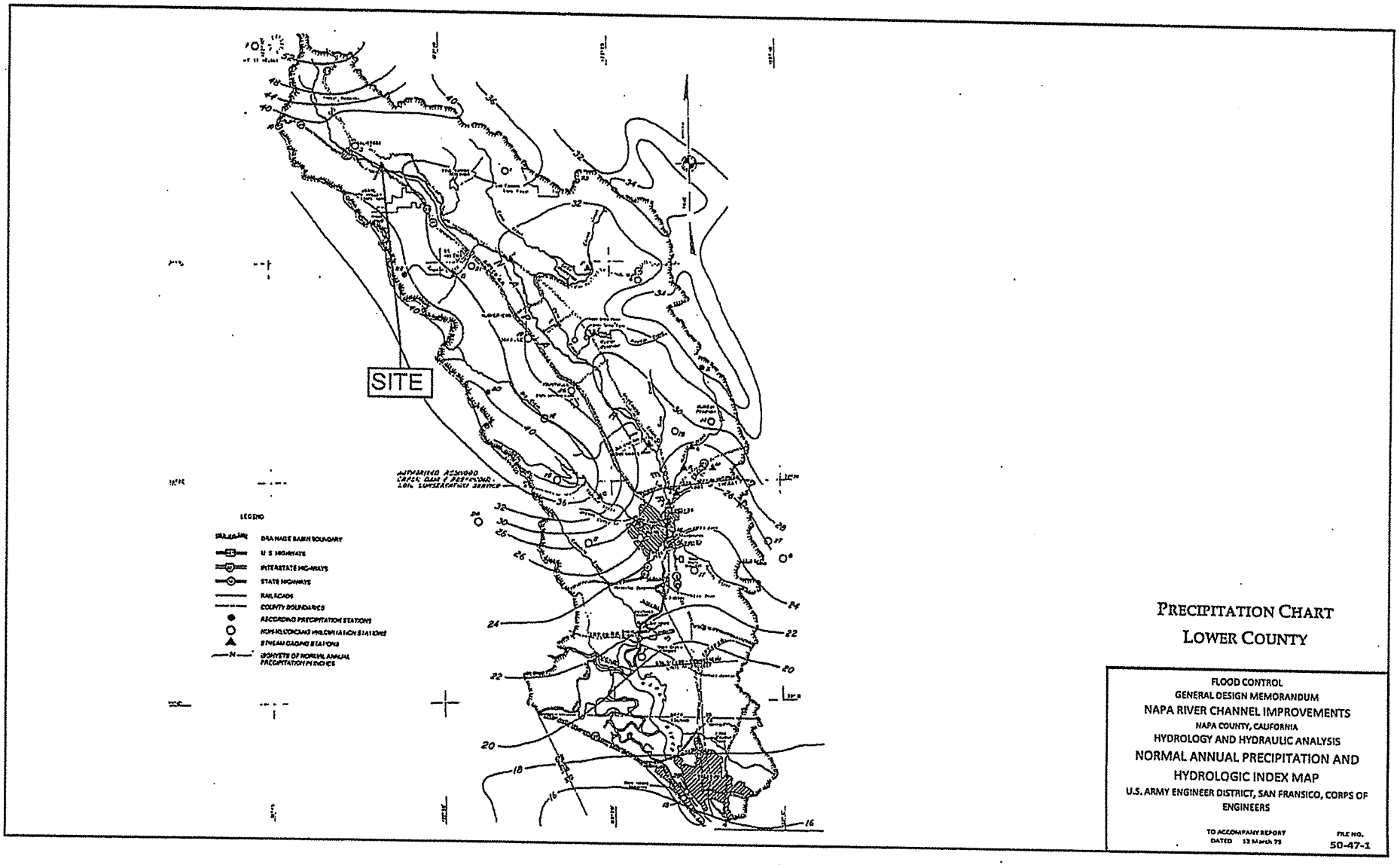


Exhibit 8: MEAN ANNUAL PRECIPITATION VS. 60 MINUTE RAINFALL

1077 Dunaweal Ln.

April 25, 2014

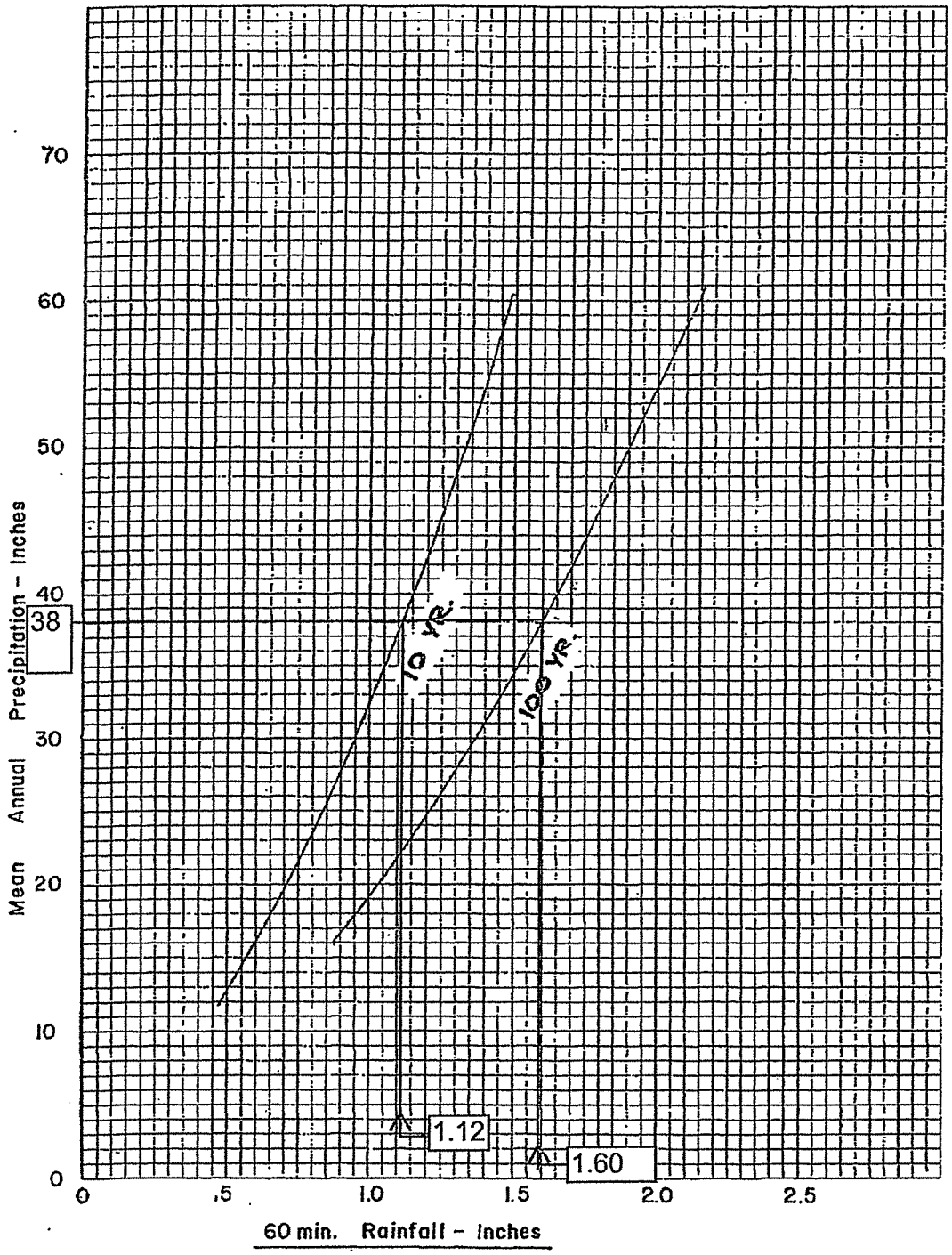
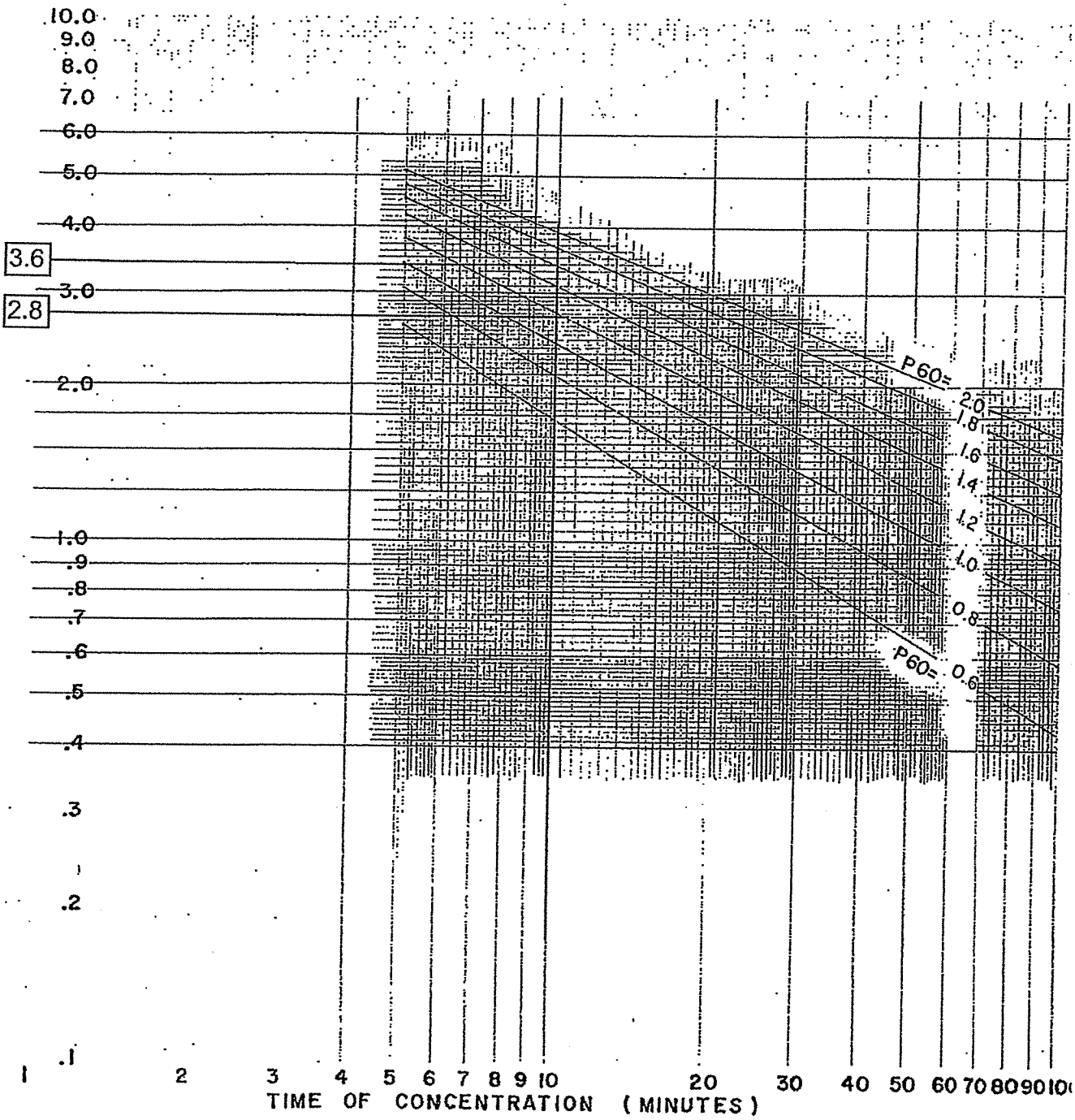


Exhibit 9: INTENSITY – DURATION CHART

1077 Dunaweal Ln.

April 25, 2014



Based on figure 7-8II.6 (-8-64)
State of California
Division of Highways
Planning Manual

Exhibit 10:Table of Runoff Curve Numbers
1077 Dunaweal Ln.
April 25, 2014

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Table of Runoff Curve Numbers (SCS, 1986)

Description of Land Use	Hydrologic Soil Group			
	A	B	C	D
Paved parking lots, roofs, driveways	98	98	98	98
Streets and Roads:				
Paved with curbs and storm sewers	98	98	98	98
Gravel	76	85	89	91
Dirt	72	82	87	89
Cultivated (Agricultural Crop) Land*:				
Without conservation treatment (no terraces)	72	81	88	91
With conservation treatment (terraces, contours)	62	71	78	81
Pasture or Range Land:				
Poor (<50% ground cover or heavily grazed)	68	79	86	89
Good (50-75% ground cover; not heavily grazed)	39	61	74	80
Meadow (grass, no grazing, mowed for hay)	30	58	71	78
Brush (good, >75% ground cover)	30	48	65	73
Woods and Forests:				
Poor (small trees/brush destroyed by over-grazing or burning)	45	66	77	83
Fair (grazing but not burned; some brush)	36	60	73	79
Good (no grazing; brush covers ground)	30	55	70	77
Open Spaces (lawns, parks, golf courses, cemeteries, etc.):				
Fair (grass covers 50-75% of area)	49	69	79	84
Good (grass covers >75% of area)	39	61	74	80
Commercial and Business Districts (85% impervious)	89	92	94	95
Industrial Districts (72% impervious)	81	88	91	93
Residential Areas:				
1/8 Acre lots, about 65% impervious	77	85	90	92
1/4 Acre lots, about 38% impervious	61	75	83	87
1/2 Acre lots, about 25% impervious	54	70	80	85
1 Acre lots, about 20% impervious	51	68	79	84

*From Chow et al. (1988).

Ex 11 NRCS Hydrologic Soil Group
1077 Dunaweal Ln.
April 25, 2014

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils

Soil Rating Polygons
- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Soil Rating Lines
- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Soil Rating Points
- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL: http://websoilsurvey.nrcs.usda.gov
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Napa County, California
Survey Area Data: Version 5, Nov 25, 2013

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Nov 2, 2010—Feb 17, 2012

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Ex 11 NRCS Hydrologic Soil Group
1077 Dunaweal Ln.
April 25, 2014

Hydrologic Soil Group

Hydrologic Soil Group—Summary by Map Unit—Napa County, California (CA055)				
Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
103	Bale loam, 0 to 2 percent slopes	B	20.3	79.3%
116	Clear Lake clay, drained	C	4.0	15.7%
118	Cole silt loam, 0 to 2 percent slopes	C	1.1	4.3%
140	Forward gravelly loam, 30 to 75 percent slopes	B	0.2	0.7%
Totals for Area of Interest			25.5	100.0%

Description

Hydrologic soil groups are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms.

The soils in the United States are assigned to four groups (A, B, C, and D) and three dual classes (A/D, B/D, and C/D). The groups are defined as follows:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

If a soil is assigned to a dual hydrologic group (A/D, B/D, or C/D), the first letter is for drained areas and the second is for undrained areas. Only the soils that in their natural condition are in group D are assigned to dual classes.

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A Commitment to Service

Department of Public Works

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Main: (707) 253-4351
Fax: (707) 253-4627

Steven Lederer
Director

MEMORANDUM

To:	PBES Staff	From:	Rick Marshall Deputy Director of Public Works
Date:	June 3, 2015	Re:	Girard Winery P14-00053

Thank you for the opportunity to review the subject permit application. I have reviewed the *Traffic Impact Study for the Girard Winery Project,* by W-Trans, dated December 18, 2014; the Initial Study prepared by your office; the letter from Ellison Folk and Laurel Impett, Shute Mihaly & Weinberger, dated January 20, 2015; and the response to the Folk & Impett letter by W-Trans, dated April 9, 2015.

I generally concur with the methods used, assumptions made, and conclusions reached by W-Trans in their original study and in their response to the Folk & Impett letter. I offer the following comments and recommendations:

Study area evaluated. The study area evaluated is appropriate for the proposed project, and is consistent with other project reviews conducted in the County of Napa. Traffic from the proposed project beyond the area studied in this analysis would be greatly diluted as it spreads throughout the roadway network and mixes with other traffic from the area.

Peak hour appropriate for analysis. I concur with W-Trans response that the scenarios evaluated in their analysis, weekday PM peak hour and weekend midday peak hour, are appropriate for this type of study, and this is consistent with other project reviews conducted in the County of Napa.

Thresholds of significance. W-Trans correctly identifies that the proposed project will add traffic to nearby roads and intersections which will operate at unacceptable levels of service under future conditions. However, they incorrectly conclude that because the Napa County General Plan includes a policy restricting the addition of traffic lanes, that this does not constitute a significant impact. In reality, it <u>does</u> constitute a significant cumulative impact, but evaluation of each project must consider alternatives other than just adding lanes in order to determine whether this impact can be mitigated to a less-than-significant level.

A recommendation that the project contribute to a traffic impact fee program would be appropriate if the County had one in place at this time. Since such a program is not yet developed, in order to move forward this proposed development must incorporate some other type of measure which could be found to adequately mitigate this impact, or else prepare an Environmental Impact Report to enable the adoption of overriding findings. It is my recommendation that the applicant modify their proposal so that the number of weekday afternoon or weekend midday peak hour trips generated by the project do not increase volumes on SR 29 or Silverado Trail by more than 1%. This is a threshold which is supported by other recent approvals in this County.

In order to reduce the number of peak hour trips added, the applicant could implement a Transportation Demand Management (TDM) plan such as is mentioned in W-Trans reports. In order to determine whether the TDM plan will adequately mitigate the cumulative impact as noted above, the traffic study should quantify the resulting number of trips which would be added to the impacted facilities, to demonstrate to decision makers whether the project would add more or less than a 1% increase with these measures in place.

Specific to the proposed TDM plan as described so far, I concur with Folk & Impett that the project applicant must provide more details about the proposed shuttle service. We need this information to determine whether there will be any secondary traffic or parking impacts at the location where visitors will gather to catch the shuttles.

Evaluation of special events. I concur with W-Trans position that the evaluation of weekday and weekend peaks, during regular operations, is what is appropriate for this analysis. It is the standard practice of our industry to assume that a small number of periods each year will have volumes which exceed these levels, and are not appropriate for analysis or design of facilities.

Left-Turn Lane not required. I concur with the determination by W-Trans that a left-turn lane at the project access location on Dunaweal Lane is not warranted.

Cumulative Impacts. By evaluating the volumes obtained from the countywide traffic forecasting model, the study has effectively included all recent approved projects and more. I do not recommend that further analysis along this line is needed.

Please contact me at Rick.Marshall@countyofnapa.org or call (707) 259-8381 if you have questions or need additional information.

w-trans

Whitlock & Weinberger
Transportation, Inc.
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Suite 201
Santa Rosa, CA 95401
voice 707.542.9500
fax 707.542.9590
web www.w-trans.com

December 18, 2014

Ms. Heather McCollister
1512 D Street
Napa, CA 94559

Traffic Impact Study for the Girard Winery Project

Dear Ms. McCollister;

Whitlock & Weinberger Transportation, Inc. (W-Trans) has completed a focused traffic analysis addressing potential traffic impacts and access needs for the proposed new winery to be located at 1077 Dunaweal Lane in the County of Napa. The traffic study was completed in accordance with the criteria established by the County of Napa, and is consistent with standard traffic engineering techniques. Comments from County staff have been addressed in preparing this final study.

Study Area

The project site is located on the east side of Dunaweal Lane between Silverado Trail and State Route (SR) 29, and is currently vacant. Dunaweal Lane is a two-lane roadway that runs north-south, and is designated as a local roadway. The posted speed limit on Dunaweal Lane is 45 miles per hour (mph).

Two intersections were identified by County staff for analysis.

Silverado Trail/Dunaweal Lane is a tee intersection with stop controls and flared right-turn lane on the northbound terminating Dunaweal Lane approach.

SR 29/Dunaweal Lane is stop-controlled with flared right-turn lanes on both the northbound and southbound Dunaweal Lane approaches.

Project Description

The proposed project would allow production of up to 200,000 gallons of wine annually, and operation of a tasting room for an average of 52 visitors on a weekday and 62 visitors on a weekend (or maximums of 75 and 90 visitors on a peak day, respectively. The project would have eight full-time employees and three part time employees on-site during weekdays as well as two full-time employees and four part-time employees on weekends. Vehicular access to the project site would be provided via a full access driveway on Dunaweal Lane. The most recent site plan, dated February 4, 2014 is enclosed.

Existing Volumes

Mechanical tube counts were collected on Dunaweal Lane near the project site on three consecutive days in March 2014 (Thursday through Saturday). Intersection counts were taken during the p.m. peak period in September 2014 at Silverado Trail/Dunaweal Lane and SR 29/Dunaweal Lane. The existing traffic volumes on Dunaweal Lane are summarized in Table 1. The volume of traffic ranged from 1,484 on Thursday to 1,691 vehicles on Saturday; this would be considered relatively low and reflects the volumes that would be generated by a residential subdivision having fewer than 20 homes.

Table 1
Existing Traffic Volumes

Study Segment	Friday		Saturday	
	Daily Trips NB/SB	PM Peak NB/SB	Daily Trips NB/SB	Midday Peak NB/SB
Dunaweal Ln	828/746	68/90	880/811	101/77
Total (NB+SB)	**1,574**	**158**	**1,691**	**178**

Existing Conditions

Intersections

Using the turning movement data collected at the two study intersections together with the current configurations, existing operating conditions at each intersection were evaluated. As shown in Table 2, both intersections are currently operating at LOS A or B overall and on all approaches. Copies of the calculations for all scenarios are enclosed.

Table 2
Existing PM Peak Hour Intersection Levels of Service

Study Intersection *Approach*	Existing Conditions		Existing plus Project	
	Delay	LOS	Delay	LOS
1. Silverado Trail/Dunaweal Ln	1.8	A	1.8	A
Westbound (Silverado) Left-turn	*7.6*	*A*	*7.6*	*A*
Northbound (Dunaweal) Approach	*8.9*	*A*	*8.9*	*A*
2. SR 29/Dunaweal Ln	0.9	A	0.9	A
Northbound (Dunaweal) Approach	*9.7*	*A*	*9.7*	*A*
Southbound (Dunaweal) Approach	*11.6*	*B*	*11.6*	*B*
Eastbound (SR 29) Left-turn	*8.9*	*A*	*8.9*	*A*
Westbound (SR 29) Left-turn	*8.1*	*A*	*8.1*	*A*

Notes: Delay is measured in average seconds per vehicle; LOS = Level of Service

According to Policy CIR-16 of the *Napa County General Plan*, 2008, "No single level of service standard is appropriate for un-signalized intersections, which shall be evaluated on a case-by-case basis to determine if signal warrants are met." For analysis purposes it was assumed that the impact would be significant if project-added traffic caused operation to fall to LOS E or F on an approach for which the Peak Hour Volume Signal Warrant is met.

With all approaches at LOS A or B, the current operation of both intersections would be considered acceptable. While weekend operation was not evaluated, given the similarity of volumes on a weekday versus a weekend day together with the very low average delays currently being encountered, it appears reasonable to conclude that operation during the weekend peak period is also low and therefore acceptable.

Roadways

Information in the *Napa County General Plan Update Draft Environmental Impact Report*, February 2007 (GPUDEIR), indicates that under 2003 volumes SR 29 was operating at LOS D between Lodi Lane and Deer Park Road (this is the nearest segment included in the analysis). Silverado Trail is identified in the same document as operating at LOS C under 2003 volumes.

Policy CIR-16 of the Napa County General Plan also provides guidance for roadways, indicating that, "The County shall seek to maintain an arterial Level of Service D or better on all county roadways, except where maintaining this desired level of service would require the installation of more travel lanes than shown on the Circulation Map." Both SR 29 and Silverado Trail are shown as 2-lane Rural Collectors on the Circulation Map (Figure CIR-1). As a result, the LOS D standard does not apply and operation is therefore considered acceptable regardless of the service level.

Collision History

The collision history along Dunaweal Lane between Silverado Trail and SR 29 was reviewed to determine any trends or patterns that may indicate a safety issue. Collision rates were calculated based on the collision data available from the California Highway Patrol as published in their *Statewide Integrated Traffic Records System* (SWITRS) reports during a five-year period between January 1, 2007, and December 31, 2011. The calculated collision rate for the study segment was compared to the average collision rate for similar facilities statewide, as indicated in *2010 Collision Data on California State Highways*, California Department of Transportation (Caltrans).

The statewide average collision rate for a rural two-lane, flat road with a speed limit of 55 mph or less is 1.05 collisions/million vehicle miles (c/mvm). Over the five-year study period, seven collisions were reported on Dunaweal Lane between Silverado Trail and SR 29, for a calculated collision rate of 0.90 c/mvm, which is lower than the statewide average for similar facilities. Further, no injuries or fatalities were reported during the five-year study period. The collision rate calculation spreadsheet is enclosed.

Future Volumes

Future projected traffic volumes were obtained from the Solano Transportation Authority (STA) who maintains the joint Napa County/Solano County 2010-2030 Travel Demand Forecasting Model. The data used included directional segment volumes along SR 29 and Silverado Trail for the p.m. peak hour. Using the 2030 and 2010 model volumes a growth factor of 1.45 was determined for SR 29. This growth factor was applied to turning movements to and from Dunaweal Lane and the remainder of the future increase was added to the volumes for the through movements. It is noted that the 78 vehicle trips added to Dunaweal Lane during the p.m. peak hour would adequately represent increases associated with three new wineries or expansions to existing wineries along Dunaweal Lane.

Future Conditions

Intersections

Based on these projected future volumes, the two study intersections are expected to operate acceptably overall, though the northbound Dunaweal approach to Silverado Trail is expected to operate at LOS E and the southbound Dunaweal Lane approach to SR 29 is expected to operate at LOS F. These results are shown in Table 3.

Table 3
Future PM Peak Hour Intersection Levels of Service

Study Intersection *Approach*	Future Conditions		Future plus Project	
	Delay	LOS	Delay	LOS
1. Silverado Trail/Dunaweal Ln	3.9	A	4.9	A
Westbound (Silverado) Left-turn	*9.5*	*A*	*9.6*	*A*
Northbound (Dunaweal) Approach	*38.7*	*E*	*45.7*	*E*
2. SR 29/Dunaweal Ln	9.6	A	12.4	B
Northbound (Dunaweal) Approach	*20.3*	*C*	*20.7*	*C*
Southbound (Dunaweal) Approach	**	*F*	**	*F*
Eastbound (SR 29) Left-turn	*11.4*	*B*	*11.4*	*B*
Westbound (SR 29) Left-turn	*8.7*	*A*	*8.7*	*A*

Notes: Delay is measured in average seconds per vehicle; LOS = Level of Service; ** = delay greater than 120 seconds

Roadways

According to the GPUDEIR, under projected 2030 volumes SR 29 is expected to operate at LOS F in the study area and, despite substantial increases in traffic, Silverado Trail is expected to continue operating at LOS C. As previously noted, the County has exempted both of these roads from their operational standard, so the projected operation is considered acceptable.

Trip Generation

The anticipated trip generation for a proposed project is typically estimated using standard rates published by the Institute of Transportation Engineers (ITE) in *Trip Generation Manual*, 9th Edition, 2012. However, the publication contains no such information for a winery. Therefore, the County of Napa's Winery Traffic Information/Trip Generation Sheet was used to determine the anticipated traffic that would be generated by the proposed tasting room. A copy of this worksheet is enclosed.

Employee-related trips will be minimized by scheduling employee shifts that reduce the number of trips generated during the p.m. peak period. Production employees will work Monday through Friday from 7 a.m. to 3 p.m., hospitality and/or tasting room employees will work seven days per week from 9 a.m. to 6 p.m. and administrative employees will work Monday through Friday from 8 a.m. to 5 p.m. The resulting weekday p.m. peak hour trips will be associated with administrative employees and tasting visitors only.

The County of Napa's Winery Traffic Information/Trip Generation Sheet does not include guidance on inbound versus outbound trips, so it was assumed that 75 percent of trips at the winery would be outbound during the weekday p.m. peak hour since most of the trips would be associated with employees and customers leaving at closure of the winery. For the weekend midday peak hour it was assumed that inbound and outbound trips would be evenly split. A summary of the project's trip generation potential is provided in Table 4.

Table 4
Project Trip Generation

Land Use	Daily Trips		Weekday PM Peak			Weekend Midday Peak		
	Weekday	Weekend	Trips	In	Out	Trips	In	Out
Proposed Project								
Winery plus Tasting Room	74	58	26	6	20	29	15	14
Total Trips on Driveway	**74**	**58**	**26**	**6**	**20**	**29**	**15**	**14**

Trip Distribution

The pattern used to allocate new project trips to the street network was determined by reviewing existing average daily traffic volumes on Dunaweal Lane. It is understood that the winery will direct employees to take SR 29 when their origin/destination is the north and take Silverado Trail when their origin/destination is the south. This results in right-turns from Dunaweal Lane to the regional network, further reducing impacts at the study intersections due to project-related trips. It is recommended that clear signage that directs tasting room visitors in the same fashion be installed at the project driveway for exiting vehicles and similar directions be posted on the winery's website.

Visitor traffic accessing the site from the north via Silverado Trail and from the south via SR 29 was assumed to have an even split, while all employee trips from the north take SR 29 and from the south were assumed to take Silverado Trail. Evening peak hour counts recently obtained at Dunaweal Lane together with the anticipated travel pattern specific to this project were used to estimate the splits at SR 29 and Silverado Trail. The resulting trip distribution is shown in Table 4.

Table 4
Trip Distribution Assumptions and Project-Added Trips

Origin/Destination	Percent of Trips	Daily/Weekend Trips	PM Peak Trips	Weekend Peak Trips
SR 29 south of Dunaweal				
Employee Trips	0	0/0	0	0
Visitor & Truck Trips	15	7/7	2	4
SR 29 north of Dunaweal				
Employee Trips	70	21/10	7	3
Visitor & Truck Trips	35	15/15	6	9
Silverado Trail south of Dunaweal				
Employee Trips	0	0/0	0	0
Visitor & Truck Trips	35	15/15	6	9
Silverado Trail north of Dunaweal				
Employee Trips	30	9/4	3	1
Visitor & Truck Trips	15	7/7	2	4
TOTAL		**74/58**	**26**	**30***

Note: * Value does not equal trip generation exactly due to rounding

Plus Project Conditions

Intersections

Upon adding project-generated trips to existing volumes, both study intersections are expected to continue operating at LOS A or B overall as well as on all approaches. Because operation will remain acceptable, the impact is considered less-than-significant.

Under Future plus Project conditions both study intersections are projected to continue operating at the same levels of service both overall and on individual approaches except that the overall operation at SR 29/ Dunaweal Lane changes from LOS A to LOS B.

Roadways

The additional traffic that the project would generate would reasonably be expected to be included in the growth projected by the County's traffic model. Further, since both study roadways are exempt from the County's operational standard, the added trips can be considered to have a less-than-significant impact.

Recommendation: Steps should be taken to direct winery traffic in such a way as to minimize impacts and support efforts to maintain LOS D operation on the SR 29 study intersection and roadway segments.

Site Access

Left-Turn Lane Warrants

The need for a left-turn lane on Dunaweal Lane at the proposed project driveway was evaluated based on criteria contained in the *Napa County Road and Street Standards*, 2011. Because future average daily traffic volumes on Dunaweal Lane are not available, recently obtained counts for both the weekday and weekend were used for this analysis.

Using the County's criteria, for the daily Friday traffic volume of 1575 vehicles and 1875 vehicles on a weekend, a left-turn lane would not be warranted for the projected driveway ADT of 74 vehicles on a weekday and 60 vehicles or more on a weekend. The proposed project would generate a weekday average of 74 trips and weekend average of 58 trips. Based on these traffic levels, a left-turn lane would not be warranted at the project driveway. The left-turn lane warrant graphs are enclosed for reference.

Sight Distance

At driveways, a substantially clear line of sight should be maintained between the driver of a vehicle waiting on the driveway and the driver of an approaching vehicle. Adequate time must be provided for the waiting vehicle to either cross, turn left, or turn right, without requiring the through traffic to radically alter their speed.

Sight distance along Dunaweal Lane at the proposed driveway was evaluated based on sight distance criteria contained in the *Highway Design Manual* published by Caltrans. The recommended sight distance for minor street approaches that are driveways is based on stopping sight distance, with the approach travel speeds as the basis for determining the recommended sight distance. For a 45-mph posted speed limit on Dunaweal Lane, the recommended stopping sight distance for a private driveway is 360 feet.

Dunaweal Lane is relatively flat and straight on both sides of the proposed driveway. Based on a review of the site plan, proposed driveway and Google Earth, sight lines are more than adequate and meet the recommended distance for the prevailing travel speeds.

Conclusions and Recommendations

- The proposed project would generate an average of 74 new daily trips, including 26 weekday p.m. peak hour trips and 29 weekend p.m. peak hour trips.
- The calculated collision rate for the study segment was lower than the statewide average for similar facilities.
- The study intersections and roadways are operating acceptably under existing volumes, and are expected to continue to do so with project trips added.
- Under projected future volumes the study intersections are expected to continue operating acceptably overall, though due to excessive delays anticipated at SR 29/Dunaweal Lane signalization may be warranted.
- SR 29 and Silverado Trail will continue to operate acceptably based on the applicable standards under projected Future volumes.
- It is recommended that the schedule for employee shifts be set to minimize the amount of traffic generated during the weekday p.m. peak hour.
- Clear signage that directs visitors to use SR 29 when destined to the north and Silverado Trail when destined to the south should be placed at the driveway. Similar information should be provided on the winery's website as well.
- A left-turn lane is not warranted at the project driveway based on Napa County's Left-Turn Lane Warrant criterion.
- Acceptable clear sight lines are available in both directions along Dunaweal Lane from the proposed driveway.
- The applicant should take steps to minimize traffic impacts and support efforts to maintain LOS D operation on SR 29 and its intersection with Dunaweal Lane.

Thank you for giving W-Trans the opportunity to provide these services. Please call if you have any questions.

Sincerely,

Dalene J. Whitlock, PE, PTOE
Principal

DJW/djw/NAX077.L2

Enclosures: Site Plan
Level of Service Calculations
Collision Rate Calculation Spreadsheet
Winery Traffic Information/Trip Generation Sheet
Napa County Left-Turn Lane Warrant

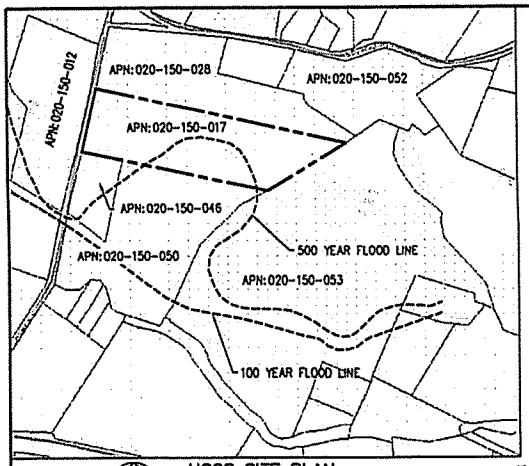
GIRARD WINERY

1077 Dunaweal Ln.

Calistoga, California 94515

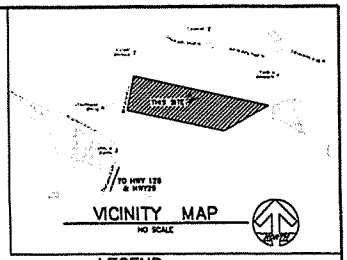
APN 022-150-017

USE PERMIT APPLICATION



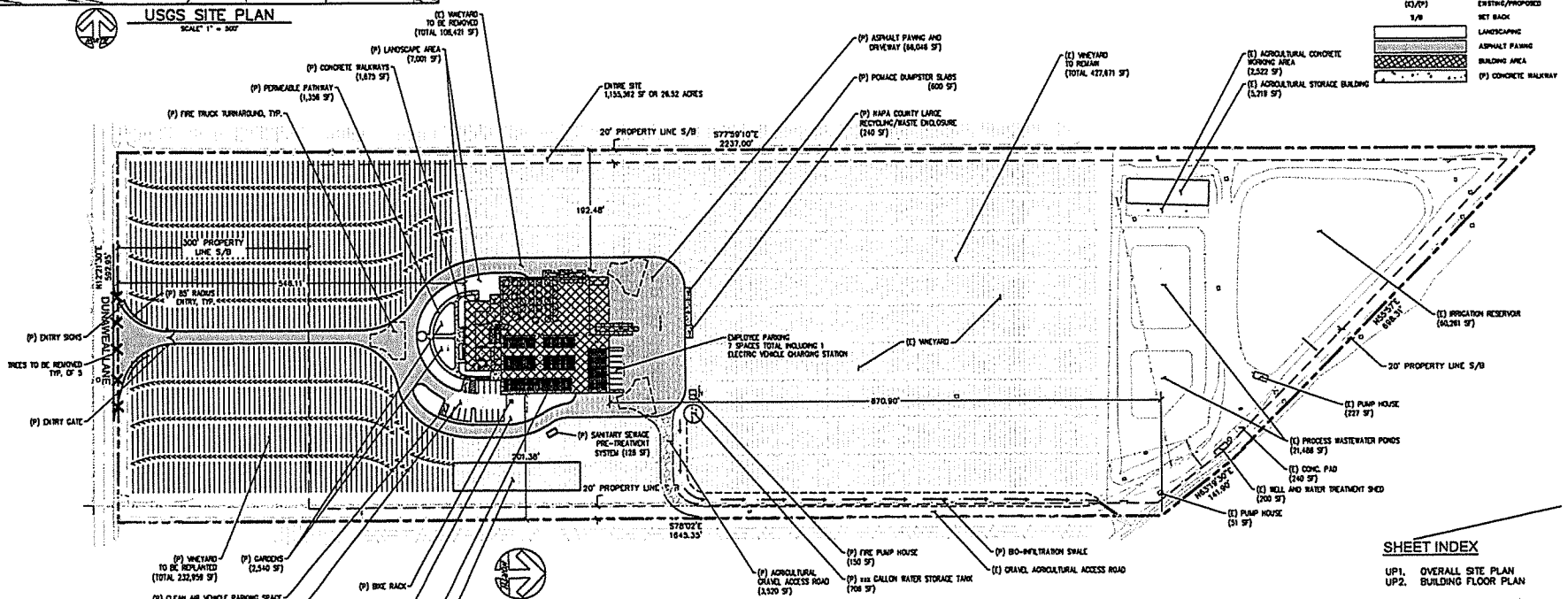
USGS SITE PLAN

SCALE: 1" = 500'



LEGEND

- APPROXIMATE PROPERTY LINE
- FENCE
- EDGE OF PAVEMENT
- EDGE OF GRAVEL DRIVEWAY
- DRAINAGE COURSE FLOWLINE
- VINEROW
- OVERHEAD UTILITIES
- SETBACK
- 100 YEAR FLOOD PLAIN
- 500 YEAR FLOOD PLAIN
- 5 FOOT INDEX 1' INTERVAL CONTOURS
- WELL
- (E)/(P) EXISTING/PROPOSED SET BACK
- LANDSCAPING
- ASPHALT PAVING
- BUILDING AREA
- (P) CONCRETE WALKWAY



PROPOSED OVERALL SITE PLAN

SCALE: 1" = 80'

OWNER/APPLICANT
VINTAGE WINE ESTATES
205 CONCOURSE BLVD.
SANTA ROSA, CA 95403
CONTACT: PAT MONEY
PH. (877) 299-9463

ARCHITECT
DEL STARRETT ARCHITECT
181 CONCOURSE BLVD., SUITE A
SANTA ROSA, CA 95403
CONTACT: DEL STARRETT
PH. (707) 526-9445

LANDSCAPE ARCHITECT
PARKER SHEN LANDSCAPE ARCHITECT
1815 PACIFIC AVE. #23
SANTA ROSA, CA 95403
PH. (707) 477-7502

ARCHITECT
ALWAYS ENGINEERING INC.
121 STORY CIRCLE, SUITE 1000
SANTA ROSA, CA 95401
CONTACT: RON MONROE
PH. (707) 542-8795

Grading Quantities:
Site Grading is based upon subgrade to existing grade. No account has been taken for stripping, expansion or contraction. Volumes should be verified and determined independently by the Contractor.

	CUT:	ENGINEERED FILL:	NET:
TOTAL EARTHWORK:	2,172 CY	4,834 CY	1,942 CY (FILL)

TOTAL DISTURBED AREA = 3.59 ACRES

Note: Excess spoils will be disposed of in a county approved site or spread in onsite vineyards. Temporary grading spoils will be stockpiled onsite in the unplanted vineyard area until ready for use.

SHEET INDEX

Always Engineering, Inc.
Civil Engineering & Topographic Surveying
2360 Professional Drive (707) 542-8795
Santa Rosa, CA 95403 Fax (707) 542-6147
www.alwaysengr.com

Prepared for: GIRARD WINERY
1077 DUNAWEAL LN., CALISTOGA, CA

Prepared on: February 4, 2014

USE PERMIT
OVERALL SITE PLAN
1077 DUNAWEAL LN., CALISTOGA, CA
APN:020-150-017

JOB # 13530
SHEET
UP1 OF UP2

Winery Traffic Information / Trip Generation Sheet

Traffic during a Typical Weekday

Number of FT employees: 8 x 3.05 one-way trips per employee = 24 daily trips.

Number of PT employees: 3 x 1.90 one-way trips per employee = 6 daily trips.

Average number of weekday visitors: 52 / 2.6 visitors per vehicle x 2 one-way trips = 40 daily trips.

Gallons of production: 200,000 / 1,000 x .009 truck trips daily[3] x 2 one-way trips = 4 daily trips.

Total = 74 **daily trips.**

(№ of FT employees) + (№ of PT employees/2) + (sum of visitor and truck trips x .38) = 26 **PM peak trips.**

Traffic during a Typical Saturday

Number of FT employees (on Saturdays): 2 x 3.05 one-way trips per employee = 6 daily trips.

Number of PT employees (on Saturdays): 4 x 1.90 one-way trips per employee = 8 daily trips.

Average number of Saturday visitors: 62 / 2. 8 visitors per vehicle x 2 one-way trips = 44 daily trips.

Total = 58 **daily trips.**

(№ of FT employees) + (№ of PT employees/2) + (visitor trips x .57) = 29 **PM peak trips.**

Traffic during a Crush Saturday

Number of FT employees (during crush): 20 x 3.05 one-way trips per employee = 61 daily trips.

Number of PT employees (during crush): 10 x 1.90 one-way trips per employee = 19 daily trips.

Average number of Saturday visitors: 62 / 2. 8 visitors per vehicle x 2 one-way trips = 44 daily trips.

Gallons of production: 200,000 / 1,000 x .009 truck trips daily x 2 one-way trips = 4 daily trips.

Avg. annual tons of grape on-haul: 1,000 / 144 truck trips daily [4] x 2 one-way trips = 14 daily trips.

Total = 142 **daily trips.**

Largest Marketing Event- Additional Traffic

Number of event staff (largest event): 30 x 2 one-way trips per staff person = 60 trips.

Number of visitors (largest event): 500 / 2.8 visitors per vehicle x 2 one-way trips = 357 trips.

Number of special event truck trips (largest event): 10 x 2 one-way trips = 20 trips.

[3] Assumes 1.47 materials & supplies trips + 0.8 case goods trips per 1,000 gallons of production / 250 days per year (see *Traffic Information Sheet Addendum* for reference).

[4] Assumes 4 tons per trip / 36 crush days per year (see *Traffic Information Sheet Addendum* for reference).

SEGMENT COLLISION RATE CALCULATIONS

Vintage Wine Estates Project

Location: 1077 Dunaweal Lane

Date of Count: Thursday, March 06, 2014
ADT: 1,500

Number of Collisions: 2
Number of Injuries: 0
Number of Fatalities: 0
Start Date: January 1, 2007
End Date: December 31, 2011
Number of Years: 5

Highway Type: Conventional 2 lanes or less
Area: Rural
Design Speed: ≤55
Terrain: Flat

Segment Length: 0.8 miles
Direction: North/South

$$\frac{\text{Number of Collisions x 1 Million}}{\text{ADT x 365 Days per Year x Segment Length x Number of Years}}$$

$$\frac{2 \times 1{,}000{,}000}{1{,}500 \times 365 \times 0.81 \times 5}$$

	Collision Rate		Fatality Rate	Injury Rate
Study Segment	**0.90**	**c/mvm**	**0.0%**	**0.0%**
Statewide Average*	**1.05**	**c/mvm**	**2.4%**	**40.1%**

ADT = average daily traffic volume
c/mvm = collisions per million vehicle miles
* 2010 Collision Data on California State Highways, Caltrans

PM Peak Hour - Existing Conditions
Vintage Wine Estates TIS
County of Napa

Level Of Service Computation Report
2000 HCM Unsignalized Method (Base Volume Alternative)

Intersection #1 Silverado Trail/Dunaweal Ln

Average Delay (sec/veh): 1.8 Worst Case Level Of Service: A[8.9]

Street Name:	Dunaweal Ln						Silverado Trail					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	- T	- R	L	- T	- R	L	- T	- R	L	- T	- R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Rights:	Include			Include			Include			Include		
Lanes:	0	0 1!	0 0	0	0 0 0	0	0	0 0 1	0	0	1 0 0	0
Volume Module: >> Count Date: 17 Sep 2014 << 4:45 - 5:45 pm												
Base Vol:	16	0	84	0	0	0	0	167	27	15	248	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	16	0	84	0	0	0	0	167	27	15	248	0
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
PHF Volume:	17	0	89	0	0	0	0	177	29	16	264	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
FinalVolume:	17	0	89	0	0	0	0	177	29	16	264	0
Critical Gap Module:												
Critical Gp:	6.4	6.5	6.2	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	4.1	xxxx	xxxxx
FollowUpTim:	3.5	4.0	3.3	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	2.2	xxxx	xxxxx
Capacity Module:												
Cnflict Vol:	487	487	192	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	206	xxxx	xxxxx
Potent Cap.:	543	484	855	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	1377	xxxx	xxxxx
Move Cap.:	538	478	855	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	1377	xxxx	xxxxx
Volume/Cap:	0.03	0.00	0.10	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	0.01	xxxx	xxxx
Level Of Service Module:												
2Way95thQ:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	0.0	xxxx	xxxxx
Control Del:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	7.6	xxxx	xxxxx
LOS by Move:	*	*	*	*	*	*	*	*	*	A	*	*
Movement:	LT -	LTR -	RT	LT -	LTR -	RT	LT -	LTR -	RT	LT -	LTR -	RT
Shared Cap.:	xxxx	1018	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
SharedQueue:	xxxxx	0.3	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	0.0	xxxx	xxxxx
Shrd ConDel:	xxxxx	8.9	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	7.6	xxxx	xxxxx
Shared LOS:	*	A	*	*	*	*	*	*	*	A	*	*
ApproachDel:		8.9			xxxxxx			xxxxxx			xxxxxx	
ApproachLOS:		A			*			*			*	

Note: Queue reported is the number of cars per lane.

PM Peak Hour - Existing Conditions
Vintage Wine Estates TIS
County of Napa

Level Of Service Computation Report
2000 HCM Unsignalized Method (Base Volume Alternative)

Intersection #2 SR 29/Dunaweal Ln

Average Delay (sec/veh): 0.9 Worst Case Level Of Service: B[11.6]

Street Name:	Dunaweal Ln						SR 29					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	- T	- R	L	- T	- R	L	- T	- R	L	- T	- R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Rights:	Include			Include			Include			Include		
Lanes:	0	0 1!	0 0	0	0 1!	0 0	1	0 0 1	0	1	0 0 1	0
Volume Module: >> Count Date: 16 Sep 2014 << 4:00 - 5:00 pm												
Base Vol:	2	0	2	47	0	25	14	382	2	2	558	64
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	2	0	2	47	0	25	14	382	2	2	558	64
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
PHF Volume:	2	0	2	51	0	27	15	412	2	2	601	69
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
FinalVolume:	2	0	2	51	0	27	15	412	2	2	601	69
Critical Gap Module:												
Critical Gp:	7.1	6.5	6.2	7.1	6.5	6.2	4.1	xxxx	xxxxx	4.1	xxxx	xxxxx
FollowUpTim:	3.5	4.0	3.3	3.5	4.0	3.3	2.2	xxxx	xxxxx	2.2	xxxx	xxxxx
Capacity Module:												
Cnflict Vol:	1096	1117	413	1084	1084	636	670	xxxx	xxxxx	414	xxxx	xxxxx
Potent Cap.:	192	209	644	196	219	482	930	xxxx	xxxxx	1156	xxxx	xxxxx
Move Cap.:	179	205	644	193	215	482	930	xxxx	xxxxx	1156	xxxx	xxxxx
Volume/Cap:	0.01	0.00	0.00	0.26	0.00	0.06	0.02	xxxx	xxxx	0.00	xxxx	xxxx
Level Of Service Module:												
2Way95thQ:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	0.0	xxxx	xxxxx	0.0	xxxx	xxxxx
Control Del:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	8.9	xxxx	xxxxx	8.1	xxxx	xxxxx
LOS by Move:	*	*	*	*	*	*	A	*	*	A	*	*
Movement:	LT -	LTR -	RT	LT -	LTR -	RT	LT -	LTR -	RT	LT -	LTR -	RT
Shared Cap.:	xxxx	769	xxxxx	xxxx	624	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
SharedQueue:	xxxxx	0.0	xxxxx	xxxxx	0.4	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shrd ConDel:	xxxxx	9.7	xxxxx	xxxxx	11.6	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shared LOS:	*	A	*	*	B	*	*	*	*	*	*	*
ApproachDel:		9.7			11.6			xxxxxx			xxxxxx	
ApproachLOS:		A			B			*			*	

Note: Queue reported is the number of cars per lane.

PM Peak Hour - Existing plus Project Conditions
Vintage Wine Estates TIS
County of Napa

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #1 Silverado Trail/Dunaweal Ln

Average Delay (sec/veh): 2.0 Worst Case Level Of Service: A[8.9]

Street Name:	Dunaweal Ln						Silverado Trail					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	- T	- R	L	- T	- R	L	- T	- R	L	- T	- R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Rights:	Include			Include			Include			Include		
Lanes:	0 0	1! 0	0	0 0	0 0	0 0	0 0	0 1	0	0 1	0 0	0
Volume Module: >> Count Date: 17 Sep 2014 << 4:45 - 5:45 pm												
Base Vol:	16	0	84	0	0	0	0	167	27	15	248	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	16	0	84	0	0	0	0	167	27	15	248	0
Added Vol:	3	0	7	0	0	0	0	0	1	2	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	19	0	91	0	0	0	0	167	28	17	248	0
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
PHF Volume:	20	0	97	0	0	0	0	177	30	18	264	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
FinalVolume:	20	0	97	0	0	0	0	177	30	18	264	0
Critical Gap Module:												
Critical Gp:	6.4	6.5	6.2	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	4.1	xxxx	xxxx
FollowUpTim:	3.5	4.0	3.3	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	2.2	xxxx	xxxx
Capacity Module:												
Cnflict Vol:	492	492	192	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	207	xxxx	xxxx
Potent Cap.:	540	481	854	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	1376	xxxx	xxxx
Move Cap.:	534	474	854	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	1376	xxxx	xxxx
Volume/Cap:	0.04	0.00	0.11	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	0.01	xxxx	xxxx
Level Of Service Module:												
2Way95thQ:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	0.0	xxxx	xxxxx
Control Del:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	7.7	xxxx	xxxxx
LOS by Move:	*	*	*	*	*	*	*	*	*	A	*	*
Movement:	LT -	LTR -	RT	LT -	LTR -	RT	LT -	LTR -	RT	LT -	LTR -	RT
Shared Cap.:	xxxx	1033	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
SharedQueue:	xxxxx	0.4	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	0.0	xxxx	xxxxx
Shrd ConDel:	xxxxx	8.9	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	7.7	xxxx	xxxxx
Shared LOS:	*	A	*	*	*	*	*	*	*	A	*	*
ApproachDel:		8.9			xxxxxx			xxxxxx			xxxxxx	
ApproachLOS:		A			*			*			*	

Note: Queue reported is the number of cars per lane.

PM Peak Hour - Existing plus Project Conditions
Vintage Wine Estates TIS
County of Napa

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #2 SR 29/Dunaweal Ln

Average Delay (sec/veh): 1.0 Worst Case Level Of Service: B[11.3]

Street Name:	Dunaweal Ln						SR 29					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	- T	- R	L	- T	- R	L	- T	- R	L	- T	- R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Rights:	Include			Include			Include			Include		
Lanes:	0 0	1! 0	0	0 0	1! 0	0	1 0	0 1	0	1 0	0 1	0
Volume Module: >> Count Date: 16 Sep 2014 << 4:00 - 5:00 pm												
Base Vol:	2	0	2	47	0	25	14	382	2	2	558	64
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	2	0	2	47	0	25	14	382	2	2	558	64
Added Vol:	0	0	0	3	0	7	2	0	0	0	0	1
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	2	0	2	50	0	32	16	382	2	2	558	65
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
PHF Volume:	2	0	2	54	0	34	17	412	2	2	601	70
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
FinalVolume:	2	0	2	54	0	34	17	412	2	2	601	70
Critical Gap Module:												
Critical Gp:	7.1	6.5	6.2	7.1	6.5	6.2	4.1	xxxx	xxxxx	4.1	xxxx	xxxxx
FollowUpTim:	3.5	4.0	3.3	3.5	4.0	3.3	2.2	xxxx	xxxxx	2.2	xxxx	xxxxx
Capacity Module:												
Cnflict Vol:	1105	1123	413	1089	1089	636	671	xxxx	xxxxx	414	xxxx	xxxxx
Potent Cap.:	190	207	644	195	217	481	929	xxxx	xxxxx	1156	xxxx	xxxxx
Move Cap.:	173	203	644	191	213	481	929	xxxx	xxxxx	1156	xxxx	xxxxx
Volume/Cap:	0.01	0.00	0.00	0.28	0.00	0.07	0.02	xxxx	xxxx	0.00	xxxx	xxxx
Level Of Service Module:												
2Way95thQ:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	0.1	xxxx	xxxxx	0.0	xxxx	xxxxx
Control Del:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	8.9	xxxx	xxxxx	8.1	xxxx	xxxxx
LOS by Move:	*	*	*	*	*	*	A	*	*	A	*	*
Movement:	LT -	LTR -	RT	LT -	LTR -	RT	LT -	LTR -	RT	LT -	LTR -	RT
Shared Cap.:	xxxx	753	xxxxx	xxxx	662	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
SharedQueue:	xxxxx	0.0	xxxxx	xxxxx	0.5	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shrd ConDel:	xxxxx	9.8	xxxxx	xxxxx	11.3	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shared LOS:	*	A	*	*	B	*	*	*	*	*	*	*
ApproachDel:		9.8			11.3			xxxxxx			xxxxxx	
ApproachLOS:		A			B			*			*	

Note: Queue reported is the number of cars per lane.

PM Peak Hour - Future Conditions
Vintage Wine Estates TIS
County of Napa

Level Of Service Computation Report
2000 HCM Unsignalized Method (Base Volume Alternative)

Intersection #1 Silverado Trail/Dunaweal Ln

Average Delay (sec/veh): 3.9 Worst Case Level Of Service: E[38.7]

Street Name:	Dunaweal Ln						Silverado Trail					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Rights:	Include			Include			Include			Include		
Lanes:	0 0 1! 0 0			0 0 0 0 0			0 0 0 1 0			0 1 0 0 0		
Volume Module:												
Base Vol:	122	0	23	0	0	0	0	786	39	22	494	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	122	0	23	0	0	0	0	786	39	22	494	0
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	122	0	23	0	0	0	0	786	39	22	494	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
FinalVolume:	122	0	23	0	0	0	0	786	39	22	494	0
Critical Gap Module:												
Critical Gp:	6.4	6.5	6.2	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	4.1	xxxx	xxxxx
FollowUpTim:	3.5	4.0	3.3	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	2.2	xxxx	xxxxx
Capacity Module:												
Cnflict Vol:	1344	1344	806	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	825	xxxx	xxxxx
Potent Cap.:	169	153	385	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	814	xxxx	xxxxx
Move Cap.:	166	149	385	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	814	xxxx	xxxxx
Volume/Cap:	0.74	0.00	0.06	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	0.03	xxxx	xxxx
Level Of Service Module:												
2Way95thQ:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	0.1	xxxx	xxxxx
Control Del:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	9.5	xxxx	xxxxx
LOS by Move:	*	*	*	*	*	*	*	*	*	A	*	*
Movement:	LT -	LTR -	RT	LT -	LTR -	RT	LT -	LTR -	RT	LT -	LTR -	RT
Shared Cap.:	xxxx	246	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
SharedQueue:	xxxxx	3.4	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	0.1	xxxx	xxxxx
Shrd ConDel:	xxxxx	38.7	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	9.5	xxxx	xxxxx
Shared LOS:	*	E	*	*	*	*	*	*	*	A	*	*
ApproachDel:		38.7		xxxxxx			xxxxxx			xxxxxx		
ApproachLOS:		E		*			*			*		

Note: Queue reported is the number of cars per lane.

PM Peak Hour - Future Conditions
Vintage Wine Estates TIS
County of Napa

Level Of Service Computation Report
2000 HCM Unsignalized Method (Base Volume Alternative)

Intersection #2 SR 29/Dunaweal Ln

Average Delay (sec/veh): 9.6 Worst Case Level Of Service: F[177.3]

Street Name:	Dunaweal Ln						SR 29					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Rights:	Include			Include			Include			Include		
Lanes:	0 0 1! 0 0			0 0 1! 0 0			1 0 0 1 0			1 0 0 1 0		
Volume Module:												
Base Vol:	2	0	2	68	0	36	20	613	2	2	1113	93
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	2	0	2	68	0	36	20	613	2	2	1113	93
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	2	0	2	68	0	36	20	613	2	2	1113	93
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
FinalVolume:	2	0	2	68	0	36	20	613	2	2	1113	93
Critical Gap Module:												
Critical Gp:	7.1	6.5	6.2	7.1	6.5	6.2	4.1	xxxx	xxxxx	4.1	xxxx	xxxxx
FollowUpTim:	3.5	4.0	3.3	3.5	4.0	3.3	2.2	xxxx	xxxxx	2.2	xxxx	xxxxx
Capacity Module:												
Cnflict Vol:	1836	1864	614	1819	1819	1160	1206	xxxx	xxxxx	615	xxxx	xxxxx
Potent Cap.:	59	74	496	61	79	240	586	xxxx	xxxxx	974	xxxx	xxxxx
Move Cap.:	49	71	496	59	76	240	586	xxxx	xxxxx	974	xxxx	xxxxx
Volume/Cap:	0.04	0.00	0.00	1.16	0.00	0.15	0.03	xxxx	xxxx	0.00	xxxx	xxxx
Level Of Service Module:												
2Way95thQ:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	0.1	xxxx	xxxxx	0.0	xxxx	xxxxx
Control Del:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	11.4	xxxx	xxxxx	8.7	xxxx	xxxxx
LOS by Move:	*	*	*	*	*	*	B	*	*	A	*	*
Movement:	LT -	LTR -	RT	LT -	LTR -	RT	LT -	LTR -	RT	LT -	LTR -	RT
Shared Cap.:	xxxx	240	xxxxx	xxxx	101	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
SharedQueue:	xxxxx	0.1	xxxxx	xxxxx	6.5	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shrd ConDel:	xxxxx	20.3	xxxxx	xxxxx	177	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shared LOS:	*	C	*	*	F	*	*	*	*	*	*	*
ApproachDel:		20.3			177.3		xxxxxx			xxxxxx		
ApproachLOS:		C			F		*			*		

Note: Queue reported is the number of cars per lane.

PM Peak Hour - Future plus Project Conditions
Vintage Wine Estates TIS
County of Napa

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #1 Silverado Trail/Dunaweal Ln

Average Delay (sec/veh): 4.9 Worst Case Level Of Service: E[45.7]

Street Name:	Dunaweal Ln						Silverado Trail					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	- T	- R	L	- T	- R	L	- T	- R	L	- T	- R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Rights:	Include			Include			Include			Include		
Lanes:	0 0	1! 0	0	0 0	0 0	0	0 0	0 1	0	0 1	0 0	0
Volume Module:												
Base Vol:	122	0	23	0	0	0	0	786	39	22	494	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	122	0	23	0	0	0	0	786	39	22	494	0
Added Vol:	3	0	7	0	0	0	0	0	1	2	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	125	0	30	0	0	0	0	786	40	24	494	0
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	125	0	30	0	0	0	0	786	40	24	494	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
FinalVolume:	125	0	30	0	0	0	0	786	40	24	494	0
Critical Gap Module:												
Critical Gp:	6.4	6.5	6.2	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	4.1	xxxx	xxxxx
FollowUpTim:	3.5	4.0	3.3	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	2.2	xxxx	xxxxx
Capacity Module:												
Cnflict Vol:	1348	1348	806	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	826	xxxx	xxxxx
Potent Cap.:	168	152	385	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	813	xxxx	xxxxx
Move Cap.:	164	148	385	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	813	xxxx	xxxxx
Volume/Cap:	0.76	0.00	0.08	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	0.03	xxxx	xxxx
Level Of Service Module:												
2Way95thQ:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	0.1	xxxx	xxxxx
Control Del:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	9.6	xxxx	xxxxx
LOS by Move:	*	*	*	*	*	*	*	*	*	A	*	*
Movement:	LT -	LTR -	RT	LT -	LTR -	RT	LT -	LTR -	RT	LT -	LTR -	RT
Shared Cap.:	xxxx	235	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
SharedQueue:	xxxxx	4.1	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	0.1	xxxx	xxxxx
Shrd ConDel:	xxxxx	45.7	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	9.6	xxxx	xxxxx
Shared LOS:	*	E	*	*	*	*	*	*	*	A	*	*
ApproachDel:		45.7			xxxxxx			xxxxxx			xxxxxx	
ApproachLOS:		E			*			*			*	

Note: Queue reported is the number of cars per lane.

PM Peak Hour - Future plus Project Conditions
Vintage Wine Estates TIS
County of Napa

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #2 SR 29/Dunaweal Ln

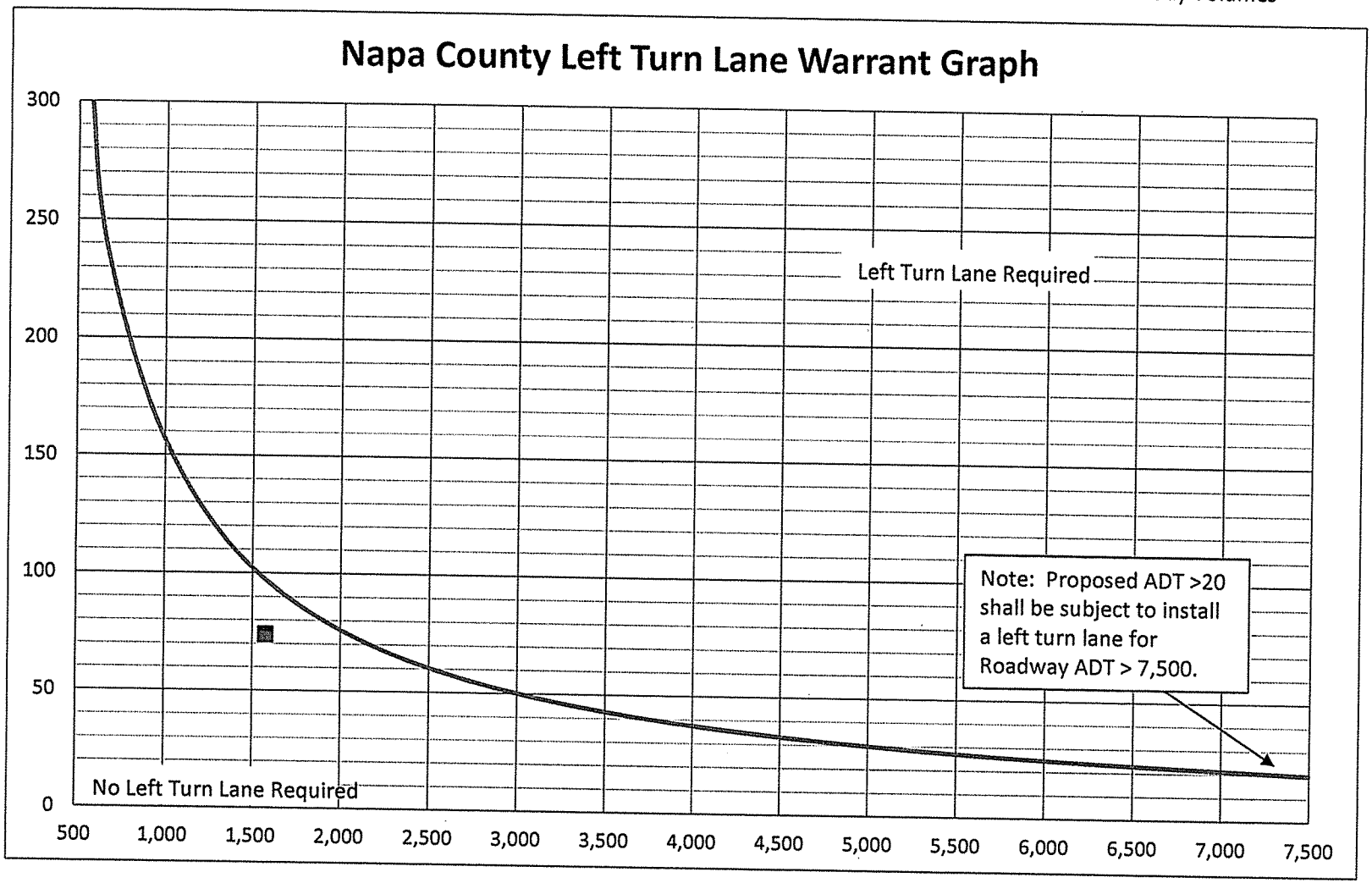
Average Delay (sec/veh): 12.4 Worst Case Level Of Service: F[209.8]

Street Name:	Dunaweal Ln						SR 29					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	- T	- R	L	- T	- R	L	- T	- R	L	- T	- R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Rights:	Include			Include			Include			Include		
Lanes:	0 0	1! 0	0	0 0	1! 0	0	1 0	0 1	0	1 0	0 1	0
Volume Module:												
Base Vol:	2	0	2	68	0	36	20	613	2	2	1113	93
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	2	0	2	68	0	36	20	613	2	2	1113	93
Added Vol:	0	0	0	3	0	7	2	0	0	0	0	1
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	2	0	2	71	0	43	22	613	2	2	1113	94
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	2	0	2	71	0	43	22	613	2	2	1113	94
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
FinalVolume:	2	0	2	71	0	43	22	613	2	2	1113	94
Critical Gap Module:												
Critical Gp:	7.1	6.5	6.2	7.1	6.5	6.2	4.1	xxxx	xxxxx	4.1	xxxx	xxxxx
FollowUpTim:	3.5	4.0	3.3	3.5	4.0	3.3	2.2	xxxx	xxxxx	2.2	xxxx	xxxxx
Capacity Module:												
Cnflict Vol:	1844	1869	614	1823	1823	1160	1207	xxxx	xxxxx	615	xxxx	xxxxx
Potent Cap.:	58	73	496	60	78	240	585	xxxx	xxxxx	974	xxxx	xxxxx
Move Cap.:	46	70	496	58	75	240	585	xxxx	xxxxx	974	xxxx	xxxxx
Volume/Cap:	0.04	0.00	0.00	1.22	0.00	0.18	0.04	xxxx	xxxx	0.00	xxxx	xxxx
Level Of Service Module:												
2Way95thQ:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	0.1	xxxx	xxxxx	0.0	xxxx	xxxxx
Control Del:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	11.4	xxxx	xxxxx	8.7	xxxx	xxxxx
LOS by Move:	*	*	*	*	*	*	B	*	*	A	*	*
Movement:	LT -	LTR -	RT	LT -	LTR -	RT	LT -	LTR -	RT	LT -	LTR -	RT
Shared Cap.:	xxxx	233	xxxxx	xxxx	100	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
SharedQueue:	xxxxx	0.1	xxxxx	xxxxx	7.4	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shrd ConDel:	xxxxx	20.7	xxxxx	xxxxx	210	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shared LOS:	*	C	*	*	F	*	*	*	*	*	*	*
ApproachDel:		20.7			209.8			xxxxxx			xxxxxx	
ApproachLOS:		C			F			*			*	

Note: Queue reported is the number of cars per lane.

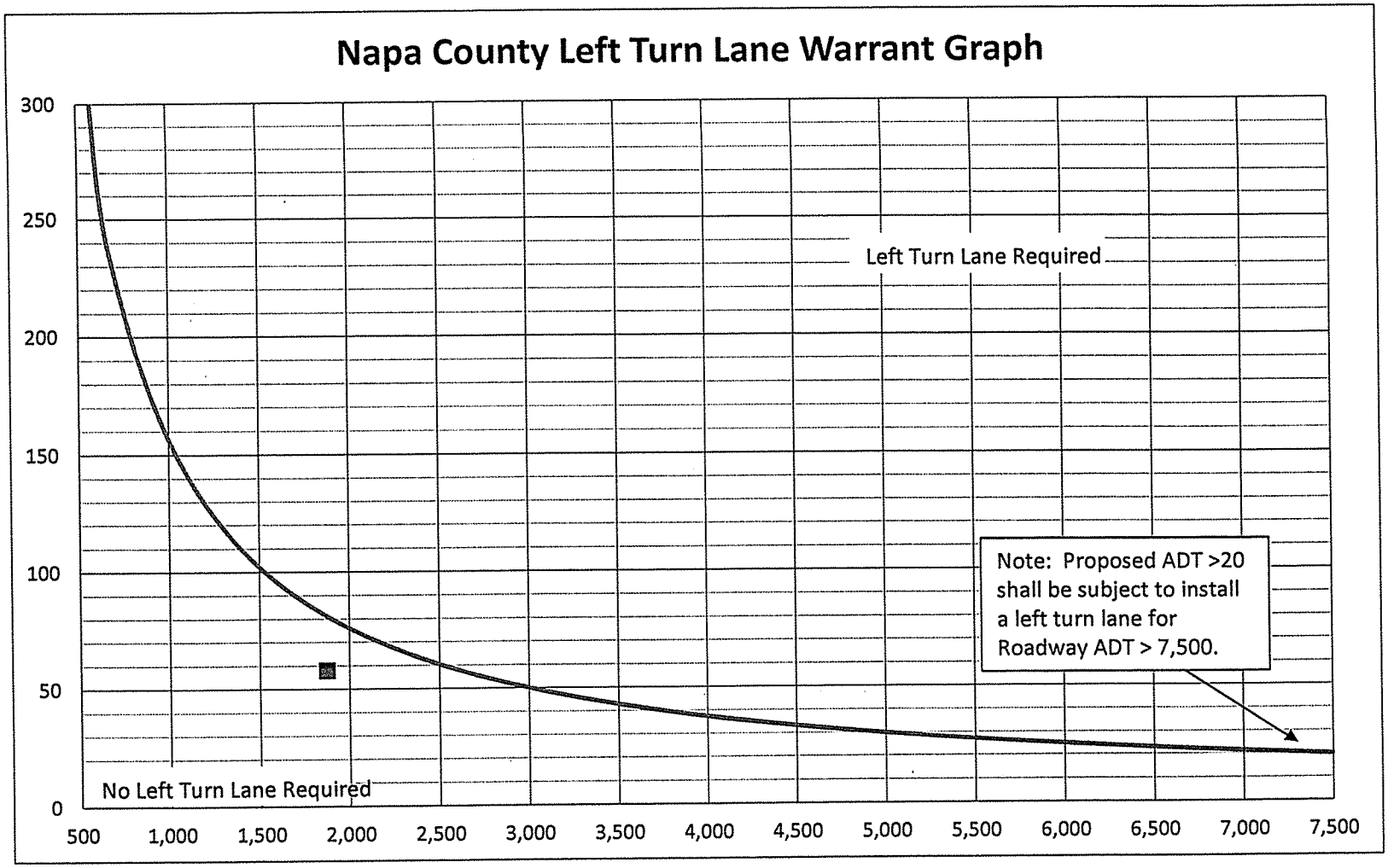
Project Name: Girard Winery

Scenario: Weekday Volumes



Project Name: Girard Winery

Scenario: Weekend Volumes



April 9, 2015

Mr. Pat Roney
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Response to Comments on the "Traffic Impact Study for the Girard Winery Project"

Dear Mr. Roney;

As requested, Whitlock & Weinberger Transportation, Inc. (W-Trans) has reviewed comments relative to the "Traffic Study for the Girard Winery Project" as contained in a letter dated January 20, 2015, to David Morrison from Ellison Folk and Laurel L. Impett. These comments are found in Sections D and E of the letter. The comments are paraphrased and shown in *italics*, followed by our responses.

The IS concedes that the Project will have significant impacts relating to the increase in traffic, but fails to identify feasible mitigation.

The IS finds that the project would have **less-than-significant** impacts on traffic operation **with mitigation**, and mitigation is identified as part of the project description.

As noted in the traffic study, both study intersections are projected to operate acceptably at LOS C or better overall under Future plus Project volumes (worst case condition). As regards intersection operation, the project's impact is therefore less-than-significant, without any mitigation being needed.

The County's General Plan projects Future LOS F operation on SR 29, though the County's policy does not establish a threshold for this roadway as the General Plan prohibits widening the road to four lanes. Analysis was performed to determine the project's potential impact on operation of SR 29 under projected Future 2030 p.m. peak hour volumes. As indicated in the enclosed calculations, both with the maximum estimated project volumes added to anticipated 2030 volumes and without, operation would remain at LOS E both north and south of Dunaweal Lane, with no change in the volume-to-capacity (v/c) ratios. (Note that the volumes used may differ from those applied in the General Plan analysis, which is why LOS E operation results in this analysis compared to LOS F in the General Plan. The focus of the analysis is the difference in operation without and with the project, however.) The "percent time following" is expected to be 89 percent north of Dunaweal Lane and 93 percent south of this intersection both without and with the estimated trips from the project added.

Since the project will enact transportation demand management (TDM) measures to eliminate adding **any** peak hour trips, the evaluated conditions would only occur if there were employee and visitor trips as estimated without the benefit of the TDM program. Given that it is relatively easy for employee and visitor trips to be managed, as proposed, it appears reasonable to accept this TDM plan as a realistic and feasible option for addressing potential traffic impacts, even if they would be less-than-significant. Based on this analysis it was determined that even without the TDM program the project's trips would result in less-than-significant impacts.

The study area is inadequate; it should have addressed the distribution of trips along SR 29 and Silverado Trail.

The study area was selected to include the two locations where the project would generate the highest number of vehicle turning movements, which in turn would reflect the locations with the greatest potential transportation impacts. Beyond these two intersections the added trips would be almost entirely comprised of through movements, which would result in no change to the level of service or volume-to-capacity ratio of SR 29, as shown in the calculations discussed above. Further, the number of project-generated trips would be considerably lower at locations further from Dunaweal Lane as the trips disperse wherever paths diverge, such as at the intersections of Dunaweal Lane with SR 29 and Silverado Trail. As shown in Table 4 of the traffic study, the projected number of p.m. peak hour trips on SR 29 would vary from two south of Dunaweal Lane to 13 north of Dunaweal Lane.

It is noted that the projections of future LOS F operation along SR 29 are based on a substantial anticipated increase in traffic over current levels. These added future trips would reasonably be expected to include the project-generated trips, so any impacts associated with project traffic have already been accounted for in the General Plan and its associated EIR.

However, while the project's impact would not be significant even if it generated the number of trips estimated based on the County's standard winery trip generation calculations, the project description includes measures limiting activity during peak periods to minimize potential transportation impacts by essentially eliminating any new trips during peak periods.

The IS does not establish proper thresholds of significance that define when an increase is substantial in relation to the existing traffic load or capacity of the street system.

The traffic study relies on both the Caltrans and County standards of significance which indicate that operation at LOS C or better is acceptable. As noted in the traffic study, both intersections of Dunaweal Lane with SR 29 and Silverado Trail are projected to operate at LOS C or better overall under the highest volume scenario, which is Future plus Project. The CEQA checklist has traditionally been interpreted such that if acceptable operation is maintained, then the increase is not considered substantial in relation to the existing traffic load or capacity of the street system.

The IS asserts that project impacts could be mitigated by altering employee shifts and timing of events.

The IS does not assert that the project has significant impacts, therefore mitigation measure are not necessary. However, to minimize the project's potential to affect traffic the project description includes transportation demand management (TDM) measures to shift project-generated trips outside the periods of peak traffic and congestion. However, even if the TDM measures failed, as noted above, the project's traffic impact would still be less-than-significant.

The traffic analysis was based on the County's standard trip generation estimates, which overstate peak hour trips according to data collected by W-Trans. Although these added trips would be expected to have a less-than-significant impact, the proposed TDM program would reduce the number of trips added to the network below the 26 p.m. peak hour and 29 Saturday midday peak hour trips used for the analysis. The TDM program would shift most, if not all, of these trips outside the peak hours, resulting in minimal impact during periods of peak congestion.

The IS ignores the effect of event traffic, including a proposed 500-person event. Further, the impacts of truck traffic, especially the 242 daily truck trips during harvest, should be addressed since all of the wineries harvest during the same week or two.

Events occur on an infrequent basis (14 times per year, or less than two per month on average), so the traffic associated with them falls below the "30th highest hour" level that is typically the basis for design. Further, the TDM plan pushes these trips outside the peak hours on both weekdays and weekends, taking advantage of the excess roadway capacity available during these off-peak times rather than adding to peak period congestion.

It is unclear where the estimate of 242 daily truck trips came from. The trip generation sheet shows a maximum of 142 daily trips during harvest, of which 14 are trucks; 80 are for employees. Further, crush occurs over a six to eight week period, not one to two weeks and each individual winery receives grapes at various times depending on the varietals and the microclimate where they are grown.

Finally, it should be noted that the maximum-sized 500-person event occurs only once per year. To avoid facilities with excessive capacities, AASHTO recommends that designs be based on volumes during the 30th highest hour. Since trips associated with the single large event per year would represent only a few of the highest hourly volumes annually, these "plus Project" conditions would not abe appropriate for design purposes. Given that there is only one such event per year, analysis of conditions during the 500-person event are not warranted.

The potential impacts of weddings held at the Girard Winery must be evaluated.

The special events evaluated in the traffic study are based on typical traffic associated with a maximum number of attendees, regardless of what type of event it is. Weddings were not specifically evaluated in the traffic study as they are not proposed, nor will they be allowed.

The cumulative impacts that will result from the project and planned or recently approved projects in the County are not examined.

The cumulative impacts of all of the winery projects should be accounted for in the future traffic projections used in this analysis. These volumes reflect an 82.5 percent increase in traffic on SR 29 and more than a 200 percent increase on Silverado Trail. Given that the County is substantially more than half built out, it would appear that this magnitude of an increase is unlikely to actually be experienced, so these projections overstate the actual potential for traffic volumes to increase. It is therefore reasonable to conclude that the projected future traffic volumes include all of the trips associated with future winery development, including that which is currently envisioned and even that which is not.

The IS fails to consider parking-related impacts from the project, especially the largest event with a maximum of 500 persons.

It is intended that shuttles will be used during the 500-person event to transport guests from off-site parking areas to the winery. Event invitations will provide details about the parking and shuttle operation, and guests will be reminded to park off-site in any event-related communications. The amount of parking allowed on-site will be limited to the supply available. For a 200-person event the parking needed would be 71 spaces for attendees and ten for employees. With 37 marked spaces plus the ability to create about 90 informal spaces at the rear of the parcel as well as along vineyard rows, there is more than adequate space to park all of the vehicles associated with the special events having 200 attendees or less.

The IS further fails to identify or analyze transportation impacts that would result from shuttle buses.

If shuttles are used in lieu of personal vehicles, even assuming use of 14-passenger vans with only 12 passengers either arriving or departing and no passengers on the return trip, then a 500-person event would generate a total of 84 round trips, or 168 trip ends, over the course of several hours. This is less than half the number of trips that would be generated by personal vehicles, and therefore shuttles would result in less of an impact than personal vehicles were used. Since the 500-person event only occurs once per year, its impacts would not be considered as the basis for the environmental impact analysis.

We hope this information adequately addresses the comments received regarding the traffic analysis. Please call if you have any questions.

Sincerely,

Dalene J. Whitlock, PE, PTOE
Principal

DJW/djw/NAX077.L2

Enclosure: Two-Lane Highway Level of Service Calculations

HCS 2010: Two-Lane Highways Release 6.50

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst	Dalene Whitlock
Agency/Co.	Napa County
Date Performed	2/11/15
Analysis Time Period	Weekday PM Peak Hour
Highway	SR 29
From/To	Calistoga to Dunaweal Lane
Jurisdiction	Caltrans
Analysis Year	2030
Description	Future Conditions

Input Data

Highway class	Class 3		Peak hour factor, PHF	1.00	
Shoulder width	6.0	ft	% Trucks and buses	5	%
Lane width	12.0	ft	% Trucks crawling	0.0	%
Segment length	1.3	mi	Truck crawl speed	0.0	mi/hr
Terrain type	Level		% Recreational vehicles	2	%
Grade: Length	-	mi	% No-passing zones	90	%
Up/down	-	%	Access point density	8	/mi

Analysis direction volume, Vd 1062 veh/h
Opposing direction volume, Vo 1113 veh/h

Average Travel Speed

Direction	Analysis (d)		Opposing (o)	
PCE for trucks, ET	2.0*		2.0*	
PCE for RVs, ER	1.0		1.0	
Heavy-vehicle adj. factor, (note-5) fHV	0.952		0.952	
Grade adj. factor, (note-1) fg	1.00		1.00	
Directional flow rate, (note-2) vi	1116	pc/h	1169	pc/h

Free-Flow Speed from Field Measurement:		
Field measured speed, (note-3) S FM	-	mi/h
Observed total demand, (note-3) V	-	veh/h
Estimated Free-Flow Speed:		
Base free-flow speed, (note-3) BFFS	45.0	mi/h
Adj. for lane and shoulder width, (note-3) fLS	0.0	mi/h
Adj. for access point density, (note-3) fA	2.0	mi/h
Free-flow speed, FFSd	43.0	mi/h
Adjustment for no-passing zones, fnp	0.9	mi/h
Average travel speed, ATSd	24.4	mi/h
Percent Free Flow Speed, PFFS	56.8	%

Percent Time-Spent-Following

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.0	1.0
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adjustment factor, fHV	1.000	1.000
Grade adjustment factor, (note-1) fg	1.00	1.00
Directional flow rate, (note-2) vi	1062 pc/h	1113 pc/h
Base percent time-spent-following, (note-4) BPTSFd	80.9 %	
Adjustment for no-passing zones, fnp	16.0	
Percent time-spent-following, PTSFd	88.7 %	

Level of Service and Other Performance Measures

Level of service, LOS	E	
Volume to capacity ratio, v/c	0.66	
Peak 15-min vehicle-miles of travel, VMT15	345	veh-mi
Peak-hour vehicle-miles of travel, VMT60	1381	veh-mi
Peak 15-min total travel time, TT15	14.1	veh-h
Capacity from ATS, CdATS	1700	veh/h
Capacity from PTSF, CdPTSF	1700	veh/h
Directional Capacity	1700	veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	1.3	mi
Length of two-lane highway upstream of the passing lane, Lu	-	mi
Length of passing lane including tapers, Lpl	-	mi
Average travel speed, ATSd (from above)	24.4	mi/h
Percent time-spent-following, PTSFd (from above)	88.7	
Level of service, LOSd (from above)	E	

Average Travel Speed with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for average travel speed, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for average travel speed, Ld	-	mi
Adj. factor for the effect of passing lane on average speed, fpl	-	
Average travel speed including passing lane, ATSpl	-	
Percent free flow speed including passing lane, PFFSpl	0.0	%

Percent Time-Spent-Following with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for percent time-spent-following, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for percent time-spent-following, Ld	-	mi
Adj. factor for the effect of passing lane on percent time-spent-following, fpl	-	
Percent time-spent-following including passing lane, PTSFpl	-	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSpl	E	
Peak 15-min total travel time, TT15	-	veh-h

Bicycle Level of Service

HCS 2010: Two-Lane Highways Release 6.50

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst	Dalene Whitlock
Agency/Co.	Napa County
Date Performed	2/11/15
Analysis Time Period	Weekday PM Peak Hour
Highway	SR 29
From/To	Calistoga to Dunaweal Lane
Jurisdiction	Caltrans
Analysis Year	2030
Description	Future plus Project Conditions

Input Data

Highway class	Class 3		Peak hour factor, PHF	1.00	
Shoulder width	6.0	ft	% Trucks and buses	5	%
Lane width	12.0	ft	% Trucks crawling	0.0	%
Segment length	1.3	mi	Truck crawl speed	0.0	mi/hr
Terrain type	Level		% Recreational vehicles	2	%
Grade: Length	-	mi	% No-passing zones	90	%
Up/down	-	%	Access point density	8	/mi

Analysis direction volume, Vd 1075 veh/h
Opposing direction volume, Vo 1113 veh/h

Average Travel Speed

Direction	Analysis (d)		Opposing (o)	
PCE for trucks, ET	2.0*		2.0*	
PCE for RVs, ER	1.0		1.0	
Heavy-vehicle adj. factor, (note-5) fHV	0.952		0.952	
Grade adj. factor, (note-1) fg	1.00		1.00	
Directional flow rate, (note-2) vi	1129	pc/h	1169	pc/h

Free-Flow Speed from Field Measurement:		
Field measured speed, (note-3) S FM	-	mi/h
Observed total demand, (note-3) V	-	veh/h
Estimated Free-Flow Speed:		
Base free-flow speed, (note-3) BFFS	45.0	mi/h
Adj. for lane and shoulder width, (note-3) fLS	0.0	mi/h
Adj. for access point density, (note-3) fA	2.0	mi/h
Free-flow speed, FFSd	43.0	mi/h
Adjustment for no-passing zones, fnp	0.9	mi/h
Average travel speed, ATSd	24.3	mi/h
Percent Free Flow Speed, PFFS	56.5	%

Percent Time-Spent-Following

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.0	1.0
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adjustment factor, fHV	1.000	1.000
Grade adjustment factor, (note-1) fg	1.00	1.00
Directional flow rate, (note-2) vi	1075 pc/h	1113 pc/h
Base percent time-spent-following, (note-4) BPTSFd	81.2 %	
Adjustment for no-passing zones, fnp	15.8	
Percent time-spent-following, PTSFd	89.0 %	

Level of Service and Other Performance Measures

Level of service, LOS	E	
Volume to capacity ratio, v/c	0.66	
Peak 15-min vehicle-miles of travel, VMT15	349	veh-mi
Peak-hour vehicle-miles of travel, VMT60	1397	veh-mi
Peak 15-min total travel time, TT15	14.4	veh-h
Capacity from ATS, CdATS	1700	veh/h
Capacity from PTSF, CdPTSF	1700	veh/h
Directional Capacity	1700	veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	1.3	mi
Length of two-lane highway upstream of the passing lane, Lu	-	mi
Length of passing lane including tapers, Lpl	-	mi
Average travel speed, ATSd (from above)	24.3	mi/h
Percent time-spent-following, PTSFd (from above)	89.0	
Level of service, LOSd (from above)	E	

Average Travel Speed with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for average travel speed, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for average travel speed, Ld	-	mi
Adj. factor for the effect of passing lane on average speed, fpl	-	
Average travel speed including passing lane, ATSpl	-	
Percent free flow speed including passing lane, PFFSpl	0.0	%

Percent Time-Spent-Following with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for percent time-spent-following, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for percent time-spent-following, Ld	-	mi
Adj. factor for the effect of passing lane on percent time-spent-following, fpl	-	
Percent time-spent-following including passing lane, PTSFpl	-	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSpl	E	
Peak 15-min total travel time, TT15	-	veh-h

Bicycle Level of Service

HCS 2010: Two-Lane Highways Release 6.50

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst	Dalene Whitlock
Agency/Co.	Napa County
Date Performed	2/11/15
Analysis Time Period	Weekday PM Peak Hour
Highway	SR 29
From/To	Dunaweal Lane to Larkmead Lane
Jurisdiction	Caltrans
Analysis Year	2030
Description	Future Conditions

Input Data

Highway class	Class 3		Peak hour factor, PHF	1.00	
Shoulder width	6.0	ft	% Trucks and buses	5	%
Lane width	12.0	ft	% Trucks crawling	0.0	%
Segment length	2.0	mi	Truck crawl speed	0.0	mi/hr
Terrain type	Level		% Recreational vehicles	2	%
Grade: Length	-	mi	% No-passing zones	90	%
Up/down	-	%	Access point density	8	/mi

Analysis direction volume, Vd 1361 veh/h
Opposing direction volume, Vo 1434 veh/h

Average Travel Speed

Direction	Analysis (d)		Opposing (o)	
PCE for trucks, ET	2.0*		2.0*	
PCE for RVs, ER	1.0		1.0	
Heavy-vehicle adj. factor, (note-5) fHV	0.952		0.952	
Grade adj. factor, (note-1) fg	1.00		1.00	
Directional flow rate, (note-2) vi	1430	pc/h	1506	pc/h

Free-Flow Speed from Field Measurement:		
Field measured speed, (note-3) S FM	-	mi/h
Observed total demand, (note-3) V	-	veh/h
Estimated Free-Flow Speed:		
Base free-flow speed, (note-3) BFFS	45.0	mi/h
Adj. for lane and shoulder width, (note-3) fLS	0.0	mi/h
Adj. for access point density, (note-3) fA	2.0	mi/h
Free-flow speed, FFSd	43.0	mi/h
Adjustment for no-passing zones, fnp	0.6	mi/h
Average travel speed, ATSd	19.6	mi/h
Percent Free Flow Speed, PFFS	45.7	%

Percent Time-Spent-Following

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.0		1.0	
PCE for RVs, ER	1.0		1.0	
Heavy-vehicle adjustment factor, fHV	1.000		1.000	
Grade adjustment factor, (note-1) fg	1.00		1.00	
Directional flow rate, (note-2) vi	1361	pc/h	1434	pc/h
Base percent time-spent-following, (note-4) BPTSFd	88.8	%		
Adjustment for no-passing zones, fnp	9.0			
Percent time-spent-following, PTSFd	93.2	%		

Level of Service and Other Performance Measures

Level of service, LOS	E	
Volume to capacity ratio, v/c	0.84	
Peak 15-min vehicle-miles of travel, VMT15	681	veh-mi
Peak-hour vehicle-miles of travel, VMT60	2722	veh-mi
Peak 15-min total travel time, TT15	34.7	veh-h
Capacity from ATS, CdATS	1700	veh/h
Capacity from PTSF, CdPTSF	1700	veh/h
Directional Capacity	1700	veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	2.0	mi
Length of two-lane highway upstream of the passing lane, Lu	-	mi
Length of passing lane including tapers, Lpl	-	mi
Average travel speed, ATSd (from above)	19.6	mi/h
Percent time-spent-following, PTSFd (from above)	93.2	
Level of service, LOSd (from above)	E	

Average Travel Speed with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for average travel speed, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for average travel speed, Ld	-	mi
Adj. factor for the effect of passing lane on average speed, fpl	-	
Average travel speed including passing lane, ATSpl	-	
Percent free flow speed including passing lane, PFFSpl	0.0	%

Percent Time-Spent-Following with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for percent time-spent-following, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for percent time-spent-following, Ld	-	mi
Adj. factor for the effect of passing lane on percent time-spent-following, fpl	-	
Percent time-spent-following including passing lane, PTSFpl	-	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSpl	E	
Peak 15-min total travel time, TT15	-	veh-h

Bicycle Level of Service

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Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst	Dalene Whitlock
Agency/Co.	Napa County
Date Performed	2/11/15
Analysis Time Period	Weekday PM Peak Hour
Highway	SR 29
From/To	Dunaweal Lane to Larkmead Lane
Jurisdiction	Caltrans
Analysis Year	2030
Description	Future plus Project Conditions

Input Data

Highway class	Class 3		Peak hour factor, PHF	1.00	
Shoulder width	6.0	ft	% Trucks and buses	5	%
Lane width	12.0	ft	% Trucks crawling	0.0	%
Segment length	2.0	mi	Truck crawl speed	0.0	mi/hr
Terrain type	Level		% Recreational vehicles	2	%
Grade: Length	-	mi	% No-passing zones	90	%
Up/down	-	%	Access point density	8	/mi

Analysis direction volume, Vd 1363 veh/h
Opposing direction volume, Vo 1434 veh/h

Average Travel Speed

Direction	Analysis (d)		Opposing (o)	
PCE for trucks, ET	2.0*		2.0*	
PCE for RVs, ER	1.0		1.0	
Heavy-vehicle adj. factor, (note-5) fHV	0.952		0.952	
Grade adj. factor, (note-1) fg	1.00		1.00	
Directional flow rate, (note-2) vi	1432	pc/h	1506	pc/h

Free-Flow Speed from Field Measurement:			
Field measured speed, (note-3) S FM		-	mi/h
Observed total demand, (note-3) V		-	veh/h
Estimated Free-Flow Speed:			
Base free-flow speed, (note-3) BFFS		45.0	mi/h
Adj. for lane and shoulder width, (note-3) fLS		0.0	mi/h
Adj. for access point density, (note-3) fA		2.0	mi/h
Free-flow speed, FFSd		43.0	mi/h
Adjustment for no-passing zones, fnp		0.6	mi/h
Average travel speed, ATSd		19.6	mi/h
Percent Free Flow Speed, PFFS		45.7	%

Percent Time-Spent-Following

Direction	Analysis (d)	Opposing (o)
PCE for trucks, ET	1.0	1.0
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adjustment factor, fHV	1.000	1.000
Grade adjustment factor, (note-1) fg	1.00	1.00
Directional flow rate, (note-2) vi	1363 pc/h	1434 pc/h

Base percent time-spent-following, (note-4)	BPTSFd	88.8	%
Adjustment for no-passing zones, fnp		9.0	
Percent time-spent-following, PTSFd		93.2	%

Level of Service and Other Performance Measures

Level of service, LOS	E	
Volume to capacity ratio, v/c	0.84	
Peak 15-min vehicle-miles of travel, VMT15	682	veh-mi
Peak-hour vehicle-miles of travel, VMT60	2726	veh-mi
Peak 15-min total travel time, TT15	34.7	veh-h
Capacity from ATS, CdATS	1700	veh/h
Capacity from PTSF, CdPTSF	1700	veh/h
Directional Capacity	1700	veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	2.0	mi
Length of two-lane highway upstream of the passing lane, Lu	-	mi
Length of passing lane including tapers, Lpl	-	mi
Average travel speed, ATSd (from above)	19.6	mi/h
Percent time-spent-following, PTSFd (from above)	93.2	
Level of service, LOSd (from above)	E	

Average Travel Speed with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for average travel speed, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for average travel speed, Ld	-	mi
Adj. factor for the effect of passing lane on average speed, fpl	-	
Average travel speed including passing lane, ATSpl	-	
Percent free flow speed including passing lane, PFFSpl	0.0	%

Percent Time-Spent-Following with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for percent time-spent-following, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for percent time-spent-following, Ld	-	mi
Adj. factor for the effect of passing lane on percent time-spent-following, fpl	-	
Percent time-spent-following including passing lane, PTSFpl	-	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSpl	E	
Peak 15-min total travel time, TT15	-	veh-h

Bicycle Level of Service

Bike Map, 2nd Edition, 2011

Bike Map

The City of Calistoga Bike Map shows two preferred bicycle loops in and around Calistoga. This map is designed to help riders choose the safest and most scenic routes. Always use caution and common sense when bicycling anywhere in Calistoga.

The 2nd Edition, 2011 City Bike Map is now available in PDF format. To view a PDF version of the bike map - click on one of the following Bicycle Map PDF links:

Bike Map - Front Page, Downtown, Calistoga and Vicinity, Back Page

For more Bicycle Map information please contact Erik V. Lundquist, Senior Planner at elundquist@ci.calistoga.ca.us

CITY OF CALISTOGA BIKE MAP

for Calistoga and Surrounding Area:

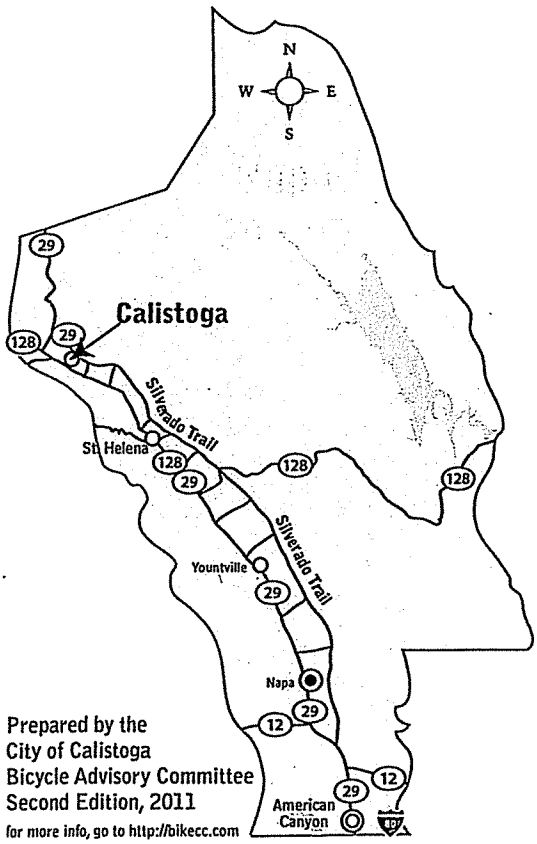
Calistoga Bicycle Loops

East Loop: Silverado Trail, Dunaweal Lane, Washington Street, Lake Street

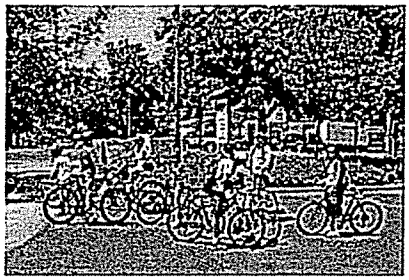
West Loop: Cedar Street, Mitzi Drive, Centennial Circle, Grant Street, Myrtledale Avenue, Tubbs Lane, Bennett Lane, Washington Street

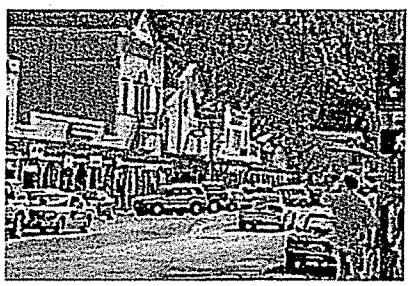
Plus hiking, driving and bike maps for:

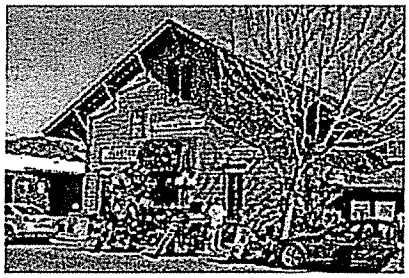
- Oat Hill Mine and Palisades Trails
- Kortum Canyon & Diamond Mountain Roads
- Over 40 Calistoga AVA and Area Wineries
- Historic Downtown Calistoga
- Bothe Napa Valley State Park, Tucker's Farm Center, Old Bale Grist Mill
- The Petrified Forest and Safari West

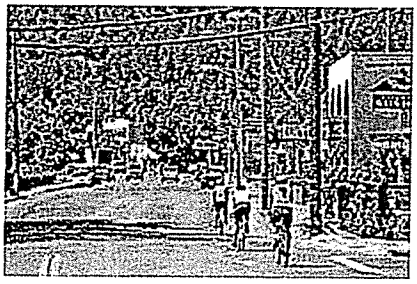


Prepared by the
City of Calistoga
Bicycle Advisory Committee
Second Edition, 2011
for more info, go to http://bikecc.com



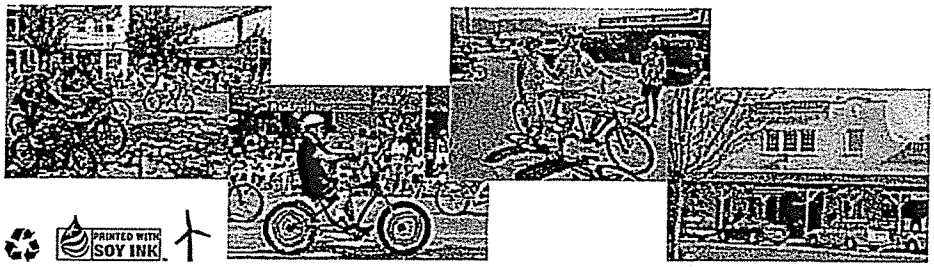






Calistoga is one of the best places to bicycle in the Napa Valley. The varied terrain accommodates all riders. Calistoga and the surrounding area offers smooth country roads with very little traffic and mountainous hard-core trails for the adrenaline junkies. Take a ride through our beautiful vineyards and historic locales on your own—or with an experienced tour guide. Bike rentals are available at the local bike shop in the downtown area. While you're out-and-about, check out some of our local attractions, shops, points of interest, and wonderful eating and dining establishments. Start your day with a breathtaking balloon ride at dawn and enjoy a mud bath, a massage, and a glass of wine at dusk.

Calistoga—Hot Springs, Cool Wines, Warm Welcomes!



PRINTED WITH SOY INK

THIS MAP HAS A WEBSITE!

Use your cell phone's web browser to find out more information at http://bikecc.com. Type in one of the many links shown on different parts of this map for in-depth information, pictures, Calistoga visitor info, and more!

BIKEWAY CLASSIFICATIONS

BIKE PATH (CLASS 1): a route intended solely for the purpose of bicycle and pedestrian traffic.

BIKE LANE (CLASS 2): a protected lane on a vehicular road intended for bicycle traffic only. Exercisie caution and common sense.

BIKE ROUTE (CLASS 3): motorists are supposed to share the road with bicycles. Exercise extreme caution and common sense.

BICYCLE SAFETY

This map is designed to help you choose the safest and most scenic routes in and around Calistoga. Always use caution and common-sense when bicycling anywhere in Calistoga.

OBEY ALL TRAFFIC SIGNS & SIGNALS

- Do not pass on the right
- Do not ride against traffic
- Use hand signals

RIDE IN A STRAIGHT LINE

- Always ride single-file on City Streets, Bike Routes and in Bike Lanes
- Do not weave between parked cars
- Follow lane markings
- Do not ride on sidewalks

RIDE DEFENSIVELY

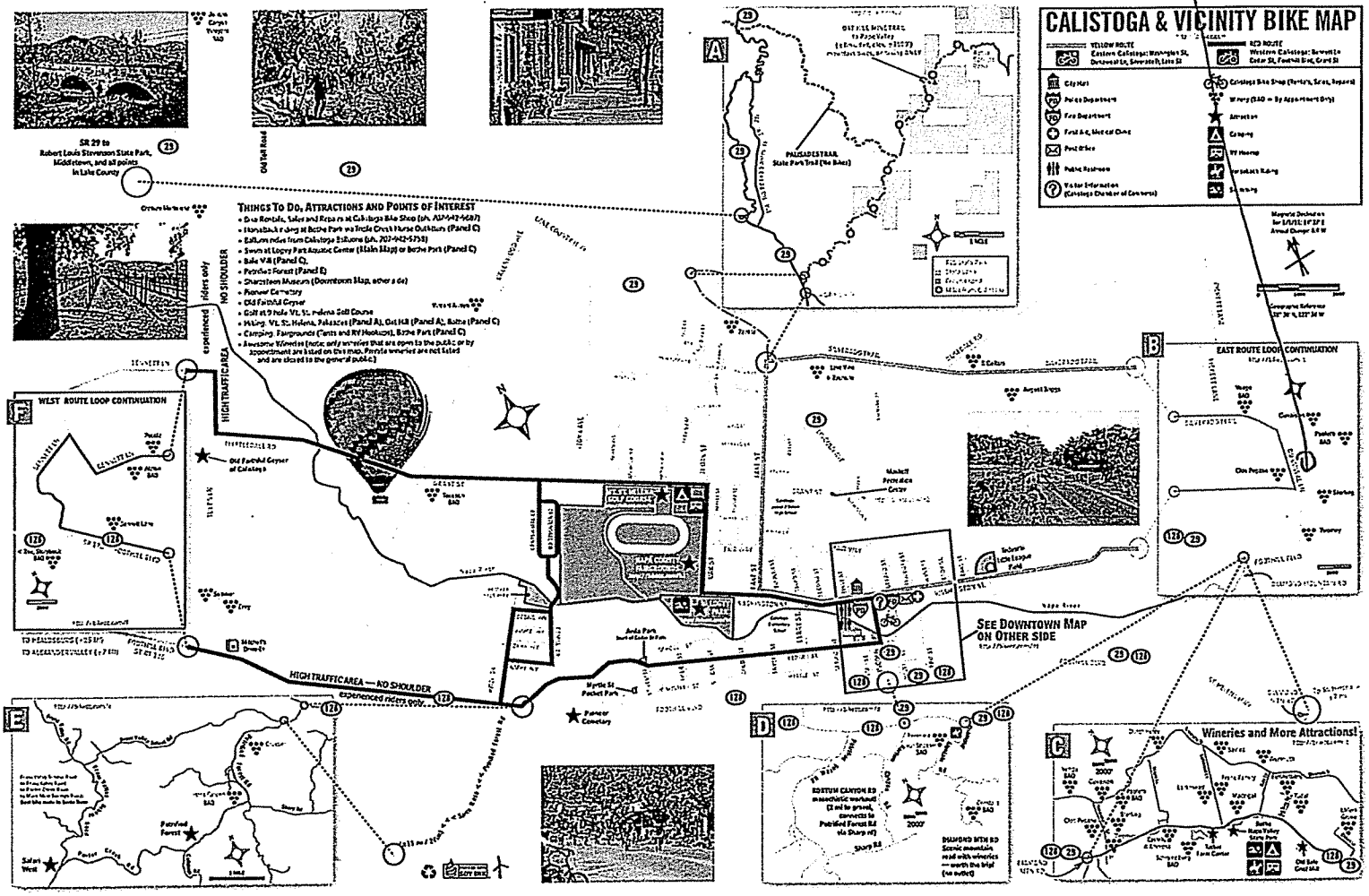
- Watch for cars pulling out
- Make eye contact with drivers making turns
- Scan the road behind you

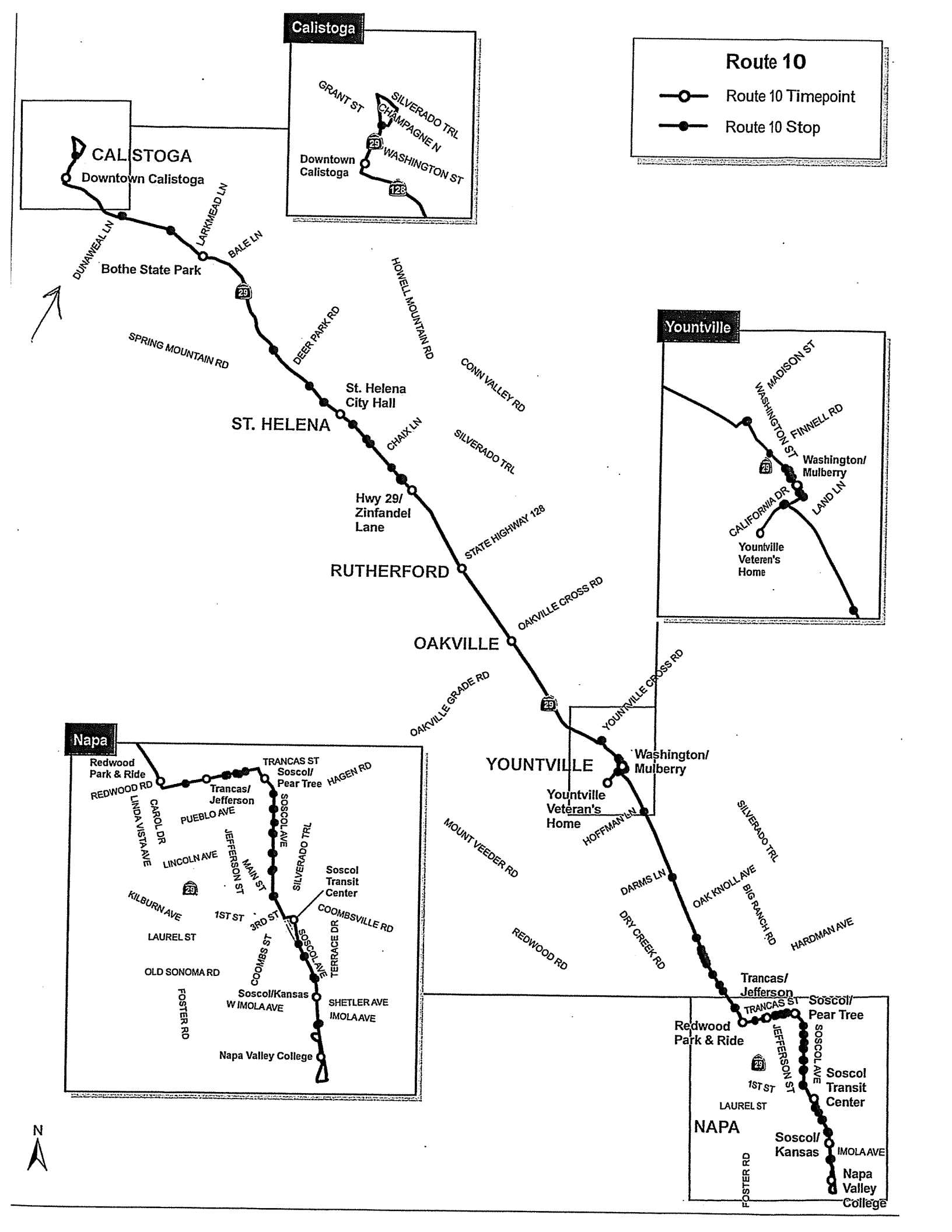
BE BIKE SAFE

- Ride a well-equipped bike
- Inspect your bike regularly
- Use a helmet
- Wear light color clothing at night/bright colors during the day
- Have plenty of water/liquids and healthy road-snacks at the ready.

design, cartography, and website by winslow technology services & studio (http://www.wtsas.com)—a calistoga company—DUNS# 831755975

Project site




Route 10
Route 10 Timepoint
Route 10 Stop
Calistoga
GRANT ST
SILVERADO TRL
CHAMPAGNE N
WASHINGTON ST
Downtown Calistoga
CALISTOGA
Downtown Calistoga
DUNAWEAL LN
LARKMEAD LN
BALE LN
Bothe State Park
SPRING MOUNTAIN RD
DEER PARK RD
HOWELL MOUNTAIN RD
CONN VALLEY RD
St. Helena City Hall
ST. HELENA
CHAIX LN
SILVERADO TRL
Hwy 29/ Zinfandel Lane
STATE HIGHWAY 128
RUTHERFORD
OAKVILLE CROSS RD
OAKVILLE
OAKVILLE GRADE RD
YOUNTVILLE CROSS RD
Yountville
MADISON ST
WASHINGTON ST
FINNELL RD
Washington/ Mulberry
CALIFORNIA DR
LAND LN
Yountville Veteren's Home
YOUNTVILLE
Washington/ Mulberry
Yountville Veteran's Home
HOFFMAN LN
MOUNT VEEDER RD
SILVERADO TRL
DARMS LN
OAK KNOLL AVE
BIG RANCH RD
HARDMAN AVE
DRY CREEK RD
REDWOOD RD
Napa
Redwood Park & Ride
REDWOOD RD
TRANCAS ST
Soscol/ Pear Tree
HAGEN RD
Trancas/ Jefferson
PUEBLO AVE
LINDA VISTA AVE
CAROL DR
SOSCOL AVE
JEFFERSON ST
MAIN ST
LINCOLN AVE
SILVERADO TRL
Soscol Transit Center
KILBURN AVE
1ST ST
3RD ST
COOMBSVILLE RD
LAUREL ST
COOMBS ST
SOSCOL AVE
TERRACE DR
OLD SONOMA RD
FOSTER RD
Soscol/Kansas
W IMOLA AVE
SHETLER AVE
IMOLA AVE
Napa Valley College
Trancas/ Jefferson
TRANCAS ST
Soscol/ Pear Tree
Redwood Park & Ride
JEFFERSON ST
SOSCOL AVE
1ST ST
Soscol Transit Center
LAUREL ST
NAPA
Soscol/ Kansas
IMOLA AVE
FOSTER RD
Napa Valley College
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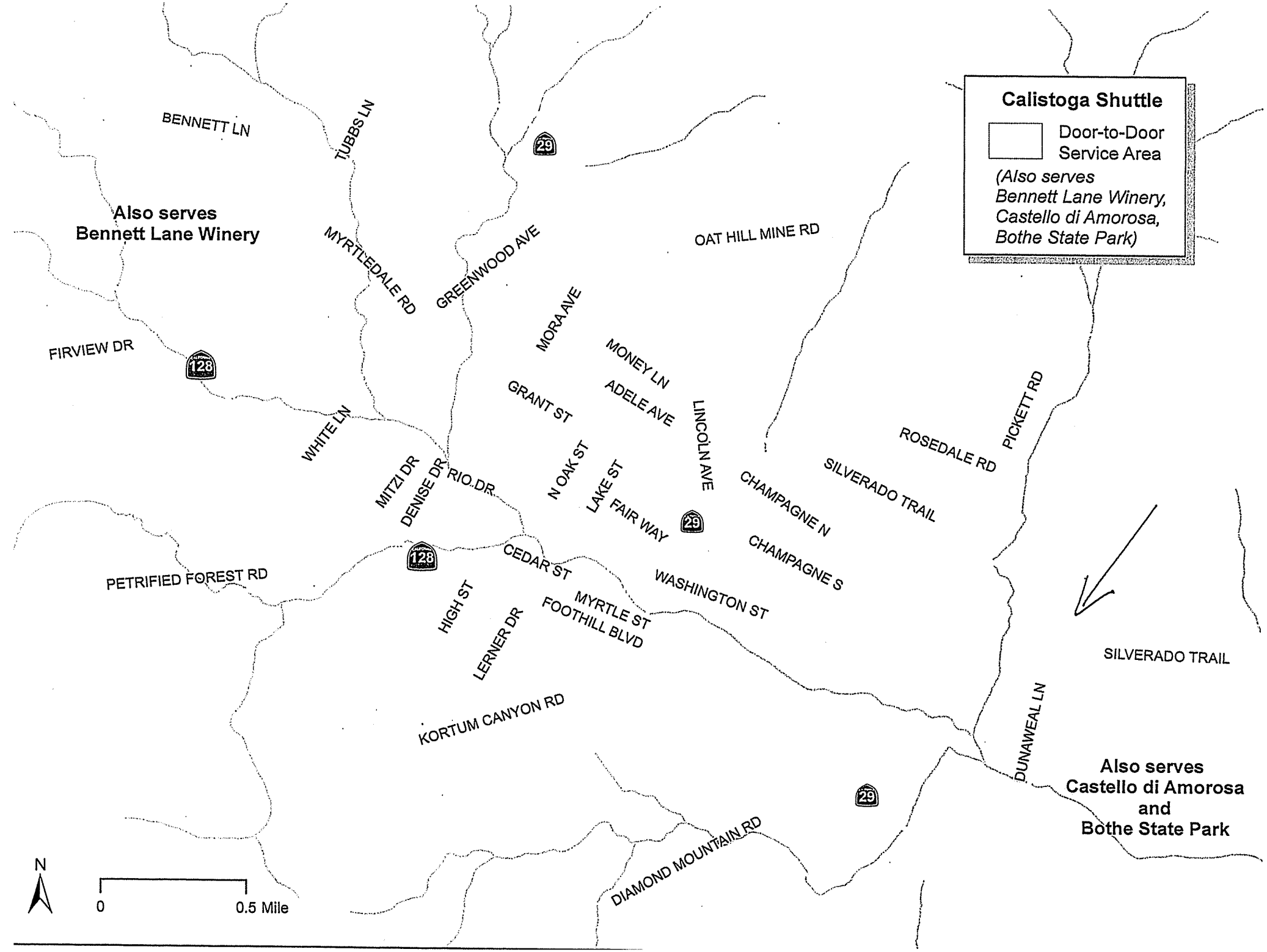
Calistoga Shuttle
Door-to-Door Service Area
(Also serves Bennett Lane Winery, Castello di Amorosa, Bothe State Park)
Also serves Bennett Lane Winery
Also serves Castello di Amorosa and Bothe State Park
BENNETT LN
TUBBS LN
MYRTLEDALE RD
GREENWOOD AVE
OAT HILL MINE RD
MORA AVE
MONEY LN
ADELE AVE
GRANT ST
LINCOLN AVE
ROSEDALE RD
PICKETT RD
SILVERADO TRAIL
CHAMPAGNE N
CHAMPAGNE S
FIRVIEW DR
WHITE LN
MITZI DR
DENISE DR
RIO DR
N OAK ST
LAKE ST
FAIR WAY
CEDAR ST
WASHINGTON ST
MYRTLE ST
FOOTHILL BLVD
HIGH ST
LERNER DR
PETRIFIED FOREST RD
KORTUM CANYON RD
DUNAWEAL LN
DIAMOND MOUNTAIN RD
29
128
N
0
0.5 Mile

Biological Resource Survey

Girard Winery

1077 Dunaweal Lane
APN# 020-150-017
Calistoga, CA

Prepared
For

Girard Winery

By
Kjeldsen Biological Consulting
923 St. Helena Ave.
Santa Rosa, CA 95404

July 2014

Biological Resource Survey

Girard Winery

1077 Dunaweal Lane

APN# 020-150-017

Calistoga, CA

PROJECT NAME: Girard Winery
1077 Dunaweal Ln.
Calistoga, CA
Use Permit Application
APN 022-150-017

CIVIL ENGINEER: Always Engineering, Inc.
2360 Professional Drive
Santa Rosa, CA 95403

PROJECT COORDINATOR: Heather McCollister
(707) 287-5999
bhmccolli@sbcglobal.net

REPORT PREPARED BY: Kjeldsen Biological Consulting
923 St. Helena Ave.
Santa Rosa, CA 95404
(707) 544-3091
Fax:(707) 575-8030
kjeldsen@sonic.net

PERIOD OF STUDY: March –July 2014

Biological Resource Survey

Girard Winery

1077 Dunaweal Lane

APN# 020-150-017

Calistoga, CA

TABLE OF CONTENTS

Biological Resource Survey

Girard Winery

1077 Dunaweal Lane

APN# 020-150-017

Calistoga, CA

Executive Summary

This study was conducted at the request of Heather McCollister, on behalf of the property owners, as background information for project permits from the Napa County Conservation, Development and Planning Department.

The project proposes a winery, access road, landscaping, parking areas, primary and reserve treated sanitary subsurface drip septic area and associated infrastructure. The property is approximately 26.53 acres. The total disturbed area of the project is 3.59 acres. The entire project is within a disturbed environment. The property is in Napa County located at 1077 Dunaweal Lane east of the city of Calistoga. The property is within the USGS Calistoga Quadrangle.

The purpose of this report is to identify biological resources that may be affected by the proposed project. The fieldwork studied the proposed project envelope, the property and adjoining environment. The findings presented below are the results of fieldwork conducted during the spring and summer of 2014 by Kjeldsen Biological Consulting:

- The project footprint is within a developed landscape. The winery is proposed for an area that was a vineyard that has been removed and prepped for replanting;
- The project as proposed will not have any direct impacts to Federal or State protected wetlands as defined by Section 404 of the Clean Water Act;
- The proposed project will not significantly reduce habitat for or have the potential to negatively impact any special-status plants or animals;
- No sensitive plants, sensitive plant habitat, or special-status plant species was identified on the property. We find that it is unlikely that the proposed project would impact any of the special-status plants known for the Quadrangle or the region based on our fieldwork, the habitat present and historic use within and associated with the project footprint:
- No sensitive animals, sensitive wildlife habitat, or special-status animal species was identified on the project site. We find that it is unlikely that the proposed project would impact any of the special-status animals known for the Quadrangle or the region based on our fieldwork, the habitat present and historic use within and associated with the project footprint:

- One juvenile Northwestern Pond Turtle was observed on the bank of the existing reservoir. There is no potential impact to this species associated with the project.
- No raptor activity or nests were observed on or near the proposed project site;
- No wildlife corridors will be impacted by the proposed project;
- There are no indications of the presence of Sensitive Natural Communities regulated by the California Department of Fish and Wildlife or US Fish and Wildlife within or directly associated with the project footprint;
- No native trees will be removed by the proposed project;
- The footprint of the project will not significantly contribute to habitat loss or habitat fragmentation; and
- The flora and fauna observed on and near the site are included as an Appendix.

Assessment of Impacts

The project is within a developed landscape that has been in agriculture for decades. The property and project site conditions are such that there is no reason to expect any impacts to special-status species on site or off site provided Best Management Practices are implemented.

Recommendations

The following recommended measures are presented to reduce potential biological impacts by the proposed project to a less than significant level pursuant to the California Environmental Quality Act.

Best Management Practices including silt and erosion control measures must be implemented to prevent off-site movement of sediment and dust during and post construction.

Biological Resource Survey
Girard Winery
1077 Dunaweal Lane
Calistoga, CA

A PROJECT DESCRIPTION

This study was conducted at the request of Heather McCollister on behalf the property owner. This study and report are provided as background information necessary for securing permits from Napa County Conservation, Development and Planning Department for the proposed project.

A.1 Introduction

The project proposes a winery, access road, landscaping, parking areas, primary and reserve treated sanitary subsurface drip septic area and associated infrastructure. The property is approximately 26.53 acres. The total disturbed area of the project is 3.59 acres. The entire project is within a disturbed environment.

The property is in Napa County located at 1077 Dunaweal Lane east of the city of Calistoga. The property is within the USGS Calistoga Quadrangle. Plate I provides a site and location map of the property. Plate III provides an aerial photograph of the property. The attached Site Plan prepared by Always Engineering, Inc. Civil Engineering and Topographic Surveying illustrates the project (2/4/2014).

A.2 Background

The surrounding land use consists of vineyards, residences, winery, and oak woodlands. The property is a rectangular shaped parcel within the Napa Valley floor. The parcel at present consists of a fallow field from which vineyard has been removed, reservoir, agricultural storage building, process wastewater ponds and associated infrastructure.

A.3 Purpose

The purpose of this report is to identify biological resources that may be affected by the proposed project as listed below:

- To determine the presence of potential habitat for special-status species which would be impacted by the proposed project, including habitat types which may have the potential for supporting special-status species (target species that are known for the region, habitat, the Quadrangle and surrounding Quadrangles);
- To identify and assess potential impacts to Federal or State protected wetlands as defined by Section 404 of the Clean Water Act; and

- To determine if the project will substantially interfere with native wildlife species, wildlife corridors, and or native wildlife nursery sites;
- Identify any State or Federal biological permits required by the proposed project; and
- Recommend measures to reduce biological impacts to a less than significant level pursuant to the California Environmental Quality Act (CEQA).

A.4 Definitions

Definitions used in this report are attached in Appendix B.

B SURVEY METHODOLOGY

The purpose of the spring-summer floristic survey is to provide a faunal and floristic study of the project site with emphasis on any special-status animals, plants, unique plant populations and or critical habitat associated with the proposed project. The project scoping determined the extent of our surveys which ranged from March to July 2014.

B.1 Project Scoping

The scoping for the project considered seasonal fieldwork, location and type of habitat and or vegetation types present on the property or associated with potential special-status plant species known for the Quadrangles, surrounding Quadrangles the County or the region. Our scoping also considered records in the most recent version of the Department of Fish and Wildlife California Natural Diversity Data Base (DFW CNDDB Rare Find-3) and the California Native Plant Society (CNPS) Electronic Inventory of Rare or Endangered Plants. "Target" special-status species are those listed by the State, the Federal Government or the California Native Plant Society or considered threatened in the region. Our scoping is also a function of our familiarity with the local flora and fauna as well as previous projects on other properties in the area.

Section 15380 of the California Environmental Quality Act [CEQA (September, 1983)] has a discussion regarding non-listed (State) taxa. This section states that a plant (or animal) must be treated as Rare or Endangered even if it is not officially listed as such. If a person (or organization) provides information showing that a taxa meets the State's definitions and criteria, then the taxa should be treated as such.

Tables II and III present DFW CNDDB Rare Find species and U.S. Fish and Wildlife Service listed species for the Quadrangle and surrounding Quadrangles.

B.2 Field Survey Methodology

Our studies were made by walking transects through and around the project site. Our fieldwork focused on locating suitable habitat for organisms or indications that such habitat exists on the site. Digital photographs were taken during our studies to document conditions and selected photographs are included within this report. A floristic and seasonally appropriate survey was conducted in the field at the time of year when rare, threatened, or endangered species are both evident and identifiable for all the species expected to occur within the Study Area.

Plants Field surveys were conducted recording identifying all species on the site and in the near proximity. Transects through the proposed project sites were made methodically by foot. Transects were established and scrutinized to cover topographic and vegetation variations within the study area. The Intuitive Controlled approach calls for the qualified surveyor to conduct a survey of the area by walking through it and around its perimeters, and closely examining portions where target species are especially likely to occur. The open nature of the site, historic and on going agricultural practices, and small size of the proposed development footprint

facilitated our field studies. All plant life was recorded in field notes and is presented in Appendix A

The fieldwork for identifying special-status plant species is based on our knowledge and many years of experience in conducting special-status plant species surveys in the region. Plants were identified in the field or reference material was collected, when necessary, for verification using laboratory examination with a binocular microscope and reference materials. Herbarium specimens from plants collected on the project site were made when relevant. Voucher material for selected individuals is in the possession of the authors. All plants observed (living and/or remains from last season's growth) were recorded in field notes.

Typically, blooming examples are required for identification however; it is not the only method for identifying the presence of or excluding the possibility of rare plants. Vegetative morphology and dried flower or fruit morphology, which may persist long after the blooming period, may also be used. Skeletal remains from previous season's growth can also be used for identification. Some species do not flower each year or only flower at maturity and therefore must be identified from vegetative characteristics. Algae, fungi, mosses, lichens, ferns, Lycophyta and Sphenophyta have no flowers and there are representatives from these groups that are now considered to be special-status species, which require non-blooming identification. For some plants unique features such as the aromatic oils present are key indicator. For some trees and shrubs with unique vegetative characteristics flowering is not needed for proper identification. The vegetative evaluation as a function of field experience can be used to identify species outside of the blooming period to verify or exclude the possibility of special-status plants in a study area.

Habitat is also a key characteristic for consideration of special-status species in a study area. Many special-status species are rare in nature because of their specific and often very narrow habitat or environmental requirements. Their presence is limited by specific environmental conditions such as: hydrology, microclimate, soils, nutrients, interspecific and intraspecific competition, and aspect or exposure. In some situations special-status species particularly annuals may not be present each year and in this case one has to rely on skeletal material from previous years. A site evaluation based on habitat or environmental conditions is therefore a reliable method for including or excluding the possibility of special-status species in an area.

Animals were identified in the field by their sight, sign, or call. Our field techniques consisted of surveying the area with binoculars and walking the perimeter of the project site. Existing site conditions were used to identify habitat, which could potentially support special-status animal species. All animal life was recorded in field notes and is presented in Appendix A.

Trees were surveyed to determine whether occupied raptor nests were present within the proximity of the project site (i.e., within a minimum 500 feet of the areas to be disturbed). Surveys consisted of scanning the trees on the property (500 ft +) with binoculars searching for nest or bird activity. Our search was conducted from the property and by walking under existing trees looking for droppings or nest scatter from nests that may be present that were not observable by binoculars.

Aerial photos were reviewed to look at the habitat surrounding the site and the potential for wildlife movement, or wildlife corridors from adjoining properties onto or through the site.

Wetlands The project site was reviewed to determine from existing environmental conditions with a combination of vegetation, soils, and hydrologic information if seasonal wetlands were present. Wetlands were evaluated using the ACOE's three-parameter approach: Vegetation, Hydrology, and Soils.

Tributaries to Waters of the US are determined by the evaluation of continuity and "ordinary high water mark." The ordinary high water mark is determined based on the top of scour marks and high flow impacts on vegetation.

The area surveyed is shown on Plate III.

Table I. Time and Date of Field Work for Spring and Summer 2014

Date	Personnel	Person-hr.	Time	Conditions
March 13, 2014	Chris K. and Daniel T. Kjeldsen	2.0 person-hours	11:15 to 12:15	Clear, clear cool temperatures.
April 25, 2014	Chris K. and Daniel T. Kjeldsen	2.0 person-hours	11:00 to 12:00	Overcast, no wind, with mild temperatures.
May 8, 2014	Chris K. and Daniel T. Kjeldsen	2.0 person-hours	12:00 to 13:00	Clear, windy with warm temperatures.
July 22, 2014	Chris K. and Daniel T. Kjeldsen	2.0 person-hours	13:00 to 14:00	Clear, no wind, with warm temperatures.

C RESULTS / FINDINGS

C.1 Biological Setting

The study site is located in Napa County within the upper Napa Valley. The parcel drains by direct infiltration or sheet flow into roadside ditches and unnamed tributaries of the Napa River. The proposed winery and support facilities are within a developed landscape (hardscape) and the wastewater disposal system is to be located within fallow agricultural lands (vineyard has been removed) (see Plate I for Location). Figures 1 to 5 illustrate the site conditions.

The property is within the inner North Coast Range Mountains, a geographic subdivision of the larger California Floristic Province (Hickman, 1993). The property and surrounding region is strongly influenced storms and fog from the Pacific Ocean. The region is in climate Zone 14 "Ocean influenced Northern and Central California" characterized as an inland area with ocean or cold air influence. The climate of the region is characterized by hot, dry summers and cool, wet winters, with precipitation that varies regionally from less than 30 to more than 60 inches per year. This climate regime is referred to as a "Mediterranean Climate." The average annual temperature ranges from 45 to 90 degrees Fahrenheit. The variations of abiotic conditions including geology results in a high level of biological diversity per unit area in the region.

Our survey focused on the areas proposed project footprint, irrigation wastewater site, and immediate surrounding habitat. The aerial photo illustrates the site (Plate III) and the photographs that follow further document existing conditions of the project sites.

C.2 Habitat Types Present

The vegetation of California has been considered to be a mosaic with major changes present from one area to another often with distinct vegetation changes within short distances. It is generally convenient to refer to the vegetation associates on a site as a plant community or alliance. Typically plant communities or vegetation alliances are identified or characterized by the dominant vegetation form or plant species present. There have been numerous community classification schemes proposed by different authors using different systems for the classification of vegetation. A basic premise for the designation of plant communities, associations or alliances is that in nature there are distinct plant populations occupying a site that are stable at any one time (climax community is a biotic association, that in the absence of disturbance maintains a stable assemblage over long periods of time).

In general terminology one would refer to the habitat on the property as Ruderal Grassland (agricultural land that has been routinely maintained), and hardscape with some landscape plantings. The dominant land cover types on the project site consist of non-native weeds. In the sections below the habitat types present are described and further categorized with the new system of vegetation classification by Sawyer *et al* A Manual of California Vegetation Second Edition. Sawyer classifies the vegetation on the property as Grassland Semi-natural Stands with Herbaceous Layer Sawyer does not classify hardscape or landscape plantings. This classification is the presently preferred system that over time will replace existing classification systems.

Annual Semi-Natural Herbaceous Grassland Stands present as "weeds" within the agricultural lands of the property (this area can also be classified as "ruderal habitat" which reflects the abundance of non-native annuals as a result of the agricultural disturbance.

Ruderal-Grassland Semi-Natural Herbaceous Stands with Herbaceous Layer (Annual Grasslands)

Semi-Natural Herbaceous Grasslands are a result of decades of agriculture and the introduction of non-native grasses and herbs. Sawyer uses the term "Semi-natural Stands to refer to non-native introduced plants that have become established and coexist with native species. This includes what can be termed weeds, aliens, exotics or invasive plants in agricultural and nonagricultural settings. The Semi-natural Herbaceous Stands cannot be mapped due to the small size but if one searches the site one can find small patches of the following;

Avena ssp. Semi-natural Herbaceous Stand, Wild oats grasslands. The membership rules require *Avena ssp.* to be> 50% relative cover of the herbaceous layer. Semi-natural stands are those dominated by non-native species that have become naturalized primarily as a result of historic agricultural practices and fire suppression or management practices for weed abatement and fire suppression.

Bromus diandrus Semi-Natural Herbaceous Stands Annual brome grassland; (Membership Rules *Bromus diandrus >60%* relative cover with other non-natives in the herbaceous layer). *Bromus diandrus* is dominant or co-dominant with non-native in the herbaceous layer. Emergent trees and shrubs may be present at low cover Herbs<75 cm tall are intermittent to continuous. Ripgut brome is an annual grass from Eurasia. This alliance accounts for the largest acreage of grassland vegetation in cismontane California. Stands in our area contain *Aria caryophylla, Cynosurus echinatus, Dichelostemma multiflorum, Erodium botrys, Limnanthes douglasii, Taeniantherum caput-medusae,* and *Baccharis pilularis* shrubs.

Lolium perenne Semi-Natural Herbaceous Stands Perennial Rye Grass Field; (Membership Rules *Lolium perenne*> %50 relative cover, native plants< 15% relative cover). *Lolium perenne* is a non-native grass from Europe introduced into temperate regions throughout the world. It is an annual or a perennial, cool-season bunch grass.

Wildlife Associated with Semi-natural Grasslands

Semi-natural Grasslands with Herbaceous Layer (annual ruderal non-native grasslands) within the study area provide habitat for a variety of birds and Mammals. The vegetation present provides browse for deer (*Odocoileus hemionus*), cover and foraging habitat for mice and voles (*Peromyscus* ssp., *Reithrodontomys* ssp., *Microtus* ssp.), habitat for Pocket Gophers *Thomomys bottae),* foraging habitat for Broad-footed Moles (*Scapanus latimanus*), foraging and habitat for shrews, and cover and foraging habitat for Black-tailed Jackrabbit (*Lepus californicus).* Numerous bird species forage for insects and seeds in these grasslands. Bats will forage for insects over this area and raptors will feed on reptiles and mammals in this type of vegetation cover. In general, however, the non-native annual grasslands, such as are present on the study site, are not an optimum habitat for wildlife.

Developed Hardscape with Landscape Plantings

This occupies a portion of the property and is visible on the aerial photograph. It consists of agricultural buildings, access roads, parking area, reservoir and process water treatment ponds not part of this project.

Figure 1. Fallow vineyard that has been disked. Proposed Winery Site.

Figure 2. View of proposed winery site.

Figure 3. View of Dunaweal Lane and the location of proposed winery entrance.

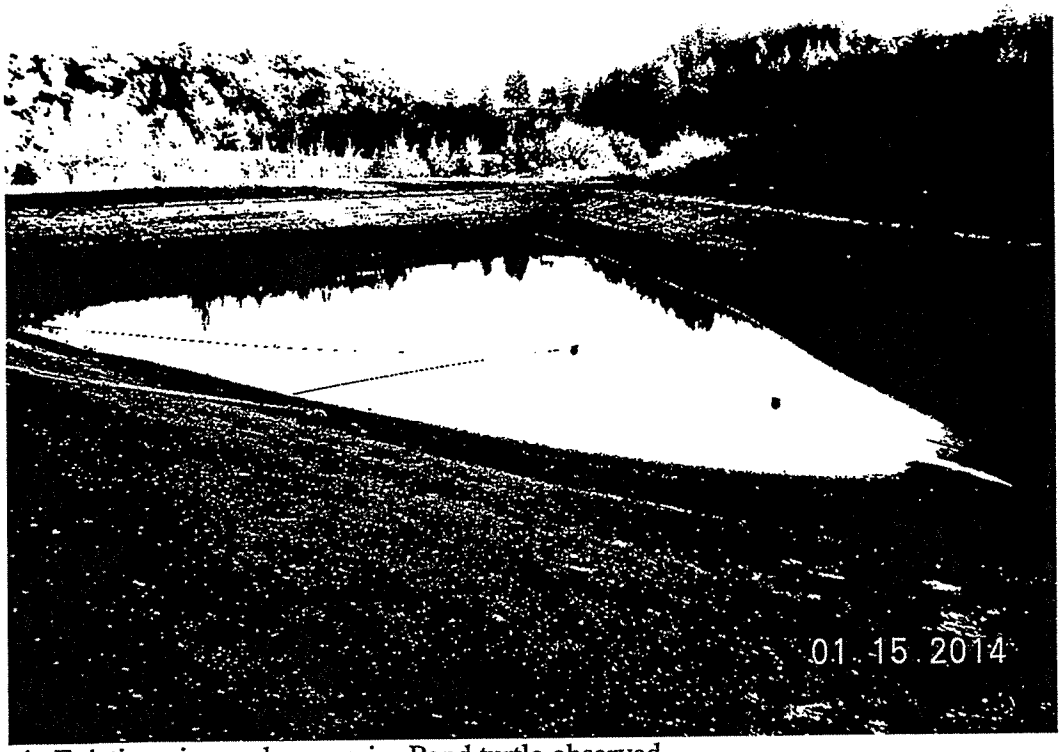

Figure 4. Existing vineyard reservoir. Pond turtle observed.

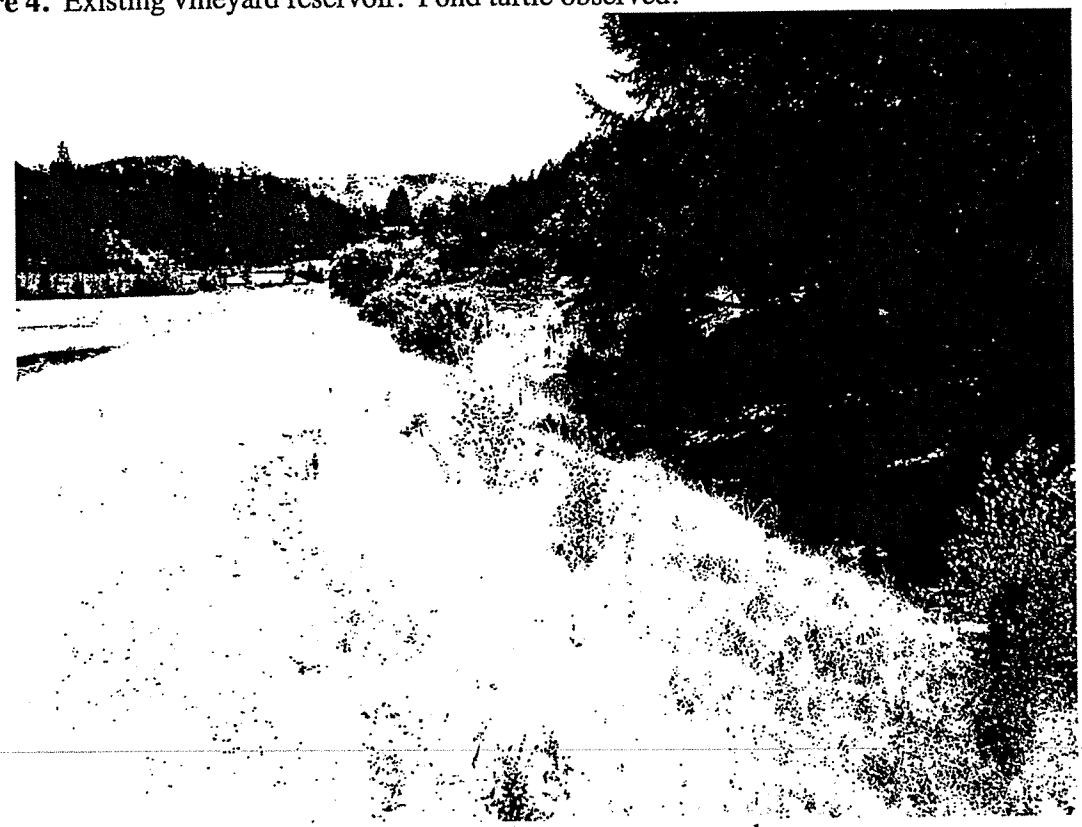

Figure 5. Created drainage swale adjacent to the waste water ponds.

The aerial photograph, Plate III illustrates the site and the surrounding environment. The environmental setting of the project site consists of:

- On the north side of the project – Vineyard, Rural Residential;
- On the east side of the project – Rural Residential and Riparian Corridor of Napa River;
- On the south side of the project – Vineyards; and
- On the west side of the project - State Highway 29.

The dominant land cover types in the vicinity of the property consist of vineyards followed by riparian corridor and on the edge of the valley floor, and Conifer Oak Woodland (Forest or Woodland Alliance)

Drainage on the site is by sheet flow into seasonal unnamed tributaries of the Napa River, and thence San Pablo Bay.

Napa County Definition for a Defined Drainages is a watercourse designated by a solid line or dash and three dots symbol on the largest scale of the United States Geological Survey maps most recently published, or any replacement to that symbol, and or any watercourse which has a well-defined channel with a depth greater that four feet and banks steeper that 3:1 and contains hydrophilic vegetation, riparian vegetation or woody-vegetation including tree species greater that ten feet in height.

There is a created drainage swale adjacent to the eastern property line. This swale would be not be considered a Napa County Defined Drainages. There are no direct impacts to this drainage associated with the proposed winery site or wastewater irrigation area.

C.3 Special-Status Species

Special-status organisms are plants or animals that have been designated by Federal or State agencies as rare, endangered, or threatened. Section 15380 of the California Environmental Quality Act [CEQA (September, 1983)] has a discussion regarding non-listed (State) taxa. This section states that a plant (or animal) must be treated as Rare or Endangered even if it is not officially listed as such. If a person (or organization) provides information showing that a taxa meets the State's definitions and criteria, then the taxa should be treated as such.

A map from the DFW CNDDB Rare Find shows known special-status species in the proximity of the project as shown on Plate II. These taxa as well as those listed in Appendix C Special-status Species known for the Quadrangle and Surrounding Quadrangles were considered and reviewed as part of our scoping for the project site and property. Reference sites were reviewed as part of our scoping for some of the species.

Tables II and III below provides a list of species that are known to occur DFW CNDDB Rare Find search) and U.S Fish and Wildlife Service. The table includes an analysis / justification for concluding absence.

Table II. Analysis of DFW CNDDB and USFWS special-status plant species from the region. Columns are arranged alphabetically by scientific name.

Scientific Name Common Name	Species Habitat Association or Plant Community	Habitat present on Project Site	Bloom Time	Obs. on or Near Site	Analysis of habitat on project site for presence or absence.
Allium peninsulare var. *franciscanum* Franciscan onion	Cismontane woodland, Valley & Foothill Grassland/Clay often Serpentinite	No	May-June	No	Absence of requisite edaphic conditions. Historic use precludes presence.
Amorpha californica var. *napensis* Napa False Indigo	Cismontane Woodland	No	April-July	No	Requisite habitat, exposure and historic land use preclude presence on project site.
Amsinkia lunularis Bent-flowered Fiddleneck	Cismontane Woodland, Valley & Foothill Grassland, 3 to 500 M	No	March-June	No	Potential for project site. No indications for presence during our fieldwork. Historic use precludes presence.
Arctostaphylos stanfordiana ssp. *decumbans* Rincon Manzanita	Chaparral, Lower Montane Coniferous Forest (openings), Rocky, often Serpentinite	No	Feb.-April	No	Absence of requisite habitat and vegetation associates on the site or in the immediate vicinity.
Astragalus claranus Clara Hunt's Milk-vetch	Chaparral, Cismontane Woodland, Valley and Foothill Grassland	No	March-May	No	Absence of requisite micro-habitat, vegetation associates and historic land use precludes presence. Lack of finding during our fieldwork.
Astragalus rattanii var. *jepsonianus* Jepson's Milk-vetch	Cismontane Woodland, Valley & Foothill Grassland	No	April-June	No	Requisite habitat absent on the site or in the immediate vicinity. Historic use precludes presence.

Table II Continued Scientific Name Common Name	Species Habitat Association or Plant Community	Habitat present on Project Site	Bloom Time	Obs. on or Near Site	Analysis of habitat on project site for presence or absence
Balsamorhiza macrolepis var. *macrolepis* Big-scale Balsamroot	Chaparral, Cismontane Woodland, Valley & Foothill Grassland	No	March-June	No	Historic use of site precludes presence.
Blennosperma bakeri Sonoma Sunshine	Valley & Foothill Grassland, Vernal Pools	No	March-May	No	Absence of requisite mesic habitat.
Brodiaea leptandra Narrow-anthered California Brodiaea	Cismontane Woodland	No	May-June	No	Requisite habitat, exposure and historic land use preclude presence on project site.
Ceanothus confusus Rincon Ridge Ceanothus	Closed Cone Conifer Forests, Chaparral	No	Feb.-April	No	Absence of typical habitat and vegetation associates.
Ceanothus divergens Calistoga Ceanothus	Chaparral, Serpentinite or Volcanic-Rocky.	No	May-Sept.	No	Absence of typical habitat and vegetation associates. Lack of finding during our fieldwork.
Ceanothus purpureus Holly-leaved Ceanothus	Chaparral	No	March-May	No	Absence of typical habitat and vegetation associates. Lack of finding during our fieldwork.
Centromadia parryi ssp. *parryi* Pappose Tarplant	Grassland Salt or Alkaline Marshes	No	March-June	No	Requisite mesic conditions absent. Lack of finding during our fieldwork.
Eryngium constancei Loch Lomond Button-celery	Vernal Pools	No	April-June	No	Absence of mesic conditions required for presence. Lack of finding during our fieldwork.

Table II Continued Scientific Name Common Name	Species Habitat Association or Plant Community	Habitat present on Project Site	Bloom Time	Obs. on or Near Site	Analysis of habitat on project site for presence or absence
Downingia pusilla Dwarf Downingia	Wetlands	No	March May	No	Requisite aquatic habitat absent on the site or in the immediate vicinity.
Fritillaria liliacea Fragrant Fritillary	Open Grasslands	No	Feb.-April	No	Absence of edaphic conditions required for presence.
Hemizonia congesta ssp. *congesta* White Seaside Tarplant	Coastal Scrub, Valley & Foothill Grassland	No	April Oct.	No	Absence of requisite habitat. Historic use precludes presence.
Juncus luciensis Santa Lucia Dwarf Rush	Seeps, Meadows, Vernal Pools, Stream Sides	No	April-June	No	Absence of requisite mesic habitat.
Lasthenia burkei Burke's Goldfields	Vernal Pools	No	April – June	No	Requisite aquatic habitat absent on the site or in the immediate vicinity.
Layia septentrionalis Colusa Layia	Cismontane Woodland, Valley and Foothill Grassland, Serpentinite	No	April-May	No	Historic agricultural use and hardscape as well as absence of requisite edaphic conditions preclude presence.
Leptosiphon jepsonii Jepson's Leptosiphon	Chaparral, Cismontane Woodland, Valley and Foothill Grassland	No	April-May	No	Requisite habitat absent on the site or in the immediate vicinity. Lack of finding during our fieldwork.
Limnanthes floccosea ssp. *floccosa* Woolly Meadowfoam	Meadows & Seeps, Valley & Foothill Grassland, Cismontane Woodland, Vernal Pools.	No	April-May	No	Requisite mesic habitat absent on the site or in the immediate vicinity.

Table II Continued Scientific Name Common Name	Species Habitat Association or Plant Community	Habitat present on Project Site	Bloom Time	Obs. on or Near Site	Analysis of habitat on project site for presence or absence
Limnanthes vinculans Sebastopol Meadowfoam	Meadows and Seeps, Valley and Foothill Grassland, Vernal Pools.	No	April-May	No	Requisite mesic habitat absent on the site or in the immediate vicinity.
Lupinus sericatus Cobb Mountain Lupine	Broadleaved Upland Forest, Chaparral, Cismontane Woodland	No	March-June	No	Absence of requisite vegetation associates as well as historical use of project site precludes presence. Lack of finding during our fieldwork.
Microsris paludosa Marsh Microseris	Moist areas Closed Cone Conifer Forests, Cismontane Woodland, Valley & Foothill Grassland	No	April-June	No	Absence of typical habitat and vegetation associates. Historic use precludes presence.
Navarretia leucocephala ssp. *bakeri* Baker's Navarretia	Meadows and Seeps, Cismontane Woodland, Valley and Foothill Grassland, Vernal Pools	No	May-July	No	Absence of typical habitat and vegetation associates. Historic use precludes presence..
Penstemon newberryi var. *sonomensis* Sonoma Beardtongue	Cismontane Woodland	No	April-Aug.	No	Absence of typical habitat and vegetation associates.
Plagiobothrys strictus Calistoga Popcorn-flower	Vernal pools near thermal springs	No	March-June	No	Requisite mesic habitat absent on the site or in the immediate vicinity.
Poa napensis Napa Blue Grass	Meadows near Hot Springs	No	May-Aug.	No	Requisite mesic habitat absent on the site or in the immediate vicinity. Lack of finding during our fieldwork.

Table II Continued Scientific Name Common Name	Species Habitat Association or Plant Community	Habitat present on Project Site	Bloom Time	Obs. on or Near Site	Analysis of habitat on project site for presence or absence
Sidalcea hickmanii ssp. *napensis* Napa Checkerbloom	Chaparral Serpentinite	No	May-June	No	Absence of typical habitat and vegetation associates. Lack of finding during our fieldwork.
Sidalcea oregana ssp. *hydrophila* Marsh Checkerbloom	Meadows and seeps, Riparian scrub mesic	No	June-Aug.	No	Requisite mesic habitat absent.
Trifolium amoenum Showy Rancheria Clover	Coastal Bluff Scrub, Valley & Foothill Grassland (Sometimes Serpentinite)	No	April-June	No	Historic use of the site precludes presence. This species is vulnerable to disturbance and livestock grazing.
Trifolium hydrophilum Saline Clover	Marshes and Swamps Grassland	No	April-June	No	Absence of mesic habitat required for presence.
Trichostema ruygtii Napa Bluecurls, Vinegar Weed	Grassland	No	No	June-Aug.	Requisite habitat absent on the site. Historic use of the site precludes presence.
Triquetrella californica Coastal Triquetrella	Endemic To Coastal California < 30 Miles. Thin Soil On Outcrops In Scrub Or Grassland	No	NA	No	Lack of appropriate habitat for this moss.

Table III. Analysis of anmal species that are known to occur (DFW CNDDB Rare Find search). Columns are arranged alphabetically by scientific name.

Scientific Name Common Name	**Habitat**	**Potential for Property**	**Obs. on Project Site**	**Analysis of habitat on project site for presence or absence.**
Accipter sriatus Sharp-Shinned Hawk	Avian prey, Nests in conifers or tops of live oaks	Yes	No	Lack of habitat for prey. May fly over
Ambystoma californiense California Tiger Salamander	Ephemeral Breeding pools with upland oak woodlands for estivation	No	No	No breeding or upland habitat. Surrounded by development
Antrozous pallidus Pallid Bat	Roosts in Buildings and Overhangs, woodlands	No	No	No evidence for presence observed.
Buteo swainsoni Swainson's Hawk	Open areas with riparian influence	No	No	Lack of nesting habitat.
Corynorhinus townsendii Townsend's Big-eared Bat	Caves, also in Buildings	No	No	No roosting habitat present
Elanus leucurus White-tailed Kite	Nests in tall trees near water	No	No	Requisite habitat absent.
Emys marmorata Western Pond Turtle	Slow moving water or ponds	Yes	Yes	No habitat on project site. Observed in reservoir off site.
Falco mexicanus Prairie Falcon	Nests on cliffs	No	No	May fly over. Lack of habitat for nesting and feeding.
Falco peregrinus anatum American Peregrine Falcon	Nests on cliffs	No	No	May fly over. Lack of habitat for nesting and feeding.
Hypomesus transpacificus Delta Smelt	California Delta	No	No	Lack of aquatic habitat.

Table III Continued Scientific Name Common Name	Habitat	Potential for Property	Obs. or Potential for Project Site	Analysis of habitat on project site for presence or absence.
Hysterocarpus traski pomo Russian River Tule Perch	Riverine	No	No	Requisite habitat absent on project site.
Hydrochara rickseckeri Ricksecker's Water Scavenger Beetle	Shallow Water	No	No	Requisite habitat absent o project site.
Hydroporus leechi Leech's Skyline Diving Beetle	Ponds	No	No	Requisite habitat absent o project site.
Lavinia symmetricus navarroensis Navarro Roach	Riverine	No	No	Lack of habitat.
Myotis thysanodes Fringed Myotis	Montane Forests or Montane Meadows	Yes	No	No evidence for presence observed during our fieldwork.
Oncorhynchus kisutch Coho Salmon-Central California Coast ESU	Aquatic	No	No	Lack of habitat.
Oncorhynchus mykiss irideus Steelhead-central California Coast	Aquatic	No	No	Potential for presence in Napa River. No aquatic impacts. Habitat not associated with the proposed project.
Oncorhynchus tshawytswcha California Coastal Chinook Salmon	Aquatic	No	No	Lack of habitat.
Progne subis Purple Martin	Cavity nesters. Like open areas near water.	No	No	Habitat associated with proposed project is unlikely to contain feeding or nesting potential.
Rana boylii Foothill Yellow-legged Frog	Streams with pools	No	No	Potential for presence in Napa River. Unlikely to occur on project site.
Rana draytonii California Red-legged Frog	Creeks, Rivers, permanent flowing water.	No	No	Requisite habitat absent on project site.
Strix occidentalis caurina Northern Spotted Owl	Old growth, forested deep canyons.	No	No	Requisite habitat absent. Not associated with project.

Scientific Name Common Name	Habitat	Potential for Property	Obs. or Potential for Project Site	Analysis of habitat on project site for presence or absence.
Stygobromus cherylae Barr's Amphipod	Aquatic	No	No	Requisite habitat absent on project site.
Syncaris pacifica California Freshwater Shrimp	Creeks and Estuaries below 300 ft.	No	No	Requisite habitat required for presence lacking.
Taxidea taxus American Badger	Grasslands with food source of ground squirrels	No	No	Absence of food sources required for presence. No burrows observed

C.4 Discussion of Sensitive Habitat Types

The Napa County Baseline Data Report defines Biotic communities as the characteristic assemblages of plants and animals that are found in a given range of soil, climate, and topographic conditions across a region. Sensitive biotic communities in the County were identified using a two-step process for the Napa County Baseline Data Report. The two steps were:

1. An existing list of sensitive biotic communities prepared by the California Department of Fish and Wildlife (DFW) (2003a) was first reviewed by senior Jones & Stokes biologists, and those communities that may occur in the County were identified. Because the community names in the DFW list (2003a) did not correspond directly with the names used in the Land Cover Layer, a determination was made as to which land cover types on the Land Cover Layer correspond to the communities on the DFW list.

2. The aerial extent of each land cover types mapped in the County was generated from the land cover layer. Those biotic communities with an areal extent of less than 500 acres in the County (approximately 0.1% of the County) were identified. These communities were discussed with local experts and their conservation importance established. Those that were not already on the original DFW list and that were determined to be worthy of conservation were added to the list.

The Napa County Baseline Data Report as well as the California Department of Fish and Wildlife Natural Diversity Data Base (DFW CNDDB) lists recognized Sensitive Biotic Communities. The Napa County Baseline Data Report lists twenty-three communities which are considered sensitive by DFW due to their rarity, high biological diversity, and/or susceptibility to disturbance or destruction. The CNDDB communities in Napa County are the following:

Serpentine bunchgrass grassland,
Wildflower field (located within native grassland),
Creeping ryegrass grassland,
Purple Needlegrass grassland,
One-sided bluegrass grassland,
Mixed serpentine chaparral,

McNab cypress woodland,
Oregon white oak woodland,
California bay forests and woodlands,
Fremont cottonwood riparian forests,
Arroyo willow riparian forests,
Black willow riparian forests,
Pacific willow riparian forests,
Red willow riparian forests,
Narrow willow riparian forests,
Mixed willow riparian forests,
Sargent cypress woodland,
Douglas-fir-ponderosa pine forest (old-growth),
Redwood forest,
Coastal and valley freshwater marsh,
Coastal brackish marsh,
Northern coastal salt marsh, and
Northern vernal pool.

Napa County biotic communities of limited distribution that are sensitive include:
Native grassland;
Tanbark oak alliance;
Brewer willow alliance;
Ponderosa pine alliance;
Riverine, lacustrine, and tidal mudflats; and
Wet meadow grasses super alliance.

The grasslands within the footprint of the project do not consist of any of the sensitive grassland communities listed by the County Baseline Data Report of DFW.

The California Department of Fish and Wildlife Natural Diversity Database five-mile search shows that Serpentine Bunchgrass and Valley Needlegrass Grassland are present near the project site. There are no marshes or wetlands associated with the project footprint or the property.

D. POTENTIAL BIOLOGICAL IMPACTS

The project's effect on onsite or regional biological resources is considered to be significant if the project results in:

- Alteration of unique characteristics of the area, such as sensitive plant communities and habitats (i.e. serpentine habitat, wetlands, riparian habitat);
- Adverse impacts to special-status plant and animal species;
- Adverse impacts to important or vulnerable resources as determined by scientific opinion or resource agency concerns (i.e. sensitive biotic communities, special status habitats; e.g. wetlands);
- Loss of critical breeding, feeding or roosting habitat; and
- Interference with migratory routes or habitat connectivity.

In the sections below a discussion of potential impacts of the project on the biological resources is presented.

D.1 Analysis of Potential Impacts to Special-status Species

The proposed project is primarily within a previously developed landscape. There is no reason to expect any impacts to special-status species provided BMP's.

Western Pond Turtle ***(Emys marmorata)*** The pond turtle is found throughout California and is listed by the State as a Species of Concern. It does not have Federal status. Suitable habitat consists of any permanent or nearly permanent body of water or slow moving stream with suitable refuge, basking sites and nesting sites. Refuge sites include partially submerged logs or rocks or mats of floating vegetation. Basking sites can be partially submerged rocks or logs, as well as shallow-sloping banks with little or no cover. Nesting occurs in sandy banks or in soils up to 100 meters away from aquatic habitat.

It is unlikely that turtles would move in the area proposed for winery site. The disturbed area and vineyard do not provide potential nesting habitat, due to soil compaction dry ground with no cover or vegetated cover. Turtles most likely have moved in from the adjacent pond southeast of the property.

The **Calistoga Popcorn-Flower** ***(Plagiobothrys strictus)*** is shown with a confidence interval that overlaps that of the study area . This is a species that is limited in nature and is historically known from sites on the west side of State Highway 29. It is associated with geothermal springs or swales in clay loam soil. There is no habitat on the property that would support this species. We found no evidence that would indicate any potential for presence on the property. The other species known for the quadrangle and surrounding quadrangles and those listed in the table above are reasonably precluded by the historic use of the property and the hardscape present.

Pallid Bat (***Antrozous pallidus***)**:** The Pallid Bat occupies a wide variety of habitats, such as grasslands, shrublands, and forested areas of oak and pine, but prefer rocky outcrops with desert scrub. The pallid bat roosts in caves, mines, crevices, and occasionally in hollow trees or buildings.

They forage over open country and within woodlands. No roosts or evidence of their presence was observed within the proposed project area potential. . The project and property do not contain potential roosting habitat.

Northern Spotted Owl (*Strix occidentalis caurina*): Northern spotted owls require mature forest patches with permanent water and suitable nesting trees and snags (Zeiner et al. 1990a). Northern spotted owls use dense, old-growth forests, or mid- to late- seral stage forests, with a multi-layered canopy for breeding (Remsen 1978). Mixed conifer, redwood, and Douglas-fir habitats are required for nesting and roosting. The project and property do not contain potential nesting habitat and the project sited do not contain potential foraging habitat.

Our fieldwork did not find any habitat for any special-status animal species known for the Quadrangle surrounding Quadrangles or for the region that would be impacted by the proposed project. The present conditions of the project site and historic use is such that there is little reason to expect the occurrence of any special-status animal species on the property or within the footprint of the project.

Habitat impacted by the proposed project is such that it will not substantially reduce or restrict the range of listed animals.

D.2 Analysis of Potential Impacts on Sensitive Habitat

There are no DFW Sensitive Communities or Napa County Sensitive Biotic Communities present on project site. The project footprint is primarily within a historically developed landscape.

Native Grassland - The project will not impact any populations of native grasslands.

Seasonal Wetland generally denotes areas where the soil is seasonally saturated and/or inundated by fresh water for a significant portion of the wet season, and then seasonally dry during the dry season. To be classified as "Wetland," the duration of saturation and/or inundation must be long enough to cause the soils and vegetation to become altered and adapted to the wetland conditions. Varying degrees of pooling or ponding, and saturation will produce different edaphic and vegetative responses. These soil and vegetative clues, as well as hydrological features, are used to define the wetland type. Seasonal wetlands typically take the form of shallow depressions and swales that may be intermixed with a variety of upland habitat types. Seasonal wetlands fall under the jurisdiction of the U.S. Army Corps of Engineers. There are no potential seasonal wetlands or vernal pools associated with the project footprint.

"Waters of the State" include drainages which are characterized by the presence of definable bed and bank that meet ACOE, and RWQCB definitions and or jurisdiction. Any direct discharge of storm water into "Waters of the State" will require ACOE, DFW, and RWQCB permits. There are no drainages or creeks associated with the project.

Riparian Vegetation is by all standards considered sensitive. Riparian Vegetation functions to control water temperature, regulate nutrient supply (biofilters), bank stabilization, rate of runoff, wildlife habitat (shelter and food), release of allochthonous material, release of woody debris which functions as habitat and slow nutrient release, and protection for aquatic organisms.

Riparian vegetation is also a moderator of water temperature has a cascade effect in that it relates to oxygen availability. The project will not impact any riparian vegetation.

Trees The project will not remove any native trees. Domestic walnuts along Dunaweal Lane will be removed by the proposed entrance.

Wildlife Habitat and Wildlife Corridors

Are natural areas interspersed with developed areas are important for animal movement, increasing genetic variation in plant and animal populations, reduction of population fluctuations, and retention of predators of agricultural pests and for movement of wildlife and plant populations. Wildlife corridors have been demonstrated to not only increase the range of vertebrates including avifauna between patches of habitat but also facilitate two key plant-animal interactions: pollination and seed dispersal. Corridor users can be grouped into two types: passage species and corridor dwellers. The data from various studies indicate that corridors should be at least 100 feet wide to provide adequate movement for passage species and corridor dwellers in the landscape. There are no identifiable wildlife corridors through the property.

Raptor Nests, Bird Rookeries, Bat Roosts, Wildlife Dens or Burrows

No raptor nests were identified during our survey. We found no indications of nesting raptors on the property or in the near vicinity of the project sites. We did not observe any nests, whitewash or nest droppings, perching associated with the project site or trees along Dunaweal lane or adjoining parcels. No bird rookeries were present on the property or within the project footprint.

Very few burrows were observed, but small mammals and songbirds likely utilize habitats on the project site for foraging and cover. No significant wildlife dens or burrows were observed.

Unique Species that are Endemic, Rare or Atypical for the Area

No unique or unusual populations of plants or animals were present on the property or the project site.

The flora and fauna present are typical for the developed landscape of the region. There were no unique species, endemic populations of plants or animals or species that are rare or atypical for the area present on the project site or property.

Habitat Fragmentation

The proposed project is within a historically developed landscape. The project will not result in habitat fragmentation.

D.3 Potential Off-site Impacts of the Project

There is no expected impact to biological resources by the proposed project. BMP's during development of the site will prevent any significant off-site impacts.

D.4 Potential Cumulative Impacts

Cumulative biological effects are the result of incremental losses of biological resources within a region. The site location, historic development and use of the area within the footprint of the project negate the potential for cumulative biological resource effects. The project development is proposed for an area of the property that has had a long historic use. There is nothing to indicate that there will be any cumulative biological impacts of the project provided.

D.5 State and Federal Permit

Any impact to wetlands or drainages will require agency consultation and permits from the California Department of Fish and Wildlife, U.S. Army Corps of Engineers, and Regional Water Quality Control Boards for impacts to "Waters of the State."

The project as proposedwill not impact any wetlands or seasonal drainages.

E. RECOMMENDATIONS TO AVOID IMPACTS

E.1 Significance

The significance of potential impacts is a function of the scope and scale of the proposed project within the existing Federal, State and Local regulations and management practices. The determination of significance of impacts to biological resources consists of an understanding of the project as proposed and an evaluation of the context in which the impact may occur. The extent and degree of any impact on-site or off-site must be evaluated consistent with known or expected site conditions. Therefore, the significance of potential impacts is assessed relevant to a site-specific scale and the larger regional context.

E.2 Recommendations

The historic use of the property and project site conditions are such that there is no reason to expect any impacts to special-status species on-site or off-site provided standard construction practices are utilized. The project must comply with Napa County SWPPP requirements to ensure that best management practices are adopted in order to minimize the amount of sediment and other pollutants leaving the site during construction activities.

F. SUMMARY

This study is provided as background information necessary for evaluating potential impacts of the project on local Biological Resources.

We find that the proposed project following BMPs will not have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service.

The site is primarily developed landscape, and the history of use reasonably preclude presence of any special-status plant species on the project site.

We find that the project as proposed will not have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the California Department of Fish and Wildlife or US Fish and Wildlife Service.

We find that the project as proposed will not have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means. No wetlands or vernal pools are associated with the proposed project.

We find that the proposed project will not interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites.

We find that the proposed project will not conflict with any local policies or ordinances protecting biological resources.

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G.2 Qualifications of Field Investigators

Chris K. Kjeldsen, Ph.D., Botany, Oregon State University, Corvallis, Oregon. He has over forty years of professional experience in the study of California flora. He was a member of the Sonoma County Planning Commission and Board of Zoning (1972 to 1976). He has over thirty years of experience in managing and conducting environmental projects involving impact assessment and preparation of compliance documents, Biological Assessments, DFW Habitat Assessments, DFW Mitigation projects, ACOE Mitigation projects and State Parks and Recreation Biological Resource Studies. Experience includes conducting special-status species surveys, jurisdictional wetland delineations, general biological surveys, 404 and 1600 permitting, and consulting on various projects. He taught Plant Taxonomy at Oregon State University and numerous botanical science and aquatic botany courses at Sonoma State University including sections on wetlands and wetland delineation techniques. He has supervised numerous graduate theses, NSF, DOE and local agency grants and served as a university administrator. He has a valid DFW collecting permit.

Daniel T. Kjeldsen, B. S., Natural Resource Management, California Polytechnic State University, San Luis Obispo, California. He spent 1994 to 1996 in the Peace Corps managing natural resources in Honduras, Central America. His work for the Peace Corps in Central America focused on watershed inventory, mapping and the development and implementation of a protection plan. He has over ten years of experience in conducting Biological Assessments, DFW Habitat Assessments, ACOE wetland delineations, wetland rehabilitation, and development of and implementation of mitigation projects and mitigation monitoring. He has received 3.2 continuing education units MCLE 27 hours in Determining Federal Wetlands Jurisdiction from the University of California Berkeley Extension. Attended Wildlife Society Workshop Falconiformes of Northern California Natural History and Management California Tiger Salamander 2003, Natural History and Management of Bats Symposium 2005, Western Pond Turtle Workshop 2007, and Western Section Bat Workshop 2011. Laguna Foundation & The Wildlife Project Rare Pond Species Survey Techniques 2009. A full resume is available upon request.

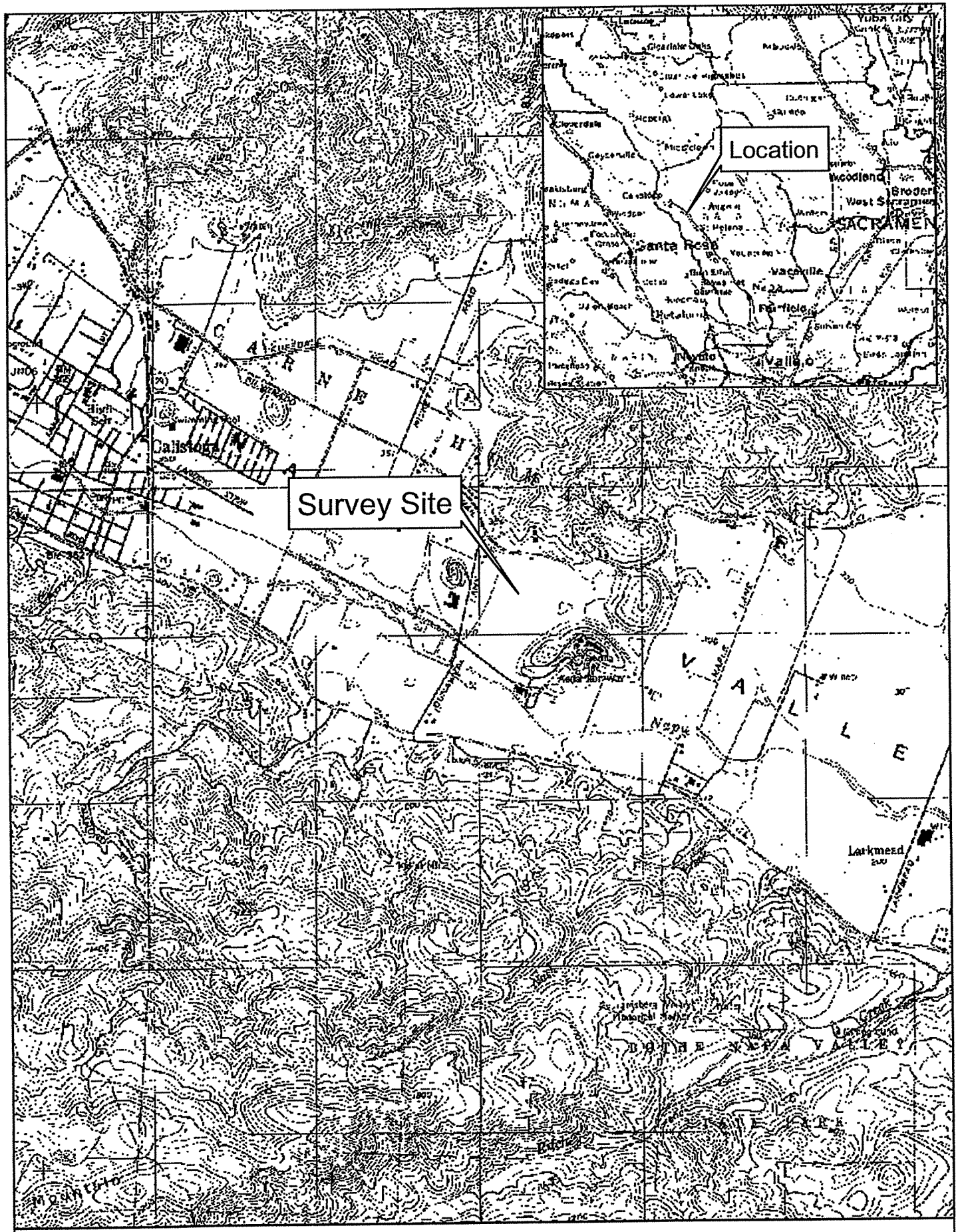
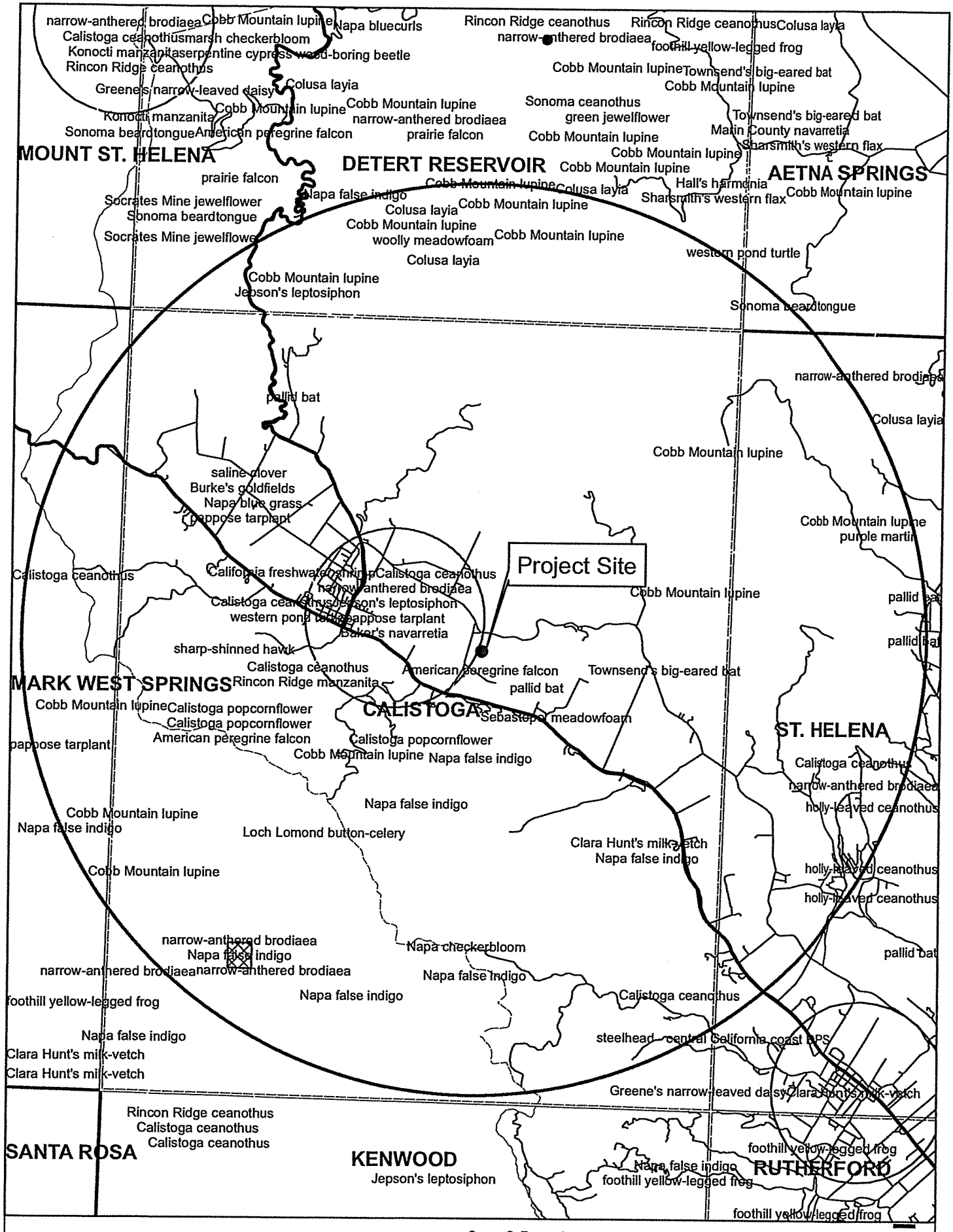


Plate I. Site / Location Map (Calistoga Quadrangle)


narrow-anthered brodiaea
Cobb Mountain lupine
Napa bluecurls
Calistoga ceanothus
marsh checkerbloom
Konocti manzanita
serpentine cypress wood-boring beetle
Rincon Ridge ceanothus
Greene's narrow-leaved daisy
Colusa layia
Konocti manzanita
Cobb Mountain lupine
Cobb Mountain lupine
narrow-anthered brodiaea
Sonoma beardtongue
American peregrine falcon
prairie falcon
MOUNT ST. HELENA
DETERT RESERVOIR
prairie falcon
Napa false indigo
Socrates Mine jewelflower
Sonoma beardtongue
Colusa layia
Cobb Mountain lupine
Cobb Mountain lupine
woolly meadowfoam
Cobb Mountain lupine
Colusa layia
Socrates Mine jewelflower
Cobb Mountain lupine
Jepson's leptosiphon
Rincon Ridge ceanothus
narrow-anthered brodiaea
Rincon Ridge ceanothus
Colusa layia
foothill yellow-legged frog
Cobb Mountain lupine
Townsend's big-eared bat
Cobb Mountain lupine
Sonoma ceanothus
green jewelflower
Townsend's big-eared bat
Marin County navarretia
Cobb Mountain lupine
Sharsmith's western flax
Cobb Mountain lupine
Cobb Mountain lupine
AETNA SPRINGS
Hall's harmonia
Sharsmith's western flax
Cobb Mountain lupine
western pond turtle
Sonoma beardtongue
pallid bat
narrow-anthered brodiaea
Colusa layia
Cobb Mountain lupine
saline clover
Burke's goldfields
Napa blue grass
pappose tarplant
Cobb Mountain lupine
purple martin
Project Site
Calistoga ceanothus
California freshwater shrimp
Calistoga ceanothus
narrow-anthered brodiaea
Calistoga ceanothus
Jepson's leptosiphon
western pond turtle
pappose tarplant
Baker's navarretia
Cobb Mountain lupine
pallid bat
pallid bat
sharp-shinned hawk
Calistoga ceanothus
Rincon Ridge manzanita
American peregrine falcon
Townsend's big-eared bat
pallid bat
MARK WEST SPRINGS
Cobb Mountain lupine
Calistoga popcornflower
Calistoga popcornflower
American peregrine falcon
CALISTOGA
Sebastopol meadowfoam
ST. HELENA
pappose tarplant
Calistoga popcornflower
Cobb Mountain lupine
Napa false indigo
Calistoga ceanothus
narrow-anthered brodiaea
holly-leaved ceanothus
Napa false indigo
Cobb Mountain lupine
Napa false indigo
Loch Lomond button-celery
Clara Hunt's milk-vetch
Napa false indigo
Cobb Mountain lupine
holly-leaved ceanothus
holly-leaved ceanothus
narrow-anthered brodiaea
Napa false indigo
narrow-anthered brodiaea
narrow-anthered brodiaea
Napa checkerbloom
Napa false indigo
pallid bat
Napa false indigo
foothill yellow-legged frog
Calistoga ceanothus
Napa false indigo
steelhead - central California coast DPS
Clara Hunt's milk-vetch
Clara Hunt's milk-vetch
Greene's narrow-leaved daisy
Clara Hunt's milk-vetch
Rincon Ridge ceanothus
Calistoga ceanothus
Calistoga ceanothus
SANTA ROSA
KENWOOD
Jepson's leptosiphon
foothill yellow-legged frog
Napa false indigo
RUTHERFORD
foothill yellow-legged frog
foothill yellow-legged frog
Plate II DFG CNDDB 5-Mile Search
0
0.5
1
2 Miles
(Data Date July 2014)

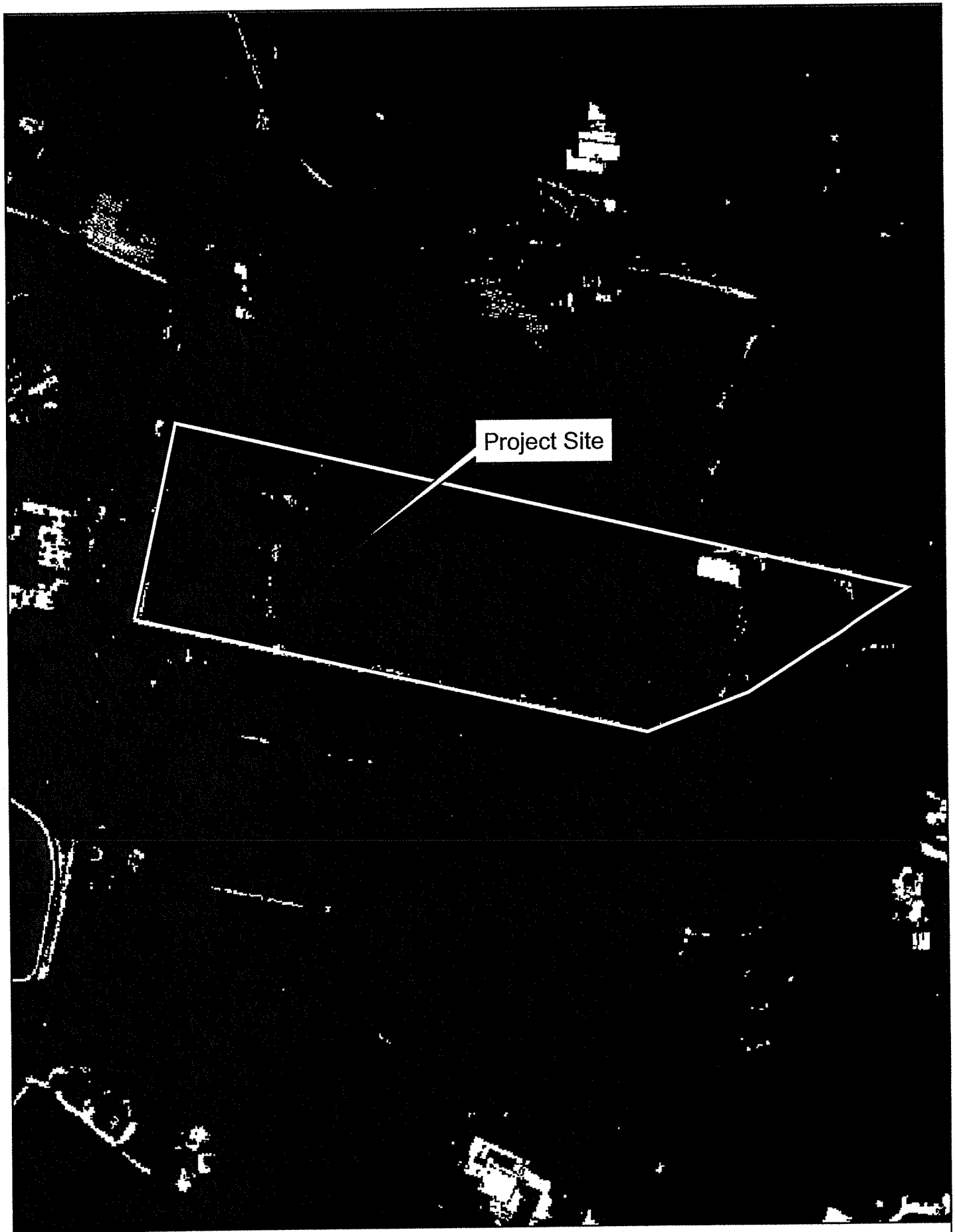


Plate III. Aerial Photo / Survey Area

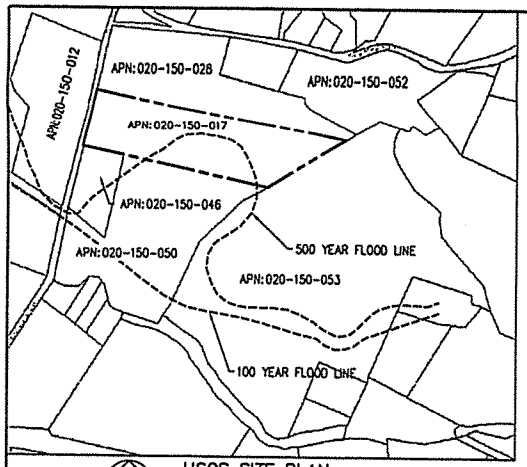
GIRARD WINERY

1077 Dunaweal Ln.

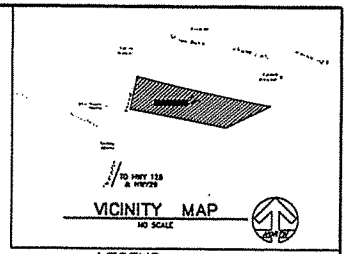
Calistoga, California 94515

APN 022-150-017

USE PERMIT APPLICATION



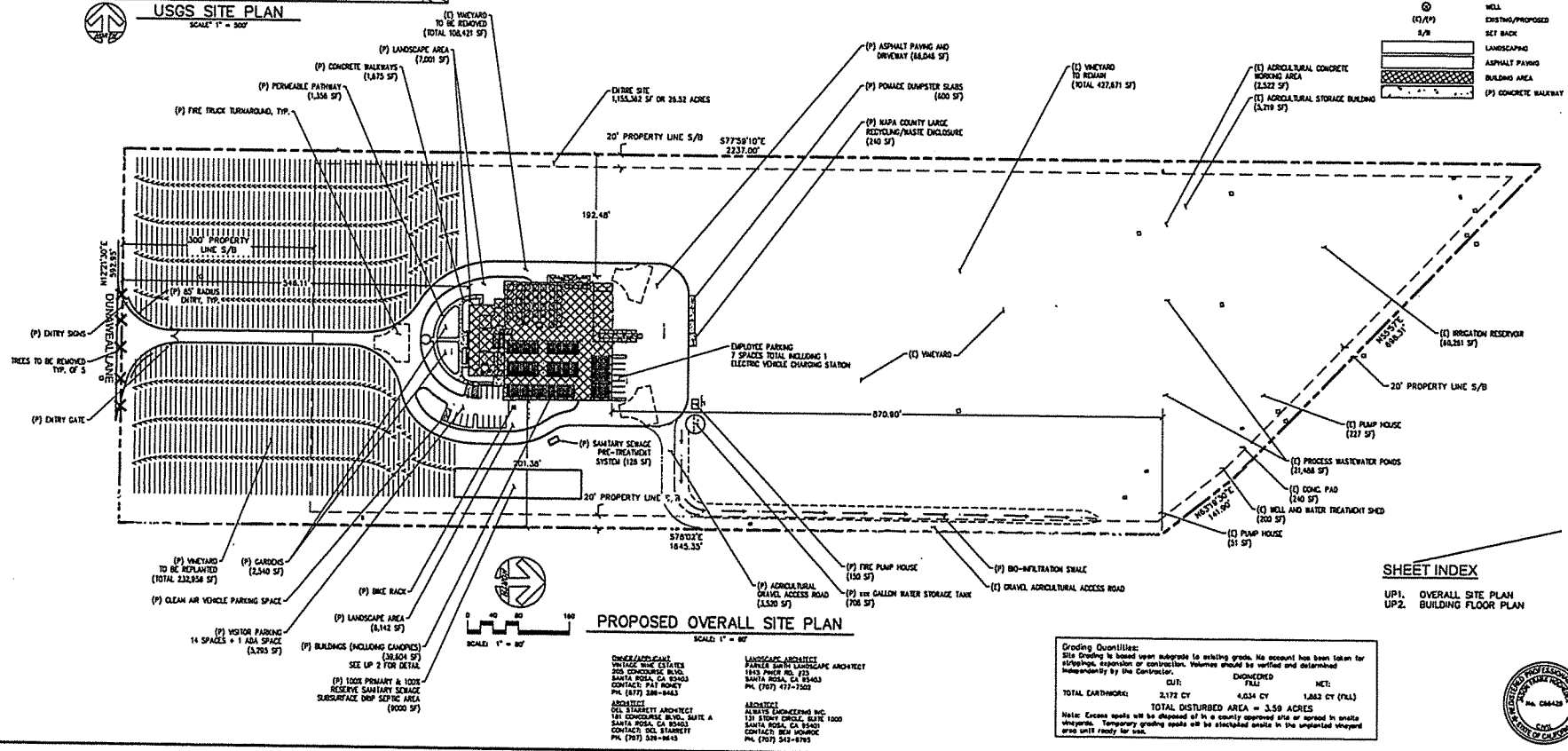
USGS SITE PLAN
SCALE: 1" = 500'



VICINITY MAP
NO SCALE

LEGEND

- APPROXIMATE PROPERTY LINE
- FENCE
- EDGE OF PAVEMENT
- EDGE OF GRAVEL DRIVEWAY
- DRAINAGE COURSE FLOWLINE
- WINDROW
- OVERHEAD UTILITIES
- SETBACK
- 100 YEAR FLOOD PLAIN
- 500 YEAR FLOOD PLAIN
- 20 — 5 FOOT INDEX
- 15 — 1' INTERVAL CONTOURS
- WELL
- (E)/(P) EXISTING/PROPOSED
- S/B SET BACK
- LANDSCAPING
- ASPHALT PAVING
- BUILDING AREA
- (P) CONCRETE WALKWAY



PROPOSED OVERALL SITE PLAN
SCALE: 1" = 80'

SHEET INDEX

OWNER/APPLICANT
VINTAGE WINE ESTATES
205 CONCOURSE BLVD.
SANTA ROSA, CA 95403
CONTACT: PAT ROney
PH. (877) 286-8463

ARCHITECT
DEL STARRETT ARCHITECT
181 CONCOURSE BLVD., SUITE A
SANTA ROSA, CA 95403
CONTACT: DEL STARRETT
PH. (707) 539-9643

LANDSCAPE ARCHITECT
PARKER SMITH LANDSCAPE ARCHITECT
1845 PINER RD., #25
SANTA ROSA, CA 95403
PH. (707) 477-7500

ARCHITECT
ALWAYS ENGINEERING INC.
131 STONY CIRCLE, SUITE 1000
SANTA ROSA, CA 95401
CONTACT: BEN MONROE
PH. (707) 542-8795

Grading Quantities:
Site Grading is based upon subgrade to existing grade. No account has been taken for stripping, expansion or contraction. Volumes should be verified and determined independently by the Contractor.

	CUT:	ENGINEERED FILL:	NET:
TOTAL EARTHWORK:	2,172 CY	4,034 CY	1,862 CY (FILL)

TOTAL DISTURBED AREA = 3.59 ACRES

Note: Excess spoils will be disposed of in a county approved site or spread in onsite vineyards. Temporary grading spoils will be stockpiled onsite in the unplanted vineyard area until ready for use.

REGISTERED PROFESSIONAL ENGINEER — BENJAMIN PAUL MONROE — No. C66429 — CIVIL — STATE OF CALIFORNIA

REVISION	DESCRIPTION	BY	DATE

Always Engineering, Inc.
Civil Engineering & Topographic Surveying
3358 Progress Court, Suite 1000
Santa Rosa, CA 95403 Fax: (707) 542-8795
(707) 542-8795
www.alwayseng.com

Prepared for: GIRARD WINERY
1077 DUNAWEAL LN., CALISTOGA, CA

Prepared on: February 4, 2014

USE PERMIT
OVERALL SITE PLAN
1077 DUNAWEAL LN., CALISTOGA, CA
APN:020-150-017

JOB # 13530
SHEET
UP1 OF UP2

APPENDIX A

Plants and Animals Observed Associated With The Project Site

PLANTS

The nomenclature for the list of plants found on the project site and the immediate vicinity follows: Brodo, Irwin M., Sylvia Duran Sharnoff and Stephen Sharnoff, 2001, for the lichens;; S Norris and Shevrock - 2004, for the mosses; and Baldwin, B.G., D.H. Goldman, D.J.Keil, R.Patterson, T.J.Rosati, and D.H.Wilkens, editors, 2012 - for the vascular plants.. The plant list is organized by major plant group.

Habitat type indicates the general associated occurrence of the taxon on the project site or in nature.
Abundance refers to the relative number of individuals on the project site or in the region.

MAJOR PLANT GROUP **Family** **Genus**	**Habitat Type**	**Abundance**
Common Name		

NCN = No Common Name, * = Non-native, @= Voucher Specimen

MINACEAE		
Alsia californica (W.J.Hooker&Arnott) Sullivant NCN	Epiphytic on Trees	Common
Dendroalsia abietina (Hook.) Brit. NCN	Epiphytic on Trees	Common
Homalothecium nuttallii (Wilson) Jaeger NCN	Epiphytic on Trees	Common
Orthotrichum lyellii Hook & Tayl. NCN	Epiphytic on Trees	Common
Scleropodium touretii (Brid.) L Koch. NCN	Epiphytic on Trees	Common
LICHENS		
FOLIOSE		
Flavoparmelia caperata (L.) Hale NCN	Epiphytic on Trees	Common
Flavopunctilia flaventor (Stirt.) Hale NCN	Epiphytic on Trees	Common
Parmelia sulcata Taylor NCN	Epiphytic on Trees	Common
Xanthoria polycarpa (Hoffm.) Rieber Pin-cushion Sunburst Lichen	Epiphytic on Trees	Common

MAJOR PLANT GROUP Family Genus Common Name	Habitat Type	Abundance

NCN = No Common Name, * = Non-native, @= Voucher Specimen

FRUTICOSE

Evernia prunastri (L.) Ach. NCN	Epiphytic on Trees	Common
Ramalina farinacea (L.) Ach. NCN	Epiphytic on Trees	Common

VASCULAR PLANTS DIVISION CONIFEROPHYTA--GYMNOSPERMS

PINACEAE

Pseudotsuga menziesii (Vassey) Mayr var. *menziesii* Douglas-fir	On Property Line	Common

TAXODIACEAE

Sequoia sempervirens (D.Don) Endl. Redwood	Planted	Common

VASCULAR PLANTS DIVISION ANTHOPHYTA --ANGIOSPERMS
CLASS--DICOTYLEDONAE- TREES

MAGNOLIIDS

LAURACEAE

Umbellularia californica (Hook.&Arn.) Nutt. California Laurel, Sweet Bay, Pepperwood, California Bay	On Property Line	Occasional

EUDICOTS

ERICACEAE Heath Family

Arbutus menziesii Pursh Madrone	On Property Line	Common

FAGACEAE Oak Family

Quercus agrifolia Nee Live Oak	On Property Line	Common
Quercus kelloggii Newb. Black Oak	On Property Line	Common
Quercus lobata Nee. Valley Oak	On Property Line	Common

JUGLANDACEAE Walnut Family

**Juglans nigra* L. Black Walnut	Planted	Common
**Juglans regia* L. English Walnut	Planted	Common

OLEACEAE Olive Family

**Olea europaea* L. Olive	Domestic Ruderal	Occasional

MAJOR PLANT GROUP Family Genus Common Name	Habitat Type	Abundance

NCN = No Common Name, * = Non-native, @= Voucher Specimen

PLATANACEAE Sycamore Family		
*_Platanus acerifolia_ Wild London Plane Tree, Sycamore	Domestic Introduction	Occasional
ROSACEAE Rose Family		
*_Pyrus communis_ (L.) Pear	Escape or Domestic	Occasional
SALICACEAE Willow Family		
Populus fremontii S.Watson ssp. _fremontii_ Fremont Cottonwood	Along property Line	Occasional
Salix laevigata Bebb. Red Willow	On Property Line	Common
SAPINDACEAE Soapberry Family		
Acer macrophyllum Prush Big-leaf Maple	On Property Line	Common

VASCULAR PLANTS DIVISION ANTHOPHYTA --ANGIOSPERMS
CLASS--DICOTYLEDONAE-SHRUBS AND WOODY VINES

MAGNOLIIDS

EUDICOTS

ASTERACEAE (Compositae) Sunflower Family		
Baccharis pilularis deCandolle Coyote Brush	On Property Line	Common
ROSACEAE Rose Family		
*_Rubus armeniacus_ Focke Himalayan Blackberry	On Property Line	Common

VASCULAR PLANTS DIVISION ANTHOPHYTA --ANGIOSPERMS
CLASS--DICOTYLEDONAE-HERBS

EUDICOTS

APIACEAE (Umbelliferae) Carrot Family		
*_Dacus carota_ L. Wild Carrot, Queen Anne's Lace	Ruderal	Common
ASTERACEAE (Compositae) Sunflower Family		
*_Anthemis cotula_ L. Mayweed, Stinkweed, Dog-fennel	Ruderal	Common
*_Calendula arvensis_ L. Field Marigold	Ruderal	Occasional
*_Helminthotheca echioides_ (L.) Holub Ox-tongue (=_Picris echioides_)	Ruderal	Common
*_Lactuca serriola_ L. Prickly Lettuce	Ruderal	Occasional

MAJOR PLANT GROUP Family Genus Common Name	Habitat Type	Abundance

NCN = No Common Name, * = Non-native, @= Voucher Specimen

**Senecio vulgaris* L. NCN	Ruderal	Occasional
**Taraxacum officinale* F.H.Wigg Dandelion	Ruderal	Common
Xanthium strumarium L. Cocklebur	Ruderal	Occasional
BRASSICACEAE Mustard Family		
**Brassica nigra* (L.) Koch Black Mustard	Ruderal	Common
DIPSACACEAE Teasel Family		
**Dipsacus sativus* L. Fuller's Teasel	Ruderal	Common
FABACEAE (Leguminosae) Legum Family		
**Vicia sativa* L. subsp. *nigra* Narrow Leaved-vetch	Ruderal	Common
GERANIACEAE Geranium Family		
**Erodium botrys* (Cav.) Bertol. Broadleaf Filaree, Long-beaked Filaree	Ruderal	Common
MALVACEAE Mallow Family		
**Malva parviflora* L. Cheeseweed, Mallow	Ruderal	Common
ONAGRACEAE Evening-primrose Family		
Epilobium brachycarpum C.Presl Willow Herb	Ruderal Dry Areas	Common
PLANTAGINACEAE Plantain Family		
**Plantago lanceolata* L. English Plantain	Ruderal	Common
POLYGONACEAE Buckwheat Family		
**Polygonum aviculare* L. subsp. *depressum* Common Prostrate Knotweed (=*P. arenastrum)*	Ruderal	Common
**Rumex crispus* L. Curly Dock	Ruderal	Common
VISCACEAE Misteltoe Family		
Phoradendron serotinum (Raf.) Johnst. subsp. *tomentosum* Oak Mistletoe (=*P. villosum)*	Woodlands	Common

MAJOR PLANT GROUP Family Genus Common Name	Habitat Type	Abundance

NCN = No Common Name, * = Non-native, @= Voucher Specimen

VASCULAR PLANTS DIVISION ANTHOPHYTA --ANGIOSPERMS
CLASS--MONOCOTYLEDONAE-GRASSES

POACEAE Grass Family		
**Avena barbata* Link. Slender Wild Oat	Rudera	Common
**Bromus diandrus* Roth Ripgut Grass	Ruderal	Common
Elymus glaucus Buckley ssp. *glaucus* Blue Wildrye	Ruderal	Common
Festuca microstachys Nutt. NCN (=*Vulpia microstachys)*	Ruderal	Common
**Festuca myuros* L. Rattail Fescue,Zorro Annual Fescue (=*Vulpia myuros)*	Ruderal s	Common
**Phalaris aquatica* L. Harding Grass	Grasslands	Common

VASCULAR PLANTS DIVISION ANTHOPHYTA --ANGIOSPERMS
CLASS--MONOCOTYLEDONAE-SEDGES AND RUSHES

CYPERACEAE Sedge Family		
Cyperus eragrostis Lam. Nut-grass	Ruderal Moist Areas	Common

Fauna Species Observed in the Vicinity of the Project Site

The nomenclature for the animals found on the project site and in the immediate vicinity follows: Mc Ginnis –1984, for the fresh water fishes; Stebbins -1985, for the reptiles and amphibians; and Udvardy and Farrand – 1998, for the birds; and Jameson and Peeters -1988 for the mammals.

AMPHIBIA AND REPTILIA ORDER Common Name	Genus	Observed
CHELONIA		
Northwestern Pond Turtle	*Actinemys marmorata marmorata*	X

AVES ORDER Common Name	Genus	Observed
AVES		
California Quail	*Callipepla californica*	X
Canada Goose	*Branta canadensis*	X
Common Crow	*Corvus brachyrhynchos*	X
European Starling	*Sturnus vulgaris*	X
CHELONIA		
Western Pond Turtle	*Emys marmorata*	X

MAMMALS ORDER Common Name	Genus	Observed
LAGOMORPHA		
Black-tailed Jackrabbit	*Lepus californicus*	Scat
RODENTIA		
Pocket Gopher	*Thomomys bottae*	Sight

APPENDIX B

Definitions (Not all are relevant to this project)

Absolute Cover. The percentage of ground covered by the vertical projection of the plant crowns of a species or defined set of plants as viewed from above The absolute cover of herbaceous plants includes any standing (attached to a living palnt, and not lying on the grouns) plant parts, whether alive or dead; this deviniton escludes litter and other searated plant material. The cover may include mosses, lichens and recognizable cryptogamic crusts.

Best Management Practices. Best management practices represent the construction or agricultural practices that are consistent with regulatory laws or industry standards which are prudent and consistent with site conditions.

Confidence Interval. The California Department of Fish and Wildlife (DFW) California Natural Diversity Data Base (CNDDB) uses map polygon projections for indicating potential for occurrence of special-status plant populations around a recorded occurrence.

Critical Habitat. Critical habitat is by definition a designated by U.S. Fish and Wildlife Service as essential for the existence of a particular population of species. The U.S. Fish and Wildlife Service designates critical habitat for special-status species as an area or region within which a species may be found. "Critical habitat" is defined as areas essential for the "conservation" of the species in question.

Habitat Fragmentation. The issue of habitat fragmentation is of concern locally, nationally, and globally. The term habitat fragmentation refers to the loss of connections within the biosphere such that the movement, genetic exchange, and dispersal of native populations is restricted or prevented. Anthropogenic habitat fragmentation can be the result of a road construction, logging, agriculture, or urban growth. The practice of retaining or planning for "Corridors" is an attempt to address this issue. Corridors that allow movement of wildlife through and around a site include stream and riparian areas and also areas that connect two or more sites of critical wildlife habitat.

Habitat Types. Habitat types are used by DFW to categorize elements of nature associated with the physical and biological conditions in an area. These are of particular importance for the wildlife they support, and they are important as indicators of the potential for special-status species.

Relative Cover. A measure of the cover of a species in relation to that of other species within a set area or sample of vegetation. This is usually calculated for species that occur in the same layer (stratum) of vegetation, and this measure can be calculated across a group of samples.

Riparian Corridor. Riparian corridors can be defined as the stream channel between the low-water and high-water marks plus the terrestrial landscape above the high water-mark (where vegetation may be influenced by elevated water tables or extreme flooding and by the ability of the soils to hold water; Naiman, et. al. 1993).

Riparian Corridor or Riparian Ecosystem. Riparian ecosystems occupy the ecotone between upland and lotic aquatic realms. Riparian corridors can be defined as the stream channel between the low- and high-water marks plus the terrestrial landscape above the high water-mark (where vegetation may be influenced by elevated water tables or extreme flooding and by the ability of the soils to hold water; Naiman, et. al. 1993).

Ruderal Habitat. Ruderal habitat is characterized by disturbance and the establishment and dominance of non-native introduced weed species. Ruderal plant communities are a function of or result of agricultural or logging practices. This habitat is typically found along graded roads, erosional surfaces or sites influenced by agricultural animal populations.

Sensitive Habitat. DFW Natural Diversity Data Base uses environmentally sensitive plant communities for plant populations that are rare or threatened in nature. Sensitive habitat is defined as any area in which plant or animal life or their habitats are either rare or especially valuable and any area which meets one of the following criteria: (1) habitats containing or supporting "rare and endangered" species as defined by the State Fish and Wildlife Commission, (2) all perennial and intermittent streams and their tributaries, (3) coastal tide lands and marshes, (4) coastal and offshore areas containing breeding or nesting sites and coastal areas used by migratory and resident water-associated birds for resting areas and feeding, (5) areas used for scientific study and research concerning fish and wildlife, (6) lakes and ponds and adjacent shore habitat, (7) existing game and wildlife refuges and reserves, and (8) sand dunes. Sensitive Habitat also includes wetlands and tributaries to "Waters of the US" as defined by the Corps of Engineers (ACOE) and DFW seasonal streams DFW.

Serpentinite. Serpentinite or serpentine consists of ultramafic rock outcrops that due to the unique mineral composition support a unique flora often of endemics. Kruckeberg, 1984, indicates that the taxonomy and evolutionary responses to serpentines include "1) taxa endemic to serpentine, 2) local or regional indicator taxa, largely confined to serpentine in parts of their ranges, 3) indifferent or "bodenvag" taxa that range on and off serpentine, and 4) taxa that are excluded from serpentine." Serpentine outcrops or serpentinites support numerous special-status plant taxa.

Special-status Species. Special-status organisms are plants or animals that have been designated by Federal or State agencies as rare, endangered, or threatened. We have also included plant species listed by the CNPS. Section 15380 of the California Environmental Quality Act [CEQA (September, 1983)] has a discussion regarding non-listed (State) taxa. This section states that a plant (or animal) must be treated as Rare or Endangered even if it is not officially listed as such. If a person (or organization provides information showing that a taxa meets the State's definitions and criteria, then the taxa should be treated as such.

Standard Agricultural Practices. Standard agricultural practices are best management practices which are prudent as applied in the agricultural industry such as the use of regulated pesticides,

methods of and timing of weed control, appropriate fertilizer application, irrigation management, frost protection, erosion control and soil conservation and management, and dust control among other practices.

Streams. The DFW definition of stream is a body of water that flows at least periodically or intermittently through a bed or channel having banks and supports wildlife, fish, or other aquatic life. This includes watercourses having a surface or subsurface flow that support or have supported riparian vegetation. DFW's jurisdiction within altered or artificial waterways is based on the value of those waterways to fish and wildlife.

Target organisms. Special-status species that are listed by: the California Department of Fish and recorded in the Natural Diversity Data Base for the Quadrangle and surrounding Quadrangles of the project site; the California Native Plant Society for the habitat present on the project site Quadrangle and surrounding Quadrangles; Federal Endangered and Threatened Species that Occur in the U.S.G.S. 7 1/2 Minute Quadrangle; our experience with the local flora and fauna; any species identified by local individuals that are considered to be rare in the region; and DFW Five Mile radius CNDDB Rarefind search (See Plate II).

Wetlands. Wetlands are defined as those areas that are inundated or saturated by surface water or groundwater at a frequency and duration sufficient to support, and under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Many surface waters and wetlands in California meet the criteria for waters of the United States, including intermittent streams and seasonal lakes and wetlands.

Vernal Pools. Vernal pools are a type of seasonal wetland distinct for California and the western US. Typically they are associated with seasonal rainfall or "Mediterranean climate" and have a distinct flora and fauna, an impermeable or slowly permeable substrate and contain standing water for a portion of the year. They are characterized by a variable aquatic and dry regime with standing water during the spring plant growth regime. They have a high degree of endemism of flora and fauna.

Federal Regulations

Federal Endangered Species Act Pursuant to the federal Endangered Species Act (ESA), the U.S. Fish and Wildlife Service (FWS) and the National Oceanic and Atmospheric Administration (NOAA), have authority over projects that may affect the continued existence of a species that is federally listed as threatened or endangered. Section 9 of ESA prohibits the take of a federally listed species; take is defined, in part, as killing, harming, or harassment and includes habitat modification or degradation where it actually results in death or injury to wildlife by significantly impairing essential behavioral patterns including breeding, feeding, or sheltering.

Section 404 of the Clean Water Act Section 404 of the Clean Water Act establishes a requirement to obtain a permit before any activity that involves any discharge of dredged or fill material into "waters of the United States," including wetlands. Waters of the United States include navigable waters of the United States, interstate waters, all other waters where the use or degradation or destruction of the waters could affect interstate or foreign commerce,

tributaries to any of these waters, and wetlands that meet any of these criteria or that are adjacent to any of these waters or their tributaries.

Army Corps of Engineers (ACOE) regulates and issues 404 permits for activities that involve the discharge of dredged or fill materials into waters of the United States. A Water Quality Certification 401 permit must also be obtain from the appropriate state agency stating that the fill is consistent with the state's water quality standards and criteria. In California, the authority to grant water quality certification is delegated by the State Water Board to the nine Regional Water Quality Control Boards (RWQCBs).

State Regulations

California Endangered Species Act Pursuant to the California Endangered Species Act (CESA) and Section 2081 of the Fish and Wildlife Code, a permit from Department of Fish and Wildlife (DFW) is required for projects that could result in the take of a state listed threatened or endangered species. Under CESA, "take" is defined as an activity that would directly or indirectly kill an individual of a species, but the definition does not include "harm" or "harass," as the ESA does. As a result, the threshold for a take under CESA is higher than that under the ESA.

California Fish and Wildlife Code Section 1600 – Lake and Streambed Alteration Permit. All diversions, obstructions, or changes to the natural flow or bed, channel, or bank of any river, stream, or lake in California that supports wildlife resources are subject to regulation by DFW pursuant to Section 1600 of the California Fish and Wildlife Code. Section 1600 states that it is unlawful for any person, government agency, state, local, or any public utility to substantially divert or obstruct the natural flow or substantially change the bed, channel, or bank of any river, stream, or lake or deposit or dispose of waste, debris, or other material containing crumbled, flaked, or ground pavement where it may pass into any river, stream, or lake without first notifying DFW of such activity.

Porter-Cologne Water Quality Control Act Under the Porter-Cologne Water Quality Control Act, "waters of the state" fall under the jurisdiction of the RWQCB. Under the act, the RWQCB must prepare and periodically update water quality control basin plans. Each basin plan sets forth water quality standards for surface water and groundwater, as well as actions to control non-point and point sources of pollution to achieve and maintain these standards. Projects that affect wetlands or waters must meet waste discharge requirements of the RWQCB, which may be issued in addition to a water quality certification or waiver under Section 401 of the Clean Water Act.

APPENDIX C

CNPS Special Status-species Listed for the Project Quadrangle and Surrounding Quadrangles

DFW CNDDB Rare Find Special-status Species Listed for the Quadrangle and Surrounding Quadrangles

U.S. Fish and Wildlife Service Listed Species for the Quadrangle

Inventory of Rare and Endangered Plants - 7th edition interface

v7-14jun 6-11-14

Status: search results - Wed, Jul. 16, 2014 16:06 ET c

Your Quad Selection: Calistoga (517D) 3812255, Kenwood (501A) 3812245, Santa Rosa (501B) 3812246, Aetna Springs (516B) 3812264, St. Helena (516C) 3812254, Rutherford (500B) 3812244, Detert Reservoir (517A) 3812265, Mount St. Helena (517B) 3812266, Mark West Springs (517C) 3812256

scientific	common	family	CNPS
Allium peninsulare var. franciscanum	Franciscan onion	Alliaceae	List 1B.2
Alopecurus aequalis var. sonomensis	Sonoma alopecurus	Poaceae	List 1B.1
Amorpha californica var. napensis	Napa false indigo	Fabaceae	List 1B.2
Amsinckia lunaris	bent-flowered fiddleneck	Boraginaceae	List 1B.2
Anomobryum julaceum	slender silver moss	Bryaceae	List 2B.2
Arctostaphylos canescens ssp. sonomensis	Sonoma canescent manzanita	Ericaceae	List 1B.2
Arctostaphylos manzanita ssp. elegans	Konocti manzanita	Ericaceae	List 1B.3
Arctostaphylos stanfordiana ssp. decumbens	Rincon Ridge manzanita	Ericaceae	List 1B.1
Astragalus claranus	Clara Hunt's milk-vetch	Fabaceae	List 1B.1
Astragalus rattanii var. jepsonianus	Jepson's milk-vetch	Fabaceae	List 1B.2
Balsamorhiza macrolepis	big-scale balsamroot	Asteraceae	List 1B.2
Blennosperma bakeri	Sonoma sunshine	Asteraceae	List 1B.1
Brodiaea leptandra	narrow-anthered brodiaea	Themidaceae	List 1B.2

Ceanothus confusus	Rincon Ridge ceanothus	Rhamnaceae	List 1B.1
Ceanothus divergens	Calistoga ceanothus	Rhamnaceae	List 1B.2
Ceanothus purpureus	holly-leaved ceanothus	Rhamnaceae	List 1B.2
Ceanothus sonomensis	Sonoma ceanothus	Rhamnaceae	List 1B.2
Centromadia parryi ssp. parryi	pappose tarplant	Asteraceae	List 1B.2
Cryptantha dissita	serpentine cryptantha	Boraginaceae	List 1B.2
Downingia pusilla	dwarf downingia	Campanulaceae	List 2B.2
Erigeron biolettii	streamside daisy	Asteraceae	List 3
Erigeron greenei	Greene's narrow-leaved daisy	Asteraceae	List 1B.2
Eriogonum nervulosum	Snow Mountain buckwheat	Polygonaceae	List 1B.2
Eryngium constancei	Loch Lomond button-celery	Apiaceae	List 1B.1
Fritillaria liliacea	fragrant fritillary	Liliaceae	List 1B.2
Fritillaria pluriflora	adobe-lily	Liliaceae	List 1B.2
Gratiola heterosepala	Boggs Lake hedge-hyssop	Plantaginaceae	List 1B.2
Harmonia hallii	Hall's harmonia	Asteraceae	List 1B.2
Hemizonia congesta ssp. congesta	white seaside tarplant	Asteraceae	List 1B.2
Hesperolinon bicarpellatum	two-carpellate western flax	Linaceae	List 1B.2
Hesperolinon sharsmithiae	Sharsmith's western	Linaceae	List

	flax		1B.2
Juncus luciensis	Santa Lucia dwarf rush	Juncaceae	List 1B.2
Lasthenia burkei	Burke's goldfields	Asteraceae	List 1B.1
Lasthenia conjugens	Contra Costa goldfields	Asteraceae	List 1B.1
Layia septentrionalis	Colusa layia	Asteraceae	List 1B.2
Leptosiphon jepsonii	Jepson's leptosiphon	Polemoniaceae	List 1B.2
Lessingia hololeuca	woolly-headed lessingia	Asteraceae	List 3
Limnanthes vinculans	Sebastopol meadowfoam	Limnanthaceae	List 1B.1
Lupinus sericatus	Cobb Mountain lupine	Fabaceae	List 1B.2
Micropus amphibolus	Mt. Diablo cottonweed	Asteraceae	List 3.2
Microseris paludosa	marsh microseris	Asteraceae	List 1B.2
Navarretia leucocephala ssp. bakeri	Baker's navarretia	Polemoniaceae	List 1B.1
Navarretia leucocephala ssp. plieantha	many-flowered navarretia	Polemoniaceae	List 1B.2
Navarretia myersii ssp. deminuta	small pincushion navarretia	Polemoniaceae	List 1B.1
Navarretia rosulata	Marin County navarretia	Polemoniaceae	List 1B.2
Penstemon newberryi var. sonomensis	Sonoma beardtongue	Plantaginaceae	List 1B.3
Plagiobothrys strictus	Calistoga popcorn-flower	Boraginaceae	List 1B.1
Poa napensis	Napa blue grass	Poaceae	List

			1B.1
Sidalcea hickmanii ssp. napensis	Napa checkerbloom	Malvaceae	List 1B.1
Sidalcea oregana ssp. hydrophila	marsh checkerbloom	Malvaceae	List 1B.2
Sidalcea oregana ssp. valida	Kenwood Marsh checkerbloom	Malvaceae	List 1B.1
Streptanthus batrachopus 📷	Tamalpais jewel-flower	Brassicaceae	List 1B.3
Streptanthus brachiatus ssp. brachiatus	Socrates Mine jewel-flower	Brassicaceae	List 1B.2
Streptanthus brachiatus ssp. hoffmanii 📷	Freed's jewel-flower	Brassicaceae	List 1B.2
Streptanthus hesperidis	green jewel-flower	Brassicaceae	List 1B.2
Streptanthus morrisonii ssp. elatus 📷	Three Peaks jewel-flower	Brassicaceae	List 1B.2
Streptanthus morrisonii ssp. kruckebergii	Kruckeberg's jewel-flower	Brassicaceae	List 1B.2
Streptanthus vernalis 📷	early jewel-flower	Brassicaceae	List 1B.2
Stuckenia filiformis ssp. alpina	slender-leaved pondweed	Potamogetonaceae	List 2B.2
Trichostema ruygtii 📷	Napa bluecurls	Lamiaceae	List 1B.2
Trifolium amoenum 📷	two-fork clover	Fabaceae	List 1B.1
Trifolium hydrophilum	saline clover	Fabaceae	List 1B.2
Triquetrella californica 📷	coastal triquetrella	Pottiaceae	List 1B.2
Viburnum ellipticum 📷	oval-leaved viburnum	Adoxaceae	List 2B.3

U.S. Fish & Wildlife Service
Sacramento Fish & Wildlife Office
Federal Endangered and Threatened Species that Occur in or may be Affected by Projects in the CALISTOGA (517D) U.S.G.S. 7 1/2 Minute Quad

Report Date: July 16, 2014

Listed Species

Invertebrates

Syncaris pacifica
California freshwater shrimp (E)

Fish

Hypomesus transpacificus
delta smelt (T)

Oncorhynchus kisutch
coho salmon - central CA coast (E) (NMFS)

Oncorhynchus mykiss
Central California Coastal steelhead (T) (NMFS)
Central Valley steelhead (T) (NMFS)
Critical habitat, Central California coastal steelhead (X) (NMFS)

Oncorhynchus tshawytscha
California coastal chinook salmon (T) (NMFS)
Central Valley spring-run chinook salmon (T) (NMFS)
winter-run chinook salmon, Sacramento River (E) (NMFS)

Amphibians

Rana draytonii
California red-legged frog (T)

Birds

Strix occidentalis caurina
northern spotted owl (T)

Plants

Astragalus clarianus
Clara Hunt's milk-vetch (E)

Eryngium constancei
Loch Lomond coyote-thistle (=button-celery) (E)

Lasthenia burkei
Burke's goldfields (E)

Plagiobothrys strictus
Calistoga allocarya (popcorn-flower) (E)

Poa napensis
Napa bluegrass (E)

Key:

- (E) Endangered - Listed as being in danger of extinction.
- (T) Threatened - Listed as likely to become endangered within the foreseeable future.
- (P) Proposed - Officially proposed in the Federal Register for listing as endangered or threatened.
- (NMFS) Species under the Jurisdiction of the . Consult with them directly about these species.
- Critical Habitat - Area essential to the conservation of a species.
- (PX) Proposed Critical Habitat - The species is already listed. Critical habitat is being proposed for it.
- (C) Candidate - Candidate to become a proposed species.
- (V) Vacated by a court order. Not currently in effect. Being reviewed by the Service.
- (X) Critical Habitat designated for this species

California Department of Fish and Game
Natural Diversity Database
Selected Elements by Scientific Name - Five Mile

	Scientific Name/Common Name	Element Code	Federal Status	State Status	GRank	SRank	CDFG or CNPS
1	*Accipiter striatus* sharp-shinned hawk	ABNKC12020			G5	S3	
2	*Amorpha californica var. napensis* Napa false indigo	PDFAB08012			G4T2	S2	1B.2
3	*Antrozous pallidus* pallid bat	AMACC10010			G5	S3	SC
4	*Arctostaphylos stanfordiana ssp. decumbens* Rincon Ridge manzanita	PDERI041G4			G3T1	S1	1B.1
5	*Astragalus claranus* Clara Hunt's milk-vetch	PDFAB0F240	Endangered	Threatened	G1	S1	1B.1
6	*Brodiaea leptandra* narrow-anthered brodiaea	PMLIL0C022			G3?	S3?	1B.2
7	*Ceanothus confusus* Rincon Ridge ceanothus	PDRHA04220			G1	S1	1B.1
8	*Ceanothus divergens* Calistoga ceanothus	PDRHA04240			G2	S2	1B.2
9	*Ceanothus purpureus* holly-leaved ceanothus	PDRHA04160			G2	S2	1B.2
10	*Centromadia parryi ssp. parryi* pappose tarplant	PDAST4R0P2			G3T1	S1	1B.2
11	*Coastal and Valley Freshwater Marsh*	CTT52410CA			G3	S2.1	
12	*Corynorhinus townsendii* Townsend's big-eared bat	AMACC08010		Candidate Threatened	G3G4	S2S3	SC
13	*Emys marmorata* western pond turtle	ARAAD02030			G3G4	S3	SC
14	*Eryngium constancei* Loch Lomond button-celery	PDAPI0Z0W0	Endangered	Endangered	G1	S1	1B.1
15	*Falco mexicanus* prairie falcon	ABNKD06090			G5	S4	
16	*Falco peregrinus anatum* American peregrine falcon	ABNKD06071	Delisted	Delisted	G4T4	S3S4	
17	*Juncus luciensis* Santa Lucia dwarf rush	PMJUN013J0			G2G3	S2S3	1B.2
18	*Lasthenia burkei* Burke's goldfields	PDAST5L010	Endangered	Endangered	G1	S1	1B.1
19	*Layia septentrionalis* Colusa layia	PDAST5N0F0			G2	S2	1B.2
20	*Leptosiphon jepsonii* Jepson's leptosiphon	PDPLM09140			G2	S2	1B.2
21	*Limnanthes floccosa ssp. floccosa* woolly meadowfoam	PDLIM02043			G4T4	S3.2	4.2
22	*Limnanthes vinculans* Sebastopol meadowfoam	PDLIM02090	Endangered	Endangered	G1	S1	1B.1
23	*Lupinus sericatus* Cobb Mountain lupine	PDFAB2B3J0			G2	S2	1B.2

	Scientific Name/Common Name	Element Code	Federal Status	State Status	GRank	SRank	CDFG or CNPS
24	*Myotis thysanodes* fringed myotis	AMACC01090			G4	S4	
25	*Navarretia leucocephala ssp. bakeri* Baker's navarretia	PDPLM0C0E1			G4T2	S2	1B.1
26	*Oncorhynchus mykiss irideus* steelhead - central California coast DPS	AFCHA0209G	Threatened		G5T2Q	S2	
27	*Penstemon newberryi var. sonomensis* Sonoma beardtongue	PDSCR1L483			G4T1	S2	1B.3
28	*Plagiobothrys strictus* Calistoga popcornflower	PDBOR0V120	Endangered	Threatened	G1	S1	1B.1
29	*Poa napensis* Napa blue grass	PMPOA4Z1R0	Endangered	Endangered	G1	S1	1B.1
30	*Progne subis* purple martin	ABPAU01010			G5	S3	SC
31	*Sidalcea hickmanii ssp. napensis* Napa checkerbloom	PDMAL110A6			G3T1	S1	1B.1
32	*Sidalcea oregana ssp. hydrophila* marsh checkerbloom	PDMAL110K2			G5T3	S3	1B.2
33	*Syncaris pacifica* California freshwater shrimp	ICMAL27010	Endangered	Endangered	G1	S1	
34	*Trifolium hydrophilum* saline clover	PDFAB400R5			G2	S2	1B.2

CALIFORNIA DEPARTMENT OF

RareFind

Query Summary:
Quad (Calistoga (3812255) Kenwood (3812245) Santa Rosa (3812246) Aetna Springs (3812264) St. Helena (3812254) Rutherford (3812244) Detert Reservoir (3812265) Mount St. Helena (3812266) Mark West Springs (3812256))
Habitat (Valley & foothill grassland Aquatic)

Print Close

CNDDB Element Query Results

Scientific Name	Common Name	Taxonomic Group	Element Code	Total Occs	Returned Occs	Federal Status	State Status	Global Rank	State Rank	CA Rare Plant Rank	Other Status	Habitats
Allium peninsulare var. franciscanum	Franciscan onion	Monocots	PMLIL021R1	14	1	None	None	G5T1	S1	1B.2	null	Cismontane woodland | Ultramafic | Valley & foothill grassland
Ambystoma californiense	California tiger salamander	Amphibians	AAAAA01180	1094	25	Threatened	Threatened	G2G3	S2S3	null	CDFW_SSC-Species of Special Concern | IUCN_VU-Vulnerable	Cismontane woodland | Meadow & seep | Riparian woodland | Valley & foothill grassland | Vernal pool | Wetland
Amsinckia lunaris	bent-flowered fiddleneck	Dicots	PDBOR01070	64	2	None	None	G2?	S2?	1B.2	BLM_S-Sensitive	Cismontane woodland | Valley & foothill grassland
Antrozous pallidus	pallid bat	Mammals	AMACC10010	402	10	None	None	G5	S3	null	BLM_S-Sensitive | CDFW_SSC-Species of Special Concern | IUCN_LC-Least Concern | USFS_S-Sensitive | WBWG_H-High Priority	Chaparral | Coastal scrub | Desert wash | Great Basin grassland | Great Basin scrub | Mojavean desert scrub | Riparian woodland | Sonoran desert scrub | Upper montane coniferous forest | Valley & foothill grassland
Astragalus claranus	Clara Hunt's milk-vetch	Dicots	PDFAB0F240	6	6	Endangered	Threatened	G1	S1	1B.1	SB_RSABG-Rancho Santa Ana Botanic Garden	Chaparral | Cismontane woodland | Valley & foothill grassland
Astragalus rattanii var. jepsonianus	Jepson's milk-vetch	Dicots	PDFAB0F7E1	47	1	None	None	G4T3	S3	1B.2	BLM_S-Sensitive	Cismontane woodland | Ultramafic | Valley & foothill grassland
Balsamorhiza macrolepis	big-scale balsamroot	Dicots	PDAST11061	43	2	None	None	G2	S2	1B.2	BLM_S-Sensitive | USFS_S-Sensitive	Chaparral | Cismontane woodland | Ultramafic | Valley & foothill grassland
Blennosperma bakeri	Sonoma sunshine	Dicots	PDAST1A010	23	4	Endangered	Endangered	G1	S1	1B.1	SB_RSABG-Rancho Santa Ana Botanic Garden	Valley & foothill grassland | Vernal pool | Wetland
												Broadleaved upland forest | Chaparral |

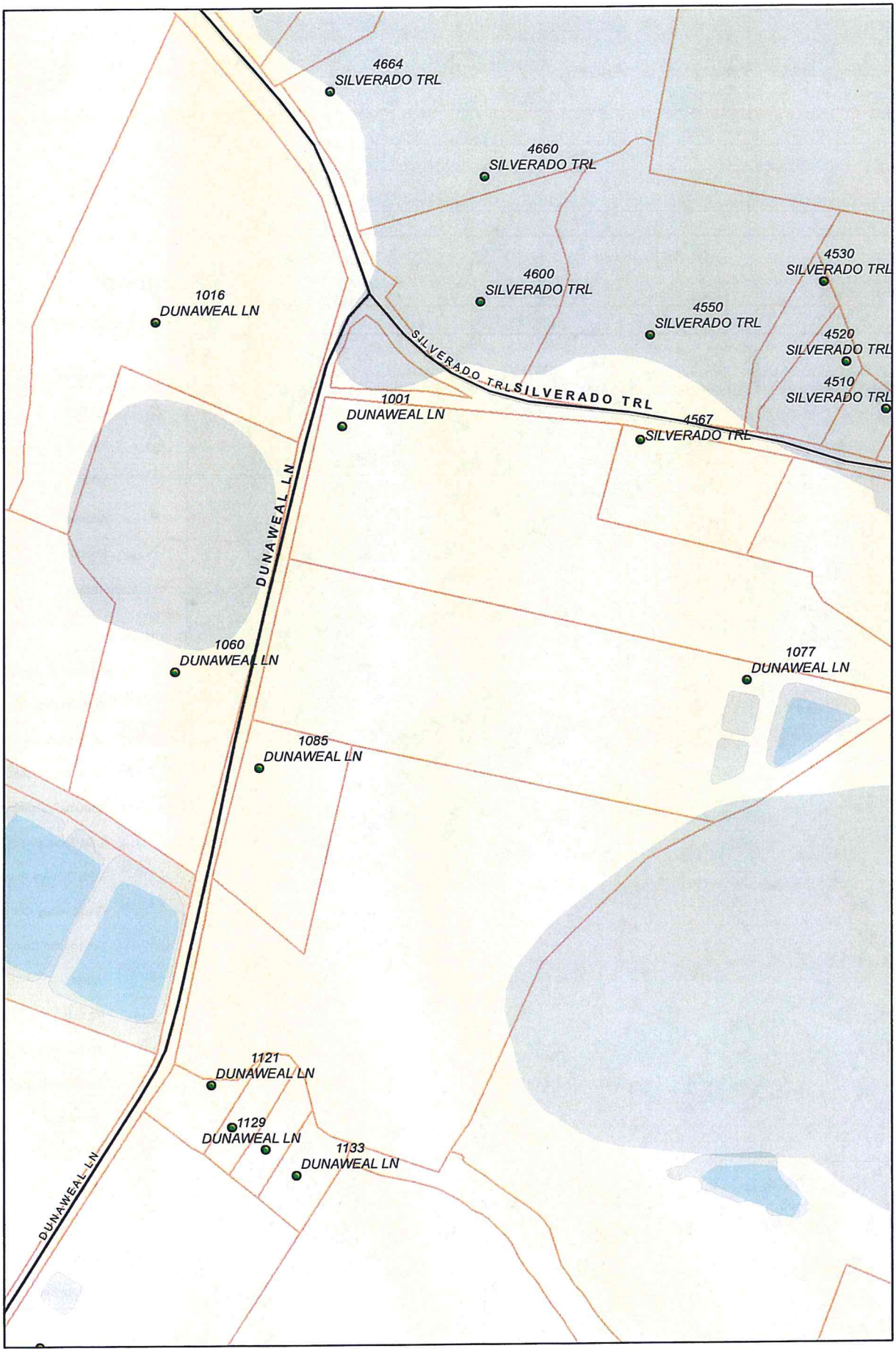
Brodiaea leptandra	narrow-anthered brodiaea	Monocots	PMLIL0C022	29	19	None	None	G3?	S3?	1B.2	null	Cismontane woodland | Lower montane coniferous forest | Valley & foothill grassland
Buteo swainsoni	Swainson's hawk	Birds	ABNKC19070	2394	1	None	Threatened	G5	S3	null	ABC_WLBCC-Watch List of Birds of Conservation Concem | BLM_S-Sensitive | IUCN_LC-Least Concem | USFS_S-Sensitive | USFWS_BCC-Birds of Conservation Concem	Great Basin grassland | Riparian forest | Riparian woodland | Valley & foothill grassland
Centromadia parryi ssp. parryi	pappose tarplant	Dicots	PDAST4R0P2	29	4	None	None	G3T1	S1	1B.2	BLM_S-Sensitive	Coastal prairie | Marsh & swamp | Meadow & seep | Valley & foothill grassland
Corynorhinus townsendii	Townsend's big-eared bat	Mammals	AMACC08010	487	10	None	Candidate Threatened	G3G4	S2S3	null	BLM_S-Sensitive | CDFW_SSC-Species of Special Concem | IUCN_LC-Least Concem | USFS_S-Sensitive | WBWG_H-High Priority	Broadleaved upland forest | Chaparral | Chenopod scrub | Great Basin grassland | Great Basin scrub | Joshua tree woodland | Lower montane coniferous forest | Meadow & seep | Mojavean desert scrub | Riparian forest | Riparian woodland | Sonoran desert scrub | Sonoran thorn woodland | Upper montane coniferous forest | Valley & foothill grassland
Downingia pusilla	dwarf downingia	Dicots	PDCAM060C0	127	1	None	None	GU	S2	2B.2	null	Valley & foothill grassland | Vernal pool | Wetland
Elanus leucurus	white-tailed kite	Birds	ABNKC06010	158	1	None	None	G5	S3	null	BLM_S-Sensitive | CDFW_FP-Fully Protected | IUCN_LC-Least Concem	Cismontane woodland | Marsh & swamp | Riparian woodland | Valley & foothill grassland | Wetland
Emys marmorata	western pond turtle	Reptiles	ARAAD02030	1136	23	None	None	G3G4	S3	null	BLM_S-Sensitive | CDFW_SSC-Species of Special Concem | IUCN_VU-Vulnerable |	Aquatic | Artificial flowing waters | Klamath/North coast flowing waters | Klamath/North coast standing waters | Marsh & swamp | Sacramento/San Joaquin flowing waters |

											USFS_S-Sensitive	Sacramento/San Joaquin standing waters | South coast flowing waters | South coast standing waters | Wetland
Falco mexicanus	prairie falcon	Birds	ABNKD06090	457	2	None	None	G5	S4	null	CDFW_WL-Watch List | IUCN_LC-Least Concern | USFWS_BCC-Birds of Conservation Concern	Great Basin grassland | Great Basin scrub | Mojavean desert scrub | Sonoran desert scrub | Valley & foothill grassland
Fritillaria liliacea	fragrant fritillary	Monocots	PMLIL0V0C0	69	6	None	None	G2	S2	1B.2	USFS_S-Sensitive	Coastal prairie | Coastal scrub | Ultramafic | Valley & foothill grassland
Fritillaria pluriflora	adobe-lily	Monocots	PMLIL0V0F0	107	1	None	None	G3	S3	1B.2	BLM_S-Sensitive | SB_RSABG-Rancho Santa Ana Botanic Garden	Chaparral | Cismontane woodland | Ultramafic | Valley & foothill grassland
Hemizonia congesta ssp. congesta	white seaside tarplant	Dicots	PDAST4R065	33	1	None	None	G5T2T3	S2S3	1B.2	null	Coastal scrub | Valley & foothill grassland
Hydrochara ricksecker	Ricksecker's water scavenger beetle	Insects	IICOL5V010	13	1	None	None	G2?	S2?	null	null	Aquatic | Sacramento/San Joaquin flowing waters | Sacramento/San Joaquin standing waters
Hydroporus leechi	Leech's skyline diving beetle	Insects	IICOL55040	13	1	None	None	G1?	S1?	null	null	Aquatic
Hysterocarpus traski pomo	Russian River tule perch	Fish	AFCQK02011	4	1	None	None	G5T2	S2	null	AFS_VU-Vulnerable | CDFW_SSC-Species of Special Concern	Aquatic | Klamath/North coast flowing waters
Lavinia symmetricus navarroensis	Navarro roach	Fish	AFCJB19023	4	1	None	None	G4T1T2	S1S2	null	CDFW_SSC-Species of Special Concern	Aquatic | Sacramento/San Joaquin flowing waters
Layia septentrionalis	Colusa layia	Dicots	PDAST5N0F0	46	11	None	None	G2	S2	1B.2	BLM_S-Sensitive	Chaparral | Cismontane woodland | Ultramafic | Valley & foothill grassland
Limnanthes floccosa ssp. floccosa	woolly meadowfoam	Dicots	PDLIM02043	54	1	None	None	G4T4	S3.2	4.2	null	Chaparral | Cismontane woodland | Valley & foothill grassland | Vernal pool | Wetland
Limnanthes vinculans	Sebastopol meadowfoam	Dicots	PDLIM02090	43	8	Endangered	Endangered	G1	S1	1B.1	SB_RSABG-Rancho Santa Ana Botanic Garden	Meadow & seep | Valley & foothill grassland | Vernal pool | Wetland
Microseris	marsh											Cismontane woodland | Closed-cone

paludosa	microseris	Dicots	PDAST6E0D0	31	1	None	None	G2	S2	1B.2	null	coniferous forest | Coastal scrub | Valley & foothill grassland
Navarretia leucocephala ssp. bakeri	Baker's navarretia	Dicots	PDPLM0C0E1	58	8	None	None	G4T2	S2	1B.1	BLM_S-Sensitive	Cismontane woodland | Lower montane coniferous forest | Meadow & seep | Valley & foothill grassland | Vernal pool | Wetland
Oncorhynchus mykiss irideus	steelhead - central California coast DPS	Fish	AFCHA0209G	38	2	Threatened	None	G5T2Q	S2	null	AFS_TH-Threatened	Aquatic | Sacramento/San Joaquin flowing waters
Plagiobothrys strictus	Calistoga popcornflower	Dicots	PDBOR0V120	3	3	Endangered	Threatened	G1	S1	1B.1	SB_UCBBG-UC Berkeley Botanical Garden	Meadow & seep | Valley & foothill grassland | Vernal pool | Wetland
Poa napensis	Napa blue grass	Monocots	PMPOA4Z1R0	2	2	Endangered	Endangered	G1	S1	1B.1	SB_RSABG-Rancho Santa Ana Botanic Garden	Meadow & seep | Valley & foothill grassland | Wetland
Rana boylii	foothill yellow-legged frog	Amphibians	AAABH01050	805	19	None	None	G3	S2S3	null	BLM_S-Sensitive | CDFW_SSC-Species of Special Concern | IUCN_NT-Near Threatened | USFS_S-Sensitive	Aquatic | Chaparral | Cismontane woodland | Coastal scrub | Klamath/North coast flowing waters | Lower montane coniferous forest | Meadow & seep | Riparian forest | Riparian woodland | Sacramento/San Joaquin flowing waters
Rana draytonii	California red-legged frog	Amphibians	AAABH01022	1335	3	Threatened	None	G2G3	S2S3	null	CDFW_SSC-Species of Special Concern | IUCN_VU-Vulnerable	Aquatic | Artificial flowing waters | Artificial standing waters | Freshwater marsh | Marsh & swamp | Riparian forest | Riparian scrub | Riparian woodland | Sacramento/San Joaquin flowing waters | Sacramento/San Joaquin standing waters | South coast flowing waters | South coast standing waters | Wetland
Serpentine Bunchgrass	Serpentine Bunchgrass	Herbaceous	CTT42130CA	22	1	None	None	G2	S2.2	null	null	Valley & foothill grassland
Stygobromus cherylae	Barr's amphipod	Crustaceans	ICMAL05D60	1	1	None	None	G1	S1	null	null	Aquatic
Syncaris pacifica	California freshwater shrimp	Crustaceans	ICMAL27010	18	3	Endangered	Endangered	G1	S1	null	IUCN_EN-Endangered	Aquatic | Sacramento/San Joaquin flowing waters

												Alkali marsh | Alkali playa | Alpine | Alpine dwarf scrub | Bog & fen | Brackish marsh | Broadleaved upland forest | Chaparral | Chenopod scrub | Cismontane woodland | Closed-cone coniferous forest | Coastal bluff scrub | Coastal dunes | Coastal prairie | Coastal scrub | Desert dunes | Desert wash | Freshwater marsh | Great Basin grassland | Great Basin scrub | Interior dunes | Ione formation | Joshua tree woodland | Limestone | Lower montane coniferous forest | Marsh & swamp | Meadow & seep | Mojavean desert scrub | Montane dwarf scrub | North coast coniferous forest | Oldgrowth | Pavement plain | Redwood | Riparian forest | Riparian scrub | Riparian woodland | Salt marsh | Sonoran desert scrub | Sonoran thorn woodland | Ultramafic | Upper montane coniferous forest | Upper Sonoran scrub | Valley & foothill grassland
Taxidea taxus	American badger	Mammals	AMAJF04010	476	1	None	None	G5	S4	null	CDFW_SSC-Species of Special Concern | IUCN_LC-Least Concern	
Trichostema ruygtii	Napa bluecurls	Dicots	PDLAM220H0	19	2	None	None	G2	S2	1B.2	null	Chaparral | Cismontane woodland | Lower montane coniferous forest | Valley & foothill grassland | Vernal pool | Wetland
Trifolium amoenum	showy rancheria clover	Dicots	PDFAB40040	26	2	Endangered	None	G1	S1	1B.1	SB_RSABG-Rancho Santa Ana Botanic Garden | SB_USDA-US Dept of Agriculture	Coastal bluff scrub | Ultramafic | Valley & foothill grassland
Trifolium												Marsh & swamp | Valley & foothill

hydrophilum	saline clover	Dicots	PDFAB400R5	49	4	None	None	G2	S2	1B.2	null	grassland | Vernal pool | Wetland
Triquetrella californica	coastal triquetrella	Bryophytes	NBMUS7S010	11	1	None	None	G1	S1	1B.2	USFS_S-Sensitive	Coastal bluff scrub | Coastal scrub | Valley & foothill grassland
Valley Needlegrass Grassland	Valley Needlegrass Grassland	Herbaceous	CTT42110CA	45	2	None	None	G3	S3.1	null	null	Valley & foothill grassland
Wildflower Field	Wildflower Field	Herbaceous	CTT42300CA	5	1	None	None	G2	S2.2	null	null	Valley & foothill grassland



A Tradition of Stewardship
A Commitment to Service

Legend

- Address Points
- Roads
- Major Roads

Geology

GEO_UNIT

- Artificial fill (historic)
- Surficial deposits (Qua
- Clear Lake Volcanics (I
- Other Pleistocene - Plic
- Sonoma Volcanics (Plic
- Late Tertiary Assembla
- Early Tertiary Assembla
- Great Valley Complex (
- Franciscan Complex (C
- Water
- Parcels
- Water Bodies
- American Canyon
- Calistoga
- County
- Napa
- St Helena
- Yountville
- County Boundary

County of Napa

Conservation, Development & Planning

Planning General

Revised Date: 8/25/2011

Horizontal Datum: NAD 83,
CA State Plane Coordinates,
Zone II, feet

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

0 250 500 1,000 1,500 2,000 Feet

NAPA COUNTY CALIFORNIA

A Tradition of Stewardship
A Commitment to Service

Legend

Wineries in Vicinity

Status

- Approved
- Pending
- Producing
- Unknown

- Address Points
- Roads
- Major Roads

Geology

GEO_UNIT

- Artificial fill (historic)
- Surficial deposits (Quate
- Clear Lake Volcanics (Pl
- Other Pleistocene - Plioc
- Sonoma Volcanics (Plioc
- Late Tertiary Assemblag
- Early Tertiary Assemblag
- Great Valley Complex (C
- Franciscan Complex (Cr
- Water

- Parcels
- Water Bodies
- American Canyon
- Calistoga
- County
- Napa
- St Helena
- Yountville
- County Boundary

County of Napa

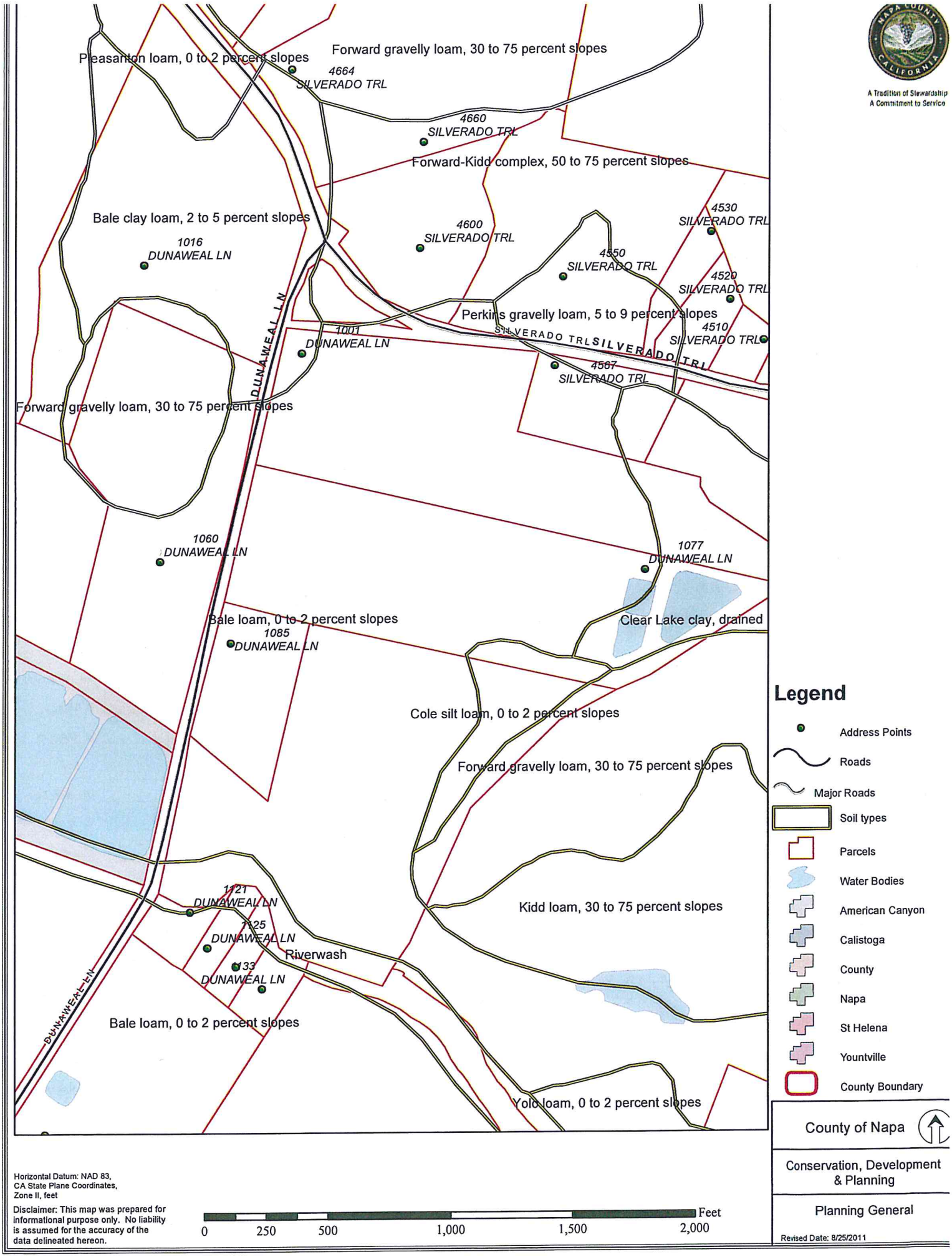
Conservation, Development & Planning

Planning General

Revised Date: 8/25/2011

Horizontal Datum: NAD 83,
CA State Plane Coordinates,
Zone II, feet

0 550 1,100 2,200 3,300 4,400 Feet



A Tradition of Stewardship
A Commitment to Service

Legend

- Address Points
- Roads
- Major Roads
- Soil types
- Parcels
- Water Bodies
- American Canyon
- Calistoga
- County
- Napa
- St Helena
- Yountville
- County Boundary

County of Napa

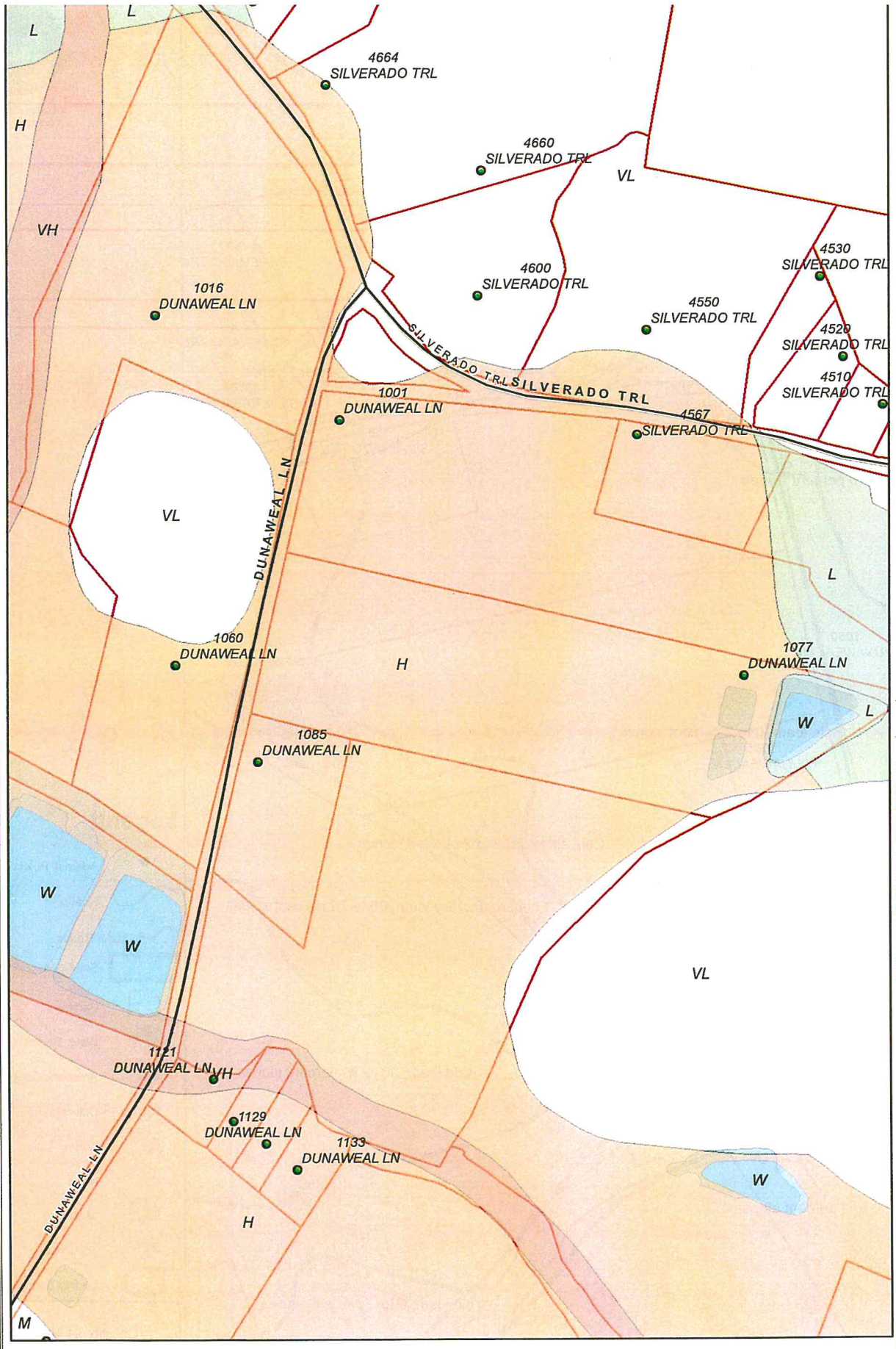
Conservation, Development & Planning

Planning General

Revised Date: 8/25/2011

Horizontal Datum: NAD 83, CA State Plane Coordinates, Zone II, feet

0 250 500 1,000 1,500 2,000 Feet



A Tradition of Stewardship
A Commitment to Service

Legend

- Address Points
- Roads
- Major Roads

Liquefaction

- VH Very High
- H High
- M Medium
- L Low
- VL Very Low
- W Water

- Parcels
- Water Bodies
- American Canyon
- Calistoga
- County
- Napa
- St Helena
- Yountville
- County Boundary

County of Napa

Conservation, Development & Planning

Planning General

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Zone II, feet

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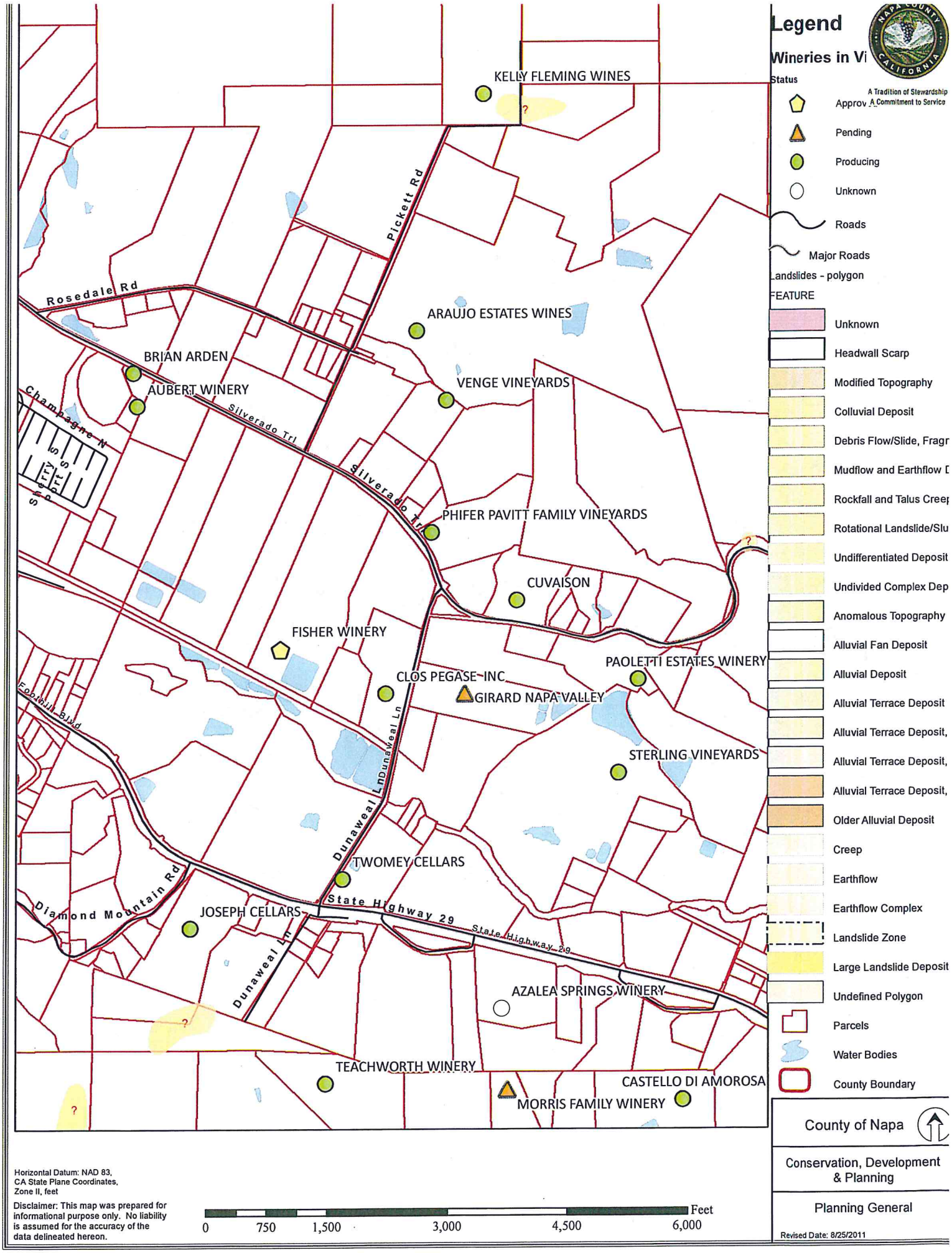
0 250 500 1,000 1,500 2,000 Feet



Legend

Wineries in Vi

Status

- Approv
- Pending
- Producing
- Unknown

- Roads
- Major Roads

Landslides - polygon

FEATURE

- Unknown
- Headwall Scarp
- Modified Topography
- Colluvial Deposit
- Debris Flow/Slide, Fragr
- Mudflow and Earthflow D
- Rockfall and Talus Creep
- Rotational Landslide/Slu
- Undifferentiated Deposit
- Undivided Complex Dep
- Anomalous Topography
- Alluvial Fan Deposit
- Alluvial Deposit
- Alluvial Terrace Deposit
- Alluvial Terrace Deposit,
- Alluvial Terrace Deposit,
- Alluvial Terrace Deposit,
- Older Alluvial Deposit
- Creep
- Earthflow
- Earthflow Complex
- Landslide Zone
- Large Landslide Deposit
- Undefined Polygon

- Parcels
- Water Bodies
- County Boundary

A Tradition of Stewardship
A Commitment to Service

Horizontal Datum: NAD 83,
CA State Plane Coordinates,
Zone II, feet

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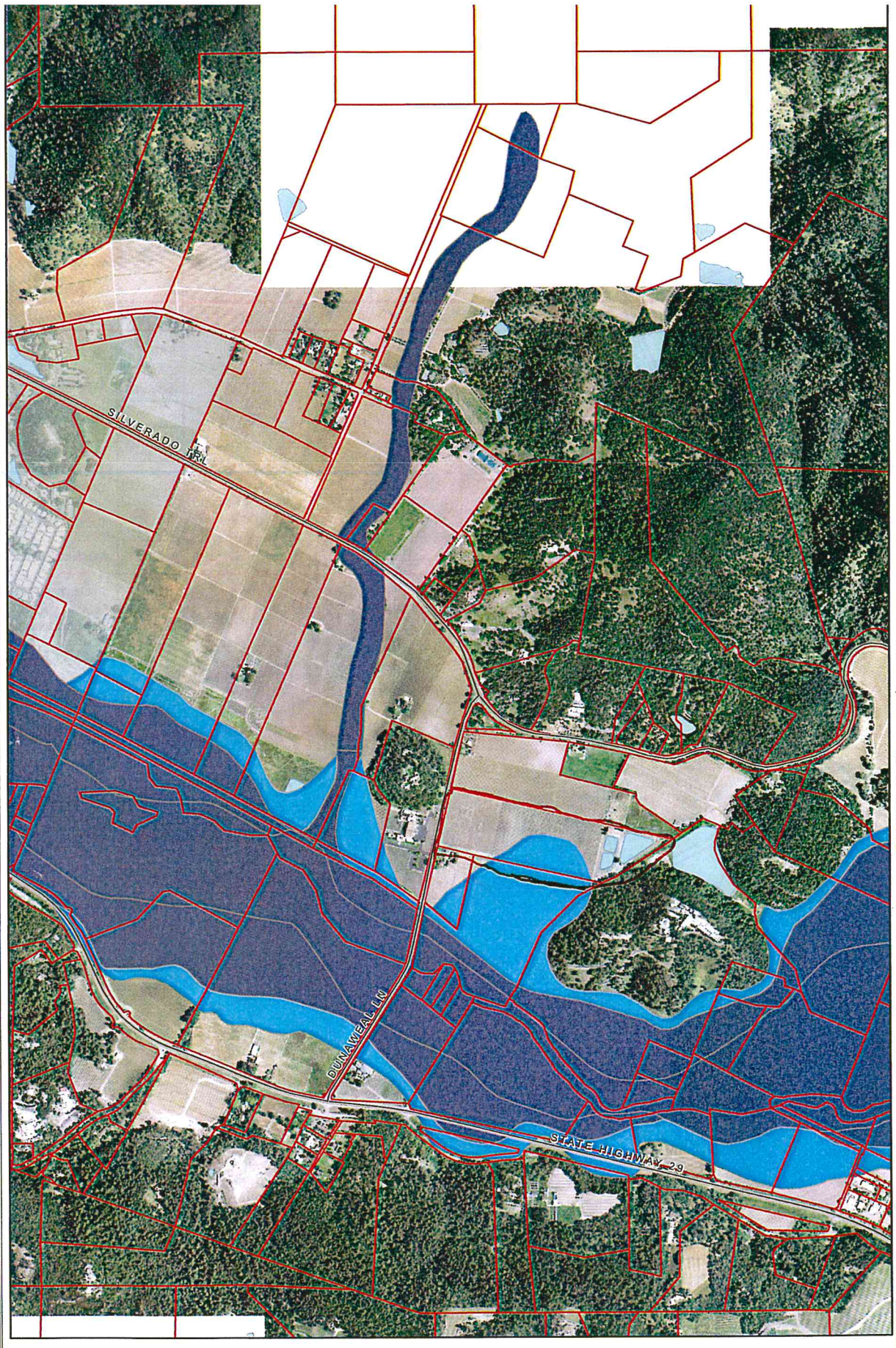
0 750 1,500 3,000 4,500 6,000 Feet

County of Napa

Conservation, Development & Planning

Planning General

Revised Date: 8/25/2011



A Tradition of Stewardship
A Commitment to Service

Legend

- Major Roads
- Parcels

Flood Zones

FLD_ZONE

- 100 year zone
- 500 year zone
- Water Bodies
- American Canyon
- Calistoga
- County
- Napa
- St Helena
- Yountville
- County Boundary

2011 Air Photos Napa V

RGB

- Red: Band_1
- Green: Band_2
- Blue: Band_3

Horizontal Datum: NAD 83,
CA State Plane Coordinates,
Zone II, feet

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0 700 1,400 2,800 4,200 5,600 Feet

County of Napa

Conservation, Development & Planning

Planning General

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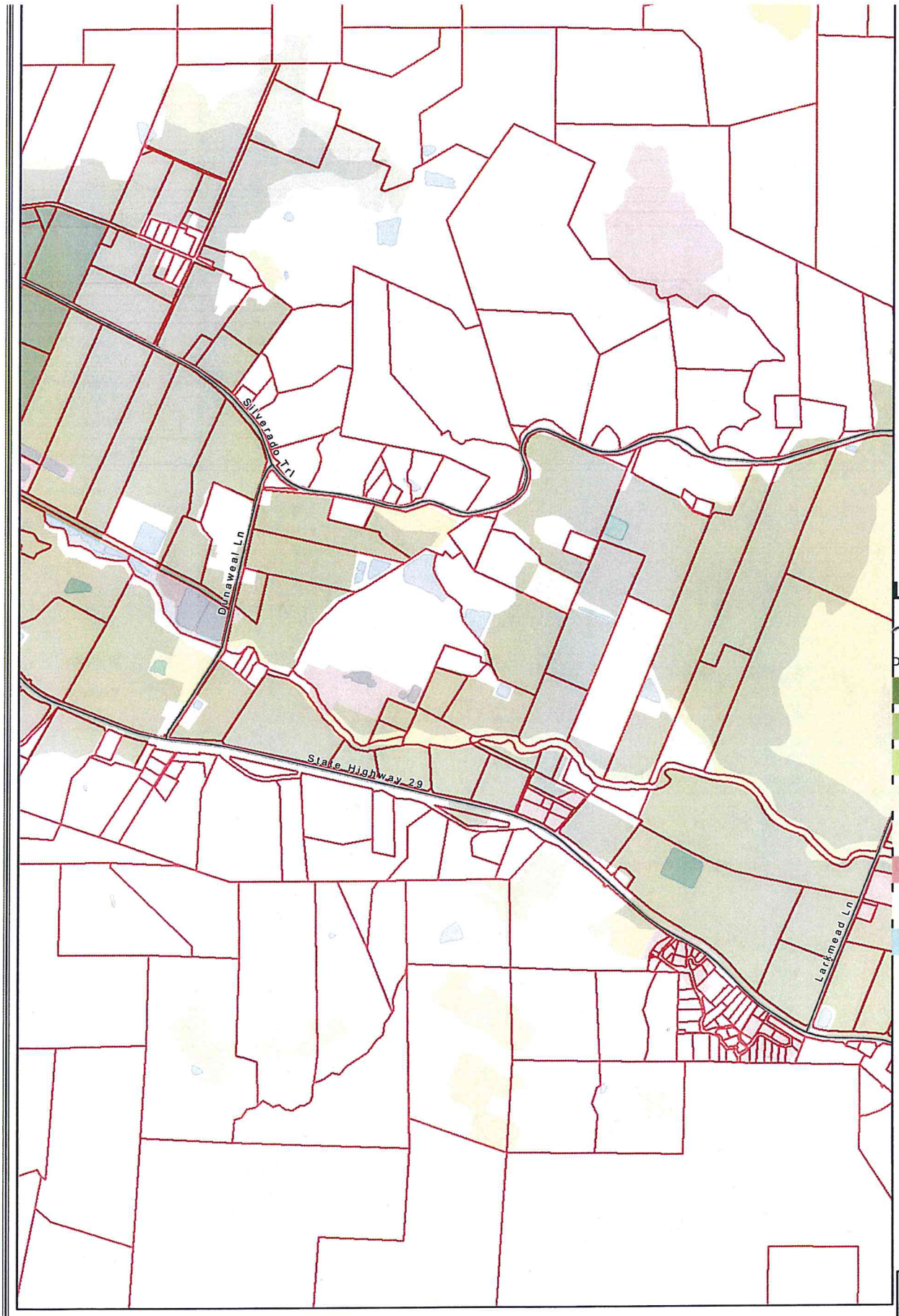

A Tradition of Stewardship
A Commitment to Service

Legend

- Major Roads

Dept of Conserv. Farmlands 2012

- Prime Farmland (P)
- Farmland of Statewide Importance
- Unique Farmland (U)
- Farmland of Local Importance (L)
- Grazing Land (G)
- Urban and Built up Land (D)
- Other Land (X)
- Water (W)
- Parcels
- Water Bodies
- American Canyon
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- Yountville
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0 1,000 2,000 4,000 6,000 8,000 Feet

County of Napa

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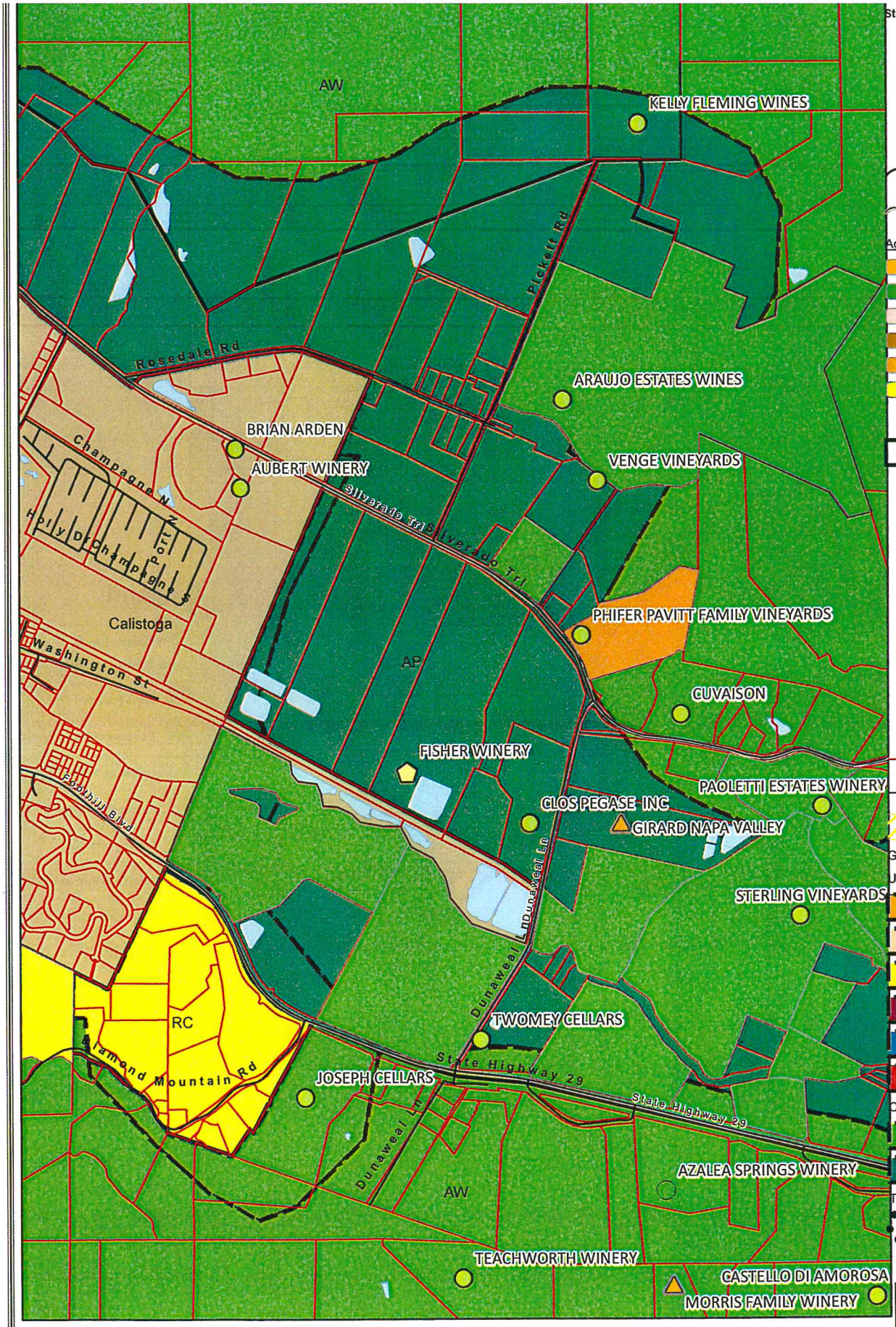

Status
- Approv
- Pendin
- Produc

A Tradition of Stewardship
A Commitment to Service

- Unknown
- Roads
- Major Roads

Ag Contracts
- unknown type
- A
- C
- E
- F
- H
- Parcels
- Zoning (outline)
- Water Bodies
- American Canyon
- Calistoga
- County
- Napa
- St Helena
- Yountville
- Landfill - General Plan
- Airport
- Railroad
- Airport Clear Zone

General Plan 2008-2030

URBANIZED OR NON-AGRICULTURA
- Cities
- Urban Residential
- Rural Residential
- Industrial
- Public-Institutional
- Study Area

OPEN SPACE
- Agriculture, Watershed &
- Agricultural Resource

TRANSPORTATION
- Mineral Resource
- County Boundary

Horizontal Datum: NAD 83,
CA State Plane Coordinates,
Zone II, feet

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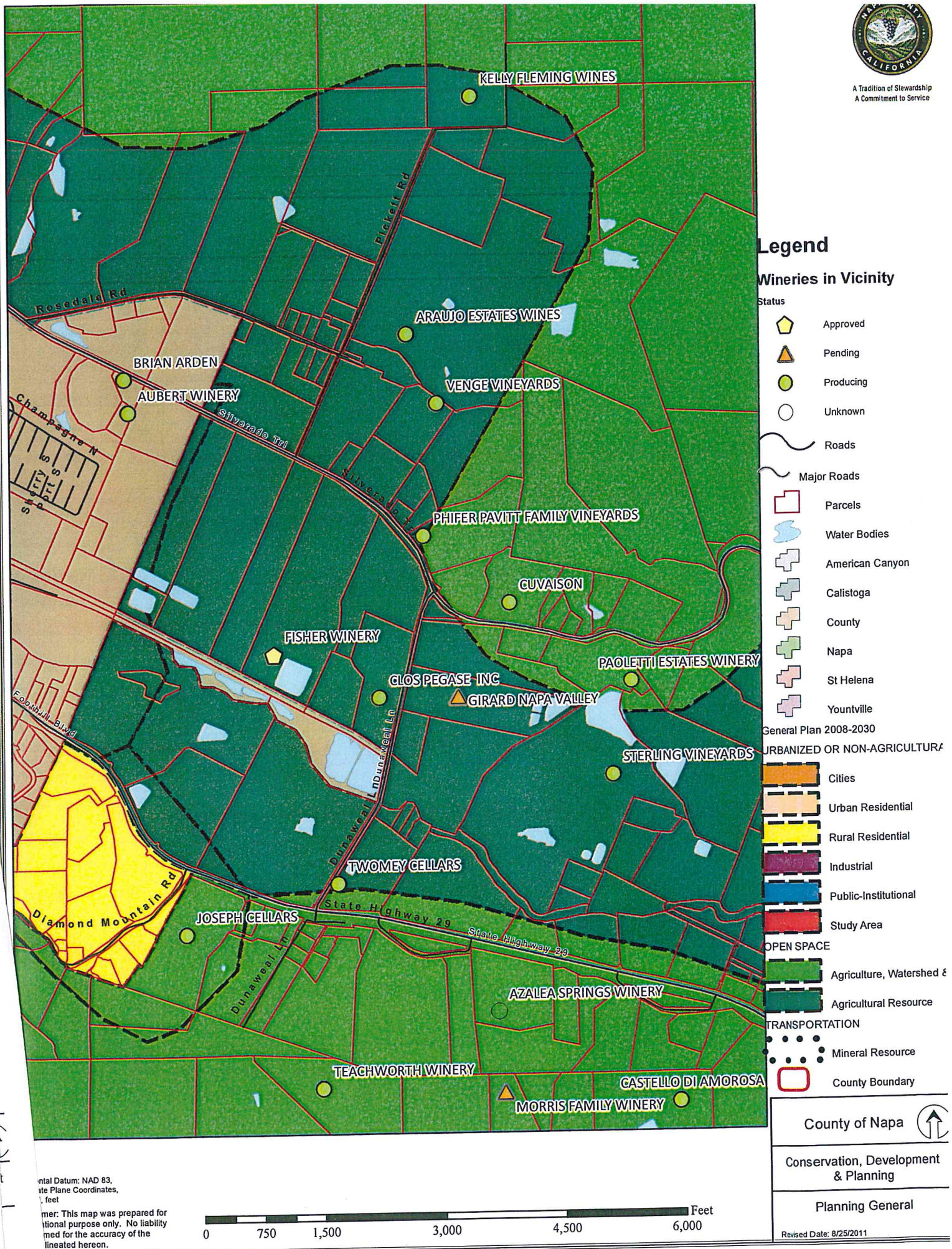
0 750 1,500 3,000 4,500 6,000 Feet

County of Napa

Conservation, Development & Planning

Planning General

Revised Date: 8/25/2011



A Tradition of Stewardship
A Commitment to Service

Legend

Wineries in Vicinity

Status

- Approved
- Pending
- Producing
- Unknown

Roads

Major Roads

- Parcels
- Water Bodies
- American Canyon
- Calistoga
- County
- Napa
- St Helena
- Yountville

General Plan 2008-2030

URBANIZED OR NON-AGRICULTURA

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TRANSPORTATION

- Mineral Resource
- County Boundary

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, feet

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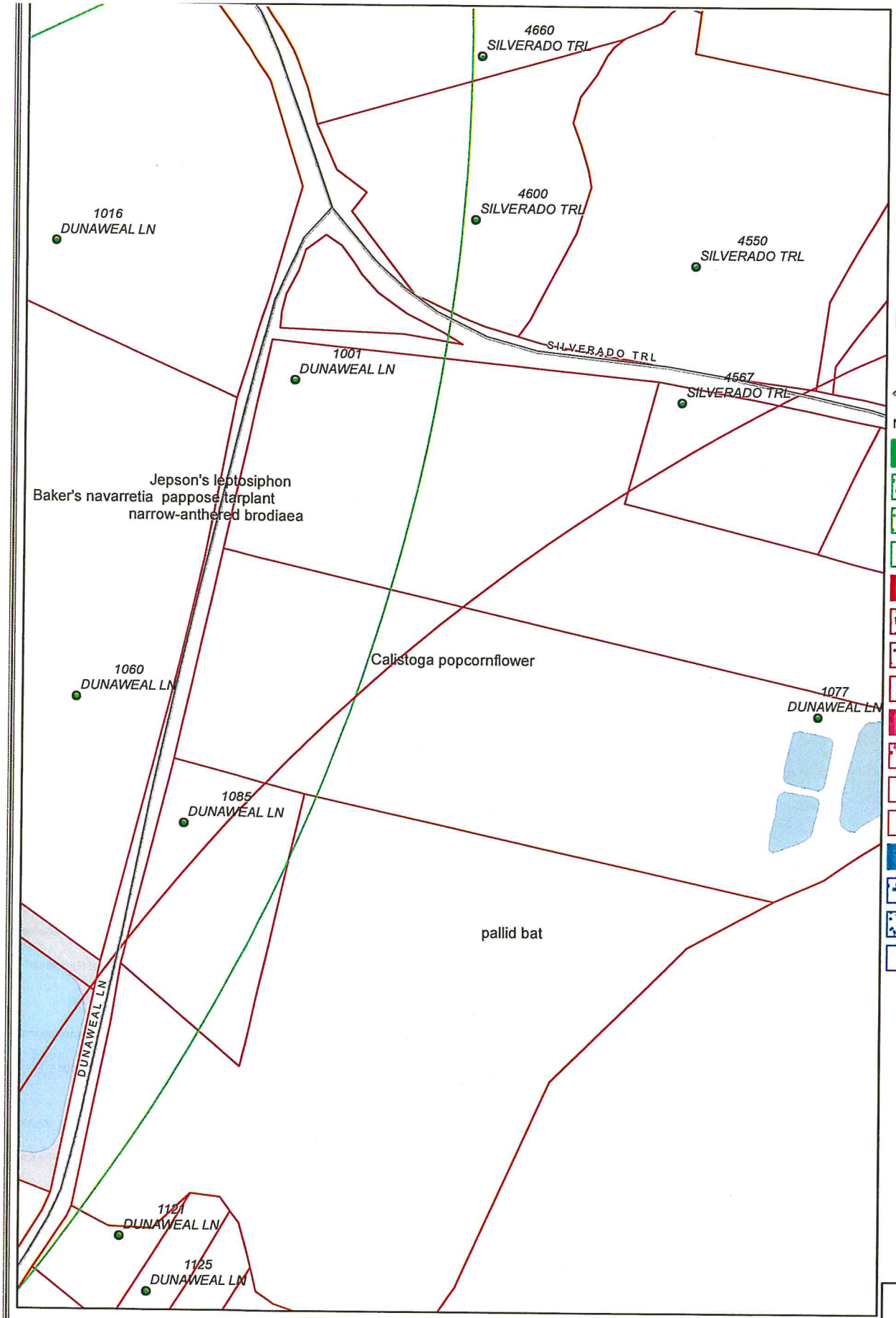
County of Napa

Conservation, Development & Planning

Planning General

Revised Date: 8/25/2011



A Tradition of Stewardship
A Commitment to Service

Legend

- Address Points
- Major Roads

Natural Diversity Database (F&G)

- Plant (80m)
- Plant (specific)
- Plant (non-specific)
- Plant (circular)
- Animal (80m)
- Animal (specific)
- Animal (non-specific)
- Animal (circular)
- Terr. Comm. (80)
- Terr. Comm. (specific)
- Terr. Comm. (non-spec
- Terr. Comm. (circular)
- Aqu. Comm. (80)
- Aqu. Comm. (specific)
- Aqu. Comm. (non-spec
- Aqu. Comm. (circular)
- Parcels
- Water Bodies
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0 187.5 375 750 1,125 1,500 Feet

County of Napa

Conservation, Development & Planning

Planning General

Revised Date: 8/25/2011