George W. Nickelson, P.E.

Traffic Engineering – Transportation Planning

May 17, 2011

Ms. Donna Oldford
Plans4Wine
2620 Pinot Way
St. Helena, CA 94574

Subject: ***Traffic Impact Analysis for a Proposed Winery Expansion at 2125 Cuttings Wharf Road in Napa County***

Dear Ms. Oldford:

This report summarizes our traffic impact analysis for a proposed winery expansion at 2125 Cuttings Wharf Road in Napa County. This report has identified the existing traffic conditions and conducted an analysis of the proposed winery expansion traffic effects.

1. Existing Traffic Conditions

Cuttings Wharf Road is essentially a two-lane rural road in the area of the winery site. At the winery site Cuttings Wharf Road does not have a left turn lane.

The primary issues for access design are the vehicle visibility and operation relative to vehicles traveling on Cuttings Wharf Road and vehicles turning in/out of the access road. The required vehicle visibility or "corner sight distance" is a function of the travel speeds on Cuttings Wharf Road. Caltrans design standards indicate that for appropriate corner sight distance, "a substantially clear line of sight should be maintained between the driver of a vehicle waiting at the cross road and the driver of an approaching vehicle in the right lane of the main highway.".[1] Caltrans design guidelines also indicate that at private access intersections the minimum corner sight distance "shall be equal to the stopping sight distance".

Based on new radar surveys at the site access, the "critical" vehicle speeds (85% of all surveyed vehicles travel at or below the critical speed) along Cuttings Wharf Road were measured at about 48 mph northbound and 52 mph southbound.[2] Caltrans' design standards indicate that these speeds require a stopping sight distance of about 400-450 feet, measured along the travel lanes on Cuttings Wharf Road.[3] Our preliminary field review suggests the visibility would meet the Caltrans standard.

Based on Napa County records, Cuttings Wharf Road has an average weekday traffic volume of 2,105 vehicles and a Saturday volume of 2,059 vehicles south of State Route 121 (SR 121).[4] The weekday peak period (4-6 PM) and Saturday peak period (1-3 PM) volumes are about 9% of the daily volumes. Counts at the winery site indicate the weekday and Saturday two-way peak hour volumes on Cuttings Wharf Road are 146 and 148 vehicles respectively.[5] Based on the count data, it is estimated that the daily traffic volume at the project site is about 1,640 vehicles.

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2. Potential Traffic Effects of the Proposed Winery

a. Project Description[6]

The site now has a residence and accessory structures associated with the existing approved 20,000 gallon per year winery. A portion of the site is also currently planted in vineyard. The proposed project would create an expanded winery and would involve conversion of the residential structure into winery uses (offices, tasting room, etc.). The new winery would have an annual production of 100,000 gallons, of which 75,000 gallons would reflect grapes delivered from off-site vineyards. A total of 8 full time and 4 part time employees would work at the winery.

The winery would have a visitor program with a maximum of 24 visitors (by appointment) on both weekdays and weekend days. Quarterly wine club/release events would have up to 50 persons at each event.

b. Trip Generation

As outlined in Table 1, the winery would generate 34 net daily trips on a weekday or a Saturday (with a 10 trip per day credit for conversion of the existing single family unit into winery uses). During the harvest season, the winery trip generation would be slightly higher at 38 daily trips. It is noted that these calculations conservatively assume that all full time and part time employees are on site each day.

The proposed quarterly events would each generate 64 daily trips.

c. Site Access Design Issues

The primary traffic design issue would be the need for a left-turn lane at the site access. Standards for left-turn lanes relate to the left-turn volume conflicting with the volume of opposing through traffic. Napa County has adopted a warrant methodology based on daily traffic volumes on the highway and daily traffic volumes on the access road or driveway.[7] As noted above, our estimate of the daily volume on Cuttings Wharf Road is about 1,640 vehicles at the winery site.

Napa County standards for left-turn lanes indicate that with this volume on Cuttings Wharf Road, the daily volumes in/out of the proposed winery would be well below the level at which a left-turn lane would be warranted (left turn lane graph is attached).

3. Summary and Conclusions

At the site access, our initial field review indicates that there is sufficient sight distance along Cuttings Wharf Road. The sight distance measurements should be confirmed by the project's civil engineer.

The combination of volumes on Cuttings Wharf Road and volumes in/out of the winery would be below Napa County thresholds for installation of a left-turn lane.

I trust that this analysis responds to your needs and the requirements of Napa County. Please let me know if there are any questions or if further input is required.

Sincerely,

George W. Nickelson, P.E.

Attachments: left turn lane warrant
radar survey results

References:

(1) Caltrans, *Highway Design Manual – Fifth Edition*, July 1, 2004.

(2) George W. Nickelson, P.E., radar surveys on April 9, 2011.

(3) Caltrans, ibid.

(4) Napa County Department of Public Works, traffic counts on Cuttings Wharf Road conducted February-March 2011.

(5) George W. Nickelson, P.E., traffic counts conducted on April 6, 2011 and April 9, 2011.

(6) Project information provided by Ms. Donna Oldford, Plans4Wine, May 15, 2011.

(7) Napa County Department of Public Works, *Adopted Road & Street Standards*, Revised August 31, 2004.

TABLE 1
TRIP GENERATION FOR THE PROPOSED
WINERY EXPANSION AT 2125 CUTTINGS WHARF ROAD

Daily Traffic During a Typical Weekday:		
• 24 visitors/2.6 per vehicle x 2 one-way trips	=	18 daily trips
• 12 employees x 2 one-way trips per employee	=	24 daily trips
• 1 truck x 2 one-way trips per truck(1)	=	2 daily trips
• Conversion of single family residence	=	-10 daily trips
		34 daily trips
Daily Traffic During a Typical Saturday:		
• 24 visitors/2.8 per vehicle x 2 one-way trips	=	18 daily trips
• 12 employees x 2 one-way trips per employee	=	24 daily trips
• 1 truck x 2 one-way trips per truck(1)	=	2 daily trips
• Conversion of single family residence	=	-10 daily trips
		34 daily trips
Daily Traffic During Harvest Season (6 weeks):		
• 24 visitors/2.6 per vehicle x 2 one-way trips	=	18 daily trips
• 12 employees x 2 one-way trips per employee	=	24 daily trips
• 3 trucks x 2 one-way trips per truck(2)	=	6 daily trips
• Conversion of single family residence	=	-10 daily trips
		38 daily trips
Daily Traffic During a Quarterly Event:		
• 50 visitors/2.8 per vehicle x 2 one-way trips	=	36 daily trips
• 18 employees(3) x 2 one-way trips per employee	=	36 daily trips
• 1 truck x 2 one-way trips per truck(1)	=	2 daily trips
• Conversion of single family residence	=	-10 daily trips
		64 daily trips

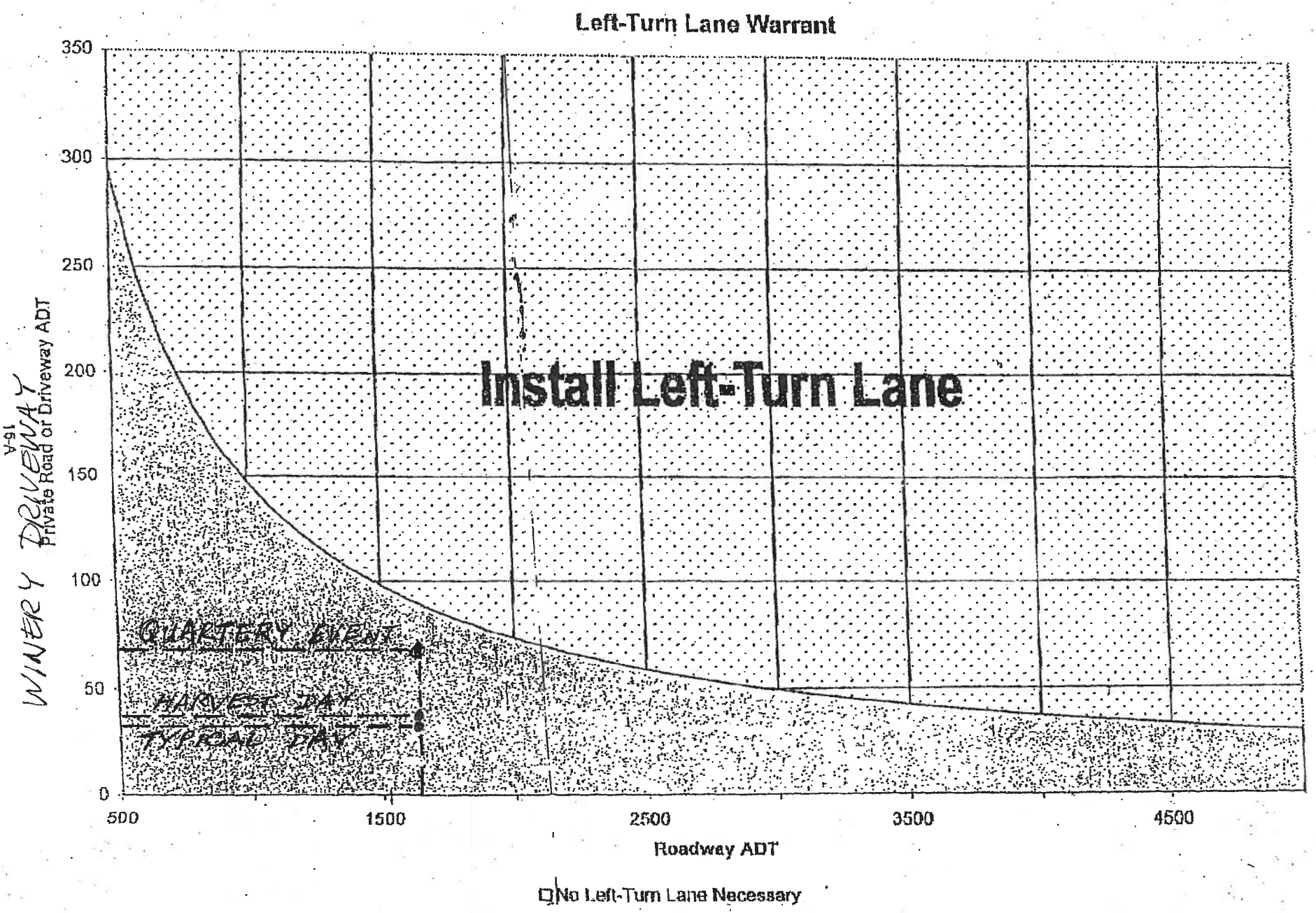
(1) During the 46-week non-harvest season, a maximum of 1 daily truck would be generated related to routine deliveries associated with the production; 100,000 gallons/2.38 gallons per case = 42,017 cases. (75,000 gallons or 455 tons of grapes would be from off-site vineyards)

• 42,017 cases/2,310 cases per truck	=	18 glass delivery trucks
• 42,017 cases/1,232 cases per truck	=	34 wine shipment trucks
• 5 miscellaneous weekly deliveries	=	230 miscellaneous trucks
		282 annual trucks

282 trucks/46 weeks = 6 weekly trucks or 1 truck per day.

(2) 455 tons of off-site grapes/10 tons per truck/6 weeks = 8 trucks/week or 2 trucks per day.

(3) A quarterly event would have an estimated 6 additional employees related to food service.



WINERY DRIVEWAY

16-A

QUARTERY EVENT

HARVEST DAY

TYPICAL DAY

CUTTINGS WHARF ROAD

RADAR SPEED SURVEY

OMNI-MEANS LTD.

Cuttings Wharf Rd. approaching Project Driveway (#2125)

DATE: 4/9/11 TIME START: 1:00pm TIME END: 2:30pm WEATHER: Clear ROAD TYPE: 2 lanes; rural

DIRECTION: Northbound
SPEED LIMIT: 45 mph advisory OBSERVER: gwn assocs CALIBRATION TEST: Yes

SPEED	FREQUENCY	ACUM %	PERCENTAGE BREAKDOWN
31	1	2.0	**
32	1	4.0	****
33	0	4.0	****
34	0	4.0	****
35	0	4.0	****
36	4	12.0	****5****1**
37	0	12.0	****5****1**
38	0	12.0	****5****1**
39	5	22.0	****5****1****5****2**
40	5	32.0	****5****1****5****2****5****3**
41	3	38.0	****5****1****5****2****5****3****5***
42	3	44.0	****5****1****5****2****5****3****5****4****
43	8	60.0	****5****1****5****2****5****3****5****4****5****5****6
44	4	68.0	****5****1****5****2****5****3****5****4****5****5****5****6****5***
45	2	72.0	****5****1****5****2****5****3****5****4****5****5****5****6****5****7**
46	1	74.0	****5****1****5****2****5****3****5****4****5****5****5****6****5****7****
47	4	82.0	****5****1****5****2****5****3****5****4****5****5****5****6****5****7****5****8**
48	2	86.0	****5****1****5****2****5****3****5****4****5****5****5****6****5****7****5****8****5*
49	4	94.0	****5****1****5****2****5****3****5****4****5****5****5****6****5****7****5****8****5****9****
50	1	96.0	****5****1****5****2****5****3****5****4****5****5****5****6****5****7****5****8****5****9****5*
51	0	96.0	****5****1****5****2****5****3****5****4****5****5****5****6****5****7****5****8****5****9****5*
52	0	96.0	****5****1****5****2****5****3****5****4****5****5****5****6****5****7****5****8****5****9****5*
53	0	96.0	****5****1****5****2****5****3****5****4****5****5****5****6****5****7****5****8****5****9****5*
54	1	98.0	****5****1****5****2****5****3****5****4****5****5****5****6****5****7****5****8****5****9****5***
55	0	98.0	****5****1****5****2****5****3****5****4****5****5****5****6****5****7****5****8****5****9****5***
56	0	98.0	****5****1****5****2****5****3****5****4****5****5****5****6****5****7****5****8****5****9****5***
57	0	98.0	****5****1****5****2****5****3****5****4****5****5****5****6****5****7****5****8****5****9****5***
58	0	98.0	****5****1****5****2****5****3****5****4****5****5****5****6****5****7****5****8****5****9****5***
59	0	98.0	****5****1****5****2****5****3****5****4****5****5****5****6****5****7****5****8****5****9****5***
60	0	98.0	****5****1****5****2****5****3****5****4****5****5****5****6****5****7****5****8****5****9****5***
61	0	98.0	****5****1****5****2****5****3****5****4****5****5****5****6****5****7****5****8****5****9****5***
62	1	100.0	****5****1****5****2****5****3****5****4****5****5****5****6****5****7****5****8****5****9****5****0

50

AVERAGE SPEED = 43
50th PERCENTILE = 42.3
85th PERCENTILE = 47.7
90th PERCENTILE = 48.5
95th PERCENTILE = 49.5

PACE = 39 - 48
% IN PACE = 74
VEHICLES IN PACE = 37

SAMPLE VARIANCE = 28.79225
STANDARD DEVIATION = 5.365842
RANGE 1*S = 74
RANGE 2*S = 92
RANGE 3*S = 98

RADAR SPEED SURVEY

OMNI—MEANS LTD.

Cuttings Wharf Rd. approaching Project Driveway (#2125)

DATE: 4/9/11 TIME START: 1:00pm TIME END: 2:30pm WEATHER: Clear ROAD TYPE: 2 lanes; rural

DIRECTION: Southbound
SPEED LIMIT: 45 mph advisory OBSERVER: gwn assocs CALIBRATION TEST: Yes

SPEED	FREQUENCY	ACUM %	PERCENTAGE BREAKDOWN
34	1	2.0	|**
35	0	2.0	|**
36	0	2.0	|**
37	1	4.0	|****
38	0	4.0	|****
39	0	4.0	|****
40	0	4.0	|****
41	0	4.0	|****
42	3	10.0	|****5****1
43	0	10.0	|****5****1
44	4	18.0	|****5****1****5***
45	4	26.0	|****5****1****5****2****5*
46	3	32.0	|****5****1****5****2****5****3**
47	7	46.0	|****5****1****5****2****5****3****5****4****5*
48	3	52.0	|****5****1****5****2****5****3****5****4****5****5**
49	5	62.0	|****5****1****5****2****5****3****5****4****5****5****6**
50	5	72.0	|****5****1****5****2****5****3****5****4****5****5****5****6****5****7**
51	3	78.0	|****5****1****5****2****5****3****5****4****5****5****5****6****5****7****5***
52	4	86.0	|****5****1****5****2****5****3****5****4****5****5****5****6****5****7****5****8****5*
53	4	94.0	|****5****1****5****2****5****3****5****4****5****5****5****6****5****7****5****8****5****9****
54	2	98.0	|****5****1****5****2****5****3****5****4****5****5****5****6****5****7****5****8****5****9****5***
55	0	98.0	|****5****1****5****2****5****3****5****4****5****5****5****6****5****7****5****8****5****9****5***
56	1	100.0	|****5****1****5****2****5****3****5****4****5****5****5****6****5****7****5****8****5****9****5****0

50

AVERAGE SPEED = 47.9
50th PERCENTILE = 47.6
85th PERCENTILE = 51.8
90th PERCENTILE = 52.5
95th PERCENTILE = 53.2

PACE = 44 - 53
% IN PACE = 84
VEHICLES IN PACE = 42

SAMPLE VARIANCE = 18.27918
STANDARD DEVIATION = 4.275416
RANGE 1*S = 76
RANGE 2*S = 96
RANGE 3*S = 98