Bally Keal Vineyards, LLC

Use Permit application U-19-08

Initial Study and

Mitigated Negative Declaration

July 2021

CEQA Lead Agency:

County of Solano

Prepared by:

Department of Resource Management

TABLE OF CONTENTS

CHAPTER 1 - PART II OF INITIAL STUDY OF ENVIRONMENTAL IMPACTS

1.1 INTRODUCTION

The following analysis is provided by the Solano County Department of Resource Management as a review of and supplement to the applicant's completed "Part I of Initial Study". These two documents, Part I and II, comprise the Initial Study prepared in accordance with the California Environmental Quality Act (CEQA) Guidelines, Section 15063.

Project Title:	Bally Keal Vineyards LLC
Application Number:	Use Permit U-19-08
Project Location:	4286 Suisun Valley Road Fairfield, CA 94534
Assessor Parcel No.(s):	0027-030-010
Project Sponsor's Name and Address:	Bally Keal Vineyards, LLC c/o Joe Cassidy 160 South Linden Avenue South San Francisco, CA 94080

General Information

This mitigated negative declaration (MND) has been prepared by the County of Solano, as lead agency, pursuant to the California Environmental Quality Act (CEQA) (Pub. Resources Code, § 21000 et seq.), to analyze and disclose the environmental effects associated with project. This document discusses the proposed project, the environmental setting for the proposed project, and the potential for impacts on the environment from the proposed project and any measures incorporated which will minimize, avoid and/or provide mitigation measures for the impacts of the proposed project on the environment.

- ❑ Please review this Initial Study. You may order additional copies of this document from the Solano County Department of Resource Management Planning Services Division at 675 Texas Street, Fairfield, CA, 94533.

- ❑ We welcome your comments. If you have any comments regarding the proposed project please send your written comments to this Department by the deadline listed below.

- ❑ Submit comments via postal mail to:

  Department of Resource Management
  Planning Services Division
  Attn: Eric Wilberg, Planner Associate
  675 Texas Street
  Fairfield, CA 94533

- ❑ Submit comments via fax to: (707) 784-4805

- ❑ Submit comments via email to: ejwilberg@solanocounty.com
- ❑ Submit comments by the deadline of: 5:00 pm on Friday, August 6, 2021

Next Steps

After comments are received from the public and any reviewing agencies, the Department may recommend that the environmental review is adequate and that a Negative Declaration be adopted or that the environmental review is not adequate and that further environmental review is required.

1.2 ENVIRONMENTAL DETERMINATION

On the basis of this Initial Study the Solano County Department of Resource Management finds:

☐ The proposed project could not have a significant effect on the environment, and a NEGATIVE DECLARATION will be prepared.

☒ That although the proposed project could have a significant effect on the environment, there will not be a significant effect in this case because the project proponent has agreed to revise the project to avoid any significant effect. A MITIGATED NEGATIVE DECLARATION will be prepared.

☐ The proposed project could have a significant effect on the environment, and an ENVIRONMENTAL IMPACT REPORT (EIR) is required.

☐ The proposed project could have a significant effect on the environment, but at least one effect has been (1) adequately analyzed in a previous document pursuant to applicable legal standards, and (2) addressed by mitigation measures based on the previous analysis as described in the attached initial study. An EIR is required that analyzes only the effects that were not adequately addressed in a previous document.

☐ That although the proposed project could have a significant effect on the environment, no further environmental analysis is required because all potentially significant effects have been (1) adequately analyzed in an earlier EIR or NEGATIVE DECLARATION pursuant to applicable standards, and (2) avoided or mitigated pursuant to that earlier EIR or NEGATIVE DECLARATION, including revisions or mitigation measures that are included in the project, and further analysis is not required.

6-30-21
Date

Eric Wilberg, Planner Associate
County of Solano
Department of Resource Management

INCORPORATION OF MITIGATION MEASURES INTO THE PROPOSED PROJECT

By signature of this document, the project proponent amends the project description to include the mitigation measures as set forth in Section 2.

6/25/2021
Date

Joseph P. Cassidy
Bally Keal Vineyards LLC

1.3 ENVIRONMENTAL SETTING:

The subject site is located at 4286 Suisun Valley Road, one-mile northwest of the City of Fairfield. The property is situated within an agricultural setting identified as the Suisun Valley Agricultural Region by the Solano County General Plan. Surrounding land is utilized for agricultural production, predominantly vineyard cultivation. The site borders agricultural land to the north and south, Suisun Creek to the east, and Suisun Valley Road to the west. Rockville Cemetery is located west of the subject site; Rockville Corner, a commercial area is ½ mile south; and Willotta Oaks a residential neighborhood of approximately 75 single family homes is located ½ mile to the southwest.

The 79.29-acre property is relatively flat, exhibiting slopes of less than six percent. The parcel is developed with a 22,000 square foot Primary Dwelling, an 8,000 square foot detached garage, and two accessory structures of 24,000 sq. ft. and 12,000 sq. ft. This development is clustered near the center of the property. The parcel is also developed with a 1,600 square foot Secondary Dwelling and two 1,800 square foot accessory structures near the western lot line.

63-acres of the property are cultivated with vineyards.

Figure 1: Vicinity Map

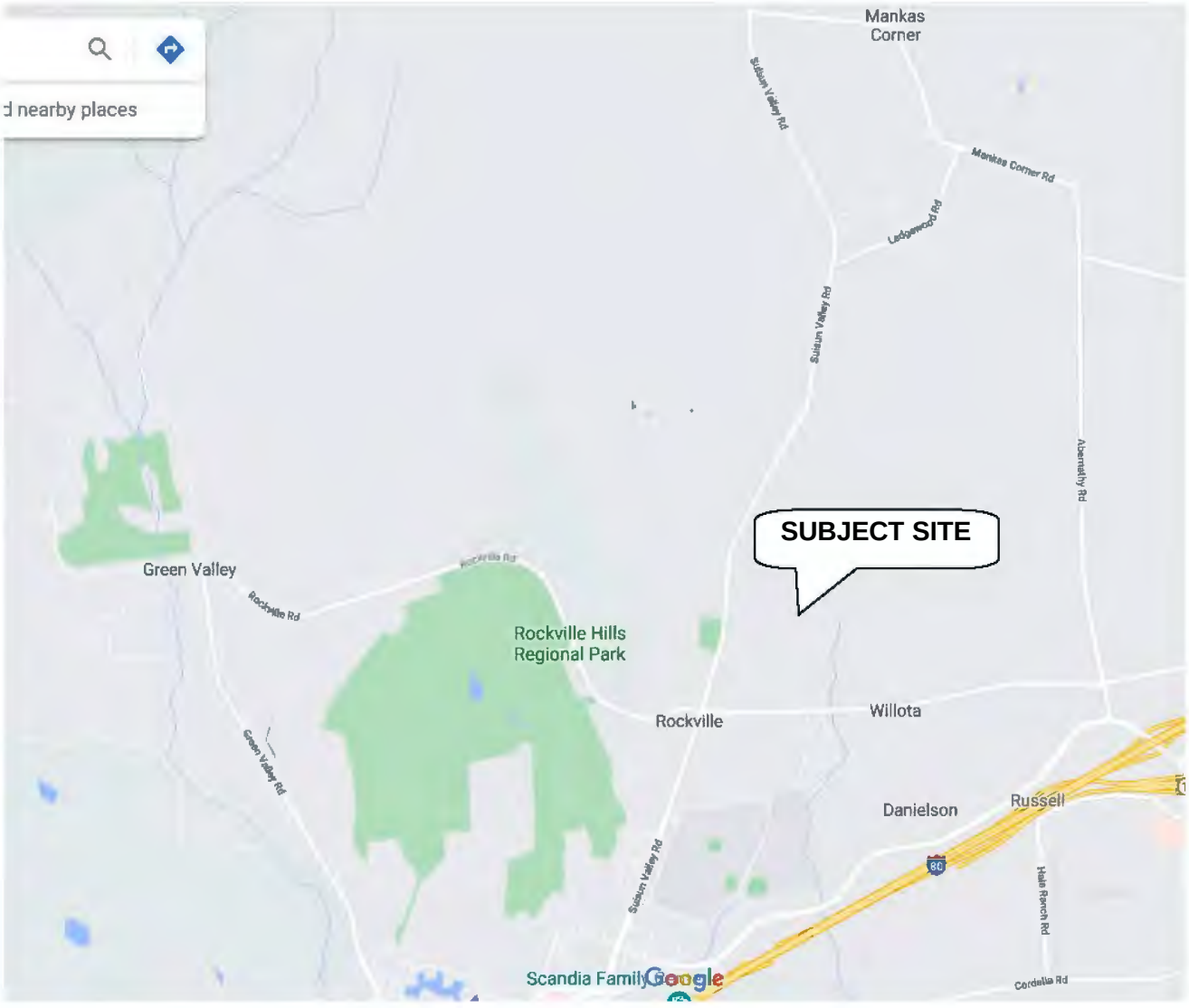


Figure 2: Assessor's Parcel Map

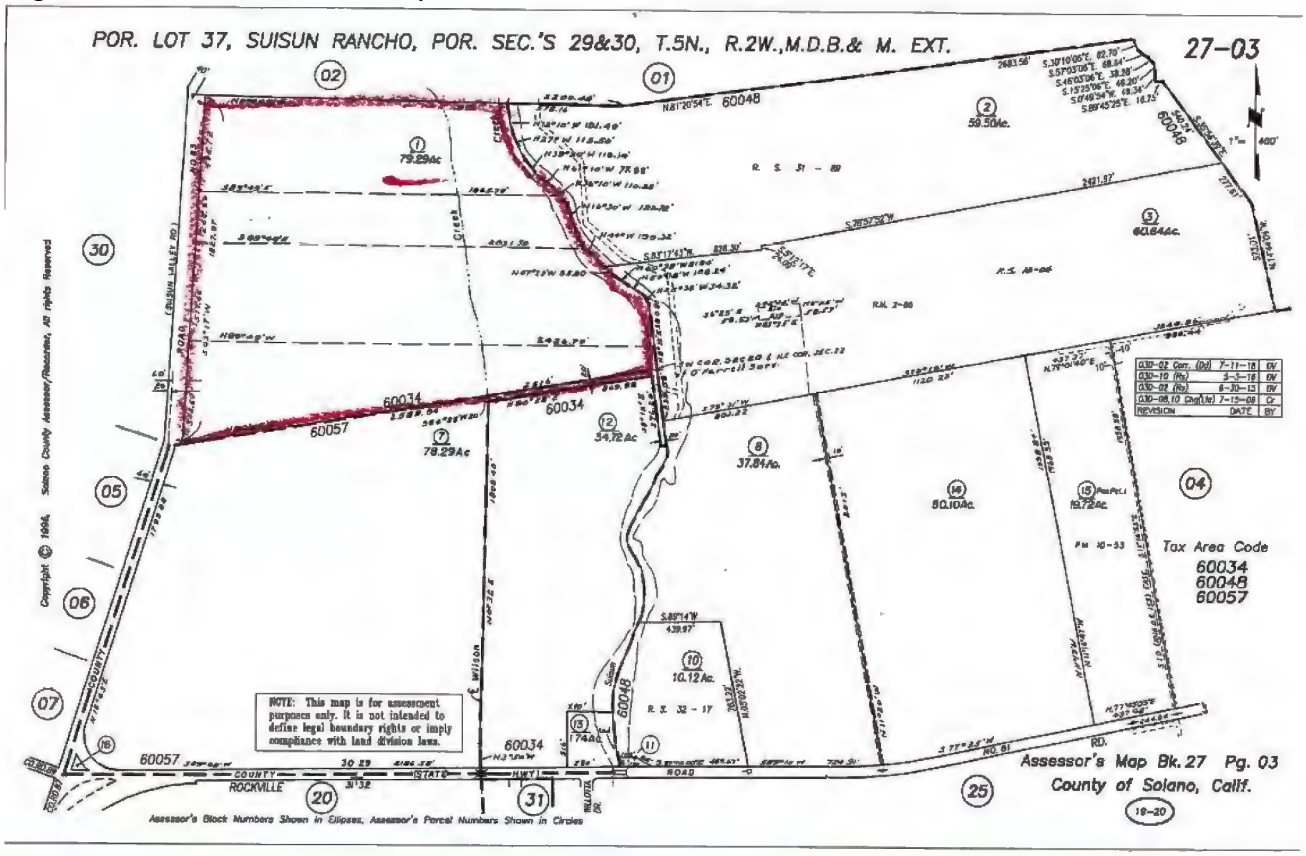


Figure 3: Aerial Photo Project Site – March 2019

1.4 PROJECT DESCRIPTION:

The project involves the construction of a 5,000 square foot expansion of an existing 24,000 sq. ft. accessory building to facilitate development of a winery and distillery with two public tasting rooms. The expansion will accommodate a wine tasting room, a distillery, spirits tasting room, and covered outdoor patio. The wine tasting room will be 1,468 square feet in size. It also includes a 1,700 square foot outdoor patio with an 800 square foot shade structure. 1,096 square feet of the addition will feature a distillery, with an addition 722 square feet devoted to spirits tasting. A 752 square foot outdoor covered patio will support the spirits tasting, 732 square feet will be for tax paid and bonded spirits storage and the remaining 476 square feet for mechanical equipment. With an additional 1,454 square foot tax paid and bonded spirits storage located within the existing 24,000 square foot building.

The wine processing facility includes the conversion of 11,700 square feet of the existing building; 2,276 square feet of administrative offices, restrooms, and support spaces; 5,000 square feet of refrigerated tax paid wine storage, with the remaining 4,200 square feet to be used for winery and vineyard management storage.

The project proponent anticipates average visitation of approximately 60 weekday visitors and 100 weekend visitors. The tasting room hours would be daily, from 11 a.m. until 5 p.m. Up to five full-time employees will work at the property.

Total annual production would consist of a maximum of 90,000 gallons, with wine comprising most of the production. Therefore, the winery component of the project is classified as a medium winery under Solano County Zoning Regulations having a production capacity of less than 100,000 gallons annually. Approximately 26,000 gallons of wine would originate from the project site. Grape on-haul for the remaining 64,000 gallons would be approximately 600 tons. Within the 90,000-gallon production total, the facility would also produce a smaller amount of distilled grape-grain beverage, such as Brandy, Grappa, and Eau devie. Other distilled spirits may include: Rum, Tequila, Japanese style Whiskey, Irish Whiskey, Moutai, and Gin. If demand is adequate, production of this beverage is expected to be approximately 5,000 gallons. Combined wine and distilled beverage production would remain 90,000 gallons or less annually.

The project would also convert an existing 12,000 square foot storage building to a special events facility. The primary purpose of the facility will be to host weddings, corporate, and charity events, or similar special events. Events would also occur outdoors adjacent to the event building. As shown on the development plans, the facility will have a “bar” space, but it will not be an owner-licensed bar. Instead, it will be available for use during special events for a licensed beverage caterer. 45 events annually are expected. 10 events will have up to 100 people, 25 events will have up to 200 people, and 10 events will have up to 400 people. Most events are expected to occur between Thursday and Sunday, but events could take place any day of the week. Events are anticipated to last from noon until midnight.

The wine and spirits tasting rooms and outdoor spaces will be available for use as part of a special event, and if not would remain open to the public, including if special events were taking place in the special events facility. Typical hours of operation for the tasting rooms will be 11:00 a.m. to 5:00 p.m. Hours of operation for the winery/distillery will typically be from 8:00 a.m. to 5:00 p.m. There would be a minimum of three employees on-site, up to five employees to run the tasting rooms and the winery/distillery.

The project proposes a total of 128 special event parking spaces that will be located in a new asphaltic concrete parking lot between the buildings and along the existing southern driveway and

vineyard. All parking spaces in the new parking lot will be striped. The remaining spaces along the edge of the vineyard/driveway will not be paved or striped. Section 28.94 of the Solano County Zoning Regulations requires one parking space per four seats of public assembly, or one space for every four people at capacity. The maximum event size is 400 seats/people, resulting in 100 required spaces. Therefore, 128 parking spaces adequately meet the minimum parking space requirements.

Events will be open to invitees only. The outdoor lawn area is proposed to host weddings and other tented events. Live music is proposed, both DJs and live bands. Temporary speakers will be brought in for each event. Amplified music will be directed towards the existing primary dwelling and event center. The project will implement downlighting recommendations and only provide the amount of light intensity necessary to illuminate the event as it takes place and will not over saturate the site.

The project does not involve any overnight stays at the private residence.

It is anticipated that construction associated with the expansion and renovation would be completed within three years after use permit authorization.

Access/Circulation

The subject property has frontage along Suisun Valley Road between Rockville and Mankas Corner Roads. In this area, Suisun Valley Road is a rural two-lane roadway with unimproved shoulders and no sidewalk or bicycle lane. Two access driveways serve the project site. The northern driveway provides access to the main home, winery, event center, and main parking lot. The southern driveway provides access to the secondary residence. This access will be improved and widened to 22 feet for emergency vehicles and as second means of access to the parking lot, winery, and event center. For large events, guests will enter from the north driveway and exit via the south driveway. This one-way traffic pattern will avoid queuing on Suisun Valley Road and will provide additional onsite parking that will meet the estimated parking demand in the traffic impact analysis study.

Parking

Multiple parking areas for event guests, staff, and visitors are proposed on-site. The primary parking area will be developed between the proposed event center and winery/distillery building. This area includes landscaping and will accommodate up to 73 parking spaces and is intended to serve the special events component of the project. An additional 60 parking spaces are proposed along the southern driveway leading from the project out to Suisun Valley Road. 10 parking spaces are proposed adjacent to the winery building. Four additional spaces are proposed near the event center building. In total, 147 parking spaces will be provided on-site to accommodate both the special events facility and winery/distillery.

Domestic Water Supply

The City of Vallejo provides domestic water service to the site. The property has an existing 1.5” meter and backflow prevention device. It is not clear at this time if this service size can accommodate the additional supply requirements of a new public facility and distillery. Based on correspondence from the City of Vallejo (Appendix B) it is very likely a new water service will be required to accommodate the converted facilities and their intended uses.

The property is also developed with two domestic potable water wells.

Irrigation Water & Fire Suppression

The Suisun-Solano Water Authority supplies water for irrigation and fire suppression. Existing buildings constructed after 2008 have fire sprinkler systems that are served by an 8" water line that also supplies the existing standpipes and the two existing hydrants.

Stormwater

The project site currently has approximately 175,650 square feet of impervious area. The proposed project would increase the total impervious area by approximately 56,010 square feet due to addition of a parking lot, the addition for tasting rooms and a future 5,000 square foot addition to the proposed winery building. The parking lot will be sloped toward the southeast allowing stormwater to runoff into the vineyards. Therefore, a storm water detention pond is not proposed as the impervious area is located in the center on the site that is surrounded by vineyards.

Wastewater

A permit has been submitted to remove the existing grease interceptor and the two existing 1,800-gallon septic tanks onsite and install a new updated waste collection and treatment system.

Signage

Proposed signage includes one sign at each driveway and a third sign to identify the Bally Keal Vineyard. Sign permitting will be required which conforms to requirements set forth in Section 28.96 of the County Zoning Regulations.

Figure 4: Site Plan

Figure 5: Detail Site Plan

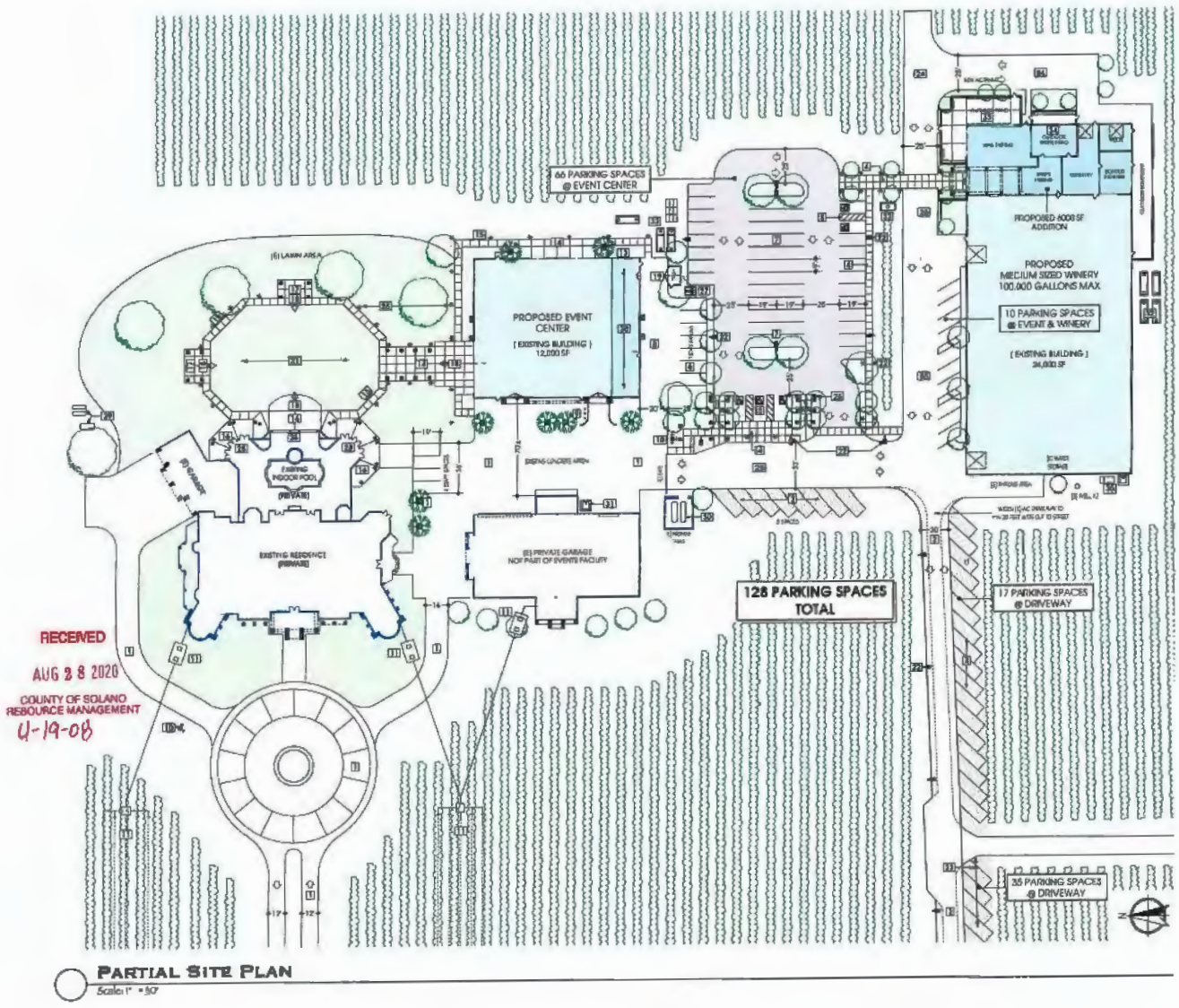


Figure 6: View East along existing driveway toward Proposed Winery

Figure 7: View South toward Proposed Winery Addition

Figure 8: View Southeast toward Proposed Special Event Facility

Figure 9: View South toward Proposed Special Event Facility, Outdoor Event Area

1.5 ADDITIONAL DATA

NRCS Soil Classification:	Brentwood clay loam, 0 to 2 percent slopes. Class I
Agricultural Preserve Status/Contract No.:	Williamson Act Contract No. 116, active
Non-renewal Filed (date):	Not Applicable
Airport Land Use Referral Area:	Not Applicable
Alquist Priolo Special Study Zone:	Not Applicable
Primary or Secondary Management Area of the Suisun Marsh	Not Applicable
Primary or Secondary Zone identified in the Delta Protection Act of 1992:	Not Applicable

Surrounding General Plan, Zoning and Land Uses

	General Plan	Zoning	Land Use
Property	Agriculture	Suisun Valley Agriculture "ASV-20"	Agriculture, residential
North	Agriculture	Suisun Valley Agriculture "ASV-20"	Agriculture (vineyard)
South	Agriculture	Suisun Valley Agriculture "ASV-20"	Agriculture (field crops)
East	Agriculture	Suisun Valley Agriculture "ASV-20"	Agriculture (orchard)
West	Agriculture	Suisun Valley Agriculture "ASV-20"	Cemetery

1.6 LAND USE CONSISTENCY ANALYSIS

General Plan & Zoning

The subject site is designated Agriculture by the Solano County General Plan. Table LU-5 of the General Plan provides a description and intent of the Agricultural designation:

The (Agricultural Designation) *provides areas for the practice of agriculture as the primary use, including areas that contribute significantly to the local agricultural economy, and allows for secondary uses that support the economic viability of agriculture. Agricultural land use designations protect these areas from intrusion by nonagricultural uses and other uses that do not directly support the economic viability of agriculture.*

Further the General Plan identifies ten Agricultural Regions throughout the County, the subject site being located within the Suisun Valley Agricultural Region. Table AG-3 of the General Plan highlights the unique characteristics of each region and summarizes desired land uses.

The (Suisun Valley) *provides for agricultural production, agricultural processing facilities, facilities to support the sale of produce, and tourist services that are ancillary to agricultural production.*

The subject site is zoned Suisun Valley Agriculture "A-SV-20" consistent with the General Plan designation. Section 28.23 of the County Zoning Ordinance provides a table of allowed uses and permit requirements applicable to this zoning district. As seen on Table 28.23A, crop production, residential development, Winery, and Special Events facility are allowed or conditionally allowed land uses within the A-SV-20 Zoning District. The Project requires issuances of a Use Permit per Solano County Zoning Regulations.

1.7 RESPONSIBLE, TRUSTEE, & AGENCIES THAT MAY HAVE JURISDICTION

Agencies that May Have Jurisdiction over the Project

- ❑ Bay Area Air Quality Management District
- ❑ California Department of Fish and Wildlife
- ❑ City of Vallejo
- ❑ Cordelia Fire Protection District
- ❑ Fairfield – Suisun Unified School District
- ❑ San Francisco Regional Quality Control Board
- ❑ Solano Irrigation District
- ❑ U.S. Army Corps. Of Engineers: Sacramento District
- ❑ U.S. Fish & Wildlife Service

CHAPTER 2 - ENVIRONMENTAL CHECKLIST

This chapter discusses the potential for adverse impacts on the environment. Where the potential for adverse impacts exist, the report discusses the affected environment, the level of potential impact on the affected environment and methods to avoid, minimize or mitigate for potential impacts to the affected environment.

Findings of SIGNIFICANT IMPACT

Based on the Initial Study, Part I as well as additional application materials reviewed by the Department of Resource Management, the project does not have the potential for significant impacts to any environmental resources.

Findings of LESS THAN SIGNIFICANT IMPACT WITH MITIGATION MEASURES

Based on the Initial Study, Part I as well as the review of the proposed project by the Department of Resource Management, the project requires mitigation measures to reduce potential impacts to less than significant levels.

- ❑ Air Quality
- ❑ Biological Resources
- ❑ Greenhouse Gas Emissions
- ❑ Transportation and Traffic

Findings of LESS THAN SIGNIFICANT IMPACT

Based on the Initial Study, Part I as well as the review of the proposed project by the Department of Resource Management, the following environmental resources were considered and the potential for impact is considered to be less than significant. A detailed discussion of the potential adverse effects on environmental resources is provided below:

- ❑ Aesthetics
- ❑ Geology and Soils
- ❑ Hazards and Hazardous Materials
- ❑ Noise
- ❑ Utilities and Service Systems
- ❑ Mandatory Findings of Significance

Findings of NO IMPACT

Based on the Initial Study, Part I as well as the review of the proposed project by the Department of Resource Management, the following environmental resources were considered but no potential for adverse impacts to these resources were identified. A discussion of the no impact finding on environmental resources is provided below:

- ❑ Agriculture
- ❑ Cultural Resources
- ❑ Energy
- ❑ Mineral Resources
- ❑ Population and Housing
- ❑ Public Services

- ❑ Hydrology and Water
- ❑ Land Use and Planning
- ❑ Recreation
- ❑ Tribal Cultural Resources
- ❑ Wildfire

2.1 Aesthetics

Would the project:	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
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. In nonurbanized areas, substantially degrade the existing visual character or quality of the site and its surroundings? If the project is in an urbanized area, would the project conflict with applicable zoning and other regulations governing scenic quality?	☐	☐	☐	■
d. Create a new source of substantial light or glare that would adversely affect day or nighttime views in the area?	☐	☐	■	☐

Environmental Setting

Surrounding foreground views to the north, east, and south are that of a relatively flat agricultural landscape typical of the Suisun Valley Agricultural Region. Lands are predominantly planted in vineyards surrounding the subject site. Oak covered hillsides reaching elevations of approximately 400 feet above mean sea level are located west of the site. A riparian corridor along Suisun Creek consisting primarily of large trees and brush can be seen approximately 1,000 feet east of the proposed project. The following oblique photograph of the subject site depicts the landscape within the vicinity of the project.

Figure 10 – View Northeast towards the Subject Site

Impacts Discussion

a. *Have a substantial adverse effect on a scenic vista?*

The General Plan (Resources Chapter pg. RS-36) identifies the county's agricultural landscapes and oak and grass covered hills as scenic resources. In addition, Suisun Valley Road is identified as the nearest Scenic Roadway on Figure RS-5 of the General Plan.

Surrounding agricultural crop production and oak covered hills within the vicinity are considered scenic resources. As shown on the proposed site plan, development is clustered near the center of the lot, preserving a large portion of the property for continued agricultural production. Development is set back approximately ¼ mile from Suisun Valley Road, the nearest Scenic Roadway. Development within view from the Scenic Roadway is existing. **No Impact**

b. *Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?*

There are no trees, rock outcroppings, or historic buildings within a state scenic highway that would be affected by the project. **No Impact.**

c. Substantially degrade the existing visual character or quality of the site and its surroundings?

The project will occur and operate within the existing development on-site and preserves the agricultural landscape and scenic resource qualities of the property as well as surrounding lands. **No Impact.**

d. Create a new source of substantial light or glare that would adversely affect day or nighttime views in the area?

Exterior light fixtures on buildings, and along walkways, parking, and patio areas will be aimed downward and shielded to prevent glare or reflection and to minimize light pollution beyond the project boundaries. **Less than Significant Impact.**

2.2 AGRICULTURAL AND FORESTRY

Would the project:	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
a. Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (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. Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use?	☐	☐	☐	■
d. Result in the loss of forest land or conversion of forest land to non-forest use?	☐	☐	☐	■

Environmental Setting

As referenced on the 2018 California Department of Conservation Important Farmland map, the 79.29-acre subject site is classified as Prime Farmland. Prime Farmland has the best combination of physical and chemical features able to sustain long-term agricultural production. This land has the soil quality, growing season, and moisture supply needed to produce sustained high yields. Land must have been used for irrigated agricultural production at some time during the four years prior to the mapping date.

The property is predominantly utilized for agricultural purposes and since 1969 has been entered into an active Williamson Act Contract (Contract No. 116). 63-acres of the property is devoted vineyard cultivation. The balance of the property is established with residential development. A riparian corridor along Suisun Creek runs along the eastern property line. The existing land use and

proposed development are allowed and conditionally allowed within the Suisun Valley Agriculture "A-SV-20" Zoning District.

Impacts Discussion

a. *Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?*

The property is shown as Prime Farmland pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency. The project consists of the development of a winery and related uses with crop production on the remaining acreage. Agricultural processing uses, including wineries, are considered an agricultural use. New construction of the proposed parking area and building addition are sited within the established residential footprint of the site and would not convert or remove an agricultural use. **No Impact.**

b. *Conflict with existing zoning for agricultural use, or a Williamson Act contract?*

The existing and proposed land uses are allowed and conditionally allowed within the Suisun Valley Agriculture "A-SV-20" Zoning District (Reference Solano County Zoning Regulations Section 28.23 Table A). The project is identified as a compatible land use by the Solano County Uniform Rules and Procedures Governing Agricultural Preserves and Land Conservation Contracts. **No Impact.**

c. *Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use?*

The project would not result in the conversion of Farmland to a non-agricultural use, neither on or off site. **No Impact.**

d. *Result in the loss of forest land or conversion of forest land to non-forest use?* **No Impact.**

2.3 AIR QUALITY

Would the project:	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
a. Conflict with or obstruct implementation of the applicable air quality plan?	☐	■	☐	☐
b. 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?	☐	■	☐	☐
c. Expose sensitive receptors to substantial pollutant concentrations?	☐	■	☐	☐

d.	Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people?	☐	■	☐	☐

Environmental Setting

The Suisun Valley is located within the San Francisco Bay Area Air Basin (SFBAAB), which also comprises Alameda, Contra Costa, Marin, Napa, San Francisco, San Mateo, and Santa Clara Counties and the southern portion of Sonoma County. Western Solano County is currently designated as a nonattainment area for the federal and state ozone (8-hour) and PM2.5 (24-hour) standards (ARB 2009, EPA 2009). In addition, western Solano County is currently designated as a nonattainment area for the state ozone (1-hour) and the state PM10 (24-hour) standards. Solano County is unclassified for the federal PM10 standard (ARB 2009).

Concentrations of ozone, carbon monoxide (CO), nitrogen dioxide (NO2), sulfur dioxide (SO2), respirable and fine particulate matter (PM10 and PM2.5), and lead are used as indicators of ambient air quality conditions. Because these are the most prevalent air pollutants known to be deleterious to human health, and because there is extensive documentation available on health-effects criteria for these pollutants, they are commonly referred to as "criteria air pollutants." Sensitive receptors within the vicinity of the proposed project include nearby single-family residential dwellings to the southeast.

The General Plan EIR found that future development under the General Plan in Solano County would generate emissions of criteria air pollutants and ozone precursors, both of which affect regional air quality. The General Plan EIR found that even with Mitigation Measure 4.2-2a (Coordinate with Air Districts on Assumptions from Air Quality Plan Updates) and the various General Plan goals, policies, and programs intended to minimize air quality impacts, implementation of the General Plan would still result in operational emissions in excess of significance thresholds and assumptions used by the Bay Area Air Quality Management District (BAAQMD) for applicable clean air plans and attainment planning efforts. Therefore, the General Plan EIR found that build out of the General Plan would conflict with current air quality planning efforts.

The anticipated population and development with implementation of the General Plan would lead to operational (mobile-source and area-source) emissions that exceed BAAQMD's significance thresholds. Implementation of General Plan EIR Mitigation Measure 4.2-3a, the adopted General Plan policies and implementation programs, and existing regulations would reduce operational emissions of reactive organic gases (ROG), oxides of nitrogen (NOX), and PM10, but not to a less-than-significant level.

Construction-related emissions of criteria air pollutants and precursors would still exceed significance thresholds; for this reason, and because of the large amount of development anticipated in Solano County, such emissions would violate or contribute substantially to an existing or projected air quality violation, and/or expose sensitive receptors to substantial pollutant concentrations.

Impacts Discussion

a. Conflict with or obstruct implementation of the applicable air quality plan?

The project is consistent with the development assumptions evaluated in the General Plan EIR. Because the proposed project is consistent with the General Plan, it is not anticipated to exceed the impacts analyzed within the General Plan EIR. The Proposed processing facility's incremental contribution to regional nonattainment conditions as documented in the General Plan EIR is not an impact peculiar to the project within the meaning of State CEQA Guidelines Section 15183. Rather, the General Plan ElR, and the related findings adopted by the Solano County Board of Supervisors, identified air quality impacts as significant and unavoidable. To the extent that the proposed project contributes incrementally to those impacts, CEQA Guidelines Section 15183 permits the County to conclude that such impacts have been adequately discussed and disclosed in the General Plan EIR. **Less Than Significant Impact with Mitigation. AIR-1 and AIR-2.**

b. *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?*

Reference discussion (a) above. **Less Than Significant Impact with Mitigation.**

c. *Expose sensitive receptors to substantial pollutant concentrations?*

Reference discussion (a) above. **Less than Significant Impact with Mitigation.**

d. *Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people?*

Reference discussion (a) above. **Less than Significant Impact with Mitigation.**

Mitigation Measures:

Mitigation Measure AIR - 1. Require Implementation of Measures to Reduce Construction-Related Exhaust Emissions. The applicant, as a condition of project approval, shall be required to implement the following measures to further reduce exhaust emissions from construction-related equipment:

- Commercial electric power shall be provided to the project site in adequate capacity to avoid or minimize the use of portable gas-powered electric generators and equipment.
- Where feasible, equipment requiring the use of fossil fuels (e.g., diesel) shall be replaced or substituted with electrically driven equivalents (provided that they are not run via a portable generator set).
- To the extent feasible, alternative fuels and emission controls shall be used to further reduce NOX and PM10 exhaust emissions.
- On-site equipment shall not be left idling when not in use.
- The hours of operation of heavy-duty equipment and/or the amount of equipment in use at any one time shall be limited.
- Construction shall be curtailed during periods of high ambient pollutant concentrations; this may involve ceasing construction activity during the peak hour of vehicular traffic on adjacent roadways or on Spare the Air Days.

- Staging areas for heavy-duty construction equipment shall be located as far as possible from sensitive receptors.

- Before construction contracts are issued, the project applicants shall perform a review of new technology, in consultation with BAAQMD, as it relates to heavy-duty equipment, to determine what (if any) advances in emissions reductions are available for use and are economically feasible. Construction contract and bid specifications shall require contractors to utilize the available and economically feasible technology on an established percentage of the equipment fleet. It is anticipated that in the near future, both NO_X and PM_{10} control equipment would be available.

Mitigation Measure AIR - 2. Require Implementation of Measures to Reduce Fugitive PM_{10} Dust Emissions. The applicant, as a condition of project approval, to implement the following enhanced and additional control measures recommended by BAAQMD to further reduce fugitive PM_{10} dust emissions:

- Hydroseeding shall be used or nontoxic soil stabilizers shall be applied to inactive construction areas (previously graded areas inactive for 10 days or more).

- Exposed stockpiles (e.g., dirt, sand) shall be enclosed, covered, or watered twice daily, or nontoxic soil binders shall be applied to such stockpiles.

- Traffic speeds on unpaved roads shall be limited to 15 mph.

- Sandbags or other erosion control measures shall be installed to prevent runoff of silt to public roadways.

- Vegetation shall be replanted in disturbed areas as quickly as possible.

- Wheel washers shall be installed on all exiting trucks, or the tires or tracks of all trucks and equipment leaving the site shall be washed off.

- Windbreaks shall be installed or trees/vegetative windbreaks shall be planted at windward side(s) of construction areas.

- Excavation and grading activity shall be suspended when winds (instantaneous gusts) exceed 25 mph.

- The area subject to excavation, grading, and other construction activity at any one time shall be limited, as necessary.

2.4 BIOLOGICAL RESOURCES

Would the project:	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
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 Wildlife 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 Wildlife or U.S. 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?	☐	☐	☐	■

Environmental Setting

As seen on the General Plan's Priority Habitat Areas map (Figure RS-1 of the General Plan), the subject site is not located within any identified wetland or vernal pool area, conservation area, critical habitat, or recovery area. The County does not have a tree preservation ordinance and no trees are proposed for removal. This project will not conflict with conservation plans.

The project proponent has provided the results of a Biological Reconnaissance Report which surveyed the project site to identify potential jurisdictional wetlands, sensitive natural communities, and special status plant or wildlife habitat (Appendix C). The report concludes that based on occurrence records, habitat availability, and the reconnaissance-level site visit, no special status plant or wildlife species, or sensitive natural communities are expected to occur at the project site, with the exception of potential seasonal nesting by protected migratory birds. No potentially jurisdictional wetlands or waters were observed.

A letter submitted to the County by the California Department of Fish and Wildlife dated May 27, 2021 states that Special-status species with the potential to occur on or near the Project site include, but are not limited to, Swainson's hawk (Buteo swainsoni), listed as threatened pursuant to CESA; burrowing owl (Athene cunicularia), a California Species of Special Concern (SSC); pallid bat (Antrozous pallidus), an SSC; and white-tailed kite (Elanus leucurus), a Fully Protected Species.

Swainson's Hawk

Potentially suitable nesting trees exist in the riparian habitat of Suisun Creek, approximately 500 feet to the east of the Project site. In addition, other trees in the vicinity of the Project site may provide suitable nesting habitat. The agricultural fields, rangeland, and open space near the Project provide potentially suitable foraging habitat. There are California Natural Diversity Database (CNDDB) occurrences of nesting Swainson's hawk approximately 1.8 miles northeast of the Project site and approximately 2.9 miles to the south. Swainson's hawks are present within the vicinity of the Project site and there is potentially suitable habitat for the species in the vicinity of the Project where the species could be impacted. To reduce impacts to less-than-significant CDFW recommends the following Mitigation Measure BIO-1:

Burrowing Owl

As identified by CDFW, there are two documented occurrences of burrowing owl within 3.1 and 3.7 miles southeast of the Project site according to the CNDDB. In accordance with CDFW, owls may be disturbed up to 1,640 feet from a project. Burrowing owls are present within the vicinity of the Project site and there is potentially suitable habitat for the species in the vicinity of the Project where the species could be impacted.

The Project could result in burrowing owl nest abandonment, loss of young, reduced health and vigor of owlets, or injury or mortality of adults. Additionally, the Project may result in a permanent reduction of burrowing owl habitat in Solano County. Burrowing owls are an SSC due to population decline and breeding range retraction. Based on the above, the Project may potentially significantly impact burrowing owls. To reduce impacts to less-than-significant CDFW recommends the following Mitigation Measures BIO-2A and BIO-2B:

Nesting Birds

Nesting birds may be disturbed by Project noise or human presence, which could lead to nest abandonment or reduced health and vigor of young, a potentially significant impact. To reduce impacts to less than significant, CDFW recommends the following Mitigation Measure BIO-3:

Pallid Bat

The Project provides potentially suitable roost structures and foraging habitat for pallid bat, an SSC, and other bat species. The pallid bat ranges throughout California and occupies a wide variety of habitat types. In addition, the California Bay Area Linkage Network identifies the habitat surrounding the Project area as a core area for pallid bats and notes that these bats can use vineyards for invertebrate foraging. Pallid bats can roost in buildings or under porches and open structures. The Project site contains potentially suitable roost buildings and foraging habitat and is in the vicinity of potentially suitable habitat.

Pallid bats are highly sensitive to human disturbance. Project activities that convert and expand existing buildings could cause roost or young abandonment and injury or mortality of bats, a

potentially significant impact. To reduce impacts to less than significant, CDFW recommends the following Mitigation Measure BIO-4:

Impacts Discussion

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 Wildlife or U.S. Fish and Wildlife Service?*

Species identified as a candidate, sensitive, or special status in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service have not been identified on-site; however have occurred within the vicinity and have the potential to be impacted by the Project. The following Mitigation Measures would reduce the potential for impacts to **less-than-significant**.

Mitigation Measure BIO-1: Swainson's Hawk Surveys

If Project activities are scheduled during the nesting season for Swainson's hawks (March 1 to September 15), prior to beginning work on the Project, a qualified biologist shall conduct surveys according to the *Recommended timing and methodology for Swainson's Hawk Nesting Surveys in California's Central Valley*. Survey methods should be closely followed by starting early in the nesting season (late March to early April) to maximize the likelihood of detecting an active nest (nests, adults, and chicks are more difficult to detect later in the growing season because trees become less transparent as vegetation increases). Surveys shall be conducted: 1) within a minimum 0.5-mile radius of the Project site or a larger area if needed to identify potentially impacted active nests, and 2) for at least the two survey periods immediately prior to initiating Project-related construction activities. Surveys shall occur annually for the duration of the Project. The qualified biologist shall have a minimum of two years of experience implementing the survey methodology resulting in detections. If active Swainson's hawk nests are detected, the Project shall implement a 0.5-mile construction avoidance buffer around the nest until the nest is no longer active as determined by a qualified biologist. If take of Swainson's hawk cannot be avoided, the Project shall consult with CDFW pursuant to CESA and obtain an ITP. CDFW Bay Delta Region staff is available to provide guidance on the ITP application process.

Mitigation Measure BIO-2A: Burrowing Owl Habitat Assessment, Surveys, and Avoidance

Prior to Project activities, a habitat assessment shall be performed consistent with CDFW protocol. The habitat assessment shall extend at least 492 feet from the Project site boundary and include burrows and burrow surrogates. If the habitat assessment identifies potentially suitable burrowing owl habitat, then a qualified biologist shall conduct surveys following the CDFW survey methodology. Surveys shall encompass the Project site and a sufficient buffer zone to detect owls nearby that may be impacted commensurate with the type of disturbance anticipated, and include burrow surrogates such as culverts, piles of concrete or rubble, and other non-natural features, in addition to burrows and mounds. Time lapses between surveys or Project activities shall trigger subsequent surveys, as determined by a qualified biologist, including but not limited to a final survey within 24 hours prior to ground disturbance. The qualified biologist shall have a minimum of two years of experience implementing CDFW survey methodology resulting in detections. Detected nesting burrowing owls shall be avoided pursuant to the buffer zone prescribed and in any passive relocation plan for non-nesting owls shall be subject to CDFW review.

Mitigation Measure BIO-2B: Burrowing Owl Habitat Mitigation

If the Project would impact an unoccupied nesting burrowing owl burrow or burrow surrogate (i.e., a burrow known to have been used in the past three years for nesting), or an occupied burrow (where a non-nesting owl would be evicted as described above), the following habitat mitigation shall be implemented prior to Project construction.

Impacts to each nesting site shall be mitigated by permanent preservation of two occupied nesting sites with appropriate foraging habitat within Solano County, unless otherwise approved by CDFW, through a conservation easement and implementing and funding a long-term management plan in perpetuity. The same requirements shall apply for impacts to non-nesting evicted owl sites.

The Project may implement alternative methods for preserving habitat with written acceptance from CDFW.

Mitigation Measure BIO-3: Nesting Bird Surveys

If construction, grading, or other Project related activities are scheduled during the nesting season, February 1 to September 1, a focused survey for active nests shall be conducted by a qualified biologist within 7 days prior to the beginning of Project related activities. If an active nest is found, the qualified biologist shall delineate a no-work-zone buffer distance around the nest that is site and species specific using high visibility fencing or flagging. The buffer distance shall be specified to protect the bird's normal behavior and prevent nesting failure or abandonment. No work shall occur within the no-work-zone until the nest is no longer active as determined by a qualified biologist. Fencing or flagging material shall be removed and properly disposed after Project activities are complete or the nest is no longer active, as determined by a qualified biologist. If a lapse in Project related work of 7 days or longer occurs, another focused survey shall occur before Project work is reinitiated.

Mitigation Measure BIO-4: Roosting Bat Surveys

Prior to Project activities a qualified bat biologist shall conduct surveys for pallid bats prior to Project construction. The survey methodology shall include an initial habitat assessment and survey several months before project construction, to facilitate sufficient time to implement the exclusion plan described below, and the types of equipment used for detection.

Biologist resumes and a survey methodology shall be submitted to CDFW for approval prior to implementing surveys. Biologist resumes shall reflect a least two years of experience conducting bat surveys that resulted in detections of pallid bat including the project name, dates, and person who can verify the experience. Ideally, the resume should also indicate that the biologist possesses a state-issued Scientific Collecting Permit for the relevant species.

An exclusion plan shall be submitted to CDFW and the County for approval if bats are detected during the above survey. The plan shall: 1) recognize that both the maternity and winter roosting seasons are vulnerable times for bats and require exclusion outside of these times, 2) identify suitable areas for excluded bats to disperse or require installation of appropriate dispersal habitat for the bats, such as artificial bat houses, and an associated management and monitoring plan with necessary funding, and 3) be implemented prior to project construction and allow bats to leave the building unharmed.

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 Wildlife or U.S. Fish and Wildlife Service?*

No aquatic, wetland or riparian habitat or other sensitive natural community is impacted by the proposed expansion.

The proposed project would occur and is located approximately 1,000 feet from the existing riparian corridor to the east. No other sensitive natural communities were found on or adjacent to the project site. **No Impact.**

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?*

There are no federally impacted wetlands located on the subject site. **No Impact.**

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?*

The site is located within the general vicinity of a habitat corridor/linage on Figure RS-1 (Priority Habitat Area) of the General Plan. The site has been historically disturbed through farming practices and residential activities. **Less Than Significant Impact.**

e. *Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?*

The project would not conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance, or conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan. These types of ordinances have not been adopted within this region of the County. **No Impact.**

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?*

Reference discussion (e) above. **No Impact.**

2.5 CULTURAL RESOURCES

Would the project:	Significant Impact	Less Than Significant Impact With Mitigation	Less Than Significant Impact	No Impact
a. Cause a substantial adverse change in the significance of an 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.	Disturb any human remains, including those interred outside of dedicated cemeteries?	☐	☐	☐	■

Environmental Setting

The project site was converted from an orchard to a vineyard in 1968. The secondary dwelling unit and two accessory buildings in the vicinity were constructed about or prior to 1968. These structures have no special architectural merits nor designed by a master architect. The primary residence and additional accessory structures were constructed between 2002 and 2008; these buildings do not qualify for listing as historic resources under the criteria of the California Register of Historic Resources of being 45 years of age or older.

The top 2 to 3 feet of topsoil are disturbed due to prior disking or vineyard ripping. The building addition, parking lot paving, and widening of the southern driveway would require approximately 2 feet of excavation. Agricultural operations on-site have been occurring since at least 1968 and the proposed project will be in an area previously developed area.

Impacts Discussion

a. *Cause a substantial adverse change in the significance of an historical resource as defined in CEQA Guidelines §15064.5?*

The buildings on the property are not architecturally distinctive, constructed relatively recently, and do not convey important historical themes. The existing development does not meet criteria for inclusion on the California Register of Historical Resources; therefore, no formal evaluation is warranted.

The top two to three feet of soil is loose due to prior disking and vineyard ripping. The depth of any excavation for the additions to an existing building and other onsite improvements would not exceed two feet. The shallow depth of the excavation would not encounter cultural resources. **No Impact.**

b. *Cause a substantial adverse change in the significance of an archaeological resource pursuant to CEQA Guidelines §15064.5?*

Due to the historical agricultural use and ground disturbance of the property, it is not likely that archeological resources exist on the site. State law (Section 7050.5 of the California Health and Safety Code) dictates that any human remains found during construction activities shall be reported to the proper official(s). **No Impact.**

c. *Disturb any human remains, including those interred outside of formal cemeteries?*

Due to the agricultural nature of the site, it is not likely that any human remains exist on the site. State law (Section 7050.5 of the California Health and Safety Code) dictates that any human remains found during construction activities shall be reported to the proper official(s). **No Impact.**

2.6 ENERGY

Would the project:	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
a. Result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation?	☐	☐	☐	■
b. Conflict with or obstruct a state or local plan for renewable energy or energy efficiency?	☐	☐	☐	■

Impacts Discussion

a. Result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation?

No Impact.

b. Conflict with or obstruct a state or local plan for renewable energy or energy efficiency?

No Impact.

2.7 GEOLOGY AND SOILS

Would the project:	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
a. Directly or indirectly cause 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?	☐	☐	■	☐
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, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial direct or indirect risks to life or property?	☐	☐	■	☐
e.	Have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater?	☐	☐	☐	■
f.	Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?	☐	☐	☐	■

Environmental Setting

The Seismic Shaking Potential map, Figure HS-3 of the General Plan depicts the project within the Highest Potential Earthquake Damage Area and within one mile of the Cordelia Fault. The project is not located within an Alquist-Priolo fault zone. Per General Plan Figure HS-6, the project site has Moderate liquefaction potential. The Landslide Stability map (Figure HS-5) depicts the project within an area of least landslide susceptibility (Area 1).

The project proponent has provided a preliminary Geotechnical Exploration Report from KC Engineering Company (Appendix D). The report describes the soils as hard to moderately to high expansive clay with varying amount of sand extending to a maximum of 40 feet below grade. The upper 2 to 3 feet of topsoil are relatively loose due to prior disking and/or vineyard ripping. There is no indication of active faults at the site. The Geological Exploratory Report includes recommendations on drainage, foundation, slab-on-grade amongst others. The underlying soil is stable and suitable for the project. The project site is not on a seismic fault and have no potential of fault rupture. The site is not subject to seismically induced landslide hazards and the potential for liquefaction, is very low.

Impacts Discussion

a. Directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury or death involving:

i. Rupture of a known earthquake fault, as described 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?

The site is not located within an Alquist-Priolo Fault Zone; however, is located within one mile of the Cordelia Fault identified in the General Plan. New construction would require issuance of building permit(s) requiring structures to be built to the latest Uniform Building Code. **Less Than Significant Impact.**

ii. Strong seismic ground shaking?

Reference discussion (a) above. **Less Than Significant Impact.**

iii. Seismic-related ground failure, including liquefaction?

The subject site is located within an area of Moderate Liquefaction Potential. The project will require a soils and geologic report and a foundation and structural engineering designed to minimize any impacts from liquefaction. **Less Than Significant Impact.**

iv. Landslides?

The subject site is located within an area Least Susceptible to Landslide. **No Impact.**

b. Result in substantial soil erosion or the loss of topsoil?

Issuance of a grading and drainage permit is necessary prior to construction, which will impose conditions which prevent soil erosion. **Less Than Significant Impact.**

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, differential settlement, liquefaction or collapse?

Reference discussion in (a) above. **Less Than Significant Impact.**

d. Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial risks to life or property?

Reference discussion (a) above. **Less Than Significant Impact.**

e. Have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater?

New solid waste facilities and wastewater treatment facilities would be installed to handle the increased discharge from the project. **No Impact.**

f. Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?

No unique paleontological resource or unique geologic feature have been identified on-site. **No Impact.**

2.8 GREENHOUSE GAS EMISSIONS

Would the project:	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
a. Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?	☐	■	☐	☐
b. Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?	☐	■	☐	☐

Environmental Setting

Also reference discussion under 2.3 Air Quality. In addition, the new wine fermentation tanks use ganimede technology that would use the carbon dioxide from the fermentation process stir the tanks instead of doing so mechanically. Therefore, extremely low levels of carbon dioxide will be released into the atmosphere. Equipment used during the renovation would use Tier4 Compliant Construction Equipment.

Impacts Discussion

a. Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?

The proposed project may generate greenhouse gas emissions in addition to other emissions during the construction phase of the project. **Less Than Significant with Mitigation. GHG – 1.**

b. Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?

The proposed project may generate greenhouse gas emissions in addition to other emissions during the construction phase of the project. **Less Than Significant with Mitigation. GHG – 1.**

Mitigation Measures:

Mitigation Measure GHG – 1. Require Tier-3 Compliant Construction Equipment. Equipment utilized during grading and construction shall meet Tier-4 standards of emission control.

2.9 HAZARDS AND HAZARDOUS MATERIALS

Would the project:	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
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 reasonably 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. Impair implementation of, or physically interfere with, an adopted emergency response plan or emergency evacuation plan?	☐	☐	☐	■
g. Expose people or structures to a significant risk of loss, injury or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands?	☐	☐	☐	■

Environmental Setting

The winery will utilize a series of potentially hazardous materials in its' production process, including:

- Sodium percarbonate,
- Citric acid anhydrous,
- Potassium carbonate,
- Bentonite performance minerals,
- Metabisulphite,
- Sulfurous Acid,
- Peroxyacetic acid,
- Sodium Hydroxide
- Starsan
- PBW

As seen on Figure 2A of the Travis Air Force Base Land Use Compatibility Plan, the subject property is located outside of the LUCP Area Influence Zone. The site is located greater than two miles from a public use airport and not within the vicinity of a private airstrip.

The project is over one mile from any urbanized area and is identified as a moderate or low Wildland Fire Area per General Plan Figure HS-9.

Impacts Discussion

a. *Does the project create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?*

   The project is required to operate in compliance with a Hazardous Materials Business Plan issued by Solano County. The plan provides for the proper use and storage of the materials identified above as well as emergency response procedures in the event of a release of hazardous materials. **Less Than Significant Impact.**

b. *Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?*

   Reference discussion (a) above. **Less Than Significant Impact.**

c. *Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?*

   The project is not located within one-quarter mile of a school. **No Impact.**

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?*

   The project is not located on a hazardous materials site as defined in Government Code Section 65962.5. **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 result in a safety hazard for people residing or working in the project area?*

The project is located outside of the Travis LUCP area of influence and not within two miles of a public airport. The project is consistent with the Land Use compatibility Plan for Travis Air force Base. **No Impact.**

f. Impair implementation of, or physically interfere with, an adopted emergency response plan or emergency evacuation plan?

The project will not affect any adopted emergency response plans. **No Impact.**

g. Expose people or structures to a significant risk of loss, injury or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands?

The project is not located in the vicinity of any wildland/urban interface areas**. No Impact.**

2.10 HYDROLOGY AND WATER QUALITY

Would the project:	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
a. Violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or ground water quality?	☐	☐	☐	■
b. Substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin?	☐	☐	☐	■
c. Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or through the addition of impervious surfaces, in a manner which would:	☐	☐	☐	■
i) Result in substantial erosion or siltation on- or off-site;	☐	☐	☐	■
ii) Substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site;	☐	☐	☐	■
iii) 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; or				
	iv) Impede or redirect flood flows?	☐	☐	☐	■
d.	In flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation?	☐	☐	☐	■
e.	Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?	☐	☐	☐	■

Environmental Setting

The project will utilize an on-site septic system to handle wastewater discharge.

The project will be served by a combination of exiting water sources. Solano Water Authority supplies water for irrigation and fire suppression (building fire sprinklers, standpipes and two fire hydrants) and the City of Vallejo provides domestic potable water. Two existing wells also provide potable water to the site. The project site is within a 'C' zone as indicated by USGS water bearing rock map, which is an area with adequate water supply.

Per the Health and Safety Chapter of the Solano County General Plan, the proposed project is not located within an area subject to inundation by seiche, tsunami, or mudflow.

Approximately 63 acres of the subject site are cultivated with vineyards. Development of additional parking along the southern driveway will remove less than one-acre of vineyard. Stormwater runoff will enter the on-site vineyard to the east. The project does not warrant a stormwater detention basin.

The subject site is outside the 100-year flood plain with a FEMA designation of Zone AO.

Impacts Discussion

a. Violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or ground water quality?

The project requires private septic system permitting through Solano County Environmental Health, whereas adherence to those permit requirements protects against violation of any water quality standards or waste discharge. **No Impact.**

b. Substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin?

The project will be served by on-site well and City of Vallejo for domestic drinking water and will not require a substantial increase in ground water utilization. The intermittent nature of the events allows for groundwater recharge. **No Impact.**

c. (i – iv) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or through the addition of impervious surfaces?

The development will not alter any creeks, streams or rivers. Storm water will be retained onsite and released at pre-development rates. **No Impact.**

d. In flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation?

The project is not in an area which would experience any inundation by seiche, tsunami, or mudflow. **No Impact.**

e. Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?

Reference (a) above. **No Impact.**

2.11 LAND USE AND PLANNING

Would the project:	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
a. Physically divide an established community?	☐	☐	☐	■
b. Cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect?	☐	☐	☐	■

Environmental Setting

The subject site is designated Agriculture by the Solano County General Plan. Further, the General Plan identifies ten Agricultural Regions throughout the County, the subject site being located within the Suisun Valley Agricultural Region.

The subject site is zoned Suisun Valley Agriculture "A-SV-20" consistent with the General Plan designation. Section 28.23 of the County Zoning Ordinance provides a table of allowed uses and permit requirements applicable to this zoning district. As seen on Table 28.23A, crop production, residential development, agricultural processing, and special events facilities are allowed or conditionally allowed land uses within the A-SV-20 Zoning District.

Impacts Discussion

a. Physically divide an established community?

The project is not located within an established community. **No Impact.**

b. Cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect?

Table LU-5 of the General Plan provides a description and intent of the Agricultural designation:

The (Agricultural Designation) *provides areas for the practice of agriculture as the primary use, including areas that contribute significantly to the local agricultural economy, and allows for secondary uses that support the economic viability of agriculture. Agricultural land use designations protect these areas from intrusion by nonagricultural uses and other uses that do not directly support the economic viability of agriculture.*

Table AG-3 of the General Plan highlights the unique characteristics of each region and summarizes desired land uses: *The* (Suisun Valley) *provides for agricultural production, agricultural processing facilities, facilities to support the sale of produce, and tourist services that are ancillary to agricultural production.*

The project does not conflict with the intent of the Solano County General Plan, Suisun Valley Strategic Plan, or the Suisun Valley Agriculture Zoning District. **No Impact.**

2.12 MINERIAL RESOURCES

Would the project:	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
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?	☐	☐	☐	■

Environmental Setting

As seen on the Mineral Resources map, Figure RS-4 of the Solano County General Plan, there are no active mines or mineral resource zones within the vicinity of the project site.

Impacts Discussion

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?

No known mineral resources exist at the site. **No Impact.**

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?

Reference discussion (a) above. **No Impact.**

2.13 NOISE

Would the project:	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
a. Generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?	☐	☐	■	☐
b. Generation of excessive ground borne vibration or ground borne noise levels?	☐	☐	■	☐
c. For a project located within the vicinity of a private airstrip or 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?	☐	☐	☐	■

Environmental Setting

The site is surrounded by agriculturally zoned properties. Table HS-2 of the Solano County General Plan indicates a community noise exposure of less than 75 dBA to be normally acceptable for agricultural uses. The nearest sensitive receptor(s), residences within the Willotta Oaks neighborhood are ½ mile southeast of the project.

Impacts Discussion

a. *Generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?*

Construction and grading of the project would generate noise on-site; however, will be temporary in nature. Noise levels from on-going agricultural practices along with temporary construction are anticipated to be less than significant because of the temporary nature along with the distance to nearest sensitive receptors existing in the agricultural setting. Social gatherings would be held indoors within the event barn and suppress noise levels from extending beyond parcel boundaries. Outdoor events with DJ or live bands will generate noise, however adherence to Section 28.70.10 of the County Zoning Regulations would prevent offensive noise that exceeds 65dBA LDN at any property line. **Less Than Significant Impact.**

b. Generation of excessive ground borne vibration or ground borne noise levels?

Reference discussion (a) above. **Less Than Significant Impact.**

c. *For a project located within the vicinity of a private airstrip or 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?*

The project is located outside the area of influence of the Travis Air Force Base Land Use Compatibility Plan (LUCP) and as seen on Figure 2B of the LUCP, the subject site located outside any of the identified noise contours. The project is not located within the vicinity of a private airstrip. **No Impact.**

2.14 POPULATION AND HOUSING

Would the project:	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
a. Induce substantial unplanned 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)?	☐	☐	☐	■
b. Displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere?	☐	☐	☐	■

Environmental Setting

The project is agricultural and commercial agri-tourism in nature and does not involve residential development or the expansion of off-site infrastructure.

Impacts Discussion

a. *Induce substantial unplanned 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)?*

The project does not substantially induce population growth or construct infrastructure that could induce population growth. **No Impact.**

b. *Displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere?*

The project does not involve the displacement of homes or people or necessitate construction of more housing elsewhere. **No Impact.**

2.15 PUBLIC SERVICES

Would the project:	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
a. Result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, the 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?	☐	☐	☐	■

Environmental Setting & Impacts Discussion

a. *Result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, the 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:*

The subject site is located within and currently served by the Cordelia Fire protection district and is within the jurisdiction of the Solano County Sheriff's Department for the unincorporated County. No schools or parks will be affected. The project will utilize an on-site domestic water well. An on-site septic system would serve the project with no impacts to municipal sanitation services. **No Impact.**

2.16 RECREATION

Would the project:	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
a. Would the project 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 that might have an adverse physical effect on the environment?	☐	☐	☐	■

Environmental Setting & Impacts Discussion

The project does not involve or affect recreational facilities or resources.

a. Would the project 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?

The project does not involve or affect recreational facilities or resources. **No Impact.**

b. Does the project include recreational facilities or require the construction or expansion of recreational facilities that might have an adverse physical effect on the environment?

The project does not involve or affect recreational facilities or resources. **No Impact.**

2.17 TRANSPORTATION

Would the project:		Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
a.	Conflict with a program, plan, ordinance or policy addressing the circulation system, including transit, roadway, bicycle, and pedestrian facilities?	☐	☐	■	☐
b.	Conflict or be inconsistent with CEQA Guidelines Section 15064.3, subdivision (b) "vehicle miles traveled"?	☐	■	☐	☐
c.	Substantially increase hazards due to a geometric design feature (e.g. sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?	☐	☐	☐	■
d.	Result in inadequate emergency access?	☐	☐	☐	■

Environmental Setting

The applicant has provided a Focused Traffic Impact Analysis prepared by GHD Inc. dated January 16, 2020. Reference Appendix E for further detailed discussion regarding setting, existing conditions, and analysis.

The primary roadway serving the project site is Suisun Valley Road:

Suisun Valley Road is oriented in a north-south direction extending north from Interstate 80, to State Route 121 in Napa County (where it becomes Wooden Valley Road). Suisun Valley Road is classified as a Collector road in the Solano County General Plan. In the project vicinity, it is a rural two-lane roadway with centerline striping and unimproved shoulder areas of various widths (no sidewalks or bicycle lanes). Suisun Valley Road along the project frontage is straight and flat, but there is a horizontal curve 1,300 feet south of the main driveway and a horizontal curve 500 feet north of the main driveway. There are two driveways accessing the property: the main driveway is located to the north of the property and a secondary driveway is located 500 feet south of the main driveway.

Speed limit signs are located on Suisun Valley Road between the two driveways. North of the signs the speed limit is 55 mph and south of the signs the speed limit is 45 mph. The horizontal curve to the south has an advisory speed of 35 mph and the curve to the north has an advisory speed of 40 mph.

Rockville Road is located south of the project site and is oriented in an east-west direction. Also called the Lincoln Highway, it extends west from Interstate 80, intersecting Suisun Valley Road, then continues to the town of Green Valley approximately three miles further west. Rockville Road is classified as a Collector road in the Solano County General Plan. It is a rural two-lane roadway with the centerline striping and unimproved shoulders. Rockville Road has a 45-mph speed limit east of Suisun Valley Road and a 35-mph speed limit west of Suisun Valley Road. However, all approaches to the Suisun Valley Road/Rockville Road intersection have a 25-mph speed limit within approximately 300 feet of the intersection.

Bicycles

There are currently no striped bicycle lanes or paths on Suisun Valley Road. However, the Solano Transportation Authority has prepared a comprehensive Countywide Bicycle Transportation Plan that has proposed 6.9 miles of Class II bicycle lanes on Suisun Valley Road extending from Mangels Boulevard to the Napa County Line. There are striped, paved shoulders on Rockville Road extending from Suisun Valley Road to Green Valley Road that serve as Class II bicycle lanes. Proposed improvements for Rockville Road consist of extending the Class II bicycle lanes from Suisun Valley Road to the Fairfield city limit.

Public Transit

There are currently no fixed route services on Suisun Valley Road or Rockville Road in the vicinity of the project site. A public bus route providing service between the Fairfield Transit Center and the Vallejo Transit Center has a bust stop at the Solano Community College located approximately one mile south of the project site.

Existing Intersection Operations

To identify existing traffic conditions, traffic counts were conducted at the project site's two driveway intersections with Suisun Valley Road and at the Suisun Valley Road/Rockville Road intersection. Weekend (Saturday) counts were conducted between 12:00-4:00 p.m. and Weekday counts were

conducted between 3:00-6:00 pm in order to identify peak background volumes on the street network. The traffic counts were conducted October 2019 during the grape harvest//crush season when seasonal work demand peaks. As a result, traffic volumes on roadways are temporarily very high, therefore the existing traffic volumes provide a conservatively high baseline for the analysis. A machine tube-count was also conducted on Suisun Valley Road for one week in order to identify the Average Daily Traffic (ADT) volumes on Suisun Valley Road fronting the project site. The existing weekday and weekend peak hour volumes are shown on Figure 2 of Appendix 6.5.

Existing weekday PM and weekend afternoon peak hour intersection traffic operations were evaluated utilizing the existing traffic volumes and existing intersection lane geometrics and controls. The Suisun Valley Road/Bally Keal driveway intersections operate at acceptable LOS during weekday and weekend peak hours. The intersections operate at LOS B or better for the stopped westbound driveway approach. Existing turn volumes at the driveways are low, approximately 1-2 peak hour trips. The Suisun Valley Road/Rockville Road intersection operates at LOS C or better during the weekday and weekend peak hours. The existing levels of service are shown below:

EXISTING PEAK HOUR INTERSECTION OPERATIONS
LEVEL OF SERVICE (LOS) AND SECONDS OF DELAY

Intersection	Control	Weekday PM Peak Hour	Saturday Afternoon Peak Hour
		Existing LOS Delay	Existing LOS Delay
Suisun Valley Rd. / North Driveway	MSSC	A 0.0"	B 12.4"
Suisun Valley Rd. / South Driveway	MSSC	B 13.3"	B 13.6"
Suisun Valley Rd. / Rockville Rd.	Signal	C 23.9"	B 18.9"

Based on Highway Capacity Manual (HCM) Operations methodology using Synchro-Simtraffic software.
MSSC = Minor street stop control. LOS reflects approach with the longest delay.

Existing Roadway Operations

Machine tube counts tabulated traffic volumes on Suisun Valley Road fronting the project site over a week long period, including two Fridays and two Saturdays. The Average Daily Traffic (ADT) volume for the entire period was 4,200 daily trips (2,100 northbound and 2,100 southbound). The highest weekday volumes occurred on Friday, with 4,600 daily trips (2,300 nb and 2,300 sb). Weekend Saturday volumes average 4,400 daily trips (2,200 nb and 2,200 sb).

Volumes on Suisun Valley Road were evaluated for LOS based on volume thresholds identified in the Solano County General Plan. Volumes on Suisun Valley Road operate at acceptable LOS A-C (< 15,000 daily trips).

Impacts Discussion

a. *Conflict with a program, plan, ordinance or policy addressing the circulation system, including transit, roadway, bicycle, and pedestrian facilities?*

Traffic operating conditions are measured by Level of Service (LOS) which applies a letter ranking to successive levels of roadway and intersection traffic performance. LOS "A" represents optimum conditions with free-flow travel and no congestion. LOS "F" represents congested conditions with long delays. When applied to unsignalized intersections with minor street stop

controls, the LOS reflects the delays experienced by the minor street approach. For all-way stop and signalized controls, the LOS reflects the average overall intersection delay. Intersection LOS have been determined using the Synchro software suite consistent with the Highway Capacity Manual methodology.

Solano County Road Improvement Standards and Land Development Requirements (adopted February 2006) establishes the following policy:

Sec. 1-4 – LEVEL OF SERVICE STANDARD: The goal of Solano County is to maintain a Level of Service C on all roads and intersections. In addition to meeting the design widths and standards contained in this document, all projects shall be designed to maintain a Level of Service C, except where the existing level of service is already below C, the project shall be designed such that there will be no decrease in the existing level of service. Levels of Service shall be calculated using the Transportation Research Board's most recent Highway Capacity Manual.

Based on the policy above, a threshold of LOS C has been established for locations operating at LOS A-C. For locations operating below LOS C, a change in the level of service from existing conditions as a result of the project is established as the threshold for significant impacts.

The traffic report determined that all surveyed intersections (Suisun Valley Road at the north driveway, Suisun Valley Road at the south driveway, and Suisun Valley Road at Rockville Road) will continue to operate at the same acceptable Level of Service C or above upon completion of the project. No intersection improvements are required by the project's traffic. **Less Than Significant Impact.**

b. *Conflict or be inconsistent with CEQA Guidelines Section 15064.3, subdivision (b) which establishes criteria for analyzing transportation impacts, in particular vehicle miles traveled?*

Vehicle Miles Traveled (VMT)

In December 2018, the California Office of Planning and Research (OPR) issued a Technical Advisory on Evaluating Transportation Impact in CEQA. The advisory document outlines screening thresholds for land use projects to identify when a project can be expected to cause a less-than-significant impact, particularly with regards to vehicle miles traveled (VMTs). The OPR advisory identifies Small Projects as those which generate or attract fewer than 110 trips per day, which generally may be assumed to cause a less than significant impact.

On March 12, 2021, the project proponent provided a Focused Vehicle Miles Traveled (VMT) summary analysis prepared by GHD Inc. for the project. (Appendix F). Daily trip generation associated with the winery and distillery activities would generate 65 weekday daily trips and 93 weekend daily trips. The following is a calculation of trip generation for the proposed winery:

TRIP GENERATION FOR PROPOSED WINERY

Typical Weekday Daily Trips:	
Visitors: up to 60 visitors / 2.6 visitors per vehicle x 2 o-w trips	= 46 trips
Employees: up to 5 full-time x 3.05 one-way trips	= 15 trips
Trucks: Production- 90,000 gallons / 1,000 x .009 x 2 o-w trips	= 2 trips
Trucks: General deliveries	= 2 trips
Weekday Daily Trips:	**= 65 trips (33 in, 32 out)**
Weekday PM Peak Hour Trips: 20% of daily (30% in, 70% out)	**= 13 trips (4 in, 9 out)**
Typical Weekend Daily Trips:	
Visitors: up to 100 visitors / 2.8 visitors per vehicle x 2 o-w trips	= 72 trips
Employees: up to 5 full-time x 3.05 one-way trips	= 15 trips
Trucks: Production- 90,000 gallons / 1,000 x .009 x 2 o-w trips	= 2 trips
Trucks: General deliveries	= 2 trips
Weekend Daily Trips:	**= 91 trips (46 in, 45 out)**
Weekend Afternoon Pk. Hr. Trips: 20% of daily (47% in, 53% out)	**= 18 trips (9 in, 9 out)**
Harvest Season Weekend Daily Trips:	
Visitors: up to 100 visitors / 2.8 visitors per vehicle x 2 o-w trips	= 72 trips
Employees: up to 5 full-time x 3.05 one-way trips	= 15 trips
Trucks: Production- 90,000 gallons / 1,000 x .009 x 2 o-w trips	= 2 trips
Trucks: General deliveries	= 2 trips
Grape On-haul: 600 tons / 20 tons per truck / 36 days x 2 trips	= 2 trips
Weekend Daily Trips:	**= 93 trips (46 in, 47 out)**
Weekend Afternoon Pk. Hr. Trips: 20% of daily (47% in, 53% out)	**= 19 trips (9 in, 10 out)**

Based on screening criteria for VMT impacts, a daily trip generation of less than 110 trips would qualify for exemption under Caltrans criteria. However, daily project trip generation associated with winery activities does not include daily trips associated with the special events component of the project.

Daily trip generation for special events was calculated for the two largest events that include 200 guests and 400 guests. As proposed, the facility would host 25 events per year with 200 guests and 10 events per year with 400 guests. However, as described the project would also host 10 events per year with 100 guests. Based on the daily trip calculations, the three special event sizes would generate the following daily trips:

# of Events	Event Size	Daily Trips/Event	Total Daily Trips/Year
10	100 guest special event	80 trips	800
25	200 guest special event	160 trips	4,000
10	400 guest special event	322 trips	3,220
45			**8,020**

Source: GHD, Focused Traffic Impact Analysis for the Proposed Winery/Distillery Project and Special Events Facility at Bally Keal Vineyards, Solano County, May 29, 2020

As shown above, the total number of daily event trips per year is 8,020 trips. Annualized over the entire year, there would be an average increase of 22 trips per day associated with special event activities. When combined with normal winery activities, daily trips associated with special event activities would exceed Caltrans (and OPR's) screening threshold limit of 110 daily trips (92 winery daily trips + 22 special event daily trips) generating a total of 114 daily trips. Impacts to traffic are considered **Less Than Significant with Mitigation.**

Mitigation Measures:

Mitigation Measure TRAFFIC – 1: Suspend winery tasting operations during special events.

Winery operations associated with the project shall be suspended during all special event activities. Specifically, all guest visitation associated with tours and tastings (60 visitors weekday and 100 visitors weekends) shall be prohibited on days when special events are being held at the facility. Daily trip generation would be reduced by 46 trips on the weekday and 72 trips on the weekend lowering the overall project daily trips below the screening threshold of 110 daily trips.

c. *Substantially increase hazards due to a geometric design feature (e.g. sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?*

The proposed facility does not include any features which create dangerous conditions. **No Impact.**

d. *Result in inadequate emergency access?*

The project does not alter the access to the site and will have sufficient ingress and egress. **No Impact.**

2.18 TRIBAL CULTURAL RESOURCES

Would the project:	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
a. Would the project cause a substantial adverse change in the significance of a tribal resource, defined in Public Resources Code section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is:	☐	☐	☐	■
i) Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code section 5020.1(k), or	☐	☐	☐	■
ii) A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code section 5024.1. In applying the criteria set forth in subdivision (c) of Public Resources Code section 5024.1, the lead agency shall	☐	☐	☐	■

consider the significance of the resource to a California Native American tribe.

Environmental Setting

The project involves construction within approximately one acre of the developed property. There are no historical structures proposed for removal.

Impacts Discussion

a. *Would the project cause a substantial adverse change in the significance of a tribal resource, defined in Public Resources Code section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code section 5020.1(k), or a resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code section 5024.1.*

No tribal or historical resources have been identified on the subject site. **No Impact.**

2.19 UTILITIES AND SERVICE SYSTEMS

Would the project:	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
a. Require or result in the construction of new or expanded water, wastewater treatment, or storm water drainage, electric power, natural gas, or telecommunications facilities, the construction or relocation of which could cause significant environmental effects?	☐	☐	■	☐
b. Have sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry, and multiple dry years?	☐	☐	■	☐
c. 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?	☐	☐	☐	■
d. Generate solid waste in excess of state or local standards, or in excess of the capacity	☐	☐	■	☐

	of local infrastructure, or otherwise impair the attainment of solid waste reduction goals?				
e.	Comply with federal, state, and local statutes and regulations related to solid waste?	☐	☐	■	☐

Environmental Setting

The proposed winery lies within the unincorporated portion of Solano County. The winery will require electrical power, potable water, agricultural water, sanitary and process wastewater treatment facilities. Water will be provided by wells and by the City of Vallejo.

Impacts Discussion

a. *Require or result in the construction of new or expanded water, wastewater treatment, or storm water drainage, electric power, natural gas, or telecommunications facilities, the construction or relocation of which could cause significant environmental effects?*

A process wastewater treatment system will be utilized for processed wastewater. New septic systems will be utilized for sanitary services at the winery and the visitor serving facilities. These facilities will require permitting from the San Francisco Regional Water Quality Control Board.

The City of Vallejo provides domestic water service to the site. The property has an existing 1.5" meter and backflow prevention device. It is not clear at this time if this service size can accommodate the additional supply requirements of a new public facility and distillery. Based on correspondence from the City of Vallejo (Appendix 6.2) it is very likely a new water service will be required to accommodate the converted facilities and their intended uses. The property is also developed with two domestic potable water wells. **Less Than Significant Impact.**

b. *Have sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry, and multiple dry years?*

Reference discussion (a) above. **Less Than Significant Impact.**

c. *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?*

The project will utilize onsite wastewater treatment. **No Impact.**

d. *Generate solid waste in excess of state or local standards, or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals?*

Solano County is served by two landfills which maintain more than a fifteen-year capacity for the county's solid waste disposal needs. The project will not substantially increase solid waste generated on-site. **Less Than Significant Impact.**

e. *Comply with federal, state, and local statutes and regulations related to solid waste?*

Reference discussion (d) above. **Less Than Significant Impact.**

2.20 WILDFIRE

Would the project:	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
a. Substantially impair an adopted emergency response plan or emergency evacuation plan?	☐	☐	☐	■
b. Due to slope, prevailing winds, and other factors, exacerbate wildfire risks, and thereby expose project occupants to pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire?	☐	☐	☐	■
c. Require the installation or maintenance of associated infrastructure (such as roads, fuel breaks, emergency water sources, power lines, or other utilities) that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment?	☐	☐	☐	■
d. Expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes?	☐	☐	☐	■

Environmental Setting

The project is sited on relatively flat terrain within the Suisun Valley. As seen on Figure HS-9 of the Solano County General Plan Wildland Fire Hazard Area map, the property is located within an area designated “low or none” for wildland fire hazard. In addition, the project is located outside the California Board of Forestry and Fire Protection’s State Responsibility Area.

Impacts Discussion

a. Substantially impair an adopted emergency response plan or emergency evacuation plan?

There are no identified adopted emergency response plans applicable to the project. **No Impact.**

b. Due to slope, prevailing winds, and other factors, exacerbate wildfire risks, and thereby expose project occupants to pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire?

There are no identified wildfire risks associated with the project. **No Impact.**

c. Require the installation or maintenance of associated infrastructure (such as roads, fuel breaks, emergency water sources, power lines, or other utilities) that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment?

Reference discussion (b) above. **No Impact.**

d. Expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes?

Reference discussion (b) above. **No Impact.**

2.21 MANDATORY FINDINGS OF SIGNIFICANCE

Would the project:	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
a. Does the project have the potential to substantially 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, substantially 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 which will cause substantial adverse effects on human beings, either directly or indirectly?	☐	☐	■	☐

Impacts Discussion

a-c. No environmental impacts attributable to this proposal have been identified that would 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 an endangered, rare or threatened species, eliminate important examples of the major periods of California history or prehistory, have impacts that are individually limited, but

cumulatively considerable, or cause substantial adverse effects on human beings. **Less Than Significant Impact.**

CHAPTER 3 – AGENCY COORDINATION AND PUBLIC INVOLVEMENT

3.1 Consultation and Coordination with Public Agencies

The Initial Study is being circulated for public comment and referred to the State Clearinghouse for coordinated review by state agencies.

3.2 Public Participation Methods

The Initial Study is also available at the Solano County Department of Resource Management and online at the Department's Planning Services Division website at:

http://www.solanocounty.com/depts/rm/documents/eir/default.asp

Interested parties may contact the planner assigned to this project at the contact points provided below:

Eric Wilberg
Planner Associate

Solano County Department of Resource Management
Planning Services Division
675 Texas Street
Fairfield, CA 94533

PHONE: (707) 784-6765
FAX: (707) 784-4805
EMAIL: ejwilberg@solanocounty.com

3.3 List of Preparers

Solano County Department of Resource Management

This Initial Study was prepared by the Solano County Department of Resource Management.

3.4 Distribution List

Federal Agencies

U.S. Army Corps of Engineers
U.S. Department of Fish and Wildlife

State Agencies

California Department of Conservation
California Department of Fish and Wildlife
California Department of Public Health, Drinking Water Field Operations Branch
California Department of Transportation (CalTrans)

Regional Agencies

Bay Area Air Quality Management District
San Francisco Regional Water Quality Board

Local Agencies

City of Vallejo
Cordelia Fire Protection District
Solano Irrigation District
Solano County Building & Safety Division
Solano County Environmental Health Division
Solano County Public Works Engineering Division

DEPARTMENT OF RESOURCE MANAGEMENT
PLANNING SERVICES APPLICATION FORM
675 Texas Street Suite 5500, Fairfield, CA 94533
(707) 784-6765 Phone
(707) 784-4805 Fax
www.solanocounty.com

Application Type: ☐ New ☐ Extension (maps) ☐ Minor Revision ☐ Map Modification

☐ Administrative Permit (AD)	☐ Minor Use Permit (MU)	☐ Sign Permit (SGN)
☐ Architectural Review (AR)	☐ Mobilehome Storage Permit (MH)	☒ Use Permit (U)
☐ General Plan Amendment (G)	☐ Mutual Agreement (MA)	☐ Variance (V)
☐ Major Subdivision (S)	☐ Performance Standards (PS)	☐ Waiver (WA)
☐ Marsh Development Permit (MD)	☐ Policy Plan Overlay (PP)	☐ Zone Text Amendment (ZT)
☐ Minor Subdivision (MS)	☐ Rezone (Z)	

FOR OFFICE USE ONLY

Application No. 19-08 MR# Hrg: AD ZA (PC) BOS Date Filed: 7-5-19 Plnr: MGY

Project Name: 4286 Suisun Valley Road

Subject Site Information

Site Address: 4286 Suisun Valley Road City: Unincorporated State: CA Zip: 94534

Assessor's Parcel Number (s): 027-030-010 Size (sq. ft/acre): 79.29 acres

Preferred Property Access by Staff: ☐ OK to access ☐ Call applicant before access ☒ Call owner before access

Contact Information

Property Owner Name: Bally Keal Vineyards LLC

Contact Name: Joe Cassidy Phone: 650-876-9400 Email: joe@centrixbuilders.com

Mailing Address: 160 South Linden Avenue City: South San Francisco State: CA Zip: 94080

Architect/Engineer/Land Surveyor Company Name: PDF

Contact Name: Paul Friend Phone: 707-864-6986 Email: paul@pdfdesigns.com

Mailing Address: 4171 Suisun Valley Road, Suite C City: Fairfield State: CA Zip: 94534

Applicant/Company Name: Ballly Keal Vineyards LLC

Contact Name: Joe Cassidy Phone: 650-876-9400 Email: joe@centrixbuilders.com

Mailing Address: 160 South Linden Avenue City: South San Francisco State: CA Zip: 94080

Other Contacts:

Name: Mark Loper Phone: 415-567-9000 Email: mloper@reubenlaw.com

Mailing Address: Reuben, Junius & Rose, LLP - One Bush Street City: San Francisco State: CA Zip: 94104

pd 7908.00
Chk #102 Rec# #5533

1 Project Narrative

Describe the type of development, proposed uses/business, phases, changes or alterations to the property or building and intent or purpose of your proposal clearly. Attach additional sheets as necessary.

The project proposes an approximately 5,000 square foot expansion of an existing building to accommodate a winery, a distillery--which is classified as an agricultural processing facility--and a tasting room. In addition, the project proposes to convert a different existing building into a special events use. This use is permitted in the A-SV-20 zoning district as a winery and agricultural processing facility with special events.

A new landscaped parking area is proposed between the three buildings, and additional stalls are proposed along the driveway leading from Suisun Valley Road to the commercial use portion of the property. In total, 103 parking spaces are proposed.

The project does not propose any changes to the existing residence.

2 General Plan, Zoning and Utilities:

General Plan, Zoning or Williamson Act Contract information is available at our offices or can be obtained by visiting www.solanocounty.com. Click on the "Interactive Map" icon, then search by address or assessor parcel number.

Current General Plan Designation: Agriculture

Current Zoning: A-SV20

Proposed General Plan Designation: No change

Proposed Zoning: No change

Current Water Provider: City of Vallejo

Current Sewage Disposal: septic system

Proposed Water Provider:

Proposed Sewage Disposal: septic system

3 Williamson Act Contract

A. Is any portion of the property under Williamson Act Contract? [X] Yes [ ] No

If yes, Contract No. 116 please provide a copy.

If yes, has a Notice of Non-Renewal been filed? [ ] Yes [X] No

If yes, please provide a copy.

B. Are there any agricultural conservation, open space or similar easements affecting the use of the project site? (such easements do not include Williamson Act contracts)

[ ] Yes [X] No *if yes, please list and provide a copy.*

To the best of owner's knowledge.

4 Additional Background Information

A. Does the proposal propose the demolition or alteration of any existing structures on the subject site?

[X] Yes [ ] No If yes, please describe in the project narrative.

B. List any permits that are required from Solano County and/or other local, state, federal agencies (i.e. building permit, Department of Fish and Game permits, etc.)

Building permit, septic permit

C. List any known previously approved projects located on the property (i.e. Use Permit, Parcel Maps, etc). Identify the project name, type of project and date of approval.

The existing facility was constructed in 2002. The current property owner is not aware if that project required a use permit, or what level of review if any took place before it was constructed. Past projects before 2002 might have been approved as well.

D. List any known professionally prepared reports for the project (i.e. biological survey, traffic study, geologic, hazardous materials, etc.)

None

E. Does the project involve Housing and Urban Development (HUD) federal funding? [ ] Yes [X] No
Is HUD funding anticipated? [ ] Yes [X] No

If yes, indicate the type of funding (i.e. CDBG grant, HOME, Investment Partnership Program, etc), funding amount, whether awarded or application pending and fiscal year of award or application request.

H. Is this part of a larger project? If yes, please explain. ☐ Yes ☒ No

5 Existing Conditions

Describe in general the project site and surrounding properties as they presently exist; including but not limited to, information on existing land uses, unique physical and topographic features, soil stability, plants and animals, cultural, historical, or scenic aspects, and any other information which would assist the Department in understanding the project's environmental setting. Clear, representative color photographs may be submitted to show the project area. Draw in property boundaries on the photographs.

A. Project site:
The existing property includes a private residence set back from Suisun Valley Road, two storage buildings, a garage, vineyards, and a secondary residence closer to the road.

B. Surrounding properties:
Mix of vineyards and wineries and other crop production. Rockville cemetary is located south of the property. The corner of Rockville Road and Suisun Valley Road is approximately 0.6 miles from the property.

C. Existing use of land:
Residential, crop production (vineyards).

D. Describe number and type of existing structures:

	Type/Number	Square Feet
Residential	Main House	23,000
Agricultural	1 agricultural storage building	24,000
Commercial	1agricultural storage	12,000
Industrial	1 garage	8,000
Other		1,600

E. Describe existing vegetation on site, including number and type of existing trees.

50 olive trees on the main driveway. 2 weeping willows behind the main house and various oak trees by Wilson Creek on the east property line.

F. If in agricultural use, describe type of use or crop (cattle, sheep, hay, vegetables, fruit, etc).

Vineyard; 63 acres of cabernet grapes.

G. Slope of property:

Flat or sloping	(0 - 6% slope)	entire property acres
Rolling	(7 - 15% slope)	_____ acres
Hilly	(16 - 24% slope)	_____ acres
Steep	(> 24% slope)	_____ acres

H. Describe existing drainage conditions on site. Indicate direction of surface flows, adjacent parcels affected.
surface drainage/natural drainage

I. Describe land uses on adjacent parcels (specify types of crops if agricultural).

North	agricultural	South	agricultural
East	agricultural	West	agricultural

J. Distance to nearest residence(s) or other adjacent use(s): .5 (ft/(mi))

K. Describe and indicate location of any power lines, water mains, pipelines or other transmission lines which are located on or adjacent to the property.
Water main is on Suisun Valley Road. Power lines are on Suisun Valley Road and on each property line to the north and south.

L. Describe number and location of natural creeks or water courses through or adjacent to the property. Specify names (if any). Indicate whether ephemeral (brief flows following rains), intermittent (seasonal flows during wet season), or perennial (year-round flows).
Wilson Creek is at the east property line. Wet only during the winter months.

M. Describe number and location of man-made drainage channels through or adjacent to the property. Specify names, if any.
There is one small channel that goes from north to south in the center of the property.

N. Identify and describe any on-site or adjacent marshes, wetlands, vernal pools, wet meadows, riparian (i.e. dependant on water bodies) vegetation, etc.:
N/A

O. Are there any unique, sensitive, rare, threatened, or endangered animals, plants, or habitats on the project site or located in close proximity which may be affected by the project?

Yes _____ No _____ Don't Know x If yes, please list:

P. Describe existing vehicle access(s) to property:
There are two entrances. The main gates from Suisun Valley Road and the agricultural gate from Suisun Valley Road.

Q. List and describe the nature and location of all existing easements serving or affecting the property, including access, utility, and other public or private easements (see deed or recent preliminary title report).

See preliminary report enclosed.

R. List and describe any freestanding and attached signage on the property. Describe the dimensions, area and height. Include the location on the site plan.

There is a sign at the property at the main gate 51" x 32" "Bally Keal Vineyards"

6 Proposed Changes to the Site

A. Topography and grading (attach copy of grading plan showing existing and proposed topography and drainage patterns.)

i. Percent of site previously graded: 5 %.

ii. Project area (area to be graded or otherwise disturbed): 5,000 (sq. ft.)/acres.

iii. Estimate amount of soil to be moved (cut and/or fill):

X Less than 50 cubic yds^3 _____ More than 50 cubic yds^3 _____ More than 1000 cubic yds^3

iv. Estimate amount of soil to be:

Imported 20 yd^3 Exported _____ yd^3 Used on site _____ yd^3.

B. Number, size and type of trees, and type and quantity of vegetation to be removed. (size of trees = diameter at 4ft. above grade)

No trees are being removed.

C. Number, type and use of existing structures to be removed, and removal schedule:

No structures are being removed.

D. Describe proposed fencing and/or visual screening (landscaping):

There will be new minor landscaping around the parking area.

E. Proposed access to project site (road name, driveway location, etc.):

Access will be from Suisun Valley Road.

F. Proposed source and method of water supply:

Existing water supply is City of Vallejo. Agricultural water supply is from Berryessa/Solano County/on-site well. There is an existing well on the property for landscaping purposes.

G. Proposed method of sewage disposal (specify agency if public sewer):

Existing septic system to be modified to meet code.

H. Provisions for solid/hazardous waste disposal (specify company or agency if applicable):
New enclosure proposed
Pick Up By: Republic Services, Fairfield

I. List hazardous materials or wastes handled on-site:
N/A

J. Duration of construction and/or anticipated phasing:
6 months

K. Will the proposed use be affected by or sensitive to existing noise in the vicinity? If so, describe source (e.g. freeway, industrial) and distance to noise source.

7 Proposed Site Utilization

A. **RESIDENTIAL PROJECTS** N/A

1. Number of structures: Single Family: _____ Multi-family: _____ Accessory: _____
   If multi-family, number of units: _____ Maximum height: _____
2. Signage: Freestanding: _____ Dimension(s): _____ Area: _____ (sq.ft)
   Attached/Wall: _____ Dimensions(s): _____ Area: _____ (sq.ft)

B. **NON-RESIDENTIAL PROJECTS** (Commercial, Industrial, Agricultural, Other)

1. Lot coverage:
   Building coverage: 5,000 (sq.ft) Surfaced area: _____ (sq.ft)
   Landscaped or open space: _____ (sq.ft)
2. Total floor area: _____ (sq.ft)
3. Number of stories: _____ Maximum height: L 35' (ft.)
4. Proposed hours of operation:
   Days: 7
   From: 9 a.m./p.m to 10 a.m./(p.m)

Year round: [X] Yes [ ] No Months of operation: from _____ through _____

5. Proposed construction schedule:

   Daily construction schedule: from 7 (a.m.)/p.m. to 5 a.m./(p.m.)

   Days of construction: Monday through Saturday

6. Will this project be constructed in phases? Describe:

   No

7. Maximum number of people using facilities:

   At any one time: 10 Throughout day: 10

8. Total number of employees: 10

   Expected maximum number of employees on site: 10

   During a shift: 10 During day: 10

9. Number of parking spaces proposed: 103

10. Maximum number of vehicles expected to arrive at site:

    At any one time: 5 day: 5

11. Radius of service area: 10 miles

12. Type of loading/unloading facilities:

    Inside the vineyard. 1000' feet back from the street.

13. Type of exterior lighting proposed:

    Rods, poles

14. Describe all anticipated noise-generating operations, vehicles or equipment on-site.

    skill saws, tractor, forklift

15. Describe all proposed uses which may emit odors detectable on or off-site.

    N/A

16. Describe all proposed freestanding and wall signage. Include the dimensions, area and height.

    New main sign at the agricultural gate will be "Bally Keal Vineyards. 20" Long, 4" Wide

8 Environmental Checklist

Indicate the following items applicable to the project or its effects. Discuss in Section 9 all items checked "Yes" or "Maybe". ***Attach additional sheets as necessary.***

	YES	MAYBE	NO
A. Change in existing natural features including any bays, tidelands, lakes, streams, beaches, natural landforms or vegetation.	☐	☐	☒
B. Change in scenic views or vistas from existing residential areas, public lands or roads.	☐	☐	☒
C. Change in scale, pattern or character of general area of project.	☐	☒	☐
D. Increased amounts of solid waste or litter.	☐	☒	☐
E. Dust, ash, smoke, fumes or odors on site or in vicinity.	☐	☐	☒
F. Change in ground water quality or quantity.	☐	☐	☒
G. Alteration of existing drainage patterns, or change in surface water quantity or quality.	☐	☐	☒
H. Change in existing noise or vibration levels.	☒	☐	☐
I. Construction on filled land or construction or grading on slopes of 25% or more.	☐	☐	☒
J. Storage, use or disposal of materials potentially hazardous to man or wildlife, including gasoline and diesel fuel. (See Environmental Health Division for assistance or information).	☐	☐	☒
K. Increase in demand for public services (police, fire, water, sewer, etc.)	☐	☒	☐
L. Increase in fossil fuel consumption (electricity, natural gas, oil, etc.).	☐	☒	☐
M. Change in use of or access to an existing recreational area or navigable stream.	☐	☐	☒
N. Change in traffic or vehicular noise on road system in immediate vicinity.	☐	☒	☐
O. Increased hazards for vehicles, bicycles or pedestrians.	☐	☒	☐
P. Removal of agricultural or grazing lands from production.	☒	☐	☐
Q. Relocation of people.	☐	☐	☒

9 Additional Information by Applicant

In order to make this application COMPLETE, please submit any additional data, information or special study reports that may be necessary to determine whether the project may have significant effect on the environment or to evaluate any adverse impacts, and to determine how they may be mitigated. Add additional pages as necessary.

10 Information Verification - Signed by Owner and Applicant

Owner and Applicant must sign below certifying that all information is to the best of his/her knowledge true and correct.

If the applicant is not the owner of record of all property included in this application, the signature given below is certification that the owners of record have knowledge of and consent to the filing of this application and supporting information. Additionally, the undersigned does hereby authorize representatives of the County to enter upon the above mentioned property for inspection purposes. **This certification acknowledges that if the project exceeds the number of hours implicit in the application fee, applicants are subject to the hourly billing rate of staff time. You will be notified if the project is approaching this threshold.**

I hereby certify that the statements furnished above and in the attached exhibits present the data and information required for this initial evaluation to the best of my ability, and that the facts, statements, and information presented are true and correct to the best of my knowledge and belief.

Owner signature: Joe Cassidy Date: 6/19/19

PRINTED NAME: Joe Cassidy

Applicant signature: Joe Cassidy Date: 6/19/19

PRINTED NAME: Joe Cassidy

For Office Use Only

Planning Permit Fee(s)

UR 19 08	$ 6720
____-____-____	$
____-____-____	$
____-____-____	$

Environmental Review Fees

Initial Study	$ 1113
Archaeological Study (Sonoma State NWIC)	$ 75
Negative Declaration	$
CA Fish and Games (ND or EIR)	$
Initiate EIR	$
Mitigation Monitoring Plan	$

Total Fees Paid $ 7908 Cash ☐ Check ☐ Charge/Debit ☐ Receipt No.: 5533 DATE: 7/15/19

Staff verify: Zoning: _____ GP Land Use & Consistency: _____

Comments: _____ Staff/Date: _____

9 Additional Information by Applicant

In order to make this application COMPLETE, please submit any additional data, information or special study reports that may be necessary to determine whether the project may have significant effect on the environment or to evaluate any adverse impacts, and to determine how they may be mitigated. Add additional pages as necessary.

10 Information Verification - Signed by Owner and Applicant

Owner and Applicant must sign below certifying that all information is to the best of his/her knowledge true and correct.

If the applicant is not the owner of record of all property included in this application, the signature given below is certification that the owners of record have knowledge of and consent to the filing of this application and supporting information. Additionally, the undersigned does hereby authorize representatives of the County to enter upon the above mentioned property for inspection purposes. **This certification acknowledges that if the project exceeds the number of hours implicit in the application fee, applicants are subject to the hourly billing rate of staff time. You will be notified if the project is approaching this threshold.**

I hereby certify that the statements furnished above and in the attached exhibits present the data and information required for this initial evaluation to the best of my ability, and that the facts, statements, and information presented are true and correct to the best of my knowledge and belief.

Owner signature: Joe Cassidy Date: 6/19/19

PRINTED NAME: Joe Cassidy

Applicant signature: Joe Cassidy Date: 6/19/19

PRINTED NAME: Joe Cassidy

For Office Use Only

Planning Permit Fee(s)

UP-19-08	$ 6720
___-___-___	$
___-___-___	$
___-___-___	$

Environmental Review Fees

Initial Study	$ 1113
Archaeological Study (Sonoma State NWIC)	$ 75
Negative Declaration	$
CA Fish and Games (ND or EIR)	$
Initiate EIR	$
Mitigation Monitoring Plan	$

Total Fees Paid $ 7908 Cash ☐ Check ☐ Charge/Debit ☐ Receipt No.: 5933 DATE: 7/15/19

Staff verify: Zoning: _____ GP Land Use & Consistency: _____

Comments: _____ Staff/Date: _____

City of VALLEJO California

Water Department · 202 Fleming Hill Road · Vallejo · CA · 94589 · 707.648.4307

Development Review Comments

August 12, 2019

Karen Avery, Planner
Solano County Department of Resource Management
1000 Webster Street, 2nd Floor
Fairfield, CA 94533

Re: BALLY KEAL VINEYARDS
Permit #: U-19-08
Address: 4386 Suisun Valley Rd.
APN: 027-030-010

Karen Avery:

Thank you for providing the City of Vallejo with the proposed minor use permit plans for review and comment. Based on these preliminary plans, Water Department staff is happy to provide the following courtesy comments; no input or review has been provided by other City departments.

Site Utility Plan. A Site Utility plan was not provided that identifies the existing and proposed water supply lines for the buildings and where the water is sourced from. The applicant shall provide the Water Department with a Site Utility plan to identify the layout of existing and proposed water supply lines. Please include the existing and proposed locations of water meters, backflow prevention devices and hydrants on the next submittal. For all water supply services at this location, backflow prevention devices will be required.

Water Supply. The proposed property has an existing 1.5" meter and backflow prevention device. It is not clear at this time if this service size can accommodate the additional supply requirements of a new public facility and distillery. It is very likely a new water service will be required to accommodate the converted facilities and their intended uses. In order to accurately assess if the water supply needs of the site are being met the applicant will need to provide the City of Vallejo Water Department with a fixture count that adheres to the requirements of the California Plumbing Code.

Fire Services. It appears two separate sprinkler systems will be required for the two buildings. It is acceptable to the Water Department if the existing private 8-inch fire hydrant supply line is utilized for the sprinkler systems.

Fees. The existing water service is for residential purposes only. If the existing water service is converted to a commercial use commercial use fees will apply.

Conditions of Approval Items:

The following specific conditions of approval are required for the next phase of the project. Standard conditions of approval are attached. Please review the standard conditions for all conditions that may apply to this project.

- ☐ For all services, please provide an estimated Water Fixture Count for the project that adheres to the requirements of the California Plumbing Code.
- ☐ For all water service, please update plans to identify the locations of all the proposed supply lines, water meters and backflow prevention devices.

The City's Water Department looks forward to working with the County and the developer, and any subsequent review will require the payment of a nominal fee to cover staff time.

Please call me if you have questions or would like to meet to discuss this in person.

Best regards,

Melissa Cansdale, Associate Engineer
Melissa.cansdale@cityofvallejo.net
(707) 553-7223

Attachment

Standard Conditions of Approval – Water Department

A. **CODE REQUIREMENTS. All code requirements as stated in Title 11 of the Vallejo Municipal Code (VMC) and Vallejo Standard Specifications and Standard Drawings adopted in 2011 (VSSSD) that apply to this project shall be conformed to. The project is being made aware of codes that require extra attention by the following items.**

1. **WATER SYSTEM PLANS (VSSSD Section 4.1).** All water system improvements shall be consistent with the latest Vallejo Water System Master Plan, prepared by Kennedy/Jenks Engineers. Prior to Improvement plan approval and building permit issuance, water system improvement plans shall be submitted to the **Water Department** for review and approval, and shall contain at least:
    a. Location and size of fire sprinkler service connection(s).
    b. Location and size of existing and proposed domestic service connection(s).
    c. Location and size of irrigation service connection(s), if any.
    d. Location of fire hydrants.
    e. Location of structures with respect to existing public water system improvements, such as mains, meters, etc.
    f. Location and size of any new water mains.
    g. Location and size of backflow prevention devices (required on water service connections to irrigation systems, certain commercial water users, and to commercial fire sprinkler systems, per City Ordinance 922 N.C. (2d).

2. **FIRE FLOW REQUIREMENTS (VSSSD Section 4.1).** Fire flow requirements of the Fire department shall be complied with. Fire flow at no less than 25 psig residual pressure shall be available within 1,000 feet of any structure. One half of the fire flow shall be available within 300 feet of any structure.
    a. For single family residential units, the fire flow is 1,500 gpm.
    b. For other developments, see the Vallejo Water System Master Plan, 2015, prepared by Kennedy Jenks.
3. **HYDRAULIC CALCULATIONS (VSSSD Section 4.1).** Prior to Improvement Plan and building permit issuance, hydraulic calculations shall be submitted to the **Water Director** demonstrating that the fire flow requirements are complied with.
4. **FIRE PROTECTION SYSTEMS (VSSSD Section 4.1).** Fire hydrant placement and fire sprinkler system installation, if any, shall meet the requirements of the Fire Department. For combined water and fire services, the requirements of both the Fire Department and the Vallejo Water System Master Plan, with latest revisions, shall be satisfied.
5. **WATER EASEMENTS (VSSSD Section 4.1).** Easements shall be granted for all water system improvements installed outside the public right-of-way in the City's Standard Form for Grant of Water Line Easement with the following widths:
    a. 15 ft. wide (minimum) for water mains.
    b. 10 ft. wide (minimum) for fire hydrants, water meters, backflow preventers, double detector check valves, etc.
    c. Other facilities will be reviewed by the Water Department.
6. **WATER METERS (VMC 11.04.110 and 11.16.090).** Each parcel shall be metered separately and shall have a separate fire sprinkler service connection.

7. **WATER SERVICE BONDS AND FEES (VMC Sections 11.16, 11.18, 11.20 and 11.24).** Water service shall be provided by the City of Vallejo following completion of the required water system improvements and payment of applicable fees. Performance and payment bonds shall be provided to the City of Vallejo prior to construction of water system improvements. Fees include those fees specified in the Vallejo Municipal Code including connection and elevated storage fees, etc., and fees for tapping, tie-ins, inspections, disinfection, construction water, and other services provided by the City with respect to the water system improvements. The Water Department may be contacted for a description of applicable fees. These fees have to be paid prior to issuance of the building permit.

B. **CONDITIONS OF APPROVAL**
   1. Apply and pay for Fire Flow Test with the Water Department in order to determine operation of sprinkler system and final service size.
   2. Provide water meter and service sizing calculations per most recent California Plumbing Code, include a water fixture count table.
   3. As of January 1, 2018, all units in multi-family, commercial, or combination thereof, buildings shall be individually metered (if existing plumbing allows or is re-configured) by the City, additional meters at the owner/applicant's expense; or, master metered by the City, and sub-metered by the property owner, with approved/certified meters. Per California Senate Bill 7 (SB7).

C. **WATER SYSTEM INSTALLATION**. Prior to occupancy or final building inspection, install water system improvements as required. Backflow device/s where required shall be installed in areas hidden from public view and/or shall be mitigated by landscaping.
   a. ESTIMATE OF FEES: Until Building Plans, Water Meter Data Card and Fire Flow Test results are submitted.

Technical Memorandum

January 11, 2021

To:	Mr. Joe Cassidy	Ref. No.:	11204665(0201)
From:	Joslyn Curtis, Botanist	Tel:	916 865-5302
	Elizabeth Meisman, Wildlife Biologist	Tel:	707-267-2217
CC:	Genevieve Rozhon, Wildlife Biologist	Tel:	707-267-2298
	Ken Mierzwa, Senior Biologist	Tel:	707-443-8326
	Peter Galloway; Senior Transportation Planner	Tel:	925-262-1903

Subject: **Bally Keal Vineyards – Biological Reconnaissance Site Visit to Support County Land Use Permit**

1. Introduction

Joe Cassidy, Bally Keal Vineyards owner and operator, proposes to complete access, parking, and structural improvements in support of expanded event capacity at the Bally Keal Vineyards (hereafter "Project"). The Project is located at 4286 Suisun Valley Road in Fairfield, California. Project activities include repaving of the south driveway, conversion of existing storage building into a special events facility, addition of a new tasting room to an existing building, removal of approximately ¼ acre of grapes for a new parking lot, removal of 5,000 SF of grapes for the new tasting room foundation, and landscaping for an outdoor event area. Special status species and resources are the primary focus of this evaluation. Common species or resources without special protections are not considered. The purpose of this biological reconnaissance technical memo is to document the results of a January 7, 2021 site visit and provide information to support the Project's County Land Use Permit.

2. Survey Methods

A reconnaissance site visit was conducted by Joslyn Curtis, GHD Botanist (hereafter surveyor), on January 7, 2021 from 0800 to 1130. Weather began as foggy, about 50 degrees Fahrenheit, with no winds (Beaufort scale 0). By 0910 the fog had cleared, and the survey concluded with clear to partly cloudy skies with little to no wind (Beaufort scale 0-1).

The survey included the lawn area behind the existing residence, new proposed patio area behind the existing event center building, new proposed parking lot area, area west of the distillery building where the

current septic system is located, and along the proposed widened access road. The surveyor was given an overview of the grounds, before beginning concerted surveying of all areas proposed for development.

The survey methods were intended to identify potential jurisdictional wetlands, sensitive natural communities (SNCs), and special status plant or wildlife habitat. Where the habitat allowed the surveyor to walk without risk of damaging nests or dens and surrounding vegetation, the survey included a physical search of the area. This included inspecting the ground, shrubs, holes, and trees for the presence of any wildlife species. Additionally, the bark of vegetation and the ground layer under vegetation were inspected for evidence of wildlife species, such as feathers, pellets, whitewash, scat, tracks, etc. Where the habitat was dense or otherwise impenetrable or inaccessible, observations were made from fixed locations. This reconnaissance-level site visit was conducted to identify general special status resources and habitat within the Project site. No protocol-level surveys for wetlands, SNCs, or special status plants and wildlife were conducted at this time.

3. Results

3.1 Summary of General Biological Resources

The Project site is composed of vineyards, existing buildings, landscaping, paved/gravel surfaces, and some graded areas where grapevines have been removed. Suisun Creek forms the eastern property boundary, and is located 500 to1,000 feet east of the proposed activities. Putah South Canal is located about 800 feet west of the property boundary. Neither of these water bodies would be impacted by proposed Project activities.

There were two, large, mature weeping willows (*Salix babylonica*) in the lawn area behind the existing residence and a few immature yew pines (*Podocarpus macrophyllus*) and olive trees (*Olea europaea)* on the north side of the existing distillery building. Overall, across the Project site there was little natural habitat structure. The understory of the vineyard consisted of non-native, annual plants. No high-quality habitat or any habitat for special status species was observed (full species lists observed on-site is provided in **Section 6, Tables 1 and 2**). Several representative photographs are included in **Section 7** to document the site condition at the time of the visit.

3.1.1 Wetlands and Waters

No potentially jurisdictional wetlands or waters of the U.S. or State were observed in the Project area or in areas to be impacted by proposed project activities.

3.1.2 Sensitive Natural Communities (SNCs)

No SNCs were observed in the Project area or in areas to be impacted by proposed Project activities.

3.1.3 Special Status Plants

No special status plants species were observed on-site. A list of all plant species detected during the reconnaissance-level site visit are presented in **Section 6, Table 1.** However, the site visit occurred during the winter outside of the typical blooming period for plants.

3.1.4 Special Status Wildlife

No special status wildlife species were observed on-site. A list of all bird species detected during the site visit is presented in **Section 6, Table 2**. As many neotropical avian migrants do not arrive until later in the spring, **Table 2** is not a comprehensive list of all species that could occur throughout the breeding season (in addition, the survey was not protocol-level). No other wildlife species were observed.

4. Discussion

Several nest structures assumed to belong to passerine songbirds were observed during the January 7, 2021 site visit (see **Photo 4 in Section 7**). Additionally, several avian species were observed on-site during the site visit that are protected by the federal Migratory Bird Treaty Act (MBTA), California Fish and Game Code (FGC), and California Migratory Bird Protection Act (MMPA) (see **Section 6, Table 2**). Trees on-site and immediately adjacent to the Project site may provide suitable nesting habitat for migratory bird species.

5. Conclusion

Based on occurrence records, habitat availability, and the reconnaissance-level site visit, no special status plant or wildlife species, or SNCs are expected to occur at the Project site, with the exception of potential seasonal nesting by protected migratory birds. No potentially jurisdictional wetlands or waters were observed on-site.

6. Tables

Table 1 Plant Species Detected On-site

Common Name	Scientific Name	Nativity	USACE Wetland Status	Special Status
Foxtail Fern	*Asparagus densiflorus meyersii*	non-native	UPL	None
Bishop's weed	*Ammi majus*	non-native	UPL	None
Japanese laurel	*Aucuba japonica*	non-native	UPL	None
Beet	*Beta vulgaris*	non-native	UPL	None
Black mustard	*Brassica nigra*	invasive non-native	UPL	None
Pot marigold	*Calendula officinalis*	non-native	UPL	None
Field bindweed	*Convolvulus arvensis*	invasive non-native	UPL	None
Canada horseweed	*Erigeron canadensis*	native	FACU	None
Coastal heron's bill	*Erodium cicutarium*	invasive non-native	UPL	None
Whitestem filaree	*Erodium moschatum*	invasive non-native	UPL	None
Bristly ox-tongue	*Helminthotheca echioides*	invasive non-native	FAC	None
Foxtail barley	*Hordeum murinum*	invasive non-native	FACU	None
Fluellin	*Kickxia spuria*	non-native	UPL	None
Prickly lettuce	*Lactuca serriola*	invasive non-native	FACU	None
Lily turf	*Liriope muscari*	non-native	UPL	None
Dwarf mallow	*Malva neglecta*	non-native	UPL	None
California burclover	*Medicago polymorpha*	invasive non-native	FACU	None
Olive	*Olea europaea*	invasive non-native	UPL	None
Bermuda buttercup	*Oxalis pes-caprae*	invasive non-native	UPL	None
Annual blue grass	*Poa annua*	non-native	FAC	None
Yew pine	*Podocarpus macrophyllus*	non-native	UPL	None
Curly dock	*Rumex crispus*	invasive non-native	FAC	None
Weeping willow	*Salix babylonica*	non-native	FAC	None
Common groundsel	*Senecio vulgaris*	non-native	FACU	None
Spiny sowthistle	*Sonchus asper*	invasive non-native	FAC	None
Chickweed	*Stellaria media*	non-native	FACU	None
Red seeded dandelion	*Taraxacum officinale*	invasive non-native	FACU	None
European wine grape	*Vitis vinifera*	non-native	UPL	None

Key:
FAC: facultative plant
FACU: facultative upland plant
UPL: upland plant

Table 2 Avian Species Detected On-site

Common Name	Scientific Name	Protected/Special Status
Mourning Dove	*Zenaida macroura*	MBTA/FGC/MBPA
Red-tailed Hawk	*Buteo jamaicensis*	MBTA/FGC/MBPA
American Kestrel	*Falco sparverius*	MBTA/FGC/MBPA
American Crow	*Corvus brachyrhynchos*	MBTA/FGC/MBPA
Common Raven	*Corvus corax*	MBTA/FGC/MBPA
Black Phoebe	*Sayornis nigricans*	MBTA/FGC/MBPA
House Wren	*Troglodytes aedon*	MBTA/FGC/MBPA
Western Bluebird	*Sialia mexicana*	MBTA/FGC/MBPA
European Starling	*Sturnus vulgaris*	None; non-native
House Finch	*Haemorhous mexicanus*	MBTA/FGC/MBPA
White-crowned Sparrow	*Zonotrichia leucophrys*	MBTA/FGC/MBPA
Audubon's Warbler	*Setophaga coronata auduboni*	MBTA/FGC/MBPA

Key:
MBTA: federal Migratory Bird Treaty Act
FGC: California Fish and Game Code
MBPA: California Migratory Bird Protection Act

7. Site Visit Photographs

Photo 1 - View facing east, from southeastern corner of Project site, on west side of distillery.

Photo 2 - View facing north, from southeastern corner of Project site, on west side of distillery.

Site Visit Photographs

Photo 3 - View facing southeast, looking at several trees along north wall of distillery.

Photo 4 - View of some small passerine nests in one of the trees along distillery's north wall.

Site Visit Photographs

Photo 5 - View facing east, looking at road grading on widened access road.

Photo 6 - View facing west, looking at road grading on widened access road.

Photo 7 - View facing east, looking up access road from gate at main road.

Photo 8 - View facing east, looking from southwest corner at area for proposed parking lot.

Site Visit Photographs

Photo 9 - View facing west, looking from southeast corner at area for proposed parking lot.

Photo 10 - View facing north, looking from southeast corner at area for proposed parking lot.

Site Visit Photographs

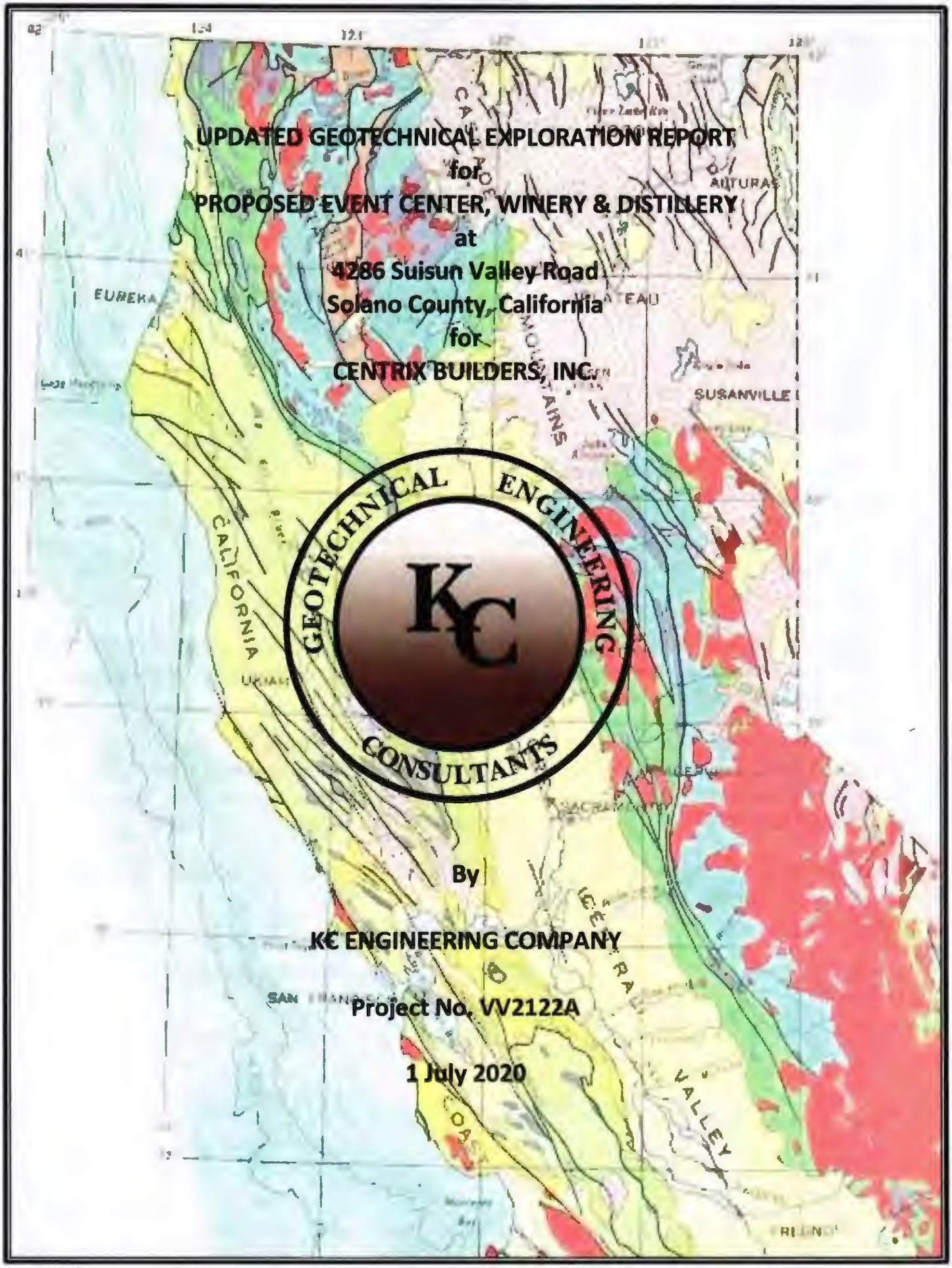
Photo 11 - View facing west, looking from northeast corner at area for proposed parking lot.

Photo 12 - View facing north, looking from northwest corner at area for proposed parking lot, behind existing event center.

Site Visit Photographs

Photo 13 - View facing north, looking across lawn behind the existing residence.

Photo 14 - View facing west, looking at owl box behind existing residence.



UPDATED GEOTECHNICAL EXPLORATION REPORT
for
PROPOSED EVENT CENTER, WINERY & DISTILLERY
at
4286 Suisun Valley Road
Solano County, California
for
CENTRIX BUILDERS, INC.

GEOTECHNICAL ENGINEERING CONSULTANTS

KC

By

KC ENGINEERING COMPANY

Project No. VV2122A

1 July 2020

865 Cotting Lane, Suite A
Vacaville, California 95688
(707) 447-4025, fax 447-4143

8798 Airport Road
Redding, California 96002
(530) 222-0832, fax 222-1611

KC ENGINEERING COMPANY
A SUBSIDIARY OF MATERIALS TESTING, INC.
www.mti-kcgeotech.com

Project No. VV2122A
1 July 2020

Mr. Joe Cassidy
Centrix Builders, Inc.
160 S. Linden Avenue, Suite 100
South San Francisco, CA 94080

Subject: Proposed Event Center, Winery & Distillery
4286 Suisun Valley Road
Solano County, California
UPDATED GEOTECHNICAL EXPLORATION REPORT

Dear Mr. Cassidy:

At your request, **KC ENGINEERING COMPANY** has explored the geotechnical conditions of the surface and subsurface soils of the proposed special event center, winery and distillery project to be constructed at the subject site.

The accompanying report presents our conclusions and recommendations based on our exploration. Our findings indicate that the proposed event center, winery and distillery project is geotechnically feasible for construction on the subject site provided the recommendations of this report are carefully followed and are incorporated into the project plans and specifications.

Should you have any questions relating to the contents of this report or should you require additional information, please contact our office at your convenience.

REGISTERED PROFESSIONAL ENGINEER
DAVID V. CYMANSKI
GE 2585
EXP. 6-30-22
GEOTECHNICAL
STATE OF CALIFORNIA

Respectfully Submitted,
KC ENGINEERING COMPANY

David V. Cymanski, G.E.
Principal Engineer

Copies: 3 mail, 1 email to Client & PDF Designs

TABLE OF CONTENTS

Page No.

UPDATED GEOTECHNICAL EXPLORATION

Purpose and Scope

The purpose of the geotechnical exploration for the proposed special events center, winery and distillery project was to determine the surface and subsurface soil conditions at the subject site. It is noted that we previously investigated this site in 2008 for the large structure on the south. The data from that report was reviewed and utilized herein. Based on the results of our prior and recent exploration, updated geotechnical criteria and recommendations were established for grading of the site, design of foundations, slabs-on-grade, pavement sections and the construction of other related facilities on the property.

In accordance with your authorization, our exploration services included the following tasks:

a. A review of available geotechnical and geologic literature concerning the site and vicinity;
b. Site reconnaissance by the Geotechnical Engineer to observe and map surface conditions;
c. Drilling of a total of three exploratory borings, excavating one test pit and sampling of the subsurface soils;
d. Laboratory testing of the samples obtained to determine their classification and engineering characteristics;
e. Analysis of the data and formulation of conclusions and recommendations; and
f. Preparation of this written report.

Site Location and Description

The subject site is located at 4286 Suisun Valley Road in Solano County, California as shown on Figure 1, "Aerial Vicinity Map" included in the Appendix of this report. The vineyard property is flat and contains a custom residence, a guest house, a detached garage/shop building, and a former farm implement metal building.

The above description is based on a reconnaissance of the site by the Geotechnical Engineer, a review of a Partial Site Plan by PDF Designs, dated April 2019, and a review of a Google Earth image dated 9/1/18. The Google Earth image was used as the basis for our "Aerial Vicinity Map" included as Figure 1, and the PDF Site Plan was used as our "Site Plan" included as Figure 2 in the Appendix.

Proposed Construction

The proposed construction is planned to consist of tenant improvements and remodeling of the two existing shop/garage and farm buildings and construction of a new parking lot and driveways as shown on Figure 2, "Site Plan". The existing central-eastern building is proposed to be the new event center. The southeastern metal building is planned to have a building addition on the eastern side and will become the new winery, distillery and tasting room. Additional site improvements are planned to consist of underground utilities, concrete and asphalt pavements, and landscaping. Earthwork is expected to consist of processing and compacting the areas for the new addition, parking stalls and driveway areas.

Field Exploration

The field exploration was performed in March 2008 and included a reconnaissance of the site and the drilling of three exploratory test borings at the approximate locations shown on Figure 2, "Site Plan". We performed a supplemental reconnaissance and exploration in June of 2020 to observe current conditions and to obtain additional surface samples at the test pit location.

The borings were drilled to a maximum depth of 40 feet below the existing ground surface. The drilling was performed with a Mobile B-24 drill rig using power-driven, four-inch diameter solid flight augers. Visual classifications were made from auger cuttings and the samples in the field. As the drilling proceeded, relatively disturbed tube samples were obtained by driving a 3-inch O.D., California split-tube sampler, containing thin brass liners, into the boring bottom in accordance with ASTM D3550. The samplers were driven into the in-situ soils at various depths under the impact of a 140-pound hammer having a free fall of 30 inches. The number of blows required to advance the sampler 12 inches into the soil, after seating the sampler 6 inches, were adjusted to the standard penetration resistance (N-Value). The raw blow counts obtained using the California sampler were corrected to equivalent N-Values using Burmister's (1948) energy and diameter correction formula. When the sampler was withdrawn from the boring bottom, the samples were removed, examined for identification purposes, labeled and sealed to preserve the in-situ moisture content, and transported to our laboratory for testing.

Classifications made in the field were verified in the laboratory after further examination and testing. The stratification of the soils, descriptions, location of disturbed soil samples and standard penetration resistance are shown on the respective "Log of Test Boring" contained within the Appendix.

Laboratory Testing

The laboratory testing program was directed towards providing sufficient information for the determination of the engineering characteristics of the site soils so that the recommendations outlined in this report could be formulated. The laboratory test results are presented on the respective Boring Logs and lab data sheets in the Appendix.

Moisture content and dry density tests (ASTM D2937) were performed on representative relatively disturbed soil samples in order to determine the consistency of the soil and the moisture variation throughout the explored soil profile as well as estimate the compressibility of the underlying soils. In order to assist in the identification and classification of the subsurface soils, sieve analysis tests (ASTM D6913) and Atterberg Limits tests (ASTM D4318) were performed on selected soil samples. The Atterberg Limits test results were used to estimate the expansion potential of the near surface soils. The sieve analysis results also aided in our liquefaction analysis. The strength parameters of the foundation soils were determined from unconfined compression tests (ATSTM D2166) performed on selected relatively disturbed soil samples. Standard field penetration resistance (N-Values) also assisted in the determination of strength and bearing capacity. The standard penetration resistances are recorded on the respective "Log of Test Boring".

A representative bulk sample of the near surface soils was obtained to evaluate the presence and concentration of water soluble sulfates in accordance with ASTM C1580.

Subsurface Conditions

Based on our field exploration and laboratory testing, the surface and subsurface soil conditions are generally uniform across the site. The soil profile generally consists of reddish brown to dark brown, stiff to hard, moderately to highly expansive clay with varying amounts of sand extending to the maximum depth explored of 40 feet below the ground surface. It is noted that the upper 2 to 3 feet was relatively loose due to prior disking and/or vineyard ripping.

Groundwater was encountered at a depth of 23 feet below grade at the time of drilling in 2008. Fluctuations in the groundwater table can occur with variations in seasonal rainfall, variations in the characteristics of the subsurface deposits, and irrigation on the site and vicinity.

A more thorough description and stratification of the soils encountered along with the results of the laboratory tests are presented on the respective Boring Logs in the Appendix. The approximate locations of the borings are shown on Figure 2.

Site Geology

According to the Geologic Map of the Northeastern San Francisco Bay Region, the geologic deposits underlying the site consist of Holocene-aged alluvial fan deposits. These deposits consist of moderately to poorly sorted and moderately to poorly bedded sand, gravel, silt, and clay deposited where streams emanate from upland regions onto more gently sloping valley floors or plains. The subsurface deposits encountered during our investigation generally correlate with previous mapping.

Geo-Hazards

Seismicity & Ground Motion Analysis

The site is not located within an Alquist-Priolo Earthquake Fault Zone[1]. There are no known active faults crossing the site as mapped and/or recognized by the State of California. However, Suisun Valley is located in a seismically-active region and earthquake related ground shaking should be expected during the design life of structures constructed on the site. The California Geological Survey has defined an active fault as one that has had surface displacement in the last 11,700 years, or has experienced earthquakes in recorded history.

Based on our review of the Fault Activity Map of California[2] and the USGS National Seismic Hazard Maps-Source Parameters[3], the nearest active faults are the Cordelia, Green Valley and West Napa Faults, located approximately 0.9 miles to the west, 2.4 miles to the west and 9.1 miles to the west, respectively. Numerous other active faults in the Bay Area may also produce significant seismic shaking at the site.

The 2019 CBC specifies that the potential for liquefaction and soil strength loss should be evaluated, where applicable, for the Maximum Considered Earthquake Geometric Mean (MCE_G) peak ground acceleration with an adjustment for site class effects in accordance with American Society of Civil Engineer (ASCE 7-16)[4]. The MCE_G is peak ground acceleration is based on the geometric mean peak ground acceleration with a 2 percent probability of exceedance in 50 years. Based on ASCE 7-16, the MCE_G peak ground acceleration with adjustment for site class effects (PGA_M) was calculated to be 0.757g for the property using SEAOC/OSHPD U.S. Seismic Design Maps web-based tool with a site coefficient (F_{PGA}) of 1.2 for Site Class D.

---

[1] Parish, J.G., 2018 *Earthquake Fault Zones,* California Geological Survey, Special Publication 42, Revised 2018.
[2] Jennings, C.W. and Bryant, W.A., 2010, *Fault Activity Map of California*, California Geological Survey Geologic Data Map No. 6, scale 1:750,000
[3] U.S. Geological Survey, 2008 National Seismic Hazards Maps – Source Parameters, accessed 6/30/20, from USGS web site: https://earthquake.usgs.gov/cfusion/hazfaults_2008_search/query_main.cfm
[4] American Society of Civil Engineer (ASCE), 2016, Minimum Design Loads for Buildings and Other Structures, Standard 7-16 and Supplement 1, dated 12/12/18.

The structure at the site should be designed to withstand the anticipated ground accelerations. Based on the SEAOC/OSHPD U.S Seismic Design Maps[5] website and ASCE 7-16, the 2019 CBC earthquake design values are as follows. The US seismic design summary report is included in the Appendix.

Site Class:	D
Mapped Acceleration Parameters:	S_S = 1.592g; S_1 = 0.600g
Design Spectral Response Accelerations:	S_{DS} = 1.273g; S_{D1} = 0.680g

The provided values are based on a stiff clay soil profile or Site Class D for the upper 100 feet. In our opinion, a ground motion hazard analysis is not necessary per ASCE 7-16, Section 11.4.8, Exception 2. The seismic response coefficient Cs should be determined by Eq. (12.8-2) for values of $T \leq 1.5T_S$ and taken as equal to 1.5 times the value computed in accordance with either Eq. (12.8-3) for $T_L \geq T > 1.5T_S$ or Eq. (12.8-4) for $T > T_L$. This must be evaluated and verified by the Structural Engineer.

Fault Rupture

The site is not located within an Alquist-Priolo Earthquake Fault Zone. Based on our review of geologic maps, no known active or inactive faults cross or project toward the subject site. In addition, no evidence of active faulting was visible on the site during our site reconnaissance. Therefore, it is our opinion that there is no potential for fault-related surface rupture at the subject site.

Landsliding

The subject site and immediate vicinity is relatively flat and therefore, not subject to seismically-induced landslide hazards.

Liquefaction

Soil liquefaction is a phenomenon in which loose and saturated cohesionless soils are subject to a temporary, but essentially total loss of shear strength, due to pore pressure build-up under the reversing cyclic shear stresses associated with earthquakes. Soils typically found most susceptible to liquefaction are saturated and loose, fine to medium grained sand having a uniform particle range and less than 35% fines passing the No. 200 sieve, and a corrected standard penetration blow count $(N_1)_{60}$ less than 30. According to Special Publication 117A by the California Geological Survey, the assessment of hazards associated with potential liquefaction

[5] https://seismicmaps.org/, accessed 7/1/20

of soil deposits at a site must consider translational site instability (i.e. lateral spreading, etc.) and more localized hazards such as bearing failure and settlement. The acceptable factor of safety against liquefaction is recommended in SP117 to be 1.3 or greater.

The data used for evaluating liquefaction potential of the subsurface soils consisted of the unit weights, the soil type, the groundwater level, and the location of the site to the nearest active fault and the predicted ground surface acceleration. The subsurface soils encountered on the site are predominately cohesive with a consistency of stiff to hard. In addition, the soils below the groundwater table were found to have 96.1% fines passing the No. 200 sieve. Based on the data obtained and in view of the above noted criteria, it is our opinion that the potential for liquefaction related hazards at the site is very low.

DISCUSSIONS, CONCLUSIONS AND RECOMMENDATIONS

General

From a geotechnical point of view, the proposed event center, winery and distillery project and associated improvements are considered to be feasible for construction on the subject site provided the recommendations presented in this report are incorporated into the project plans and specifications.

All grading and foundation plans for the development must be reviewed by the Geotechnical Engineer prior to contract bidding or submittal to governmental agencies to ensure that the geotechnical recommendations contained herein are properly incorporated and utilized in design.

KC ENGINEERING CO. should be notified at least two working days prior to site clearing, grading, and/or foundation operations on the property. This will give the Soil Engineer ample time to discuss the problems that may be encountered in the field and coordinate the work with the contractor.

Field observation and testing during the grading and/or foundation operations must be provided by representatives of ***KC ENGINEERING CO.*** to enable them to form an opinion regarding the adequacy of the site preparation, the acceptability of fill materials, and the extent to which the earthwork construction and the degree of compaction comply with the specification requirements. Any work related to the grading and/or foundation operations performed without the full knowledge and under the direct observation of the Soil Engineer will render the recommendations of this report invalid.

Geotechnical Considerations

The primary geotechnical concerns for the site are the presence of near-surface relatively soft and loose soils and moderately to highly expansive nature of the clays. The soft and loose soils under the proposed improvements will need to be over-excavated, processed and compacted as recommended herein. The near surface soil is prone to heave and shrink movements with changes in moisture content and must be carefully considered in the design of grading, foundations, drainage, and landscaping. We recommend that the proposed structures be supported by a deepened and interconnected spread footing and well-reinforced thickened slab foundation system, along with an underlying structural fill pad.

Grading

Grading activities may be performed during the rainy season, however, achieving proper compaction may be difficult due to excessive moisture; and delays may occur. Grading performed during the dry months will minimize the occurrence of the above problems. When project grading plans become available for our review, supplemental grading recommendations may be required.

In the area of the proposed building addition, parking areas and new driveways, we recommend that the existing soft and loose soils be over-excavated 2 feet, followed by ripping the exposed bottom 12 inches, moisture conditioning and compacting to a minimum degree of relative compaction of 90% at least 3 percent above optimum moisture content as determined by ASTM D1557 Laboratory Test Procedure. After processing and compacting the lower 12 inches, the site may be brought to the desired finished grades by placing engineered fill in lifts of 8 inches in un-compacted thickness and compacting to a relative compaction of 90% at 3 percent over optimum in accordance with the aforementioned test procedure.

Should select import material be used for general fill, the import material should be approved by the Soil Engineer before it is brought to the site. Where select import soil is used in other areas, it should meet the following requirements:

a. Have an R-Value of not less than 15;
b. Have a Plasticity Index not higher than 12;
c. Not more than 15% passing the No. 200 sieve;
d. No rocks larger than 3 inches in maximum size;

The fill materials shall be placed in uniform lifts of not more than 8 to 12 inches in uncompacted thickness depending on size and weight of equipment used. Each layer shall be spread evenly and shall be thoroughly blade mixed during the spreading to obtain uniformity of material in each layer. Before compaction begins, the fill shall be brought to a water content that will permit proper compaction by either (a) aerating the material if it is too wet, or (b) spraying the material with water if it is too dry.

Compaction shall be by footed rollers or other types of acceptable compacting rollers. Rollers shall be of such design that they will be able to compact the fill to the specified density. Rolling shall be accomplished while the fill material is within the specified moisture content range. Rolling of each layer shall be continuous over its entire area and the roller shall make sufficient trips to ensure that the required density has been obtained. No ponding or jetting shall be permitted.

The standard test used to define maximum densities and optimum moisture content of all compaction work shall be the Laboratory Test procedure ASTM D1557 and field tests shall be expressed as a relative compaction in terms of the maximum dry density and optimum moisture content obtained in the laboratory by the foregoing standard procedure. Field density and moisture tests shall be made in each compacted layer by the Soil Engineer in accordance with ASTM D6938, respectively. When footed rollers are used for compaction, the density and moisture tests shall be taken in the compacted material below the surface disturbed by the roller. When these tests indicate that the compaction requirements for any layer of fill, or portion thereof, have not been met, the particular layer, or portion thereof, shall be reworked until the compaction requirements have been met.

Surface Drainage

A very important factor affecting the performance of structures and pavements is the proper design, implementation, and maintenance of surface drainage, as well as maintaining uniform moisture conditions around the structures. Ponded water will cause swelling and/or loss of soil strength and may also seep under structures. Should surface water be allowed to seep under the structures, differential foundation movement resulting in structural damage and/or standing water under the slab will occur. This may cause dampness to the floor which may result in mildew, staining, and/or warping of floor coverings. To minimize the potential for the above problems, dampproofing and waterproofing should be provided as required by Section 1805 of the 2019 CBC. In addition, the following surface drainage measures are recommended and must be maintained by the property owner in perpetuity:

a) Positive building pad slopes and surface drainage must be provided by the project Civil Engineer to remove all storm water from the pad and to prevent storm and/or irrigation water from ponding adjacent to the structure foundations. The finished pad grade around the structures should be compacted and sloped 5% away from the exterior foundations and as required in Section 1804.4 of the 2019 CBC and directed to catch basins or swales that discharge to a suitable outlet. Surface swales should be sloped a minimum of 2% as required by the CBC.

b) Enclosed or trapped planter areas adjacent to the structure foundations should be avoided if possible. Where enclosed planter areas are constructed, these areas must be provided with adequate measures to drain surface water (irrigation and rainfall) away from the foundation. Positive surface gradients and/or controlled drainage area inlets should be provided. Care should be taken to adequately slope surface grades away from the structure foundations and into area inlets. Drainage area inlets should be piped to a suitable discharge facility.

c) Adequate measures for storm water discharge from the roof gutter downspouts must be provided by the project Civil Engineer and maintained by the property owners at all times, such that no water is allowed to pond next to the structure. Closed pipe discharge lines should be connected to downspouts and discharged into a suitable drainage facility.

d) Site drainage should be designed by the project Civil Engineer. Civil engineering, hydraulic engineering, and surveying expertise is necessary to design proper surface drainage to assure that the flow of water is directed away from the foundations.

e) Over-irrigation of plants is a common source of water migrating beneath a structure. Consequently, the amount of irrigation should not be any more than the amount necessary to support growth of the plants. Foliage requiring little irrigation (drip system) is recommended for the areas immediately adjacent to the structures.

f) Landscape mounds or concrete flatwork should not be constructed to block or obstruct the surface drainage paths. The Landscape Architect or other landscaper should be made aware of these landscaping recommendations and should implement them as designed. The surface drainage facilities should be constructed by the contractor as designed by the Civil Engineer.

Foundations

Provided that the upper 3 feet of the building pad soils are processed and compacted as recommended in the "Grading" section, the proposed structure addition may be supported by utilizing a deepened, well-reinforced and inter-connected spread footing foundation system with a thickened slab floor. The new footings and slab should be structurally doweled to the existing foundation.

A continuous spread footing should be placed around the perimeter of the structure and be a minimum of 18 inches wide. All interior and exterior column footings should be interconnected to the perimeter with reinforced concrete tie-beams or by continuous slab floor reinforcing extending through the interior column footings. Isolated footings should not be utilized unless connected with reinforced tie-beams or through reinforced slab connections. The continuous and pad/column footings should extend to a minimum depth of 24 inches below the interior slab subgrade soil elevation. The tie beams where used should extend to a minimum depth of 18 inches below the interior soil pad grade. The recommended design allowable bearing pressure for footings is 2,000 p.s.f. due to dead plus live loads. The allowable pressure may be increased by 1/3 due to all transient loads which include wind and seismic.

All foundations must be adequately reinforced to provide structural continuity and resist the anticipated loads as determined by the project Structural Engineer. The final footing design and reinforcement should be determined by the project Structural Engineer. However, continuous footings and tie-beams are recommended to be reinforced with a minimum of four No. 6 bars, two at the top and two near the bottom of the footing. Additional reinforcement will be as required by the structural engineer and in accordance with structural building code requirements. Foundations designed in accordance with the above criteria are expected to experience a total settlement of less than ¾ of an inch with less than ½ inch of an inch in 50 feet.

To accommodate lateral building loads, the passive resistance of the foundation soil can be utilized. The passive soil pressures can be assumed to act against the front face of the footing below a depth of 1 foot below the ground surface. It is recommended that a passive pressure equivalent to that of a fluid weighing 250 p.c.f. be used. For design purposes, an allowable friction coefficient of 0.30 can be assumed at the base of the spread footings. These two modes of resistance should not be added unless the frictional component is reduced by 50 percent since the mobilization of the passive resistance requires some horizontal movement, effectively reducing the frictional resistance.

Previous testing indicates a sulfate content of 25 ppm (mg/kg). It is noted that the sulfate test results indicate low or "S0" sulfate exposure to concrete as identified in the Durability Requirements, Section 1904 of the 2016 California Building Code, and Tables 19.3.1.1 of ACI 318-14 Building Code Requirements for Structural Concrete. No cement type restriction is required, however, we do recommend that a Type II cement be utilized in concrete mixes for additional sulfate and corrosion resistance.

Slab-on-Grade Construction

Interior and exterior concrete slabs, including sidewalks, driveways, non-structural detached patios and general flatwork will likely experience some cracking due to finishing, curing methods, drying shrinkage, as well as moisture variations and related soil movements within the underlying clay soils. To reduce the potential cracking of the slabs-on-grade, the following recommendations are made:

a) All areas to receive slabs should be thoroughly wetted and soaked to seal any desiccation or shrinkage cracks prior to placing concrete. This work should be done under the observation of the Soil Engineer.

b) Slabs should be underlain by a minimum of 4 inches of Caltrans Class II Aggregate Base placed and compacted to a minimum of 90% between the finished subgrade and the slabs to serve as subbase support.

c) Interior slabs areas should be a minimum of 6 inches thick and reinforced with a minimum of No. 4 rebar spaced 18 inches center to center, each way. Exterior pedestrian flatwork and general slabs should be a minimum of 5 inches thick and reinforced with No. 3 rebar spaced at 18 inches on center. The actual slab thickness and reinforcement should be determined by the project Structural Engineer in accordance with the structural requirements and the anticipated loading conditions. The reinforcement shall be placed in the center of the slab unless otherwise designated by the design engineer. We recommend that exterior slabs be structurally rebar doweled to the perimeter foundation, especially at door openings. Doweling details should be provided by the Structural Engineer.

d) A vapor retarder membrane should be installed between the prepared building pad aggregate base and the interior slabs to minimize moisture condensation under the floor coverings and/or upward vapor transmission. The vapor barrier membrane should be a minimum 15-mil extruded polyolefin plastic that complies with ASTM E1745 Class A and have a permeance of less than 0.01 perms per ASTM E96 or ASTM F1249. It is noted that polyethylene films (visqueen) do not meet these specifications. The vapor barrier must be adequately lapped and taped/sealed at penetrations and seems in accordance with ASTM E1643 and the manufacturer's specifications. The vapor retarder must be placed continuously across the slab area.

e) Water vapor migrating to the surface of the concrete can adversely affect floor covering adhesives. Provisions should be provided in the concrete mix design to minimize moisture emissions. This should include the selection of a water-cement ratio which inhibits water permeation (0.45 max) and/or the addition of suitable admixtures to limit water transmission. We also recommend the use of Type II cement for additional corrosion resistance.

f) Slabs for driveways, and exterior flatwork should be placed structurally independent of the foundations. Driveway slab recommendations are presented in the "Pavement" section of the report. A 30-pound felt strip, expansion joint material, or other positive separator should be provided around the edge of all floating slabs to prevent bonding to the foundation. However, rebar doweling is recommended to minimize vertical movements between exterior slabs and building foundations. Doweling details should be determined by the Structural Engineer.

g) To minimize moisture infiltration under exterior slabs and to add edge rigidity, we recommend that slabs be thickened at the edges to extend below the aggregate base layer to the soil subgrade for a minimum width of 6 inches.

h) Slabs should be provided with crack control saw cut joints or tool joints to allow for expansion and contraction of the concrete. In general, contraction joints should be spaced no more than 20 times the slab thickness in each direction. The layout of the joints should be determined by the project Structural Engineer and/or Architect.

i) We recommend that appropriate provisions be provided by the Structural Engineer and Contractor to minimize slab cracking, such as curing measures and/or admixtures to minimize concrete drying-shrinkage and curling. American Concrete Institute methods and guidelines of curing, such as wet curing or membrane curing, are recommended to minimize drying shrinkage cracking.

Pavement Areas

The new driveways and parking areas may be paved with either asphalt concrete (AC) or Portland cement concrete (PCC) surfaces. Recommendations for these pavement surfaces are presented below. We emphasize that the performance of the pavement is critically dependent upon adequate and uniform compaction of the subgrade soils, as well as engineered fill and utility trench backfill within the limits of pavements. Pavements will typically have poor performance and shorter life where water is allowed to migrate into the aggregate base and subgrade soils. The main sources of water into pavement materials are landscape planters constructed within or adjacent to pavement areas. Where this is planned, it is suggested to extend the curbs into the soil subgrade at least 2 inches. The construction of all pavements should conform to the requirements set forth by the latest Standard Specifications of the Department of Transportation of the State of California (Caltrans) and/or the Solano County.

Preparation of Subgrade: After underground utilities have been placed in the areas to receive pavement and removal of excess material has been completed, the upper 12 inches of the subgrade soil shall be scarified, moisture conditioned and compacted to a minimum relative compaction of 95% at a moisture content at 3% or more above optimum in accordance with the grading recommendations specified in this report. Prior to placement of aggregate baserock, it is recommended that the subgrade be proof rolled and observed for deflection by the Soils Engineer. Should deflection and/or pumping conditions be encountered, stabilization recommendations will be provided based on field conditions.

Aggregate Base: All aggregate base material placed subsequently should also be compacted to a minimum relative compaction of 95% based on the ASTM Test Procedure D1557. Aggregate base should meet the minimum requirements of Caltrans ¾" Class 2 per Section 26 and be crushed and angular. The recommended aggregate base thicknesses for asphalt concrete pavements are noted in the table below. The minimum aggregate base thickness for Portland cement concrete PCC roadway pavements is 6 compacted inches.

Asphalt Concrete: Asphalt concrete shall conform with Section 39 of Caltrans Standard Specifications and shall be per the City Standards. Based on an R-Value of 5, and traffic indices typical for commercial developments, the recommended pavement sections for asphalt concrete surfaces are summarized in the table below. The appropriate traffic index (TI) and any minimum pavement sections should be determined by the Civil Engineer in conformance with Solano County Standards.

Traffic Condition	Traffic Index (TI)	Asphalt Concrete (inches)	Class II Aggregate Base[1] (inches)
Auto Parking Stalls	4.5	3.0 3.0	8.0 5.0**
Drive Lanes	6.0	3.0 3.0	13.5 9.0**

NOTES:
(1) Minimum R-Value = 78
(2) All layers in compacted thickness to CalTrans Standard Specifications.
** AB underlain by Tensar TX8 Geogrid

Portland Cement Concrete: Where PCC pavement areas are utilized, such as for drive isles and truck areas or at trash enclosures, the concrete should be poured on the compacted aggregate base layer described above of 6 inches. The concrete section should be designed by the project Civil or Structural Engineer per Chapter 620 of the Highway Design Manual or City Standards. We recommend a minimum of 6 inches thick PCC reinforced with a minimum of No. 4 rebar spaced at 16 inches on center, each way, underlain by 6 inches of compacted Class 2 aggregate base. Additional reinforcement may be required by the Structural Engineer. Pavement joints shall be per the HDM and City Standards.

General Construction Requirements

Utility trenches extending underneath all traffic areas must be backfilled with native or import soil materials and compacted to relative compaction of 90% to within 12 inches of the subgrade. The upper 12 inches should be compacted to 95% relative compaction in accordance with

Laboratory Test Procedure ASTM D1557. Backfilling and compaction of these trenches must also meet the requirements set forth by Solano County, Department of Public Works.

Applicable safety standards require that trenches in excess of 5 feet must be properly shored or that the walls of the trench slope back to provide safety for installation of lines. If trench wall sloping is performed, the inclination should vary with the soil type and applicable OSHA Safety Standards. The soils at the site are considered to be Type B, except where groundwater is encountered Type C should be used.

With respect to state-of-the-art construction or local requirements, utility lines are generally bedded with granular materials. These materials can convey surface or subsurface water beneath the structures. It is, therefore, recommended that all utility trenches which possess the potential to transport water be sealed with a compacted impervious cohesive soil material or lean concrete where the trench enters/exits the building perimeter. This impervious seal should extend a minimum of 2 feet away from the building perimeter.

LIMITATIONS AND UNIFORMITY OF CONDITIONS

1. It should be noted that it is the responsibility of the owner or his representative to notify ***KC ENGINEERING CO.***, in writing, a minimum of two working days before any clearing, grading, or foundation excavation operations can commence at the site.

2. The recommendations of this report are based upon the assumption that the soil conditions do not deviate from those disclosed in the borings and from a reconnaissance of the site. Should any variations or undesirable conditions be encountered during the development of the site, ***KC ENGINEERING CO.***, will provide supplemental recommendations as dictated by the field conditions.

3. This report is issued with the understanding that it is the responsibility of the owner, or his representative, to ensure that the information and recommendations contained herein are brought to the attention of the Architect and Engineer for the project and incorporated into the plans and that the necessary steps are taken to see that the Contractor and Subcontractors carry out such recommendations in the field.

4. At the present date, the findings of this report are valid for the property investigated. With the passage of time, significant changes in the conditions of a property can occur due to natural processes or works of man on this or adjacent properties. In addition, legislation or the broadening of knowledge may result in changes in applicable standards. Changes outside of our control may render this report invalid, wholly or partially. Therefore, this report should not be considered valid after a period of two (2) years without our review, nor should it be used, or is it applicable, for any properties other than those investigated.

5. Notwithstanding, all the foregoing applicable codes must be adhered to at all times.

APPENDIX

Aerial Vicinity Map

Site Plan

Log of Test Borings

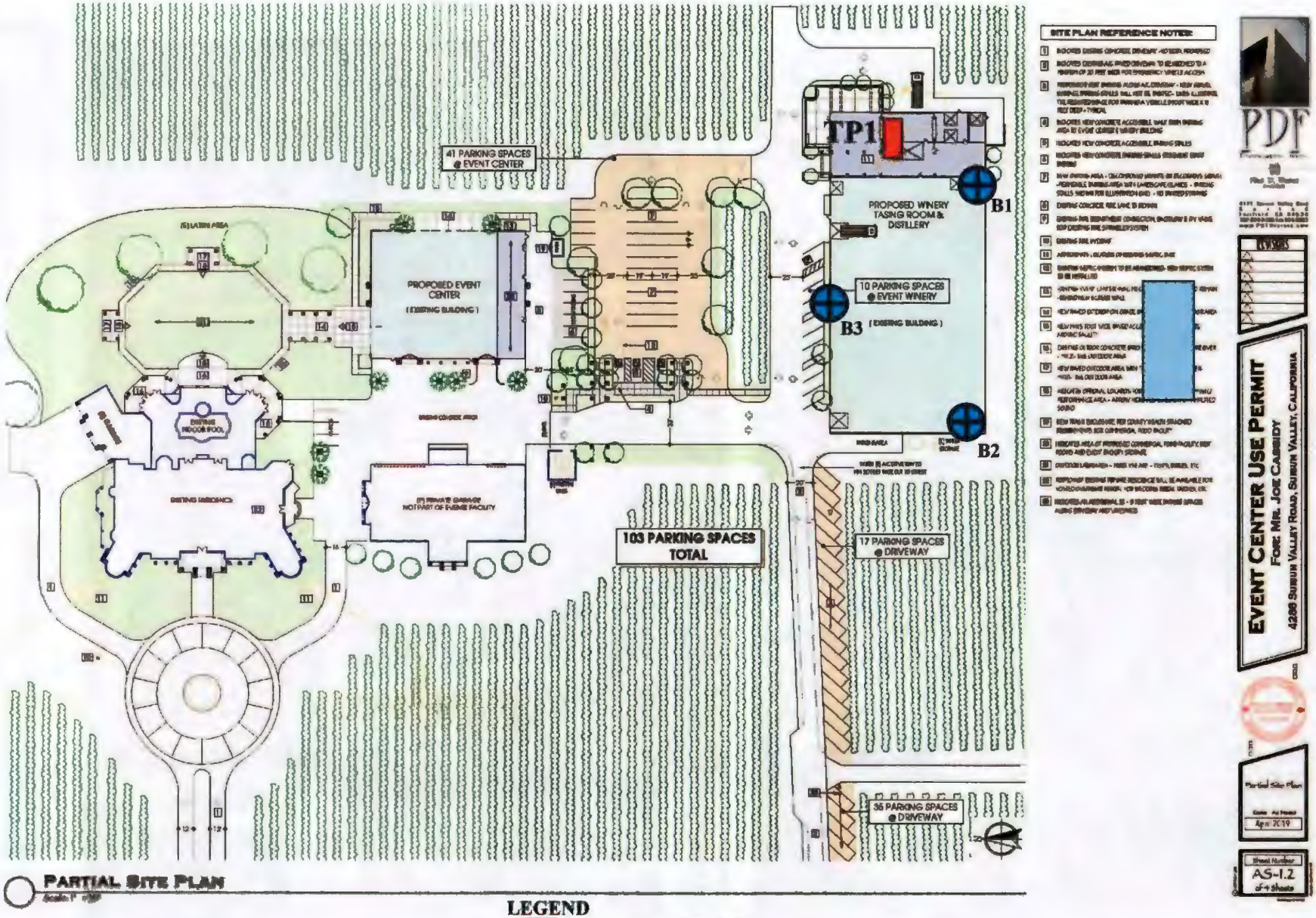
Subsurface Exploration Legend

Laboratory Test Results

US Seismic Design Report

KC ENGINEERING COMPANY
865 Cotting Lane, Suite A
Vacaville, CA 95688
707.447.4025

Project No. VV2122A
Proposed Event Center, Winery & Distillery
4286 Suisun Valley Road, Solano Co., CA
Figure 1 – AERIAL VICINITY MAP



PARTIAL SITE PLAN

LEGEND

Approximate Test Pit

Approx. Boring Location, KCE 2008

KC ENGINEERING COMPANY
865 Cotting Lane, Suite A
Vacaville, CA 95688
707-447-4025

Project No. VV2122A
Proposed Event Center, Winery & Distillery
4286 Suisun Valley Road, Solano Co., CA
Figure 2 – SITE PLAN

LOG OF TEST BORING
BORING NO.: 1

PROJECT: Proposed Farm Implement Storage Building
PROJECT NO.: VV2122
CLIENT: Premier Design
DATE: 19 March 2008
LOCATION: 4286 Suisun Valley Road, Solano County
ELEVATION:
DRILLER: Ram Geotechnical Drilling, Inc.
LOGGED BY: PGT
DRILL RIG: Track-mounted Mobile B-24
BORING DIAMETER: 4 inches
DEPTH TO WATER: INITIAL ▽ : 23 feet
FINAL ▽ : AFTER: hrs.

DEPTH	SAMPLE NO.	SAMPLER	GRAPHIC LOG	GEOTECHNICAL DESCRIPTION AND CLASSIFICATION	SOIL CLASSIFICATION	CONVERTED SPT BLOW COUNT (BLOWS/FT.)	DRY DENSITY (PCF)	MOISTURE CONTENT (PERCENT)	ADDITIONAL TESTS AND REMARKS (LL, PI, UCC, e&c, Gradation)
0				Reddish Brown CLAY w/ Fine Sand; slightly moist, very stiff	CL-CH				Disced upper 3 ft.
5	1-1					23	93.6	19.6	
				Reddish Brown CLAY with Sand; moist, stiff	CL				
10	1-2					14	-	-	%Sand=17.1 %<200=82.9
				Reddish Brown CLAY; moist, very stiff	CL				
15	1-3					22	-	-	
				Reddish Brown CLAY with Sand; moist, stiff	CL				
20	1-4					11	93.5	25.5	%Sand=23.9 %<200=76.1
				Reddish Brown CLAY; wet, stiff ▽	CL				
25	1-5					13	87.7	27.5	%Sand=3.9 %<200=96.1

This information pertains only to this boring and is not necessarily indicitive of the whole site.

KC ENGINEERING CO.

Figure 3

LOG OF TEST BORING
BORING NO.: 1

PROJECT: Proposed Farm Implement Storage Building
PROJECT NO.: VV2122
CLIENT: Premier Design
DATE: 19 March 2008
LOCATION: 4286 Suisun Valley Road, Solano County
ELEVATION:
DRILLER: Ram Geotechnical Drilling, Inc.
LOGGED BY: PGT
DRILL RIG: Track-mounted Mobile B-24
BORING DIAMETER: 4 inches
DEPTH TO WATER: INITIAL ▽ : 23 feet
FINAL ▽ : AFTER: hrs.

DEPTH	SAMPLE NO.	SAMPLER	GRAPHIC LOG	GEOTECHNICAL DESCRIPTION AND CLASSIFICATION	SOIL CLASSIFICATION	CONVERTED SPT BLOW COUNT (BLOWS/FT.)	DRY DENSITY (PCF)	MOISTURE CONTENT (PERCENT)	ADDITIONAL TESTS AND REMARKS (LL, PI, UCC, #4c, Gradation)
30				—As above; stiffer					
35	1-6			—As above; hard		67	-	-	
40				Boring terminated at 40 ft. Groundwater encountered at 23 ft.					
45									
50									

This information pertains only to this boring and is not necessarily indicitive of the whole site.

KC ENGINEERING CO.

Figure 3

LOG OF TEST BORING
BORING NO.: 2

PROJECT: Proposed Farm Implement Storage Building
PROJECT NO.: VV2122
CLIENT: Premier Design
DATE: 19 March 2008
LOCATION: 4286 Suisun Valley Road, Solano County
ELEVATION:
DRILLER: Ram Geotechnical Drilling, Inc.
LOGGED BY: PGT
DRILL RIG: Track-mounted Mobile B-24
BORING DIAMETER: 4 inches
DEPTH TO WATER: INITIAL ▽ :
FINAL ▽ :
AFTER: hrs.

DEPTH	SAMPLE NO.	SAMPLER	GRAPHIC LOG	GEOTECHNICAL DESCRIPTION AND CLASSIFICATION	SOIL CLASSIFICATION	CONVERTED SPT BLOW COUNT (BLOWS/FT.)	DRY DENSITY (PCF)	MOISTURE CONTENT (PERCENT)	ADDITIONAL TESTS AND REMARKS (LL, PI, UCC, #&c, Gradation)
0				Reddish Brown CLAY; slightly moist, very stiff	CL-CH				Disced upper 3 ft.
5	2-1					17	109.7	19.8	UCC=5470 psf
				Reddish Brown CLAY w/ Fine Sand; moist, stiff	CL				
10	2-2					13	104.7	20.0	
				Dark Brown CLAY; moist, very stiff	CL				
15	2-3					19	102.5	22.4	
				Reddish Brown Sandy CLAY; moist, stiff	CL				
20	2-4					14	-	-	
				Boring terminated at 20 ft. Groundwater not encountered.					
25									

This information pertains only to this boring and is not necessarily indicitive of the whole site.

KC ENGINEERING CO.

Figure 4

LOG OF TEST BORING
BORING NO.: 3

PROJECT: Proposed Farm Implement Storage Building
PROJECT NO.: VV2122
CLIENT: Premier Design
DATE: 19 March 2008
LOCATION: 4286 Suisun Valley Road, Solano County
ELEVATION:
DRILLER: Ram Geotechnical Drilling, Inc.
LOGGED BY: PGT
DRILL RIG: Track-mounted Mobile B-24
BORING DIAMETER: 4 inches
DEPTH TO WATER: INITIAL ⏚ :
FINAL ⏚ :
AFTER: hrs.

DEPTH	SAMPLE NO.	SAMPLER	GRAPHIC LOG	GEOTECHNICAL DESCRIPTION AND CLASSIFICATION	SOIL CLASSIFICATION	CONVERTED SPT BLOW COUNT (BLOWS/FT.)	DRY DENSITY (PCF)	MOISTURE CONTENT (PERCENT)	ADDITIONAL TESTS AND REMARKS (LL, PI, UCC, #&c, Gradation)
0				Reddish Brown CLAY; slightly moist, very stiff	CL				Disced upper 3 ft.
5	3-1					18	-	-	LL=43% PI=25%
				Reddish Brown Sandy CLAY; moist, stiff	CL				
10	3-2					11	107.0	20.3	UCC=1804 psf
	3-3			----As above; very stiff		25	100.6	22.1	
15				Boring terminated at 15 ft. Groundwater not encountered.					
20									
25									

This information pertains only to this boring and is not necessarily indicitive of the whole site.

KC ENGINEERING CO.

Figure 5

UNIFIED SOIL CLASSIFICATION SYSTEM

MAJOR DIVISIONS			SYMBOLS		TYPICAL NAMES
COARSE GRAINED SOILS More than half of material is larger than No. 200 Sieve	GRAVELS More than half of coarse fraction is larger than No. 4 sieve	Clean gravels (<5% fines)	GW		Well graded gravels, gravel-sand mixtures, little or no fines (Cu>4 & 1<Cc<3)
			GP		Poorly graded gravels, gravel-sand mixtures, little or no fines
		Gravel with fines (>12% fines)	GM		Silty gravels, poorly graded gravel-sand-silt mixtures (PI<4 & below "A" line)
			GC		Clayey gravels, poorly graded gravel-sand-clay mixtures (PI>7 & above "A" line)
	SANDS More than half of coarse fraction is smaller than No. 4 sieve	Clean sands (<5% fines)	SW		Well graded sands, gravelly sands, little or no fines (Cu>6 & 1<Cc<3)
			SP		Poorly graded sands, gravelly sands, little or no fines
		Sands with fines (>12% fines)	SM		Silty sands, poorly graded sand-silt mixtures (PI<5 & below "A" line)
			SC		Clayey sands, poorly graded sand-clay mixtures (PI>7 & below "A" line)
FINE GRAINED SOILS More than half of material is smaller than No. 200 Sieve	SILTS AND CLAYS Liquid Limit is less than 50%		ML		Inorganic silts and very fine sands, silty or clayey fine sands, clayey silts with slight plasticity
			CL		Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, silty clays, lean clays
			OL		Organic silts and clays of low plasticity
	SILTS AND CLAYS Liquid Limit is more than 50%		MH		Inorganic silts, micaceous or diatomaceous fine sandy or silty soils, elastic silts
			CH		Inorganic clays of high plasticity, fat clays
			OH		Organic silts and clays of medium to high plasticity
HIGHLY ORGANIC SOILS			Pt		Peat and other highly organic soils

KC ENGINEERING COMPANY
865 Cotting Lane, Suite A
Vacaville, CA 95688

SAMPLER AND LAB TESTING LEGEND

- Auger
- Bulk Sample, taken from auger cuttings
- California Sampler
- Bulk/Grab Sample
- Pitcher
- Standard Penetration Test
- Shelby Tube
- No Recovery

LL=Liquid Limit (%)
PI=Plasticity Index
Φ=Friction Angle
C=Cohesion
UCC=Unconfined Compression
R value=Resistance Value
Consol=Consolidation Test

SOIL GRAIN SIZE
U.S. STANDARD SIEVE OPENINGS

	#200	#40	#10	#4	¾"	3"	12"
CLAY / SILT	SAND: FINE	SAND: MEDIUM	SAND: COARSE	GRAVEL: FINE	GRAVEL: COARSE	COBBLES	BOULDERS
0.002	0.075	0.425	2.00	4.75	19.0	75	300

SOIL GRAIN SIZE IN MILLIMETERS

RELATIVE DENSITY (Coarse-grained soils)

SANDS & GRAVELS	BLOWS/FOOT[1]
Very Loose	0 – 4
Loose	4 – 10
Medium Dense	10 – 30
Dense	30 – 50
Very Dense	> 50

CONSISTENCY (Fine-grained soils)

SILTS & CLAYS	STRENGTH[2]	BLOWS/FOOT[1]
Very Soft	< 500	0 – 2
Soft	500 – 1,000	2 – 4
Firm	1,000 – 2,000	4 – 8
Stiff	2,000 – 4,000	8 – 15
Very Stiff	4,000 – 8,000	15 – 30
Hard	> 8,000	>30

1 – Number of blows of 140 pound hammer falling 30 inches to drive a 2-inch O.D. split spoon sampler (ASTM D1586)
2 – Unconfined compressive strength in lb/ft² as determined by lab testing or approximated by the standard penetration test (ASTM D1586) or pocket penetrometer.

WEATHERING (Bedrock)

Fresh	No visible sign of decomposition or discoloration; rings under hammer impact
Slightly weathered	Slight discoloration inwards from open fractures; little or no effect on normal cementation; otherwise similar to Fresh
Moderately weathered	Discoloration throughout; weaker minerals decomposed; strength somewhat less than fresh rock but cores can not be broken by hand or scraped with knife; texture preserved; cementation little to not affected; fractures may contain filling
Highly weathered	Most minerals somewhat decomposed; specimens can be broken by hand with effort or shaved with knife; texture becoming indistinct but fabric preserved; faint fractures
Completely weathered	Minerals decomposed to soil but fabric and structure preserved; specimens can be easily crumbled or penetrated

STRENGTH (Bedrock)

Plastic	Very low strength
Friable	Crumbles easily by rubbing with fingers
Weak	An unfractured specimen will crumble under light hammer blows
Moderately strong	Specimen will withstand a few heavy hammer blows before breaking
Strong	Specimen will withstand a few heavy ringing blows and will yield with difficulty only dust and small flying fragments
Very strong	Specimen will resist heavy ringing hammer blows and will yield with difficulty only dust and small flying fragments

BEDDING (Bedrock) / SPACING (inches)

Very thickly bedded	> 48
Thickly bedded	24 to 48
Thin bedded	2.5 to 24
Very thin bedded	5/8 to 2.5
Laminated	1/8 to 5/8
Thinly laminated	<1/8

FRACTURING (Bedrock) / SPACING (inches)

Very little fractured	> 48
Occasionally fractured	12 to 48
Moderately fractured	6 to 12
Closely fractured	1 to 6
Intensely fractrured	5/8 to 1
Crushed	<5/8

Materials Testing, Inc.

5798 Airport Road
Redding, California 96002
(530) 222-1116, fax 222-1611

865 Cotting Lane, Suite A
Vacaville, California 95688
(707) 447-4025, fax 447-4143

CLIENT: Premier Design
1055 Stillspring Drive
Vacaville, CA 95698

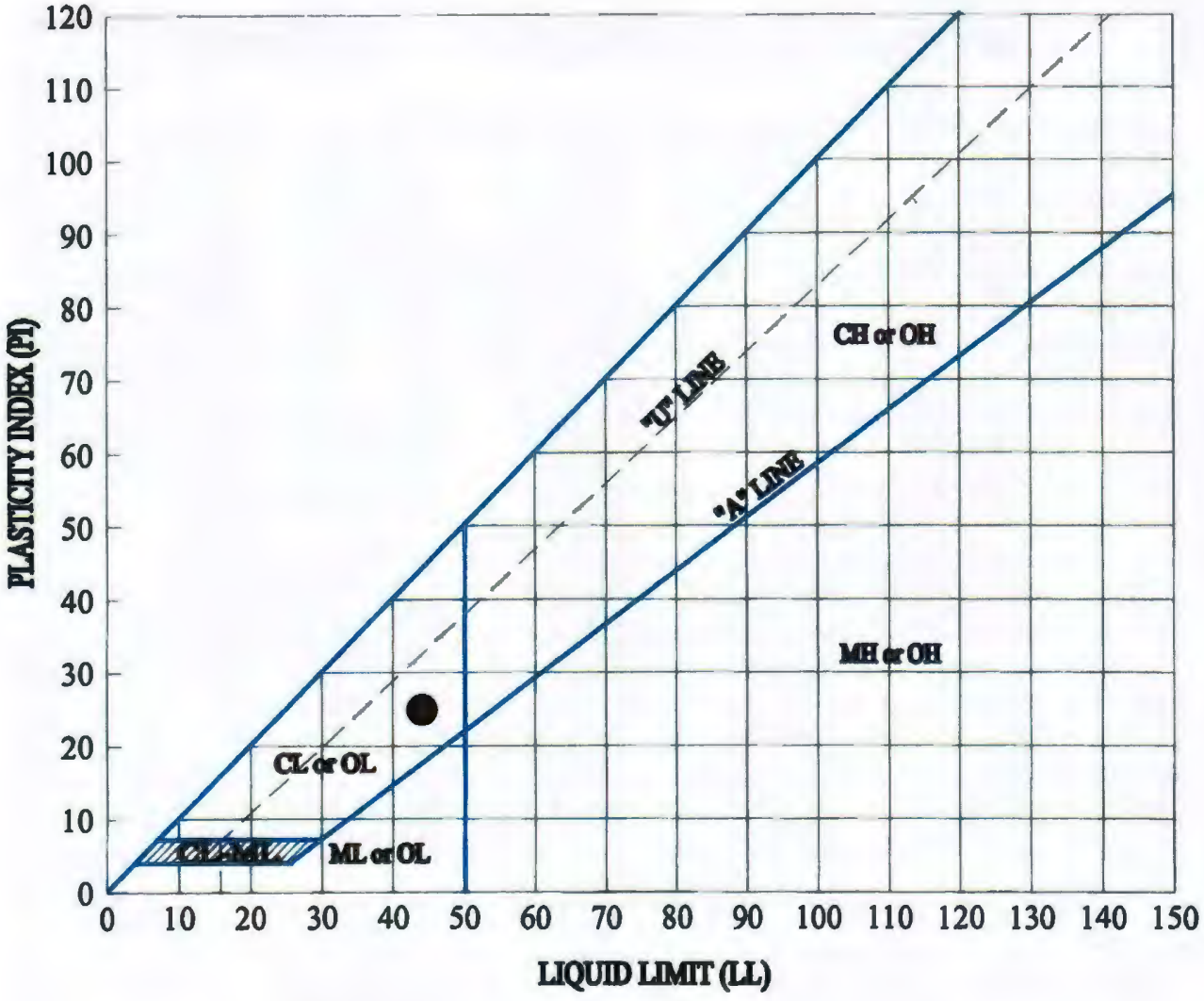
CLIENT NO: VV2122-001
REPORT NO: 0300-004
DATE: 04/02/08

SUBJECT: Farm Implement Storage Building

SUBMITTED BY: KC Engineering

DENSITY OF IN PLACE SOIL BY THE DRIVE TUBE METHOD (ASTM D2937)
LIQUID LIMIT, PLASTIC LIMIT & PLASTICITY INDEX OF SOILS (ASTM D4318)
DATA SHEET

Sample #	Description	Dry Density p.c.f.	Moisture Content %	Liquid Limit	Plastic Limit	Plastic Index
1-1 @ 3.0'	Brown Clay (Visual)	93.6	19.6	—	—	—
1-4 @ 18.0'	Brown Sandy Clay (Visual)	93.5	25.5	—	—	—
1-5 @ 25.0'	Brown Clay (Visual)	87.7	27.5	—	—	—
2-1 @ 3.0'	Brown Clay (Visual)	109.7	19.8	—	—	—
2-2 @ 8.0'	Brown Sandy Clay (Visual)	104.7	20.0	—	—	—
2-3 @ 13.0'	Dark Brown Clay (Visual)	102.5	22.4	—	—	—
3-1 @ 3.0'	Brown Clay (Visual)	—	—	43	18	25
3-2 @ 8.0'	Brown Clay (Visual)	107.0	20.3	—	—	—
3-3 @ 13.0'	Brown Clay (Visual)	100.6	22.1	—	—	—

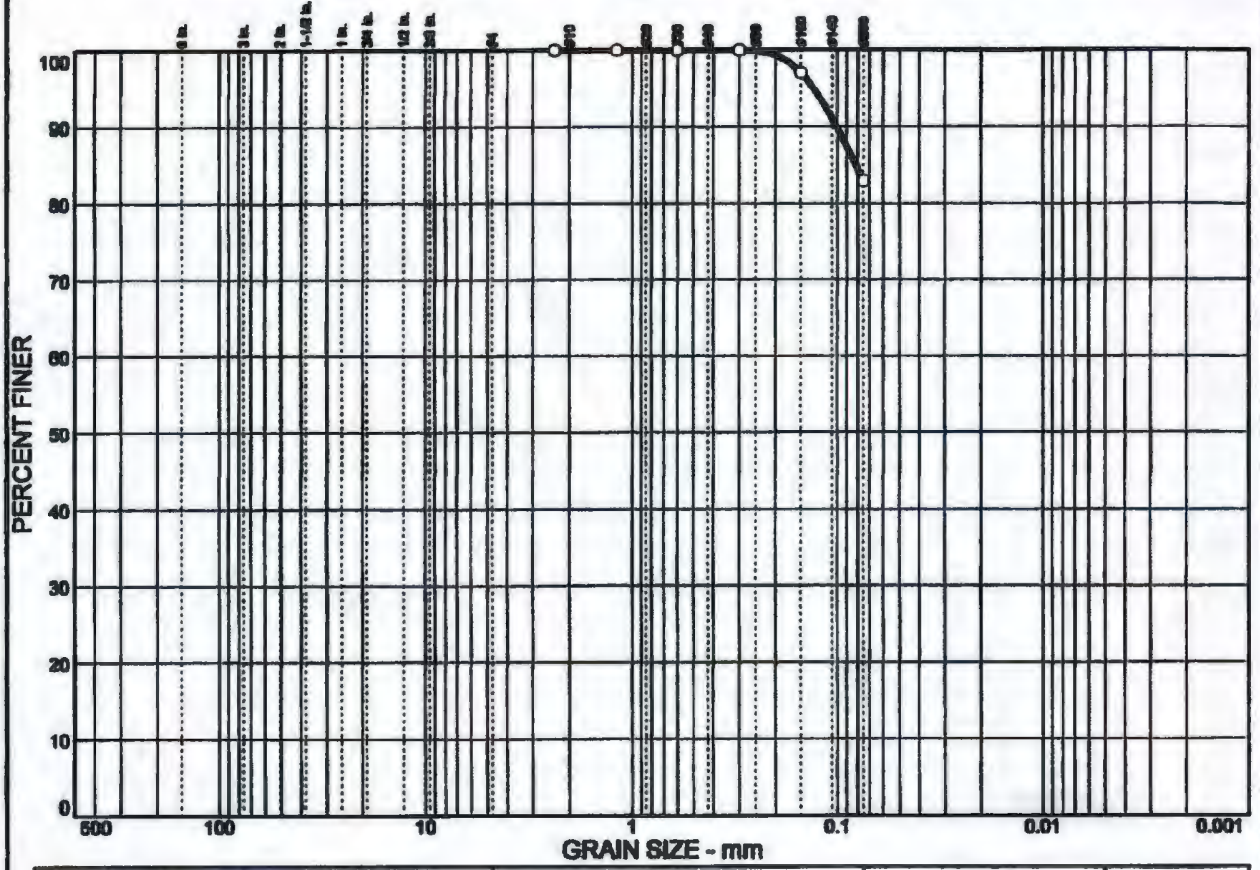


KEY SYMBOL	SAMPLE NUMBER	Depth	NATURAL MOISTURE CONTENT, %	PLASTIC LIMIT, PL, %	LIQUID LIMIT, LL, %	PLASTICITY INDEX, PI, %	LIQUIDITY INDEX	UNIFIED SOIL CLASSIFICATION SYMBOL
●	3-1	3 feet	-	18	43	25	-	CL

KC ENGINEERING COMPANY
865 Cotting Lane, Suite A
Vacaville, CA 95688
(707) 447-4025

Project No. VV2122
Proposed Farm Implement Storage Building
4286 Suisun Valley Road
Solano County, California
PLASTICITY CHART AND DATA

PARTICLE SIZE DISTRIBUTION TEST REPORT



% + 3"	% GRAVEL	% SAND	% SILT	% CLAY
0.0	0.0	17.1	82.9	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
#8	100.0		
#16	100.0		
#30	100.0		
#50	100.0		
#100	97.0		
#200	82.9		

* (no specification provided)

Soil Description

Brown Sandy Clay (Visual)

Atterberg Limits

PL= — LL= — PI= —

Coefficients

D_{85}= 0.0818 D_{60}= D_{50}=
D_{30}= D_{15}= D_{10}=
C_U= C_C=

Classification

USCS= CL AASHTO= —

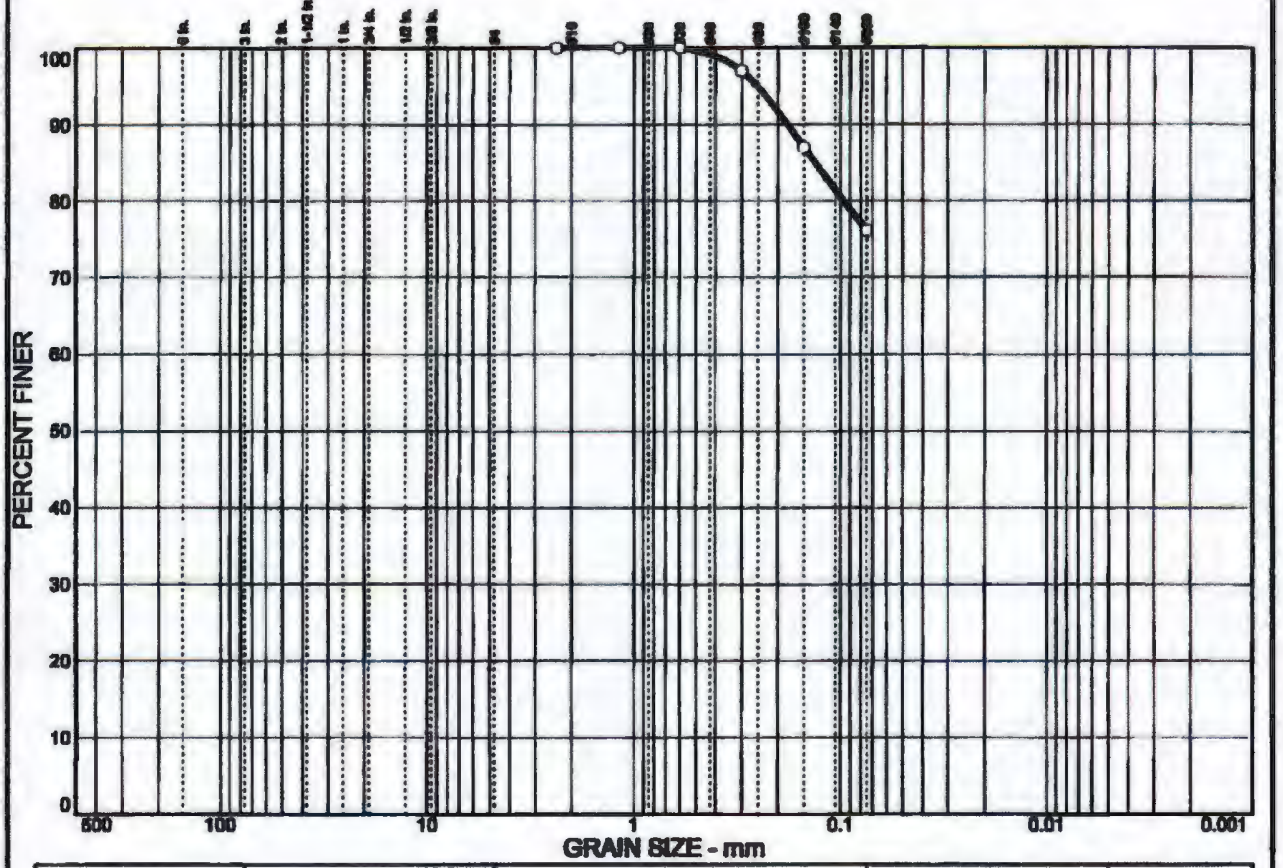
Remarks

Sample No.: 1-2 **Source of Sample:** Farm Implement Storage Building **Date:** 04/02/08
Location: **Elev./Depth:** 8.0'

Materials Testing, Inc.

Client: Premier Design
Project: Farm Implement Storage Building
Project No: VV2122-001 **Report Number:** 0400-001

PARTICLE SIZE DISTRIBUTION TEST REPORT



% + 3"	% GRAVEL	% SAND	% SILT	% CLAY
0.0	0.0	23.9	76.1	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
#8	100.0		
#16	100.0		
#30	100.0		
#50	97.0		
#100	87.0		
#200	76.1		

* (no specification provided)

Soil Description

Brown Sandy Clay (Visual)

Atterberg Limits

PL= — LL= — PI= —

Coefficients

D_{85}= 0.133 D_{60}= D_{50}=
D_{30}= D_{15}= D_{10}=
C_u= C_c=

Classification

USCS= CL AASHTO= —

Remarks

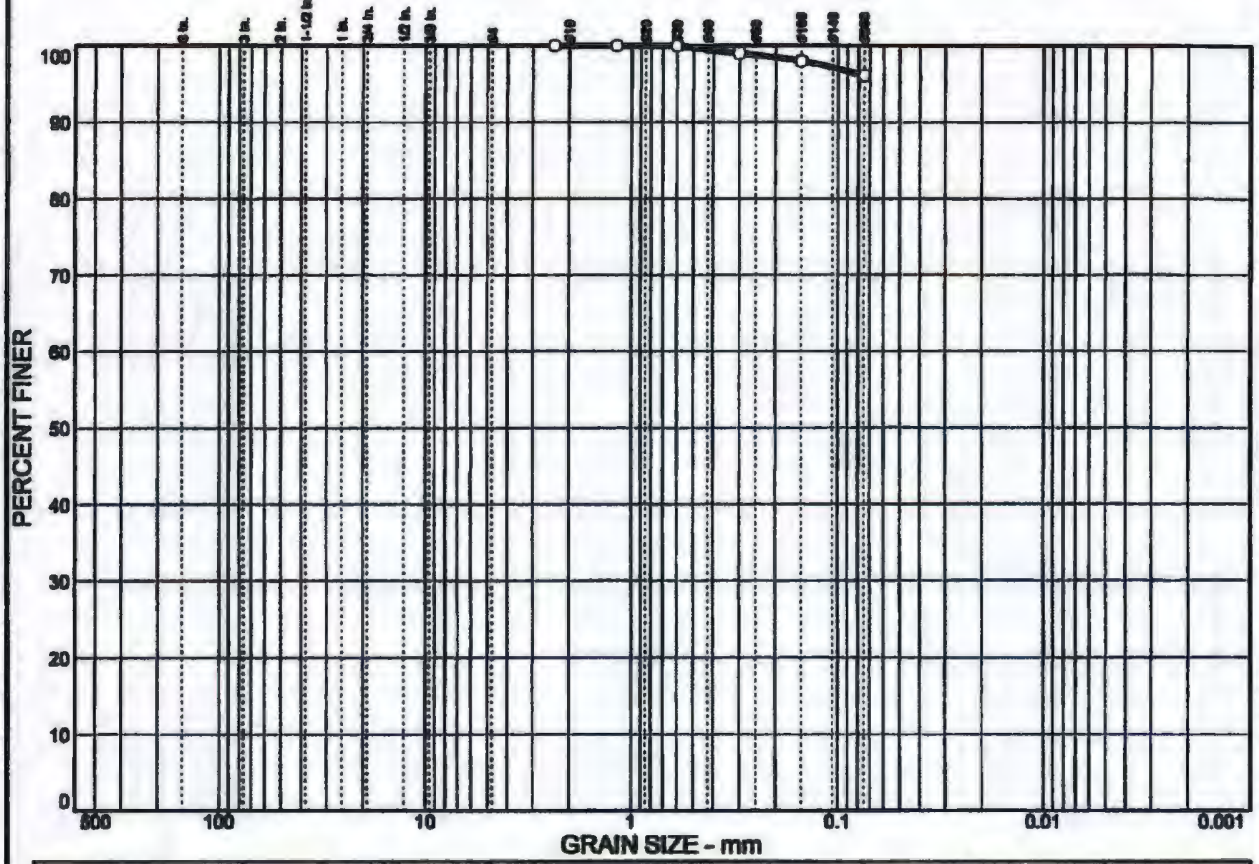
Sample No.: 1-4 **Source of Sample:** Farm Implement Storage Building **Date:** 04/02/08
Location: **Elev./Depth:** 18.0'

Materials Testing, Inc.

Client: Premier Design
Project: Farm Implement Storage Building

Project No: VV2122-001 **Report Number:** 0400-002

PARTICLE SIZE DISTRIBUTION TEST REPORT



% + 3"	% GRAVEL	% SAND	% SILT	% CLAY
0.0	0.0	3.9	96.1	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
#8	100.0		
#16	100.0		
#30	100.0		
#50	99.0		
#100	98.0		
#200	96.1		

* (no specification provided)

Soil Description

Brown Clay (Visual)

Atterberg Limits

PL= — LL= — PI= —

Coefficients

D_{85}= D_{60}= D_{50}=
D_{30}= D_{15}= D_{10}=
C_u= C_c=

Classification

USCS= CL AASHTO= —

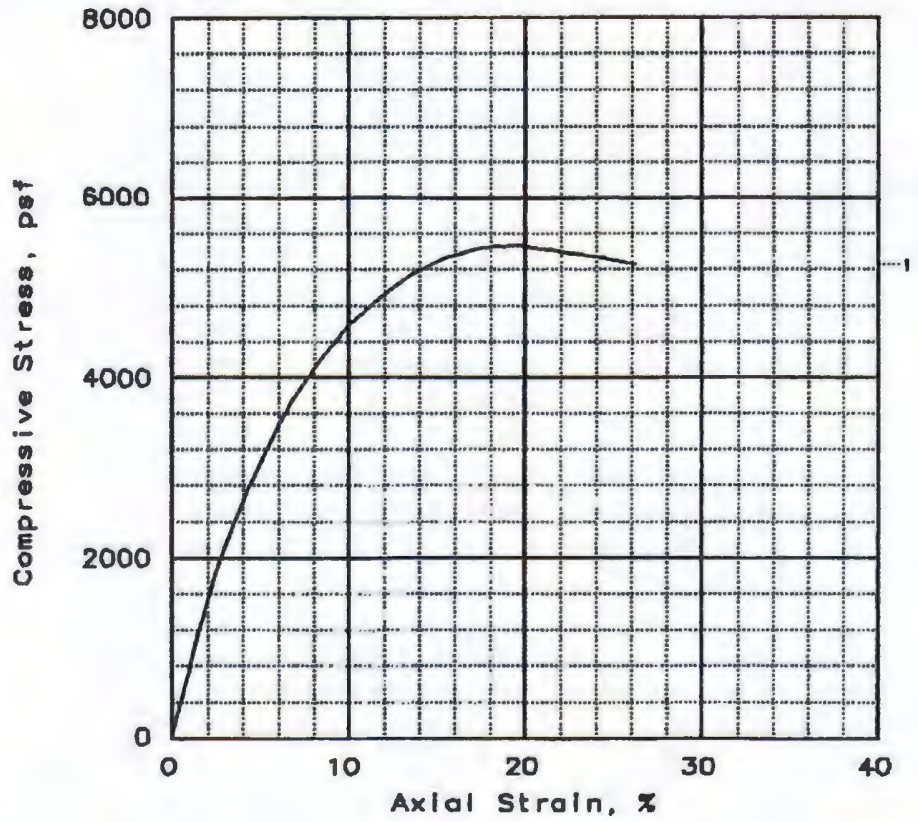
Remarks

Sample No.: 1-5 **Source of Sample:** Farm Implement Storage Building **Date:** 04/02/08
Location: **Elev./Depth:** 25.0'

Materials Testing, Inc.

Client: Premier Design
Project: Farm Implement Storage Building
Project No: VV2122-001 **Report Number:** 0400-003

UNCONFINED COMPRESSION TEST



SAMPLE NO.:	1			
Unconfined strength, psf	5470			
Undrained shear strength, psf	2735			
Failure strain, %	19.6			
Strain rate, %/min				
Water content, % (cuttings after test)	19.8			
Wet density, pcf	131.4			
Dry density, pcf	109.7			
Saturation, %	121.4			
Void ratio	0.4016			
Specimen diameter, in	2.410			
Specimen height, in	4.100			
Height/diameter ratio	1.70			

Description: Brown Clay

			GS= 2.452	Type: Tube

Project No.: VV2122
Date: 4-1-08
Remarks:
Type of Failure

Bulge

Report No.: ——

Client: Premier Design

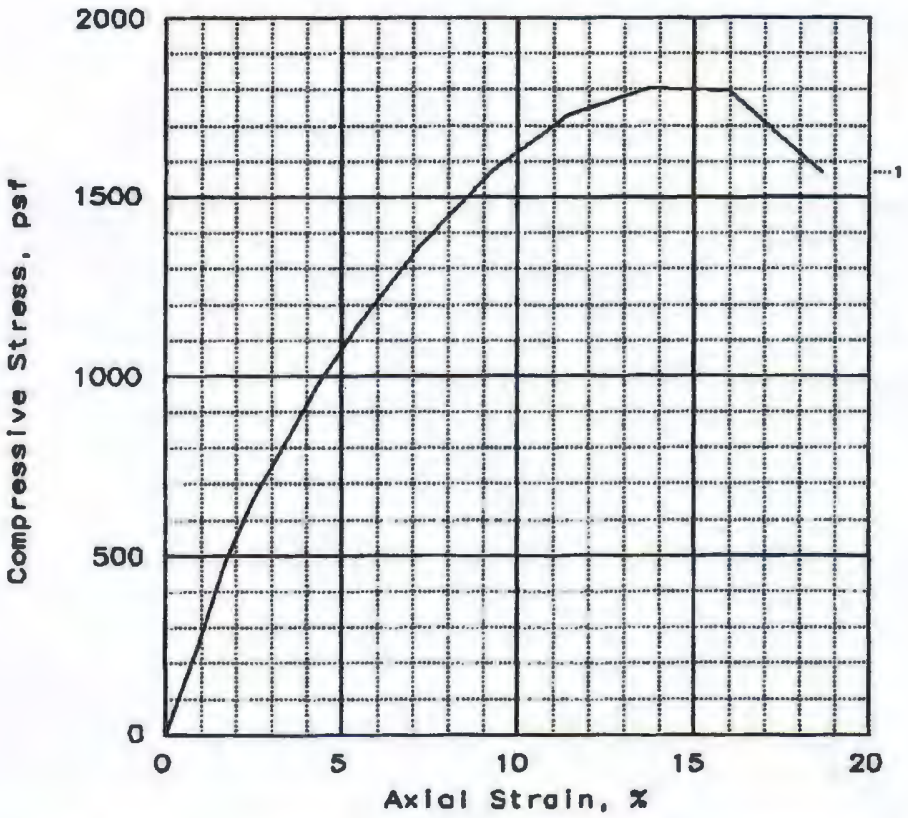
Project: Farm Implement Storage Building

Location: 2-103'

UNCONFINED COMPRESSION TEST

MATERIALS TESTING, INC.

UNCONFINED COMPRESSION TEST



SAMPLE NO.:	1			
Unconfined strength, psf	1804			
Undrained shear strength, psf	902			
Failure strain, %	13.8			
Strain rate, %/min				
Water content, % (cuttings after test)	20.3			
Wet density, pcf	128.7			
Dry density, pcf	107.0			
Saturation, %	85.3			
Void ratio	0.6882			
Specimen diameter, in	2.410			
Specimen height, in	4.000			
Height/diameter ratio	1.66			
Description: Brown Clay				
	GS= 2.893	Type: Tube		

Project No.: VV2122
Date: 4-1-08
Remarks:
Type of Failure

Bulge

Report No.: ——

Client: Premier Design

Project: Farm Implement Storage Building

Location: 3-208'

UNCONFINED COMPRESSION TEST

MATERIALS TESTING, INC.

Sunland Analytical
11353 Pyrites Way, Suite 4
Rancho Cordova, CA 95670
(916) 852-8557

Date Reported 03/26/2008
Date Submitted 03/20/2008

To: Keith Litts
K.C. Engineering
865 Cotting Lane Suite A
Vacaville, CA 95688

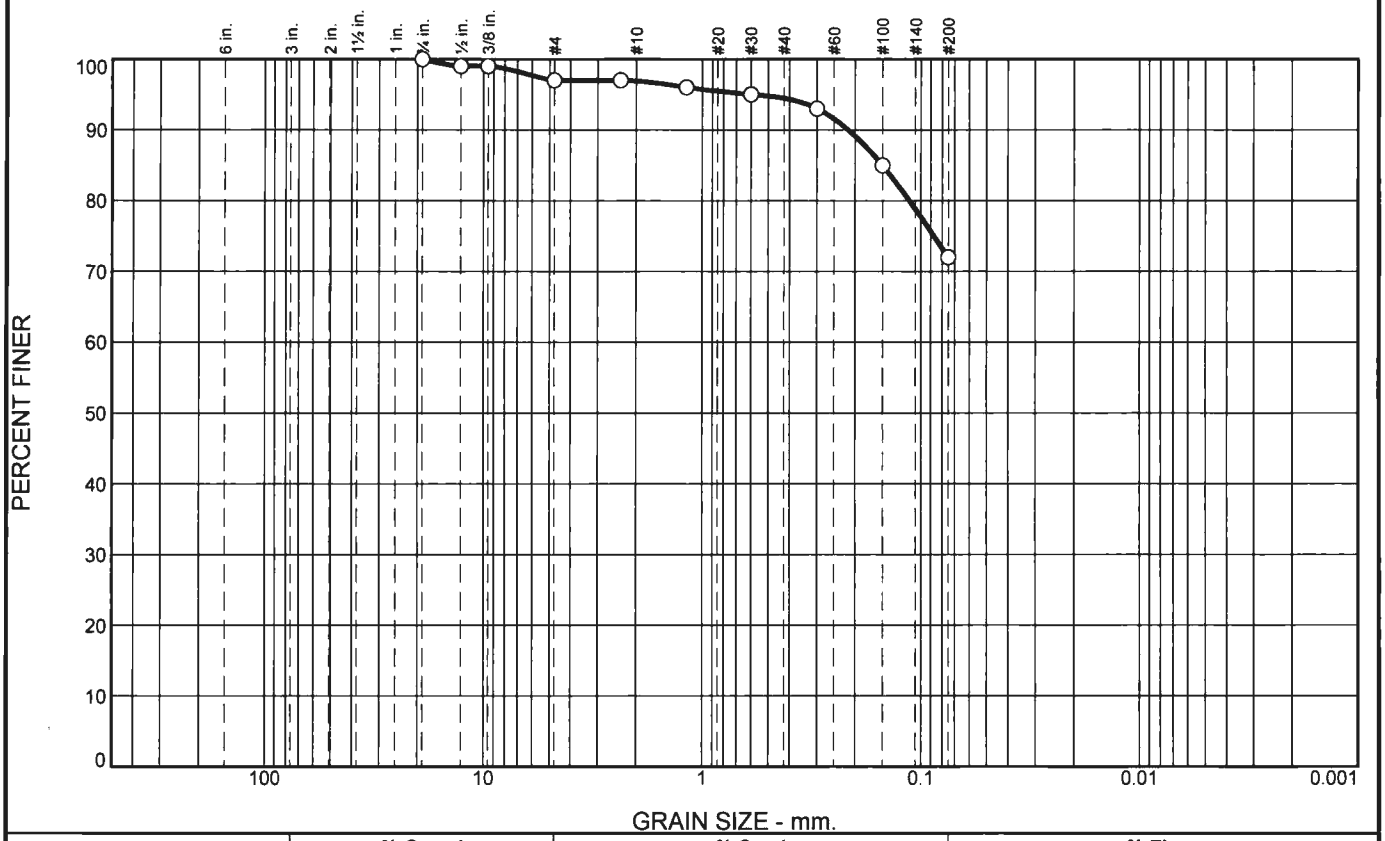
From: Gene Oliphant, Ph.D.
General Manager

The following is the report of analysis requested on SUN Order 52765.
Your purchase order number is .
Thank you for your business.

SUN #	Sample Describ	Sample #	Chloride as ppm Cl /Dry Wt.	Sulfate as ppm SO4 /Dry Wt.
105486	VV2122	BAG A	No Test	25.0

Methods: Sulfate-Cal Trans #417, Chloride-Cal Trans #422

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0	0	3	0	3	22	72	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
3/4"	100		
1/2"	99		
3/8"	99		
#4	97		
#8	97		
#16	96		
#30	95		
#50	93		
#100	85		
#200	72		

* (no specification provided)

Material Description

Ligh Grayish Brown Clay with Sand

Atterberg Limits

PL= 18 LL= 31 PI= 13

Coefficients

D_{90}= 0.2153 D_{85}= 0.1500 D_{60}=
D_{50}= D_{30}= D_{15}=
D_{10}= C_u= C_c=

Classification

USCS= CL AASHTO= A-6(7)

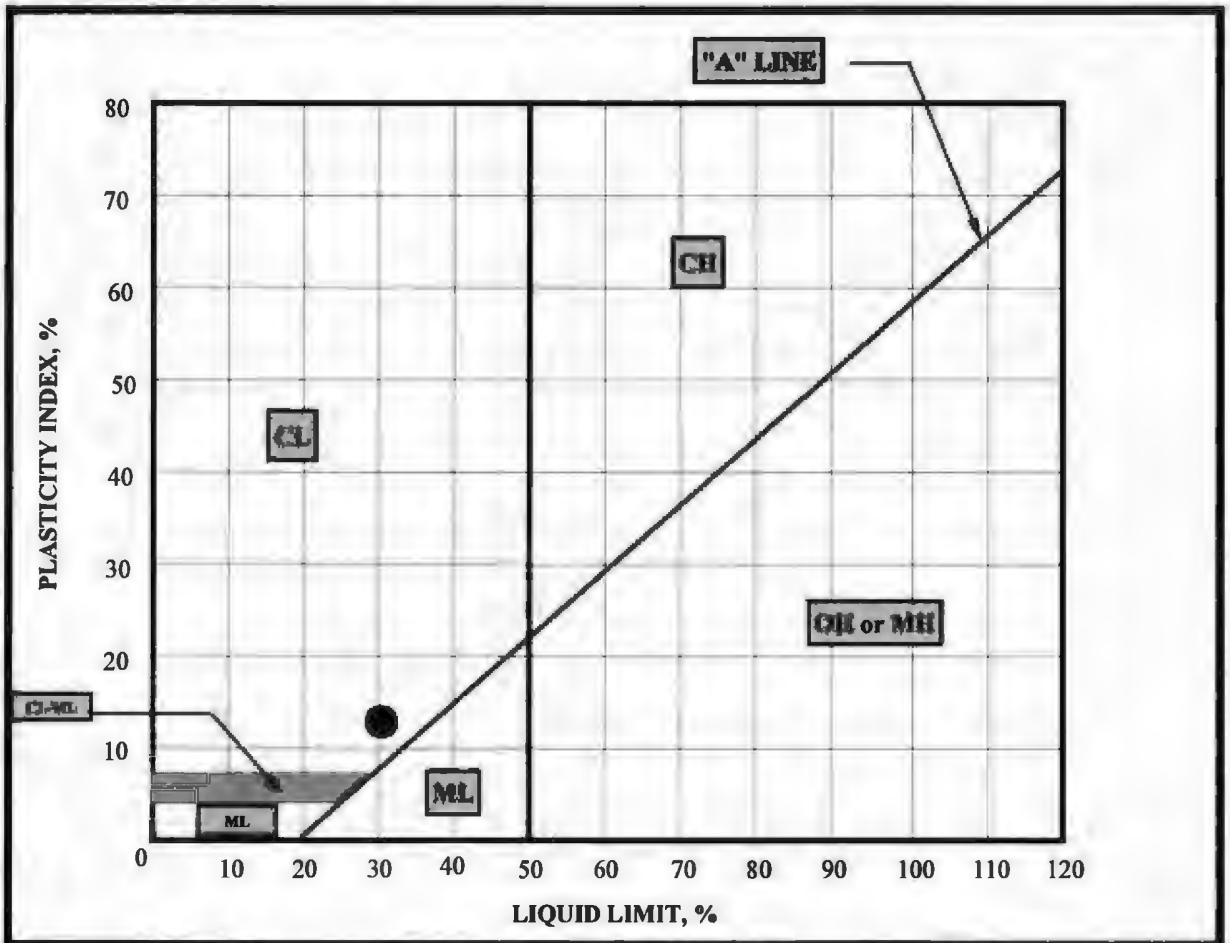
Remarks

Material tested in accordance with ASTM D6913.

Location: TP-1
Sample Number: 1 **Depth:** 1.0' **Date:** 06/25/2020

Client: Centrix Builders, Inc.
Project: Winery & Tasting Room Addition
4286 Suisun Valley Road, Fairfield, California
Project No: VV2122A **Figure** 0300-001

Tested By: John Hubbard



KEY SYMBOL	SAMPLE NUMBER	DEPTH	NATURAL MOISTURE CONTENT, %	LIQUID LIMIT, LL, %	PLASTIC LIMIT, PL, %	PLASTICITY INDEX, PI, %	LIQUIDITY INDEX	UNIFIED SOIL CLASSIFICATION SYMBOL
●	TP-1	1.0'	N/A	31	18	13	N/A	CL

Note: Atterberg Limits tested in accordance with ASTM D4318.

Materials Testing, Inc.

PLASTICITY CHART AND DATA

Winery & Tasting Romm Addition
4286 Suisun Valley Road, Fairfield, California

Project No:	Date:	Figure No:
VV2122A	6/25/2020	0300-002

OSHPD

4286 Suisun Valley Road, Solano County

Latitude, Longitude: 38.2508, -122.1157

Map data ©2020

Date	7/1/2020, 2:00:01 PM
Design Code Reference Document	ASCE7-16
Risk Category	II
Site Class	D - Default (See Section 11.4.3)

Type	Value	Description
S_S	1.592	MCE_R ground motion. (for 0.2 second period)
S_1	0.6	MCE_R ground motion. (for 1.0s period)
S_{MS}	1.91	Site-modified spectral acceleration value
S_{M1}	1.020 on 11.4.8	Site-modified spectral acceleration value
S_{DS}	1.273	Numeric seismic design value at 0.2 second SA
S_{D1}	0.680 on 11.4.8	Numeric seismic design value at 1.0 second SA

Type	Value	Description
SDC	null -See Section 11.4.8	Seismic design category
F_a	1.2	Site amplification factor at 0.2 second
F_v	1.7 ection 11.4.8	Site amplification factor at 1.0 second
PGA	0.631	MCE_G peak ground acceleration
F_{PGA}	1.2	Site amplification factor at PGA
PGA_M	0.757	Site modified peak ground acceleration
T_L	8	Long-period transition period in seconds
SsRT	1.896	Probabilistic risk-targeted ground motion. (0.2 second)
SsUH	2.076	Factored uniform-hazard (2% probability of exceedance in 50 years) spectral acceleration
SsD	1.592	Factored deterministic acceleration value. (0.2 second)
S1RT	0.668	Probabilistic risk-targeted ground motion. (1.0 second)
S1UH	0.732	Factored uniform-hazard (2% probability of exceedance in 50 years) spectral acceleration.
S1D	0.6	Factored deterministic acceleration value. (1.0 second)
PGAd	0.631	Factored deterministic acceleration value. (Peak Ground Acceleration)
C_{RS}	0.913	Mapped value of the risk coefficient at short periods
C_{R1}	0.913	Mapped value of the risk coefficient at a period of 1 s

FOCUSED TRAFFIC IMPACT ANALYSIS FOR THE PROPOSED

WINERY / DISTILLERY PROJECT AND SPECIAL EVENTS FACILITY AT BALLY KEAL VINEYARDS 4286 SUISUN VALLEY ROAD

IN SOLANO COUNTY

May 29, 2020

Prepared by:
GHD Inc.
2300 Clayton Rd., Suite 920
Concord, CA 94520

www.ghd.com

1. Introduction / Executive Summary

The following report provides a focused Transportation Impact Analysis assessing the potential transportation impacts associated with the proposed Winery/Distillery & Special Events project at 4286 Suisun Valley Road (Bally Keal Vineyards property) in Solano County, California. The project would convert one existing onsite building to a winery/distillery with tasting room and another building to an event facility for hosting weddings or similar events. The project site is located on the east side of Suisun Valley Road approximately half of a mile north of Rockville Road. (The site location is shown in Figure 1.)

Consistent with CEQA guidelines, the following traffic scenarios have been evaluated as part of the traffic operations analysis.

- *Existing* and *Existing Plus Project* conditions
- *Cumulative* and *Cumulative Plus Project* conditions
- Vehicle Access / Turn Lane Assessments at the Project driveway intersections.

Existing conditions describes the existing transportation facilities serving the project site, and the traffic operations which currently exist for those facilities. Cumulative conditions reflect long-term traffic growth anticipated to a future horizon year. The "*Plus Project"* conditions assess the potential traffic impacts associated with the proposed project in comparison to conditions without the project.

The analysis has determined that the project would not impact traffic level of service conditions based on the Solano County significance thresholds.

Existing Plus Project: Operations would remain acceptable during the winery and typical sized event peak traffic periods on a weekday and weekend. All study intersections would function at LOS C or better.

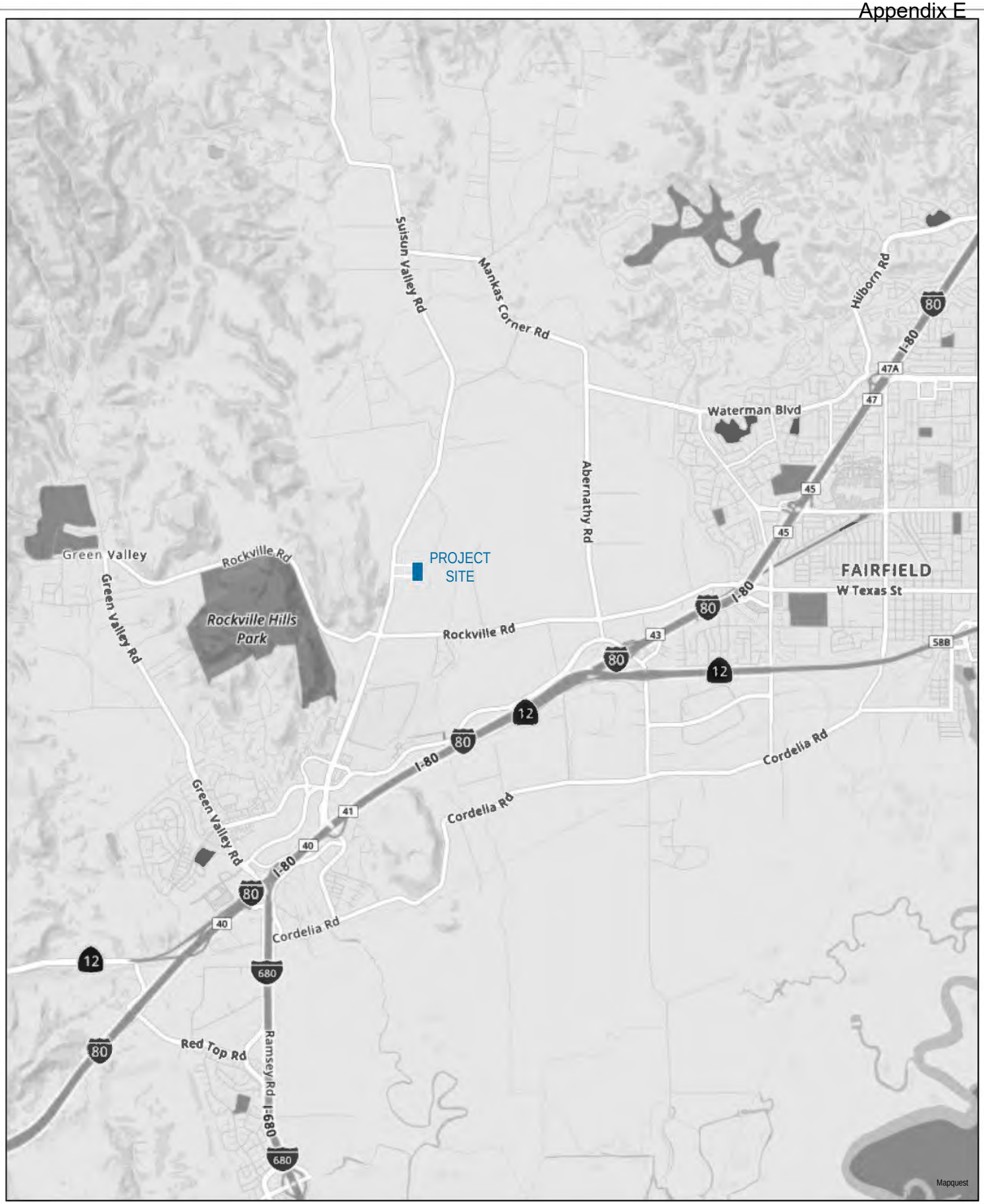
Cumulative plus Project: Operations would also remain acceptable. If future traffic volumes increase to forecast levels, cumulative-without-project operations at the Suisun Valley Road/Rockville Road intersection reflect LOS D conditions during the weekday PM peak hour. However, LOS would remain unchanged with the added project trips therefore the project trips would represent a less than significant impact. The project driveway intersections would operate at LOS C or better.

Turning volumes at the project driveways were compared to industry-standard volume thresholds regarding installation of left-turn or right-turn lanes on Suisun Valley Road for entering vehicles.

Left-turn lane: The winery and typical sized event volumes would not warrant a separate left-turn lane under existing or cumulative conditions.

Right-turn lane: The winery volumes, which would reflect the regularly occurring traffic levels associated with the project, would not warrant a right-turn lane.

Event volumes also would not warrant a right-turn lane. Event volumes under cumulative conditions could temporarily meet the threshold for a right-turn taper. However, based on the number of events (45 annually) and short time duration (one hour before an event), these conditions would be temporary. The existing driveway design also provides a wide turning radius which facilitates inbound right turns.



PROJECT VICINITY

FIGURE 1

N

2. Existing Conditions

The *Existing Conditions* analysis identifies the current roadway characteristics, traffic volumes, and current operations at the study locations.

Transportation System

Roadways

The primary roadway serving the project site is Suisun Valley Road:

Suisun Valley Road is oriented in a north-south direction extending north from Interstate 80, to State Route 121 in Napa County (where it becomes Wooden Valley Road). Suisun Valley Road is classified as a Collector road in the Solano County General Plan.(1) In the project vicinity, it is a rural two lane roadway with centerline striping and unimproved shoulder areas of various widths (no sidewalks or bicycle lanes). Suisun Valley Road along the project frontage is straight and flat, but there is a horizontal curve 1,300 feet south of the main driveway and a horizontal curve 500 feet north of the main driveway. There are two driveways accessing the property: the main driveway is located to the north of the property and a secondary driveway is located 500 feet south of the main driveway.

Speed limit signs are located on Suisun Valley Road between the two driveways. North of the signs the speed limit is 55 mph and south of the signs the speed limit is 45 mph. The horizontal curve to the south has an advisory speed of 35 mph and the curve to the north has an advisory speed of 40 mph.

Rockville Road is located south of the project site and is oriented in an east-west direction. Also called the Lincoln Highway, it extends west from Interstate 80, intersecting Suisun Valley Road, then continues to the town of Green Valley approximately three miles further west. Rockville Road is classified as a Collector road in the Solano County General Plan. It is a rural two lane roadway with centerline striping and unimproved shoulders. Rockville Road has a 45 mph speed limit east of Suisun Valley Road and a 35 mph speed limit west of Suisun Valley Road. However, all approaches to the Suisun Valley Road/Rockville Road intersection have a 25 mph speed limit within approximately 300 feet of the intersection.

Bicycles

There are currently no striped bicycle lanes or paths on Suisun Valley Road. However, the Solano Transportation Authority has prepared a comprehensive Countywide Bicycle Transportation Plan that has proposed 6.9 miles of Class II bicycle lanes on Suisun Valley Road extending from Mangels Boulevard to the Napa County Line.(2) There are striped, paved shoulders on Rockville Road extending from Suisun Valley Road to Green Valley Road that serve as Class II bicycle lanes. Proposed improvements for Rockville Road consist of extending the Class II bicycle lanes from Suisun Valley Road to the Fairfield City Limit.

Public Transit

There are currently no fixed route services on Suisun Valley Road or Rockville Road in the vicinity of the project site. A public bus route providing service between the Fairfield Transit Center and the Vallejo Transit Center has a bus stop at the Solano Community College located approximately one mile south of the project site.

Existing Traffic Volumes

To identify existing traffic conditions, traffic counts were conducted at the project site's two driveway intersections with Suisun Valley Road and at the Suisun Valley Road/Rockville Road intersection.[3] Weekend (Saturday) counts were conducted between 12:00-4:00 pm and Weekday counts were conducted between 3:00-6:00 pm in order to identify peak background volumes on the street network. The traffic counts were conducted in October 2019 during the grape harvest/crush season when seasonal work demand peaks. As a result, traffic volumes on roadways are temporarily very high, therefore the existing traffic volumes provide a conservatively high baseline for the analysis. A machine tube-count was also conducted on Suisun Valley Road for one week in order to identify the Average Daily Traffic (ADT) volumes on Suisun Valley Road fronting the project site. The existing weekday and weekend peak hour volumes are shown in Figure 2.

3. Technical Analysis Parameters and LOS Methodologies

Traffic operating conditions are measured by Level of Service (LOS), which applies a letter ranking to successive levels of roadway and intersection traffic performance. LOS 'A' represents optimum conditions with free-flow travel and no congestion. LOS 'F' represents congested conditions with long delays. When applied to unsignalized intersections with minor street stop controls, the LOS reflects the delays experienced by the minor street approach. For all-way stop and signalized controls, the LOS reflects the average overall intersection delay. Intersection LOS have been determined using the Synchro software suite consistent with the Highway Capacity Manual methodology.[4] (LOS calculation worksheets are provided in the Appendices.)

Analysis LOS Policies

General Plan Transportation Policies

Solano County Road Improvement Standards and Land Development Requirements (adopted February 2006) establishes the following policy:

> Sec. 1-4 - LEVEL OF SERVICE STANDARD: The goal of Solano County is to maintain a Level of Service C on all roads and intersections. In addition to meeting the design widths and standards contained in this document, all projects shall be designed to maintain a Level of Service C, except where the existing level of service is already below C, the project shall be designed such that there will be no decrease in the existing level of service. Levels of Service shall be calculated using the Transportation Research Board's most recent Highway Capacity Manual. [5]

Based on the policy above, a threshold of LOS C has been established for locations operating at LOS A-C. For locations operating below LOS C, a change in the level of service from existing conditions as a result of the project is established as the threshold for significant impacts.

4. Existing Traffic Operations

Existing Intersection Operations

Existing weekday PM and weekend afternoon peak hour intersection traffic operations were evaluated utilizing the existing traffic volumes and existing intersection lane geometrics and controls. The Suisun Valley Road/Bally Keal Driveway intersections operate at acceptable LOS during weekday and weekend peak hours. The intersections operate at LOS B or better for the stopped westbound driveway approach. Existing turn volumes at the driveways are low, approximately 1-2 peak hour trips. The Suisun Valley Road/Rockville Road intersection operates at LOS C or better during the weekday and weekend peak hours. The existing levels of service are shown in Table 1.

TABLE 1
EXISTING PEAK HOUR INTERSECTION OPERATIONS
LEVEL OF SERVICE (LOS) AND SECONDS OF DELAY

Intersection	Control	Weekday PM Peak Hour	Saturday Afternoon Peak Hour
		Existing LOS Delay	Existing LOS Delay
Suisun Valley Rd. / North Driveway	MSSC	A 0.0"	B 12.4"
Suisun Valley Rd. / South Driveway	MSSC	B 13.3"	B 13.6"
Suisun Valley Rd. / Rockville Rd.	Signal	C 23.9"	B 18.9"

Based on Highway Capacity Manual (HCM) Operations methodology using Synchro-Simtraffic software.
MSSC = Minor street stop control. LOS reflects approach with the longest delay.

Existing Roadway Operations

Machine tube counts tabulated traffic volumes on Suisun Valley Road fronting the project site over a week long period, including two Fridays and two Saturdays. The Average Daily Traffic (ADT) volume for the entire period was 4,200 daily trips (2,100 northbound and 2,100 southbound). The highest weekday volumes occurred on Friday, with 4,600 daily trips (2,300 nb and 2,300 sb). Weekend Saturday volumes averaged 4,400 daily trips (2,200 nb and 2,200 sb).

Volumes on Suisun Valley Road were evaluated for LOS based on volume thresholds identified in the Solano County General Plan as shown in Table 2.[6] (Complete table provided in Appendices.) Volumes on Suisun Valley Road operate at acceptable LOS A-C (< 15,000 daily trips).

TABLE 2
EXISTING ROADWAY SEGMENT OPERATIONS

LOS Volume Thresholds

	LOS Volume Thresholds			
Rural 2 Lane Roadway	A-C	D	E	F
Average Daily Traffic (ADT):	≤ 15,000	≤ 21,300	≤ 27,100	> 27,100

	Weekday	Weekend
Suisun Valley Road at #4286		
Existing ADT:	4,600 LOS A-C	4,400 LOS A-C

Source: Solano County Draft General Plan EIR, 2008.

5. Project Description

Information regarding the project has been provided by the project applicant. The trip generating components of the project are outlined as follows:

Winery / Distillery: Convert existing building to a winery and distillery with public tasting room. The project applicant anticipates average visitation of approximately 60 weekday visitors. Weekend visitation is typically higher than weekdays, therefore the weekend analysis evaluated traffic conditions with 100 daily visitors and the weekday analysis evaluated 60 visitors. The project anticipates up to 5 full time employees. The tasting room hours would be daily, 11:00 am to 5:00 pm.

Total annual production would consist of a maximum of 90,000 gallons, with wine comprising most of the production. Approximately 26,000 gallons would originate from the site. Grape on-haul for the remaining gallons at maximum production would be approximately 600 tons. Within the production total, the winery would also produce a smaller amount of distilled grape-grain beverage. If demand is adequate, production is expected to be approximately 5,000 gallons. Combined wine and distilled beverage production would remain 90,000 gallons or less annually.

Special Events Facility: Convert existing 12,000 square foot storage building to a special events facility with the primary purpose of hosting weddings, corporate/charity, or similar events. The applicant expects approximately 45 events annually, with approximately 10 events consisting of up to 100 people, 25 events with up to 200 people, and 10 events with up to 400 people. Events could take place on a weekday or weekend (most are expected to occur between Thursday and Sunday) with anticipated times between noon and midnight.

6. Project Trip Generation

Winery/Distillery:

The vehicle trips were calculated for "peak" conditions, corresponding with the peak hour of trip generation. To generate vehicle trips, automobile occupancy rates used by Napa County were utilized to calculate the visitor trips.[7]

As shown in Table 3, the winery is calculated to generate up to 65 weekday daily trips and 91 weekend daily trips. For peak hour trips, the Institute of Transportation Engineers (ITE) Trip Generation Manual provides hourly trip data as a percentage of the daily trips for wineries.[8] The data shows weekday PM peak hour trips are 14.8% and weekend peak hour trips are 16.7%. To be conservative, 20% of the daily trips has been used for the peak hour trips. The project is calculated to generate 13 weekday PM peak hour trips (4 in, 9 out) and 18 weekend peak hour trips (9 in, 9 out).

TABLE 3
TRIP GENERATION FOR PROPOSED WINERY

Typical Weekday Daily Trips:	
Visitors: up to 60 visitors / 2.6 visitors per vehicle x 2 o-w trips	= 46 trips
Employees: up to 5 full-time x 3.05 one-way trips	= 15 trips
Trucks: Production- 90,000 gallons / 1,000 x .009 x 2 o-w trips	= 2 trips
Trucks: General deliveries	= 2 trips
Weekday Daily Trips:	**= 65 trips (33 in, 32 out)**
Weekday PM Peak Hour Trips: 20% of daily (30% in, 70% out)	**= 13 trips (4 in, 9 out)**
Typical Weekend Daily Trips:	
Visitors: up to 100 visitors / 2.8 visitors per vehicle x 2 o-w trips	= 72 trips
Employees: up to 5 full-time x 3.05 one-way trips	= 15 trips
Trucks: Production- 90,000 gallons / 1,000 x .009 x 2 o-w trips	= 2 trips
Trucks: General deliveries	= 2 trips
Weekend Daily Trips:	**= 91 trips (46 in, 45 out)**
Weekend Afternoon Pk. Hr. Trips: 20% of daily (47% in, 53% out)	**= 18 trips (9 in, 9 out)**
Harvest Season Weekend Daily Trips:	
Visitors: up to 100 visitors / 2.8 visitors per vehicle x 2 o-w trips	= 72 trips
Employees: up to 5 full-time x 3.05 one-way trips	= 15 trips
Trucks: Production- 90,000 gallons / 1,000 x .009 x 2 o-w trips	= 2 trips
Trucks: General deliveries	= 2 trips
Grape On-haul: 600 tons / 20 tons per truck / 36 days x 2 trips	= 2 trips
Weekend Daily Trips:	**= 93 trips (46 in, 47 out)**
Weekend Afternoon Pk. Hr. Trips: 20% of daily (47% in, 53% out)	**= 19 trips (9 in, 10 out)**

Trip Distribution

The project trips have been distributed onto the street network based on existing traffic flow patterns and geographical location of the project site. The existing traffic counts at the project driveway found 100% of the trips were to/from the south. To further substantiate the trip distribution, traffic counts from a previous study on Suisun Valley Road were reviewed. Overall, the counts identified 90% of trips to/from the south and 10% to/from the north. In order to provide a conservative evaluation of the potential southbound left-turn volumes at the project driveway for the traffic operations analysis, the project trips were distributed with 85% to/from the south and 15% to/from the north.

The applicant states both driveways will be available for access in and out of the property. Because the north driveway provides a more formal entry than the south driveway, most winery inbound trips are expected to utilize the north driveway. Outbound trips are likely to use both the north and south driveways. Therefore the winery trips were distributed with all inbound trips utilizing the north driveway and outbound trips split between both driveways.

The winery project trips are shown in Figures 2 and 3, respectively.

7. Existing Plus Project Conditions

Intersection Operations

Existing Plus Project peak hour intersection operations are summarized in Table 4. As shown, the study intersections would continue to operate at acceptable LOS. The driveways would operate at LOS C or better during the weekday PM peak hour and LOS B during the weekend peak hour. The Suisun Valley Road/Rockville Road intersection would continue to operate at LOS C during the weekday PM peak hour and LOS B during the weekend peak hour.

TABLE 4
EXISTING + WINERY PEAK HOUR INTERSECTION OPERATIONS
LEVEL OF SERVICE (LOS) AND SECONDS OF DELAY

		Weekday PM Peak Hour		Saturday Afternoon Peak Hour	
Intersection	Control	Existing LOS Delay	Existing + Proj LOS Delay	Existing LOS Delay	Existing + Proj LOS Delay
Suisun Valley Rd. / North Driveway	MSSC	A 0.0”	B 14.4”	B 12.4”	B 12.4”
Suisun Valley Rd. / South Driveway	MSSC	B 13.3”	C 15.9”	B 13.6”	B 13.6”
Suisun Valley Rd. / Rockville Rd.	Signal	C 23.9”	C 24.5”	B 18.9”	B 19.1”

Based on Highway Capacity Manual (HCM) Operations methodology using Synchro-Simtraffic software.
MSSC = Minor street stop control. LOS reflects approach with the longest delay.

Roadway Operations

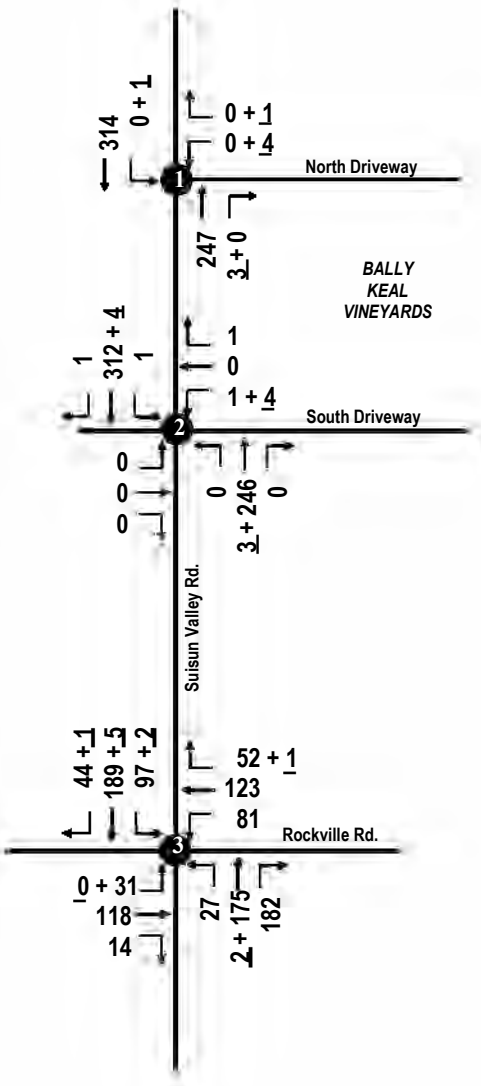
The winery would add approximately 55 weekday and 77 weekend daily trips to Suisun Valley Road south of the project, resulting in 4,655 weekday and 4,477 weekend daily trips. As shown in Table 5, roadway operations would remain unchanged and continue to operate at acceptable LOS A-C conditions with the added project trips.

TABLE 5
EXISTING + WINERY ROADWAY SEGMENT OPERATIONS

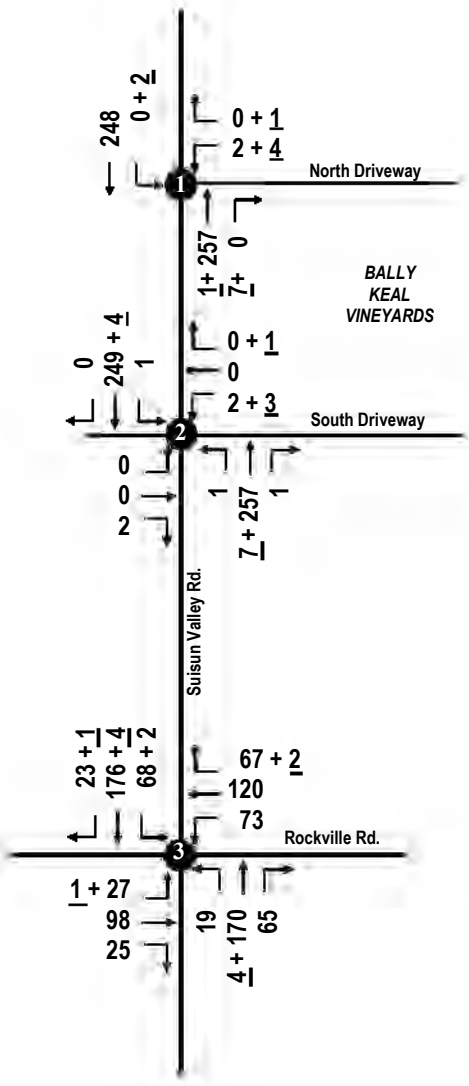
LOS Volume Thresholds				
	LOS Volume Thresholds			
Rural 2 Lane Roadway	A-C	D	E	F
Average Daily Traffic (ADT):	≤ 15,000	≤ 21,300	≤ 27,100	> 27,100
Suisun Valley Road at #4286	Weekday		Weekend	
Existing + Winery ADT:	4,600 + 55	LOS A-C	4,400 + 77	LOS A-C

Source: Solano County Draft General Plan EIR, 2008.

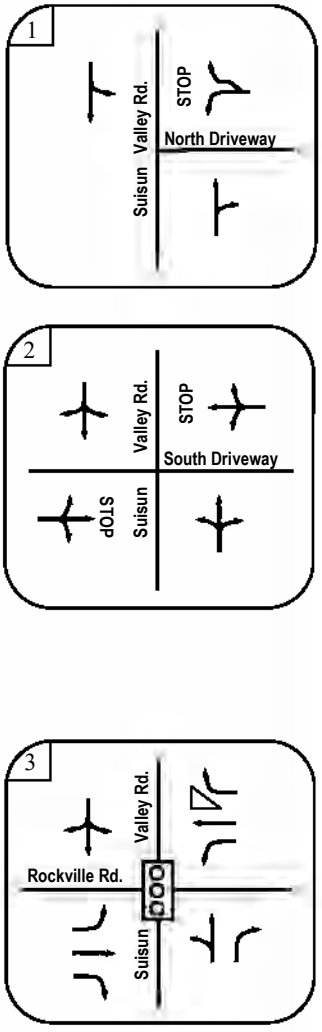
EXISTING WEEKDAY PM PEAK HOUR VOLUMES
+ WINERY TRIPS: 13 (4 in, 9 out)



EXISTING WEEKEND PEAK HOUR VOLUMES
+ WINERY TRIPS: 18 (9 in, 9 out)



GEOMETRIES/CONTROLS:



EXISTING PEAK HOUR VOLUMES
+ WINERY TRIPS

FIGURE 2

N

8. Cumulative Conditions

Cumulative conditions refers to a long-term "No Project" condition where the proposed development remains undeveloped and all model land uses and circulation improvements are assumed to be built.

Cumulative volume projections were derived using the Napa-Solano Regional Travel Demand Model for Year 2040 conditions.(9) The daily volume growth forecasts on nearby segments of Suisun Valley Road and Rockville Road ranged from 1.9% - 2.5% per year annual growth. To remain conservative, an annual growth rate of 2.5% per year for 21 years (2019 to 2040) was applied to the existing counts.

Cumulative Intersection Operations

Table 6 provides a summary of the Cumulative intersection LOS. LOS conditions at the project driveways would operate at acceptable LOS C or better. **If volumes increase as forecast, the Suisun Valley Road/Rockville Road intersection would operate at LOS D during the weekday PM peak hour.** This assumes no roadway improvements, including existing lane geometries and signal control phasing. The intersection would operate at LOS C during the weekend peak hour.

Cumulative Roadway Operations

Daily volumes on Suisun Valley Road would increase to 7,000 weekday and 6,700 weekend daily trips. As shown in Table 7, volumes would be representative of acceptable LOS A-C conditions.

9. Cumulative Plus Project Conditions

Winery

Intersection Operations

As shown in Table 6 the levels of service would remain unchanged at all of the study intersections. The project driveways would operate at acceptable LOS C. **The Suisun Valley Road/Rockville Road intersection would continue to operate at LOS D during the weekday PM peak hour with the added project trips. Since the LOS remains unchanged, the project trips would not constitute a significant impact.** The Suisun Valley Road/Rockville Road intersection would continue to operate at LOS C during the weekend peak hour.

The cumulative-plus-project volumes are provided in Figure 3.

TABLE 6
CUMULATIVE + WINERY PEAK HOUR INTERSECTION OPERATIONS
LEVEL OF SERVICE (LOS) AND SECONDS OF DELAY

Intersection	Control	Weekday PM Peak Hour		Saturday Afternoon Peak Hour	
		Cmltve. LOS Delay	Cmltve. + Proj LOS Delay	Cmltve. LOS Delay	Cmltve. + Proj LOS Delay
Suisun Valley Rd. / North Driveway	MSSC	A 0.0"	C 16.1"	C 15.8"	C 15.8"
Suisun Valley Rd. / South Driveway	MSSC	C 15.2"	C 18.7"	C 18.0"	C 18.0"
Suisun Valley Rd. / Rockville Rd.	Signal	**D 38.2"**	**D 39.1"**	C 28.2"	C 28.8"

Based on Highway Capacity Manual (HCM) Operations methodology using Synchro-Simtraffic software.
MSSC = Minor street stop control. LOS reflects approach with the longest delay.

Roadway Operations

With the winery adding 55 weekday and 77 weekend daily trips to Suisun Valley Road south of the project, total volumes would be 7,055 weekday and 6,777 weekend daily trips. As shown in Table 7, LOS conditions would remain unchanged and continue to operate at acceptable LOS A-C.

TABLE 7
CUMULATIVE + WINERY ROADWAY SEGMENT OPERATIONS

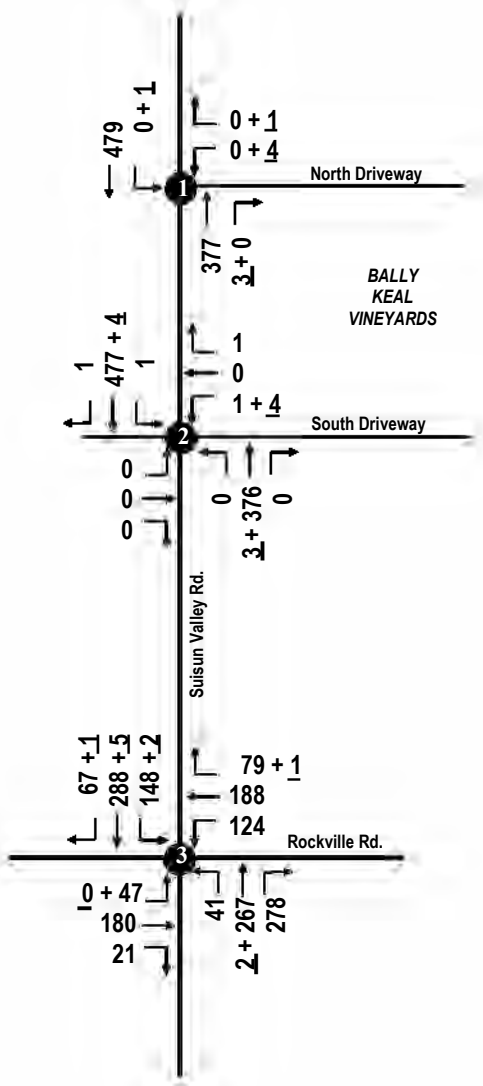
LOS Volume Thresholds

	LOS Volume Thresholds			
Rural 2 Lane Roadway	A-C	D	E	F
Average Daily Traffic (ADT):	≤ 15,000	≤ 21,300	≤ 27,100	> 27,100

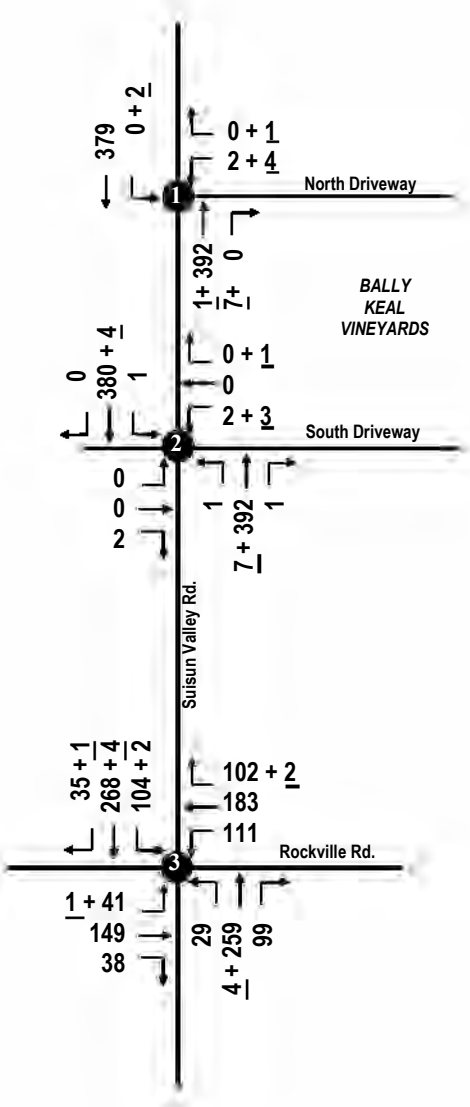
	Weekday	Weekend
Suisun Valley Road at #4286:		
Cumulative + Winery ADT	7,000 + 55 LOS A-C	6,700 + 77 LOS A-C

Source: Solano County Draft General Plan EIR, 2008.

CUMULATIVE WEEKDAY PM PEAK HOUR VOLUMES
+ WINERY TRIPS: 13 (4 in, 9 out)



CUMULATIVE WEEKEND PEAK HOUR VOLUMES
+ WINERY TRIPS: 18 (9 in, 9 out)



CUMULATIVE PEAK HOUR VOLUMES + WINERY TRIPS

FIGURE 3

N

10. Special Events Center

Trip Generation:

As noted, approximately 45 events would be held annually, comprised approximately of 10 events with up to 100 people, 25 events with up to 200 people, and 10 events with up to 400 people.

The vehicle trips were calculated corresponding with the event's peak hour of trip generation before and after an event. It is anticipated most events would occur on weekends, but some may occur on a weekday. Therefore, traffic operations with added event trips have been evaluated for both weekend and weekday conditions.

Vehicle trips generated by temporary staff (catering, entertainment, etc.) were also included using a conservative ratio of one staff person per fifteen guests. (This would reflect an event with full service. Events with buffet service would require fewer staff, and therefore, generate fewer trips than calculated.) The calculated trips are shown in Table 8.

Most events would consist of 200 or fewer attendees. Events with 200 guests are calculated to generate up to 160 trips (80 in prior to the event, and 80 out after the event). The largest events with 400 guests would generate up to 322 total trips (161 in before, 161 out after).

TABLE 8
TRIP GENERATION FOR PROPOSED EVENT FACILITY

Typical Attendance:	
Guests: up to 200 guests / 2.8 guests per vehicle x 2 one-way trips	= 142 trips
Staff: 13 staff / 1.5 staff per vehicle x 2 o-w trips	= 18 trips
Total Trips (200 guests):	**= 160 trips (80 in, 80 out)**
Maximum Attendance:	
Guests: up to 400 guests / 2.8 guests per vehicle x 2 one-way trips	= 286 trips
Staff: 27 staff / 1.5 staff per vehicle x 2 o-w trips	= 36 trips
Total Trips (400 guests):	**= 322 trips (161 in, 161 out)**

These events are of sufficient duration that the inbound and outbound trips occur in separate hours, thus the number of trips on the street network at one time is half of the total volume. Similarly, only half of the trips could be generated during a peak commute period of the day. For example, a wedding starting during the afternoon commute peak time of day would generate inbound trips during the commute peak period, but the outbound trips would occur later at night, when background traffic volumes are lower. However, to remain conservative, both scenarios (before an event and after an event) were evaluated using the peak commute hour volumes. Both driveways would be available for events and vehicle circulation would utilize both driveways for inbound and outbound trips.

Existing + Event

Intersection Operations

The existing plus event peak hour LOS conditions for the most frequent events (up to 200 guests) are listed in Table 9. The project driveway intersections would operate at acceptable LOS C or better before and after events. The Suisun Valley Road/Rockville Road intersection would also continue to operate at LOS C or better on weekdays and weekends. The existing-plus-event trips are shown in Figure 4. (LOS calculation worksheets are provided in the Appendices.)

TABLE 9
EXISTING + TYPICAL EVENT (200 GUESTS) PEAK HOUR INTERSECTION OPERATIONS
LEVEL OF SERVICE (LOS) AND SECONDS OF DELAY

Intersection	Control	Weekday PM Peak Hour		Saturday Afternoon Peak Hour	
		Existing LOS Delay	Existing + Project LOS Delay	Existing LOS Delay	Existing + Project LOS Delay
Suisun Valley Rd. / North Driveway Before Event / After Event:	MSSC	A 0.0”	A 0.3” / C 16.6”	B 12.4”	B 13.0” / B 12.9”
Suisun Valley Rd. / South Driveway Before Event / After Event:	MSSC	B 13.3”	B 14.1” / C 20.0”	B 13.6”	B 14.4” / B 14.9”
Suisun Valley Rd. / Rockville Rd. Before Event / After Event:	Signal	C 23.9”	C 25.4” / C 26.2”	B 18.9”	B 19.7” / C 20.2”

LOS conditions assuming all event trips (before and after) occur during the peak hour of background traffic.

Roadway Operations

On a day when an event occurs, typical size events would add approximately 160 daily trips to Suisun Valley Road (136 to the south and 24 to the north), resulting in 4,736 weekday and 4,536 weekend daily trips on the highest volume link. Roadway operations would remain unchanged and continue to operate at acceptable LOS A-C conditions with the added event trips.

Cumulative + Event

Intersection Operations

As shown in Table 10 the project driveway intersections would operate at LOS C or better conditions before and after events. **The Suisun Valley Road/Rockville Road intersection would continue to operate at LOS D (no change in LOS from cumulative-without-project conditions) during the weekday PM peak hour with the added event trips, therefore the event trips would not constitute a significant impact.** The cumulative-plus-event volumes are shown in Figure 5.

TABLE 10
CUMULATIVE + TYPICAL EVENT (200 GUESTS) PEAK HOUR INTERSECTION OPERATIONS
LEVEL OF SERVICE (LOS) AND SECONDS OF DELAY

Intersection	Control	Weekday PM Peak Hour		Saturday Afternoon Peak Hour	
		Cmltve. LOS Delay	Cmltve. + Project LOS Delay	Cmltve. LOS Delay	Cmltve. + Project LOS Delay
Suisun Valley Rd. / North Driveway Before Event / After Event:	MSSC	A 0.0"	A 0.2" / C 18.5"	C 15.8"	C 16.7" / C 17.0"
Suisun Valley Rd. / South Driveway Before Event / After Event:	MSSC	C 15.2"	C 16.0" / C 23.2"	C 18.0"	C 19.2" / C 21.1"
Suisun Valley Rd. / Rockville Rd. Before Event / After Event:	Signal	**D 38.2"**	**D 42.3" / D 48.4"**	C 28.2"	C 30.8" / C 33.1"

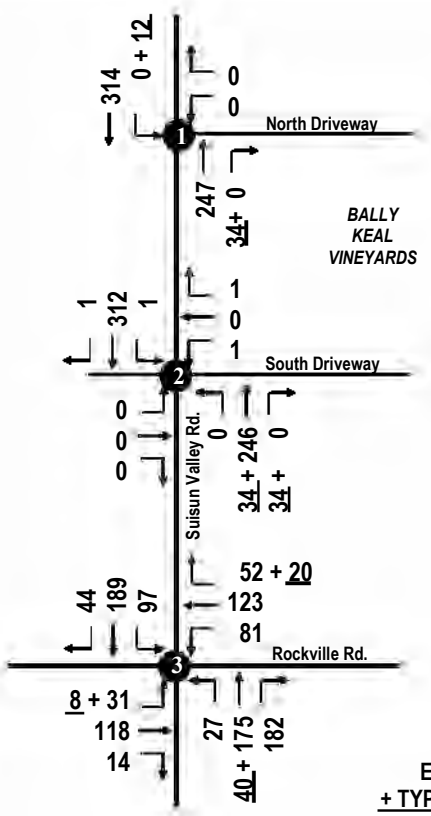
LOS conditions assuming all event trips (before and after) occur during the peak hour of background traffic.

Roadway Operations

Under cumulative plus typical event conditions, daily volumes on the highest volume link of Suisun Valley Road would increase to 7,136 weekday daily trips (7,000 + 136) and 6,836 weekend daily trips (6,700 + 136). LOS would remain unchanged and continue to operate at acceptable LOS C conditions with the added event trips (≤ 15,000 ADT).

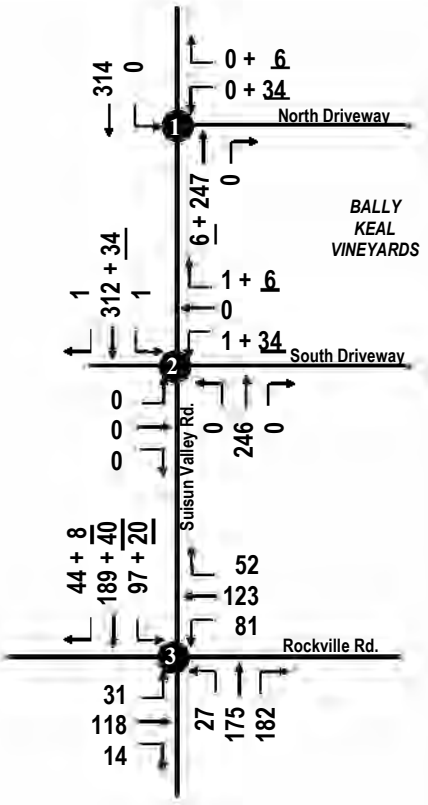
Large events with up to 400 guests would be limited to 10 events annually. For events with 400 guests, the project driveways could temporarily experience outbound vehicle delays after an event if the event ended during the peak commute hour of background traffic. However, the delays would be limited to vehicles on the property (not to vehicles on Suisun Valley Road). It is also anticipated the largest events will end later in the evening when traffic volumes on Suisun Valley Road are substantially lower than the peak commute volumes used for the analysis. The applicant has also stated that for the largest events, onsite traffic control personnel could be provided in order to direct vehicles in the most efficient circulation pattern.

An event with 400 guests would add approximately 322 daily trips (274 to the south and 48 to the north). Under existing conditions, total daily volumes on the highest volume link of Suisun Valley Road would result in 4,874 (4,600 + 274) weekday and 4,674 (4,400 + 274) weekend daily trips. Under cumulative conditions, total daily volumes would equate to 7,274 weekday and 6,974 weekend trips on Suisun Valley Road. Volumes under existing and cumulative conditions would continue to operate at acceptable LOS A-C conditions.

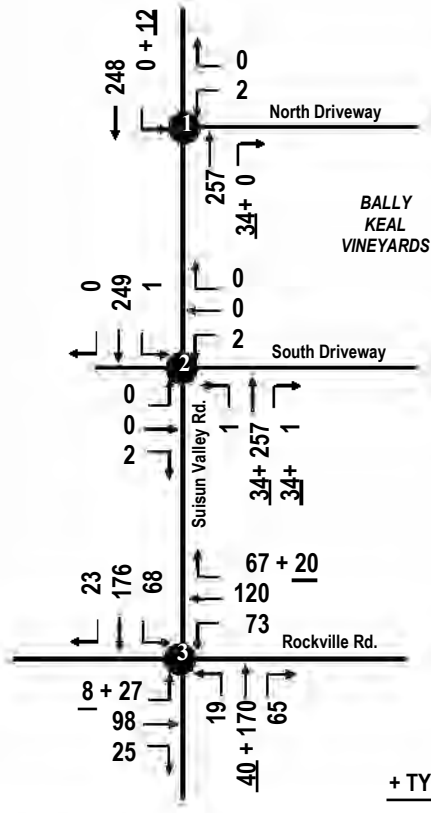


BEFORE EVENT

EXISTING WEEKDAY PM PEAK HOUR VOLUMES
+ TYPICAL SIZE EVENT TRIPS (80 IN Before, 80 OUT After)

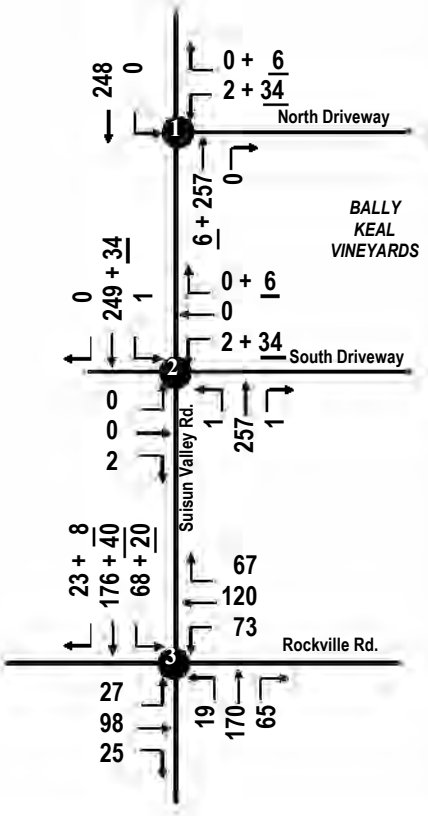


AFTER EVENT



BEFORE EVENT

EXISTING WEEKEND PEAK HOUR VOLUMES
+ TYPICAL SIZE EVENT TRIPS (80 IN Before, 80 OUT After)



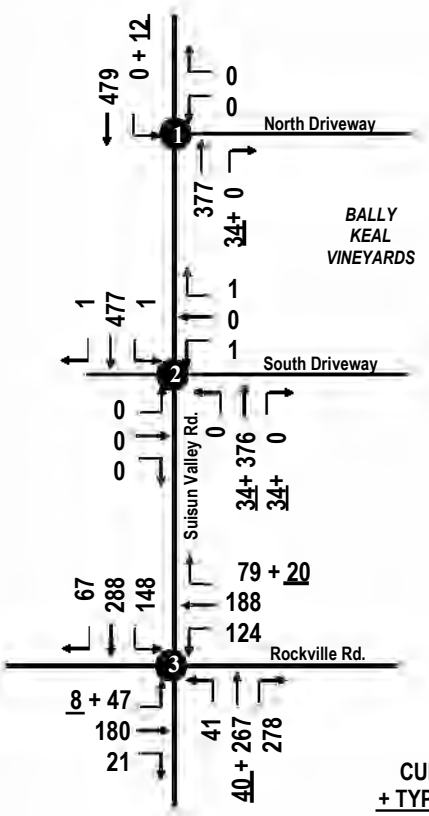
AFTER EVENT

GHD

EXISTING PEAK HOUR VOLUMES
+ 200 PERSON EVENT

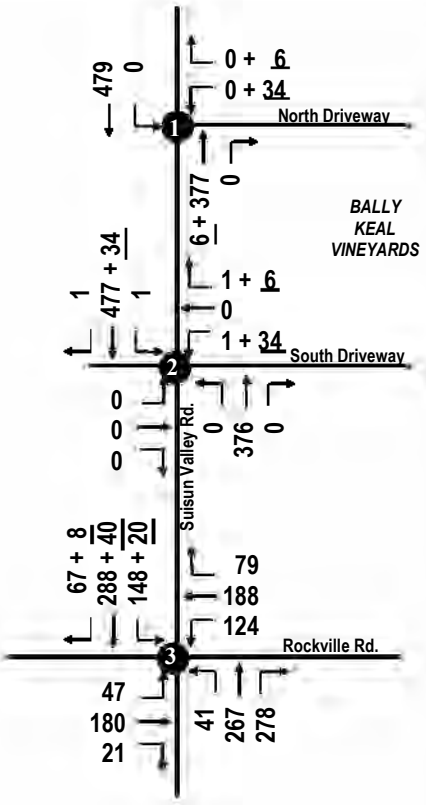
FIGURE 4

N

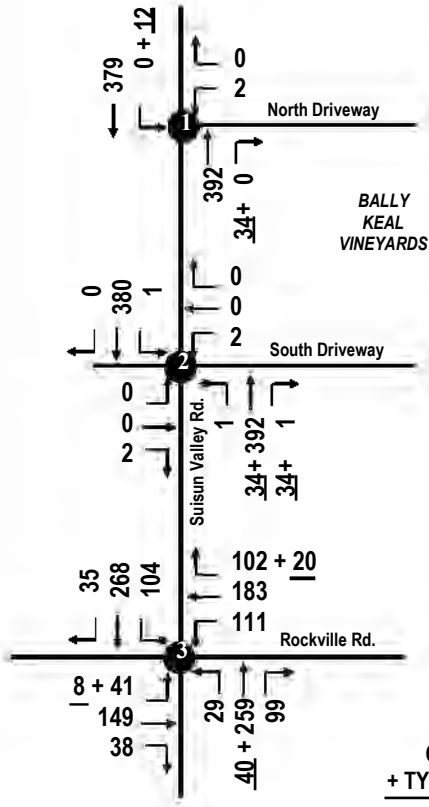


BEFORE EVENT

CUMULATIVE WEEKDAY PM PEAK HOUR VOLUMES
+ TYPICAL SIZE EVENT TRIPS (80 IN Before, 80 OUT After)

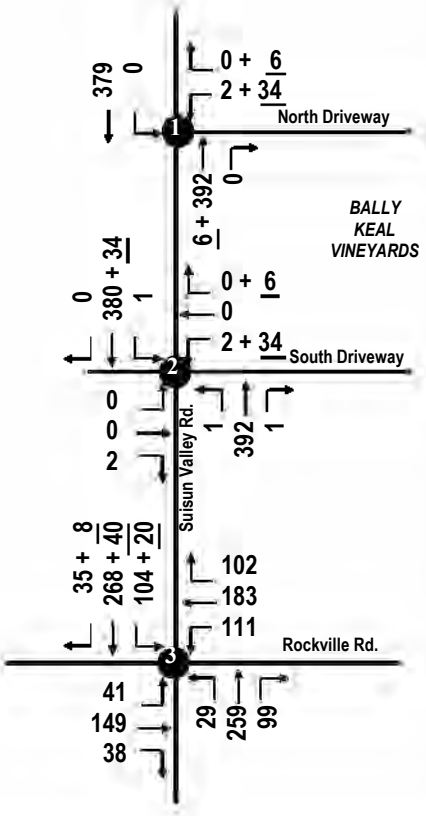


AFTER EVENT



BEFORE EVENT

CUMULATIVE WEEKEND PEAK HOUR VOLUMES
+ TYPICAL SIZE EVENT TRIPS (80 IN Before, 80 OUT After)



AFTER EVENT

CUMULATIVE PEAK HOUR VOLUMES
+ 200 PERSON EVENT

FIGURE 5

N

11. Auxiliary Turn Lane Warrants

The project's driveway volumes were compared with guidelines established by the Transportation Research Board (TRB) for warranting installation of a left-turn lane and/or a right-turn lane on Suisun Valley Road.[10] (The TRB warrant graphs correspond with the AASHTO guidelines for auxiliary lanes provided in the Policy on Geometric Design of Highways and Streets manual.) The recommendations for installing a left-turn lane are based on opposing traffic volumes approaching the intersection and the percentage of turning vehicles in the approaching volumes. The right turn warrants are based on the proportion of right turns to the total approach volumes. (The warrant graphs for weekday and weekend conditions are provided in the Appendices.)

Left-Turn Lane

As noted, access to/from the property is available via two driveways. Using both driveways, turning volumes could be reduced to 50% of the project trips at either driveway. However, to remain conservative, the left-turn lane warrants were evaluated assuming 100% of southbound left turns occur at one driveway (north).

Trips occurring on a regular basis would be generated by the winery use.

A left-turn lane would not be warranted for southbound Suisun Valley Road under existing or cumulative conditions with the added winery trips.

Right-Turn Lane

A right-turn lane also would not be warranted under existing or cumulative conditions with the added winery trips.

Event trips were compared to the turn lane thresholds, but the limited number of events (35 annually) should be considered when evaluating the relevance of the turn lane warrants.

Under existing and cumulative conditions during the peak commute hour of the day, the most common size events would not warrant a left-turn lane or a right-turn lane.

Under cumulative conditions, events would be at or near the lower threshold for a right-turn *taper* (paved shoulder area to facilitate turning out of the main lane of traffic). However, the project site's north driveway entrance is wide and flared, providing a wide turning radius which facilitates the inbound right-turn movement. Given the limited number of events, short time duration (one hour before event), and high background volume assumptions, additional right-turn lane improvements are not merited.

If improvements to the south driveway are required to meet County roadway standards, incorporating a flared driveway entrance similar to the north driveway could be considered in order to facilitate the right turn movement at the south driveway.

.

12. Project Site Access / Design Parameters

Vehicle Circulation

A preliminary site plan is provided in Figure 6. There are two driveways serving the site. The north driveway consists of an undivided segment on the western half, then widens to two lanes separated by a landscaped median on the eastern half. The driveway is very wide at the intersection of Suisun Valley Road (approximately 100 feet), providing a wide inbound turning radius and effectively two outbound turning lanes. The south driveway is a gravel driveway of various widths and also has wide flat dirt shoulders and turn-out areas.

It is our understanding that the north driveway meets the roadway standards for visitor and emergency vehicle access and that the south driveway would be improved, as necessary, to meet the required standards for visitor and emergency vehicle access/turn-around as a condition of approval. As noted in the turn lane section, if redesign of the south driveway entrance is required to meet roadway standards, incorporating a wider turning radius or turn apron/flare (similar to north driveway) could be considered in order to facilitate the inbound right-turn movements associated with events.

Sight Distance

Vehicle sight distances along Suisun Valley Road to/from both driveways were evaluated. Caltrans design standards for adequate sight distance are a function of vehicle speeds on the main road. The posted speed limit changes on the section of Suisun Valley Road fronting the project site. It has a posted speed limit of 55 mph on the north side and a 45 mph speed limit on the south side. Radar speed surveys of Suisun Valley Road were conducted at the project site. The "critical" vehicle speed (the speed at which 85% of all surveyed vehicles travel at or below) was measured to be 49 mph northbound and 51 mph southbound.

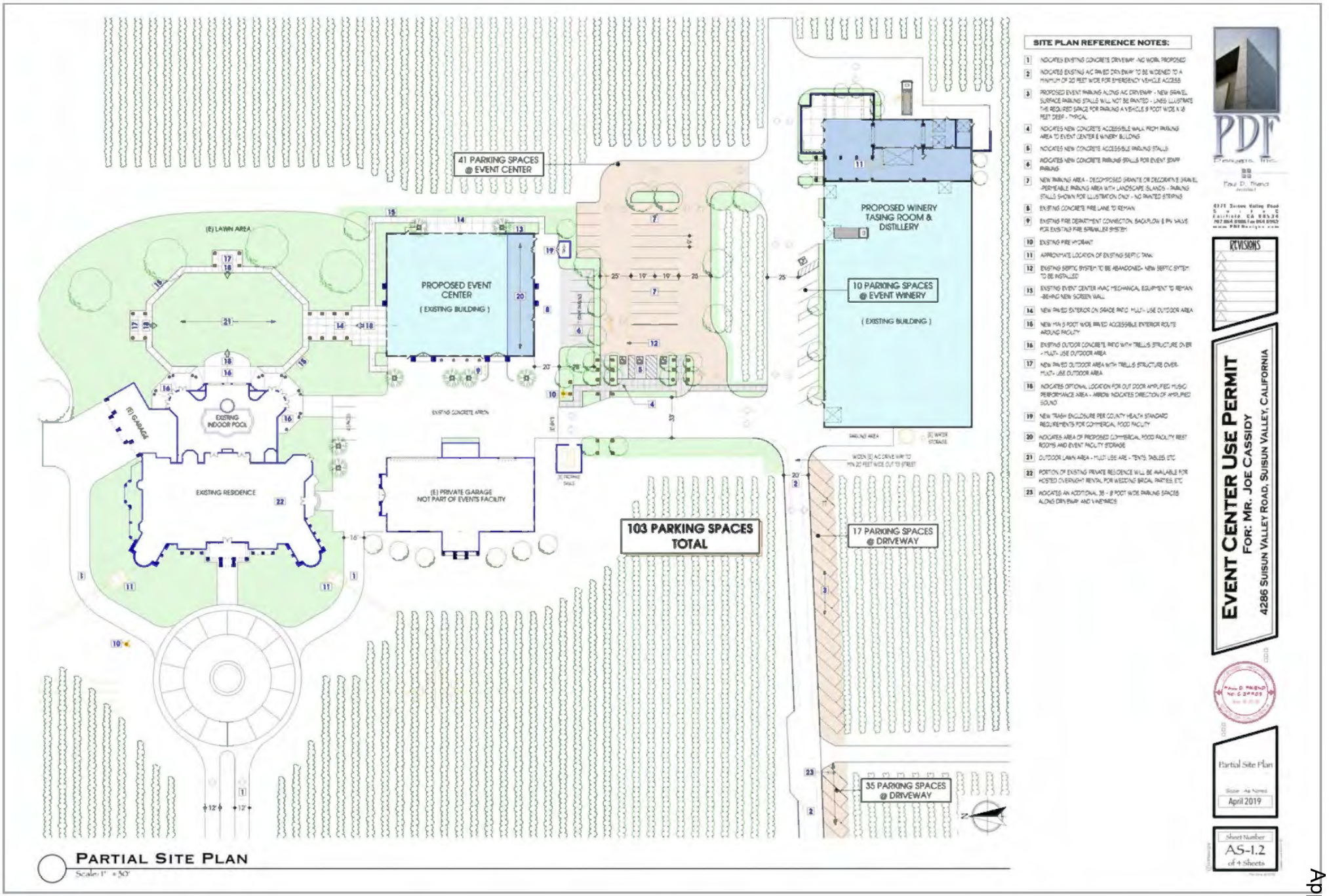
Caltrans' design standards for private access intersections recommends maintaining adequate "stopping sight distance" (the distance required for a driver at a given speed to come to a stop after seeing an obstacle on the roadway). Vehicle speeds of 51 mph require a stopping sight distance of 450 feet measured along the travel lanes on Suisun Valley Road.[11] Sight distance measurements taken at the driveway locations exceed the recommended distance in both directions at both driveway locations. Therefore, the sight distance recommendations are met.

Parking Supply

The preliminary site plan shows 103 striped parking spaces would be provided.

The proposed parking supply was compared to the County Zoning Regulations (Section 28.94.8 – Public Assembly). The zoning regulation requires one space per four seats or four persons at capacity. Maximum event size is 400 seats/guests, resulting in 100 required spaces. Therefore the proposed supply of 103 permanent spaces meets the requirement of 100 spaces.

A review of potential parking demands based on the trip generation calculations indicates supply for the winery, as well as most of the events, would be accommodated by the 103 striped spaces. However, for events in excess of 255 guests, demand could exceed supply based on the vehicle trip calculations (255 guests/2.8 per vehicle + 17 staff/1.5 per vehicle = 102 vehicles). An event with 400 guests is calculated to generate a demand for 161 spaces based on the vehicle trip rates. The applicant has stated that ample temporary parking space is available on the property grounds which would accommodate all event sizes onsite. As noted, the applicant also states that onsite traffic control personnel could be provided to direct vehicles in the most efficient parking and circulation pattern. Offsite parking is prohibited within the Suisun Valley Road right-of-way along the entire property frontage and would not be allowed.



PROJECT SITE PLAN

FIGURE 6

Appendix E

References:

(1) Solano County General Plan, Transportation and Circulation, 2008.

(2) Solano Transportation Authority, Countywide Bicycle Transportation Plan, 2012.

(3) National Data Systems, peak period counts 10/18/19 (3:00-6:00 p.m.) and 10/19/19 (12:00-4:00 p.m.). Daily counts 10/18-26/19.

(4) Transportation Research Board, Highway Capacity Manual 2010.

(5) Solano County, Road Improvement Standards and Land Development Requirements, February 28, 2006.

(6) Solano County, Draft General Plan EIR, 2008.

(7) Napa County, Conservation, Development, and Planning Department, "Use Permit Application Package," Napa County Winery Traffic Generation Characteristics, 2019.

(8) Institute of Transportation Engineers, Trip Generation Manual, 10th Edition, Winery Land Use,

(9) Solano Transportation Authority, Napa-Solano Regional Travel Demand Model (2040).

(10) Transportation Research Board, National Cooperative Highway Research Program Report 279, "Intersection Channelization Design Guide", November, 1985.

(11) Caltrans, Highway Design Manual, 6th Ed., Stopping/Corner Sight Distance, Chapters 200 and 400, 2018.

Appendices

LOS Calculations

Turn Lane Warrants

Traffic Counts

LEVEL-OF-SERVICE CRITERIA FOR INTERSECTIONS

LEVEL OF SERVICE	TYPE OF FLOW	DELAY	MANEUVERABILITY	CONTROL DELAY (SECONDS/VEHICLE)		
				SIGNALIZED	UNSIGNALIZED	ALL-WAY STOP
A	Stable Flow	Very slight delay. Progression is very favorable, with most vehicles arriving during the green phase not stopping at all.	Turning movements are easily made, and nearly all drivers find freedom of operation.	≤ 10.0 secs. ≤ 0.60 v/c	≤ 10.0	≤ 10.0
B	Stable Flow	Good progression and/or short cycle lengths. More vehicles stop than for LOS A, causing higher levels of average delay.	Vehicle platoons are formed. Many drivers begin to feel somewhat restricted within groups of vehicles.	>10 and ≤ 20.0 secs. 0.61 – 0.70 v/c	>10 and ≤ 15.0	>10 and ≤ 15.0
C	Stable Flow	Higher delays resulting from fair progression and/or longer cycle lengths. Individual cycle failures may begin to appear at this level. The number of vehicles stopping is significant, although many still pass through the intersection without stopping.	Back-ups may develop behind turning vehicles. Most drivers feel somewhat restricted	>20 and ≤ 35.0 secs. 0.71 – 0.80 v/c	>15 and ≤ 25.0	>15 and ≤ 25.0
D	Approaching Unstable Flow	The influence of congestion becomes more noticeable. Longer delays may result from some combination of unfavorable progression, long cycle lengths, or high volume-to-capacity ratios. Many vehicles stop, and the proportion of vehicles of stopping declines. Individual cycle failures are noticeable.	Maneuverability is severely limited during short periods due to temporary back-ups.	>35 and ≤ 55.0 secs. 0.81 – 0.90 v/c	>25 and ≤ 35.0	>25 and ≤ 35.0
E	Unstable Flow	Generally considered to be the limit of acceptable delay. Indicative of poor progression, long cycle lengths, and high volume-to-capacity ratios. Individual cycle failures are frequent occurrences.	There are typically long queues of vehicles waiting upstream of the intersection.	>55 and ≤ 80.0 secs. 0.91 – 1.00 v/c	>35 and ≤ 50.0	>35 and ≤ 50.0
F	Forced Flow	Generally considered to be unacceptable to most drivers. Often occurs with over saturation. May also occur at high volume-to-capacity ratios. There are many individual cycle failures. Poor progression and long cycle lengths may also be major contributing factors.	Jammed conditions. Back-ups from other locations restrict or prevent movement. Volumes may vary widely, depending principally on the downstream back-up conditions.	> 80.0 secs. > 1.00 v/c	> 50.0	> 50.0

Reference: Transportation Research Board, Highway Capacity Manual 2010.

ROADWAY SEGMENT LEVEL OF SERVICE VOLUME THRESHOLDS

Table 4.4-3
Level of Service Criteria and Description

No. of Lanes	Annual Average Daily Volume			
	LOS A–C	LOS D	LOS E	LOS F
Freeways				
4	≤ 52,000	≤ 67,200	≤ 76,500	> 76,500
6	≤ 81,700	≤ 105,800	≤ 120,200	> 120,200
8	≤ 111,400	≤ 144,300	≤ 163,900	> 163,900
10	≤ 41,200	≤ 182,600	≤ 207,600	> 207,600
12	≤ 170,900	≤ 221,100	≤ 251,200	> 251,200
Urban Roadway Segments				
2	≤ 11,200	≤ 15,400	≤ 16,300	> 16,300
4	≤ 26,000	≤ 32,700	≤ 34,500	> 34,500
6	≤ 40,300	≤ 49,200	≤ 51,800	> 51,800
8	≤ 53,300	≤ 63,800	≤ 67,000	> 67,000
Rural Roadway Segments				
2	≤ 15,000	≤ 21,300	≤ 27,100	> 27,100
4	≤ 47,800	≤ 61,800	≤ 70,200	> 70,200
6	≤ 71,600	≤ 92,700	≤ 105,400	> 105,400

Note: LOS = Level of service
Source: Florida Department of Transportation 2008

Source: Solano County Draft General Plan, 2008.

LOS Calculations

Intersection	
Int Delay, s/veh	0

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	0	247	0	0	314
Future Vol, veh/h	0	0	247	0	0	314
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	40	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	50	50	77	77	66	66
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	0	321	0	0	476

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	797	321	0	0	321	0
Stage 1	321	-	-	-	-	-
Stage 2	476	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	356	720	-	-	1239	-
Stage 1	735	-	-	-	-	-
Stage 2	625	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	356	720	-	-	1239	-
Mov Cap-2 Maneuver	356	-	-	-	-	-
Stage 1	735	-	-	-	-	-
Stage 2	625	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	0	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	-	-	1239	-
HCM Lane V/C Ratio	-	-	-	-	-	-
HCM Control Delay (s)	-	-	0	0	0	-
HCM Lane LOS	-	-	A	A	A	-
HCM 95th %tile Q(veh)	-	-	-	-	0	-

Intersection	
Int Delay, s/veh	0.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	0	0	0	1	0	1	0	246	0	1	312	1
Future Vol, veh/h	0	0	0	1	0	1	0	246	0	1	312	1
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	70	70	70	50	50	50	78	78	78	68	68	68
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	2	0	2	0	315	0	1	459	1

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	778	777	460	777	777	315	460	0	0	315	0	0
Stage 1	462	462	-	315	315	-	-	-	-	-	-	-
Stage 2	316	315	-	462	462	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	314	328	601	314	328	725	1101	-	-	1245	-	-
Stage 1	580	565	-	696	656	-	-	-	-	-	-	-
Stage 2	695	656	-	580	565	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	313	328	601	314	328	725	1101	-	-	1245	-	-
Mov Cap-2 Maneuver	313	328	-	314	328	-	-	-	-	-	-	-
Stage 1	580	564	-	696	656	-	-	-	-	-	-	-
Stage 2	693	656	-	579	564	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	13.3	0	0
HCM LOS	A	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1101	-	-	-	438	1245	-	-
HCM Lane V/C Ratio	-	-	-	-	0.009	0.001	-	-
HCM Control Delay (s)	0	-	-	0	13.3	7.9	0	-
HCM Lane LOS	A	-	-	A	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	-	0	0	-	-

HCM 2010 Signalized Intersection Summary
3: Suisun Valley Rd. & Rockville Road

Weekday Existing PM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	31	118	14	81	123	52	27	175	182	97	189	44
Future Volume (veh/h)	31	118	14	81	123	52	27	175	182	97	189	44
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, 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
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1900	1900	1863	1863	1900	1863	1900
Adj Flow Rate, veh/h	40	153	18	88	134	0	31	201	209	126	245	57
Adj No. of Lanes	1	1	1	1	1	0	0	1	1	0	1	0
Peak Hour Factor	0.77	0.77	0.77	0.92	0.92	0.92	0.87	0.87	0.87	0.77	0.77	0.77
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	74	235	200	121	284	0	45	294	398	151	293	68
Arrive On Green	0.04	0.13	0.13	0.07	0.15	0.00	0.18	0.18	0.18	0.29	0.29	0.29
Sat Flow, veh/h	1774	1863	1583	1774	1863	0	247	1603	1583	528	1027	239
Grp Volume(v), veh/h	40	153	18	88	134	0	232	0	209	428	0	0
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1774	1863	0	1850	0	1583	1794	0	0
Q Serve(g_s), s	1.2	4.2	0.5	2.6	3.5	0.0	6.3	0.0	6.1	12.0	0.0	0.0
Cycle Q Clear(g_c), s	1.2	4.2	0.5	2.6	3.5	0.0	6.3	0.0	6.1	12.0	0.0	0.0
Prop In Lane	1.00		1.00	1.00		0.00	0.13		1.00	0.29		0.13
Lane Grp Cap(c), veh/h	74	235	200	121	284	0	339	0	398	512	0	0
V/C Ratio(X)	0.54	0.65	0.09	0.73	0.47	0.00	0.68	0.00	0.52	0.84	0.00	0.00
Avail Cap(c_a), veh/h	169	627	533	176	634	0	658	0	671	661	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	0.00	1.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	25.1	22.2	20.6	24.4	20.7	0.0	20.4	0.0	17.2	17.9	0.0	0.0
Incr Delay (d2), s/veh	5.9	3.0	0.2	8.0	1.2	0.0	2.4	0.0	1.1	7.3	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.7	2.3	0.2	1.5	1.9	0.0	3.4	0.0	2.7	6.9	0.0	0.0
LnGrp Delay(d),s/veh	31.0	25.2	20.8	32.4	21.9	0.0	22.8	0.0	18.3	25.2	0.0	0.0
LnGrp LOS	C	C	C	C	C		C		B	C		
Approach Vol, veh/h		211			222			441			428	
Approach Delay, s/veh		26.0			26.1			20.7			25.2	
Approach LOS		C			C			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4		6	7	8
Phs Duration (G+Y+Rc), s		14.3	8.1	11.2		19.8	6.7	12.7
Change Period (Y+Rc), s		4.5	4.5	4.5		4.5	4.5	4.5
Max Green Setting (Gmax), s		19.0	5.3	18.0		19.7	5.1	18.2
Max Q Clear Time (g_c+I1), s		8.3	4.6	6.2		14.0	3.2	5.5
Green Ext Time (p_c), s		1.6	0.0	0.6		1.3	0.0	0.5

Intersection Summary	
HCM 2010 Ctrl Delay	23.9
HCM 2010 LOS	C

Notes

Intersection	
Int Delay, s/veh	0.1

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	2	0	257	0	0	248
Future Vol, veh/h	2	0	257	0	0	248
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	40	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	65	65	88	88	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	3	0	292	0	0	270

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	562	292	0	0	292	0
Stage 1	292	-	-	-	-	-
Stage 2	270	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	488	747	-	-	1270	-
Stage 1	758	-	-	-	-	-
Stage 2	775	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	488	747	-	-	1270	-
Mov Cap-2 Maneuver	488	-	-	-	-	-
Stage 1	758	-	-	-	-	-
Stage 2	775	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	12.4	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	488	-	1270	-
HCM Lane V/C Ratio	-	-	0.006	-	-	-
HCM Control Delay (s)	-	-	12.4	0	0	-
HCM Lane LOS	-	-	B	A	A	-
HCM 95th %tile Q(veh)	-	-	0	-	0	-

Intersection	
Int Delay, s/veh	0.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	0	0	2	2	0	0	1	257	1	1	249	0
Future Vol, veh/h	0	0	2	2	0	0	1	257	1	1	249	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	65	65	65	65	65	65	85	85	85	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	3	3	0	0	1	302	1	1	271	0

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	578	578	271	580	578	303	271	0	0	303	0	0
Stage 1	273	273	-	305	305	-	-	-	-	-	-	-
Stage 2	305	305	-	275	273	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	427	427	768	426	427	737	1292	-	-	1258	-	-
Stage 1	733	684	-	705	662	-	-	-	-	-	-	-
Stage 2	705	662	-	731	684	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	426	426	768	423	426	737	1292	-	-	1258	-	-
Mov Cap-2 Maneuver	426	426	-	423	426	-	-	-	-	-	-	-
Stage 1	732	683	-	704	661	-	-	-	-	-	-	-
Stage 2	704	661	-	727	683	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	9.7	13.6	0	0
HCM LOS	A	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1292	-	-	768	423	1258	-	-
HCM Lane V/C Ratio	0.001	-	-	0.004	0.007	0.001	-	-
HCM Control Delay (s)	7.8	0	-	9.7	13.6	7.9	0	-
HCM Lane LOS	A	A	-	A	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0	0	0	-	-

HCM 2010 Signalized Intersection Summary
3: Suisun Valley Rd. & Rockville Road

Weekend Existing Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	27	98	25	73	120	67	19	170	65	68	176	23
Future Volume (veh/h)	27	98	25	73	120	67	19	170	65	68	176	23
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, 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
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1900	1900	1863	1863	1900	1863	1900
Adj Flow Rate, veh/h	31	113	29	79	130	0	22	198	76	74	191	25
Adj No. of Lanes	1	1	1	1	1	0	0	1	1	0	1	0
Peak Hour Factor	0.87	0.87	0.87	0.92	0.92	0.92	0.86	0.86	0.86	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	64	212	180	126	277	0	33	299	397	100	257	34
Arrive On Green	0.04	0.11	0.11	0.07	0.15	0.00	0.18	0.18	0.18	0.22	0.22	0.22
Sat Flow, veh/h	1774	1863	1583	1774	1863	0	185	1668	1583	462	1193	156
Grp Volume(v), veh/h	31	113	29	79	130	0	220	0	76	290	0	0
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1774	1863	0	1853	0	1583	1812	0	0
Q Serve(g_s), s	0.7	2.5	0.7	1.9	2.7	0.0	4.7	0.0	1.6	6.4	0.0	0.0
Cycle Q Clear(g_c), s	0.7	2.5	0.7	1.9	2.7	0.0	4.7	0.0	1.6	6.4	0.0	0.0
Prop In Lane	1.00		1.00	1.00		0.00	0.10		1.00	0.26		0.09
Lane Grp Cap(c), veh/h	64	212	180	126	277	0	332	0	397	391	0	0
V/C Ratio(X)	0.49	0.53	0.16	0.63	0.47	0.00	0.66	0.00	0.19	0.74	0.00	0.00
Avail Cap(c_a), veh/h	236	783	665	269	818	0	844	0	834	762	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	0.00	1.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	20.3	17.9	17.1	19.3	16.7	0.0	16.4	0.0	12.6	15.7	0.0	0.0
Incr Delay (d2), s/veh	5.6	2.1	0.4	5.0	1.2	0.0	2.3	0.0	0.2	2.8	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.5	1.4	0.3	1.1	1.5	0.0	2.6	0.0	0.7	3.4	0.0	0.0
LnGrp Delay(d),s/veh	25.9	20.0	17.6	24.3	17.9	0.0	18.6	0.0	12.9	18.5	0.0	0.0
LnGrp LOS	C	B	B	C	B		B		B	B		
Approach Vol, veh/h		173			209			296			290	
Approach Delay, s/veh		20.6			20.3			17.1			18.5	
Approach LOS		C			C			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4		6	7	8
Phs Duration (G+Y+Rc), s		12.2	7.5	9.4		13.7	6.0	10.9
Change Period (Y+Rc), s		4.5	4.5	4.5		4.5	4.5	4.5
Max Green Setting (Gmax), s		19.5	6.5	18.0		18.0	5.7	18.8
Max Q Clear Time (g_c+I1), s		6.7	3.9	4.5		8.4	2.7	4.7
Green Ext Time (p_c), s		1.2	0.0	0.5		1.1	0.0	0.5

Intersection Summary	
HCM 2010 Ctrl Delay	18.9
HCM 2010 LOS	B

Notes

Intersection	
Int Delay, s/veh	0.2

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	4	1	247	3	1	314
Future Vol, veh/h	4	1	247	3	1	314
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	40	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	50	50	77	77	66	66
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	8	2	321	4	2	476

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	803	323	0	0	325	0
Stage 1	323	-	-	-	-	-
Stage 2	480	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	353	718	-	-	1235	-
Stage 1	734	-	-	-	-	-
Stage 2	622	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	352	718	-	-	1235	-
Mov Cap-2 Maneuver	352	-	-	-	-	-
Stage 1	733	-	-	-	-	-
Stage 2	622	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	14.4	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	352	718	1235	-
HCM Lane V/C Ratio	-	-	0.023	0.003	0.001	-
HCM Control Delay (s)	-	-	15.5	10	7.9	0
HCM Lane LOS	-	-	C	B	A	A
HCM 95th %tile Q(veh)	-	-	0.1	0	0	-

Intersection	
Int Delay, s/veh	0.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	0	0	0	5	0	1	0	249	0	1	316	1
Future Vol, veh/h	0	0	0	5	0	1	0	249	0	1	316	1
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	70	70	70	50	50	50	78	78	78	68	68	68
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	10	0	2	0	319	0	1	465	1

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	788	787	466	787	787	319	466	0	0	319	0	0
Stage 1	468	468	-	319	319	-	-	-	-	-	-	-
Stage 2	320	319	-	468	468	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	309	324	597	309	324	722	1095	-	-	1241	-	-
Stage 1	575	561	-	693	653	-	-	-	-	-	-	-
Stage 2	692	653	-	575	561	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	308	324	597	309	324	722	1095	-	-	1241	-	-
Mov Cap-2 Maneuver	308	324	-	309	324	-	-	-	-	-	-	-
Stage 1	575	560	-	693	653	-	-	-	-	-	-	-
Stage 2	690	653	-	574	560	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	15.9	0	0
HCM LOS	A	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1095	-	-	-	342	1241	-	-
HCM Lane V/C Ratio	-	-	-	-	0.035	0.001	-	-
HCM Control Delay (s)	0	-	-	0	15.9	7.9	0	-
HCM Lane LOS	A	-	-	A	C	A	A	-
HCM 95th %tile Q(veh)	0	-	-	-	0.1	0	-	-

HCM 2010 Signalized Intersection Summary — Weekday Existing PM Pk Hr + Winery
3: Suisun Valley Rd. & Rockville Road

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	31	118	14	81	123	53	27	177	182	99	194	45
Future Volume (veh/h)	31	118	14	81	123	53	27	177	182	99	194	45
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, 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
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1900	1900	1863	1863	1900	1863	1900
Adj Flow Rate, veh/h	40	153	18	88	134	0	31	203	209	129	252	58
Adj No. of Lanes	1	1	1	1	1	0	0	1	1	0	1	0
Peak Hour Factor	0.77	0.77	0.77	0.92	0.92	0.92	0.87	0.87	0.87	0.77	0.77	0.77
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	74	234	199	120	283	0	45	295	398	153	299	69
Arrive On Green	0.04	0.13	0.13	0.07	0.15	0.00	0.18	0.18	0.18	0.29	0.29	0.29
Sat Flow, veh/h	1774	1863	1583	1774	1863	0	245	1605	1583	527	1030	237
Grp Volume(v), veh/h	40	153	18	88	134	0	234	0	209	439	0	0
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1774	1863	0	1850	0	1583	1795	0	0
Q Serve(g_s), s	1.2	4.2	0.5	2.6	3.6	0.0	6.4	0.0	6.2	12.4	0.0	0.0
Cycle Q Clear(g_c), s	1.2	4.2	0.5	2.6	3.6	0.0	6.4	0.0	6.2	12.4	0.0	0.0
Prop In Lane	1.00		1.00	1.00		0.00	0.13		1.00	0.29		0.13
Lane Grp Cap(c), veh/h	74	234	199	120	283	0	340	0	398	520	0	0
V/C Ratio(X)	0.54	0.65	0.09	0.73	0.47	0.00	0.69	0.00	0.52	0.84	0.00	0.00
Avail Cap(c_a), veh/h	167	620	527	174	627	0	650	0	664	654	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	0.00	1.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	25.4	22.5	20.9	24.7	21.0	0.0	20.6	0.0	17.5	18.0	0.0	0.0
Incr Delay (d2), s/veh	6.0	3.1	0.2	8.6	1.2	0.0	2.5	0.0	1.1	8.1	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.7	2.4	0.2	1.6	1.9	0.0	3.5	0.0	2.8	7.3	0.0	0.0
LnGrp Delay(d),s/veh	31.4	25.6	21.1	33.3	22.2	0.0	23.1	0.0	18.5	26.2	0.0	0.0
LnGrp LOS	C	C	C	C	C		C		B	C		
Approach Vol, veh/h		211			222			443			439	
Approach Delay, s/veh		26.3			26.6			21.0			26.2	
Approach LOS		C			C			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4		6	7	8
Phs Duration (G+Y+Rc), s		14.4	8.2	11.3		20.2	6.8	12.7
Change Period (Y+Rc), s		4.5	4.5	4.5		4.5	4.5	4.5
Max Green Setting (Gmax), s		19.0	5.3	18.0		19.7	5.1	18.2
Max Q Clear Time (g_c+I1), s		8.4	4.6	6.2		14.4	3.2	5.6
Green Ext Time (p_c), s		1.6	0.0	0.6		1.3	0.0	0.5

Intersection Summary	
HCM 2010 Ctrl Delay	24.5
HCM 2010 LOS	C

Notes

Intersection	
Int Delay, s/veh	0.3

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	6	1	258	7	2	248
Future Vol, veh/h	6	1	258	7	2	248
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	40	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	65	65	88	88	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	9	2	293	8	2	270

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	571	297	0	0	301	0
Stage 1	297	-	-	-	-	-
Stage 2	274	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	482	742	-	-	1260	-
Stage 1	754	-	-	-	-	-
Stage 2	772	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	481	742	-	-	1260	-
Mov Cap-2 Maneuver	481	-	-	-	-	-
Stage 1	752	-	-	-	-	-
Stage 2	772	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	12.2	0	0.1
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	481	742	1260	-
HCM Lane V/C Ratio	-	-	0.019	0.002	0.002	-
HCM Control Delay (s)	-	-	12.6	9.9	7.9	0
HCM Lane LOS	-	-	B	A	A	A
HCM 95th %tile Q(veh)	-	-	0.1	0	0	-

Intersection	
Int Delay, s/veh	0.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	0	0	2	5	0	1	1	264	1	1	253	0
Future Vol, veh/h	0	0	2	5	0	1	1	264	1	1	253	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	65	65	65	65	65	65	85	85	85	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	3	8	0	2	1	311	1	1	275	0

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	592	591	275	593	591	312	275	0	0	312	0	0
Stage 1	277	277	-	314	314	-	-	-	-	-	-	-
Stage 2	315	314	-	279	277	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	418	420	764	417	420	728	1288	-	-	1248	-	-
Stage 1	729	681	-	697	656	-	-	-	-	-	-	-
Stage 2	696	656	-	728	681	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	416	419	764	414	419	728	1288	-	-	1248	-	-
Mov Cap-2 Maneuver	416	419	-	414	419	-	-	-	-	-	-	-
Stage 1	728	680	-	696	655	-	-	-	-	-	-	-
Stage 2	694	655	-	724	680	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	9.7	13.2	0	0
HCM LOS	A	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1288	-	-	764	446	1248	-	-
HCM Lane V/C Ratio	0.001	-	-	0.004	0.021	0.001	-	-
HCM Control Delay (s)	7.8	0	-	9.7	13.2	7.9	0	-
HCM Lane LOS	A	A	-	A	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0	0.1	0	-	-

HCM 2010 Signalized Intersection Summary
3: Suisun Valley Rd. & Rockville Road

Weekend Existing Pk Hr + Winery

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	28	98	25	73	120	69	19	174	65	70	180	24
Future Volume (veh/h)	28	98	25	73	120	69	19	174	65	70	180	24
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, 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
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1900	1900	1863	1863	1900	1863	1900
Adj Flow Rate, veh/h	32	113	29	79	130	0	22	202	76	76	196	26
Adj No. of Lanes	1	1	1	1	1	0	0	1	1	0	1	0
Peak Hour Factor	0.87	0.87	0.87	0.92	0.92	0.92	0.86	0.86	0.86	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	65	209	178	126	273	0	33	303	399	102	262	35
Arrive On Green	0.04	0.11	0.11	0.07	0.15	0.00	0.18	0.18	0.18	0.22	0.22	0.22
Sat Flow, veh/h	1774	1863	1583	1774	1863	0	182	1672	1583	462	1192	158
Grp Volume(v), veh/h	32	113	29	79	130	0	224	0	76	298	0	0
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1774	1863	0	1854	0	1583	1812	0	0
Q Serve(g_s), s	0.8	2.5	0.7	1.9	2.8	0.0	4.9	0.0	1.6	6.7	0.0	0.0
Cycle Q Clear(g_c), s	0.8	2.5	0.7	1.9	2.8	0.0	4.9	0.0	1.6	6.7	0.0	0.0
Prop In Lane	1.00		1.00	1.00		0.00	0.10		1.00	0.26		0.09
Lane Grp Cap(c), veh/h	65	209	178	126	273	0	336	0	399	399	0	0
V/C Ratio(X)	0.49	0.54	0.16	0.63	0.48	0.00	0.67	0.00	0.19	0.75	0.00	0.00
Avail Cap(c_a), veh/h	233	774	658	266	808	0	834	0	825	753	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	0.00	1.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	20.5	18.2	17.4	19.6	17.0	0.0	16.5	0.0	12.7	15.8	0.0	0.0
Incr Delay (d2), s/veh	5.6	2.2	0.4	5.1	1.3	0.0	2.3	0.0	0.2	2.8	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.5	1.4	0.3	1.1	1.5	0.0	2.7	0.0	0.7	3.6	0.0	0.0
LnGrp Delay(d),s/veh	26.0	20.3	17.8	24.7	18.3	0.0	18.8	0.0	13.0	18.6	0.0	0.0
LnGrp LOS	C	C	B	C	B		B		B	B		
Approach Vol, veh/h		174			209			300			298	
Approach Delay, s/veh		21.0			20.7			17.3			18.6	
Approach LOS		C			C			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4		6	7	8
Phs Duration (G+Y+Rc), s		12.4	7.6	9.4		14.0	6.1	10.8
Change Period (Y+Rc), s		4.5	4.5	4.5		4.5	4.5	4.5
Max Green Setting (Gmax), s		19.5	6.5	18.0		18.0	5.7	18.8
Max Q Clear Time (g_c+I1), s		6.9	3.9	4.5		8.7	2.8	4.8
Green Ext Time (p_c), s		1.2	0.0	0.5		1.2	0.0	0.5

Intersection Summary	
HCM 2010 Ctrl Delay	19.1
HCM 2010 LOS	B

Notes

HCM 2010 TWSC
1: Suisun Valley Rd. & Bally Keal North Driveway

Weekday Cumulative PM Peak Hour

Intersection	
Int Delay, s/veh	0

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	0	377	0	0	479
Future Vol, veh/h	0	0	377	0	0	479
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	40	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	50	50	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	0	410	0	0	521

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	931	410	0	0	410	0
Stage 1	410	-	-	-	-	-
Stage 2	521	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	296	642	-	-	1149	-
Stage 1	670	-	-	-	-	-
Stage 2	596	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	296	642	-	-	1149	-
Mov Cap-2 Maneuver	296	-	-	-	-	-
Stage 1	670	-	-	-	-	-
Stage 2	596	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	0	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	-	-	1149	-
HCM Lane V/C Ratio	-	-	-	-	-	-
HCM Control Delay (s)	-	-	0	0	0	-
HCM Lane LOS	-	-	A	A	A	-
HCM 95th %tile Q(veh)	-	-	-	-	0	-

Intersection	
Int Delay, s/veh	0.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	0	0	0	1	0	1	0	376	0	1	477	1
Future Vol, veh/h	0	0	0	1	0	1	0	376	0	1	477	1
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	70	70	70	50	50	50	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	2	0	2	0	409	0	1	518	1

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	931	930	519	930	930	409	519	0	0	409	0	0
Stage 1	521	521	-	409	409	-	-	-	-	-	-	-
Stage 2	410	409	-	521	521	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	247	267	557	248	267	642	1047	-	-	1150	-	-
Stage 1	539	532	-	619	596	-	-	-	-	-	-	-
Stage 2	619	596	-	539	532	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	246	267	557	248	267	642	1047	-	-	1150	-	-
Mov Cap-2 Maneuver	246	267	-	248	267	-	-	-	-	-	-	-
Stage 1	539	531	-	619	596	-	-	-	-	-	-	-
Stage 2	617	596	-	538	531	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	15.2	0	0
HCM LOS	A	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1047	-	-	-	358	1150	-	-
HCM Lane V/C Ratio	-	-	-	-	0.011	0.001	-	-
HCM Control Delay (s)	0	-	-	0	15.2	8.1	0	-
HCM Lane LOS	A	-	-	A	C	A	A	-
HCM 95th %tile Q(veh)	0	-	-	-	0	0	-	-

HCM 2010 Signalized Intersection Summary
3: Suisun Valley Rd. & Rockville Road

Weekday Cumulative PM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	47	180	21	124	188	79	41	267	278	148	288	67
Future Volume (veh/h)	47	180	21	124	188	79	41	267	278	148	288	67
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, 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
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1900	1900	1863	1863	1900	1863	1900
Adj Flow Rate, veh/h	51	196	23	135	204	0	45	290	302	161	313	73
Adj No. of Lanes	1	1	1	1	1	0	0	1	1	0	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	74	249	212	168	348	0	54	350	496	177	345	80
Arrive On Green	0.04	0.13	0.13	0.09	0.19	0.00	0.22	0.22	0.22	0.34	0.34	0.34
Sat Flow, veh/h	1774	1863	1583	1774	1863	0	249	1602	1583	528	1027	239
Grp Volume(v), veh/h	51	196	23	135	204	0	335	0	302	547	0	0
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1774	1863	0	1850	0	1583	1794	0	0
Q Serve(g_s), s	2.4	8.4	1.1	6.2	8.3	0.0	14.3	0.0	13.4	24.1	0.0	0.0
Cycle Q Clear(g_c), s	2.4	8.4	1.1	6.2	8.3	0.0	14.3	0.0	13.4	24.1	0.0	0.0
Prop In Lane	1.00		1.00	1.00		0.00	0.13		1.00	0.29		0.13
Lane Grp Cap(c), veh/h	74	249	212	168	348	0	404	0	496	602	0	0
V/C Ratio(X)	0.69	0.79	0.11	0.80	0.59	0.00	0.83	0.00	0.61	0.91	0.00	0.00
Avail Cap(c_a), veh/h	111	405	344	203	501	0	514	0	590	682	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	0.00	1.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	39.2	34.8	31.6	36.7	30.8	0.0	30.9	0.0	24.1	26.3	0.0	0.0
Incr Delay (d2), s/veh	10.8	5.5	0.2	17.3	1.6	0.0	8.8	0.0	1.3	14.9	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.4	4.7	0.5	3.8	4.4	0.0	8.2	0.0	6.0	14.4	0.0	0.0
LnGrp Delay(d),s/veh	50.0	40.2	31.8	54.0	32.4	0.0	39.7	0.0	25.5	41.2	0.0	0.0
LnGrp LOS	D	D	C	D	C		D		C	D		
Approach Vol, veh/h		270			339			637			547	
Approach Delay, s/veh		41.4			41.0			32.9			41.2	
Approach LOS		D			D			C			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4		6	7	8
Phs Duration (G+Y+Rc), s		22.6	12.4	15.6		32.3	8.0	20.0
Change Period (Y+Rc), s		4.5	4.5	4.5		4.5	4.5	4.5
Max Green Setting (Gmax), s		23.0	9.5	18.0		31.5	5.2	22.3
Max Q Clear Time (g_c+I1), s		16.3	8.2	10.4		26.1	4.4	10.3
Green Ext Time (p_c), s		1.8	0.0	0.6		1.7	0.0	0.8

Intersection Summary	
HCM 2010 Ctrl Delay	38.2
HCM 2010 LOS	D

Notes

Intersection	
Int Delay, s/veh	0.1

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	2	0	392	0	0	379
Future Vol, veh/h	2	0	392	0	0	379
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	40	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	50	50	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	4	0	426	0	0	412

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	838	426	0	0	426	0
Stage 1	426	-	-	-	-	-
Stage 2	412	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	336	628	-	-	1133	-
Stage 1	659	-	-	-	-	-
Stage 2	669	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	336	628	-	-	1133	-
Mov Cap-2 Maneuver	336	-	-	-	-	-
Stage 1	659	-	-	-	-	-
Stage 2	669	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	15.8	0	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	336	-	1133	-
HCM Lane V/C Ratio	-	-	0.012	-	-	-
HCM Control Delay (s)	-	-	15.8	0	0	-
HCM Lane LOS	-	-	C	A	A	-
HCM 95th %tile Q(veh)	-	-	0	-	0	-

Intersection	
Int Delay, s/veh	0.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	0	0	2	2	0	0	1	392	1	1	380	0
Future Vol, veh/h	0	0	2	2	0	0	1	392	1	1	380	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	70	70	70	50	50	50	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	3	4	0	0	1	426	1	1	413	0

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	844	844	413	846	844	427	413	0	0	427	0	0
Stage 1	415	415	-	429	429	-	-	-	-	-	-	-
Stage 2	429	429	-	417	415	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	283	300	639	282	300	628	1146	-	-	1132	-	-
Stage 1	615	592	-	604	584	-	-	-	-	-	-	-
Stage 2	604	584	-	613	592	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	282	299	639	280	299	628	1146	-	-	1132	-	-
Mov Cap-2 Maneuver	282	299	-	280	299	-	-	-	-	-	-	-
Stage 1	614	591	-	603	583	-	-	-	-	-	-	-
Stage 2	603	583	-	610	591	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	10.7	18	0	0
HCM LOS	B	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1146	-	-	639	280	1132	-	-
HCM Lane V/C Ratio	0.001	-	-	0.004	0.014	0.001	-	-
HCM Control Delay (s)	8.1	0	-	10.7	18	8.2	0	-
HCM Lane LOS	A	A	-	B	C	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0	0	0	-	-

HCM 2010 Signalized Intersection Summary
3: Suisun Valley Rd. & Rockville Road

Weekend Cumulative Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	41	149	38	111	183	102	29	259	99	104	268	35
Future Volume (veh/h)	41	149	38	111	183	102	29	259	99	104	268	35
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, 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
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1900	1900	1863	1863	1900	1863	1900
Adj Flow Rate, veh/h	45	162	41	121	199	0	32	282	108	113	291	38
Adj No. of Lanes	1	1	1	1	1	0	0	1	1	0	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	77	234	199	155	316	0	41	358	479	133	344	45
Arrive On Green	0.04	0.13	0.13	0.09	0.17	0.00	0.21	0.21	0.21	0.29	0.29	0.29
Sat Flow, veh/h	1774	1863	1583	1774	1863	0	189	1664	1583	463	1193	156
Grp Volume(v), veh/h	45	162	41	121	199	0	314	0	108	442	0	0
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1774	1863	0	1853	0	1583	1812	0	0
Q Serve(g_s), s	1.6	5.3	1.5	4.2	6.3	0.0	10.2	0.0	3.2	14.6	0.0	0.0
Cycle Q Clear(g_c), s	1.6	5.3	1.5	4.2	6.3	0.0	10.2	0.0	3.2	14.6	0.0	0.0
Prop In Lane	1.00		1.00	1.00		0.00	0.10		1.00	0.26		0.09
Lane Grp Cap(c), veh/h	77	234	199	155	316	0	398	0	479	522	0	0
V/C Ratio(X)	0.59	0.69	0.21	0.78	0.63	0.00	0.79	0.00	0.23	0.85	0.00	0.00
Avail Cap(c_a), veh/h	143	529	450	238	629	0	614	0	663	700	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	0.00	1.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	29.8	26.5	24.9	28.3	24.5	0.0	23.5	0.0	16.6	21.2	0.0	0.0
Incr Delay (d2), s/veh	7.0	3.7	0.5	8.7	2.1	0.0	3.8	0.0	0.2	7.3	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.9	2.9	0.7	2.5	3.4	0.0	5.6	0.0	1.4	8.3	0.0	0.0
LnGrp Delay(d),s/veh	36.8	30.2	25.4	37.0	26.5	0.0	27.3	0.0	16.8	28.5	0.0	0.0
LnGrp LOS	D	C	C	D	C		C		B	C		
Approach Vol, veh/h		248			320			422			442	
Approach Delay, s/veh		30.6			30.5			24.6			28.5	
Approach LOS		C			C			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4		6	7	8
Phs Duration (G+Y+Rc), s		18.1	10.0	12.5		22.8	7.2	15.3
Change Period (Y+Rc), s		4.5	4.5	4.5		4.5	4.5	4.5
Max Green Setting (Gmax), s		21.0	8.5	18.0		24.5	5.1	21.4
Max Q Clear Time (g_c+I1), s		12.2	6.2	7.3		16.6	3.6	8.3
Green Ext Time (p_c), s		1.5	0.1	0.7		1.7	0.0	0.8

Intersection Summary	
HCM 2010 Ctrl Delay	28.2
HCM 2010 LOS	C

Notes

Intersection	
Int Delay, s/veh	0.1

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	4	1	377	3	1	479
Future Vol, veh/h	4	1	377	3	1	479
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	40	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	65	65	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	6	2	410	3	1	521

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	935	412	0	0	413	0
Stage 1	412	-	-	-	-	-
Stage 2	523	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	295	640	-	-	1146	-
Stage 1	669	-	-	-	-	-
Stage 2	595	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	295	640	-	-	1146	-
Mov Cap-2 Maneuver	295	-	-	-	-	-
Stage 1	668	-	-	-	-	-
Stage 2	595	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	16.1	0	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	295	640	1146	-
HCM Lane V/C Ratio	-	-	0.021	0.002	0.001	-
HCM Control Delay (s)	-	-	17.5	10.6	8.1	0
HCM Lane LOS	-	-	C	B	A	A
HCM 95th %tile Q(veh)	-	-	0.1	0	0	-

Intersection	
Int Delay, s/veh	0.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	0	0	0	5	0	1	0	379	0	1	481	1
Future Vol, veh/h	0	0	0	5	0	1	0	379	0	1	481	1
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	70	70	70	65	65	65	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	8	0	2	0	412	0	1	523	1

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	939	938	524	938	938	412	524	0	0	412	0	0
Stage 1	526	526	-	412	412	-	-	-	-	-	-	-
Stage 2	413	412	-	526	526	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	244	264	553	244	264	640	1043	-	-	1147	-	-
Stage 1	535	529	-	617	594	-	-	-	-	-	-	-
Stage 2	616	594	-	535	529	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	243	264	553	244	264	640	1043	-	-	1147	-	-
Mov Cap-2 Maneuver	243	264	-	244	264	-	-	-	-	-	-	-
Stage 1	535	528	-	617	594	-	-	-	-	-	-	-
Stage 2	615	594	-	534	528	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	18.7	0	0
HCM LOS	A	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1043	-	-	-	272	1147	-	-
HCM Lane V/C Ratio	-	-	-	-	0.034	0.001	-	-
HCM Control Delay (s)	0	-	-	0	18.7	8.1	0	-
HCM Lane LOS	A	-	-	A	C	A	A	-
HCM 95th %tile Q(veh)	0	-	-	-	0.1	0	-	-

HCM 2010 Signalized Intersection Summary — Weekday Cumulative PM Pk Hr + Winery
3: Suisun Valley Rd. & Rockville Road

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	47	180	21	124	188	80	41	269	278	150	293	68
Future Volume (veh/h)	47	180	21	124	188	80	41	269	278	150	293	68
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, 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
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1900	1900	1863	1863	1900	1863	1900
Adj Flow Rate, veh/h	51	196	23	135	204	0	45	292	302	163	318	74
Adj No. of Lanes	1	1	1	1	1	0	0	1	1	0	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	74	248	211	168	347	0	54	351	496	178	348	81
Arrive On Green	0.04	0.13	0.13	0.09	0.19	0.00	0.22	0.22	0.22	0.34	0.34	0.34
Sat Flow, veh/h	1774	1863	1583	1774	1863	0	247	1603	1583	527	1028	239
Grp Volume(v), veh/h	51	196	23	135	204	0	337	0	302	555	0	0
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1774	1863	0	1850	0	1583	1794	0	0
Q Serve(g_s), s	2.4	8.5	1.1	6.2	8.4	0.0	14.6	0.0	13.6	24.8	0.0	0.0
Cycle Q Clear(g_c), s	2.4	8.5	1.1	6.2	8.4	0.0	14.6	0.0	13.6	24.8	0.0	0.0
Prop In Lane	1.00		1.00	1.00		0.00	0.13		1.00	0.29		0.13
Lane Grp Cap(c), veh/h	74	248	211	168	347	0	405	0	496	607	0	0
V/C Ratio(X)	0.69	0.79	0.11	0.80	0.59	0.00	0.83	0.00	0.61	0.91	0.00	0.00
Avail Cap(c_a), veh/h	110	400	340	201	496	0	508	0	584	675	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	0.00	1.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	39.6	35.2	31.9	37.2	31.1	0.0	31.3	0.0	24.4	26.5	0.0	0.0
Incr Delay (d2), s/veh	11.1	5.6	0.2	17.7	1.6	0.0	9.3	0.0	1.4	16.0	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.4	4.8	0.5	3.9	4.5	0.0	8.4	0.0	6.1	14.9	0.0	0.0
LnGrp Delay(d),s/veh	50.7	40.7	32.2	54.9	32.7	0.0	40.5	0.0	25.8	42.6	0.0	0.0
LnGrp LOS	D	D	C	D	C		D		C	D		
Approach Vol, veh/h		270			339			639			555	
Approach Delay, s/veh		41.9			41.6			33.6			42.6	
Approach LOS		D			D			C			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4		6	7	8
Phs Duration (G+Y+Rc), s		22.8	12.4	15.7		32.9	8.0	20.1
Change Period (Y+Rc), s		4.5	4.5	4.5		4.5	4.5	4.5
Max Green Setting (Gmax), s		23.0	9.5	18.0		31.5	5.2	22.3
Max Q Clear Time (g_c+I1), s		16.6	8.2	10.5		26.8	4.4	10.4
Green Ext Time (p_c), s		1.8	0.0	0.6		1.5	0.0	0.8

Intersection Summary	
HCM 2010 Ctrl Delay	39.1
HCM 2010 LOS	D

Notes

Intersection	
Int Delay, s/veh	0.3

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	6	1	393	7	2	379
Future Vol, veh/h	6	1	393	7	2	379
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	40	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	50	50	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	12	2	427	8	2	412

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	847	431	0	0	435	0
Stage 1	431	-	-	-	-	-
Stage 2	416	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	332	624	-	-	1125	-
Stage 1	655	-	-	-	-	-
Stage 2	666	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	331	624	-	-	1125	-
Mov Cap-2 Maneuver	331	-	-	-	-	-
Stage 1	654	-	-	-	-	-
Stage 2	666	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	15.5	0	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	331	624	1125	-
HCM Lane V/C Ratio	-	-	0.036	0.003	0.002	-
HCM Control Delay (s)	-	-	16.3	10.8	8.2	0
HCM Lane LOS	-	-	C	B	A	A
HCM 95th %tile Q(veh)	-	-	0.1	0	0	-

Intersection	
Int Delay, s/veh	0.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	0	0	2	5	0	1	1	399	1	1	384	0
Future Vol, veh/h	0	0	2	5	0	1	1	399	1	1	384	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	70	70	70	50	50	50	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	3	10	0	2	1	434	1	1	417	0

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	857	856	417	858	856	435	417	0	0	435	0	0
Stage 1	419	419	-	437	437	-	-	-	-	-	-	-
Stage 2	438	437	-	421	419	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	277	295	636	277	295	621	1142	-	-	1125	-	-
Stage 1	612	590	-	598	579	-	-	-	-	-	-	-
Stage 2	597	579	-	610	590	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	276	294	636	275	294	621	1142	-	-	1125	-	-
Mov Cap-2 Maneuver	276	294	-	275	294	-	-	-	-	-	-	-
Stage 1	611	589	-	597	578	-	-	-	-	-	-	-
Stage 2	594	578	-	607	589	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	10.7	17.4	0	0
HCM LOS	B	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1142	-	-	636	303	1125	-	-
HCM Lane V/C Ratio	0.001	-	-	0.004	0.04	0.001	-	-
HCM Control Delay (s)	8.2	0	-	10.7	17.4	8.2	0	-
HCM Lane LOS	A	A	-	B	C	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0	0.1	0	-	-

HCM 2010 Signalized Intersection Summary — Weekend Cumulative Pk Hr + Winery
3: Suisun Valley Rd. & Rockville Road

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	42	149	38	111	183	104	29	263	99	106	272	36
Future Volume (veh/h)	42	149	38	111	183	104	29	263	99	106	272	36
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, 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
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1900	1900	1863	1863	1900	1863	1900
Adj Flow Rate, veh/h	46	162	41	121	199	0	32	286	108	115	296	39
Adj No. of Lanes	1	1	1	1	1	0	0	1	1	0	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	77	233	198	155	314	0	40	360	481	135	347	46
Arrive On Green	0.04	0.12	0.12	0.09	0.17	0.00	0.22	0.22	0.22	0.29	0.29	0.29
Sat Flow, veh/h	1774	1863	1583	1774	1863	0	187	1667	1583	463	1192	157
Grp Volume(v), veh/h	46	162	41	121	199	0	318	0	108	450	0	0
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1774	1863	0	1853	0	1583	1812	0	0
Q Serve(g_s), s	1.6	5.4	1.5	4.3	6.4	0.0	10.4	0.0	3.3	15.0	0.0	0.0
Cycle Q Clear(g_c), s	1.6	5.4	1.5	4.3	6.4	0.0	10.4	0.0	3.3	15.0	0.0	0.0
Prop In Lane	1.00		1.00	1.00		0.00	0.10		1.00	0.26		0.09
Lane Grp Cap(c), veh/h	77	233	198	155	314	0	401	0	481	528	0	0
V/C Ratio(X)	0.60	0.70	0.21	0.78	0.63	0.00	0.79	0.00	0.22	0.85	0.00	0.00
Avail Cap(c_a), veh/h	141	522	443	235	620	0	606	0	656	691	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	0.00	1.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	30.2	26.9	25.3	28.7	24.9	0.0	23.8	0.0	16.7	21.5	0.0	0.0
Incr Delay (d2), s/veh	7.1	3.7	0.5	9.1	2.1	0.0	4.2	0.0	0.2	8.0	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.0	3.0	0.7	2.5	3.4	0.0	5.8	0.0	1.5	8.7	0.0	0.0
LnGrp Delay(d),s/veh	37.3	30.7	25.8	37.8	27.0	0.0	28.0	0.0	17.0	29.5	0.0	0.0
LnGrp LOS	D	C	C	D	C		C		B	C		
Approach Vol, veh/h		249			320			426			450	
Approach Delay, s/veh		31.1			31.1			25.2			29.5	
Approach LOS		C			C			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4		6	7	8
Phs Duration (G+Y+Rc), s		18.4	10.1	12.5		23.2	7.3	15.3
Change Period (Y+Rc), s		4.5	4.5	4.5		4.5	4.5	4.5
Max Green Setting (Gmax), s		21.0	8.5	18.0		24.5	5.1	21.4
Max Q Clear Time (g_c+I1), s		12.4	6.3	7.4		17.0	3.6	8.4
Green Ext Time (p_c), s		1.5	0.1	0.7		1.7	0.0	0.8

Intersection Summary	
HCM 2010 Ctrl Delay	28.8
HCM 2010 LOS	C

Notes

Intersection	
Int Delay, s/veh	0.2

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	0	247	34	12	314
Future Vol, veh/h	0	0	247	34	12	314
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	40	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	50	50	77	77	66	66
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	0	321	44	18	476

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	855	343	0	0	365	0
Stage 1	343	-	-	-	-	-
Stage 2	512	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	329	700	-	-	1194	-
Stage 1	719	-	-	-	-	-
Stage 2	602	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	322	700	-	-	1194	-
Mov Cap-2 Maneuver	322	-	-	-	-	-
Stage 1	705	-	-	-	-	-
Stage 2	602	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	0	0	0.3
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	-	-	1194	-
HCM Lane V/C Ratio	-	-	-	-	0.015	-
HCM Control Delay (s)	-	-	0	0	8.1	0
HCM Lane LOS	-	-	A	A	A	A
HCM 95th %tile Q(veh)	-	-	-	-	0	-

Intersection	
Int Delay, s/veh	0.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	0	0	0	1	0	1	0	280	34	1	312	1
Future Vol, veh/h	0	0	0	1	0	1	0	280	34	1	312	1
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	70	70	70	50	50	50	78	78	78	68	68	68
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	2	0	2	0	359	44	1	459	1

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	844	865	460	843	843	381	460	0	0	403	0	0
Stage 1	462	462	-	381	381	-	-	-	-	-	-	-
Stage 2	382	403	-	462	462	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	283	292	601	284	300	666	1101	-	-	1156	-	-
Stage 1	580	565	-	641	613	-	-	-	-	-	-	-
Stage 2	640	600	-	580	565	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	282	292	601	284	300	666	1101	-	-	1156	-	-
Mov Cap-2 Maneuver	282	292	-	284	300	-	-	-	-	-	-	-
Stage 1	580	564	-	641	613	-	-	-	-	-	-	-
Stage 2	638	600	-	579	564	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	14.1	0	0
HCM LOS	A	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1101	-	-	-	398	1156	-	-
HCM Lane V/C Ratio	-	-	-	-	0.01	0.001	-	-
HCM Control Delay (s)	0	-	-	0	14.1	8.1	0	-
HCM Lane LOS	A	-	-	A	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	-	0	0	-	-

HCM 2010 Signalized Intersection SummaryWkday Existing PM Pk Hr + Before Typical Event 3: Suisun Valley Rd. & Rockville Road

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	39	118	14	81	123	72	27	215	182	97	189	44
Future Volume (veh/h)	39	118	14	81	123	72	27	215	182	97	189	44
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, 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
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1900	1900	1863	1863	1900	1863	1900
Adj Flow Rate, veh/h	51	153	18	88	134	0	31	247	209	126	245	57
Adj No. of Lanes	1	1	1	1	1	0	0	1	1	0	1	0
Peak Hour Factor	0.77	0.77	0.77	0.92	0.92	0.92	0.87	0.87	0.87	0.77	0.77	0.77
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	87	232	197	118	265	0	42	338	430	149	290	67
Arrive On Green	0.05	0.12	0.12	0.07	0.14	0.00	0.21	0.21	0.21	0.28	0.28	0.28
Sat Flow, veh/h	1774	1863	1583	1774	1863	0	207	1646	1583	528	1027	239
Grp Volume(v), veh/h	51	153	18	88	134	0	278	0	209	428	0	0
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1774	1863	0	1852	0	1583	1794	0	0
Q Serve(g_s), s	1.6	4.4	0.6	2.7	3.7	0.0	7.8	0.0	6.2	12.6	0.0	0.0
Cycle Q Clear(g_c), s	1.6	4.4	0.6	2.7	3.7	0.0	7.8	0.0	6.2	12.6	0.0	0.0
Prop In Lane	1.00		1.00	1.00		0.00	0.11		1.00	0.29		0.13
Lane Grp Cap(c), veh/h	87	232	197	118	265	0	380	0	430	506	0	0
V/C Ratio(X)	0.59	0.66	0.09	0.74	0.51	0.00	0.73	0.00	0.49	0.85	0.00	0.00
Avail Cap(c_a), veh/h	162	600	510	168	606	0	629	0	643	632	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	0.00	1.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	26.0	23.4	21.7	25.6	22.2	0.0	20.8	0.0	17.1	18.9	0.0	0.0
Incr Delay (d2), s/veh	6.2	3.2	0.2	10.3	1.5	0.0	2.7	0.0	0.8	8.6	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.9	2.5	0.3	1.7	2.0	0.0	4.3	0.0	2.8	7.4	0.0	0.0
LnGrp Delay(d),s/veh	32.2	26.6	21.9	35.9	23.7	0.0	23.5	0.0	17.9	27.5	0.0	0.0
LnGrp LOS	C	C	C	D	C		C		B	C		
Approach Vol, veh/h		222			222			487			428	
Approach Delay, s/veh		27.5			28.5			21.1			27.5	
Approach LOS		C			C			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4		6	7	8
Phs Duration (G+Y+Rc), s		16.0	8.2	11.5		20.3	7.2	12.4
Change Period (Y+Rc), s		4.5	4.5	4.5		4.5	4.5	4.5
Max Green Setting (Gmax), s		19.0	5.3	18.0		19.7	5.1	18.2
Max Q Clear Time (g_c+I1), s		9.8	4.7	6.4		14.6	3.6	5.7
Green Ext Time (p_c), s		1.6	0.0	0.6		1.2	0.0	0.5

Intersection Summary	
HCM 2010 Ctrl Delay	25.4
HCM 2010 LOS	C

Notes

HCM 2010 TWSC — Weekday Existing PM Pk Hr + After Typical Event

1: Suisun Valley Rd. & Bally Keal North Driveway

Intersection	
Int Delay, s/veh	1.5

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	34	6	253	0	0	314
Future Vol, veh/h	34	6	253	0	0	314
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	40	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	50	50	77	77	66	66
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	68	12	329	0	0	476

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	805	329	0	0	329	0
Stage 1	329	-	-	-	-	-
Stage 2	476	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	352	712	-	-	1231	-
Stage 1	729	-	-	-	-	-
Stage 2	625	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	352	712	-	-	1231	-
Mov Cap-2 Maneuver	352	-	-	-	-	-
Stage 1	729	-	-	-	-	-
Stage 2	625	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	16.6	0	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	352	712	1231	-
HCM Lane V/C Ratio	-	-	0.193	0.017	-	-
HCM Control Delay (s)	-	-	17.7	10.1	0	-
HCM Lane LOS	-	-	C	B	A	-
HCM 95th %tile Q(veh)	-	-	0.7	0.1	0	-

Intersection	
Int Delay, s/veh	1.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	0	0	0	35	0	7	0	246	0	1	346	1
Future Vol, veh/h	0	0	0	35	0	7	0	246	0	1	346	1
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	70	70	70	50	50	50	78	78	78	68	68	68
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	70	0	14	0	315	0	1	509	1

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	834	827	510	827	827	315	510	0	0	315	0	0
Stage 1	512	512	-	315	315	-	-	-	-	-	-	-
Stage 2	322	315	-	512	512	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	288	307	563	291	307	725	1055	-	-	1245	-	-
Stage 1	545	536	-	696	656	-	-	-	-	-	-	-
Stage 2	690	656	-	545	536	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	282	307	563	291	307	725	1055	-	-	1245	-	-
Mov Cap-2 Maneuver	282	307	-	291	307	-	-	-	-	-	-	-
Stage 1	545	535	-	696	656	-	-	-	-	-	-	-
Stage 2	677	656	-	544	535	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	20	0	0
HCM LOS	A	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1055	-	-	-	323	1245	-	-
HCM Lane V/C Ratio	-	-	-	-	0.26	0.001	-	-
HCM Control Delay (s)	0	-	-	0	20	7.9	0	-
HCM Lane LOS	A	-	-	A	C	A	A	-
HCM 95th %tile Q(veh)	0	-	-	-	1	0	-	-

HCM 2010 Signalized Intersection Summary Weekday Existing PM Pk Hr + After Typical Event
3: Suisun Valley Rd. & Rockville Road

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	31	118	14	81	123	52	27	175	182	117	229	52
Future Volume (veh/h)	31	118	14	81	123	52	27	175	182	117	229	52
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, 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
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1900	1900	1863	1863	1900	1863	1900
Adj Flow Rate, veh/h	40	153	18	88	134	0	31	201	209	152	297	68
Adj No. of Lanes	1	1	1	1	1	0	0	1	1	0	1	0
Peak Hour Factor	0.77	0.77	0.77	0.92	0.92	0.92	0.87	0.87	0.87	0.77	0.77	0.77
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	72	226	192	113	269	0	44	284	381	179	350	80
Arrive On Green	0.04	0.12	0.12	0.06	0.14	0.00	0.18	0.18	0.18	0.34	0.34	0.34
Sat Flow, veh/h	1774	1863	1583	1774	1863	0	247	1603	1583	528	1031	236
Grp Volume(v), veh/h	40	153	18	88	134	0	232	0	209	517	0	0
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1774	1863	0	1850	0	1583	1795	0	0
Q Serve(g_s), s	1.3	4.7	0.6	2.9	4.0	0.0	7.1	0.0	7.0	16.1	0.0	0.0
Cycle Q Clear(g_c), s	1.3	4.7	0.6	2.9	4.0	0.0	7.1	0.0	7.0	16.1	0.0	0.0
Prop In Lane	1.00		1.00	1.00		0.00	0.13		1.00	0.29		0.13
Lane Grp Cap(c), veh/h	72	226	192	113	269	0	328	0	381	609	0	0
V/C Ratio(X)	0.56	0.68	0.09	0.78	0.50	0.00	0.71	0.00	0.55	0.85	0.00	0.00
Avail Cap(c_a), veh/h	171	556	473	191	578	0	614	0	627	819	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	0.00	1.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	28.4	25.4	23.5	27.8	23.8	0.0	23.3	0.0	20.0	18.5	0.0	0.0
Incr Delay (d2), s/veh	6.6	3.5	0.2	10.7	1.4	0.0	2.8	0.0	1.2	6.4	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.8	2.6	0.3	1.8	2.2	0.0	3.9	0.0	3.1	9.0	0.0	0.0
LnGrp Delay(d),s/veh	35.0	28.9	23.8	38.5	25.2	0.0	26.2	0.0	21.2	24.9	0.0	0.0
LnGrp LOS	C	C	C	D	C		C		C	C		
Approach Vol, veh/h		211			222			441			517	
Approach Delay, s/veh		29.6			30.5			23.8			24.9	
Approach LOS		C			C			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4		6	7	8
Phs Duration (G+Y+Rc), s		15.2	8.4	11.8		24.9	6.9	13.2
Change Period (Y+Rc), s		4.5	4.5	4.5		4.5	4.5	4.5
Max Green Setting (Gmax), s		20.0	6.5	18.0		27.5	5.8	18.7
Max Q Clear Time (g_c+I1), s		9.1	4.9	6.7		18.1	3.3	6.0
Green Ext Time (p_c), s		1.6	0.0	0.6		2.3	0.0	0.5

Intersection Summary	
HCM 2010 Ctrl Delay	26.2
HCM 2010 LOS	C

Notes

HCM 2010 TWSC — Weekend Existing PK Hr + Before Typical Event

1: Suisun Valley Rd. & Bally Keal North Driveway

Intersection	
Int Delay, s/veh	0.2

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	2	0	257	34	12	248
Future Vol, veh/h	2	0	257	34	12	248
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	40	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	65	65	88	88	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	3	0	292	39	13	270

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	608	312	0	0	331	0
Stage 1	312	-	-	-	-	-
Stage 2	296	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	459	728	-	-	1228	-
Stage 1	742	-	-	-	-	-
Stage 2	755	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	453	728	-	-	1228	-
Mov Cap-2 Maneuver	453	-	-	-	-	-
Stage 1	733	-	-	-	-	-
Stage 2	755	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	13	0	0.4
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	453	-	1228	-
HCM Lane V/C Ratio	-	-	0.007	-	0.011	-
HCM Control Delay (s)	-	-	13	0	8	0
HCM Lane LOS	-	-	B	A	A	A
HCM 95th %tile Q(veh)	-	-	0	-	0	-

Intersection	
Int Delay, s/veh	0.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	0	0	2	2	0	0	1	291	35	1	249	0
Future Vol, veh/h	0	0	2	2	0	0	1	291	35	1	249	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	65	65	65	65	65	65	85	85	85	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	3	3	0	0	1	342	41	1	271	0

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	638	658	271	640	638	363	271	0	0	383	0	0
Stage 1	273	273	-	365	365	-	-	-	-	-	-	-
Stage 2	365	385	-	275	273	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	389	384	768	388	394	682	1292	-	-	1175	-	-
Stage 1	733	684	-	654	623	-	-	-	-	-	-	-
Stage 2	654	611	-	731	684	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	388	383	768	386	393	682	1292	-	-	1175	-	-
Mov Cap-2 Maneuver	388	383	-	386	393	-	-	-	-	-	-	-
Stage 1	732	683	-	653	622	-	-	-	-	-	-	-
Stage 2	653	610	-	727	683	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	9.7	14.4	0	0
HCM LOS	A	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1292	-	-	768	386	1175	-	-
HCM Lane V/C Ratio	0.001	-	-	0.004	0.008	0.001	-	-
HCM Control Delay (s)	7.8	0	-	9.7	14.4	8.1	0	-
HCM Lane LOS	A	A	-	A	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0	0	0	-	-

HCM 2010 Signalized Intersection Summary Weekend Existing PK Hr + Before Typical Event
3: Suisun Valley Rd. & Rockville Road

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	35	98	25	73	120	87	19	210	65	68	176	23
Future Volume (veh/h)	35	98	25	73	120	87	19	210	65	68	176	23
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, 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
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1900	1900	1863	1863	1900	1863	1900
Adj Flow Rate, veh/h	40	113	29	79	130	0	22	244	76	74	191	25
Adj No. of Lanes	1	1	1	1	1	0	0	1	1	0	1	0
Peak Hour Factor	0.87	0.87	0.87	0.92	0.92	0.92	0.86	0.86	0.86	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	78	206	175	124	254	0	31	349	435	99	255	33
Arrive On Green	0.04	0.11	0.11	0.07	0.14	0.00	0.21	0.21	0.21	0.21	0.21	0.21
Sat Flow, veh/h	1774	1863	1583	1774	1863	0	153	1702	1583	462	1193	156
Grp Volume(v), veh/h	40	113	29	79	130	0	266	0	76	290	0	0
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1774	1863	0	1855	0	1583	1812	0	0
Q Serve(g_s), s	1.0	2.6	0.7	1.9	2.9	0.0	6.0	0.0	1.6	6.7	0.0	0.0
Cycle Q Clear(g_c), s	1.0	2.6	0.7	1.9	2.9	0.0	6.0	0.0	1.6	6.7	0.0	0.0
Prop In Lane	1.00		1.00	1.00		0.00	0.08		1.00	0.26		0.09
Lane Grp Cap(c), veh/h	78	206	175	124	254	0	380	0	435	387	0	0
V/C Ratio(X)	0.52	0.55	0.17	0.64	0.51	0.00	0.70	0.00	0.17	0.75	0.00	0.00
Avail Cap(c_a), veh/h	241	747	635	257	764	0	806	0	799	727	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	0.00	1.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	21.0	18.9	18.1	20.3	18.0	0.0	16.6	0.0	12.4	16.5	0.0	0.0
Incr Delay (d2), s/veh	5.2	2.3	0.4	5.4	1.6	0.0	2.3	0.0	0.2	2.9	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.6	1.4	0.3	1.1	1.6	0.0	3.3	0.0	0.7	3.6	0.0	0.0
LnGrp Delay(d),s/veh	26.2	21.2	18.5	25.7	19.6	0.0	18.9	0.0	12.6	19.5	0.0	0.0
LnGrp LOS	C	C	B	C	B		B		B	B		
Approach Vol, veh/h		182			209			342			290	
Approach Delay, s/veh		21.8			21.9			17.5			19.5	
Approach LOS		C			C			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4		6	7	8
Phs Duration (G+Y+Rc), s		13.7	7.6	9.5		14.1	6.5	10.6
Change Period (Y+Rc), s		4.5	4.5	4.5		4.5	4.5	4.5
Max Green Setting (Gmax), s		19.5	6.5	18.0		18.0	6.1	18.4
Max Q Clear Time (g_c+I1), s		8.0	3.9	4.6		8.7	3.0	4.9
Green Ext Time (p_c), s		1.4	0.0	0.5		1.1	0.0	0.5

Intersection Summary	
HCM 2010 Ctrl Delay	19.7
HCM 2010 LOS	B

Notes

HCM 2010 TWSC — Weekend Existing Pk Hr + After Typical Event

1: Suisun Valley Rd. & Bally Keal North Driveway

Intersection	
Int Delay, s/veh	1.3

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	36	6	263	0	0	248
Future Vol, veh/h	36	6	263	0	0	248
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	40	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	65	65	88	88	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	55	9	299	0	0	270

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	569	299	0	0	299	0
Stage 1	299	-	-	-	-	-
Stage 2	270	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	484	741	-	-	1262	-
Stage 1	752	-	-	-	-	-
Stage 2	775	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	484	741	-	-	1262	-
Mov Cap-2 Maneuver	484	-	-	-	-	-
Stage 1	752	-	-	-	-	-
Stage 2	775	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	12.9	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	484	741	1262	-
HCM Lane V/C Ratio	-	-	0.114	0.012	-	-
HCM Control Delay (s)	-	-	13.4	9.9	0	-
HCM Lane LOS	-	-	B	A	A	-
HCM 95th %tile Q(veh)	-	-	0.4	0	0	-

Intersection	
Int Delay, s/veh	1.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	0	0	2	36	0	6	1	257	1	1	283	0
Future Vol, veh/h	0	0	2	36	0	6	1	257	1	1	283	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	65	65	65	65	65	65	85	85	85	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	3	55	0	9	1	302	1	1	308	0

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	619	615	308	617	615	303	308	0	0	303	0	0
Stage 1	310	310	-	305	305	-	-	-	-	-	-	-
Stage 2	309	305	-	312	310	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	401	407	732	402	407	737	1253	-	-	1258	-	-
Stage 1	700	659	-	705	662	-	-	-	-	-	-	-
Stage 2	701	662	-	699	659	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	395	406	732	400	406	737	1253	-	-	1258	-	-
Mov Cap-2 Maneuver	395	406	-	400	406	-	-	-	-	-	-	-
Stage 1	699	658	-	704	661	-	-	-	-	-	-	-
Stage 2	692	661	-	695	658	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	9.9	14.9	0	0
HCM LOS	A	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1253	-	-	732	428	1258	-	-
HCM Lane V/C Ratio	0.001	-	-	0.004	0.151	0.001	-	-
HCM Control Delay (s)	7.9	0	-	9.9	14.9	7.9	0	-
HCM Lane LOS	A	A	-	A	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0	0.5	0	-	-

HCM 2010 Signalized Intersection Summary Weekend Existing Pk Hr + After Typical Event
3: Suisun Valley Rd. & Rockville Road

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	27	98	25	73	120	67	19	170	65	88	216	31
Future Volume (veh/h)	27	98	25	73	120	67	19	170	65	88	216	31
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, 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
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1900	1900	1863	1863	1900	1863	1900
Adj Flow Rate, veh/h	31	113	29	79	130	0	22	198	76	96	235	34
Adj No. of Lanes	1	1	1	1	1	0	0	1	1	0	1	0
Peak Hour Factor	0.87	0.87	0.87	0.92	0.92	0.92	0.86	0.86	0.86	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	63	203	173	122	265	0	33	293	387	122	300	43
Arrive On Green	0.04	0.11	0.11	0.07	0.14	0.00	0.18	0.18	0.18	0.26	0.26	0.26
Sat Flow, veh/h	1774	1863	1583	1774	1863	0	185	1668	1583	476	1165	169
Grp Volume(v), veh/h	31	113	29	79	130	0	220	0	76	365	0	0
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1774	1863	0	1853	0	1583	1809	0	0
Q Serve(g_s), s	0.8	2.7	0.8	2.0	3.0	0.0	5.1	0.0	1.8	8.7	0.0	0.0
Cycle Q Clear(g_c), s	0.8	2.7	0.8	2.0	3.0	0.0	5.1	0.0	1.8	8.7	0.0	0.0
Prop In Lane	1.00		1.00	1.00		0.00	0.10		1.00	0.26		0.09
Lane Grp Cap(c), veh/h	63	203	173	122	265	0	326	0	387	466	0	0
V/C Ratio(X)	0.49	0.56	0.17	0.65	0.49	0.00	0.68	0.00	0.20	0.78	0.00	0.00
Avail Cap(c_a), veh/h	195	724	616	211	741	0	801	0	793	723	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	0.00	1.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	21.9	19.6	18.7	21.0	18.3	0.0	17.8	0.0	13.9	16.0	0.0	0.0
Incr Delay (d2), s/veh	5.8	2.4	0.5	5.6	1.4	0.0	2.4	0.0	0.2	3.0	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.5	1.5	0.4	1.2	1.6	0.0	2.8	0.0	0.8	4.7	0.0	0.0
LnGrp Delay(d),s/veh	27.7	21.9	19.2	26.6	19.7	0.0	20.3	0.0	14.1	19.0	0.0	0.0
LnGrp LOS	C	C	B	C	B		C		B	B		
Approach Vol, veh/h		173			209			296			365	
Approach Delay, s/veh		22.5			22.3			18.7			19.0	
Approach LOS		C			C			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4		6	7	8
Phs Duration (G+Y+Rc), s		12.6	7.7	9.5		16.4	6.1	11.1
Change Period (Y+Rc), s		4.5	4.5	4.5		4.5	4.5	4.5
Max Green Setting (Gmax), s		20.0	5.5	18.0		18.5	5.1	18.4
Max Q Clear Time (g_c+I1), s		7.1	4.0	4.7		10.7	2.8	5.0
Green Ext Time (p_c), s		1.2	0.0	0.5		1.3	0.0	0.5

Intersection Summary	
HCM 2010 Ctrl Delay	20.2
HCM 2010 LOS	C

Notes

HCM 2010 TWSC Wkday Cumulative PM Pk Hr + Before Typical Event

1: Suisun Valley Rd. & Bally Keal North Driveway

Intersection	
Int Delay, s/veh	0.1

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	0	377	34	12	479
Future Vol, veh/h	0	0	377	34	12	479
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	40	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	65	65	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	0	410	37	13	521

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	976	429	0	0	447	0
Stage 1	429	-	-	-	-	-
Stage 2	547	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	279	626	-	-	1113	-
Stage 1	657	-	-	-	-	-
Stage 2	580	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	275	626	-	-	1113	-
Mov Cap-2 Maneuver	275	-	-	-	-	-
Stage 1	646	-	-	-	-	-
Stage 2	580	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	0	0	0.2
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	-	-	1113	-
HCM Lane V/C Ratio	-	-	-	-	0.012	-
HCM Control Delay (s)	-	-	0	0	8.3	0
HCM Lane LOS	-	-	A	A	A	A
HCM 95th %tile Q(veh)	-	-	-	-	0	-

Intersection	
Int Delay, s/veh	0

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	0	0	0	1	0	1	0	410	34	1	477	1
Future Vol, veh/h	0	0	0	1	0	1	0	410	34	1	477	1
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	70	70	70	65	65	65	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	2	0	2	0	446	37	1	518	1

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	987	1004	519	986	986	465	519	0	0	483	0	0
Stage 1	521	521	-	465	465	-	-	-	-	-	-	-
Stage 2	466	483	-	521	521	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	226	242	557	227	248	597	1047	-	-	1080	-	-
Stage 1	539	532	-	578	563	-	-	-	-	-	-	-
Stage 2	577	553	-	539	532	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	225	242	557	227	248	597	1047	-	-	1080	-	-
Mov Cap-2 Maneuver	225	242	-	227	248	-	-	-	-	-	-	-
Stage 1	539	531	-	578	563	-	-	-	-	-	-	-
Stage 2	576	553	-	538	531	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	16	0	0
HCM LOS	A	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1047	-	-	-	329	1080	-	-
HCM Lane V/C Ratio	-	-	-	-	0.009	0.001	-	-
HCM Control Delay (s)	0	-	-	0	16	8.3	0	-
HCM Lane LOS	A	-	-	A	C	A	A	-
HCM 95th %tile Q(veh)	0	-	-	-	0	0	-	-

HCM 2010 Signalized Intersection Summary Wkday Cmltve PM Pk Hr + Before Typical Event
3: Suisun Valley Rd. & Rockville Road

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	55	180	21	124	188	99	41	307	278	148	288	67
Future Volume (veh/h)	55	180	21	124	188	99	41	307	278	148	288	67
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, 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
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1900	1900	1863	1863	1900	1863	1900
Adj Flow Rate, veh/h	60	196	23	135	204	0	45	334	302	161	313	73
Adj No. of Lanes	1	1	1	1	1	0	0	1	1	0	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	78	246	209	167	339	0	52	389	526	174	338	79
Arrive On Green	0.04	0.13	0.13	0.09	0.18	0.00	0.24	0.24	0.24	0.33	0.33	0.33
Sat Flow, veh/h	1774	1863	1583	1774	1863	0	220	1632	1583	528	1027	239
Grp Volume(v), veh/h	60	196	23	135	204	0	379	0	302	547	0	0
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1774	1863	0	1852	0	1583	1794	0	0
Q Serve(g_s), s	2.9	8.9	1.1	6.5	8.8	0.0	17.1	0.0	13.7	25.6	0.0	0.0
Cycle Q Clear(g_c), s	2.9	8.9	1.1	6.5	8.8	0.0	17.1	0.0	13.7	25.6	0.0	0.0
Prop In Lane	1.00		1.00	1.00		0.00	0.12		1.00	0.29		0.13
Lane Grp Cap(c), veh/h	78	246	209	167	339	0	441	0	526	590	0	0
V/C Ratio(X)	0.77	0.80	0.11	0.81	0.60	0.00	0.86	0.00	0.57	0.93	0.00	0.00
Avail Cap(c_a), veh/h	108	385	327	185	467	0	519	0	593	629	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	0.00	1.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	41.2	36.6	33.3	38.7	32.7	0.0	31.8	0.0	24.0	28.2	0.0	0.0
Incr Delay (d2), s/veh	19.6	6.2	0.2	21.0	1.7	0.0	12.0	0.0	1.1	19.4	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.9	5.0	0.5	4.2	4.6	0.0	10.2	0.0	6.1	15.8	0.0	0.0
LnGrp Delay(d),s/veh	60.8	42.9	33.5	59.7	34.4	0.0	43.8	0.0	25.0	47.6	0.0	0.0
LnGrp LOS	E	D	C	E	C		D		C	D		
Approach Vol, veh/h		279			339			681			547	
Approach Delay, s/veh		45.9			44.5			35.5			47.6	
Approach LOS		D			D			D			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4		6	7	8
Phs Duration (G+Y+Rc), s		25.2	12.7	16.0		33.1	8.3	20.3
Change Period (Y+Rc), s		4.5	4.5	4.5		4.5	4.5	4.5
Max Green Setting (Gmax), s		24.4	9.1	18.0		30.5	5.3	21.8
Max Q Clear Time (g_c+I1), s		19.1	8.5	10.9		27.6	4.9	10.8
Green Ext Time (p_c), s		1.7	0.0	0.6		1.0	0.0	0.8

Intersection Summary	
HCM 2010 Ctrl Delay	42.3
HCM 2010 LOS	D

Notes

HCM 2010 TWSC — Wkday Cumulative PM Pk Hr + After Typical Event

1: Suisun Valley Rd. & Bally Keal North Driveway

Intersection	
Int Delay, s/veh	1.1

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	34	6	383	0	0	479
Future Vol, veh/h	34	6	383	0	0	479
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	40	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	65	65	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	52	9	416	0	0	521

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	937	416	0	0	416	0
Stage 1	416	-	-	-	-	-
Stage 2	521	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	294	637	-	-	1143	-
Stage 1	666	-	-	-	-	-
Stage 2	596	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	294	637	-	-	1143	-
Mov Cap-2 Maneuver	294	-	-	-	-	-
Stage 1	666	-	-	-	-	-
Stage 2	596	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	18.5	0	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	294	637	1143	-
HCM Lane V/C Ratio	-	-	0.178	0.014	-	-
HCM Control Delay (s)	-	-	19.9	10.7	0	-
HCM Lane LOS	-	-	C	B	A	-
HCM 95th %tile Q(veh)	-	-	0.6	0	0	-

Intersection	
Int Delay, s/veh	1.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	0	0	0	35	0	7	0	376	0	1	511	1
Future Vol, veh/h	0	0	0	35	0	7	0	376	0	1	511	1
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	70	70	70	65	65	65	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	54	0	11	0	409	0	1	555	1

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	973	967	556	967	967	409	556	0	0	409	0	0
Stage 1	558	558	-	409	409	-	-	-	-	-	-	-
Stage 2	415	409	-	558	558	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	231	254	531	234	254	642	1015	-	-	1150	-	-
Stage 1	514	512	-	619	596	-	-	-	-	-	-	-
Stage 2	615	596	-	514	512	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	227	254	531	234	254	642	1015	-	-	1150	-	-
Mov Cap-2 Maneuver	227	254	-	234	254	-	-	-	-	-	-	-
Stage 1	514	511	-	619	596	-	-	-	-	-	-	-
Stage 2	605	596	-	513	511	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	23.2	0	0
HCM LOS	A	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1015	-	-	-	262	1150	-	-
HCM Lane V/C Ratio	-	-	-	-	0.247	0.001	-	-
HCM Control Delay (s)	0	-	-	0	23.2	8.1	0	-
HCM Lane LOS	A	-	-	A	C	A	A	-
HCM 95th %tile Q(veh)	0	-	-	-	0.9	0	-	-

HCM 2010 Signalized Intersection SummaryWkday Cumulative PM Pk Hr + After Typical Event 3: Suisun Valley Rd. & Rockville Road

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	47	180	21	124	188	79	41	267	278	168	328	75
Future Volume (veh/h)	47	180	21	124	188	79	41	267	278	168	328	75
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, 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
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1900	1900	1863	1863	1900	1863	1900
Adj Flow Rate, veh/h	51	196	23	135	204	0	45	290	302	183	357	82
Adj No. of Lanes	1	1	1	1	1	0	0	1	1	0	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	75	250	212	163	343	0	52	334	476	182	355	82
Arrive On Green	0.04	0.13	0.13	0.09	0.18	0.00	0.21	0.21	0.21	0.34	0.34	0.34
Sat Flow, veh/h	1774	1863	1583	1774	1863	0	249	1602	1583	528	1030	237
Grp Volume(v), veh/h	51	196	23	135	204	0	335	0	302	622	0	0
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1774	1863	0	1850	0	1583	1795	0	0
Q Serve(g_s), s	2.3	8.3	1.0	6.1	8.2	0.0	14.3	0.0	13.4	28.1	0.0	0.0
Cycle Q Clear(g_c), s	2.3	8.3	1.0	6.1	8.2	0.0	14.3	0.0	13.4	28.1	0.0	0.0
Prop In Lane	1.00		1.00	1.00		0.00	0.13		1.00	0.29		0.13
Lane Grp Cap(c), veh/h	75	250	212	163	343	0	386	0	476	619	0	0
V/C Ratio(X)	0.68	0.78	0.11	0.83	0.59	0.00	0.87	0.00	0.63	1.01	0.00	0.00
Avail Cap(c_a), veh/h	111	411	350	163	466	0	418	0	503	619	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	0.00	1.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	38.5	34.2	31.0	36.4	30.5	0.0	31.2	0.0	24.7	26.7	0.0	0.0
Incr Delay (d2), s/veh	10.5	5.4	0.2	28.2	1.6	0.0	16.6	0.0	2.4	37.6	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.4	4.6	0.5	4.3	4.4	0.0	9.0	0.0	6.2	20.2	0.0	0.0
LnGrp Delay(d),s/veh	49.1	39.5	31.2	64.6	32.1	0.0	47.8	0.0	27.1	64.3	0.0	0.0
LnGrp LOS	D	D	C	E	C		D		C	F		
Approach Vol, veh/h		270			339			637			622	
Approach Delay, s/veh		40.6			45.1			38.0			64.3	
Approach LOS		D			D			D			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4		6	7	8
Phs Duration (G+Y+Rc), s		21.5	12.0	15.4		32.6	7.9	19.5
Change Period (Y+Rc), s		4.5	4.5	4.5		4.5	4.5	4.5
Max Green Setting (Gmax), s		18.4	7.5	18.0		28.1	5.1	20.4
Max Q Clear Time (g_c+I1), s		16.3	8.1	10.3		30.1	4.3	10.2
Green Ext Time (p_c), s		0.7	0.0	0.6		0.0	0.0	0.7

Intersection Summary	
HCM 2010 Ctrl Delay	48.4
HCM 2010 LOS	D

Notes

HCM 2010 TWSC — Wkend Cumulative Pk Hr + Before Typical Event

1: Suisun Valley Rd. & Bally Keal North Driveway

Intersection	
Int Delay, s/veh	0.2

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	2	0	392	34	12	379
Future Vol, veh/h	2	0	392	34	12	379
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	40	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	50	50	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	4	0	426	37	13	412

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	883	445	0	0	463	0
Stage 1	445	-	-	-	-	-
Stage 2	438	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	316	613	-	-	1098	-
Stage 1	646	-	-	-	-	-
Stage 2	651	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	311	613	-	-	1098	-
Mov Cap-2 Maneuver	311	-	-	-	-	-
Stage 1	636	-	-	-	-	-
Stage 2	651	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	16.7	0	0.3
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	311	-	1098	-
HCM Lane V/C Ratio	-	-	0.013	-	0.012	-
HCM Control Delay (s)	-	-	16.7	0	8.3	0
HCM Lane LOS	-	-	C	A	A	A
HCM 95th %tile Q(veh)	-	-	0	-	0	-

Intersection	
Int Delay, s/veh	0.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	0	0	2	2	0	0	1	426	35	1	380	0
Future Vol, veh/h	0	0	2	2	0	0	1	426	35	1	380	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	70	70	70	50	50	50	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	3	4	0	0	1	463	38	1	413	0

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	899	918	413	901	899	482	413	0	0	501	0	0
Stage 1	415	415	-	484	484	-	-	-	-	-	-	-
Stage 2	484	503	-	417	415	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	260	272	639	259	279	584	1146	-	-	1063	-	-
Stage 1	615	592	-	564	552	-	-	-	-	-	-	-
Stage 2	564	541	-	613	592	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	259	271	639	257	278	584	1146	-	-	1063	-	-
Mov Cap-2 Maneuver	259	271	-	257	278	-	-	-	-	-	-	-
Stage 1	614	591	-	563	551	-	-	-	-	-	-	-
Stage 2	563	540	-	610	591	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	10.7	19.2	0	0
HCM LOS	B	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1146	-	-	639	257	1063	-	-
HCM Lane V/C Ratio	0.001	-	-	0.004	0.016	0.001	-	-
HCM Control Delay (s)	8.1	0	-	10.7	19.2	8.4	0	-
HCM Lane LOS	A	A	-	B	C	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0	0	0	-	-

HCM 2010 Signalized Intersection Summary Wkend Cumulative Pk Hr + Before Typical Event
3: Suisun Valley Rd. & Rockville Road

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	49	149	38	111	183	122	29	299	99	104	268	35
Future Volume (veh/h)	49	149	38	111	183	122	29	299	99	104	268	35
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, 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
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1900	1900	1863	1863	1900	1863	1900
Adj Flow Rate, veh/h	53	162	41	121	199	0	32	325	108	113	291	38
Adj No. of Lanes	1	1	1	1	1	0	0	1	1	0	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	83	230	196	155	305	0	39	398	511	131	337	44
Arrive On Green	0.05	0.12	0.12	0.09	0.16	0.00	0.24	0.24	0.24	0.28	0.28	0.28
Sat Flow, veh/h	1774	1863	1583	1774	1863	0	166	1688	1583	463	1193	156
Grp Volume(v), veh/h	53	162	41	121	199	0	357	0	108	442	0	0
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1774	1863	0	1854	0	1583	1812	0	0
Q Serve(g_s), s	2.0	5.6	1.5	4.4	6.7	0.0	12.1	0.0	3.3	15.4	0.0	0.0
Cycle Q Clear(g_c), s	2.0	5.6	1.5	4.4	6.7	0.0	12.1	0.0	3.3	15.4	0.0	0.0
Prop In Lane	1.00		1.00	1.00		0.00	0.09		1.00	0.26		0.09
Lane Grp Cap(c), veh/h	83	230	196	155	305	0	437	0	511	512	0	0
V/C Ratio(X)	0.64	0.70	0.21	0.78	0.65	0.00	0.82	0.00	0.21	0.86	0.00	0.00
Avail Cap(c_a), veh/h	136	504	428	227	599	0	613	0	662	640	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	0.00	1.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	31.1	28.0	26.2	29.7	26.0	0.0	24.1	0.0	16.4	22.6	0.0	0.0
Incr Delay (d2), s/veh	7.8	3.9	0.5	10.2	2.4	0.0	5.9	0.0	0.2	9.8	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.1	3.1	0.7	2.6	3.6	0.0	6.9	0.0	1.5	9.0	0.0	0.0
LnGrp Delay(d),s/veh	38.9	31.9	26.8	39.9	28.4	0.0	29.9	0.0	16.6	32.4	0.0	0.0
LnGrp LOS	D	C	C	D	C		C		B	C		
Approach Vol, veh/h		256			320			465			442	
Approach Delay, s/veh		32.5			32.7			26.8			32.4	
Approach LOS		C			C			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4		6	7	8
Phs Duration (G+Y+Rc), s		20.2	10.3	12.7		23.3	7.6	15.4
Change Period (Y+Rc), s		4.5	4.5	4.5		4.5	4.5	4.5
Max Green Setting (Gmax), s		22.0	8.5	18.0		23.5	5.1	21.4
Max Q Clear Time (g_c+I1), s		14.1	6.4	7.6		17.4	4.0	8.7
Green Ext Time (p_c), s		1.6	0.1	0.7		1.4	0.0	0.8

Intersection Summary	
HCM 2010 Ctrl Delay	30.8
HCM 2010 LOS	C

Notes

HCM 2010 TWSC — Wkend Cumulative Pk Hr + After Typical Event

1: Suisun Valley Rd. & Bally Keal North Driveway

Intersection	
Int Delay, s/veh	1.2

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	36	6	398	0	0	379
Future Vol, veh/h	36	6	398	0	0	379
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	40	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	65	65	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	55	9	433	0	0	412

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	845	433	0	0	433	0
Stage 1	433	-	-	-	-	-
Stage 2	412	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	333	623	-	-	1127	-
Stage 1	654	-	-	-	-	-
Stage 2	669	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	333	623	-	-	1127	-
Mov Cap-2 Maneuver	333	-	-	-	-	-
Stage 1	654	-	-	-	-	-
Stage 2	669	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	17	0	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	333	623	1127	-
HCM Lane V/C Ratio	-	-	0.166	0.015	-	-
HCM Control Delay (s)	-	-	18	10.9	0	-
HCM Lane LOS	-	-	C	B	A	-
HCM 95th %tile Q(veh)	-	-	0.6	0	0	-

Intersection	
Int Delay, s/veh	1.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	0	0	2	36	0	6	1	392	1	1	414	0
Future Vol, veh/h	0	0	2	36	0	6	1	392	1	1	414	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	70	70	70	65	65	65	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	3	55	0	9	1	426	1	1	450	0

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	885	881	450	883	881	427	450	0	0	427	0	0
Stage 1	452	452	-	429	429	-	-	-	-	-	-	-
Stage 2	433	429	-	454	452	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	266	285	609	266	285	628	1110	-	-	1132	-	-
Stage 1	587	570	-	604	584	-	-	-	-	-	-	-
Stage 2	601	584	-	586	570	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	262	284	609	264	284	628	1110	-	-	1132	-	-
Mov Cap-2 Maneuver	262	284	-	264	284	-	-	-	-	-	-	-
Stage 1	586	569	-	603	583	-	-	-	-	-	-	-
Stage 2	592	583	-	583	569	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	10.9	21.1	0	0
HCM LOS	B	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1110	-	-	609	288	1132	-	-
HCM Lane V/C Ratio	0.001	-	-	0.005	0.224	0.001	-	-
HCM Control Delay (s)	8.2	0	-	10.9	21.1	8.2	0	-
HCM Lane LOS	A	A	-	B	C	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0	0.8	0	-	-

HCM 2010 Signalized Intersection Summary Wkend Cumulative Pk Hr + After Typical Event
3: Suisun Valley Rd. & Rockville Road

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	41	149	38	111	183	102	29	259	99	124	308	43
Future Volume (veh/h)	41	149	38	111	183	102	29	259	99	124	308	43
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, 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
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1900	1900	1863	1863	1900	1863	1900
Adj Flow Rate, veh/h	45	162	41	121	199	0	32	282	108	135	335	47
Adj No. of Lanes	1	1	1	1	1	0	0	1	1	0	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	74	228	194	154	312	0	40	350	471	151	374	52
Arrive On Green	0.04	0.12	0.12	0.09	0.17	0.00	0.21	0.21	0.21	0.32	0.32	0.32
Sat Flow, veh/h	1774	1863	1583	1774	1863	0	189	1664	1583	473	1173	165
Grp Volume(v), veh/h	45	162	41	121	199	0	314	0	108	517	0	0
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1774	1863	0	1853	0	1583	1810	0	0
Q Serve(g_s), s	1.7	5.7	1.6	4.6	6.8	0.0	11.1	0.0	3.5	18.7	0.0	0.0
Cycle Q Clear(g_c), s	1.7	5.7	1.6	4.6	6.8	0.0	11.1	0.0	3.5	18.7	0.0	0.0
Prop In Lane	1.00		1.00	1.00		0.00	0.10		1.00	0.26		0.09
Lane Grp Cap(c), veh/h	74	228	194	154	312	0	390	0	471	577	0	0
V/C Ratio(X)	0.60	0.71	0.21	0.78	0.64	0.00	0.81	0.00	0.23	0.90	0.00	0.00
Avail Cap(c_a), veh/h	132	488	414	219	580	0	566	0	621	645	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	0.00	1.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	32.4	29.0	27.2	30.8	26.7	0.0	25.8	0.0	18.2	22.3	0.0	0.0
Incr Delay (d2), s/veh	7.7	4.1	0.5	11.2	2.2	0.0	5.5	0.0	0.2	14.2	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.0	3.2	0.7	2.7	3.7	0.0	6.3	0.0	1.6	11.6	0.0	0.0
LnGrp Delay(d),s/veh	40.1	33.1	27.7	42.0	28.9	0.0	31.3	0.0	18.5	36.6	0.0	0.0
LnGrp LOS	D	C	C	D	C		C		B	D		
Approach Vol, veh/h		248			320			422			517	
Approach Delay, s/veh		33.5			33.8			28.0			36.6	
Approach LOS		C			C			C			D	

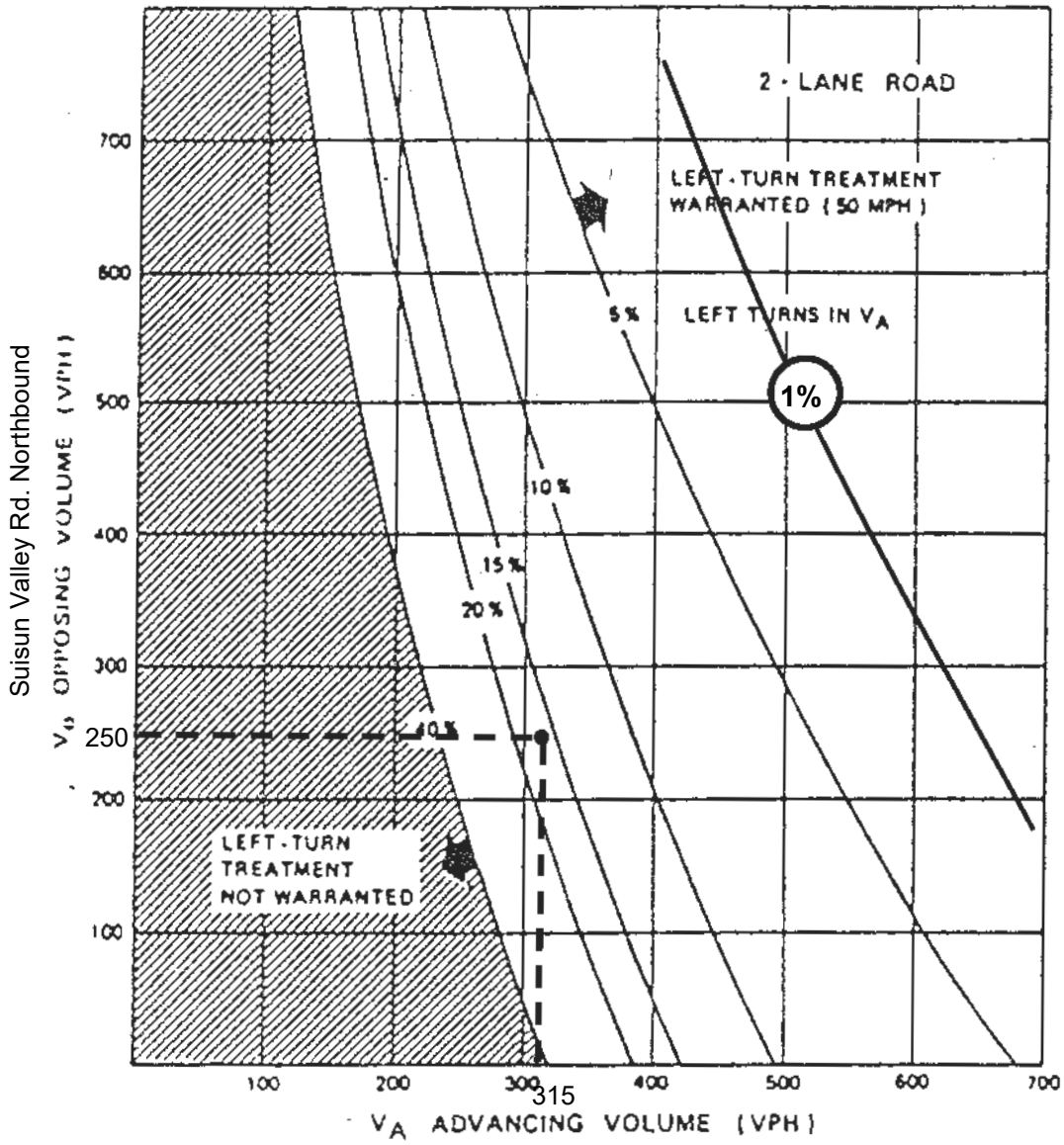
Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4		6	7	8
Phs Duration (G+Y+Rc), s		19.0	10.5	12.9		26.4	7.4	16.0
Change Period (Y+Rc), s		4.5	4.5	4.5		4.5	4.5	4.5
Max Green Setting (Gmax), s		21.0	8.5	18.0		24.5	5.1	21.4
Max Q Clear Time (g_c+I1), s		13.1	6.6	7.7		20.7	3.7	8.8
Green Ext Time (p_c), s		1.4	0.0	0.7		1.2	0.0	0.8

Intersection Summary	
HCM 2010 Ctrl Delay	33.1
HCM 2010 LOS	C

Notes

Turn Lane Warrants

CALTRANS LEFT TURN LANE WARRANTS



Bally Keal Vineyards Winery

EXISTING WEEKDAY PM PEAK HOUR + WINERY

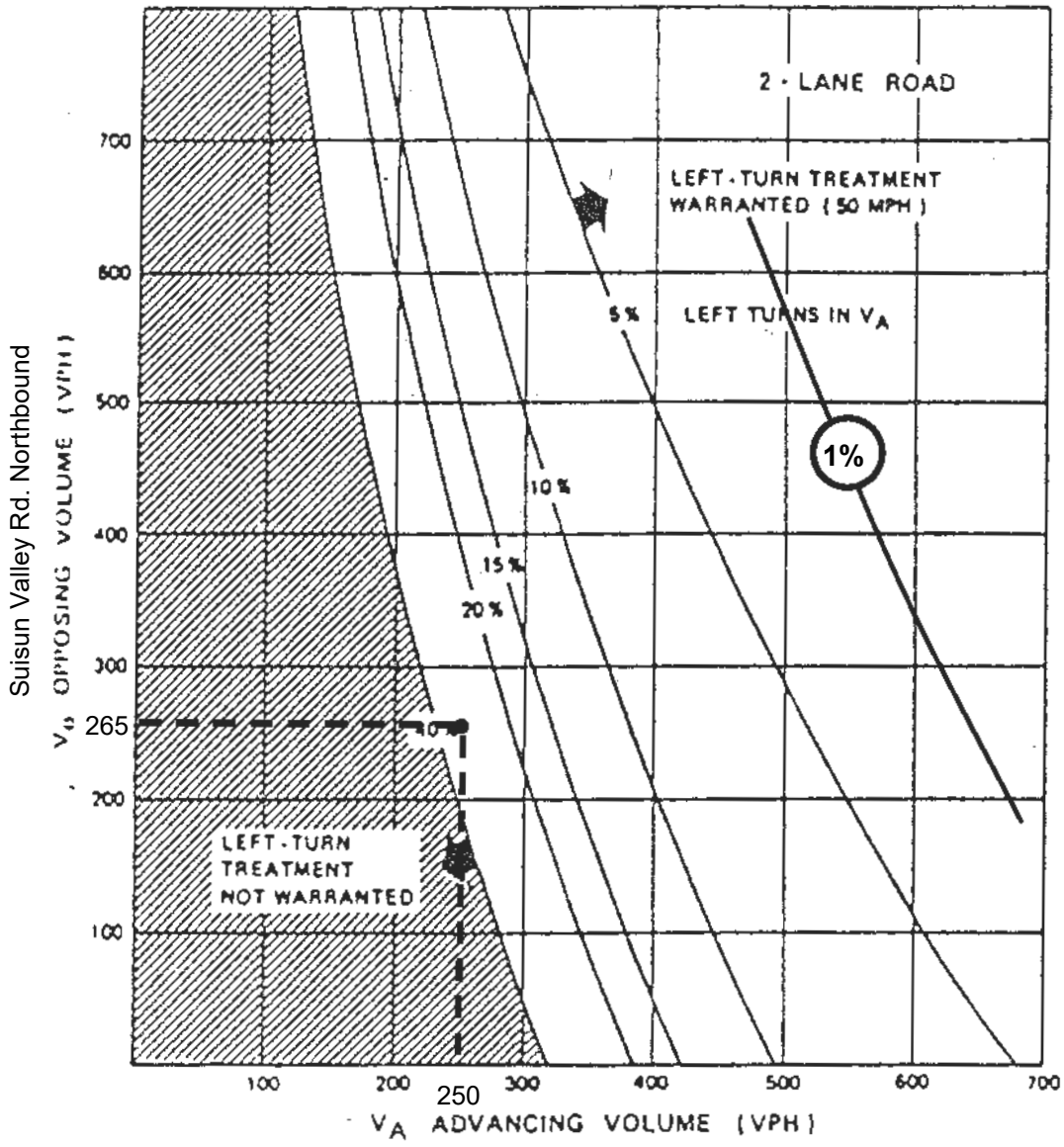
Suisun Valley Rd. / North Driveway:

V_A = 315 L.T. % = 1/315 = 1% V_o = 250

LEFT TURN LANE IS NOT WARRANTED

Caltrans, "Guidelines for Reconstruction of Intersections", August 1985.
Transportation Research Board, National Cooperative Highway Research Program Report 279, "Intersection Channelization Design Guide", November, 1985.

CALTRANS LEFT TURN LANE WARRANTS



Bally Keal Vineyards Winery

EXISTING WEEKEND PEAK HOUR + WINERY

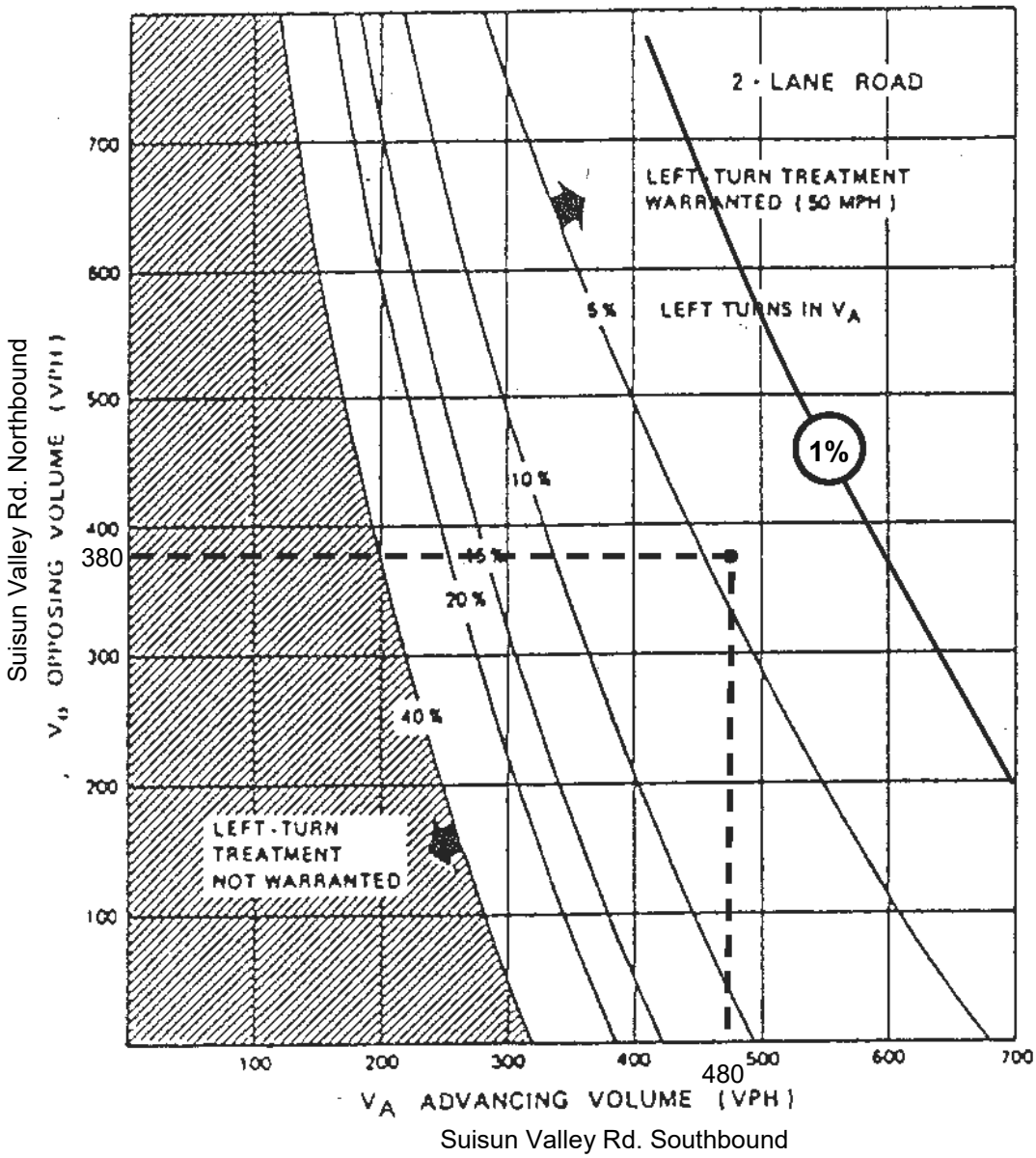
Suisun Valley Rd. / North Driveway:

V_A = 250 L.T. % = 2/250 = 1% V_o = 265

LEFT TURN LANE IS NOT WARRANTED

Caltrans, "Guidelines for Reconstruction of Intersections", August 1985.
Transportation Research Board, National Cooperative Highway Research Program Report 279, "Intersection Channelization Design Guide", November, 1985.

CALTRANS LEFT TURN LANE WARRANTS



Bally Keal Vineyards Winery

CUMULATIVE WEEKDAY PM PEAK HOUR + WINERY

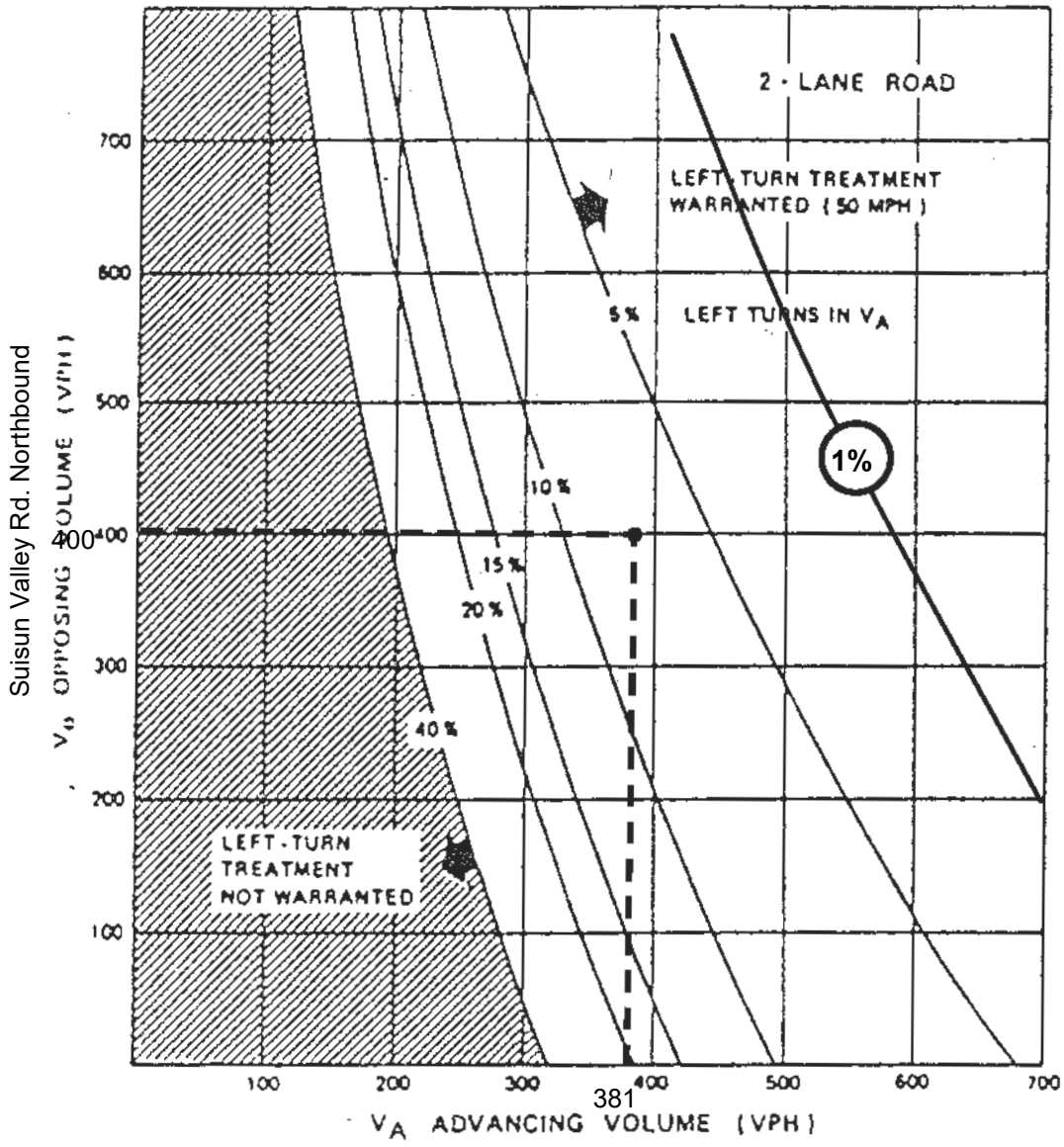
Suisun Valley Rd. / North Driveway:

V_A = 480 L.T. % = 1/480 = 1% V_o = 380

LEFT TURN LANE IS NOT WARRANTED

Caltrans, "Guidelines for Reconstruction of Intersections", August 1985.
Transportation Research Board, National Cooperative Highway Research Program Report 279, "Intersection Channelization Design Guide", November, 1985.

CALTRANS LEFT TURN LANE WARRANTS



Bally Keal Vineyards Winery

CUMULATIVE WEEKEND PEAK HOUR + WINERY

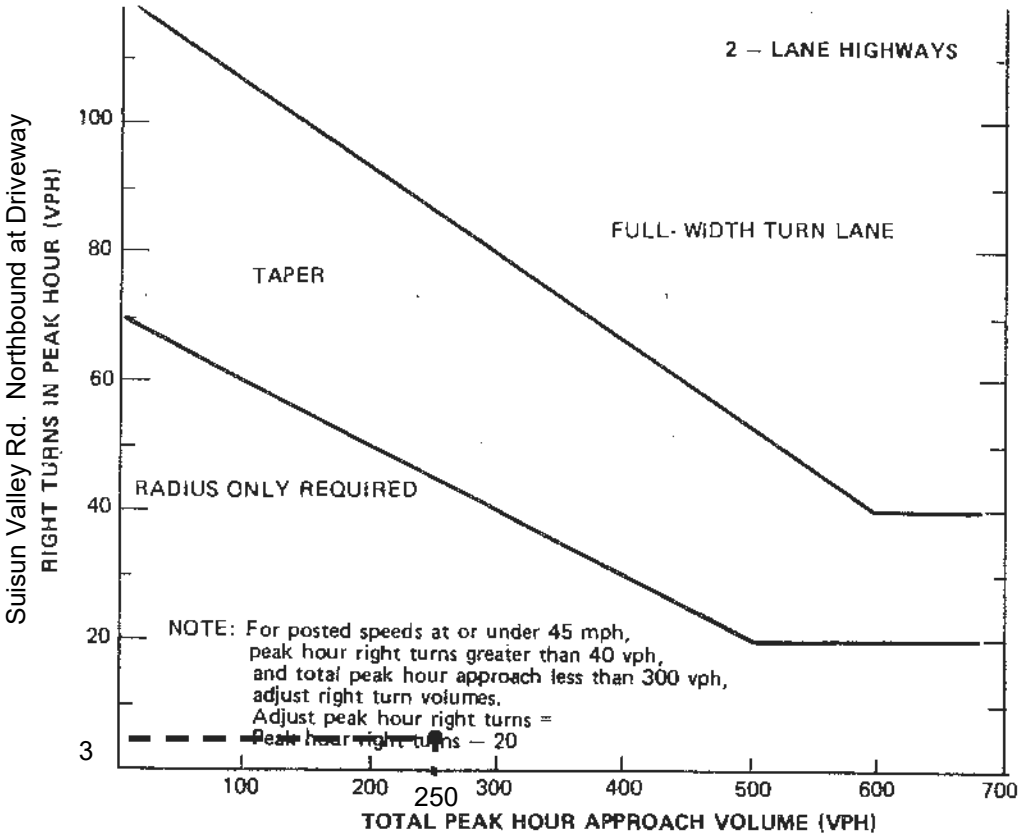
Suisun Valley Rd. / North Driveway:

V_A = 381 L.T. % = 2/381 = 1% V_o = 400

LEFT TURN LANE IS NOT WARRANTED

Caltrans, “Guidelines for Reconstruction of Intersections”, August 1985.
Transportation Research Board, National Cooperative Highway Research Program Report 279, “Intersection Channelization Design Guide”, November, 1985.

RIGHT TURN LANE WARRANTS



Suisun Valley Rd. Northbound at Driveway

Bally Keal Vineyards Winery

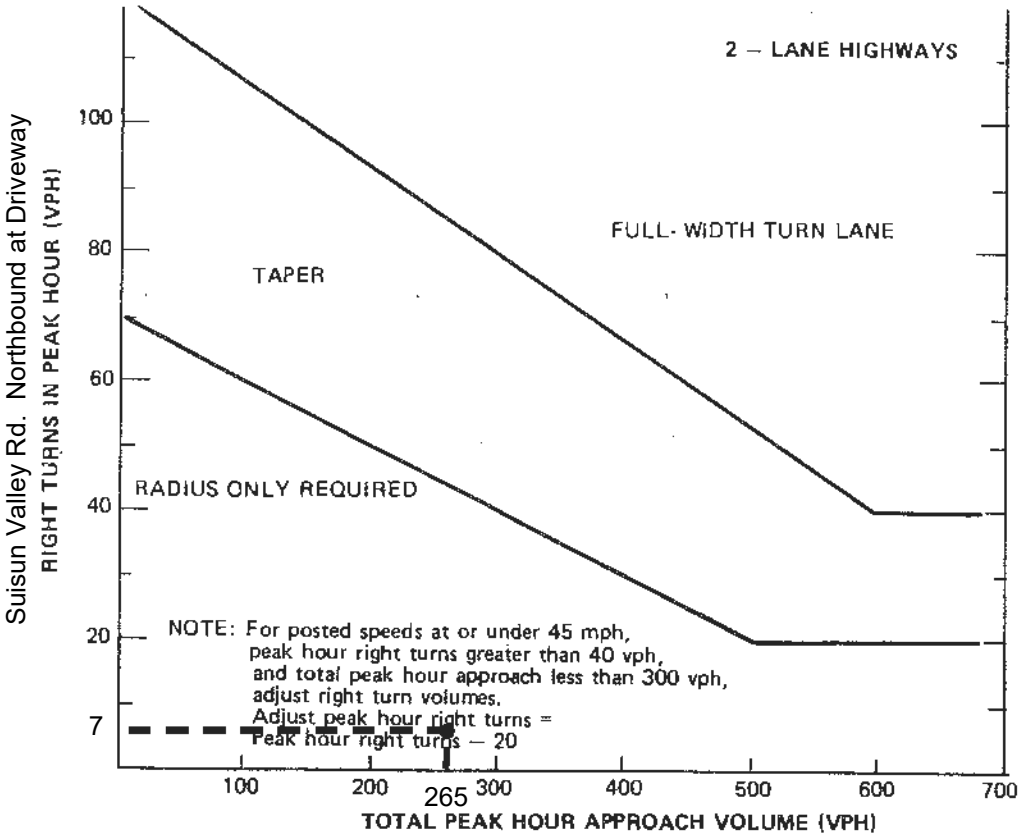
EXISTING WEEKDAY PM PEAK HOUR + WINERY

Suisun Valley Rd. / North Driveway: All Inbound Right Turns Via North Driveway

ADDITIONAL RIGHT TURN LANE IS NOT WARRANTED.

Source: Transportation Research Board, National Cooperative Highway Research Program Report 279, “Intersection Channelization Design Guide”, November, 1985.

RIGHT TURN LANE WARRANTS



Suisun Valley Rd. Northbound at Driveway

Bally Keal Vineyards Winery

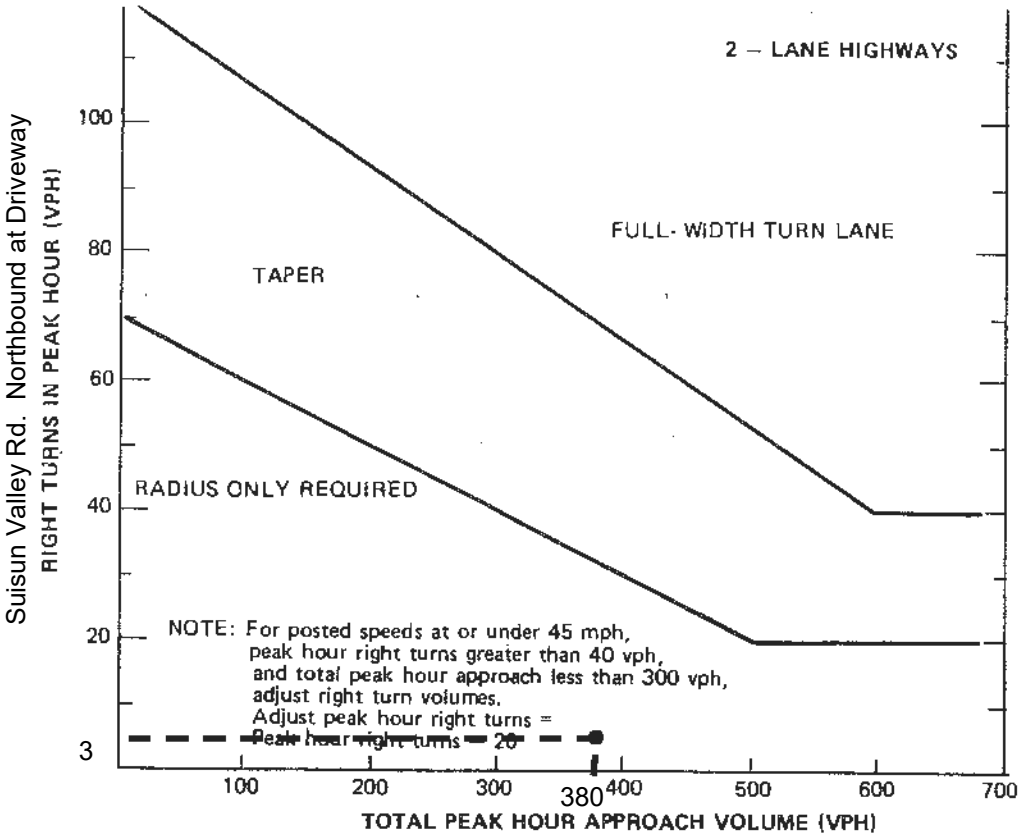
EXISTING WEEKEND PEAK HOUR + WINERY

Suisun Valley Rd. / North Driveway: All Inbound Right Turns Via North Driveway

ADDITIONAL RIGHT TURN LANE IS NOT WARRANTED.

Source: Transportation Research Board, National Cooperative Highway Research Program Report 279, "Intersection Channelization Design Guide", November, 1985.

RIGHT TURN LANE WARRANTS



Suisun Valley Rd. Northbound at Driveway

Bally Keal Vineyards Winery

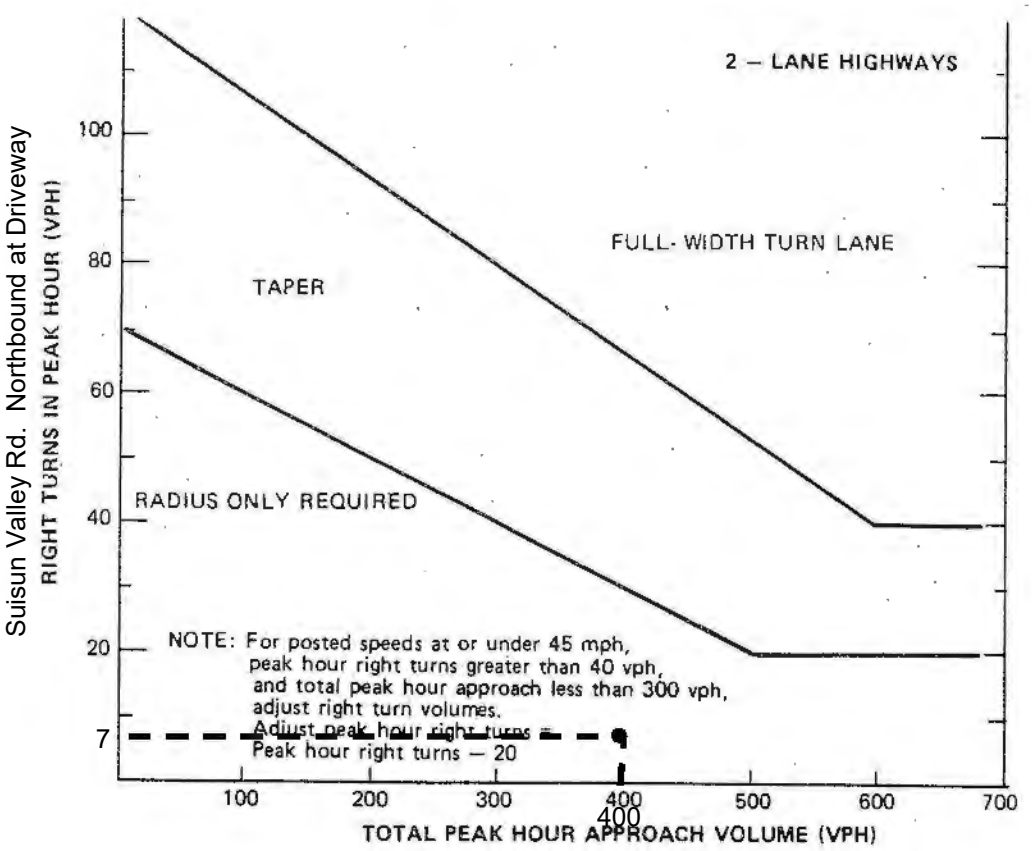
CUMULATIVE WEEKDAY PM PEAK HOUR + WINERY

Suisun Valley Rd. / North Driveway: All Inbound Right Turns Via North Driveway

ADDITIONAL RIGHT TURN LANE IS NOT WARRANTED.

Source: Transportation Research Board, National Cooperative Highway Research Program Report 279, “Intersection Channelization Design Guide”, November, 1985.

RIGHT TURN LANE WARRANTS



Suisun Valley Rd. Northbound at Driveway

Suisun Valley Rd. Northbound at Driveway

Bally Keal Vineyards Winery

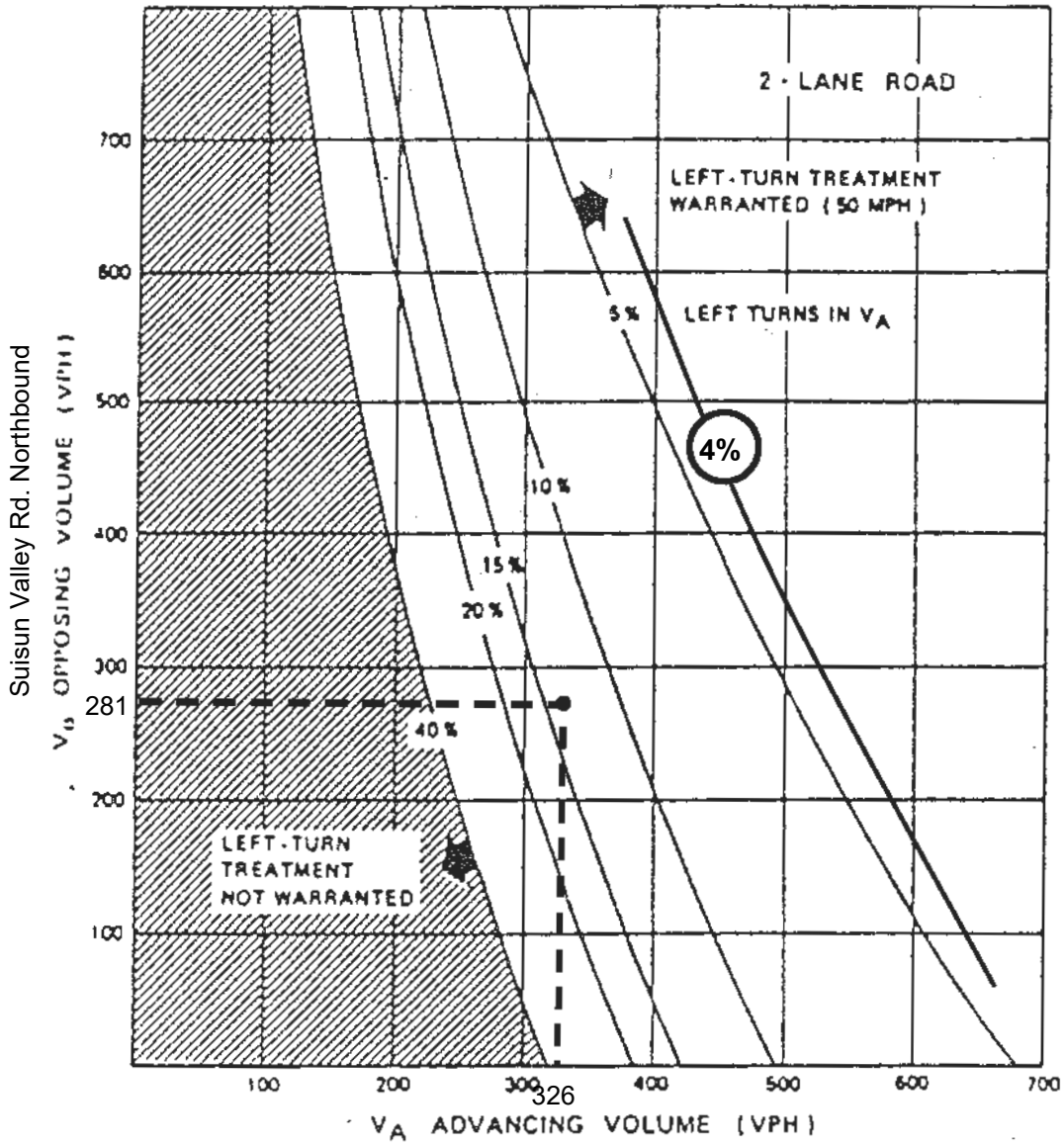
CUMULATIVE WEEKEND PEAK HOUR + WINERY

Suisun Valley Rd. / North Driveway: All Inbound Right Turns Via North Driveway

ADDITIONAL RIGHT TURN LANE IS NOT WARRANTED.

Source: Transportation Research Board, National Cooperative Highway Research Program Report 279, "Intersection Channelization Design Guide", November, 1985.

CALTRANS LEFT TURN LANE WARRANTS



Bally Keal Vineyards Event

EXISTING WEEKDAY PM PEAK HOUR + BEFORE TYPICAL SIZE EVENT (200 guests)

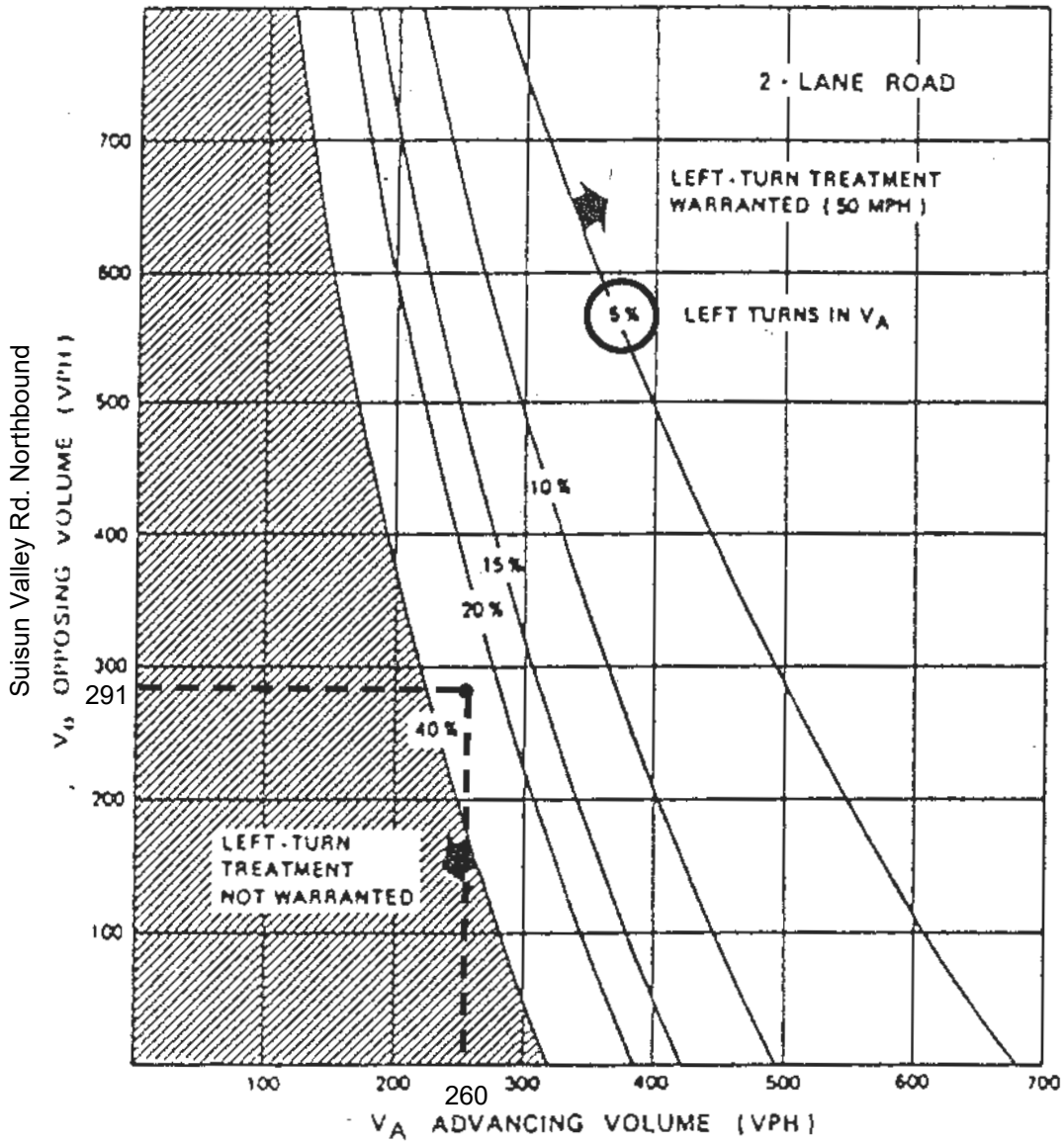
Suisun Valley Rd. / North Driveway:

V_A = 326 L.T. % = 12/326 = 4% V_o = 281

LEFT TURN LANE IS NOT WARRANTED

Caltrans, "Guidelines for Reconstruction of Intersections", August 1985.
Transportation Research Board, National Cooperative Highway Research Program Report 279, "Intersection Channelization Design Guide", November, 1985.

CALTRANS LEFT TURN LANE WARRANTS



Bally Keal Vineyards Event

EXISTING WEEKEND PEAK HOUR + BEFORE TYPICAL SIZE EVENT (200 guests)

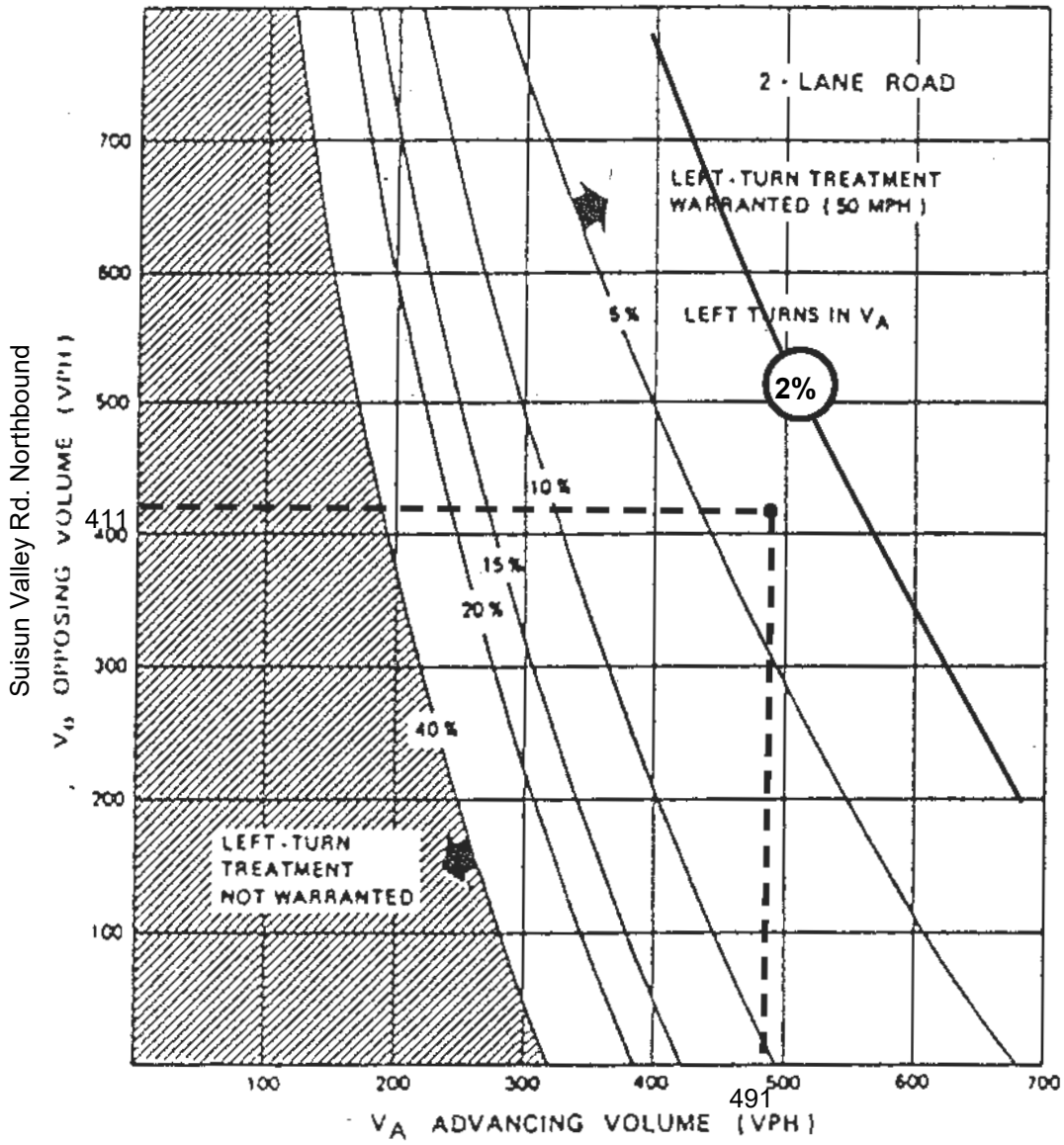
Suisun Valley Rd. / North Driveway:

V_A = 260 L.T. % = 12/260 = 5% V_o = 291

LEFT TURN LANE IS NOT WARRANTED

Caltrans, "Guidelines for Reconstruction of Intersections", August 1985.
Transportation Research Board, National Cooperative Highway Research Program Report 279, "Intersection Channelization Design Guide", November, 1985.

CALTRANS LEFT TURN LANE WARRANTS



Bally Keal Vineyards Event

CUMULATIVE WEEKDAY PM PEAK HOUR + BEFORE TYPICAL SIZE EVENT (200 guests)

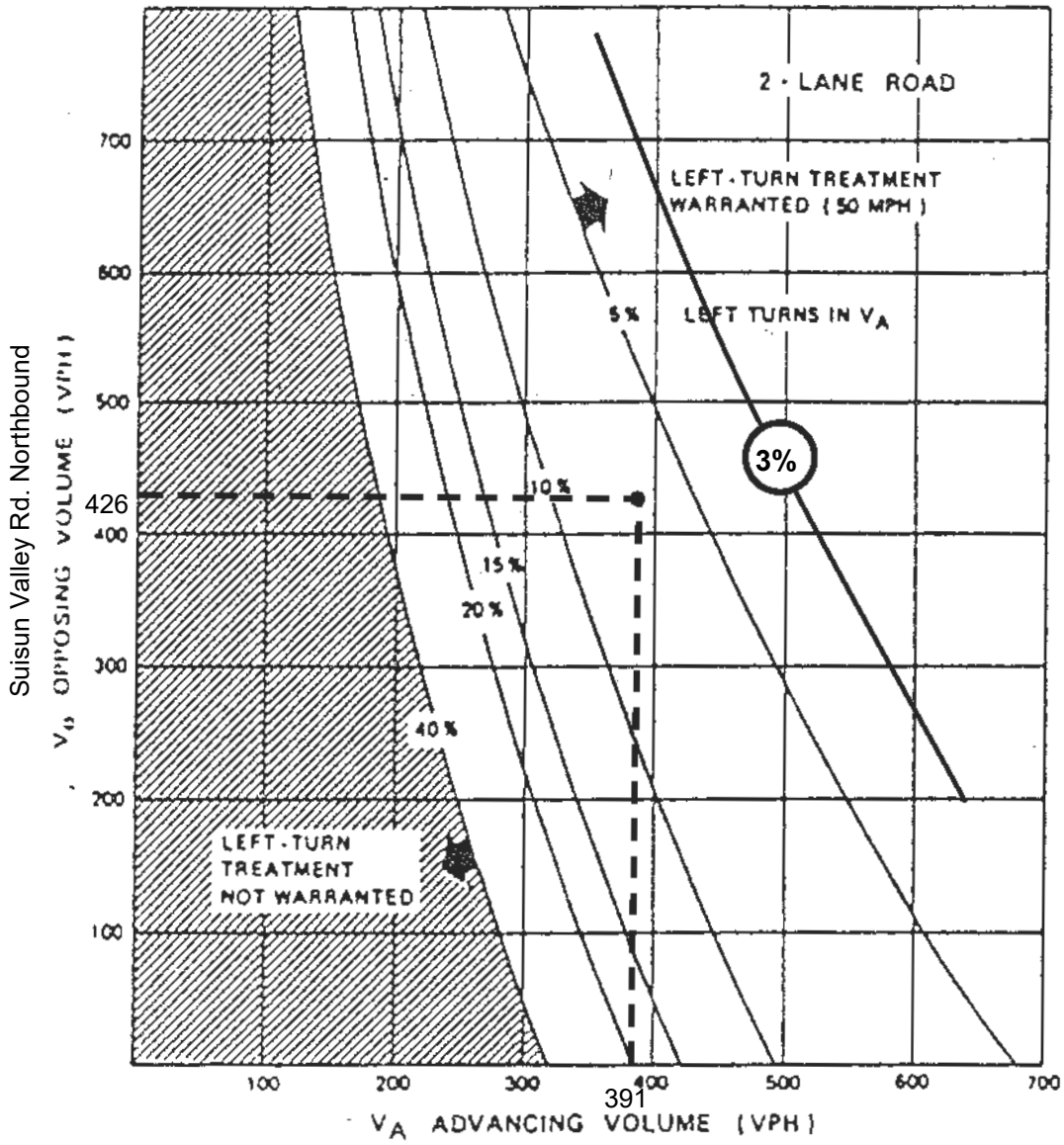
Suisun Valley Rd. / North Driveway:

V_A = 491 L.T. % = 12/491 = 2% V_o = 411

LEFT TURN LANE IS NOT WARRANTED

Caltrans, “Guidelines for Reconstruction of Intersections”, August 1985.
Transportation Research Board, National Cooperative Highway Research Program Report 279, “Intersection Channelization Design Guide”, November, 1985.

CALTRANS LEFT TURN LANE WARRANTS



Bally Keal Vineyards Event

CUMULATIVE WEEKEND PEAK HOUR + BEFORE TYPICAL SIZE EVENT (200 guests)

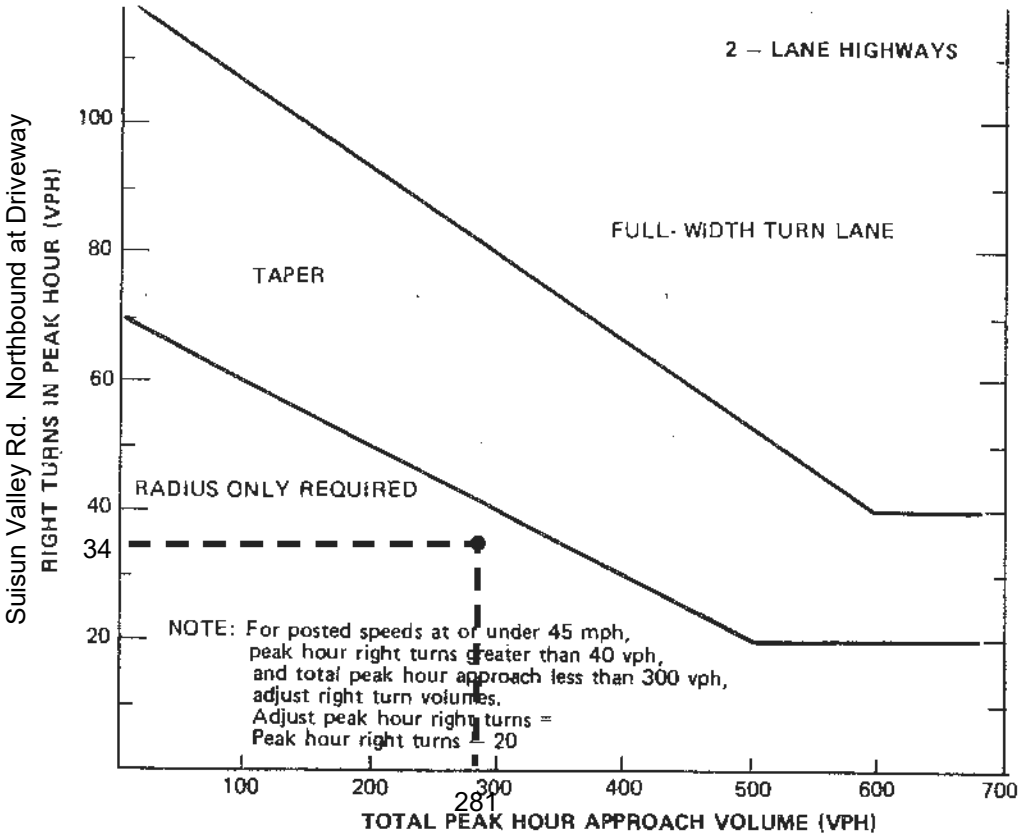
Suisun Valley Rd. / North Driveway:

V_A = 391 L.T. % = 12/391 = 3% V_o = 426

LEFT TURN LANE IS NOT WARRANTED

Caltrans, "Guidelines for Reconstruction of Intersections", August 1985.
Transportation Research Board, National Cooperative Highway Research Program Report 279, "Intersection Channelization Design Guide", November, 1985.

RIGHT TURN LANE WARRANTS



Suisun Valley Rd. Northbound at Driveway

Bally Keal Vineyards Event

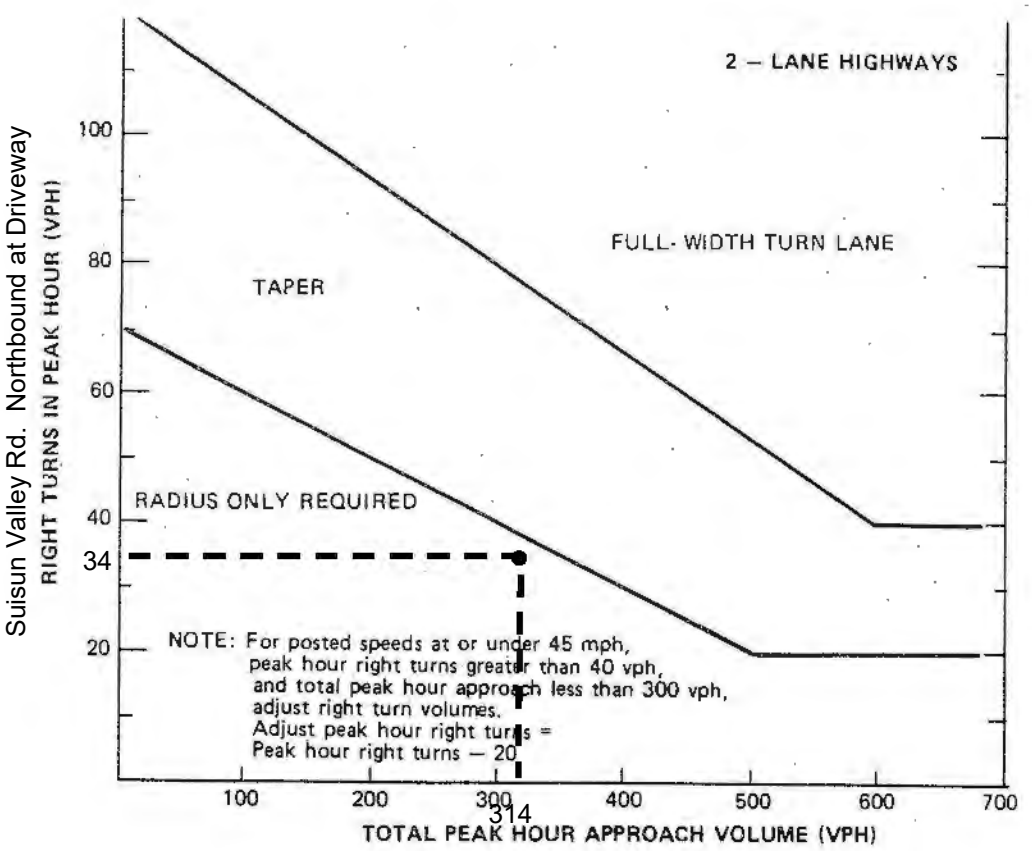
EXISTING WEEKDAY PM PEAK HOUR + BEFORE TYPICAL SIZE EVENT (200 guests)

Suisun Valley Rd. / North Driveway:

RIGHT TURN LANE IS NOT WARRANTED.

Source: Transportation Research Board, National Cooperative Highway Research Program Report 279, "Intersection Channelization Design Guide", November, 1985.

RIGHT TURN LANE WARRANTS



Suisun Valley Rd. Northbound at Driveway

Bally Keal Vineyards Event

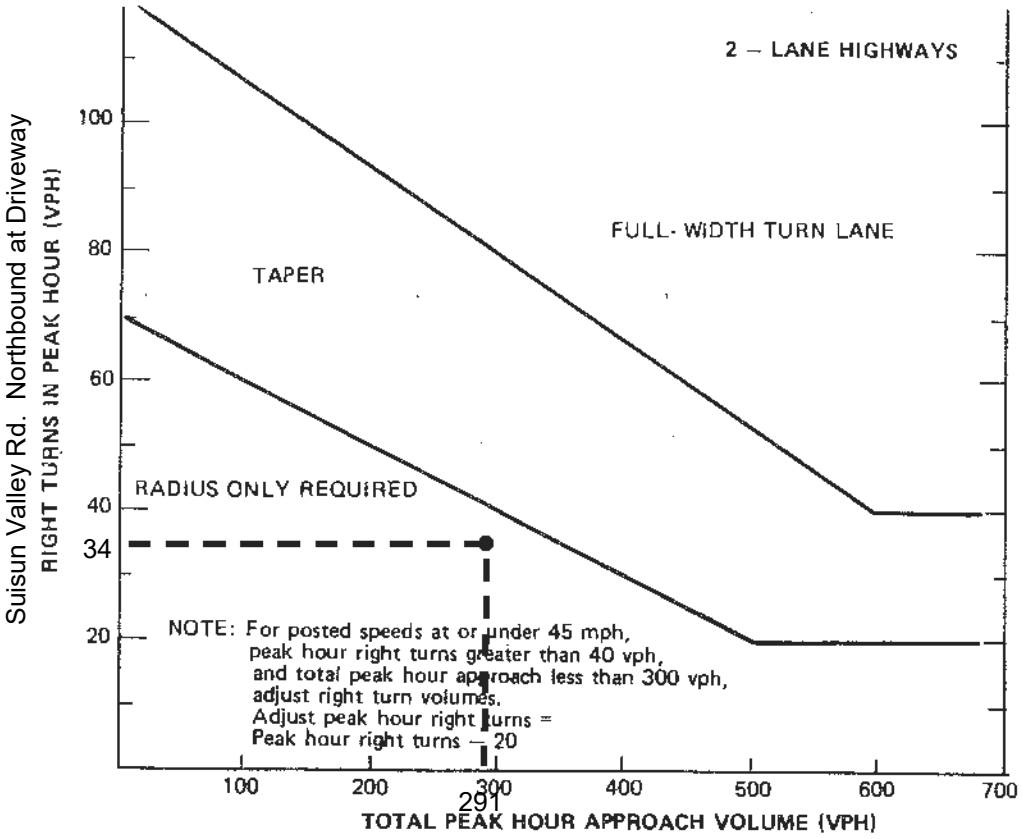
EXISTING WEEKDAY PM PEAK HOUR + BEFORE TYPICAL SIZE EVENT (200 guests)

<u>Suisun Valley Rd. / South Driveway:</u>

RIGHT TURN LANE IS NOT WARRANTED.

Source: Transportation Research Board, National Cooperative Highway Research Program Report 279, “Intersection Channelization Design Guide”, November, 1985.

RIGHT TURN LANE WARRANTS



Suisun Valley Rd. Northbound at Driveway

Bally Keal Vineyards Event

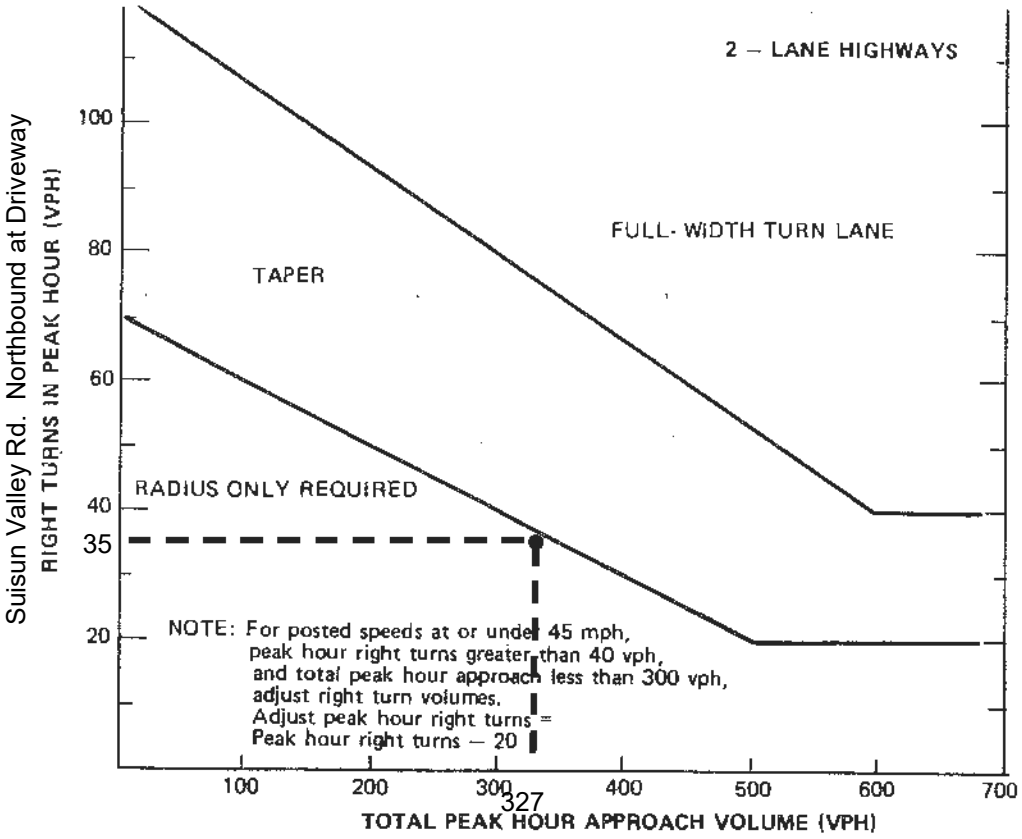
EXISTING WEEKEND PEAK HOUR + BEFORE TYPICAL SIZE EVENT (200 guests)

Suisun Valley Rd. / North Driveway:

RIGHT TURN LANE IS NOT WARRANTED.

Source: Transportation Research Board, National Cooperative Highway Research Program Report 279, “Intersection Channelization Design Guide”, November, 1985.

RIGHT TURN LANE WARRANTS



Suisun Valley Rd. Northbound at Driveway

Bally Keal Vineyards Event

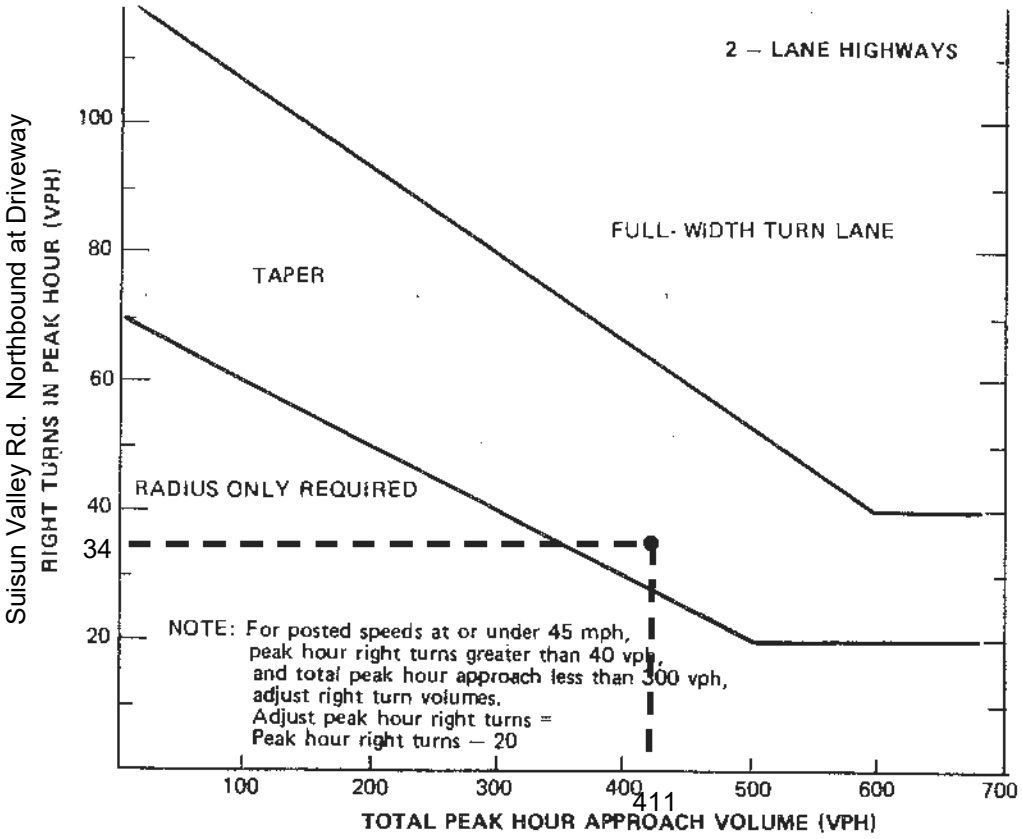
EXISTING WEEKEND PEAK HOUR + BEFORE TYPICAL SIZE EVENT (200 guests)

Suisun Valley Rd. / South Driveway:

RIGHT TURN LANE IS NOT WARRANTED.

Source: Transportation Research Board, National Cooperative Highway Research Program Report 279, "Intersection Channelization Design Guide", November, 1985.

RIGHT TURN LANE WARRANTS



Suisun Valley Rd. Northbound at Driveway

Bally Keal Vineyards Event

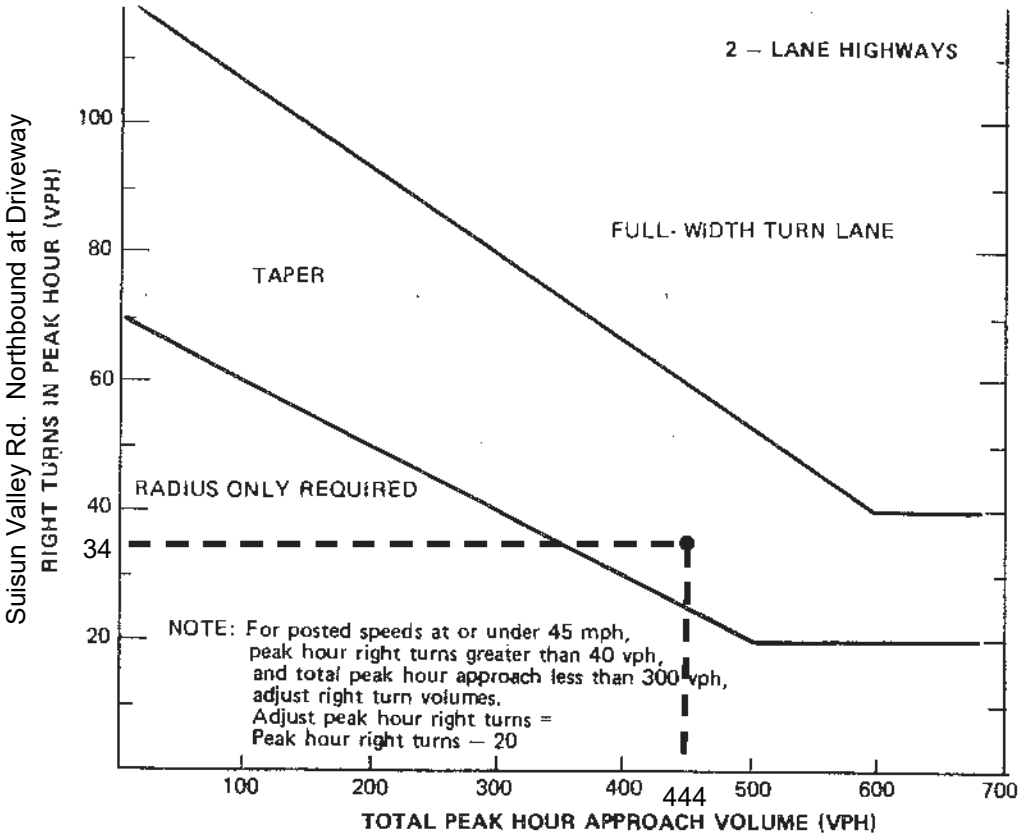
CUMULATIVE WEEKDAY PM PEAK HOUR + BEFORE TYPICAL SIZE EVENT (200 guests)

Suisun Valley Rd. / North Driveway:

RIGHT TURN TAPER IS WARRANTED.

Source: Transportation Research Board, National Cooperative Highway Research Program Report 279, “Intersection Channelization Design Guide”, November, 1985.

RIGHT TURN LANE WARRANTS



Suisun Valley Rd. Northbound at Driveway

Bally Keal Vineyards Event

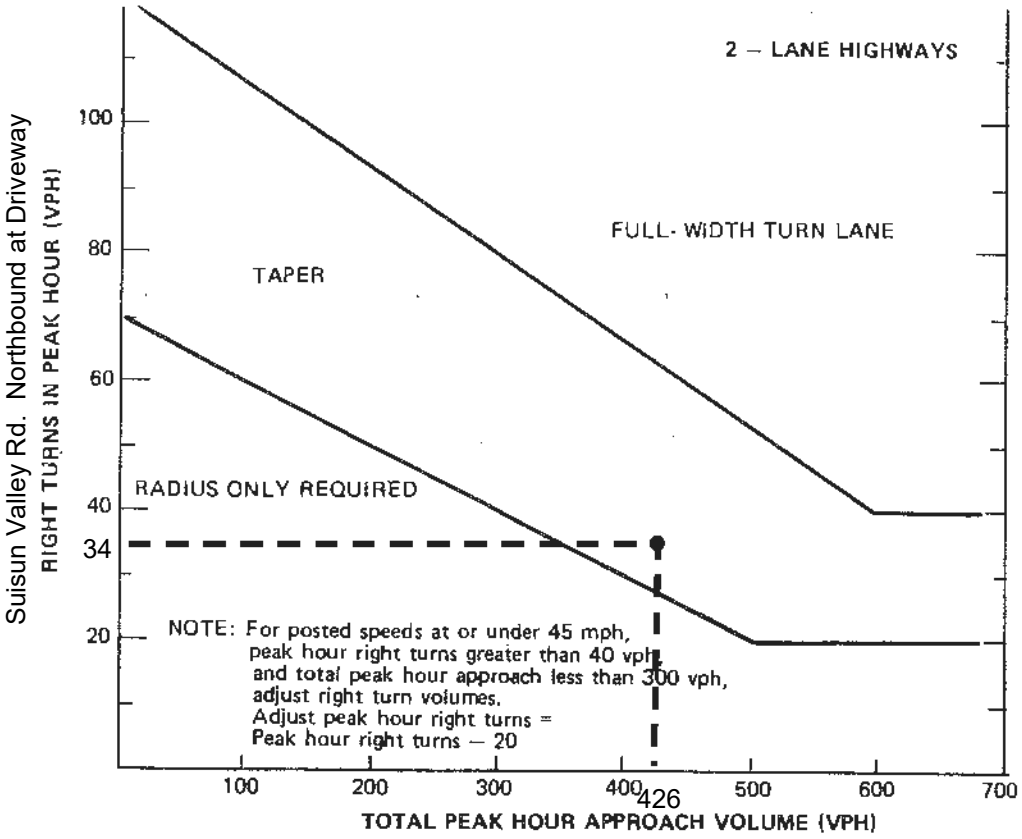
CUMULATIVE WEEKDAY PM PEAK HOUR + BEFORE TYPICAL SIZE EVENT (200 guests)

Suisun Valley Rd. / South Driveway:

RIGHT TURN TAPER IS WARRANTED.

Source: Transportation Research Board, National Cooperative Highway Research Program Report 279, "Intersection Channelization Design Guide", November, 1985.

RIGHT TURN LANE WARRANTS



Suisun Valley Rd. Northbound at Driveway

Bally Keal Vineyards Event

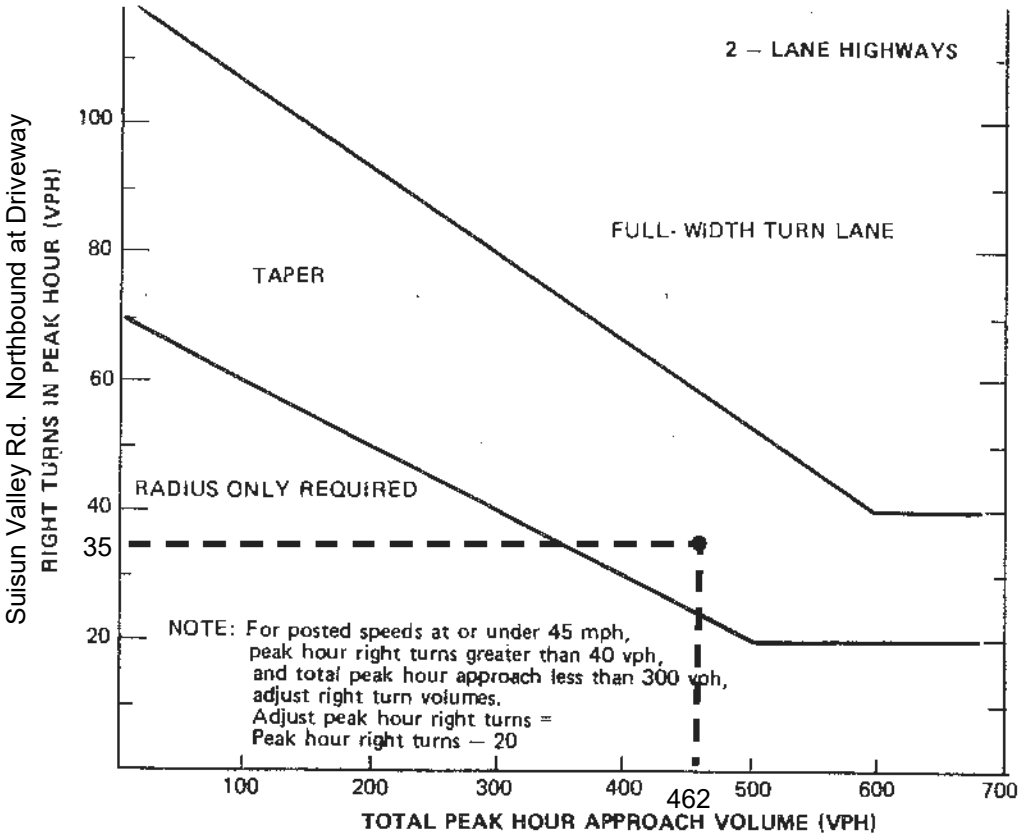
CUMULATIVE WEEKEND PEAK HOUR + BEFORE TYPICAL SIZE EVENT (200 Guests)

Suisun Valley Rd. / North Driveway:

RIGHT TURN TAPER IS WARRANTED.

Source: Transportation Research Board, National Cooperative Highway Research Program Report 279, “Intersection Channelization Design Guide”, November, 1985.

RIGHT TURN LANE WARRANTS



Suisun Valley Rd. Northbound at Driveway

Bally Keal Vineyards Event

CUMULATIVE WEEKEND PEAK HOUR + BEFORE TYPICAL SIZE EVENT (200 guests)

Suisun Valley Rd. / South Driveway:

RIGHT TURN TAPER IS WARRANTED.

Source: Transportation Research Board, National Cooperative Highway Research Program Report 279, “Intersection Channelization Design Guide”, November, 1985.

Traffic Counts

Prepared by National Data & Surveying Services

Suisun Valley Rd & 4286 North Driveway

Peak Hour Turning Movement Count

ID: 19-08543-001
City: Fairfield

Day: Friday
Date: 10/18/2019

PEAK HOURS

AM	NONE
NOON	NONE
PM	03:00 PM - 04:00 PM

COUNT PERIODS

AM	NONE
NOON	NONE
PM	03:00 PM - 06:00 PM

Suisun Valley Rd

SOUTHBOUND

AM	0	0	0	0	0	AM
NOON	0	0	0	0	0	NOON
PM	0	314	0	0	247	PM

EASTBOUND

AM	NOON	PM	
0	0	0	
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
AM	NOON	PM	

WESTBOUND

	PM	NOON	AM
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
	0	0	0
	PM	NOON	AM

CONTROL

0

	AM	NOON	PM
TEV	0	0	561
PHF			0.70

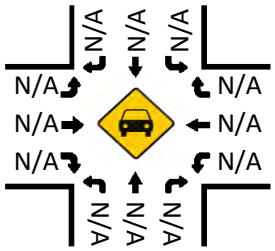
NORTHBOUND

PM	314	0	0	247	0	PM
NOON	0	0	0	0	0	NOON
AM	0	0	0	0	0	AM

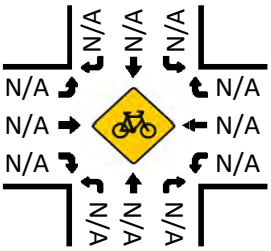
Suisun Valley Rd

N. Driveway: 4286 Suisun Valley

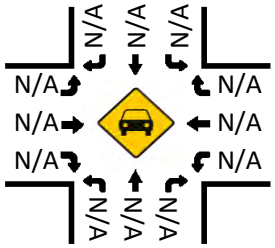
Total Vehicles (AM)



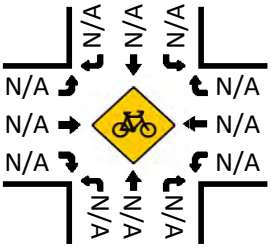
Bikes (AM)



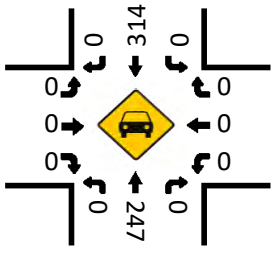
Total Vehicles (Noon)



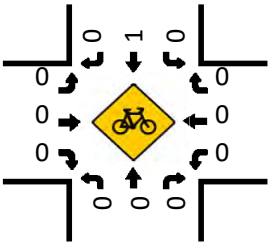
Bikes (NOON)



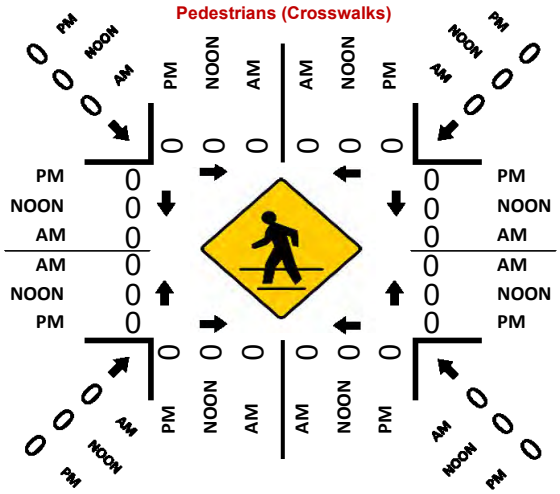
Total Vehicles (PM)



Bikes (PM)



Pedestrians (Crosswalks)



National Data & Surveying Services
Intersection Turning Movement Count

Location: Suisun Valley Rd & 4286 North Driveway
City: Fairfield
Control:

Project ID: 19-08543-001
Date: 2019-10-18

Total

NS/EW Streets:	Suisun Valley Rd				Suisun Valley Rd								N. Driveway: 4286 Suisun Valley Rd				
PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
3:00 PM	0	80	0	0	0	119	0	0	0	0	0	0	0	0	0	0	199
3:15 PM	0	54	0	0	0	84	0	0	0	0	0	0	0	0	0	0	138
3:30 PM	0	54	0	0	0	56	0	0	0	0	0	0	0	0	0	0	110
3:45 PM	0	59	0	0	0	55	0	0	0	0	0	0	0	0	0	0	114
4:00 PM	0	50	0	0	1	73	0	0	0	0	0	0	1	0	1	0	126
4:15 PM	0	33	1	1	0	53	0	0	0	0	0	0	0	0	0	0	88
4:30 PM	0	46	1	0	0	69	0	0	0	0	0	0	0	0	0	0	116
4:45 PM	0	34	0	0	0	58	0	0	0	0	0	0	0	0	1	0	93
5:00 PM	0	38	0	0	0	62	0	0	0	0	0	0	0	0	0	0	100
5:15 PM	0	31	0	0	0	55	0	0	0	0	0	0	0	0	0	0	86
5:30 PM	0	45	0	0	0	50	0	0	0	0	0	0	0	0	0	0	95
5:45 PM	0	39	0	0	0	33	0	0	0	0	0	0	0	0	0	0	72
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	563	2	1	1	767	0	0	0	0	0	0	1	0	2	0	1337
APPROACH %'s :	0.00%	99.47%	0.35%	0.18%	0.13%	99.87%	0.00%	0.00%					33.33%	0.00%	66.67%	0.00%	
PEAK HR :	03:00 PM - 04:00 PM																TOTAL
PEAK HR VOL :	0	247	0	0	0	314	0	0	0	0	0	0	0	0	0	0	561
PEAK HR FACTOR :	0.000	0.772	0.000	0.000	0.000	0.660	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.705
		0.772				0.660											

National Data & Surveying Services
Intersection Turning Movement Count

Location: Suisun Valley Rd & 4286 North Driveway
City: Fairfield
Control: 0

Project ID: 19-08543-001
Date: 2019-10-18

Bikes

NS/EW Streets:	Suisun Valley Rd				Suisun Valley Rd								N. Driveway: 4286 Suisun Valley Rd				
PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
3:00 PM	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1
3:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00 PM	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	2	0	0	0	1	0	0	0	0	0	0	0	0	0	0	3
APPROACH %'s :	0.00%	100.00%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%									
PEAK HR :	03:00 PM - 04:00 PM																TOTAL
PEAK HR VOL :	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1
PEAK HR FACTOR :	0.00	0.000	0.000	0.000	0.000	0.250	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.250
						0.250											

National Data Surveying Services

Intersection Turning Movement Count

Location: Suisun Valley Rd & 4286 North Driveway
City: Fairfield
Project ID: 19-08543-001
Date: 2019-10-18

Pedestrians (Crosswalks)

NS/EW Streets:	Suisun Valley Rd		Suisun Valley Rd				N. Driveway: 4286 Suisun Valley Rd		
PM	NORTH LEG		SOUTH LEG		EAST LEG		WEST LEG		
	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
3:00 PM	0	0	0	0	0	0	0	0	0
3:15 PM	0	0	0	0	0	0	0	0	0
3:30 PM	0	0	0	0	0	0	0	0	0
3:45 PM	0	0	0	0	0	0	0	0	0
4:00 PM	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	0	0
5:00 PM	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0
	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
TOTAL VOLUMES :	0	0	0	0	0	0	0	0	0
APPROACH %'s :									
PEAK HR :	**03:00 PM - 04:00 PM**		03:00 PM	282	565	565			TOTAL
PEAK HR VOL :	0	0	0	0	0	0	0	0	0
PEAK HR FACTOR :									

Prepared by National Data & Surveying Services

Suisun Valley Rd & 4286 South Driveway

Peak Hour Turning Movement Count

ID: 19-08543-002
City: Fairfield

Day: Friday
Date: 10/18/2019

PEAK HOURS

AM	NONE
NOON	NONE
PM	03:00 PM - 04:00 PM

COUNT PERIODS

AM	NONE
NOON	NONE
PM	03:00 PM - 06:00 PM

Suisun Valley Rd — SOUTHBOUND

AM	0	0	0	0	0	AM
NOON	0	0	0	0	0	NOON
PM	1	312	1	0	247	PM

EASTBOUND — Driveway

AM	NOON	PM	
0	0	1	
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
AM	NOON	PM	

WESTBOUND — S. Drvwy: 4286 Suisun Valley Rd

PM	NOON	AM	
1	0	0	0
0	0	0	0
1	0	0	0
0	0	0	0
1	0	0	
PM	NOON	AM	

CONTROL

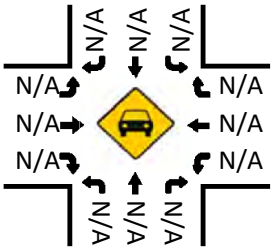
0

	AM	NOON	PM
TEV	0	0	562
PHF			0.72

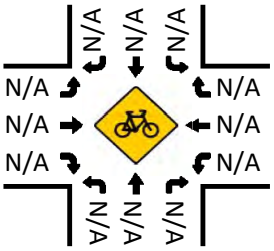
Suisun Valley Rd — NORTHBOUND

PM	313	0	0	246	0	PM
NOON	0	0	0	0	0	NOON
AM	0	0	0	0	0	AM

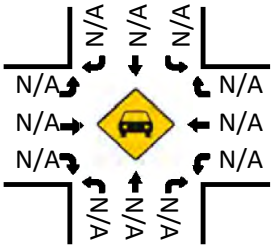
Total Vehicles (AM)



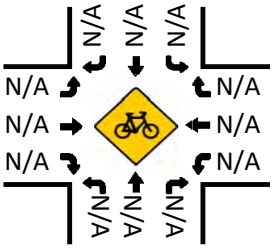
Bikes (AM)



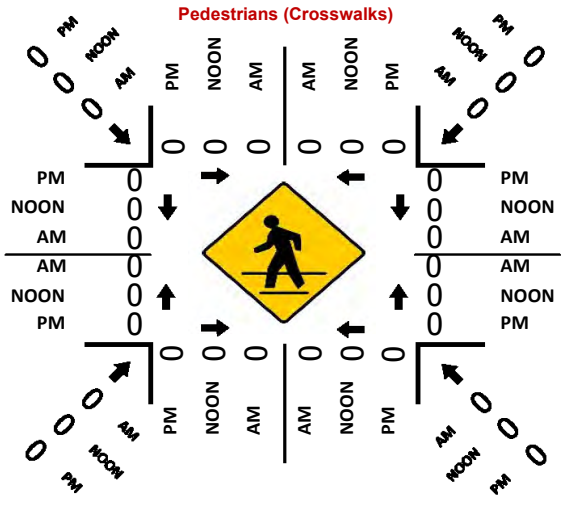
Total Vehicles (Noon)



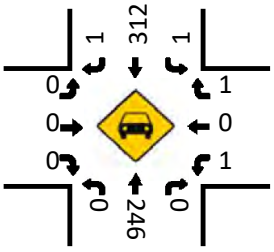
Bikes (NOON)



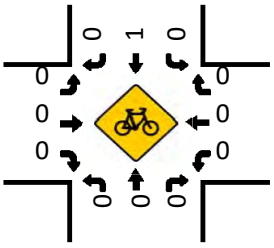
Pedestrians (Crosswalks)



Total Vehicles (PM)



Bikes (PM)



National Data & Surveying Services
Intersection Turning Movement Count

Location: Suisun Valley Rd & 4286 South Driveway
City: Fairfield
Control:

Project ID: 19-08543-002
Date: 2019-10-18

Total

NS/EW Streets:	Suisun Valley Rd				Suisun Valley Rd				Driveway				S. Drvwy: 4286 Suisun Valley Rd				
PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
3:00 PM	0	79	0	0	0	115	0	0	0	0	0	0	0	0	1	0	195
3:15 PM	0	54	0	0	0	87	0	0	0	0	0	0	0	0	0	0	141
3:30 PM	0	54	0	0	0	56	0	0	0	0	0	0	0	0	0	0	110
3:45 PM	0	59	0	0	1	54	1	0	0	0	0	0	1	0	0	0	116
4:00 PM	0	50	0	0	0	74	0	0	0	0	1	0	0	0	0	0	125
4:15 PM	1	34	0	0	0	54	0	0	0	0	0	0	0	0	0	0	89
4:30 PM	0	48	0	0	0	66	0	0	0	0	0	0	0	0	0	0	114
4:45 PM	0	35	0	0	0	60	0	0	0	0	0	0	0	0	0	0	95
5:00 PM	0	38	0	0	0	63	0	0	0	0	0	0	0	0	0	0	101
5:15 PM	0	31	0	0	0	53	0	0	0	0	0	0	0	0	0	0	84
5:30 PM	0	45	0	0	0	50	0	0	0	0	0	0	0	0	0	0	95
5:45 PM	0	39	0	0	0	33	0	0	0	0	0	0	0	0	0	0	72
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	1	566	0	0	1	765	1	0	0	0	1	0	1	0	1	0	1337
APPROACH %'s :	0.18%	99.82%	0.00%	0.00%	0.13%	99.74%	0.13%	0.00%	0.00%	0.00%	100.00%	0.00%	50.00%	0.00%	50.00%	0.00%	
PEAK HR :	03:00 PM - 04:00 PM																TOTAL
PEAK HR VOL :	0	246	0	0	1	312	1	0	0	0	0	0	1	0	1	0	562
PEAK HR FACTOR :	0.000	0.778	0.000	0.000	0.250	0.678	0.250	0.000	0.000	0.000	0.000	0.000	0.250	0.000	0.250	0.000	0.721
		0.778				0.683								0.500			

National Data & Surveying Services
Intersection Turning Movement Count

Location: Suisun Valley Rd & 4286 South Driveway
City: Fairfield
Control: 0

Project ID: 19-08543-002
Date: 2019-10-18

Bikes

NS/EW Streets:	Suisun Valley Rd				Suisun Valley Rd				Driveway				S. Drvwy: 4286 Suisun Valley Rd				
PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0 NL	0 NT	0 NR	0 NU	0 SL	0 ST	0 SR	0 SU	0 EL	0 ET	0 ER	0 EU	0 WL	0 WT	0 WR	0 WU	TOTAL
3:00 PM	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1
3:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00 PM	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	2	0	0	0	1	0	0	0	0	0	0	0	0	0	0	3
APPROACH %'s :	0.00%	100.00%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%									
PEAK HR :	03:00 PM - 04:00 PM																TOTAL
PEAK HR VOL :	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1
PEAK HR FACTOR :	0.00	0.000	0.000	0.000	0.000	0.250	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.250
						0.250											

National Data & Surveying Services

Intersection Turning Movement Count

Location: Suisun Valley Rd & 4286 South Driveway
City: Fairfield
Project ID: 19-08543-002
Date: 2019-10-18

Pedestrians (Crosswalks)

NS/EW Streets:	Suisun Valley Rd		Suisun Valley Rd		Driveway		S. Drvwy: 4286 Suisun Valley Rd		
PM	NORTH LEG		SOUTH LEG		EAST LEG		WEST LEG		
	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
3:00 PM	0	0	0	0	0	0	0	0	0
3:15 PM	0	0	0	0	0	0	0	0	0
3:30 PM	0	0	0	0	0	0	0	0	0
3:45 PM	0	0	0	0	0	0	0	0	0
4:00 PM	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	0	0
5:00 PM	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0
	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
TOTAL VOLUMES :	0	0	0	0	0	0	0	0	0
APPROACH %'s :									
PEAK HR :	**03:00 PM - 04:00 PM**		03:00 PM	282	565	565			TOTAL
PEAK HR VOL :	0	0	0	0	0	0	0	0	0
PEAK HR FACTOR :									

Prepared by National Data & Surveying Services

Suisun Valley Rd / Rockville Rd

Peak Hour Turning Movement Count

ID: 19-08543-003
City: Fairfield

Day: Friday
Date: 10/18/2019

PEAK HOURS	
AM	NONE
NOON	NONE
PM	03:00 PM - 04:00 PM

COUNT PERIODS	
AM	NONE
NOON	NONE
PM	03:00 PM - 06:00 PM

Suisun Valley Rd — SOUTHBOUND

AM	0	0	0	0	0	AM
NOON	0	0	0	0	0	NOON
PM	44	189	97	0	258	PM

Rockville Rd — EASTBOUND

AM	NOON	PM	
0	0	194	
0	0	0	0
0	0	31	0
0	0	118	0
0	0	14	0
AM	NOON	PM	

Rockville Rd — WESTBOUND

PM	NOON	AM	
52	0	0	0
123	0	0	0
81	0	0	0
0	0	0	0
397	0	0	
PM	NOON	AM	

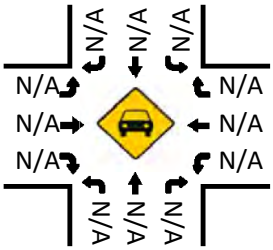
CONTROL: 0

	AM	NOON	PM
TEV	0	0	1133
PHF			0.93

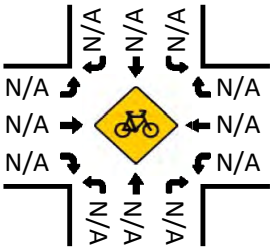
Suisun Valley Rd — NORTHBOUND

PM	284	0	27	175	182	PM
NOON	0	0	0	0	0	NOON
AM	0	0	0	0	0	AM

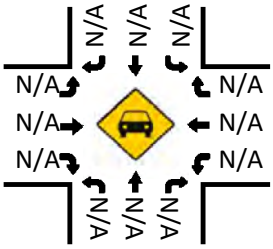
Total Vehicles (AM)



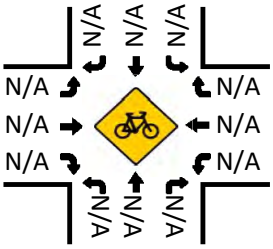
Bikes (AM)



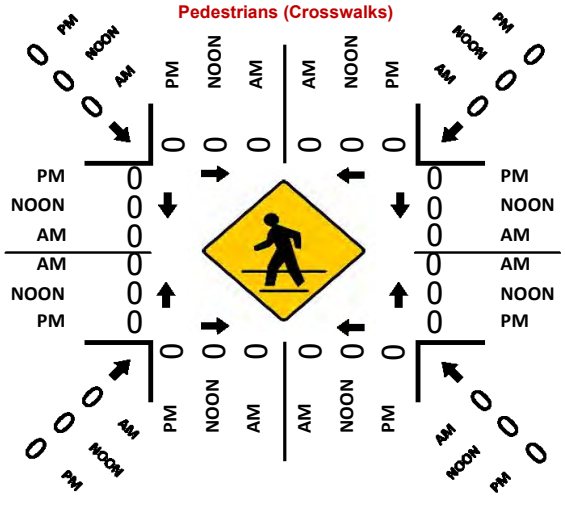
Total Vehicles (Noon)



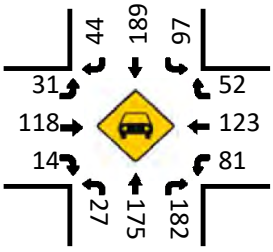
Bikes (NOON)



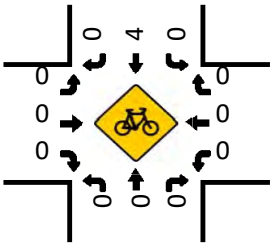
Pedestrians (Crosswalks)



Total Vehicles (PM)



Bikes (PM)



National Data & Surveying Services
Intersection Turning Movement Count

Location: Suisun Valley Rd / Rockville Rd
City: Fairfield
Control:

Project ID: 19-08543-003
Date: 2019-10-18

Total

NS/EW Streets:	Suisun Valley Rd				Suisun Valley Rd				Rockville Rd				Rockville Rd				
PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
3:00 PM	5	63	43	0	35	54	8	0	10	17	2	0	24	22	17	0	300
3:15 PM	5	32	42	0	31	62	14	0	9	41	3	0	10	46	9	0	304
3:30 PM	7	36	46	0	18	35	10	0	9	40	3	0	26	28	8	0	266
3:45 PM	10	44	51	0	13	38	12	0	3	20	6	0	21	27	18	0	263
4:00 PM	6	30	49	0	16	58	5	0	11	21	8	0	21	18	13	0	256
4:15 PM	7	22	40	0	19	38	4	0	6	24	7	0	24	38	3	0	232
4:30 PM	5	40	41	0	12	40	7	0	6	23	6	0	20	30	4	0	234
4:45 PM	4	26	47	0	13	46	12	0	4	11	6	0	26	32	8	0	235
5:00 PM	5	29	74	0	25	29	12	0	2	27	7	0	21	25	5	0	261
5:15 PM	10	28	33	0	14	35	10	0	3	16	3	0	23	31	8	0	214
5:30 PM	8	30	24	0	11	30	6	0	4	23	8	0	21	33	12	0	210
5:45 PM	4	30	20	0	15	19	10	0	5	21	5	0	19	35	5	0	188
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	76	410	510	0	222	484	110	0	72	284	64	0	256	365	110	0	2963
APPROACH %'s :	7.63%	41.16%	51.20%	0.00%	27.21%	59.31%	13.48%	0.00%	17.14%	67.62%	15.24%	0.00%	35.02%	49.93%	15.05%	0.00%	
PEAK HR :	03:00 PM - 04:00 PM																TOTAL
PEAK HR VOL :	27	175	182	0	97	189	44	0	31	118	14	0	81	123	52	0	1133
PEAK HR FACTOR :	0.675	0.694	0.892	0.000	0.693	0.762	0.786	0.000	0.775	0.720	0.583	0.000	0.779	0.668	0.722	0.000	0.932
	0.865				0.771				0.769				0.970				

National Data & Surveying Services
Intersection Turning Movement Count

Location: Suisun Valley Rd / Rockville Rd
City: Fairfield
Control: 0

Project ID: 19-08543-003
Date: 2019-10-18

Bikes

NS/EW Streets:	Suisun Valley Rd				Suisun Valley Rd				Rockville Rd				Rockville Rd				
PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
3:00 PM	0	0	0	0	0	4	0	0	0	0	0	0	0	0	0	0	4
3:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1
5:00 PM	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
5:15 PM	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1
5:30 PM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	2
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	2	0	0	0	4	0	0	0	2	1	0	0	0	1	0	10
APPROACH %'s :	0.00%	100.00%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%	0.00%	66.67%	33.33%	0.00%	0.00%	0.00%	100.00%	0.00%	
PEAK HR :	03:00 PM - 04:00 PM																TOTAL
PEAK HR VOL :	0	0	0	0	0	4	0	0	0	0	0	0	0	0	0	0	4
PEAK HR FACTOR :	0.00	0.000	0.000	0.000	0.000	0.250	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.250
						0.250											

National Data & Surveying Services

Intersection Turning Movement Count

Location: Suisun Valley Rd / Rockville Rd
City: Fairfield
Project ID: 19-08543-003
Date: 2019-10-18

Pedestrians (Crosswalks)

NS/EW Streets:	Suisun Valley Rd		Suisun Valley Rd		Rockville Rd		Rockville Rd		
PM	NORTH LEG		SOUTH LEG		EAST LEG		WEST LEG		
	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
3:00 PM	0	0	0	0	0	0	0	0	0
3:15 PM	0	0	0	0	0	0	0	0	0
3:30 PM	0	0	0	0	0	0	0	0	0
3:45 PM	0	0	0	0	0	0	0	0	0
4:00 PM	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	0	0
5:00 PM	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0
	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
TOTAL VOLUMES :	0	0	0	0	0	0	0	0	0
APPROACH %'s :									
PEAK HR :	**03:00 PM - 04:00 PM**		03:00 PM	282	565	565			TOTAL
PEAK HR VOL :	0	0	0	0	0	0	0	0	0
PEAK HR FACTOR :									

Prepared by National Data & Surveying Services

Suisun Valley Rd & 4286 North Driveway

Peak Hour Turning Movement Count

ID: 19-08543-001
City: Fairfield

Day: Saturday
Date: 10/19/2019

PEAK HOURS	COUNT PERIODS
NONE	NONE
NONE	NONE
01:00 PM - 02:00 PM	12:00 PM - 04:00 PM

SOUTHBOUND — Suisun Valley Rd

AM	0	0	0	0	0	AM
NOON	0	0	0	0	0	NOON
PM	0	237	0	0	257	PM

EASTBOUND — 4286 North Driveway

AM	NOON	PM
0	0	0
0	0	0
0	0	0
0	0	0
0	0	0

WESTBOUND — 4286 North Driveway

PM	NOON	AM
0	0	0
0	0	0
2	0	0
0	0	0
0	0	0

CONTROL

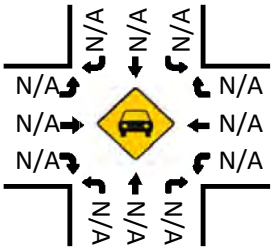
0

	AM	NOON	PM
TEV	0	0	496
PHF			0.93

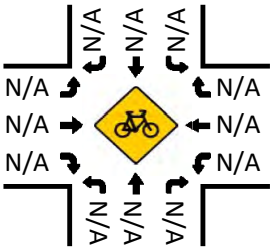
NORTHBOUND — Suisun Valley Rd

PM	239	0	0	257	0	PM
NOON	0	0	0	0	0	NOON
AM	0	0	0	0	0	AM

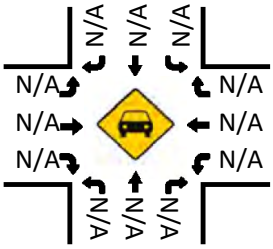
Total Vehicles (AM)



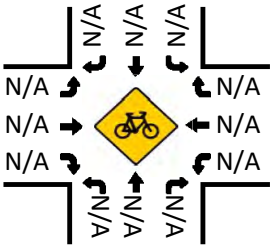
Bikes (AM)



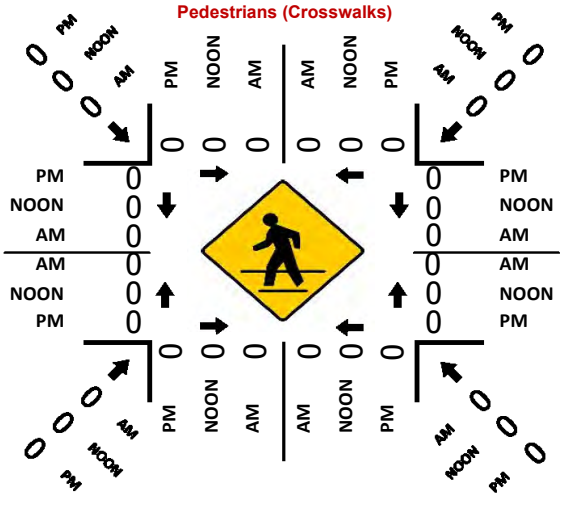
Total Vehicles (Noon)



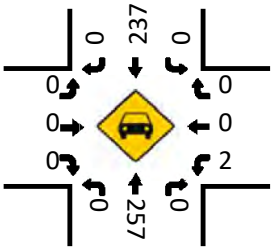
Bikes (NOON)



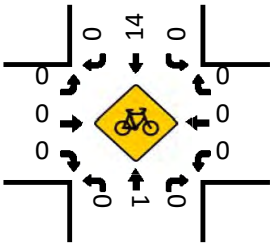
Pedestrians (Crosswalks)



Total Vehicles (PM)



Bikes (PM)



National Data & Surveying Services
Intersection Turning Movement Count

Location: Suisun Valley Rd & 4286 North Driveway
City: Fairfield
Control:

Project ID: 19-08543-001
Date: 2019-10-19

Total

NS/EW Streets:	Suisun Valley Rd				Suisun Valley Rd								4286 North Driveway				
PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0 NL	0 NT	0 NR	0 NU	0 SL	0 ST	0 SR	0 SU	0 EL	0 ET	0 ER	0 EU	0 WL	0 WT	0 WR	0 WU	TOTAL
12:00 PM	0	60	0	0	1	62	0	0	0	0	0	0	1	0	0	0	124
12:15 PM	0	58	0	0	0	42	0	0	0	0	0	0	0	0	1	0	101
12:30 PM	0	58	0	0	0	64	0	0	0	0	0	0	0	0	0	0	122
12:45 PM	0	66	0	0	1	61	0	0	0	0	0	0	0	0	0	0	128
1:00 PM	0	50	0	0	0	61	0	0	0	0	0	0	0	0	0	0	111
1:15 PM	0	73	0	0	0	60	0	0	0	0	0	0	0	0	0	0	133
1:30 PM	0	63	0	0	0	55	0	0	0	0	0	0	2	0	0	0	120
1:45 PM	0	71	0	0	0	61	0	0	0	0	0	0	0	0	0	0	132
2:00 PM	0	57	0	0	0	43	0	0	0	0	0	0	0	0	0	0	100
2:15 PM	0	54	0	0	0	57	0	0	0	0	0	0	0	0	0	0	111
2:30 PM	0	50	0	0	0	67	0	0	0	0	0	0	0	0	0	0	117
2:45 PM	0	59	0	0	0	67	0	0	0	0	0	0	0	0	0	0	126
3:00 PM	0	56	0	0	0	53	0	0	0	0	0	0	0	0	0	0	109
3:15 PM	0	52	0	0	0	59	0	0	0	0	0	0	0	0	0	0	111
3:30 PM	0	55	0	0	1	67	0	0	0	0	0	0	1	0	0	0	124
3:45 PM	0	34	0	0	0	46	0	0	0	0	0	0	0	0	0	0	80
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	916	0	0	3	925	0	0	0	0	0	0	4	0	1	0	1849
APPROACH %'s :	0.00%	100.00%	0.00%	0.00%	0.32%	99.68%	0.00%	0.00%					80.00%	0.00%	20.00%	0.00%	
PEAK HR :	01:00 PM - 02:00 PM																TOTAL
PEAK HR VOL :	0	257	0	0	0	237	0	0	0	0	0	0	2	0	0	0	496
PEAK HR FACTOR :	0.000	0.880	0.000	0.000	0.000	0.971	0.000	0.000	0.000	0.000	0.000	0.000	0.250	0.000	0.000	0.000	0.932
		0.880				0.971								0.250			

National Data & Surveying Services
Intersection Turning Movement Count

Location: Suisun Valley Rd & 4286 North Driveway
City: Fairfield
Control: 0

Project ID: 19-08543-001
Date: 2019-10-19

Bikes

NS/EW Streets:	Suisun Valley Rd				Suisun Valley Rd								4286 North Driveway				
PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
12:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:15 PM	0	0	0	0	0	13	0	0	0	0	0	0	0	0	0	0	13
12:30 PM	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1
12:45 PM	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	3
1:00 PM	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	3
1:15 PM	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	2
1:30 PM	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	3
1:45 PM	0	0	0	0	0	7	0	0	0	0	0	0	0	0	0	0	7
2:00 PM	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1
2:15 PM	0	0	0	0	0	10	0	0	0	0	0	0	0	0	0	0	10
2:30 PM	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	3
2:45 PM	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	3
3:00 PM	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	3
3:15 PM	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1
3:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	1	0	0	0	52	0	0	0	0	0	0	0	0	0	0	53
APPROACH %'s :	0.00%	100.00%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%									
PEAK HR :	01:00 PM - 02:00 PM																TOTAL
PEAK HR VOL :	0	1	0	0	0	14	0	0	0	0	0	0	0	0	0	0	15
PEAK HR FACTOR :	0.00	0.250	0.000	0.000	0.000	0.500	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.536
		0.250				0.500											

National Data & Surveying Services

Intersection Turning Movement Count

Location: Suisun Valley Rd & 4286 North Driveway
City: Fairfield
Project ID: 19-08543-001
Date: 2019-10-19

Pedestrians (Crosswalks)

NS/EW Streets:	Suisun Valley Rd		Suisun Valley Rd				4286 North Driveway		
PM	NORTH LEG		SOUTH LEG		EAST LEG		WEST LEG		
	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
12:00 PM	0	0	0	0	0	0	0	0	0
12:15 PM	0	0	0	0	0	0	0	0	0
12:30 PM	0	0	0	0	0	0	0	0	0
12:45 PM	0	0	0	0	0	0	0	0	0
1:00 PM	0	0	0	0	0	0	0	0	0
1:15 PM	0	0	0	0	0	0	0	0	0
1:30 PM	0	0	0	0	0	0	0	0	0
1:45 PM	0	0	0	0	0	0	0	0	0
2:00 PM	0	0	0	0	0	0	0	0	0
2:15 PM	0	0	0	0	0	0	0	0	0
2:30 PM	0	0	0	0	0	0	0	0	0
2:45 PM	0	0	0	0	0	0	0	0	0
3:00 PM	0	0	0	0	0	0	0	0	0
3:15 PM	0	0	0	0	0	0	0	0	0
3:30 PM	0	0	0	0	0	0	0	0	0
3:45 PM	0	0	0	0	0	0	0	0	0
	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
TOTAL VOLUMES :	0	0	0	0	0	0	0	0	0
APPROACH %'s :									
PEAK HR :	01:00 PM - 02:00 PM								TOTAL
PEAK HR VOL :	0	0	0	0	0	0	0	0	0
PEAK HR FACTOR :									

Prepared by National Data & Surveying Services

Suisun Valley Rd & 4286 South Driveway

Peak Hour Turning Movement Count

ID: 19-08543-002
City: Fairfield

Day: Saturday
Date: 10/19/2019

PEAK HOURS	
AM	NONE
NOON	NONE
PM	12:30 PM - 01:30 PM

COUNT PERIODS	
AM	NONE
NOON	NONE
PM	12:00 PM - 04:00 PM

SOUTHBOUND — Suisun Valley Rd

AM	0	0	0	0	0	AM
NOON	0	0	0	0	0	NOON
PM	0	249	1	0	245	PM

EASTBOUND — Driveway

AM	NOON	PM	
0	0	1	
0	0	0	0
0	0	0	0
0	0	0	0
0	0	2	0
AM	NOON	PM	

WESTBOUND — 4286 South Driveway

PM	NOON	AM	
0	0	0	0
0	0	0	0
2	0	0	0
0	0	0	0
2	0	0	
PM	NOON	AM	

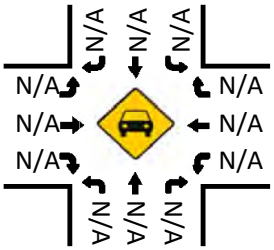
CONTROL

	0		
TEV	0 AM	0 NOON	501 PM
PHF			0.93

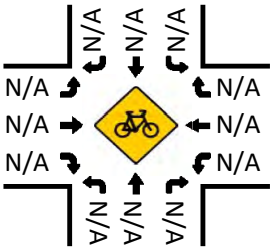
NORTHBOUND — Suisun Valley Rd

PM	253	0	1	245	1	PM
NOON	0	0	0	0	0	NOON
AM	0	0	0	0	0	AM

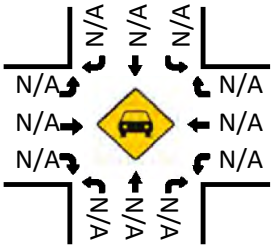
Total Vehicles (AM)



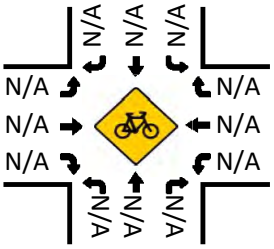
Bikes (AM)



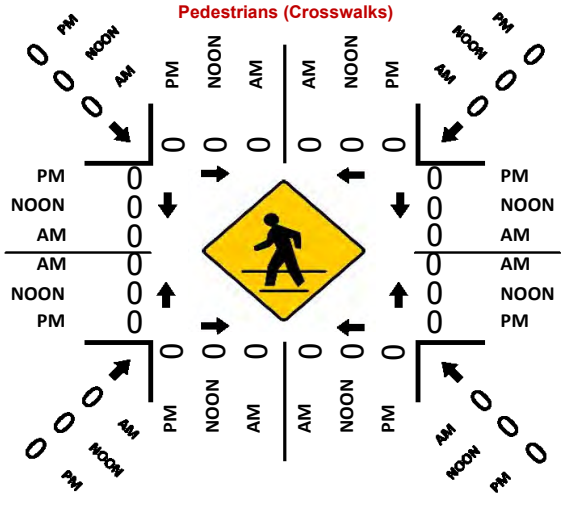
Total Vehicles (Noon)



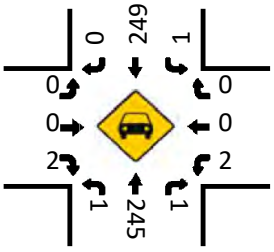
Bikes (NOON)



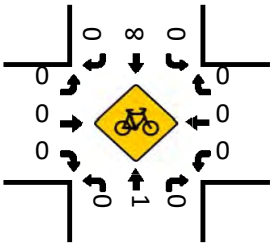
Pedestrians (Crosswalks)



Total Vehicles (PM)



Bikes (PM)



National Data & Surveying Services
Intersection Turning Movement Count

Location: Suisun Valley Rd & 4286 South Driveway
City: Fairfield
Control:

Project ID: 19-08543-002
Date: 2019-10-19

Total

NS/EW Streets:	Suisun Valley Rd				Suisun Valley Rd				Driveway				4286 South Driveway				
PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
12:00 PM	1	60	0	1	0	60	1	0	0	0	0	0	0	0	0	0	123
12:15 PM	1	60	0	0	0	43	0	0	0	0	2	0	0	0	0	0	106
12:30 PM	1	57	0	0	1	65	0	0	0	0	1	0	0	0	0	0	125
12:45 PM	0	65	1	0	0	61	0	0	0	0	1	0	1	0	0	0	129
1:00 PM	0	50	0	0	0	62	0	0	0	0	0	0	0	0	0	0	112
1:15 PM	0	73	0	0	0	61	0	0	0	0	0	0	1	0	0	0	135
1:30 PM	0	63	0	0	0	57	0	0	0	0	0	0	0	0	0	0	120
1:45 PM	0	71	0	0	0	61	0	0	0	0	0	0	0	0	0	0	132
2:00 PM	0	57	0	0	0	42	0	0	0	0	0	0	0	0	0	0	99
2:15 PM	0	54	0	0	0	58	0	0	0	0	0	0	0	0	0	0	112
2:30 PM	0	50	0	0	0	67	0	0	0	0	1	0	0	0	0	0	118
2:45 PM	0	60	0	0	od	68	0	0	0	0	0	0	0	0	0	0	128
3:00 PM	0	54	0	0	0	52	0	0	0	0	3	0	0	0	0	0	109
3:15 PM	1	53	0	0	0	60	0	0	0	0	0	0	0	0	0	0	114
3:30 PM	0	55	0	0	1	67	0	0	0	0	0	0	0	0	0	0	123
3:45 PM	0	33	0	0	0	42	0	0	1	0	0	0	1	0	0	0	77
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	4	915	1	1	2	926	1	0	1	0	8	0	3	0	0	0	1862
APPROACH %'s :	0.43%	99.35%	0.11%	0.11%	0.22%	99.68%	0.11%	0.00%	11.11%	0.00%	88.89%	0.00%	100.00%	0.00%	0.00%	0.00%	
PEAK HR :	12:30 PM - 01:30 PM																TOTAL
PEAK HR VOL :	1	245	1	0	1	249	0	0	0	0	2	0	2	0	0	0	501
PEAK HR FACTOR :	0.250	0.839	0.250	0.000	0.250	0.958	0.000	0.000	0.000	0.000	0.500	0.000	0.500	0.000	0.000	0.000	0.928
		0.846				0.947				0.500				0.500			

National Data & Surveying Services
Intersection Turning Movement Count

Location: Suisun Valley Rd & 4286 South Driveway
City: Fairfield
Control: 0

Project ID: 19-08543-002
Date: 2019-10-19

Bikes

NS/EW Streets:	Suisun Valley Rd				Suisun Valley Rd				Driveway				4286 South Driveway				
PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
12:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:15 PM	0	0	0	0	0	13	0	0	0	0	0	0	0	0	0	0	13
12:30 PM	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1
12:45 PM	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	3
1:00 PM	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	3
1:15 PM	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	2
1:30 PM	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	3
1:45 PM	0	0	0	0	0	7	0	0	0	0	0	0	0	0	0	0	7
2:00 PM	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1
2:15 PM	0	0	0	0	0	10	0	0	0	0	0	0	0	0	0	0	10
2:30 PM	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	3
2:45 PM	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	2
3:00 PM	0	0	0	0	0	4	0	0	0	0	0	0	0	0	0	0	4
3:15 PM	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1
3:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	1	0	0	0	52	0	0	0	0	0	0	0	0	0	0	53
APPROACH %'s :	0.00%	100.00%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%									
PEAK HR :	12:30 PM - 01:30 PM																TOTAL
PEAK HR VOL :	0	1	0	0	0	8	0	0	0	0	0	0	0	0	0	0	9
PEAK HR FACTOR :	0.00	0.250	0.000	0.000	0.000	0.667	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.750
		0.250				0.667											

National Data & Surveying Services

Intersection Turning Movement Count

Location: Suisun Valley Rd & 4286 South Driveway
City: Fairfield
Project ID: 19-08543-002
Date: 2019-10-19

Pedestrians (Crosswalks)

NS/EW Streets:	Suisun Valley Rd		Suisun Valley Rd		Driveway		4286 South Driveway		
PM	NORTH LEG		SOUTH LEG		EAST LEG		WEST LEG		
	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
12:00 PM	0	0	0	0	0	0	0	0	0
12:15 PM	0	0	0	0	0	0	0	0	0
12:30 PM	0	0	0	0	0	0	0	0	0
12:45 PM	0	0	0	0	0	0	0	0	0
1:00 PM	0	0	0	0	0	0	0	0	0
1:15 PM	0	0	0	0	0	0	0	0	0
1:30 PM	0	0	0	0	0	0	0	0	0
1:45 PM	0	0	0	0	0	0	0	0	0
2:00 PM	0	0	0	0	0	0	0	0	0
2:15 PM	0	0	0	0	0	0	0	0	0
2:30 PM	0	0	0	0	0	0	0	0	0
2:45 PM	0	0	0	0	0	0	0	0	0
3:00 PM	0	0	0	0	0	0	0	0	0
3:15 PM	0	0	0	0	0	0	0	0	0
3:30 PM	0	0	0	0	0	0	0	0	0
3:45 PM	0	0	0	0	0	0	0	0	0
	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
TOTAL VOLUMES :	0	0	0	0	0	0	0	0	0
APPROACH %'s :									
PEAK HR :	12:30 PM - 01:30 PM								TOTAL
PEAK HR VOL :	0	0	0	0	0	0	0	0	0
PEAK HR FACTOR :									

Prepared by National Data & Surveying Services

Suisun Valley Rd / Rockville Rd

Peak Hour Turning Movement Count

ID: 19-08543-003
City: Fairfield

Day: Saturday
Date: 10/19/2019

SOUTHBOUND — Suisun Valley Rd

PEAK HOURS	AM	0	0	0	0	0	AM	COUNT PERIODS
NONE	NOON	0	0	0	0	0	NOON	NONE
NONE	PM	23	176	68	0	264	PM	NONE
01:00 PM - 02:00 PM								12:00 PM - 04:00 PM

EASTBOUND — Rockville Rd

AM	NOON	PM	
0	0	162	⇦
0	0	0	↱ 0
0	0	27	↱ 0
0	0	98	→ 0
0	0	25	↳ 0
AM	NOON	PM	

WESTBOUND — Rockville Rd

PM	NOON	AM	
67	0	0	↰ 0
120	0	0	← 0
73	0	0	↰ 0
0	0	0	↰ 0
231	0	0	⇨
PM	NOON	AM	

CONTROL

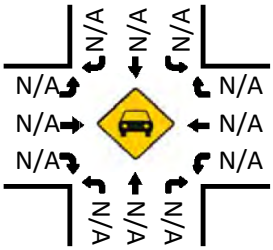
0

		AM	NOON	PM
TEV		0	0	931
PHF				0.95

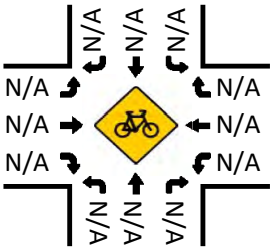
NORTHBOUND — Suisun Valley Rd

	PM	274	0	19	170	65	PM	
	NOON	0	0	0	0	0	NOON	
	AM	0	0	0	0	0	AM	

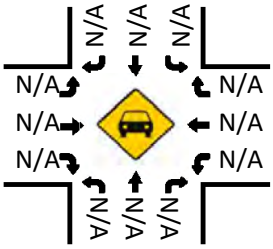
Total Vehicles (AM)



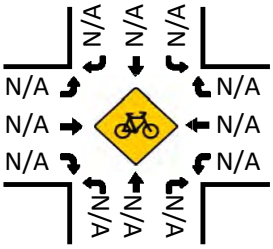
Bikes (AM)



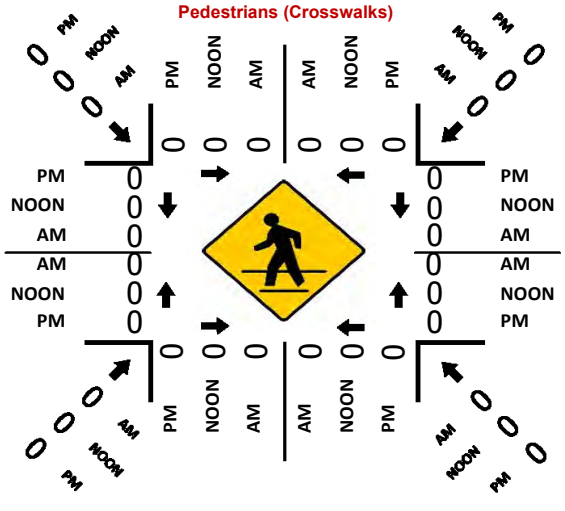
Total Vehicles (Noon)



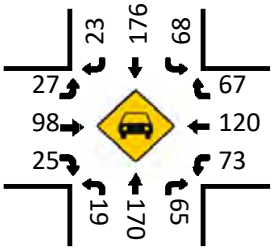
Bikes (NOON)



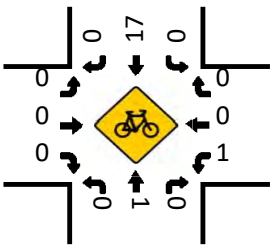
Pedestrians (Crosswalks)



Total Vehicles (PM)



Bikes (PM)



National Data & Surveying Services
Intersection Turning Movement Count

Location: Suisun Valley Rd / Rockville Rd
City: Fairfield
Control:

Project ID: 19-08543-003
Date: 2019-10-19

Total

NS/EW Streets:	Suisun Valley Rd				Suisun Valley Rd				Rockville Rd				Rockville Rd				
PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
12:00 PM	4	42	22	0	24	38	5	0	7	18	5	0	16	23	18	0	222
12:15 PM	11	58	19	0	14	31	7	0	4	27	3	0	15	24	9	0	222
12:30 PM	6	41	20	0	18	45	9	0	3	29	9	0	15	24	12	0	231
12:45 PM	9	51	18	0	21	35	8	0	7	33	7	0	16	21	12	0	238
1:00 PM	6	29	20	0	19	47	5	0	9	21	4	0	23	28	17	0	228
1:15 PM	6	40	15	0	16	50	4	0	11	21	6	0	11	28	22	0	230
1:30 PM	1	49	14	0	18	40	6	0	5	23	7	0	19	32	13	0	227
1:45 PM	6	52	16	0	15	39	8	0	2	33	8	0	20	32	15	0	246
2:00 PM	4	40	14	0	12	35	5	0	5	15	5	0	14	26	14	0	189
2:15 PM	2	35	13	0	17	43	5	0	5	27	4	0	14	19	20	0	204
2:30 PM	9	35	9	0	21	38	8	0	7	17	3	0	18	27	13	0	205
2:45 PM	4	44	14	0	18	39	13	0	8	25	4	0	13	19	13	0	214
3:00 PM	7	31	15	0	18	37	8	0	7	20	3	0	10	27	16	0	199
3:15 PM	5	34	10	0	15	39	10	0	5	26	2	0	20	16	17	0	199
3:30 PM	10	36	13	0	18	44	8	0	3	27	6	0	15	26	14	0	220
3:45 PM	3	23	12	0	15	36	3	0	3	23	5	0	17	25	12	0	177
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	93	640	244	0	279	636	112	0	91	385	81	0	256	397	237	0	3451
APPROACH %'s :	9.52%	65.51%	24.97%	0.00%	27.17%	61.93%	10.91%	0.00%	16.34%	69.12%	14.54%	0.00%	28.76%	44.61%	26.63%	0.00%	
PEAK HR :	01:00 PM - 02:00 PM																TOTAL
PEAK HR VOL :	19	170	65	0	68	176	23	0	27	98	25	0	73	120	67	0	931
PEAK HR FACTOR :	0.792	0.817	0.813	0.000	0.895	0.880	0.719	0.000	0.614	0.742	0.781	0.000	0.793	0.938	0.761	0.000	0.946
	0.858				0.940				0.872				0.956				

National Data & Surveying Services
Intersection Turning Movement Count

Location: Suisun Valley Rd / Rockville Rd
City: Fairfield
Control: 0

Project ID: 19-08543-003
Date: 2019-10-19

Bikes

NS/EW Streets:	Suisun Valley Rd				Suisun Valley Rd				Rockville Rd				Rockville Rd				
PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
12:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:15 PM	0	0	2	0	0	13	0	0	0	0	0	0	0	0	0	0	15
12:30 PM	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1
12:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:00 PM	0	0	0	0	0	6	0	0	0	0	0	0	1	0	0	0	7
1:15 PM	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
1:30 PM	0	0	0	0	0	4	0	0	0	0	0	0	0	0	0	0	4
1:45 PM	0	0	0	0	0	7	0	0	0	0	0	0	0	0	0	0	7
2:00 PM	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	2
2:15 PM	0	0	0	0	0	8	1	0	0	0	0	0	0	0	0	0	9
2:30 PM	0	0	0	0	0	5	0	0	0	0	0	0	0	0	0	0	5
2:45 PM	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	2
3:00 PM	0	0	0	0	0	4	0	0	0	0	0	0	0	0	0	0	4
3:15 PM	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1
3:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	1	2	0	0	51	1	0	0	0	2	0	1	0	0	0	58
APPROACH %'s :	0.00%	33.33%	66.67%	0.00%	0.00%	98.08%	1.92%	0.00%	0.00%	0.00%	100.00%	0.00%	100.00%	0.00%	0.00%	0.00%	
PEAK HR :	01:00 PM - 02:00 PM																TOTAL
PEAK HR VOL :	0	1	0	0	0	17	0	0	0	0	0	0	1	0	0	0	19
PEAK HR FACTOR :	0.00	0.250	0.000	0.000	0.000	0.607	0.000	0.000	0.000	0.000	0.000	0.000	0.250	0.000	0.000	0.000	0.679
		0.250				0.607								0.250			

National Data & Surveying Services

Intersection Turning Movement Count

Location: Suisun Valley Rd / Rockville Rd
City: Fairfield
Project ID: 19-08543-003
Date: 2019-10-19

Pedestrians (Crosswalks)

NS/EW Streets:	Suisun Valley Rd		Suisun Valley Rd		Rockville Rd		Rockville Rd		
PM	NORTH LEG		SOUTH LEG		EAST LEG		WEST LEG		
	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
12:00 PM	0	0	0	0	0	0	0	0	0
12:15 PM	0	0	0	0	0	0	0	0	0
12:30 PM	0	0	0	0	0	0	0	0	0
12:45 PM	0	0	0	0	0	0	0	0	0
1:00 PM	0	0	0	0	0	0	0	0	0
1:15 PM	0	0	0	0	0	0	0	0	0
1:30 PM	0	0	0	0	0	0	0	0	0
1:45 PM	0	0	0	0	0	0	0	0	0
2:00 PM	0	0	0	0	0	0	0	0	0
2:15 PM	1	1	0	0	0	0	0	0	2
2:30 PM	0	0	0	0	0	0	0	0	0
2:45 PM	0	0	1	1	0	0	0	0	2
3:00 PM	0	0	0	0	0	0	0	0	0
3:15 PM	0	0	0	0	0	0	0	0	0
3:30 PM	0	0	0	0	0	0	0	0	0
3:45 PM	0	0	0	0	0	0	0	0	0
	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
TOTAL VOLUMES :	1	1	1	1	0	0	0	0	4
APPROACH %'s :	50.00%	50.00%	50.00%	50.00%					
PEAK HR :	**01:00 PM - 02:00 PM**								TOTAL
PEAK HR VOL :	0	0	0	0	0	0	0	0	0
PEAK HR FACTOR :									

March 12, 2021

Mr. Joe Cassidy
Bally Keal Vineyards
4286 Suisun Valley Road
Fairfield, CA 94534

RE: Focused Vehicle Miles Traveled (VMT) Summary Analysis for the Proposed Bally Keal Winery & Distillery and Special Events Project in Solano County

Dear Mr. Cassidy:

The following letter report provides a focused vehicle miles traveled (VMT) analysis and discussion for the proposed Bally Keal Winery/Distillery and Special Events project at 4286 Suisun Valley Road in Solano County. Based on guidance from Senior Planning staff at Solano County, supplemental VMT analyses for the proposed project is necessary for ongoing environmental review.[i] The VMT analysis builds on previous transportation studies conducted as part of the County's CEQA review and mitigated negative declaration for the proposed project. The following sections include a discussion of background studies completed to-date, VMT guidelines and applications, proposed project trip generation, and likely project impacts and mitigation measures to reduce overall VMT associated with proposed project uses.

1. Background:

The proposed Bally Keal Vineyards and Distillery project would consist of repaving the south driveway, conversion of an existing storage building into a "special event" facility, addition of a new tasting room to an existing building, a new parking area, and landscaping for an outdoor gathering area. Transportation analyses for the proposed project were begun in the year 2019 with an administrative draft report submitted to the County for review and comment in January 2020.[ii] After receiving comments and input from Solano County, a final report was published in May 2020. At that time, the County did not require additional VMT transportation analyses to be conducted since it was prior to the State requirement for inclusion (July 2020).

2. Vehicle Miles Traveled Guidelines and Applications

2.1 VMT Background

SB 743 took effect July 1, 2020 and fundamentally changed the way Transportation Analyses are conducted as part of the California Environmental Quality Act (CEQA). Automobile Level of Service, although permitted as a local policy threshold and included in the Solano County General Plan for conformance, is no longer considered an impact on the environment. Instead, Vehicle Miles Travelled (VMT) is now the primary Transportation Metric for evaluating projects under CEQA.

GHD
2300 Clayton Road Suite 920 Concord California 94520 United States
T +1 925 849 1000 **F** +1 925 849 1040 **W** www.ghd.com

Caltrans recently published an update for their Transportation Impact Study Guidelines (*TISG, May 20, 2020*). The Caltrans' TISG is intended for use in preparing a transportation impact analysis of land use projects or plans that may impact the State Highway System and replaces the prior 2002 Guidelines. The TISG heavily references Office of Planning and Research (*OPR*) Technical Advisory as a basis for its guidance. The TISG recommends use of OPR's recommended thresholds for land use projects (15% below existing city or regional VMT per capita or per employee). As each lead agency develops and adopts its own VMT thresholds for land use projects, Caltrans will review them for consistency with OPR's recommendations, and with the state's greenhouse gas emissions reduction targets and California Air Resources Board Scoping Plan. Caltrans identifies possible mitigation framework for projects found to have a potentially significant impact on VMT. These include the following programmatic measures:

- Impact fee programs that contain a demonstrated nexus and proportionality between a fee and capital projects that result in VMT reduction;
- VMT mitigation bank programs; and,
- VMT mitigation exchange programs.

Caltrans also indicates that additional future guidance will include the basis for requesting transportation impact analysis that is not based on VMT, but rather a simplified safety analysis approach that reduces risk to all road users and focuses on multimodal analysis as well as access management issues.

2.2 VMT Screening Thresholds

Understanding CEQA and Caltrans requirements for VMT, very recent discussions were held with Solano County staff (lead agency) to determine the proposed project's status related to VMT analysis. Currently, Solano County has not developed VMT guidelines or minimum VMT thresholds for land use projects defined in the OPR Technical Advisory. Development projects requiring VMT analysis typically fall into the residential, office, and retail-commercial land use categories. Regarding "other projects," OPR indicates "lead agencies, using more location-specific information, may develop their own more specific thresholds, which may include other land use types." It is suggested that the proposed Bally Keal Winery/Distillery and Special Events project does not fit neatly into the afore-mentioned land uses. Wineries (and Event Centers) tend to reflect a combination of agriculture, office, and commercial uses and are difficult to categorize for specific VMT thresholds and screening. For this reason, a review of screening requirements for projects considered to have less-than-significant transportation impacts was investigated.

Based on Caltrans TISG and OPR's Technical Advisory (Technical Advisory on Evaluating Transportation Impacts in CEQA, the following projects are considered to have less than significant transportation impacts:[iii]

A. Residential, office, or retail projects within a Transit Priority Area, where a project is within a ½ mile of an existing or planned major transit stop or an existing stop along a high-quality transit corridor.

   - A major transit stop is defined as a site containing an existing rail transit station, a ferry terminal served by either a bus or rail transit service, or the intersection of two or more major bus routes with a frequency of service interval of 15 minutes or less during the morning and afternoon peak commute periods (Pub. Resources Code, § 21064.3).

   - A high-quality transit corridor is defined as a corridor with fixed route bus service with service intervals no longer than 15 minutes during peak commute hours (Pub. Resources Code, § 21155).

B. An area pre-screened by an agency as having low residential or office VMT:

   - An area where existing residential projects exhibit VMT per capita 15 percent or more below city or regional average.

   - An area where existing office projects exhibit VMT per capita 15 percent or more below regional average.

C. Residential projects composed of 100 percent or near-100 percent affordable housing located in any infill location. Additionally, per OPR's Technical Advisory, "Lead agencies may develop their own presumption of less than significant impact for residential projects (or residential portions of mixed use projects) containing a particular amount of affordable housing, based on local circumstances and evidence. Furthermore, a project which includes any affordable residential units may factor the effect of the affordability on VMT into the assessment of VMT generated by those units."

D. A locally-serving retail project (such a project typically reduces vehicle travel by providing a more proximate shopping destination, i.e., better accessibility).

E. Mixed-use projects composed entirely of the above low-VMT project types.

F. In any area of the state, absent substantial evidence indicating that a project would generate a potentially significant level of VMT, or inconsistency with a Sustainable Communities Strategy (SCS) or general plan, projects that generate or attract fewer than 110 trips per day generally may be assumed to cause a less-than significant transportation impact.

Based on the Caltrans project screening criteria (above), it is likely that the proposed project could qualify for exemption based on criteria F (project generates or attracts fewer than 110 daily trips per day).

3. Proposed Bally Keal Winery and Distillery Project Daily Trip Generation

3.1 Winery Activities

Based on the most recent transportation analyses conducted for the proposed project, daily trip generation associated with winery activities would generate 65 weekday daily trips and 93 weekend daily trips (see Table 3—attached). Based on screening criteria for VMT impacts, a daily trip generation of less than 110 trips would qualify for exemption under Caltrans criteria. However, daily project trip generation associated with winery activities does not include daily trips associated with special event activities.

3.2 Special Event Activities

Daily trip generation for special event activities was calculated for the two largest events that include 200 guests and 400 guests (see Table 8—attached). As proposed, the facility would host 25 events per year with 200 guests and 10 events per year with 400 guests. However, as described the project would also host 10 events per year with 100 guests (not provided in Table 8). Based on the daily trip calculations provided in Table 8, the three special event sizes would generate the following daily trips:

# of Events	Event Size	Daily Trips/Event	Total Daily Trips/Year
10	100 guest special event	80 trips	800
25	200 guest special event	160 trips	4,000
10	400 guest special event	322 trips	3,220
45			**8,020**

Source: GHD, Focused Traffic Impact Analysis for the Proposed Winery/Distillery Project and Special Events Facility at Bally Keal Vineyards, Solano County, May 29, 2020

As shown above, the total number of daily event trips per year is 8,020 trips. Annualized over the entire year, there would be an average increase of 22 trips per day associated with special event activities (see below). Combined with "normal" winery activities, daily trips associated with special event activities would exceed Caltrans (and OPR's) screening limits of 110 daily trips (92 winery daily trips + 22 special event daily trips). Please refer to Summary/Mitigation for recommended trip reduction measures.

It is noted that OPR's guidance on "special event" activities typically provide for an annual accounting of daily trips (annualized daily trips). The reason for this classification is that event activities are not considered normal weekly activities, events often do not occur every week of the year, and attendance can be highly variable. Previous transportation (VMT) studies conducted for other similar projects with "special event" activities were screened in a similar fashion. In particular, a large school gymnasium/events center project was scheduled to host multiple large events (67 events) throughout the year with some events exceeding 1,000 guests. Since the events were not a considered a "normal" weekly activity, the event daily trips were annualized, and the project was screened out of VMT analysis by the lead agency.[iv]

4. Summary/Mitigation

The proposed Bally Keal Winery/Distillery and Special Event project would exceed the Caltrans/OPR VMT screening thresholds for small projects generating less than 110 daily trips per day. With normal winery and special event activities, the proposed project's overall daily trip generation would total 114 trips (assuming annualization of special event daily trips). In response, the following measure(s) are recommended.

- Winery operations associated with the proposed Bally Keal Winery/Distillery and Special Events project shall be suspended during all special event activities. Specifically, all guest visitation associated with tours and tastings (60 visitors' weekday and 100 visitors' weekends) shall be prohibited on days when special events are being held at the facility. Daily trip generation would be reduced by 46 trips on the weekday and 72 trips on the weekend lowering the overall project daily trips below the screening threshold of 110 daily trips.

- Reduce the number of planned special events on an annual basis. The County may wish to consider reducing the total number of planned events or the number of events per week/month to provide a reduction in project-related daily trip generation.

GHD trusts this letter report provides additional VMT information related to the proposed Bally Keal Winery/Distiller and Special events project. Please contact us if you have any questions.

Sincerely,

GHD

Peter Galloway
Senior Transportation Planner

GHD

Kamesh Vedula, P.E., T.E.
Principal

Cc: Ms. Alice Barkley, Duane Morris
Attachments: Table 3, Table 8
C11204665LTR001.docx

---

[i] *Mr. James Leland, Principal Planner, County of Solano, Personal communication related to vehicle miles traveled (VMT) analysis associated with the proposed Bally Keal Winery & Distillery Project, March 9, 2021.*
[ii] *GHD, Focused Traffic Impact Analysis for the Proposed Winery/Distillery Project and Special Events Facility at Bally Keal Vineyards 4286 Suisan Valley Road, Solano County, May 29, 2020.*
[iii] *Caltrans, Vehicle Miles Travel-Focused Transportation Impact Study Guide, May 20, 2020.*
[iv] *GHD, Focused Traffic Impact, Parking Demand, and Vehicle Miles Traveled Analysis for the Proposed Bishop O'Dowd High School, Prepared for the City of Oakland, November 20, 2020.*

6. Project Trip Generation

Winery/Distillery:

The vehicle trips were calculated for "peak" conditions, corresponding with the peak hour of trip generation. To generate vehicle trips, automobile occupancy rates used by Napa County were utilized to calculate the visitor trips.[7]

As shown in Table 3, the winery is calculated to generate up to 65 weekday daily trips and 91 weekend daily trips. For peak hour trips, the Institute of Transportation Engineers (ITE) Trip Generation Manual provides hourly trip data as a percentage of the daily trips for wineries.[8] The data shows weekday PM peak hour trips are 14.8% and weekend peak hour trips are 16.7%. To be conservative, 20% of the daily trips has been used for the peak hour trips. The project is calculated to generate 13 weekday PM peak hour trips (4 in, 9 out) and 18 weekend peak hour trips (9 in, 9 out).

TABLE 3
TRIP GENERATION FOR PROPOSED WINERY

Typical Weekday Daily Trips:	
Visitors: up to 60 visitors / 2.6 visitors per vehicle x 2 o-w trips	= 46 trips
Employees: up to 5 full-time x 3.05 one-way trips	= 15 trips
Trucks: Production- 90,000 gallons / 1,000 x .009 x 2 o-w trips	= 2 trips
Trucks: General deliveries	= 2 trips
Weekday Daily Trips:	**= 65 trips (33 in, 32 out)**
Weekday PM Peak Hour Trips: 20% of daily (30% in, 70% out)	**= 13 trips (4 in, 9 out)**
Typical Weekend Daily Trips:	
Visitors: up to 100 visitors / 2.8 visitors per vehicle x 2 o-w trips	= 72 trips
Employees: up to 5 full-time x 3.05 one-way trips	= 15 trips
Trucks: Production- 90,000 gallons / 1,000 x .009 x 2 o-w trips	= 2 trips
Trucks: General deliveries	= 2 trips
Weekend Daily Trips:	**= 91 trips (46 in, 45 out)**
Weekend Afternoon Pk. Hr. Trips: 20% of daily (47% in, 53% out)	**= 18 trips (9 in, 9 out)**
Harvest Season Weekend Daily Trips:	
Visitors: up to 100 visitors / 2.8 visitors per vehicle x 2 o-w trips	= 72 trips
Employees: up to 5 full-time x 3.05 one-way trips	= 15 trips
Trucks: Production- 90,000 gallons / 1,000 x .009 x 2 o-w trips	= 2 trips
Trucks: General deliveries	= 2 trips
Grape On-haul: 600 tons / 20 tons per truck / 36 days x 2 trips	= 2 trips
Weekend Daily Trips:	**= 93 trips (46 in, 47 out)**
Weekend Afternoon Pk. Hr. Trips: 20% of daily (47% in, 53% out)	**= 19 trips (9 in, 10 out)**

10. Special Events Center

Trip Generation:

As noted, approximately 45 events would be held annually, comprised approximately of 10 events with up to 100 people, 25 events with up to 200 people, and 10 events with up to 400 people.

The vehicle trips were calculated corresponding with the event's peak hour of trip generation before and after an event. It is anticipated most events would occur on weekends, but some may occur on a weekday. Therefore, traffic operations with added event trips have been evaluated for both weekend and weekday conditions.

Vehicle trips generated by temporary staff (catering, entertainment, etc.) were also included using a conservative ratio of one staff person per fifteen guests. (This would reflect an event with full service. Events with buffet service would require fewer staff, and therefore, generate fewer trips than calculated.) The calculated trips are shown in Table 8.

Most events would consist of 200 or fewer attendees. Events with 200 guests are calculated to generate up to 160 trips (80 in prior to the event, and 80 out after the event). The largest events with 400 guests would generate up to 322 total trips (161 in before, 161 out after).

TABLE 8
TRIP GENERATION FOR PROPOSED EVENT FACILITY

Typical Attendance:	
Guests: up to 200 guests / 2.8 guests per vehicle x 2 one-way trips	= 142 trips
Staff: 13 staff / 1.5 staff per vehicle x 2 o-w trips	= 18 trips
Total Trips (200 guests):	**= 160 trips (80 in, 80 out)**
Maximum Attendance:	
Guests: up to 400 guests / 2.8 guests per vehicle x 2 one-way trips	= 286 trips
Staff: 27 staff / 1.5 staff per vehicle x 2 o-w trips	= 36 trips
Total Trips (400 guests):	**= 322 trips (161 in, 161 out)**

These events are of sufficient duration that the inbound and outbound trips occur in separate hours, thus the number of trips on the street network at one time is half of the total volume. Similarly, only half of the trips could be generated during a peak commute period of the day. For example, a wedding starting during the afternoon commute peak time of day would generate inbound trips during the commute peak period, but the outbound trips would occur later at night, when background traffic volumes are lower. However, to remain conservative, both scenarios (before an event and after an event) were evaluated using the peak commute hour volumes. Both driveways would be available for events and vehicle circulation would utilize both driveways for inbound and outbound trips.

State of California – Natural Resources Agency
DEPARTMENT OF FISH AND WILDLIFE
Bay Delta Region
2825 Cordelia Road, Suite 100
Fairfield, CA 94534
(707) 428-2002
www.wildlife.ca.gov

GAVIN NEWSOM, Governor
CHARLTON H. BONHAM, Director

May 27, 2021

Mr. Eric Wilberg
Solano County Department of Resource Management
675 Texas Street
Fairfield, CA 94533
ejwilberg@solanocounty.com

Subject: Bally Keal Vineyards, LLC U-19-08, Mitigated Negative Declaration, SCH No. 2021050118, Solano County

Dear Mr. Wilberg:

The California Department of Fish and Wildlife (CDFW) received a Notice of Intent to Adopt a Mitigated Negative Declaration (MND) from the County of Solano (County) for the Bally Keal Vineyards, LLC U-19-08 Project (Project) pursuant the California Environmental Quality Act (CEQA) and CEQA Guidelines.[1]

CDFW is submitting comments on the MND to inform the County, as the Lead Agency, of our concerns regarding potentially significant impacts to sensitive resources associated with the Project.

CDFW ROLE

CDFW is a **Trustee Agency** with responsibility under CEQA pursuant to CEQA Guidelines section 15386 for commenting on projects that could impact fish, plant, and wildlife resources. CDFW is also considered a **Responsible Agency** if a project would require discretionary approval, such as permits issued under the California Endangered Species Act (CESA) or Native Plant Protection Act, the Lake and Streambed Alteration (LSA) Program, or other provisions of the Fish and Game Code that afford protection to the state's fish and wildlife trust resources.

PROJECT DESCRIPTION SUMMARY

Proponent: Bally Keal Vineyards, LLC.

Objective: The Project would: 1) construct an approximately 5,000-square-foot expansion of an existing accessory building and convert the existing accessory building into a winery with distillery, tasting rooms, and outdoor patio, 2) convert an existing 12,000-square-foot storage building into a special events facility, 3) construct a new

[1] CEQA is codified in the California Public Resources Code in Section 21000 et seq. The "CEQA Guidelines" are found in Title 14 of the California Code of Regulations, commencing with Section 15000.

approximately 0.25-acre paved parking lot with approximately 73 parking spaces, 4) widen the driveway to the proposed winery and construct 60 parking spaces along the driveway, 5) construct 14 additional parking spaces adjacent to the proposed winery and event center. Primary Project activities include removing vineyard, grading, excavation, trenching, building construction, concrete pouring, paving, and landscaping.

Location: The Project is located at 4286 Suisun Valley Road, approximately one mile northwest of the City of Fairfield, in unincorporated Solano County. The Project site is approximately 0.6 miles northeast of the intersection of Suisun Valley Road and Rockville Road. Suisun Valley Road borders the western side of the Project and Suisun Creek borders the eastern side. The Project will occur on Assessor's Parcel Number 0027-030-010. The approximate Project centroid is Latitude 38.25124°N, Longitude 122.11618°W.

Timeframe: Project construction would take up to three years to complete.

ENVIRONMENTAL SETTING

The Project site is located on part of a 79.29-acre parcel with approximately 16 acres of developed land consisting of a residence, storage structures, and associated infrastructure, and the remaining land composed of vineyards. Suisun Creek flows north-to-south on the eastern edge of the parcel, approximately 500 to 1,000 feet from the proposed Project site. Putah South Canal is located approximately 800 feet to the west of the parcel, west of Suisun Valley Road. Ornamental trees and other landscaping are present on the Project site and the MND identifies that trees have been used by nesting birds (MND Appendix C). Nearby land is dominated by agricultural use with some low-density housing, the community of Rockville to south, and open space to the west. Special-status species with the potential to occur on or near the Project site include, but are not limited to, Swainson's hawk (*Buteo swainsoni*), listed as threatened pursuant to CESA; burrowing owl (*Athene cunicularia*), a California Species of Special Concern (SSC); pallid bat (*Antrozous pallidus*), an SSC; and white-tailed kite (*Elanus leucurus*), a Fully Protected Species.

REGULATORY REQUIREMENTS

California Endangered Species Act

Please be advised that a CESA Incidental Take Permit (ITP) must be obtained if the Project has the potential to result in "take" of plants or animals listed under CESA, such as Swainson's hawk, either during construction or over the life of the Project. Issuance of an ITP is subject to CEQA documentation; the CEQA document must specify impacts, mitigation measures, and a mitigation monitoring and reporting program. If the Project will impact CESA listed species, early consultation is encouraged, as significant modification to the Project and mitigation measures may be required in order to obtain an ITP.

CEQA requires a Mandatory Finding of Significance if a project is likely to substantially restrict the range or reduce the population of a threatened or endangered species. (Pub. Resources Code, §§ 21001, subd. (c) & 21083; CEQA Guidelines, §§ 15380, 15064, & 15065). Impacts must be avoided or mitigated to less-than-significant levels unless the CEQA Lead Agency makes and supports Findings of Overriding Consideration (FOC). The CEQA Lead Agency's FOC does not eliminate the Project proponent's obligation to comply with CESA.

Lake and Streambed Alteration Agreement

CDFW requires an LSA Notification, pursuant to Fish and Game Code section 1600 et seq., for Project activities affecting lakes or streams and associated riparian habitat. Notification is required for any activity that may substantially divert or obstruct the natural flow; change or use material from the bed, channel, or bank including associated riparian or wetland resources; or deposit or dispose of material where it may pass into a river, lake or stream. Work within ephemeral streams, washes, watercourses with a subsurface flow, and floodplains are subject to notification requirements. In those cases, CDFW will consider the CEQA document for the project and may issue an LSA Agreement. CDFW may not execute the final LSA Agreement until it has complied with CEQA as a Responsible Agency.

Raptors and Other Nesting Birds

CDFW also has jurisdiction over actions that may result in the disturbance or destruction of active nest sites or the unauthorized take of birds. Fish and Game Code sections protecting birds, their eggs, and nests include sections 3503 (regarding unlawful take, possession or needless destruction of the nests or eggs of any bird), 3503.5 (regarding the take, possession or destruction of any birds-of-prey or their nests or eggs), and 3513 (regarding unlawful take of any migratory nongame bird). Migratory birds are also protected under the federal Migratory Bird Treaty Act.

Fully Protected Species

Fully Protected species, such as white-tailed kite, may not be taken or possessed at any time (Fish and Game Code, §§ 3511, 4700, 5050, & 5515).

COMMENTS AND RECOMMENDATIONS

CDFW offers the comments and recommendations below to assist the County in adequately identifying and/or mitigating the Project's significant, or potentially significant, direct and indirect impacts on fish and wildlife (biological) resources. Based on the Project's avoidance of significant impacts on biological resources, in part through implementation of CDFW's below recommendations, CDFW concludes that an MND is appropriate for the Project.

Environmental Setting and Related Impact Shortcoming

Swainson's Hawk

The MND does not identify that Swainson's hawk, listed as threatened pursuant to CESA, may occur near the Project site. Potentially suitable nesting trees exist in the riparian habitat of Suisun Creek, approximately 500 feet to the east of the Project site. In addition, other trees in the vicinity of the Project site may provide suitable nesting habitat. The agricultural fields, rangeland, and open space near the Project provide potentially suitable foraging habitat. There are California Natural Diversity Database (CNDDB) occurrences of nesting Swainson's hawk approximately 1.8 miles northeast of the Project site and approximately 2.9 miles to the south. In addition, two unprocessed CNDDB records exist approximately 2.4 miles to the west. Swainson's hawks are present within the vicinity of the Project site and there is potentially suitable habitat for the species in the vicinity of the Project where the species could be impacted.

The breeding population of Swainson's hawks in California has declined by an estimated 91% since 1900 and the species continues to be threatened by on-going and cumulative loss of foraging habitat (CDFW 2016). Swainson's hawks could be disturbed by Project activities, resulting in potentially significant impact to Swainson's hawk through nest abandonment or reduced health and vigor of young. To reduce impacts to less-than-significant, CDFW recommends including the following Mitigation Measures.

Mitigation Measure BIO-1: Swainson's Hawk Surveys

If Project activities are scheduled during the nesting season for Swainson's hawks (March 1 to September 15), prior to beginning work on the Project, a qualified biologist shall conduct surveys according to the *Recommended timing and methodology for Swainson's Hawk Nesting Surveys in California's Central Valley.*[2] Survey methods should be closely followed by starting early in the nesting season (late March to early April) to maximize the likelihood of detecting an active nest (nests, adults, and chicks are more difficult to detect later in the growing season because trees become less transparent as vegetation increases). Surveys shall be conducted: 1) within a minimum 0.5-mile radius of the Project site or a larger area if needed to identify potentially impacted active nests, and 2) for at least the two survey periods immediately prior to initiating Project-related construction activities. Surveys shall occur annually for the duration of the Project. The qualified biologist shall have a minimum of two years of experience implementing the survey methodology resulting in detections. If active Swainson's hawk nests are detected, the Project shall implement a 0.5-mile construction avoidance buffer around the nest until the nest is no longer active as determined by a qualified biologist. If take of Swainson's hawk cannot be avoided, the

[2] Swainson's Hawk Technical Advisory Committee, 2000.
https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=83990&inline

Project shall consult with CDFW pursuant to CESA and obtain an ITP. CDFW Bay Delta Region staff is available to provide guidance on the ITP application process.

Burrowing Owl

The MND does not identify that burrowing owl, an SSC, may occur near the Project site where the species could be impacted. There are two documented occurrences of burrowing owl within 3.1 and 3.7 miles southeast of the Project site according to the CNDDB. In accordance with CDFW's *Staff Report on Burrowing Owl Mitigation, Appendix C: Habitat Assessment and Reporting Details*[3] (CDFW 2012 Staff Report), owls may be disturbed up to 1,640 feet (500 meters) from a project. Burrowing owls are present within the vicinity of the Project site and there is potentially suitable habitat for the species in the vicinity of the Project where the species could be impacted.

The Project could result in burrowing owl nest abandonment, loss of young, reduced health and vigor of owlets, or injury or mortality of adults. Additionally, the Project may result in a permanent reduction of burrowing owl habitat in Solano County. Burrowing owls are an SSC due to population decline and breeding range retraction. Based on the above, the Project may potentially significantly impact burrowing owls. To reduce impacts to less-than-significant CDFW recommends the following Mitigation Measures.

Mitigation Measure BIO-2A: Burrowing Owl Habitat Assessment, Surveys, and Avoidance

Prior to Project activities, a habitat assessment shall be performed following *Appendix C: Habitat Assessment and Reporting Details* of the CDFW 2012 Staff Report. The habitat assessment shall extend at least 492 feet (150 meters) from the Project site boundary and include burrows and burrow surrogates. If the habitat assessment identifies potentially suitable burrowing owl habitat, then a qualified biologist shall conduct surveys following the CDFW 2012 Staff Report survey methodology. Surveys shall encompass the Project site and a sufficient buffer zone to detect owls nearby that may be impacted commensurate with the type of disturbance anticipated, as outlined in the CDFW 2012 Staff Report, and include burrow surrogates such as culverts, piles of concrete or rubble, and other non-natural features, in addition to burrows and mounds. Time lapses between surveys or Project activities shall trigger subsequent surveys, as determined by a qualified biologist, including but not limited to a final survey within 24 hours prior to ground disturbance. The qualified biologist shall have a minimum of two years of experience implementing the CDFW 2012 Staff Report survey methodology resulting in detections. Detected nesting burrowing owls shall be avoided pursuant to the buffer zone prescribed in the CDFW 2012 Staff Report and any passive relocation plan for non-nesting owls shall be subject to CDFW review.

---

[3] Department of Fish and Wildlife (then Fish and Game), 2012. https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=83843&inline

Please be advised that CDFW does not consider exclusion of burrowing owls (i.e., passive removal of an owl from its burrow or other shelter) as a "take" avoidance, minimization, or mitigation measure for the reasons outlined below. Therefore, to mitigate the impacts of potentially evicting burrowing owls to less-than-significant, Mitigation Measure BIO-2B outlined below should require habitat compensation with the acreage amount identified in any eviction plan. The long-term demographic consequences of exclusion techniques have not been thoroughly evaluated, and the survival rate of excluded owls is unknown. Burrowing owls are dependent on burrows at all times of the year for survival or reproduction, therefore eviction from nesting, roosting, overwintering, and satellite burrows or other sheltering features may lead to indirect impacts or "take" which is prohibited under Fish and Game Code section 3503.5. All possible avoidance and minimization measures should be considered before temporary or permanent exclusion and closure of burrows is implemented to avoid "take."

Mitigation Measure BIO-2B: Burrowing Owl Habitat Mitigation

If the Project would impact an unoccupied nesting burrowing owl burrow or burrow surrogate (i.e., a burrow known to have been used in the past three years for nesting), or an occupied burrow (where a non-nesting owl would be evicted as described above), the following habitat mitigation shall be implemented prior to Project construction:

Impacts to each nesting site shall be mitigated by permanent preservation of two occupied nesting sites with appropriate foraging habitat within Solano County, unless otherwise approved by CDFW, through a conservation easement and implementing and funding a long-term management plan in perpetuity. The same requirements shall apply for impacts to non-nesting evicted owl sites.

The Project may implement alternative methods for preserving habitat with written acceptance from CDFW.

Nesting Birds

The MND states that the Project site provides potential habitat for nesting birds (page 25, Appendix C). During the January 7, 2021 biological site assessment, "several nest structures assumed to belong to passerine songbirds were observed". Birds may nest in ornamental trees or landscaping present within and adjacent to the Project.

Bird species that may be considered common have still declined over the past 50 years. Human activity and removal of habitat has contributed to the loss of a significant proportion of the total number of birds in the United States and Canada since the 1970s (Rosenburg et al. 2019). Nesting birds may be disturbed by Project noise or human presence, which could lead to nest abandonment or reduced health and vigor of young, a potentially significant impact. To reduce impacts to less-than-significant, CDFW recommends including the following Mitigation Measure.

Mitigation Measure BIO-3: Nesting Bird Surveys

If construction, grading, or other Project-related activities are scheduled during the nesting season, February 1 to September 1, a focused survey for active nests shall be conducted by a qualified biologist within 7 days prior to the beginning of Project-related activities. If an active nest is found, the qualified biologist shall delineate a no-work-zone buffer distance around the nest that is site and species specific using high visibility fencing or flagging. The buffer distance shall be specified to protect the bird's normal behavior and prevent nesting failure or abandonment. No work shall occur within the no-work-zone until the nest is no longer active as determined by a qualified biologist. Fencing or flagging material shall be removed and properly disposed after Project activities are complete or the nest is no longer active, as determined by a qualified biologist. If a lapse in Project-related work of 7 days or longer occurs, another focused survey shall occur before Project work is reinitiated.

Pallid Bat

The Project provides potentially suitable roost structures and foraging habitat for pallid bat, an SSC, and other bat species. The pallid bat ranges[4] throughout California and occupies a wide variety of habitat types (Zeiner et al. 1990). In addition, the California Bay Area Linkage Network identifies the habitat surrounding the Project area as a core area for pallid bats and notes that these bats can use vineyards for invertebrate foraging (Penrod et al. 2013). Pallid bats can roost in buildings or under porches and open structures (*ibid.*). The Project site contains potentially suitable roost buildings and foraging habitat and is in the vicinity of potentially suitable habitat.

Pallid bats are highly sensitive to human disturbance (Zeiner et al. 1990, Penrod et al. 2013). Project activities that convert and expand existing buildings could cause roost or young abandonment and injury or mortality of bats, a potentially significant impact. To reduce impacts to less-than-significant, CDFW recommends including the following Mitigation Measure.

Mitigation Measure BIO-4: Roosting Bat Surveys

Prior to Project activities:

1. A qualified bat biologist shall conduct surveys for pallid bats prior to Project construction. The survey methodology shall include an initial habitat assessment and survey several months before project construction, to facilitate sufficient time

[4] CDFW maintains range maps and life history accounts for all terrestrial species in California. The pallid bat range map is available at https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=2350&inline=1

to implement the exclusion plan described below, and the types of equipment used for detection.

2. Biologist resumes and a survey methodology shall be submitted to the County for approval prior to implementing surveys. Biologist resumes shall reflect at least two years of experience conducting bat surveys that resulted in detections of pallid bat including the project name, dates, and person who can verify the experience. Ideally, the resume should also indicate that the biologist possesses a state-issued Scientific Collecting Permit for the relevant species.
3. An exclusion plan shall be submitted to the County for approval if bats are detected during the above survey. The plan shall: 1) recognize that both the maternity and winter roosting seasons are vulnerable times for bats and require exclusion outside of these times, 2) identify suitable areas for excluded bats to disperse or require installation of appropriate dispersal habitat for the bats, such as artificial bat houses, and an associated management and monitoring plan with necessary funding, and 3) be implemented prior to project construction and allow bats to leave the building unharmed.

CDFW staff may be available to assist the County with review of the above-referenced materials.

GENERAL SUGGESTIONS

In addition to the above recommendations, CDFW encourages landscaping using native trees and shrubs to benefit native wildlife such as nesting birds and insect pollinators. The removal of habitat for birds from human activities has contributed to the loss of a significant proportion of birds in the United States and Canada since the 1970s (Rosenburg et al. 2019). Similarly, insect pollinators such as monarch butterflies and native bees have declined drastically relative to 1990 levels (Xerces Society Western Monarch Thanksgiving Count 2021, Xerces Society et al. 2018, Forister et al. 2011). Planting native trees, shrubs, and flowering species, is an opportunity to improve conditions for native birds and insects. It is unclear in the MND what plant species are proposed for the landscaping of the Project site (page 12, figure 5), and CDFW recommends native species such as valley oaks (*Quercus lobata*), western redbud (*Cercis occidentalis*), and narrow leaf milkweed (*Asclepias fascicularis*) where possible.[5]

[5] For further native species recommendations and planting tips, review the Willis L. Jepson Chapter of the California Native Plant Society document *Native Landscape Planting Guide:* https://jepson.cnps.org/images/horticulture/plans/willis_jepson-planting_guide.pdf and the Xerces Society document *Pollinator Plants: California*: https://xerces.org/sites/default/files/2018-05/17-045_02_XercesSoc_Pollinator-Plants_California_web-3page.pdf

ENVIRONMENTAL DATA

CEQA requires that information developed in environmental impact reports and negative declarations be incorporated into a database which may be used to make subsequent or supplemental environmental determinations. [Pub. Resources Code, § 21003, subd. (e)]. Accordingly, please report any special-status species and natural communities detected during Project surveys to the CNDDB. The CNNDB field survey form, online field survey form, and contact information for CNDDB staff can be found at the following link: https://wildlife.ca.gov/data/CNDDB/submitting-data.

FILING FEES

The Project, as proposed, would have an impact on fish and/or wildlife, and assessment of filing fees is necessary. Fees are payable upon filing of the Notice of Determination by the Lead Agency and serve to help defray the cost of environmental review by CDFW. Payment of the fee is required for the underlying Project approval to be operative, vested, and final. (Cal. Code Regs, tit. 14, § 753.5; Fish and Game Code, § 711.4; Pub. Resources Code, § 21089).

CONCLUSION

CDFW appreciates the opportunity to comment on the MND to assist the County in identifying and mitigating Project impacts on biological resources.

Questions regarding this letter or further coordination should be directed to Ms. Amanda Culpepper, Environmental Scientist, at amanda.culpepper@wildlife.ca.gov; or Ms. Melanie Day, Senior Environmental Scientist (Supervisory), at melanie.day@wildlife.ca.gov.

Sincerely,

DocuSigned by:
Gregg Erickson
BE74D4C93C604EA...

Gregg Erickson
Regional Manager
Bay Delta Region

ec: Office of Planning and Research, State Clearinghouse (SCH No. 2021040583)
Jamielynne Harrison, Solano County – jbharrison@solanocounty.com

REFERENCES

Brehme, C.S., Hathaway, S.A.; Booth, R.; Smith, B.H.; and Fisher, R.N.. 2015. Research of American Badgers in Western San Diego County, 2014. Data Summary prepared for California Department of Fish and Wildlife and the San Diego Association of Governments. 24pp. (42pp. with Appendix).

CDFW. 2016. Status Review: Swainson's Hawk (*Buteo swainsoni*) in California, Reported to the California Fish and Game Commission, Five-year Status Report. State of California Natural Resources Agency, Sacramento, CA. https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=133622&inline

Forister, M.L.; Jahner, J. P.; Casner, K. L.; Wilson, J.S.; and Shapiro, A. M. 2011. The race is not to the swift: Long-term data reveal pervasive declines in California's low-elevation butterfly fauna. *Ecology*: 92 (12): 2222-2235.

Penrod, K., Garding, P.E.; Paulman, C.; Beier, P.; Weiss, S.; Schaefer, N.; Branciforte, R.; and Gaffney, K. 2013. Critical Linkages: Bay Area & Beyond. Produced by Science & Collaboration for Connected Wildlands, Fair Oaks, CA in collaboration with the Bay Area Open Space Council's Conservation Lands Network. Available at http://www.scwildlands.org/reports/CriticalLinkages_BayAreaAndBeyond.pdf

Rosenburg, Kenneth V.; Dokter, Adriaan M.; Blancher, Peter J.; Sauer, John R.; Smith, Adam C.; Smith, Paul A.; Stanton, Jessica C.; Panjabi, Avrind; Helft, Laura; Parr, Michael; and Marra, Peter P. 2019. Decline of the North American Avifauna. *Science*: 120-124.

Xerces Society, Defenders of Wildlife, and Center for Food Safety. 2018. A petition to the State of California Fish and Game Commission to list the Crotch bumble bee (*Bombus crotchii*), Franklin's bumble bee (*Bombus franklini*), Suckley cuckoo bumble bee (*Bombus suckleyi*), and western bumble bee (*Bombus occidentalis occidentalis*) as endangered under the California Endangered Species Act. Available at https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=161902&inline

Xerces Society Western Monarch Thanksgiving County. 2021. Western Monarch Thanksgiving County Data, 1997-2020. Available at www.westernmonarchcount.org.

Zeiner, D.C.; Laudenslayer, W.F., Jr.; Mayer, K.E.; and White, M. 1990. California's Wildlife. Vol. III. California Department of Fish and Game, Sacramento, CA.