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Traffic Study



January 28, 2016

Mr. Anthony Truchard II
Truchard Vineyards
3234 Old Sonoma Road
Napa, CA, 94559

Traffic Analysis for the Truchard Vineyards Winery

Dear Mr. Truchard;

W-Trans has completed a focused analysis addressing potential traffic impacts and site access needs for the proposed new winery to be located at 4062 Old Sonoma Road in the County of Napa. The traffic study was completed in accordance with the criteria established by the County of Napa, and is consistent with standard traffic engineering techniques.

Project Description

The project includes a proposed winery with a production capacity of up to 100,000 gallons of wine annually and operation of a tasting room with up to 40 visitors per weekday and 60 visitors per day on the weekends. In addition, marketing events are also proposed. Events would be scheduled to begin and end outside the normal traffic peak periods of 4:00 p.m. to 6:00 p.m. for weekdays and 12:00 p.m. to 2:00 p.m. for weekend days.

Study Area

The study area consists of the project site and the segment of Old Sonoma Road along the project frontage. The project site is located on the east side of Old Sonoma Road and is served by two existing driveways located approximately 650 feet and 1,000 feet south of Congress Valley Road. Project-related traffic impacts to the intersection of State Route (SR) 12/SR 121/SR 29 were also considered.

Old Sonoma Road is a two-lane undivided rural collector that runs north-south in the study area, with eleven-foot travel lanes in each direction, and a posted speed limit of 45 miles per hour (mph). Based on mechanical tube counts collected in October 2013, the average daily traffic (ADT) on Old Sonoma Road is approximately 4,500 vehicles per day on weekdays and 3,600 vehicles per day on weekend days.

Future Conditions

The Future traffic scenario represents General Plan buildout at an estimated time horizon of the year 2030. Future projected traffic volumes were obtained from the Solano Transportation Authority (STA) who maintains the joint Napa County/Solano County 2010-2030 Travel Demand Forecasting Model. This data was provided in the form of segment volumes, so a growth rate was calculated based on projected p.m. peak hour growth on Old Sonoma Road near Congress Valley Road, which was found to be 1.95, or approximately 3.4 percent of growth per year. The model does not include forecasts for the weekend midday peak hour; therefore, the weekday p.m. peak hour growth rate was applied to the weekend midday peak to analyze future operations.

It should be noted that the relatively high increase in traffic growth expected in the p.m. peak hour is due to the assumed increase in congestion at the intersection of SR 29/SR 12-SR 121; Old Sonoma Road is well-situated for bypassing this congestion. As such, the high increase in traffic is only expected during the hours of peak traffic demand in the region, and not throughout the entire day. Thus, the daily volume on Old Sonoma Road is expected to have a growth rate that is much lower than 1.95.

In the 2007 Napa County General Plan Update, Old Sonoma Road just south of the project site was documented as operating at LOS C or better under both 2003 conditions and projected 2030 conditions. In Napa County, the LOS standard for roadway segments is LOS D or better.

Collision History

The collision history for the study segment of Old Sonoma Road within one-half mile of the driveway for the proposed project was reviewed to determine any trends or patterns that indicate a safety risk that may be exacerbated by the addition of project traffic. Average annual collision rates were calculated based on records for January 2006 through December 2010 obtained through the California Highway Patrol and published in their *Statewide Integrated Traffic Records System (SWITRS)* reports. A copy of the spreadsheet is enclosed for reference.

The statewide average collision rate for a rural two-lane road with a speed limit of less than 55 mph is 1.03 collisions/million vehicle miles (c/mvm). The one-mile segment of Old Sonoma Road within one-half mile of the project site had 29 reported collisions over the five-year study period for a calculated collision rate of 3.53 c/mvm, which is substantially higher than the statewide average for similar facilities, though the rates for collisions resulting in both injuries and fatalities were both lower than the statewide averages. A review of the crashes recorded indicates that all but four of the 29 collisions had only a single vehicle involved where the driver hit an object or overturned, with unsafe speed and improper turning the primary collision factors; 21 of these occurred at the three curves located more than 1,000 feet south of the project location. The two curves immediately south of the project location are signed for a 40-mph advisory speed; however, the County may wish to review the basis of this advisory speed to determine if a lower advisory speed and/or additional signing are warranted. These types of single-vehicle collisions would not be expected to increase with the development of the proposed project as the road geometry would not be changed by the project.

Trip Generation

The anticipated trip generation for a proposed project is typically estimated using standard rates published by the Institute of Transportation Engineers (ITE) in *Trip Generation Manual*, 9th Edition, 2012. However, the publication contains no such information for a winery. Therefore, the County of Napa's Winery Traffic Information/Trip Generation Sheet was used to determine the anticipated traffic that would be generated by the proposed tasting room. A copy of this worksheet is enclosed for reference.

Since the County of Napa's Winery Traffic Information/Trip Generation Sheet does not include guidance on inbound versus outbound trips, it was assumed that two thirds of tasting room visitors' trips at the winery would be outbound during the weekday p.m. peak hour since most of the trips would be associated with employees and customers leaving at closure of the winery. For the weekend midday peak hour it was assumed that inbound and outbound trips would be evenly split. A summary of the project's trip generation potential is provided in Table 1.

Trip Type	Weekday				Weekend			
	Daily Trips	PM Peak Hour		Daily Trips	Midday Peak Hour			
		Trips	In	Out	Trips	Trips	In	Out
Winery plus Tasting Room								
Tasting Room Visitors	31	12	4	8	43	27	13	14
Winery Employees	19	7	0	7	9	3	1	2
Total	50	19	4	15	52	30	14	16

Note: Trip generation does not include traffic associated with special events

Event Traffic

As part of the proposed project, marketing events would be held at the project site. Events would be scheduled to begin and end outside of normal traffic peak periods of 4:00 p.m. to 6:00 p.m. for weekdays and 12:00 p.m. to 2:00 p.m. for weekend days. As a result, no significant event-related traffic impacts would be expected during the weekday p.m. or Saturday midday peak periods.

Trip Distribution

The pattern used to allocate new project trips to the street network was based our understanding of the regional network, and in particular the route that most tasting room visitors would take. The applied distribution assumptions and resulting trips are shown in Table 2.

Table 2 – Trip Distribution Assumptions

Route	Percent	Daily Trips	Weekday PM Peak	Weekend Midday Peak
To/from north via Old Sonoma Rd	25%	12	5	7
To/from south via SR 12-SR 29	25%	13	5	8
To/from west via SR12-SR 121	50%	25	9	15
TOTAL	100%	50	19	30

Roadway segment volumes on Old Sonoma Road are summarized in Table 3, including the existing volumes counted, projected future volumes, and resulting volumes with project trips added.

Table 3 – Traffic Volume Summary

Scenario	Weekday PM Peak	Weekend Midday Peak
Old Sonoma Rd		
Existing	544	350
Existing plus Project	563	380
Future	1,061	683
Future plus Project	1,080	713

Cumulative Conditions

As noted in the 2007 Update to the Napa County General Plan, Old Sonoma Road was documented to operate at LOS C under 2003 conditions as well as under projected 2030 cumulative conditions. As compared to Napa County's LOS Standard of LOS D, Old Sonoma Road is expected to continue operating better than the County's standard with the higher volumes projected for the horizon year of 2030. Based on the limited number of project trips generated as well as the available capacity of Old Sonoma Road, Old Sonoma Road would be expected to operate acceptably under Cumulative Conditions.

State Route 12/State Route 121/State Route 29

Regionally, the project is located northwest of the intersection SR 12/SR 121/SR 29. Old Sonoma Road can be accessed from Napa, north of SR 12/SR 121/SR 29, or at SR 12-SR 121/Old Sonoma Road, west of SR 12/SR 121/SR 29.

Project-related trips to and from the north would be expected to access the project via Old Sonoma Road in Napa, and would not be expected to impact SR 12/SR 121/SR 29. Similarly, project-related trips to and from the west would be expected to access the project via SR 12-SR121/Old Sonoma Road, and would not be expected to impact SR 12/SR 121/SR 29.

To and from the south, outbound project trips would add predominantly eastbound right-turns at SR 12/SR 121/SR 29, and inbound project trips would add predominantly northbound left-turns. As shown in Table 2, up to five trips during the weekday p.m. peak hour and seven trips during the Saturday midday peak hour are expected.

While the northbound left-turn movement at the intersection experiences delays that are higher than the intersection average, the eastbound right-turn movement has delays that are typically much lower than the intersection average. During the weekday p.m. and Saturday midday peak periods the project would be expected to generate predominantly outbound trips, adding to the eastbound right turn, the movement with vehicular delay below the average for the intersection. Therefore, any delay incurred by inbound project trips would be expected to be offset by the lower delay incurred by outbound project trips, resulting in essentially no change to the average delay at the intersection. The project would therefore be expected to have a less-than-significant impact on intersection operation at SR 12/SR 121/SR 29.

Access Analysis

Site Access

Access to the project would be through two existing driveways on Old Sonoma Road, located approximately 650 and 1,000 feet south of Congress Valley Road. One driveway would be for winery operations and employee use only and the other driveway would be used exclusively by tasting room visitors.

Sight Distance

At unsignalized intersections a substantially clear line of sight should be maintained between the driver of a vehicle waiting at the crossroad and the driver of an approaching vehicle. Adequate time must be provided for the waiting vehicle to either cross, turn left, or turn right, without requiring the through traffic to radically alter their speed. Sight distance should be measured from a 3.5-foot height at the location of the driver on the minor road to a 4.25-foot object height in the center of the approaching lane of the major road. Set back for the driver on the crossroad shall be a minimum of 15 feet, measured from the edge of the traveled way.

Sight distance along Old Sonoma Road at the project driveways were evaluated based on sight distance criteria contained in the *Highway Design Manual* published by Caltrans. The recommended sight distance for minor street approaches that are a driveway are based on stopping sight distance. The approaching travel speeds are used as the basis for determining the recommended sight distance. Additionally, the stopping sight distance needed for a following driver to stop if there is a vehicle waiting to turn into a side street or driveway is evaluated based on stopping sight distance criterion and the approach speed on the major street. The posted speed on Old Sonoma Road is 45 miles per hour which would require a minimum stopping site distance of 360 feet.

The available site distance from both driveways are greater than or equal to 360 feet in both the north and south directions. Therefore, the site distances at both project driveways are adequate.

Left-Turn Lane Warrants

The need for a left-turn lane on southbound Old Sonoma Road at the project driveways was evaluated using Napa County's Left-Turn Lane Warrant, which is based on the ADT of the roadway and the projected ADT of the proposed use, as well as safety criteria. Based on the intended users of each driveway, the employee driveway is expected to generate an ADT of 19 vehicle trips while the tasting room driveway has an anticipated ADT of 31 vehicle trips per

weekday. Under Existing plus Project conditions, with approximately 4,500 vehicles per weekday on Old Sonoma Road, the proposed project volumes would not exceed the left-turn lane warrant threshold on Old Sonoma Road at either driveway.

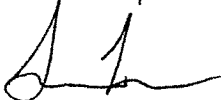
Conclusions and Recommendations

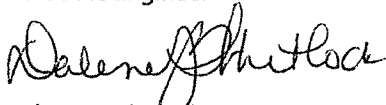
- The proposed project would generate an average of 50 new weekday trips and 52 new weekend trips, including 19 weekday p.m. peak hour trips and 30 Saturday midday peak hour trips.
- Old Sonoma Road is currently operating acceptably and would be expected to continue operating acceptably under Cumulative Conditions with or without the proposed project.
- Marketing events proposed along with the winery would be held outside of traffic peak periods, and would therefore be expected to result in less-than-significant traffic impacts during the weekday p.m. and Saturday midday peak periods.
- The proposed project would be expected to result in minimal, if any, change to intersection delay at SR 12/SR 121/SR 29.
- Site distances at both of the project driveways are adequate.
- Applying County of Napa left-turn lane warrant criterion, a left-turn lane is not warranted at either the tasting-room driveway or the employee-only driveway.

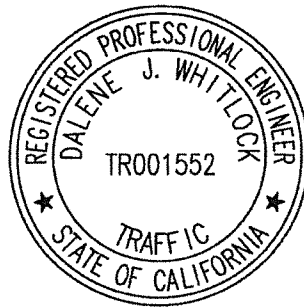
Thank you for giving W-Trans the opportunity to provide these services. Please call if you have any questions.

Sincerely,


Briana Byrne, EIT
Assistant Transportation Engineer


Sam Lam, PE
Associate Engineer


Dalene J. Whitlock, PE, PTOE
Principal



DJW/stl/NAX072.L2

Enclosures: Collision Rate Spreadsheet
Winery Trip Generation Worksheet
Left-Turn Lane Warrants Calculations

SEGMENT COLLISION RATE CALCULATIONS

County of Napa

Location: Old Sonoma Road (1-mi. segment near Truchard Vineyards)
 Date of Count: October 2013
 ADT: 4,500

Number of Collisions: 29
 Number of Injuries: 9
 Number of Fatalities: 0
 Start Date: January 1, 2006
 End Date: December 31, 2010
 Number of Years: 5

Highway Type: Conventional 2 lanes or less
 Area: Rural
 Design Speed: <=55
 Terrain: Flat

Segment Length: 1.0 miles
 Direction: North/South

$$\frac{\text{Number of Collisions} \times 1 \text{ Million}}{\text{ADT} \times 365 \text{ Days per Year} \times \text{Segment Length} \times \text{Number of Years}}$$

$$\frac{29 \times 1,000,000}{4,500 \times 365 \times 1 \times 5}$$

	Collision Rate	Fatality Rate	Injury Rate
Study Segment	3.53 c/mvm	0.0%	31.0%
Statewide Average*	1.03 c/mvm	2.4%	38.0%

ADT = average daily traffic volume
 c/mvm = collisions per million vehicle miles
 * 2009 Collision Data on California State Highways, Caltrans

Winery Traffic Information / Trip Generation Sheet

Project Name: Hard Vineyards

Project Scenario: Proposed

Traffic during a Typical Weekday

Number of FT employees: <u>4</u> x 3.05 one-way trips per employee	=	<u>12</u> daily trips.
Number of PT employees: <u>3</u> x 1.90 one-way trips per employee	=	<u>5</u> daily trips.
Average number of weekday visitors: <u>40</u> / 2.6 visitors per vehicle x 2 one-way trips	=	<u>31</u> daily trips.
Gallons of production: <u>100000</u> / 1,000 x .009 truck trips daily ³ x 2 one-way trips	=	<u>2</u> daily trips.
Total	=	<u>50</u> daily trips.
Number of total weekday trips x .38	=	<u>19</u> PM peak trips.

Traffic during a Typical Saturday

Number of FT employees (on Saturdays): <u>3</u> x 3.05 one-way trips per employee	=	<u>9</u> daily trips.
Number of PT employees (on Saturdays): <u>0</u> x 1.90 one-way trips per employee	=	<u>0</u> daily trips.
Average number of weekend visitors: <u>60</u> / 2.8 visitors per vehicle x 2 one-way trips	=	<u>43</u> daily trips.
Total	=	<u>52</u> daily trips.
Number of total Saturday trips x .57	=	<u>30</u> PM peak trips.

Traffic during a Crush Saturday

Number of FT employees (during crush): <u>4</u> x 3.05 one-way trips per employee	=	<u>12</u> daily trips.
Number of PT employees (during crush): <u>3</u> x 1.90 one-way trips per employee	=	<u>6</u> daily trips.
Average number of weekend visitors: <u>60</u> / 2.8 visitors per vehicle x 2 one-way trips	=	<u>43</u> daily trips.
Gallons of production: <u>100000</u> / 1,000 x .009 truck trips daily x 2 one-way trips	=	<u>2</u> daily trips.
Avg. annual tons of grape on-haul: <u>300</u> x .11 truck trips daily ⁴ x 2 one-way trips	=	<u>4</u> daily trips.
Total	=	<u>67</u> daily trips.
Number of total Saturday trips x .57	=	<u>38</u> PM peak trips.

Largest Marketing Event- Additional Traffic

Number of event staff (largest event): <u>10</u> x 2 one-way trips per staff person	=	<u>20</u> trips.
Number of visitors (largest event): <u>150</u> / 2.8 visitors per vehicle x 2 one-way trips	=	<u>107</u> trips.
Number of special event truck trips (largest event): <u>4</u> x 2 one-way trips	=	<u>8</u> trips.

³ Assumes 1.47 materials & supplies trips + 0.8 case goods trips per 1,000 gallons of production / 250 days per year (see *Traffic Information Sheet Addendum* for reference).

⁴ Assumes 4 tons per trip / 36 crush days per year (see *Traffic Information Sheet Addendum* for reference).

Napa County Left Turn Lane Warrant Graph

