

May 24, 2011

Mr. Dan Takasugi, P.E.
Public Works Director
City of Calistoga
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Focused Traffic Impact Analysis for T-Vine Cellars

Dear Mr. Takasugi;

As requested, Whitlock & Weinberger Transportation, Inc. (W-Trans) has completed a focused traffic study for the proposed T-Vine Cellars project to be located at 810 Foothill Boulevard in the City of Calistoga. The proposed project would include redevelopment of the "Rainbow Tractor" site to accommodate a winery producing about 2,500 cases of wine annually.

Project Description

The proposed project includes redevelopment of a 0.42-acre parcel to a 1,300 square foot winery, 2,000 square foot administration building and tasting room building separated by a small parking lot. The winery building would house six stainless steel tanks and 120 barrels with a small storage/ mechanical room at the back of the cellar. Tasting room hours will vary seasonally, but basic operation hours are scheduled from 10 a.m. to 7 p.m. and administration hours 9 a.m. to 5 p.m.

Existing Conditions

The project site is located on the east side of State Route (SR) 29, which is called Foothill Boulevard within the City of Calistoga limits. SR 29 has two 12-foot lanes as well as 8-foot shoulders on both sides of the road. The closest driveways along SR 29 are about 300 feet northwest and 950 feet southeast of the project driveway. The posted speed limit changes from 35 mph in Calistoga to 50 mph about 300 feet southeast of the project site's driveway. There are no existing bicycle or pedestrian facilities in the surrounding area.

Trip Generation

For purposes of estimating the number of trips that the existing Rainbow Tractor dealership would have been generating, *Trip Generation*, 8th Edition, Institute of Transportation Engineers, 2008, was used. This publication is a standard reference used by jurisdictions throughout the country, and is based on actual trip generation studies performed at numerous locations in areas of various populations. ITE does not include rates for tractor dealerships, so rates comparable to an auto dealership use were evaluated as both uses provide services such as sales, repair and maintenance. The ITE rates for "New Car Sales" (ITE LU #210), "Automobile Part Sales" (ITE LU #210), "Automobile Care Center" (ITE LU #210), and "Quick Lubrication Vehicle Shop" (ITE LU #210) were reviewed. To provide a conservative analysis, the "New Car Sales" rates were applied to estimate trips from the tractor dealership as these rates are the lowest, so would result in the most conservative comparison versus the proposed new use. Trip generation rates per thousand square feet (ksf) were applied for this use.

There are no standard trip generation rates for wineries; however, W-Trans has developed a spreadsheet that covers all aspects of operation and determines trips associated with activities such as

arrival of materials (fruit, barrels, etc.), shipping of products, and disposal of pomace, as well as trips made by employees, visitors and special event guests. Using data supplied by the applicant, we have developed the trip estimates for the T-Vine project.

The proposed T-Vine Cellars will include a winery administration building, hospitality facilities and produce 2,500 cases of wine annually on site. Wine production activities will include receiving and crushing fruit, fermenting, barrel aging, blending and bottling wine for storage off site. At build out, the winery is expected to have a total of three full-time employees for daily operations and two for the tasting room during typical weekday operation. Other traffic associated with the proposed project was assumed to include an average of 52 visitors per day (a maximum of 75 daily) and one truck trip per weekday, though in reality one truck is expected to generate both an inbound and outbound trip at the site about once every six days. It should be noted that truck trip activities include production-related traffic, the mobile bottling line, deliveries and wastewater removal, which is estimated to occur an average of 16 times per year. During harvest season two additional employees would be expected to generate six more daily trips.

Data collected by W-Trans at local Sonoma County wineries was used to develop factors for winery tasting room trips made during the p.m. peak hours. Counts were collected on a driveway serving a large tasting room for one week every month for a year and indicate that 10 percent of the daily visitor trips occur during the p.m. peak hour. No factors were established for the a.m. peak hour as tasting rooms are not open and only employee trips were considered during the a.m. peak hour. It was conservatively assumed that nearly all employees generate trips during the evaluated peak hours.

The likely trip generation of the proposed project is shown in Table I, and includes an average of 58 daily trips, including five trips during the p.m. peak hour and ten during the weekend midday peak hour. Compared to the previous use, the project would generate 62 fewer daily trips, two fewer a.m. peak hour trips, and a net of one new trip during the p.m. peak hour. A copy of the Winery Trip Generation form is enclosed.

Table I
Trip Generation Summary

Land Use	Units	Daily		AM Peak Hour				PM Peak Hour			
		Rate	Trips	Rate	Trips	In	Out	Rate	Trips	In	Out
Existing											
Tractor Dealership	3.6 ksf	33.34	-120	2.03	-7	-5	-2	2.59	-9	-4	-5
Proposed											
Winery	2,500 cases										
Employees	5	3	15	1.00	5	4	1	1.00	5	1	4
Truck Traffic	n/a	n/a	1	0	0	0	0	0	0	0	0
Tasting Room Visitors	52	.80	42	0	0	0	0	.10	5	2	3
Total Project Trips			58		5	4	1		10	3	7
Net New Trips			-62		-2	-1	-1		1	-1	2

Note: ksf = 1,000 square feet

Site Access

Sight Distance

Sight distance from the proposed project driveway was evaluated based on criterion contained in the *Highway Design Manual*, 6th Edition, Caltrans. These guidelines recommend sight distances at intersections, including stopping sight distances for drivers traveling along the major approaches, and sight distances for drivers of vehicles stopped on the minor street approaches and driveways. These recommendations are based upon approach travel speeds.

Sight lines from the project driveway in both directions along SR 29 were field measured. Sight distance to the southeast, or left, exceeds 700 feet, which is adequate for speeds of more than 65 mph. To the northwest, or right, vehicles were visible from more than 450 feet away, which is adequate for speeds up to 50 mph. The sight distance available is acceptable in that it is adequate for speeds in excess of the posted speed limit.

Channelization

The need for turn lane channelization on SR 29 at the driveway was evaluated based on criteria contained in the *Intersection Channelization Design Guide*, National Cooperative Highway Research Program (NCHRP) Report No. 279, Transportation Research Board, 1985, as well as a more recent update of the methodology developed by the Washington State Department of Transportation. The NCHRP report references a methodology developed by M. D. Harmelink that includes equations that can be applied to expected or actual traffic volumes in order to determine the need for a left-turn pocket based on safety issues. Based on our research and discussions with Caltrans staff, this methodology is consistent with the "Guidelines for Reconstruction of Intersections," August 1985, which is referenced in Section 405.2, Left-turn Channelization, of Caltrans' *Highway Design Manual*.

The need for turn lanes was conservatively evaluated based on available p.m. peak hour counts for SR 29 that were obtained in March 2007 and on an approach speed of 50 mph. A sensitivity analysis was performed and it was determined that even if all ten of the trips that the project is expected generate during the p.m. peak hour, both inbound and outbound, arrived from the west, making a left turn in or from the east, making a right turn into the site, neither a left-turn, right turn or right-turn taper is warranted or recommended.

Field observations indicate that drivers will use the 8-foot shoulders to pass a vehicle stopped to turn left into the driveway. Further, there is a wide gravel shoulder on the northeast side of the street in addition to the 8-foot paved shoulder. These areas can be used by drivers turning right into the site so that they do not disrupt the flow of through traffic.

Circulation

Access to the project will be provided via the existing driveway, at the northwestern corner of the property. The driveway is 22 feet wide, which is adequate to accommodate two vehicles side by side exiting the site. Given there are no other driveways nearby, potential conflicts with the project are expected to be minimal. It should also be noted that wine making related activities such as receiving materials are expected to occur before the tasting room opens so as not to interfere with daily visitors.

AutoTurn diagrams were provided by the applicant, simulating turning movements of a Napa County Fire Engine (30.58 feet in length) and a heavy-duty 10-Wheel Truck (30.84 feet in length), which is

similar to the anticipated bottling line truck that would be used to bottle the product. Through discussions with the applicant it is understood that these trucks are the largest vehicles expected to access the site. Similarly, the 10-Wheel Truck is anticipated to be comparable in size to the juice and wastewater hauling trucks which are expected to access the site. Based on these diagrams it was determined that both trucks would be able to enter and exit the site without needing to use the shoulder along SR 29 for loading/unloading as was done by larger vehicles accessing the Rainbow Tractor dealership. The on-site road and driveway are expected to be sufficient to accommodate circulation, though any areas that would be used for turn-around movements should be paved with a structural section adequate to accommodate the anticipated type of trucks accessing the site.

The applicant has also stated that the tasting room will be closed when the bottling truck is on site. Though visitors will not be on-site during the bottling process, delivery trucks may still need access to the site. As shown in the AutoTurn diagrams, if the bottling truck were stationed in the south-east corner of the parking lot, delivery trucks should still have access to the site for deliveries,

Pedestrian and Bicycle Access

There are no sidewalks in the immediate vicinity of the project, and installation of sidewalks along the project frontage is not proposed. Given the presence of a wide paved shoulder as well as a paved shoulder on the site's frontage, there is adequate clear space for pedestrian access.

The Napa Countywide Bicycle Master Plan indicates that Class II bicycle lanes are planned on SR 29. Caltrans has not accepted this proposal, though the City is continuing to work with Caltrans staff to reach consensus on measures to improve bicycle access. The right-of-way along the project site's frontage on SR 29 is more than adequate to allow installation of a bike lane in the future when consensus is reached.

Parking

Assuming that each employee drives to work in their own vehicle, a total of five spaces would be needed to accommodate the proposed employees associated with daily winery and tasting room operations. Data collected by W-Trans used to develop winery tasting room rates was also used to develop the parking demand for the project. Based on this information, it was assumed that an average of 25 percent of the 21 daily vehicles associated with the tasting room visitors, or 6 vehicles would be parked on-site during any single hour; therefore, a maximum of 11 spaces might be needed to accommodate the typical daily parking demand.

The project as proposed provides a total of 13 parking spaces, which would accommodate the typical guest and employee parking demand with a surplus of two spaces. .

Conclusions and Recommendations

- The proposed project is expected to generate an average of 58 daily vehicle trips, including 5 a.m. peak hour trips and 10 p.m. peak hour trips, but 62 fewer daily trips than the tractor dealership facility which previously operated at the site
- Sight distance along SR 29 is adequate for speeds in excess of the posted speed limit.
- No turn lanes are warranted or recommended.

- Internal circulation and site access are expected to operate acceptably and allow entrance and circulation for a Napa County Fire Engine or a 10-Wheel Truck, the largest trucks anticipated to enter the site.
- Areas to be used for turnaround movements should be paved with a structural section adequate to accommodate trucks accessing the site.
- As suggested by the applicant, the tasting room should be closed when the bottling line is on-site. There are no sidewalks in the vicinity of the project site, but adequate clear space for pedestrian access is available.
- Bicycle facilities are planned along SR 29, but are not approved. Once consensus is reached, the right-of-way along the project site's frontage on SR 29 is more than adequate to allow installation of a bike lane.
- The proposed parking supply of 13 spaces will accommodate the anticipated 11 space peak demand needed for employees and daily visitors.

Thank you for allowing W-Trans to provide these services. Please feel free to call if you have any questions.

Sincerely,

Vanessa Aguayo
Assistant Transportation Engineer

Dalene J. Whitlock, PE, PTOE
Principal



DJW/va/CAL029.L1

Enclosures: Winery Trip Generation Form

Winery Trip Generation

Winery: T-Vine Cellars
 Location: 810 Foothill Boulevard
 Annual Full Production: 2500 cases

WINERY OPERATIONS

Employee traffic using passenger vehicles, in average ADT

Item Description	Employees				Trips			
	Existing	Proposed (year round)	Proposed (harvest period)	Proposed (bottling period)	Existing	Proposed (year round)	Proposed (harvest period)	Proposed (bottling period)
Winery Production	0	2	2	0	0	6	6	0
Cellar / Storage	0	0	0	0	0	0	0	0
Administrative	0	1	1	0	0	3	3	0
Sales	0	0	0	0	0	0	0	0
Bottling	0	0	0	0	0	0	0	0
Other staff (describe):					0	0	0	0
Totals	0	3	3	0	0	9	9	0

Truck traffic associated with winery operations (average ADT)

Item Description	Existing	Proposed
Grape Importation		
Truck loads per year: 4; 4 truck(s) at 10 tons/truck	0.00	0.03
Dates of Activity: September through October		
Juice Importation		
Truck loads per year: None	0.00	0.00
Dates of Activity: July through September		
Juice/Fruit Exportation		
Truck loads per year: None	0.00	0.00
Dates of Activity:		
Pomace Disposal		
Truck loads per year: 4; 4 truck(s) at 10 tons/truck	0.00	0.03
Dates of Activity: September through October		
Disposed: Offsite		
Bottle Delivery		
Truck loads per year: 1 truck(s) at 1904 cases/truck	0.00	0.01
Dates of Activity: July through September		
Barrel Delivery		
Truck loads per year: 1 truck(s) at 50 barrels/truck	0.00	0.01
Dates of Activity: May through July		
Finished Wine Transportation to storage/sales		
Truck loads per year: 3 truck(s) at 1000 cases/truck	0.00	0.02
Dates of Activity: July through September		
Less Backhauls		
Truck loads per year: -1 truck(s)	0.00	-0.01
Dates of Activity: July through September		
Miscellaneous trips (includes wastewater hauling)		
Truck loads per year: 35 trucks	0.00	0.27
Dates of Activity: January through December		
Totals	0.00	0.36

VINEYARD OPERATIONS

Employee trips associated with vineyard operations (in average ADT)

Item Description	Employees		Trips	
	Existing	Proposed	Existing	Proposed
Vineyard Maintenance: Year Round	0	0	0	0
Vineyard Maintenance: Peak Season	0	0	0	0
Totals	0	0	0	0

Winery Trip Generation

TASTING ROOM OPERATIONS

Item Description	Persons		Trips	
	Existing	Proposed	Existing	Proposed
Average Tasting Room Visitors	0	52	0	42
Tasting Room Employees	0	2	0	6
Totals	0	54	0	48

	Tasting Room		Production	
	Existing	Proposed	Existing	Proposed
Months of Operation	0	Year Round	0	Year Round
Days of Operation - Non-Harvest Season	12:00 AM	Monday-Sunday	12:00 AM	Monday - Friday
Days of Operation - Harvest Season	12:00 AM	Monday-Sunday	12:00 AM	Monday-Friday
Hours of Operation - Non-Harvest Season	12:00 AM	10 am- 7 pm	12:00 AM	9:00 am-5 pm
Hours of Operation - Harvest Season	12:00 AM	10am- 7 pm	12:00 AM	9:00 am-5 pm

MISCELLANEOUS OTHER TRAFFIC GENERATORS

Item Description	Existing	Proposed
Event Traffic	0	0
Enter Event Information on Schedule Tab		
Other Trips (If Applicable)		
None		
Totals	0	0

SUMMARY (During Non-Harvest Period)

Item Description	Existing	Proposed
Winery Operations (employees)	0	9
Winery Operations (truck traffic)	0	0
Vineyard Operations (employees)	0	0
Tasting Room Traffic (employees and visitors)	0	48
Event Traffic (employee and visitors)	0	0
Miscellaneous other traffic generators	0	0
Totals	0	57

Variation in ADT during the course of a typical full production year (Proposed Trips)

Month	January	February	March	April	May	June
Total Trips	45	48	50	55	59	62

Month	July	August	September	October	November	December
Total Trips	75	76	65	67	53	45

Notes:

Employees - Assume 3 ADT per employee

Visitors - Assume 2.5 person per vehicle occupancy