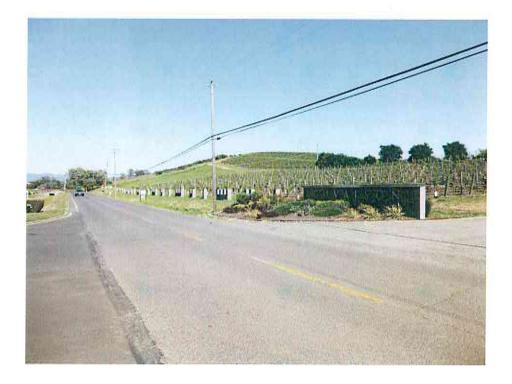


Traffic Study

Cuvaison Winery P16-00146 Planning Commission Hearing January 17, 2018



Traffic Impact Study for Cuvaison Winery



Final Report

Prepared for the County of Napa

Submitted by W-Trans

September 21, 2017

TRAFFIC ENGINEERING

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Executive Summary

The Cuvaison Winery project is a proposed modification to the Use Permit of an existing winery to increase daily visitation to a maximum of 180 people per day and add marketing events as small as 60 people and as large as 200 people. The project's anticipated trip generation based on application of the County's standard trip generation rates includes 136 net new daily trips on average during a weekday and 130 new trips on average during a weekend day, with 51 new trips during the weekday p.m. peak hour and 74 during the weekend midday peak hour. However, since this is an existing winery, the ratio of peak hour traffic to daily traffic was estimated using past experience, and this ratio was applied to daily trips to achieve the peak hour volumes used for the analysis. Under the applied assumptions the project is expected to generate on 24 additional trips during the weekday p.m. peak hour and 39 during the weekend midday peak hour. As is typically the case, even though tasting room visitors routinely visit multiple wineries during a single trip, each visitor was treated as if generating a new trip.

The study area was established by the County and includes the intersection of SR 12-121/Duhig Road and SR 12-121/Old Sonoma Road. The intersection of SR 12-121/Old Sonoma Road experienced a collision rate that is higher than the statewide average during the five-year period reviewed. Most of the collisions were rear-end or broadside types, likely attributable to the congested conditions that occur on SR 12-121 and as are typical on approaches to a signalized intersection.

Analysis indicates that SR 12-121/Duhig Road is operating unacceptably at LOS F on the Duhig Road approach during both peak periods under Existing, Existing plus Approved, and Future conditions. Upon adding project-generated trips, and with the proposed improvements to provide separate left-turn and right-turn lanes on the Duhig Road approach, delays would be less with the project than without it, resulting in a less-than-significant impact.

The intersection of SR 12-121/Old Sonoma Road is operating unacceptably during the weekday p.m. peak hour at LOS E and acceptably during the weekend midday peak hour at LOS D under Existing and Existing plus Approved conditions, with and without project-added trips. The intersection is expected to operate unacceptably at LOS F during the weekday p.m. peak hour and at LOS E during the weekend midday peak hour under Future and Future plus Project conditions. The project would have a less-than-significant impact under all scenarios, including those where the study intersection is operating unacceptably without project-added volumes, as the project-added volumes represent less than one percent of existing or existing plus approved volumes and less than five percent of the difference between existing and projected future volumes.

Queuing on northbound Duhig Road at SR 12 is expected to increase to 220 feet under existing weekend midday peak hour volumes plus special event traffic. The distance on Duhig Road between SR 12 and the nearest driveway is 650 feet, so existing space is adequate for the projected queue lengths. Queuing in the westbound SR 12 direction is expected to remain within the existing storage length of the left-turn pocket, which is 200 feet.

Vehicles will continue to access the project via Duhig Road. Any new plantings or signs should be designed to ensure that adequate sight lines will be maintained.



Introduction

This report presents an analysis of the potential traffic impacts that would be associated with a proposed modification to the Cuvaison Estate Winery Use Permit to install offices within the barrel building, update the number of events, modify its tasting program, increase the number of employees, and add a parking lot for the additional employees. The winery is located at 1221 Duhig Road in the County of Napa. The traffic study was completed in accordance with the criteria established by the County of Napa, reflects a scope of work approved by County of Napa staff, and is consistent with standard traffic engineering techniques.

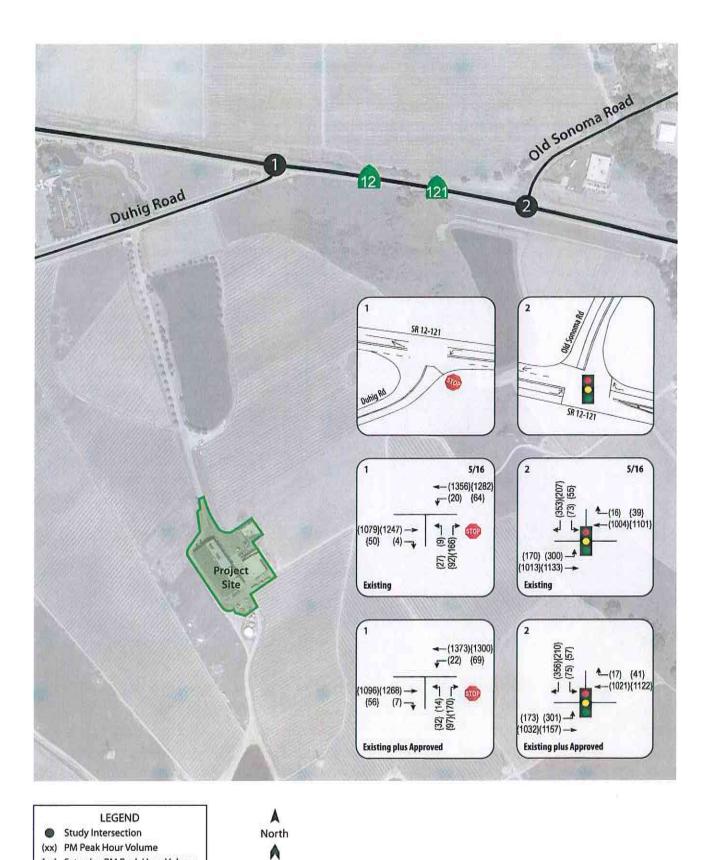
Prelude

The purpose of a traffic impact study is to provide County staff and policy makers with data that they can use to make an informed decision regarding the potential traffic impacts of a proposed project, and any associated improvements that would be required in order to mitigate these impacts to a level of insignificance as defined by the County's General Plan or other policies. Vehicular traffic impacts are typically evaluated by determining the number of new trips that the proposed use would be expected to generate, distributing these trips to the surrounding street system based on existing travel patterns or anticipated travel patterns specific to the proposed project, then analyzing the impact the new traffic would be expected to have on critical intersections or roadway segments.

Project Profile

The existing Cuvaison Estate Winery is proposing to increase their daily visitation, number of employees, and special events, and provide additional offices and parking on-site. This change is proposed due to a shift in activities from their former facility in Calistoga to the winery on Duhig Road. The project site is shown in Figure 1.





Traffic Impact Study for Cuvaison Winery Figure 1 – Study Area, Lane Configurations, and Existing and Existing plus Approved Traffic Volumes

Not to Scale

(xx) Saturday PM Peak Hour Volume

104nax.al 4/17



Transportation Setting

Operational Analysis

Study Area and Periods

The study area consists of the intersections of SR 12-121/Duhig Road and SR 12-121/Old Sonoma Road. Operating conditions during the weekday p.m. and weekend midday peak periods were evaluated as these time periods reflect the highest traffic volumes area-wide and for the proposed project. The evening peak hour occurs between 4:00 and 6:00 p.m. and typically reflects the highest level of congestion of the day during the homeward bound commute, while the weekend midday peak evaluated was 12:00 noon to 2:00 p.m.

Study Intersections

While SR 12 is generally oriented in an east-west direction and SR 121 in a north-south direction, for the purposes of this analysis, SR 12-121 was considered to be the east-west roadway at the study intersections.

SR 12-121/Duhig Road is a "tee" intersection with the northbound Duhig Road approach stop-controlled.

SR 12-121/Old Sonoma Road is a signalized "tee" intersection with protected left-turn phasing on the eastbound SR 12-121 approach and a right-turn overlap on the southbound Old Sonoma Road approach.

Collision History

The collision history for the study area was reviewed to determine any trends or patterns that may indicate a safety issue. Collision rates were calculated based on records available from the California Highway Patrol as published in their Statewide Integrated Traffic Records System (SWITRS) reports. The most current five-year period available is October 1, 2011 through September 30, 2016.

As presented in Table 1, the calculated collision rates for the study intersections were compared to the average collision rates for similar facilities statewide, as indicated in 2013 Collision Data on California State Highways, California Department of Transportation (Caltrans). The collision rate for the unsignalized intersection of SR 12-121/Duhig Road was less than the statewide average for the five-year study period. The intersection of SR 12-121/Old Sonoma Road was 0.28 collisions per million vehicles entering (c/mve) for the five-year study period, which is approximately equal to the statewide collision rate of 0.27 c/mve for similar facilities, however, the overall injury rate at SR 12-121/Old Sonoma Road is much less than the statewide average for similar facilities. Most of the collisions at the intersection were either rear-ends or hitting objects. Rear-ends are primarily caused by drivers following too closely behind another vehicle as they approach the intersection, and are common at signalized intersections that experience periods of congestion. The collision rate calculations are provided in Appendix A.

Table 1 – Collision Rate at the Study Intersections									
Study Intersection	Number of Collisions (2010-2015)	Calculated Collision Rate (c/mve)	Statewide Average Collision Rate (c/mve)						
1. SR 12-121/Duhig Rd	6	0.12	0.14						
2. SR 12-121/Old Sonoma Rd	15	0.28	0.27						

Note: c/mve = collisions per million vehicles entering



Capacity Analysis

Intersection Level of Service Methodologies

Level of Service (LOS) is used to rank traffic operation on various types of facilities based on traffic volumes and roadway capacity using a series of letter designations ranging from A to F. Generally, Level of Service A represents free flow conditions and Level of Service F represents forced flow or breakdown conditions. A unit of measure that indicates a level of delay generally accompanies the LOS designation.

The study intersection was analyzed using methodologies published in the *Highway Capacity Manual* (HCM), Transportation Research Board, 2010. This source contains methodologies for various types of intersection control, all of which are related to a measurement of delay in average number of seconds per vehicle.

The Levels of Service for SR 12-121/Duhig Road were analyzed using the "Two-Way Stop-Controlled" intersection capacity method from the HCM. This methodology determines a level of service for each minor turning movement by estimating the level of average delay in seconds per vehicle. Results are presented for individual movements together with the weighted overall average delay for the intersection.

The intersection of SR 12-121/Old Sonoma Road was evaluated using the signalized methodology from the HCM. This methodology is based on factors including traffic volumes, green time for each movement, phasing, whether or not the signals are coordinated, truck traffic, and pedestrian activity. Average stopped delay per vehicle in seconds is used as the basis for evaluation in this LOS methodology. Signal timing provided by Caltrans was used as the basis for the analysis.

Tabi	e 2 – Intersection Level of Service Criteria	
LOS	Two-Way Stop-Controlled	Signalized
A	Delay of 0 to 10 seconds. Gaps in traffic are readily available for drivers exiting the minor street.	Delay of 0 to 10 seconds. Most vehicles arrive during the green phase, so do not stop at all.
В	Delay of 10 to 15 seconds. Gaps in traffic are somewhat less readily available than with LOS A, but no queuing occurs on the minor street.	Delay of 10 to 20 seconds. More vehicles stop than with LOS A, but many drivers still do not have to stop.
С	Delay of 15 to 25 seconds. Acceptable gaps in traffic- are less frequent, and drivers may approach while another vehicle is already waiting to exit the side street.	Delay of 20 to 35 seconds. The number of vehicles stopping is significant, although many still pass through without stopping.
D	Delay of 25 to 35 seconds. There are fewer acceptable gaps in traffic, and drivers may enter a queue of one or two vehicles on the side street.	Delay of 35 to 55 seconds. The influence of congestion is noticeable, and most vehicles have to stop.
E	Delay of 35 to 50 seconds. Few acceptable gaps in traffic are available, and longer queues may form on the side street.	Delay of 55 to 80 seconds. Most, if not all, vehicles must stop and drivers consider the delay excessive.
F	Delay of more than 50 seconds. Drivers may wait for long periods before there is an acceptable gap in traffic for exiting the side streets, creating long queues.	Delay of more than 80 seconds. Vehicles may wait through more than one cycle to clear the intersection.

The ranges of delay associated with the various levels of service are indicated in Table 2.

Reference: Highway Capacity Manual, Transportation Research Board, 2010



Traffic Operation Standards

Napa County

Policy CIR-13 in the Napa County General Plan states, "The County seeks to provide a roadway system that maintains current roadway capacities in most locations and is both safe and efficient in terms of providing local access."

Policy CIR-16 of the *Napa County General Plan* provides guidance for roadways, indicating that, "The County shall seek to maintain an arterial Level of Service D or better on all county roadways, except where maintaining this desired level of service would require the installation of more travel lanes than shown on the Circulation Map. SR 29 is shown as a 2-lane Rural Throughway on the Circulation Map (Figure CIR-1).

Policy CIR-18 of the *Napa County General Plan* states, "Traffic safety and adequate local access will be priorities on roadway segments and at signalized intersections where Level of Service D or better cannot be achieved. Therefore, proposed capital improvements and development projects in these areas shall be evaluated to determine their effect on safety or local access. Projects that improve safety, improve local access, or alleviate congestion will be prioritized."

The County published *Guidelines for Interpretation of General Plan Circulation Policies on Significance Criteria* on December 1, 2015, Fehr & Peers, in an effort to provide a more quantitative method of adhering to the above standards. The document establishes thresholds of significance for road segments and different intersection control types. The memorandum states a project would cause a significant impact requiring mitigation if, for existing conditions:

- 1. A signalized intersection operates at LOS A, B, C, or D during the selected peak hours without Project trips, the LOS deteriorates to LOS E or F with the addition of Project trips; or
- 2. A signalized intersection operates at LOS E or F during the selected peak hours without Project trips, and the addition of Project trips increases the total entering volume by one percent or more.
- 3. An unsignalized intersection operates at LOS A, B, C, or D during the selected peak hours without Project trips, the LOS deteriorates to LOS E or F with the addition of Project traffic; the peak hour traffic signal warrant criteria should also be evaluated and presented for informational purposes; or
- 4. An unsignalized intersection operates at LOS E or F during the selected peak hours without Project trips, , and the project contributes one percent or more of the total entering traffic for all-way stop-controlled intersections, or ten percent or more of the traffic on a side-street approach for side-street stop-controlled intersections; the peak hour traffic signal criteria should also be evaluated and presented for informational purposes.

Further, a project would cause a significant impact requiring mitigation if, for cumulative (future) conditions, the Project's volume is equal to, or greater than five percent of the difference between cumulative (future) and existing volumes.

Caltrans

Although the study intersections are within Napa County limits, Caltrans has jurisdiction over any intersection that includes a State Route, such as both study intersections. Caltrans indicates that they endeavor to maintain operation at the transition from LOS C to LOS D. Based on previous discussions with Caltrans staff, it is understood that the standard is to be applied to the overall average intersection delay and *not* that associated with any single movement or approach. Under this approach, if one movement experiences very high delay and also has moderate to high traffic volumes, the overall delay and level of service should reflect the critical nature of the condition. However, if one movement is expected to experience high delay, but has very low traffic volumes, the overall intersection operation will likely still meet Caltrans standards.



Existing Conditions

The Existing Conditions scenario provides an evaluation of current operation based on existing traffic volumes during the weekday p.m. and weekend midday peak periods. This condition does not include project-generated traffic volumes. Volume data was collected on Thursday April 21, 2016 and Saturday, April 30, 2016. Counts taken on Duhig Road in September 2016 were lower than the volumes obtained in May of that same year. Given that the Duhig Road approach is most critical, the higher volumes from May were used and no seasonal adjustment was made. Copies of the counts are provided in Appendix B.

Intersection Levels of Service

Under existing conditions, the intersection of SR12-121/Duhig Road is operating acceptably overall at LOS A during the weekday p.m. and weekend midday peak hours, though delays indicating LOS F conditions are experienced on the stop-controlled approach during both peak periods. The intersection of SR 12-121/Old Sonoma Road is operating unacceptably at LOS E during the weekday p.m. peak hour and acceptably (under County standards) during the weekend midday peak hour at LOS D under existing conditions. The existing traffic volumes are shown in Figure 1. A summary of the intersection level of service calculations is contained in Table 3, and copies of the Level of Service calculations are provided in Appendix C.

Table 3 – Existing Peak Hour Intersection Levels of Service								
Study Intersection	Weekday	PM Peak	Weekend Midday Peak					
Approach	Delay	LOS	Delay	LOS				
1. SR 12-121/Duhig Rd	5.4	Α	2.8	A				
Northbound Approach	85.4	F	54.5	F				
2. SR 12-121/Old Sonoma	Rd 56.0	E	44.2	D				

Notes: Delay is measured in average seconds per vehicle; LOS = Level of Service; Results for minor approaches to two-way stop-controlled intersections are indicated in *italics;* **Bold** text = deficient operation

Existing plus Approved Conditions

Existing plus Approved volumes were developed to include trips from other approved and pending projects that would add traffic to the study intersections. As directed by County staff, the following projects were included to evaluate Existing plus Approved conditions:

- Hyde Winery 30,000 gallon winery at 1044 Los Carneros Avenue, south of SR 12-121 with up to 20 visitors
 per day and three employees.
- Hudson Vineyards Winery 80,000 gallon winery at 5398 Sonoma Highway, north of SR 12-121 with up to 120 visitors per day and 16 employees.
- Mahoney Vineyards 30,000 gallon winery at 1134 Dealy Lane, with 15 visitors and two employees per day, located north of SR 12-121 and east of Old Sonoma Road.
- Sleeping Giant 30,000 gallon winery at 2258 Las Amigas Road, south of SR 12-121 with eight visitors and 10 employees.

Under Existing plus Approved conditions, SR 12-121/Duhig Road is expected to operate acceptably at LOS A during the weekday p.m. and weekend midday peak hours. The northbound approach will continue to experience high delays during both peak periods. SR 12-121/Old Sonoma Road is expected to continue operating at LOS E during the weekday p.m. peak hour and LOS D during the weekend midday peak hour. A summary of the intersection level of service calculations is contained in Table 4, volumes are shown in Figure 1, and copies of the Level of Service calculations are provided in Appendix C.



Sti	udy Intersection	Weekday	Weekend Midday Pea		
	Approach	Delay	LOS	Delay	LOS
1.	SR 12-121/Duhig Rd	7.2	A	3.6	А
	Northbound Approach	110.5	F	68.1	F
2.	SR 12-121/Old Sonoma Rd	56.6	E	49.5	D

Notes: Delay is measured in average seconds per vehicle; LOS = Level of Service; Results for minor approaches to two-way stop-controlled intersections are indicated in *italics;* **Bold** text = deficient operation

Future Conditions

Future volumes for the horizon year of 2030 were calculated from data contained in the Napa-Solano Travel Demand Model, which was created and is maintained by the Solano Transportation Authority and the Napa Valley Transportation Authority. The model was built using local land use databases as well as countywide and regional travel models. Growth factors were developed from the model and applied to both study intersections. Volumes on SR 12-121 are expected to grow by a factor of 1.1 and volumes on Old Sonoma Road and Duhig Road are expected to grow by a factor of 1.4. Because the model does not include information for weekend volumes, the same growth factors were applied to the Saturday midday peak turning movement counts.

Under the anticipated Future volumes, SR 12-121/Duhig Road is expected to operate acceptably at LOS C or better during both peak hours, though delay on the stop-controlled Duhig Road approach are expected to continue increasing. The intersection of SR 12-121/Old Sonoma Road is expected to operate unacceptably at LOS E or F during both peak periods under future conditions. Future volumes are shown in Figure 2 and operating conditions are summarized in Table 5.

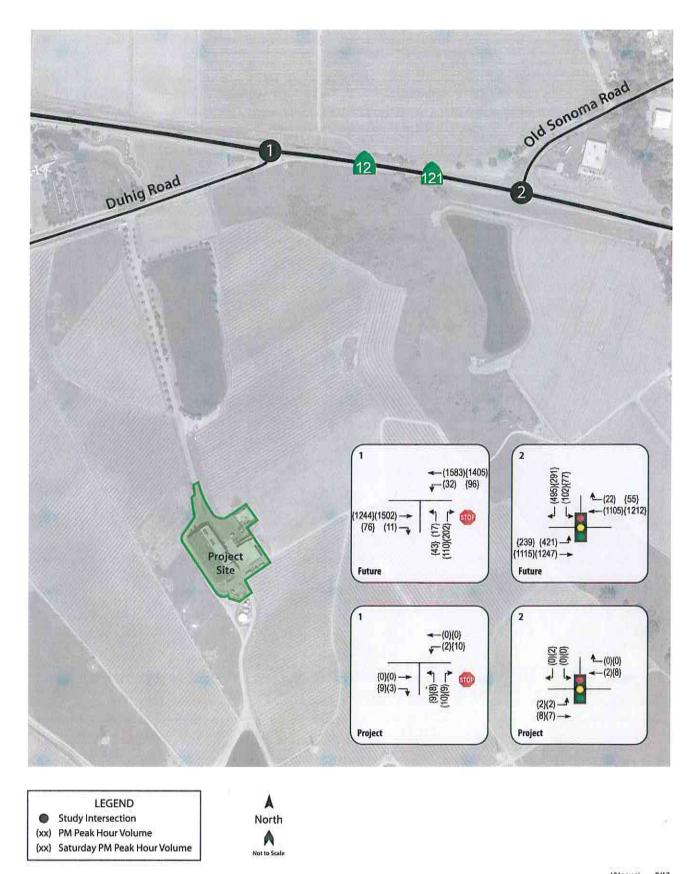
Study Intersection	Weekday	Weekday PM Peak			
Approach	Delay	LOS	Delay	LOS	
1. SR 12-121/Duhig Rd	22.6	с	7.3	A	
Northbound Approach	**	F	**	F	
2. SR 12-121/Old Sonoma Rd	102.1	F	65.5	E	

Notes: Delay is measured in average seconds per vehicle; LOS = Level of Service; Results for minor approaches to two-way stopcontrolled intersections are indicated in *italics;* ** = delay greater than 120 seconds; **Bold** text = deficient operation

Project Description

The Cuvaison Winery at 1221 Duhig Road in the County of Napa is proposing a Use Permit Modification to install offices within the barrel building, update the number of events, modify its tasting program, increase the number of employees, and add a parking lot for the additional employees. This change is proposed due to a shift in activities from their former facility in Calistoga to the winery on Duhig Road. While all of the events and visitation have occurred in the past at the Calistoga location, these trips will now be generated at the Duhig Road winery and will affect a different part of the County's roadway infrastructure, so they were treated as if they are all new trips.





Traffic Impact Study for Cuvaison Winery Figure 2 – Future and Project Traffic Volumes





Cuvaison Winery is currently permitted for 10 regular season employees, 12 during harvest season, and 75 visitors per day up to a maximum of 525 per week. The requested amendment to the Use Permit proposes 28 regular season employees, 34 during harvest season, and a maximum of 180 visitors per day up to a maximum of 840 per week. The winery is also proposing 38 special events per year, including 24 events with no more than 60 people and 14 events per year for up to 200 guests. As noted above, these changes partially reflect a shift in location for the activity, rather than new activity.

As part of the project Cuvaison Winery is proposing to construct improvements at the intersection of SR 12-121/Duhig Road to provide separate left-turn and right-turn lanes on the Duhig Road approach.

Trip Generation

The County of Napa's Winery Traffic Information/Trip Generation Sheet was used to determine the anticipated traffic generated by the current staff as well as both production that is already permitted at the site and with the proposed changes to the Use Permit. Copies of the worksheets are provided in Appendix D.

As the County of Napa's Winery Traffic Information/Trip Generation Sheet does not include guidance on inbound versus outbound trips during the peak hours, it was assumed that two-thirds of trip ends 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 Saturday midday peak hour it was assumed that inbound and outbound trip ends would be evenly split. The trip generation estimates for the current operation as well as with the proposed project are shown in Table 6.

Table 6 – Trip G	Table 6 – Trip Generation Summary – General Assumptions									
Scenario	Da	ily	Weekd	ay PM Pea	k Hour	Weekend MD Peak Hour				
	Weekday	Weekend	Trips	In	Out	Trips	In	Out		
Permitted	94	84	36	12	24	48	24	24		
Proposed	230	214	87	29	58	122	61	61		
Net New Trips	136	130	51	17	34	74	37	37		

Note: Trip generation as estimated above based on Napa County's ratios; does not include special events

As this winery is already in operation, counts were performed for a two-week period in September 2016 to determine actual ratios between peak hour traffic and daily volumes. Additionally, actual visitor and employee counts provided by Cuvaison Winery were reviewed. The Napa County trip generation form assumes 38 percent of weekday trips occur during the weekday p.m. peak hour and 57 percent of Saturday trips occur during the midday peak hour; thdata obtained at and from Cuvaison Winery shows much lower ratios.

Because Cuvaison schedules few tastings to end during the weekday p.m. peak period, their tasting trips are generally concentrated during midday. Therefore, during the weekday p.m. peak hour, and based on actual site data, it was assumed there would be one trip per employee plus seven percent of visitor trips. This is conservative, as there were usually no visitors between 4 and 5 p.m. for the days of visitation and employment data provided, and the seven percent was the average of all trips on the eight days for which data was collected. Further, while the counts showed that seven percent of all weekday trips occurred during the weekday peak hour, this approach results in an assumed 15 percent of daily trips occurring during the p.m. peak hour, which remains conservative. The inbound versus outbound ratio for the weekday p.m. peak hour was also reviewed based on the actual driveway counts, and it was determined that 80 percent of trips during the evening peak hour are outbound, while 20 percent are inbound.

For the weekend midday peak hour, there would be one trip per employee plus 28 percent of visitor trips. This is also conservative, because 1) even though the weekend peak hour varies in terms of time of day between 11 a.m. and 5 p.m., the average of the weekend peak hour, regardless of what time it occurred, was used to determine the

percent of daily and 2) all of the employees for each of the Saturdays recorded were on-site during the highest hour of the day, and therefore not creating trips. The site-specific data was applied rather than the general, theoretical rates typically used. The site-specific trip generation is shown in Table 7 and the data on which the percentages of daily are based is provided in Appendix D.

Table 7 – Trip G	Table 7 – Trip Generation Summary – Site Specific									
Scenario	Da	ily	Weekd	ay PM Pea	ak Hour	Weekend MD Peak Hour				
	Weekday	Weekend	Trips	In	Out	Trips	In	Out		
Permitted	95	85	14	3	11	25	13	12		
Proposed	229	214	38	8	30	64	33	31		
Net New Trips	134	129	24	5	19	39	20	19		

Note: Trip generation as estimated above does not include special events

Based on application of these assumptions, the proposed project is expected to generate an increase of 134 trips ends per day compared to existing permitted conditions, including an increase of 24 trips during the weekday p.m. peak hour and 39 trips during the Saturday p.m. peak hour.

Although most winery tasting room visitors taste/tour at an average of four wineries per trip, for purposes of the evaluation is was assumed that each visitor creates new inbound and outbound trips. Given the proximity of other wineries, it is likely that visitors to Cuvaison Winery will also visit other nearby wineries, so many of the visitor trips will result in new turning movements at the driveway, but not new trips on the network. The applied approach of assuming that all of these trips are new trips results in a more conservative analysis.

Trip Distribution

The pattern used to allocate new project trips to the street network was based on turning movements at the intersections of SR 12-121/Duhig Road and SR 12-121/Old Sonoma Road. The applied distribution assumptions and resulting trips are shown in Table 8.

Table 8 – Trip Distribution Assumptions									
Route	Percent	Daily Trips	Weekend Trips	Weekday PM Trips	Weekend Midday Trips				
To/from SR 12-121 East	40%	54	52	10	16				
To/from SR 12-121 West	45%	60	58	11	18				
To/from Old Sonoma Rd North	10%	13	13	2	4				
To/from Duhig Rd South	5%	7	6	1	1				
TOTAL	100%	134	129	24	39				

Special Events

The proposed Use Permit modification includes 38 annual agricultural promotion events, with 24 events for up to 60 guests, and 14 events for up to 200 guests. It was assumed that a maximum-sized 200-person event would require a staff of 10 in addition to any winery staff that would assist with the event. Using the County-established occupancy of 2.8 persons per vehicle for guests and solo occupancy for staff, a maximum sized 200-person event would be expected to generate 163 trips ends including 81 inbound trips and 82 outbound trips. Given that special events are not part of typical daily operation, and often occur outside the peak period for traffic, special event traffic was not included in the daily trip generation and resulting intersection operation analysis.



Intersection Operation

Existing plus Project Conditions

Upon the addition of project-related traffic to the Existing volumes, and with the proposed improvements at SR 12-121/Duhig Road, both study intersections would be expected to operate unacceptably during one or both peak hours. The northbound approach on Duhig Road would be expected to continue operating at LOS F, but with lower delays than without the project due to the addition of the separate turn lanes. The intersection of SR 12-121/Old Sonoma Road would be expected to continue operating at LOS E during the weekday p.m. peak hour and LOS D during the weekend midday peak hour. These results are summarized in Table 9. Project traffic volumes are shown in Figure 2.

Study Intersection Approach			Existing	Conditions		Existing plus Project				
		Weekd Pe	lay PM ak		Weekend Midday Peak		Weekday PM Peak		l Midday ak	
		Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	
1.	SR 12-121/Duhig Rd	5.4	А	2.8	Α	5.1	А	2.4	A	
	Northbound Approach	85.4	F	54.5	F					
	Northbound Left Turn					40.3	E	54.0	F	
	Northbound Right Turn					77.6	F	32.4	D	
2.	SR 12-121/Old Sonoma Rd	56.0	E	44.2	D	56.4	E	46.2	D	

Notes: Delay is measured in average seconds per vehicle; LOS = Level of Service; Results for minor approaches to two-way stop-controlled intersections are indicated in *italics;* ** = delay greater than 120 seconds; **Bold** text = deficient operation

Finding – Upon the addition of the project-related traffic to the Existing volumes, and with the proposed improvements at SR 12-121/Duhig Road, both study intersections would be expected to continue operating at LOS F during one or both peak hours, but traffic delays on the northbound Duhig Road approach to SR 12-121 would be reduced due to the addition of the separate turn lanes.. Project trips at SR 12-121/Old Sonoma Road would comprise 0.42 percent of the total entering volumes during the p.m. peak hour, which does not meet the one percent threshold. Therefore, the impact at this location is less-than-significant.

Existing plus Approved plus Project Conditions

With the addition of project trips to Existing plus Approved conditions, the intersection of SR 12-121/Duhig Road would be expected to continue operating at LOS F during both peak hours on the northbound approach. SR 12-121/Old Sonoma Road would be expected to operate at LOS E during the weekday p.m. peak period and LOS D during the weekend midday peak period with the addition of project trips. These results are summarized in Table 10.



Study Intersection Approach		Existing plus Approved Conditions Weekday PM Weekend Midday Peak Peak		kday PM Weekend Midday We		Existing Weekd Pe	lay PM	oroved plu Weekend Pe	l Midday
		Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS
1.	SR 12-121/Duhig Rd	7.2	Α	3.6	А	5.9	А	2.7	Α
	Northbound Approach	110.5	F	68.1	F				
	Northbound Left Turn					43.7	E	61.4	F
	Northbound Right Turn					88.4	F	35.0	E
2.	SR 12-121/Old Sonoma Rd	56.6	E	49.5	D	57.0	E	51.6	D

Table 10 - Existing plus Approved and Existing plus Approved plus Project Peak Hour Levels of Service

Notes: Delay is measured in average seconds per vehicle; LOS = Level of Service; Results for minor approaches to two-way stop-controlled intersections are indicated in *italics;* ** = delay greater than 120 seconds; **Bold** text = deficient operation

Finding – Delays on the northbound approach to the intersection of SR 12-121/Duhig Road would be expected to decrease with the addition of project generated trips as well as the proposed improvements, resulting in a less-than-significant impact. The intersection of SR 12-121/Old Sonoma Road would be expected to continue operating at LOS E during the weekday p.m. peak hour and LOS D during the weekend midday peak hour with the addition of project trips. Project generated trips would be 0.41 percent of the total entering volumes during the weekday p.m. peak hour and solution of the total entering volumes during the weekday p.m. peak hour and solution of the total entering volumes during the weekday p.m. peak hour and would therefore cause a less-than-significant impact under the applicable standards.

Future plus Project Conditions

Upon the addition of project-generated traffic to the anticipated Future volumes, the intersection of SR 12-121/Duhig Road would be expected to operate at LOS F on the stop-controlled Duhig Road approach during both peak hours studied. The intersection of SR 12-121/Old Sonoma Road would be expected to continue to operate at LOS F during both peak periods. The Future plus Project operating conditions are summarized in Table 11.

Stu	udy Intersection		Future (Conditions			Future p	lus Project		
	Approach	ach Weekday PM Peak		Weekend Pe		Weekd Pe	Contraction of the second		Weekend Midday Peak	
		Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	
1.	SR 12-121/Duhig Rd	22.6	С	7.3	A	18.3	с	3.9	Α	
	Northbound Approach	343	F	134	F					
	Northbound Left Turn					63.2	F	89.4	F	
	Northbound Right Turn					282.5	F	46.4	E	
2.	SR 12-121/Old Sonoma Rd	102.1	F	65.5	Ε	102.7	F	67.8	E	

Notes: Delay is measured in average seconds per vehicle; LOS = Level of Service; Results for minor approaches to two-way stop-controlled intersections are indicated in *italics;* **Bold** text = deficient operation

Finding – The intersection of SR 12-121/Duhig Road would be expected to operate with lower delays upon adding both the project generated trips and planned improvements, resulting in a less-than-significant impact.



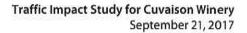
Finding – The intersection of SR 12-121/Old Sonoma Road would continue to operate unacceptably at LOS F during the weekday p.m. peak hour and at LOS E during the weekend midday peak hour with the addition of project-generated trips. The project's impact would be significant if it contributes five percent or more of the increase in traffic over existing volumes, and this project's trips are equal to 2.34 percent of the difference between cumulative and existing volumes at 12-121/Old Sonoma Road during the weekday p.m. peak hour and 4.72 percent during the weekend midday peak hour. This is considered a less-than-significant impact under the County's standards.

Queuing

Unsignalized Intersection

Westbound left-turn and northbound approach storage at SR 12/Duhig Road were determined using a methodology contained in "Estimating Maximum Queue Length at Unsignalized Intersections," John T. Gard, *ITE Journal*, November 2001. With weekend midday existing volumes, the northbound queue is estimated to be seven vehicles, or about 175 feet in length and the westbound left-turn queue is three vehicles, or 75 feet in length. Based on weekend midday peak hour volumes with guests leaving a special event in the same hour, the maximum queue on northbound Duhig Road was determined to be 11 vehicles, or about a 275-foot queue. The closest driveways on Duhig Road to SR 12 are 650 feet from the intersection, so the existing space is adequate for the maximum queue on westbound SR 12-121 is expected to remain at three vehicles, or 75 feet in length. The left-turn pocket is more than 200 feet in length and long enough to accommodate a queue of about eight vehicles. It should be noted that the end of an event would likely be later in the day, when the through volumes on SR 12 would be lower, resulting in more opportunities for both westbound and northbound vehicles to find a gap in traffic and make a left turn. The queuing analysis is included in Appendix C.

Finding – The northbound queue length is expected to increase by 100 feet on a weekend during the midday with the addition of special-event traffic from the project. The distance along Duhig Road between SR 12 and the first driveways is 650 feet, so there is more than adequate space for queuing without impacting any driveways. For the westbound left-turn queues, the 200-foot left-turn pocket is adequate for the maximum projected queue length of 75 feet.





Access and Circulation

Site Access

Cuvaison Winery is currently accessed by an existing private driveway that connects to Duhig Road.

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 Duhig Road at the project driveway was evaluated based on sight distance criteria contained in the *Highway Design Manual* published by Caltrans. The recommended sight distance for minor street approaches that are either a private road or a driveway is based on stopping sight distance for the approach travel speeds. 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 the stopping sight distance criterion and the approach speed on the major street.

Sight distance along Duhig Road in both directions from the driveway is clear for more than 600 feet, which exceeds the minimum sight distance required for vehicles traveling 50 mph. Similarly, drivers on Duhig Road will have visibility of a vehicle stopped to turn left into the driveway for more than 600 feet, which is also adequate.

Finding – Stopping sight distance at the project driveway is adequate to meet the applied criteria from the HDM for both entering and exiting movements.

Recommendation – Because landscaping and signs can impede clear sight lines, any new plantings or signs should be designed to ensure that adequate sight lines will be maintained.

On-Site Circulation

The site layout is not changing with the addition of tasting room visitors or special events. A review of the site plan indicates adequate space for vehicle and truck circulation. The site plan is provided in Figure 3.

Access Analysis

Left-Turn Lane Warrant

The need for a left-turn lane on Duhig Road at the project driveway was evaluated based on criteria contained in the *Napa County Road and Street Standards*, 2016. Duhig Road near the project driveway has an approximate daily volume (ADT) on weekdays of 1,952. The Cuvaison winery is expected to experience a driveway ADT of 229 on weekdays. Using the County's criteria, a left-turn lane is warranted on Duhig Road at the project driveway. However, an exception is being pursued that includes provision of separate left- and right-turn lanes on the Duhig Road approach to SR 12/121 that will improve operation of that intersection. The left-turn lane warrant calculations are provided in Appendix E.



WW-Trans

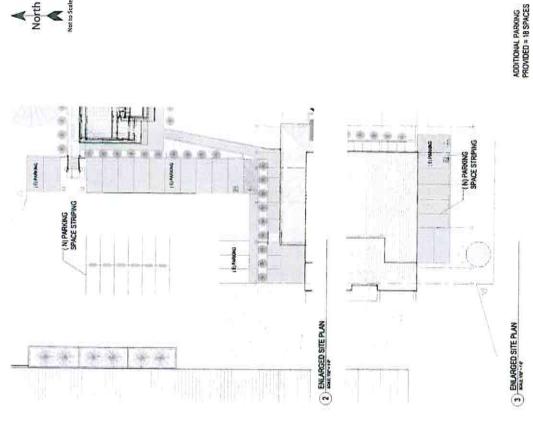
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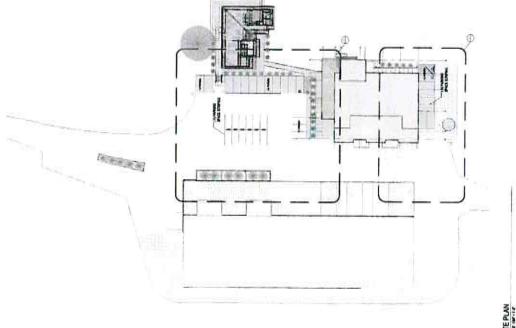
Traffic Impact Study for Cuvaison Winery Figure 3 – Site Plan

Source: Gould Evans 10/15









Conclusions and Recommendations

Conclusions

- The intersection of SR 121-Old Sonoma Road experienced collisions at a rate slightly higher than the statewide average. The limited number of trips that would be added by the project can reasonably be expected to have no impact on the crash rate or frequency as the average delay increases by a maximum of two seconds – a change that would be imperceptible to drivers.
- The proposed winery would be expected to generate an average of 134 new daily trips on weekdays, including 24 trips during the weekday p.m. peak hour, and 129 new trips on a Saturday, including 39 trips during the peak hour.
- A total of 38 annual wine marketing and agricultural promotion events are proposed as part of the project, including 24 events for 60 guests and 14 events for 200 guests. It was assumed that a maximum-sized 200person event would require a staff of 10 in addition to any winery staff that would also assist with the event.
- As part of the project, improvements at the intersection of SR 12-121/Duhig Road are proposed to provide separate left-turn and right-turn lanes on the Duhig Road approach.
- The study intersection of SR 12-121/Duhig Road is currently operating unacceptably at LOS F on the Duhig Road approach during both peak periods. SR 12-121/Old Sonoma Road is operating unacceptably under Existing conditions at LOS E during the weekday p.m. peak hour and acceptably during the weekend midday peak hour at LOS D.
- Under Existing plus Project conditions, delay would decrease at SR 12-121/Duhig Road. Project trips at SR 12-121/Old Sonoma Road would make up 0.42 percent of the total entering volumes during the p.m. peak hour, which is a less-than-significant impact under the County's policies.
- Under Existing plus Approved conditions, both study intersections are expected to continue to operate at the same levels of service as under Existing conditions. With the addition of project-generated trips, SR 12-12/Duhig Road would be expected to operate with lower delays during both peak hours due to the addition of the separate turn lanes on Duhig Road. The intersection of SR 12-121/Old Sonoma Road would be expected to operate at LOS E during the weekday p.m. peak hour and LOS D during the weekend midday peak hour.
- Under Existing plus Approved plus Project conditions, project trips at SR 12-121/Old Sonoma Road would
 make up 0.41 percent of the total entering volumes during the p.m. peak hour, which is a less-than-significant
 impact under the County's policies.
- Under Future conditions, the intersection of SR 12-121/Duhig Road is expected to operate at LOS F on the Duhig Road approach. With the addition of project generated trips, the intersection is expected to operate at lower delays due to the additional capacity that would be added by the project.
- The intersection of SR 12-121/Old Sonoma Road is expected to operate at LOS E during the weekday p.m. peak
 hour and LOS F during the weekend midday peak hour under Future conditions. With the addition of projectgenerated trips, the intersection is expected to continue operating at the same levels of service as without.
- The project would have a less-than-significant impact at SR 12-121/Old Sonoma Road during the weekday p.m. peak period, with the project trips being 2.34 percent of the difference between Future and Existing



volumes. The project would also have a less-than-significant impact during the weekend midday peak period with the project trips being 4.72 percent of the difference between Future and Existing volumes.

- Queuing on Duhig Road at SR 12 is expected to extend to 250 feet under weekend midday existing plus special event volumes, leaving about 400 feet between the end of the queue and the closest driveways. The westbound left-turn pocket on SR 12-121 is expected to accommodate the maximum queue with eventadded traffic.
- Stopping sight distance at the project driveway is adequate to meet the applied criteria from HDM for both entering and exiting movements.

Recommendations

 Because landscaping and signs can impede clear sight lines, any new plantings or signs should be designed to ensure that adequate sight lines will be maintained.



Study Participants and References

Study Participants

Principal in Charge	Da
Assistant Engineer	Lau
Editing/Formatting/Graphics	An

Dalene J. Whitlock, PE, PTOE Lauren Davini, PE Angela McCoy

References

2013 Collision Data on California State Highways, California Department of Transportation, 2016 Guidelines for Interpretation of General Plan Circulation Policies on Significance Criteria, Fehr & Peers, 2015 Highway Capacity Manual, Transportation Research Board, 2010 Highway Design Manual, 6th Edition, California Department of Transportation, 2012 Napa County General Plan, County of Napa, 2013 Napa County Road and Street Standards, County of Napa, 2016 Statewide Integrated Traffic Records System (SWITRS), California Highway Patrol, 2010-2015

NAX104





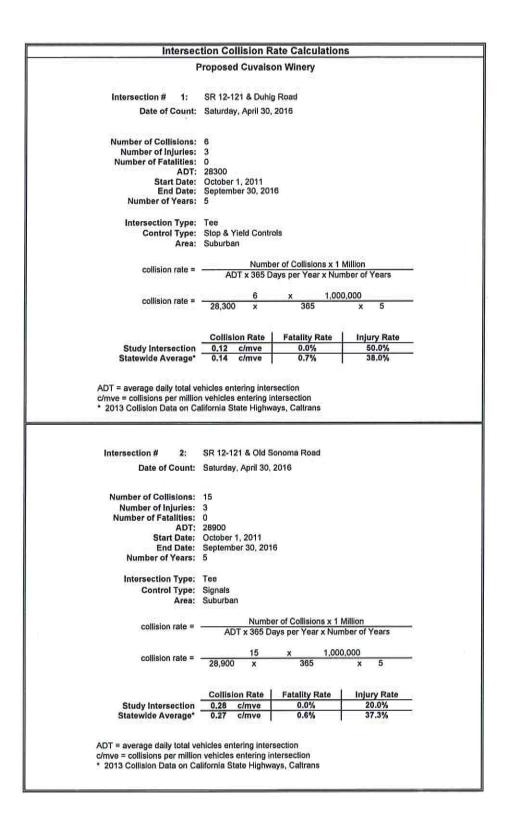
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Appendix A

Collision Rate Calculations



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Appendix **B**

Duhig Road ADT Counts



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Prepared by NDS/ATD VOLUME

Dughig Rd E/O Dwy to Cuvaison Winery

Day: Saturday Date: 9/17/2016

7 - 9 Pk Volume

Pk Hr Factor

City: Napa Project #: CA16_7643_001

105

0.691

154

0.875

259

0.820

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00:45		1	7	1	18	2	25	12:45				26	125	28	125	54	25
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01:15		0		2		2		13:15				29		27		56	
01:30		2	8	1		3	10.12	13:30				36		30		66	
01:45		0	2	0	4	0	6	13:45				28	120	42	126	70	24
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M Pk Volume			135		121		256	PM Pk Volume					128		166		29
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- 9 Volume	0 p-		59		46		105	4 - 6 Volume					153		282		435
9 Peak Hour			07:30		07:45		07:30	4 - 6 Peak Hour					16:00		16:00		16:0
- 9 Pk Volume			33		27		58	4 - 6 Pk Volume					105		154		259

4 - 6 Pk Volume

Pk Hr Factor

58

0.725

33 0.550

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27

0.675

Prepared by NDS/ATD VOLUME Dughig Rd E/O Dwy to Cuvaison Winery

Day: Sunday Date: 9/18/2016

Date:	9/18/2016										Project	#: CA16_	7643_00	1		
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04:30		0		1		1		16:30			23		25		48	
04:45		0		0	1	0	1	16:45			15	74		100	37	1
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AM Peak Hour	10:30	11:45	11:45	PM Peak Hour	13:45	18:15	18:15
AM Pk Volume	89	89	162	PM Pk Volume	106	136	200
Pk Hr Factor	0.824	0.795	0.844	Pk Hr Factor	0.803	0.791	0.847
7 - 9 Volume	41	32	73	4 - 6 Volume	111	205	316
7 - 9 Peak Hour	08:00	08:00	08:00	4 - 6 Peak Hour	16:00	17:00	16:00
7 - 9 Pk Volume	23	19	42	4 - 6 Pk Volume	74	105	174
Pk Hr Factor	0.523	0.679	0.583	Pk Hr Factor	0.804	0.709	0.906

Prepared by NDS/ATD VOLUME Dughig Rd E/O Dwy to Cuvaison Winery

Day: Monday Date: 9/19/2016

Date.	5/19/2010										Project	#: CA16_	_/043_0	101		
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00:15		0		0		0		12:15			13		17		30	
00:30		1	323	3	-24	4		12:30			21		15		36	
00:45		0	4	0	3	0	7	12:45			17	65	21	72	38	13
01:00		1		0		1		13:00			18		12		30	
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02:30		1		7		8		14:30			15		15	8853	30	
02:45		2	7	2	21	4	28	14:45			9	53	17	59	26	11
03:00		1		9		10		15:00			17		22		39	
03:15		4		14		18		15:15			15		19		34	
03:30		3		23		26		15:30			7		17		24	
03:45		0	8	7	53	7	61	15:45			19	58	27	85	46	14
04:00		1		2		3		16:00			15	1.172517	29	2010	44	
04:15		1		2		3		16:15			12		21		33	
04:30		1		1		2	a set of	16:30			8		15		23	
04:45		4	7	3	8	7	15	16:45			15	50	29	94	44	14
05:00		6		5		11		17:00	V.		17		29		46	
05:15		5		9		14		17:15			9		24	10.0	33	
05:30		13		8		21		17:30			14		22		37	
05:45		22	46	9	31	31	77	17:45			11	51	23 21	97	32	148
06:00		14	-10	4		18	- 11	18:00			5	- 24	20	31	25	14
06:15		7		5		12		18:15			13		5		18	
06:30		22		9		31		18:30			15					
06:45		21	64	3	21	24	85	18:45			22	EC	11 2	20	27	04
07:00		11	04	4	41	15	03	19:00				56		38	24	94
07:15								19:15			18		3		21	
07:30		5		11		16					14		5		19	
		14	22	5	20	19	C A	19:30			5	82.20	5	10.02	10	282
07:45		3	33	8	28	11	61	19:45			3	40	3	16	6	56
08:00		6		2		8		20:00			4		2		6	
08:15		16		8		24		20:15			0		1		1	
08:30		10	1220	11	1993	21	38	20:30			4	2.3	1	- S - 1	5	
08:45		11	43	6	27	17	70	20:45			8	16	2	6	10	22
09:00		7		7		14	1.1.1	21:00			12		5		17	
09:15		12		7		19		21:15			11		1		12	
09:30		21		6	0.000	27		21:30			2		1		3	
09:45		24	64	9	29	33	93	21:45			0	25	0	7	0	32
10:00		22		9		31		22:00			1		1		2	
10:15		16		19		35		22:15			1		0		1	
10:30		16		26	-58	42	D0G-S8L	22:30			3		з		6	
10:45		11	65	17	71	28	136	22:45			6	11	2	6	6 8	17
11:00		25		20		45		23:00			0		2	-	2	
11:15		10		15		25		23:15			2		1		3	
11:30		24		15		39		23:30			1		1	- 1	2	
11:45		14	73	23	73	37	146	23:45			2	5	Ó	4	2	9
TOTALS			416		386		802	TOTALS				494		543	-	103
SPLIT %		-	51.9%		48.1%		43.6%	SPLIT %				47.6%		52.4%	-	56.4
والبيد متجدد	A STATE OF THE OWNER OF THE OWNER			NB		SB		EB		VB			-		Te	otal
	DAILY TOTALS			0	-	0		910	and it is not set of the	29						839
					10.10						A COLUMN TWO IS NOT		-			
M Peak Hour			09:30		10:15		10:15	PM Peak Hour				12:30		16:45		16:4

AM Peak Hour	09:30	10:15	10:15	PM Peak Hour	12:30	16:45	16:45
AM Pk Volume	83	82	150	PM Pk Volume	73	105	160
Pk Hr Factor	0.865	0,788	0.833	Pk Hr Factor	0.869	0.905	0.870
7 - 9 Volume	76	55	131	4 - 6 Volume	101	191	292
7 - 9 Peak Hour	08:00	07:45	08:00	4 - 6 Peak Hour	16:45	16:45	16:45
7 - 9 Pk Volume	43	29	70	4 - 6 Pk Volume	55	105	160
Pk Hr Factor	0.672	0.659	0.729	Pk Hr Factor	0.809	0.905	0.870

Prepared by NDS/ATD

Dughig Rd E/O Dwy to Cuvaison Winery

Day: Tuesday Date: 9/20/2016

uu,	5/20/2010			CHT.			_						#. CAIO_				
	DAILY TOTALS	A set	R. 114	NB		SB		EB		WB	The all		42.31	1,14			otal
	DAILT TOTALS	N.IVAN	IN S.	0		0		950		1,049					ALCO	1,	999
AM Period	NB SB	EB	1.0	WB		TO	TAL	PM Period	NB	i i i i i i	SB	n Lind 🖬	ST-11-12	WB		TC	DTAL
00:00		0		0		0		12:00				13		15		28	100 m
00:15		0		0		0		12:15				17		13		30	
00:30		0	18	0		0	-	12:30				24		21	22	45	152.22
00:45		3	3	0		3	3	12:45	_	_	_	24		19	68	43	146
01:00		2		0		2		13:00				21		19		40	
01:15		8		4		12		13:15 13:30				22		20		42 22	
01:30 01:45		6 0	16	1	7	7 2	23	13:45				14 18		8 16	63	34	138
02:00		1	10	8		9	23	14:00			_	14		26	05	40	130
02:15		2		14		16		14:15				18		13		31	
02:30		ĩ		8		9		14:30				21		31		52	
02:45		ô	4	5	35	5	39	14:45				12		19	89	31	154
03:00		ő		14	2.2	14	22	15:00				14		22		36	
03:15		2		19		21		15:15				13		18		31	
03:30		ĩ		5		6		15:30				18		28		46	
03:45		ź	5	4	42	6	47	15:45				17	62	22	90	39	152
04:00		1	- 25	6	- 33	7	0.2-11	16:00				9		48		57	
04:15		1		1		2 .	611	16:15				17		37	-	54	
04:30		7		5	1000	12		16:30				8		45	1000	53	
04:45		4	13	3	15	7	28	16:45				12	46	31	161	43	207
05:00		4		5		9		17:00				8		30		38	
05:15		8		12		20		17:15				12		20		32	
05:30		14		6		20		17:30				14		25		39	
05:45		24	50	12	35	36	85	17:45				16	50	18	93	34	143
06:00		12		8	10.3	20		18:00				7		18	100	25	
06:15		7		10		17		18:15				7		14		21	
06:30		12	0535	8	1938	20	140	18:30				13	1227	29	00000	42	13.252
06:45		22	53	7	33	29	86	18:45	_			22	49	9	70	31	119
07:00		11		4		15		19:00				15		1		16	
07:15		8		7		15		19:15				11		0		11	
07:30		8		12	~ ~	20	-	19:30				4		4		8	40
07:45		12	39	11	34	23	73	19:45	_		_	5	35	3	8	8	43
08:00		12		12		24		20:00				5		3		8	
08:15		9		47		13		20:15				8		4		12	
08:30		8	43	ś	28	15	70	20:30				7	26	4	11	11 6	37
08:45		13	42	9	28	18 20	10	20:45 21:00		_	_	19	20	1	11	20	37
09:00		11		9		17		21:15				13		3		16	
09:15 09:30		8 15		12		27		21:30				2		2		4	
09:45		27	61	3	33	30	94	21:45				3	37	1	7	4	44
10:00		18	01	13	33	31	34	22:00	-	_		3		1		4	
10:15		11		12		23		22:15				3		4		7	
10:30		22		12		34		22:30				ĩ		3		4	
10:45		15	66	15	52	30	118	22:45				ō	7	1	9	1	16
11:00		18	00	11		29		23:00				0		1		1	
11:15		13		9		22		23:15				õ		1		1	
11:30		18		17		35		23:30				3		3		6	
11:45		16	65	24	61	40	126	23:45				0	3	Ö	5	0	8
TOTALS			417		375		792	TOTALS					533		674		1207
SPLIT %			52.7%		47.3%		39.6%	SPLIT %	-				44.2%	-	55.8%		60.4%
		-	32.775		17.270				_		_	-		_		100	
	DAILY TOTALS			NB 0		SB 0		EB 950		WB						and the second se	otal 999
				0		0		950		1,049		10.11		1990		1,	
AM Peak Hour			09:45		11:45		11:45	PM Peak Hour				21/22	12:30		16:00		16:00
AM Pk Volume			78		73		143	PM Pk Volume					91		161		207
Pk Hr Factor			0.722		0.760		0.794	Pk Hr Factor					0.948		0.839		0.908
7 - 9 Volume			81		62		143	4 - 6 Volume				0.000	96		254		350
7 - 9 Peak Hour			08:00		07:15		07:15	4 - 6 Peak Hour					17:00		16:00		16:00
7 - 9 Pk Volume			42		42		82	4 - 6 Pk Volume					50		161		207
							CORC/A	Pk Hr Factor									0.908
Pk Hr Factor		-	0,808	-	0.875		0.854	PK HI Pactor	-	-		1	0.781		0.839		0.5

Prepared by NDS/ATD

Dughig Rd E/O Dwy to Cuvaison Winery

Day: Wednesday Date: 9/21/2016

1	DAILY TOTALS			NB	5. T	SB		EB		WB						otal
		1.110		0		0		840	05.05	939			-	1	1,	,779
AM Period	NB SB	EB		WB		and the second se	OTAL	PM Period	NB		B	EB	WB			DTAL
00:00		0	19 m B	0	_	0	a com	12:00				15	18		33	
00:15		2		2		4		12:15				11	12		23	
00:30		1	0.23	3	2	4	197425	12:30				9	20	22763	29	01/94
00:45		2	5	0	5	2	10	12:45				18 53	9	59	27	112
01:00		7		0		7		13:00				18	19		37	
01:15		1		2		3		13:15				18	17		35	
01:30		3		2		5		13:30				19	10		29	
01:45		0	11	8	12	8	23	13:45				13 68	11	57	24	125
02:00		4		3		7		14:00				21	18		39	
02:15		2		8		10		14:15				11	18		29	
02:30		1	122	4	122.22	5	20	14:30				19	21	12232	40	1 2/22
02:45		1	8	5	20	6	28	14:45		_		20 71	15	72	35	143
03:00		3		1		4		15:00				11	14		25	
03:15		4		6		10		15:15				14	10		24	
03:30		3		5		8		15:30				13	29		42	
03:45		3	13	27	39	30	52	15:45				11 49	26	79	37	128
04:00		0		11		11		16:00	_			9	20		29	
04:15		1		4		5		16:15	100			16	25		41	
04:30		2	100	5	1929	7		16:30				14	30	144	44	-
04:45		6	9	10	30	16	39	16:45		10 A 10		14 53	24	99	38	152
05:00		6		12		18		17:00				10	22		32	
05:15		4		16		20		17:15				6	29		35	
05:30		16	1000	6		22		17:30				5	33		38	
05:45		25	51	3	37	28	88	17:45	_			4 25	18	102	22	127
06:00		13		5		18		18:00				7	20		27	
06:15		13		9		22		18:15				0	20		20	
06:30		21	1996	2	1222	23	44	18:30				5	8		13	
06:45		24	71	11	27	35	98	18:45				3 15	5	53	8	68
07:00		13		16		29		19:00				5	6		11	
07:15		12		11		23		19:15				3	2		5	
07:30		6	20	6	10	12	70	19:30				6	1	1.2	7	
07:45		8	39	7	40	15	79	19:45 20:00				4 18 2	4	13	8	31
08:00				6				20:00				4	0		25	
08:15 08:30		20		6		26		20:15				5	1		7	
		13	F.7	11	33	24 27	90	20:30				9 20	1	4	10	24
08:45		<u>17</u> 9	57	<u>10</u> 5	33		90	20:45						4	14	24
09:00 09:15						14		21:15				12	2		9	
09:15		14 17		12 12		26 29		21:30				8 1	1		2	
09:45		11	51	18	47	29	98	21:45				1 22	ô	4	1	26
10:00		17	51	7	47	29	98	22:00	**			1 22	0	4	1	20
10:00		16		10		24		22:00				1	2		3	
10:15		14		10		20	-	22:30				2	ź		4	
10:45		16	63	8	33	24	96	22:45				1 5	- 1	5	2	10
11:00		17	03	19	22	36	50	23:00				0	0		0	10
11:15		15		19		33		23:15				0	ő		ő	
11:30		11		14		25		23:30				2	ő		2	
11:45		16	59	17	68	33	127	23:45				2 4	1	1	3	5
TOTALS		10	437	46	391	33	828	TOTALS				403	-	548	-	951
		-		-	THE SALE			A CONTRACTOR				157		TAC SOLARS		10000
SPLIT %			52.8%		47.2%		46.5%	SPLIT %				42.4%	<u> </u>	57.6%	1	53.59
Contraction of the	-			NB		SB	C E. Coulé	EB	1000	WB		- Wayte		74 H A	To	ota

	DAILY TOTALS -	NB	SB	EB	WB			Total	
	DAILY TOTALS		0	0	840	939			1,779
AM Peak Hour		05:45	11:00	11:00	PM Peak Hour	1	12:45	16:45	16:15
AM Pk Volume		72	68	127	PM Pk Volume		73	108	155
Pk Hr Factor	a sub-state of the second	0.720	0.895	0.882	Pk Hr Factor		0.961	0.818	0.881
7 - 9 Volume		96	73	169	4 - 6 Volume		78	201	279
7 - 9 Peak Hour		08:00	07:00	08:00	4 - 6 Peak Hour		16:15	16:45	16:15
7 - 9 Pk Volume		57	40	90	4 - 6 Pk Volume		54	108	155
Pk Hr Factor	and the second second second	0.713	0.625	0.833	Pk Hr Factor	and the second second	0.844	0.818	0.881

Prepared by NDS/ATD VOLUME Dughig Rd E/O Dwy to Cuvaison Winery

Day: Thursday Date: 9/22/2016

Date:	9/22/2016											Project	#: CA16_	7643_(001		
	DAILY TOTALS	No.	14.9	NB		SB	Week ter	EB		WB		NET TO		250			otal
	DAILT TOTALS		10	0		0		895		957		d own				1,	,852
AM Period	NB SB	EB		WB	8 II - T	T	OTAL	PM Period	NB		SB	EB	ni da	WB		TC	OTAL
00:00		0		0		0		12:00				18		23		41	
00:15		0		0		0		12:15				21		19		40	
00:30 00:45		0		0		0		12:30 12:45				17		12		29	4.5
01:00		<u> </u>	_	0		0	-	12:45	-			31	87	13 20	67	44	15
01:15		5 2		7		5		13:15				20 23		20		40 50	
01:30		ō		1		1		13:30				23		24		45	
01:45		õ	7	1	9	1	16	13:45				17	81	20	91	37	17
02:00		1		Ő		1		14:00				11		14		25	
02:15		0		0		0		14:15				16		24		40	
02:30		1		1		2		14:30				16		21	03.52	37	
02:45	á	0	2	1	2	1	4	14:45				19	62	16	75	35	13
03:00		1		2		3		15:00				10		22		32	
03:15		3 0		0		3		15:15				19		16		35	
03:30		0	144.1	3		3		15:30				20	1000	23		43	50000
03:45		2	6	2	7	4	13	15:45			_	11	60	27 29	88	38	14
04:00		04		2		2		16:00 16:15				16		29		45	
04:30		5		2 2		6 7		16:15				16 10		20 28		36	
04:45		3	12	7	13	10	25	16:45				12	54	32	109	38 44	16
05:00		4	16	5		9	6.0	17:00	1000			12	54	29	105	41	10.
05:15		6		6		12		17:15				12		34		46	
05:30		11				14		17:30				7		41		48	
05:45		21	42	3 7	21	28	63	17:45				3	34	29	133	32	16
06:00		10		6		16	1000	18:00				4	1.11	18		22	
06:15		12		4		16		18:15				7		19		26	
06:30		14		10 5		24		18:30				8		14	325	22	
06:45		26	62		25	31	87	18:45				5	24	11	62	16	86
07:00		9		5		14		19:00				7		4	_	11	
07:15		6		6		12		19:15				7		0		7	
07:30 07:45		14 5	34	8	26	21	60	19:30 19:45				3	20	7	200	10	25
08:00		9	- 54	10	20	13 19	60	20:00				5	20	4	15	7	35
08:15		10		10		20		20:15				6		3		9	
08:30		14		12		26		20:30				11		2		13	
08:45		11	44	6	38	17	82	20:45				3	25	ĩ	11	4	36
09:00		9		8		17		21:00				13		0	**	13	
09:15		11		11		22		21:15				8		2		10	
09:30		16		6		22		21:30				0		2			
09:45		15	51	17	42	32	93	21:45		_		4	25	3	7	27	32
10:00		15		5		20		22:00				1		4		5	0.0-
10:15		21		18		39		22:15				3		2		5	
10:30		22	132	14	32	36		22:30				1	2	2	1.1	532	
10:45		19	77	15	52	34	129	22:45			_	2	7	0	8		15
11:00 11:15		16 18		12 10		28 28		23:00 23:15				1		2		3	
11:30		22		9		31		23:15				1		2 3		3	
11:45		20	76	17	48	37	124	23:45				1	з	1	8	3 2	11
TOTALS		20	413		283	31	696	TOTALS				1	482	+	674		115
SPLIT %	the second		59.3%		40.7%		37.6%	SPLIT %			-		41.7%		58.3%		62.4
					ALLE LANSA	00			-		-	_		_		- 240	
	DAILY TOTALS			NB 0		SB 0		EB 895		NB 157							otal 852
					-	0	-						- 19-14			1,0	-
AM Peak Hour			11:30		11:45		11:30	PM Peak Hour					12:45		16:45		12:4
M Pk Volume			81		71		149	PM Pk Volume					95		136		17
Pk Hr Factor		Contraction of the	0.920	1.1	0.772	100	0.909	Pk Hr Factor	A			-	0.766		0.829		0,89
7 - 9 Volume			78		64		142	4 - 6 Volume					88		242		330
- 9 Peak Hour			08:00		07:45		08:00	4 - 6 Peak Hour					16:00		16:45		16:4
- break nour																	
- 9 Pk Volume			44		40		82	4 - 6 Pk Volume					54		136		179

Prepared by ND5/ATD VOLUME

Dughig Rd E/O Dwy to Cuvaison Winery

Day: Friday Date: 9/23/2016

7 - 9 Peak Hour

7 - 9 Pk Volume

Pk Hr Factor

07:30

47 0.904 07:00

34 0.850 07:00

75

0.815

4 - 6 Peak Hour

4 - 6 Pk Volume

Pk Hr Factor

City: Napa Project #: CA16_7643_001

16:15

79 0.731 17:00

188

0.940

16:45

241

0.941

BLEEP	DAILY TOTALS	No.		NB		SB		EB		WB		BULARY			- 4,54		otal
Ne de Rit	DAIETTOTALS		1.16	0		0		1,174	i Talata	1,348	ê ya kati ka în		1)04	115		2,	,522
AM Period	NB SB	EB		WB		TOT	TAL	PM Period	NB	157 T. 11-	SB	EB		WB			DTAL
00:00		1		1		2		12:00				40		19		59	
00:15		0		2		2		12:15				21		41		62	
00:30		1	0	4	29.0	5		12:30				22		35	10030000	57	0000
00:45		2	4	2	9	4	13	12:45		_		37	120	25	120	62	24
01:00		1		2		3		13:00				28		24		52	
01:15		0		0		0		13:15				23		32		55	
01:30		0		0		0		13:30				16		20		36	
01:45		0	1	0	2	0	3	13:45				17	84	17	93	34	17
02:00		1		0		1		14:00				26		28		54	
02:15		6		0		6		14:15				27		28		55	
02:30		0		2		2		14:30				25		27	100.00001	52	
02:45		0	7	0	2	0	9	14:45				15	93	34	117	49	21
03:00		0		1		1		15:00				18		30	CC 5507	48	
03:15		0		1		1		15:15				15		42		57	
03:30		0		1		1		15:30				22		36		58	
03:45		2	2	5	8	7	10	15:45				15	70	41	149	56	21
04:00		2		4		6		16:00				19		41		60	
04:15		2		ż		4		16:15				16		41		57	
04:30		4		3		7		16:30				15		35		50	
04:45		10	18	10	19	20	37	16:45				27	77	31	148	58	22
05:00		4		3		7		17:00			-	21		43		64	
05:15		4		4		8		17:15				12		47		59	
05:30		10		5		15		17:30				10		50		60	
05:45		28	46	14	26	42	72	17:45				7	50	48	188	55	23
06:00		14	40	5	20	19	12	18:00	-	_	_	8	50	44	100	52	20
		8				18		18:15				11		39		50	
06:15				10													
06:30		12	50	8	20	20	0.0	18:30				15 20	F 4	32	170	47	4.01
06:45		25	59	10	33	35	92	18:45					54	13	128	33	182
07:00		7		7		14		19:00				22		12		34	
07:15		10		10		20	1.1	19:15				14		12		26	
07:30		11	181211	7	-	18		19:30				7		9		16	
07:45		13	41	10	34	23	75	19:45				3	46	3	36	6	82
08:00		10		4		14		20:00				3		1		4	
08:15		13		5		18		20:15				3		1		4	
08:30		7		11	3358	18	-	20:30				7		0	39.9	7	
08:45		17	47	8	28	25	75	20:45			_	7	20	1	3	8	23
09:00		17		12		29		21:00				16		з		19	
09:15		27		8		35		21:15				3		2		5	
09:30		16		13		29		21:30				6		1		7	
09:45		13	73	9	42	22	115	21:45				1	26	1	7	2	33
10:00		23	1630	11	- 2002	34	998943	22:00	· · · · ·			2	1994	2		4	1944.0
10:15		32		9		41	- 51	22:15				1		1		2	
10:30		32		10	100.00	42		22:30				3		0	120	3	
10:45		37	124	11	41	48	165	22:45				2	8	3	6	5	14
11:00		16		20		36		23:00				4		ŏ		4	
11:15		27		20		47		23:15				1		3		4	
11:30		32		30		62		23:30				ź		1		3	
11:45		21	96	33	103	54	199	23:45				1	8	2	6	3	14
TOTALS			518	35	347		865	TOTALS				-	656	-	1001	-	165
SPLIT %			59.9%	-	40.1%		34.3%	SPLIT %		-		_	39.6%		60.4%		65.
					Steriera	-										-	
	DAILY TOTALS			NB 0		SB 0		EB		WB					HEL.		otal 522
				0		ų		1,174		1,348						2,	0ZZ
M Peak Hour			10:00		11:45		11:30	PM Peak Hour					12:00		17:15		16:4
M Pk Volume			124		128		237	PM Pk Volume					120		189		24
Pk Hr Factor	and the second second second		0.838		0.780		0.956	Pk Hr Factor	-	-			0.750		0.945		0.9
7 - 9 Volume	0		88		62		150	4 - 6 Volume		1.30 100			127		336	1	46
- 9 Peak Hour			07:30		07:00		23+00 cm 500 U	4 - 6 Peak Hour					16:15		17:00		16:

Appendix C

Intersection Level of Service and Queuing Calculations



	12-121
HCM 2010 TWSC	1: Duhig Rd & SR

Intersection									
nt Delay, sheh 5.4	+								
Movement		EBT	EBR	8	NBL	WBT	JBN	NBR	
ane Configurations		4			*	4-	3-		
Fraffic Vol, vehih		1247	4		2	1356	6	166	
Future Vol, vehih		1247	4		2	1356	6	166	
Conflicting Peds, #hr		•	0		•	0	0	0	
Sign Control		Free	Free		Free	Free	Stop	Slop	
RT Channelized			Mone			Name	•	None	
Storage Length		X	ų.		215	3	0	1000	
Veh in Median Storage, #		•	1		•	0	0		
Grade, %		•	3.		2	•	0	12	
Peak Hour Factor		8	66		8	8	66	8	
Heavy Vehicles, %		2	2		2	2	2	2	
Armt Flow		1260	4		8	1370	6	168	
Major/Minor	20	Maiort		W	Major2		Minort		
Conflicting Flow All		-	•		1264		2672	1262	
Stage 1		6.6			1	e +	1262	1	
Stage 2		•	•		9	3	1410	1990	
Critical Hiday			N.		4.12	ĸ	6.42	6.22	
Critical Hidary Stg 1		ě	i		٠	¥	5.42	ş	
Critical Hiday Stg 2		(1)	-		(9).		5.42	ŝ	
Follow-up Hdwy		8		2	2.218	ł	3.518	3.318	
Pot Cap-1 Maneuver		1	1		999		25	207	
Stage 1		٠	÷		×	k	266	200	
Stage 2		â	14		1	•	226		
Platoon blocked, %		ŧ	ŝ			R			
Mov Cap-1 Maneuver		Ť	4		550	à	24	207	
Nov Cap-2 Maneuver		18			8	1	120	19-03	
Stage 1		٠	÷		۲	i	266	10.00	
Stage 2		3	35		1	×.	218	•	
Approach		8			WB		9N		
HCM Control Delay, s		•			0.2		85.4		
HCMLOS							u.		
Minor Lane/Mejor Minut	NBLn1	181	EBR	EBR WBL WBT	NBT				
Capacity (veh/h)	200	R		650	8				
HCM1 ane V/C Ratio	0.884	•		0.037	3				

Major/Minor	A	Major1		~	Major2		Minor1		
Conflicting Flow All		•	•		1264		2672	1262	
Stage 1		6			•	•	1262	ł	
Stage 2			•		9		1410	300	
Critical Hdmy		1			4.12		6.42	6.22	
Critical Hidary Stg 1		ě	•		۲	X	5.42	ş	
Critical Hiday Stg 2		(1)	•		(9)		5.42	ŝ	
Fallow-up Hdwy		8			2.218		3.518	3.318	
Pot Cap-1 Maneuver			4		550		25	207	
Stage 1		٠	۴		×	ł	266	21 • 5	
Stage 2		9	4				226	3	
Platoon blocked, %		6	ř			ş			
Mov Cap-1 Maneuver		ÿ	÷		550	a	24	207	
Mov Cap-2 Maneuver		10	•		8	8	120	1990	
Stage 1		ð	÷		•	x.	266	10.00	
Stage 2		3	4		30	a.	218	ŝ	
Approach		8			WB		8N		
HCM Control Delay, s HCM LOS		0	E.		0.2		85.4 F		
Minor Lane/Major Munt	NBLn1	Ē	EBT EBR WBL WBT	MBI	WBT				
Capacity (weh/h)	200	18		650	8				
HCM Lane V/C Ratio	0.884	•	•	0.037	2				
HCM Control Delay [s]	85.4	30) 30)	4	11.8	E				
HCM Lane LOS	ш.		٠	8	,				
HCM 95th %6ie Q(veh)	6.8	4	34	0.1	9				

inor Lane/Major Mymt	NBLAT EBT EBR WBL WBT		EBR	IBM	WBT	
apacity (veh/h)	200	÷		650		
CM Lane V/C Ratio	0.884	•	•	0.037		
CM Control Delay [s]	85.4	50 	•	11.8	-16	
CMLane LOS	ш.		÷	8	,	
CIM 95th %bie Q(veh)	6.8	4	3	0.1	3	

Cuvaison Winery Traffic Study Weekday PM Existing

Synchro 8 Report W-Trans

HCM 2010 TWSC 1: Duhig Rd & SR 12-121

04/11/2017

mensection.									
mt Delay, sheh 2.8	8								
Wovement .		EBT	留		NBI	WBT	18V	NBR	
Lane Configurations		•2			*	*	*		
Fraffic Vol, vehilt		1079	8		19	1282	12	25	
Inture Vol, vehh		1079	8		19	1282	12	8	
Conflicting Peds, #hr		0	•		•	•	0	•	
Sign Control		Free	Free		Free	Free	Stop	Stop	
RT Channelized			None			None	•	None	
Storage Length		£	÷		215	ĸ	0		
/eh in Median Storage, #		•			2	0	0	1	
Srade, %		•	2		8	•	0	•	
Peak Hour Factor		8	8		36	95	95	8	
Heavy Vehicles, %		~	2		2	2	2	2	
Mumt Flow		1136	83		6	1349	28	81	
Medicalities	N	Mainel		1	Contraction		Minert		
Confection Flow All		0	e		1400	e	1 Million	4469	
Since 1					001		0407	7011	
Clane 7		•	•		1	1	7011		
Critical Holan		0.3	83		140	63	1051		
Mand Litters Che 4		٠	÷		4.14	•	780	770	
Amount of a		÷	2		\$	ŝ	5.42	i	
7 fire Junuar provin)	•		1		5.42	1	
		£.	Ē		2218	ų,	3.518	3.318	
TOLICAP-1 MANBUNET		÷	•		386	,	R -	237	
ciage 1		•	7		£	x	298	ł	
Slage 2		£	÷		2	ŝ	205		
Platoon blocked, %		1	8			92			
Nov Cap-1 Maneuver		Ð.	÷		588	e	-23	162	
Mov Cap-2 Maneuver		4	4		ŝ	5	114	ð	
Slage 1		e			1	æ	286	•	
Slage 2		•			3	4		Ú.	
Antonech		Ħ			MP.		- UN		
Concentration of the		1					200		
HCM LOS		•			8		g		
Mitor LaneMajor Mitth	NBLInt	18	臣	TBM	WBT				
Capacity (vehilit)	190	•	•	588	3				
HCM Lane VIC Ratio	0.659	R	-	0.115	.2				
HCM Control Delay (s)	54.5	٠	4	11.9	9				
HCM Lane LOS	u.	ł	ĥ	œ	8				
HCM 95th % lie O(reh)	3.9	3	4	0.4	đ				

Cuvaison Winery Traffic Study Weekend Midday Existing

Synchro 8 Report W-Trans

HCM 2010 Signalized Intersection Summary 2: SR 12-121 & Old Sonoma Rd

2

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NBT

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Movement Lane Config

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986 0.63

1196 0.63 1863 10

1563

1516 0.81 1863 11144 11863 44.6 44.6

1863 66.3

Larre Configurations Traffic Volume (vehh) Future Volume (vehh) Number Petel Study (20), veh Petel Study (20), veh Adj Foar Actor Adj Foar Adj Foar Actor Adj Foar Actor Adj Foar Actor Adj Foar Actor Ad

1196 0.85 1371

1,00 1,00 1,00 24,5 4,5 4,5 4,5 4,5 4,3 1,028 4,3,7 1,028 4,3,3 1,028 4,3,3 1,028 4,3,7 1,028 4,3,7 1,028 4,3,7 1,028 4,3,7 1,028 1,028 1,028 1,028 1,020 1,

56.0 E Intersection Summary HCM 2010 CM Delay HCM 2010 LOS

220 21.0 21.0

127.5 6.0 137.5 46.6 36.8

Timer Assigned Phs Phs Durafon ((>+/+Rc), s Actane Period ((>+Rc), s Max Gene Setting (Gmat), s Max Q Cleer Time (g_-o+1), s Green Ext Time (g_-o+1), s

Approach Vol, vehith Approach Delay, s/veh Approach LOS

Cuvaison Winery Traffic Shudy Weekday PM Existing

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Vinor Lane Major Munt NBLat EBT EBR WBL WBT
181 -
0.75 (
lay (s) 68.1 - 12
ы н
HCM 95th %ate Qyeb) 4.8 0.4 -
Volume exceeds capacity \$. Delay exceeds 300s +; Computation Not Defined *; All major volume in platcon

Intersection									
Veh	7.2								
Movement	ti i	EBT	EBR	MBL		WBT	NBL	NBR	
Lane Configurations		12			10.0	+	4		
Traffic Vol, veh/h	121	1268	1	4	22 1	1373	7	170	
Future Vol, veh/h	121	1268	1			1373	\$	170	
Conflicting Peds, #hr		•	0			0	0	0	
Sign Control	Fa	Free F	Free	Fre	Free	Free	Slop	Stop	
RT Channelized		N.	None			None	<u>i</u>	None	
Slorage Length		÷	tii.	2	215	ŝ.	•	X	
Veh in Median Storage, #		•	1		3	0	•	•	
Grade, %		•	5			0	•	E	
Peak Hour Factor	0	66	66		8	86	8	8	
Heavy Vehicles, %		2	2			~	2	2	
Munt Flow	1231	10	-	- N	2	1387	#	112	
Major/Minor	Major	T		Major2	2		Minor1		
Conficting Flow Al		-		1288	22	0	2715	1284	
Stage 1		3		Î			1284		
Stage 2		ŝ			ž	ě	1431	3	
Critical Holmy		8	•	4	4.12		6.42	6.22	
Critical Hdwy Stg 1		ß			î.	1	5.42		
Critical Hdwy Stg 2		ų,	ż		ä	2	5,42	1	
Follow-up Hdwy		ŝ	i	2218	<u>10</u>	-	3.518	3.318	
Pot Cap-1 Maneuver		ä	ł	ŝ	535	•	23	201	
Stage 1		36	÷		¥.	Yeş	260	8	
Stage 2		ï	Ĩ		÷		022	8	
Platoon blocked, %		4	ŝ,	2	2			1000	
Mov Cap-1 Maneuver		i i	ŝ	6	336	•	2	201	
Mor Lap-2 Maneurer		ł	ł		,	•	911	,	
Lafer		8	ž.		ŧ.	1	8	<u>.</u>	
2 ages 2		1	ŧ		8		12	•	
Approach		æ		-	BM		BN		
HCM Control Datav s		0		e	00		110.5		
HCM LOS		N.					Ľ.		
Minor Lane/Major Munit	NBLn1 EI	EBT	EBR WBL	BL WBT	1E				
Capacity (vehin)		10							
HCM Lane VIC Ratio	879.0	ŝ	- 0.041	14	ł				
HCM Control Delay (s)	110.5	ŝ	10.00	12	3				
HCM Lane LOS	u.	ï	1100	8	ŝ				
HCM 95th %bie Q(veh)	8.1	ï	1	0.1	â				

Ouraison Winery Traffic Study Weekday PM Existing plus Approved

Synchro 8 Report Wr-Trans

	-	2	ļ						ľ		-			
	N.			,			•	Ť			•	۲		
Movement	Ħ,	EBT	WBT W	WBR SI	SBLS	SBR	EB	EBT	T WBT	T WBR	SB	ŝ		
Lane Compurations	-		-	- 1						*				
Lianc voume (venn)	100		1201	= 4							5	210		
Future volume (venui)	Ξ, Y	lela	1201		2		173	1032	2 1122	2 41	5	210		
			• ;	e .		16 Number	«3	3	6	6 16	-	*		
Initial Q (UD), veh		n	14				60		8 8	0		-		
Hed-Bike Agi(A_pbi)	1.00					1.00 Ped-Bite Adj(A_pbT)	1.00			1.00	1.00			
Parking Bus, Adj	1.00					1.00 Parking Bus, Adj	1.00		0 1.00	0 1.00	1.00	1.00		
Adj Sat Flow, vehihin				861 18	1863		1861	1	3 1863		1863	1863		
Adj hiow Hate, vehih	304	1169	1031	12	18	284 Adj Flow Rate, vehh	182	1085	5 1181	14 1	8	142		
Adj No. of Lanes	-					Adj No. of Lanes				1		10		
Peak Hour Factor	0.99	65'0	0.99 0	0.99 0.0	0 66 0	0.99 Peak Hour Factor	0.95	0.95	50.05	5 0.95	0.95	0.95		
Percent Heavy Veh, %	2			~	2	Percent Heavy Veh. %		12		2				
Cap, vehih	257	1					228	1589	9 1238	8 1092	168	338		
Arrive On Green	0.16					0.13 Arrive Ch Green	0.12	0.84	4 0.70	07.0 0	-			
Sat Flow, vehill	1774	1993	1863 1	583 17	774 1	1583 Sat Flow, vehilt	1774	1 1863	3 1863					
Grp Volume(v), vehilt	304	1169	1031	15		284 Grp Volumehri, vehih	182	1085		17	60			
Grp Sat Flow(s), vehilh/in			1.2					10		Ť	1			
Q Serve(g_s), s	24.0													
Oycle Q Clear(g_c), s	24.0	47.2	68.8				14.4				1	111		
Prop In Lane							1.00			Ĩ	1.00			
Lane Grp Cap(c), wehlh								1569	9 1238	1.00				
VIC Ratio(X)	1.18											I.		
Avail Cap(c_a), veh/h	580					448 Avail Cap(c_a), vehin	- 298	1794	4 1435		236			
HCM Platoon Ratio	1.00	1.00				1.00 HCM Platoon Ratio	1.00				-			
Upstream Filter(I)	1.00	1.00				00 Ubsteam Filter()	1.00				3			
eh	70.8	1.3												
	114.3	20		0.0			10.8	1.0						
hifal Q Delay(d3),sheh	88.8	6.0				5.1 http://doi.org/10.1444								
rehlin	27.9	27.1						î		50 5		Ľ		
y(d).s/veh	273.9	9.6	45.1 1		66.9 5	LnGrp Delavid) s/veh	22							
LnGp LOS	u.	A	0	8	ш	E LuGa LOS				4				
Approach Vol, vehilh			1046	E.	380	Approach Vol. which		1262	1777		000			
Approach Delay, siveh			44.6	8	60.5	Autoact Delay, sveh	1	23.0			835			
Approach LOS		ш	0		ш	Approach LOS						to alt		
Timor	+		5		14					100				
Accisonal Dis-	-									*	-	9	-	~
Che Printing of a work		1								4				
Pris Duration (Get Http://s	1	2.27	*				a) s	126.4		16.4		Ē		
unange Parlod (1 +rtc), 5	ľ	20					-	6.0		3.0	3.5	6.6		
wax Green Setung (Great), S		C/61	10				nax), s	137.5		18.0		110.0		
Max 4 Clear time (g_CHI), S		49.2	5				271).s	33.3		13.1		75.7		
Green Eut Time (p_c), s		38.7		8	0.0	25.6 Green Ext Time (p. c), s	50	45.1	1	0.3	0.3			
Intersection Summary						Miteresekee Overwees								
HCM 2010 CH Dates			58.6											
HCM 2010 1 US			р Ц			FICH 2010 CBI DEEP			49.5					
						HCM ZUIDLOS								

04/11/2017

Cuvaison Winery Traffic Study Weekday PM Existing plus Approved

Synchro B Report W-Trans

Cuvaison Winery Traffic Study Weekend Midday Existing plus Approved

Synchro 8 Report W-Trans

HCM 2010 TWSC 1: Duhig Rd & SR 12-121

Int Delay, sheh 21	226								
Movement		EBT	EBR		WBL	VIBIT	NBN	NBR	
ana Confineations		+2		1		*	2	- A MANA	
Traffic Vol. veh/h		1502	÷		9	1583	4	200	
Future Vol. vehith		1502	Ŧ		32	1583	4	202	
Conflicting Peds, #fr		•	•		•	0	0	•	
Sign Control		Free	B		Free	Free	Stop	Stop	
RT Channelized		•	None			None		None	
Storage Length			a.		215		0	•	
Veh in Median Storage, #		2	*		ł	•	0		
Grade, %		8	æ		•	0	0	ł	
Peak Hour Factor		100	8		100	100	8	100	
Heavy Vehicles, %		~	~		~	2	2	2	
Momt Flow		1502	÷		32	1583	17	202	
MajonMinor	Y	hajor 1		M	Major2	ľ	Minort	100	
Conflicting Flow All		•	•	a Territ	1513	0	3155	1508	
Stage 1		1)		ł	3	1508	3	
Stage 2			E		1	14	1647	¥.	
Critical Hdwy		÷	٠		4.12	*	6.42	6.22	
Critical Hdwy Stg 1		2	Ð,		ŝ	185.	5.42	8	
Critical Hdwy Stg 2		₽.51 51	*		*	2	5,42	ă.	
Follow-up Hdwy		ľ	0	24	2.218	385	3.518	3.318	
Pot Cap-1 Maneuwer		ŝ	5		4	5	-12	- 148	
Stage 1		ŝ	8		ġ	3	202	(i) (
State 2		5	ŧ		ž	5	172	£	
Platoon blocked, %		t.	8			8			
Mov Cap-1 Maneuver		Ņ	e.		47	5	Ŧ	- 148	
Mov Cap-2 Maneuver		1	•		•	*	98	X	
Stage 1		37	8)		•		202	100	
Stage 2		<u>8</u>	8		2	2	<u>8</u>	×	
Approach		8			BW		8		
HCM Control Delay, s HCM LOS		•			0.3		\$ 342.7 F		
Minut and Minut Manual	101	CDT	8	-	1997				
NUMBER OF STREET STREET	ITTON	8	5	5					
Capacity (vehit) HCM1 and VIIC Pasts	1564	: 7	• 9	42	1				
HCM Control Dalay (c)	1023		2	12.8					
HCM Lane LOS	1 Land	ŝ	3	2	ĝ				
UCH DEH ALCO OF TH	16.21	,	,	00	•				

Notes -- Volume exceeds capacity \$: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Cuvaison Winery Traffic Study Weekday PM Future

Synchro & Report W-Trans

HCM 2010 TWSC 1: Duhig Rd & SR 12-121

04/11/2017

04/11/2017

eth 7.3 eth Hehh 124 Hehh 124 Hhr 124 Bath 124 Hhr 124 Hhr 124 Har 124 Eador 10 Hes. % 10							
	No. 10 Contraction of the						
		8	WBL	TBW	NBL	NBR	
			5	+-	>		
	1 N N N	76	8	1405	\$	110	
	1.1	92	g	1405	17	110	
	1 C C	0	•	0	0	0	
	Maria	9	Free	Free	Stop	Stop	
	100	None	•	None		None	
		,	215		0	3	
			•	0	0		
		,	!			3	
F	001 0	0	100	100	100	100	
		2	2	2	2	0	
	2	76	8	1405	\$	110	
MajouMinor Majort		No.	Major2		Minor1		
Conflicting Flow All		0	1320	0	2879	1282	
Stage 1			1		1282	•	
Stage 2	1	,	•	2	1597	63	
Critical Hdwy			4.12		6.42	6.22	
Critical Hdwy Stg 1		*	•		5.42	3	
Critical Howy Stg 2			- 01		5.42		
Follow-up Hdwy			2.218	8	3.518	3.318	
Pot Cap-1 Maneuver		3	524		- 18	202	
Stage 1		8	8	•	260	ä	
Stage 2	,		100		183	×.	
Platoon blocked, %				ž			
Mov Cap-1 Maneuver	,		524	8	- 15	202	
Nov Cap-2 Maneuver			ŧ		93	3	
Stage 1			ě	•	260	a	
Stage 2			•	8	149	Ē	
Approach EB	_		BW		NB		
HCM Control Delay, s 0			0.9		133.8	l	
HCMLOS					u.		
Minor LaneMator Minut NBLn1 EB1		EBR WBL	WBIT				
152		1.2	•				
HCMLane WC Ratio 1.007 -	,	- 0.183	22				
lay (s) 133		- 13.4	3				
HCM 95th %title Q(weh) 7.6 -		- 0.7	<u>8</u>				
Notes							

Curaison Winery Traffic Study Weekend Midday Future

Synchro 8 Report W-Trans

1 1	Control (100) Contro		j						1				1
R1 R1 M61 M66 G6 M71 M61 G6 M71 M61	EBL EBT 1247 421 1247 421 1247 5 5 2 11,00 11,00 11,00 11,00 11,00 100 11,00 100 10,00 100 10,0000 10,000 10,0000 10,0000 10,000 10,000 10,0000			2			•	110	ţ	1	,	•	
	421 1247 421 1247 421 1247 5 2 100 100 100 100 100 100 101 100 101 100 101 100 101 100 100 100 100 100 100 100 100 100 25 157 25 157 100 100 100	21-12-77-	28			ement		24				Sar	
47. 107. 110. 2. 10. 110. 2. 111. 2.11.	41 1247 5 1247 5 2 100 100 100 100 100 100 100 100 101 101 101 101 101 100 101 100 101 100 101 100 100 1000	201- 1. 77-		_		· Configurations			+	*			
5 7	5 5 5 100 1.00 1.00 1.00 1.00 1.00 1.00	201- V. 177-				ic Volume (vehili)			212	5	67.Y	291	
1 2 1 1 2 1 3 2 3	8 5 100 100 100 100 100 100 421 1247 421 1247 110 100 1015 1022 1774 1833 1774 1833 1774 1833 1774 1833 1774 1833 1774 1833 1774 1833 1774 1833	State 1976				re volume (venin)			212		=		
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10 10 100	1.00 1.00 1863 1863 1863 1863 1863 1863 1874 1874 1774 1863 1774 1863 240 567 240 567	229 7 7				Pite Arith nhT	• •	n	1	u.s		4 00 1	
(1) (1) <td>1863 1863 1863 1863 1871 1247 1 1 1 1.00 1.00 2 2 2 2 2 2 1774 1863 1774 1863 1774 1863 1774 1863 24.0 267 24.0 267</td> <td>·**</td> <td></td> <td></td> <td></td> <td>inn Rise Adi</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>* 00</td> <td></td>	1863 1863 1863 1863 1871 1247 1 1 1 1.00 1.00 2 2 2 2 2 2 1774 1863 1774 1863 1774 1863 1774 1863 24.0 267 24.0 267	·**				inn Rise Adi						* 00	
1 1 1 0	421 1247 1 1 1 1.00 1.00 2.57 1537 0.15 0.02 1.774 1863 1.774 1863 1.774 1863 2.4.0 56.7 2.4.0 56.7					Set Flow whithin				2		1983	
1 1	1 1 1 1,00 1,00 2.57 1,537 0,15 0,82 1,774 1,863 1,774 1,863 1,774 1,863 2,4,0 56.7 2,4,0 56.7	100				Pow Rate, wehili						716	
10 10<	1.00 1.00 257 1.537 0.15 1.537 0.15 1.537 1.774 1.853 421 1.247 421 1.247 421 1.853 24.0 557 24.0 557	-	+	1	Ad No.	No. of Lanes			-	-			
2 1 2	2 2 257 1537 0.15 082 0.15 082 1174 163 1774 163 1774 163					t Hour Factor						100	
15 151	257 1537 0.15 0.82 1174 1683 1174 1683 1174 1683 24.0 56.7		2	3		ent Heavy Veh. %						2	
111 0.00 0.00 0.01 0.01 0.00	0.15 0.82 1774 1983 421 1247 1774 1983 24,0 56.7	244				wehth	-		1			412	
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111 124 105 50 102 400 100	421 1247 1774 1853 24.0 56.7	22	i.			Flow, vehith			1.00	3		1583	
174 183 174 183 174 183 183 184 <td>1774 1863 24.0 56.7</td> <td></td> <td></td> <td></td> <td></td> <td>Volumetri, vehih</td> <td>239</td> <td></td> <td>212</td> <td>3</td> <td>11</td> <td>216</td> <td></td>	1774 1863 24.0 56.7					Volumetri, vehih	239		212	3	11	216	
3.0 5.7 0.0 1.0 <td>24.0 56.7</td> <td>2.5</td> <td></td> <td></td> <td></td> <td>Sat Flow(s), wehhih</td> <td>22</td> <td></td> <td>10</td> <td></td> <td>Ĩ.</td> <td>1583</td> <td></td>	24.0 56.7	2.5				Sat Flow(s), wehhih	22		10		Ĩ.	1583	
20 51 80 10 100						s.(s_g)eve						19.0	
10 100	24.0 56.7					e Q Clear(g_c), s			03.3			19.0	
247 131 033 031 131 133 134 133 134 133 134 133 134 133 134 133 134 133 134 133 134 133 134 133 134 133 134 133 134 133 134 135 134 135 134 135 134 135 134 135 134 135 134 135 134 135 134 135 134 134 134 134 135 134 135 134 <td>1.00</td> <td>121</td> <td></td> <td></td> <td></td> <td>h Lane</td> <td></td> <td></td> <td>i</td> <td></td> <td></td> <td>1.00</td> <td></td>	1.00	121				h Lane			i			1.00	
	151 152	10.1	24			i Grp Cap(c), vehih			-			412	
000 100 <td>100 HOI</td> <td></td> <td></td> <td></td> <td></td> <td>Ratio(X)</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>0.52</td> <td></td>	100 HOI					Ratio(X)						0.52	
100 100 <td>7001 007</td> <td></td> <td></td> <td></td> <td></td> <td>Cap(c_a), vehih</td> <td>100</td> <td></td> <td></td> <td></td> <td></td> <td>412</td> <td></td>	7001 007					Cap(c_a), vehih	100					412	
70 73 85 610 612 700	100 1001					I Flatton Hatto	1.00					1.00	
303. 3.2 3.0 1.4 0.1 0.1 0.1 0.0 1.0 0.0 1.0 0.0 1.0 0.0 1.0 0.0 1.0 0.0 1.0 0.0 1.0 0.0 1.0 0.0 1.0 0.0 1.0 0.0 1.0 0.0 1.1 0.0	70.8 7.0					ream Hiter(I)	D) ;					1.00	
642 04 207 00 51 600 05 447 00 11 643 05 54 655 54 655 54 655 64 57 700 00 12 700 10 11 780 114 226 05 54 655 54 655 54 655 700 05 700 05 700 00 12 700 10 11 201	21 0'DI					srm Delay (d), sveh	R		112			53.1	
4.1 2.6 6.5 5.4 6.5 6.4 6.5 6.4 6.5 6.4 6.5 6.4 6.5 6.4 6.5 6.4 6.5 6.4 6.5 6.4 6.5 6.4 6.5 6.4 6.5 7.0	ah 64.7 0.4					Detail (uc), Sven	51.16		100			12	
433 114 554 103 730 103 710 211 720 221 720 221 720 221 720 221 720 221 720 221 720 221 720 221 720 221 720 221 720 221 720 221 720 221 720 221 720 221 720 221 720 221 720 221 720 221 720 221 221 221 221 221 221 221 221 221 221 221 221 231 231 231 231 231	0n d14 326					un uneny colleven			1			14	
F B C A F	438.9 11.4					HackUnu(SU%), venim			19.9			18.8	
1000 1125 522 Approach UoS 1	C II I III IIIIIIII					p ueay(g),sven	199.1		97.0			55.7 r	
113 54.5 10.0 10.4 10.3 <th1< td=""><td>1668</td><td>1</td><td></td><td>2</td><td>1 digin</td><td>PLUG</td><td>-</td><td></td><td>- 100</td><td>4</td><td>1</td><td>1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1</td><td>1</td></th1<>	1668	1		2	1 digin	PLUG	-		- 100	4	1	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	1
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Image Image <th< td=""><td></td><td>•</td><td></td><td></td><td></td><td></td><td></td><td>5</td><td></td><td></td><td>÷.</td><td></td><td></td></th<>		•						5			÷.		
2 137 5 6 4 5 137 220 235 104 2 4 5 60 30 35 60 30 35 90 30 35 137 190 240 142 220 215 14 20 30 35 137 190 240 100 Max Geen Setting (Gr-Hc), s 1412 220 240 240 231 210 250 239 Max Geen Setting (Gr-Hc), s 1315 140 240		2	+ -				-	2	m	+	5	5 7 8	1
10.3 2.0 1.0.4 14.12 2.2.0 2.7.3 13.7.5 19.0 24.0 110.0 14.12 2.0 3.3 3.0 3.5 3.0 3.5 3.0 3.5 3.0 3.5 3.0 3.5 3.0 3.5 3.0 3.5 3.0 3.5 3.0 3.5 3.0 3.5 3.0 3.5 3.0 3.5 3.0 3.5 3.0 3.5 3.0 3.5 3.0 3.5 3.0 3.5 3.0 3.5 3.0 3.6 3.0 3.6 3.0 3.6 3.0 3.6 3.0 3.6 3.0 3.6 3.0 3.6 3.0 3.0 3.6 3.0 3.6 3.0 3.6 3.0 3.6 3.0 3.6 3.0 3.6 3.0 3.6 3.0 3.6 3.0 3.6 3.0 3.6 3.0 3.6 3.0 3.6 3.0 3.6 3.0 3.6 3.0 3.6 3.0						gned Phis		2				9	
101 100 0.00 101 30 <t< td=""><td></td><td>3 .</td><td></td><td></td><td></td><td>Duration (G+Y+Rc), a-</td><td></td><td>43.2</td><td>3</td><td></td><td>-</td><td>157</td><td></td></t<>		3 .				Duration (G+Y+Rc), a-		43.2	3		-	157	
Nat Green Setting (Gmax), s 131.5 19.0 24.0 84.1 10 0.0 21.4 24.0 24.0 44.4 0.0 0.0 21.4 0.0 0.0 21.4 44.4 0.0 0.0 21.4 0.0 0.0 21.0 24.0 44.4 10 0.0 21.4 21.0 34.1 21.0 24.0 44.4 10 0.0 21.4 47.1 10.0 0.0 102.1 F Hout 2010 Chi Delay 65.5 HOM 2010 Chi Delay 65.5 F HOM 2010 LOS E HOM 2010 LOS E						nge Period (Y+Ho), s		6.0				6.0	
4.4 0.0 0.0 2.1.0 2.1.0 2.1.0 2.1.0 2.1.0 2.1.0 2.1.0 2.1.0 2.1.0 2.1.0 2.1.0 2.1.0 2.1.0 2.1.0 2.0.0 0.0 <t< td=""><td></td><td>10.10</td><td></td><td></td><td></td><td>Green Setting (Gmax), s</td><td>**</td><td>37.5</td><td></td><td></td><td></td><td>10.0</td><td></td></t<>		10.10				Green Setting (Gmax), s	**	37.5				10.0	
102.1 McCare La 10, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0		1				C CHERT HITRE (G_C+11), S		128	5°			05.3	
102.1 Interestor Sammary Frances Sammary		6				יו דיאר וחונה (ה"ה"י ס		1.11					
F HCM 2010 CM Delay					Intersect	section Summary							1
FOR 2010 LOS		5			HCM 20	1 2010 CHI Delay			55.5				
	LICH COLO LOS	4.			HCM 20	12010 LOS			w				
	Contraction of the second					1100 - 1100 - 1100 - 1100 - 1100 - 1100 - 1100 - 1100 - 1100 - 1100 - 1100 - 1100 - 1100 - 1100 - 1100 - 1100 -							1

	12-121
HCM 2010 TWSC	1: Duhig Rd & SR

Intersection							
Int Delay, sheh 7.5							
Movement	183	EBR	MBIL	WBT	IBN	NBR	
Lane Configurations	**		F	*	3		
Traffic Vol. vehih	1247		54	1356	16	174	
Future Vol, vehilt	1247		25	1356	16	174	
Conflicting Peds, #hr	0	•	0	0	0	0	
Sign Control	Free	Free	Free	Free	Stop	Stop	
RT Channelized		None	1	Nome	•	None	
Storage Length	8	3ê	215	9	0	li.	
Veh in Median Storage, #	0	8	2	0	a		
Grade, %	•	X	2	0	•	ä	
Peak Hour Factor	66	66	8	8	66	8	
Heavy Vehicles, %	~	~	2	2	2	2	
Mumt Flow	1260	80	8	1370	9	176	
Majoratinor	Maior1	2	Major2		Minort		
Confecting Flow AI	-	0	1268	•	2682	1264	
Stage 1	1	8	te J		1264	•	
Stage 2	3	3	ð	3	1418	a	
Critical Hiday	1	ē	4.12		6.42	6.22	
Critical Hdmy Sig 1	•	ä	2		5.42	3	
Celical Hday Sig 2	585	ap)	12	e	5.42		
Follow-up Hdwy		¥	2.218	٠	3.518	3.318	
Pot Cap-1 Maneuver		3)	548	•	57	102	
Stage 1				,	3RE		

A Parlan allert									
im Detay, swen	7.5								
Movement		181	EBT EBR	1	MBIL	TBW	TEN	NBR	
Lane Configurations		e#			F	*	3		
Fraffic Vol, vehih		1247	80		20	1356	16	174	
"uture Vol, vehith		1247	-			1356	16	174	
Conflicting Peds, #hr		•	•		•	0	0	0	
Sign Control		Free	Free	u.	Free	Free	Stop	Stop	
RT Channelized		•	None			Nome		None	
Storage Length		8	X		215	.9	0	JS.	
Veh in Median Storage, #		•	ŝ		ų	0	a		
Grade, %		•	X		1	0	•	ä	
Peak Hour Factor		86	66		8	8	66	8	
Heavy Vehicles, %		61	2		~	2	2	2	
Murth Flow		1280	60		25	1370	ŧ	176	
MejorMinor	-	lajort		(P)	fajor2		Minort		
Confecting Flow All		-	•	-	1268		2682	1264	
Stage 1		8.0	8.8		ţ	ε,	1264	•	
Stage 2		3	ä		1		1418	8	
Critical Hdwy		2	ē	4	4.12	e	6,42	6.22	
Critical Hdmy Sig 1		•	â		ų,	,	5.42	5	
Celical Hidary Stg 2			()).		1	e	5.42	•	
-ollow-up Hdwy		ŧ	٠	2	2.218		3.518	3.318	
Pot Cap-1 Maneuver			4)		548	•	57	202	
Stage 1		×	Ř		1	š	266	ų	
Stage 2		3	64 		3	9	224	14	
Platoon blocked, %		8	\$			9			
Mov Cap-1 Maneuver		3	9	-,	548		2	202	
Mov Cap-2 Maneuver		92	10		2	÷	119	174	
Stage 1		•			\$	•	266	124	
Stage 2		32	66		2	æ	214	•8	
Approach		8		0	8W		WB		
HCM Control Delay, s		•		97.	0.2		110.4	F	
HCM LOS							u.		
Minor Lane Major Minut	NBLn1	Ē	EBR WBL		TBW				
Capacity (vehith)	195		•	548	5				
HCM Lane V/C Ratio	0.584	•	•	0.044	ł				
HCM Control Delay (s)	110.4	3		611 110	1				
HCM Lane LOS	щ	ň	X	•	•				
HCM 95th %Be O(veh)	8.3	đ	241	6.1	4				

or LaneMajor Mimit	NBLn1 EBT	E	EBR	EBR WBL WBI	TBW	
nacity (veh/h)	195		1	548	5	
M Lane VIC Ratio	0.584	•	•	0.044	1	
M Control Delay (s)	110.4	3		11.9		
M Lane LOS	ц.	8	×	8	•	
M 95th %Elle Q(veh)	8.3	2	34	5	20	

Cuvatson Winery Traffic Study Weekday PM Existing plus Project

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Cuvaison Winery Traffic Study Weekend Midday Existing plus Project

HCM 2010 TWSC 1: Duhig Rd & SR 12-

04/11/2017

Intersection									
Int Delay, sheh 4.	4.3								
Movement		EBI	EB		MBIL	WBT	NBL	NBR	
Lane Configurations		4			*	+-	4		
Traffic Vol, vehilt		1079	8		24	1282	36	102	
Future Vol, vehh		1079	8		2	1262	36	<u>8</u>	
Conflicting Peds, #hr		•	0		•	•	0	0	
Sign Control		Fiee	麈		Free	-196 	Stop	Stap	
KI UNBITHEIZED		1	None		V	None	13	None	
ourage Lengu		1.4	•)		617	• •	•	ä	
Ven in meusur curage, #		•	•					2	
Grade, 76 Dark Univ Easter		2	1.2		1 2		• ;		
r oan muur raund Heavy Vahirlar %		3 5	R *		8.5	8 °	g •	g •	
Munt Flow		4 11 1	4 8		4.8	1110	7	7	
			\$		5	-	8	2	
MajoriMinor	-	Majort			fajor2		Minori		
Conflicting Flow All		•	•		1198		2672	1167	
Stage 1		3	9		1.	1	1167	24	
Stage 2		36				•	1505	ä	
Critical Hdwy			i.		4.12	3	6.42	622	
Critical Hdwy Stg 1		8	£		1	•	5,42	1	
Critical Hdwy Sig 2			Ű.		3		5,42		
Follow-up Hdwy		•			2.218	8	3.518	3.318	
Pot Cap-1 Maneuver		2	¥		583		-22	236	
Stage 1		×	8		2	8	296		
Stage 2		1			4		203	111	
Platoon blocked, %		•	i)			5			
Mov Cap-1 Maneuver		*	Ř		583	1	<i>a</i> -	336	
Mov Cap-2 Maneuver		2	3		1	30	110	2)	
Stage 1		2	Ť.		4	ł	982	-11 +	
Stage 2		'	9		8	2	176	26	
Accord		8			8		av		
HCM Control Dates o		•			1		10.1		
HCM LOS		•			ž		Ľ		
Minor I ano Abior Mont	MRIM	CB1	CRD WRI	idw.	TBM				
Concerts And the	5			100					
undersy (wasm)	701	•		200	1				
HOM Lane wu nauo	20.00	8		1134	1				
In the sector	191	*	,	5	1				
HCM S6th % lie O(veh)	19	£) 9	£ 3	a 9	•				
Multee									
	I								

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HCM 2010 Signalized Intersection Summary 2: SR 12-121 & Old Sonoma Rd

Morement Els Firth More SBI SBI Turke Conditionants 7 14 7 34 7 34 Turke Conditionants 7 14 7 34 7 34 Future Conditionants 7 34 7 34 7 34 Future Conditionants 7 3 34 7 34 34 7 34 Future Conditionants 7 3 34 10 100		٦	t	ţ	4	د	•			
$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	Movement	EBL	EBT	WBT	WBR	SBL	SBR			
$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	Lane Configurations	F	+	4	*	5	*			
$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	Traffic Volume (veh/h)	302	1139	1001	9	13	頭			
$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	Future Volume (veh/h)	66 1	1139	1001	<u>ب</u>	2	ž			
$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$	Number	0	~	ø		-	¥.			
$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	Initial O (Ob), weh	•	5	21	-	4	-			
$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	Ped-Bike Adj(A_pb1)	100	10.00		1.00	1.00	1.00			
$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	Parking Bus, Adj	100	1.00	8	1.00	1.00	100			
$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	Ad Set How, vehicle	1863	1863	1851	1863	1981	1863			
$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$	Ad Flow Rate, vehilt	382	1151	1017	2	14	282			
$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	Acj No. of Lanes		-	-	••	÷	•			
	Peak Hour Factor	0.99	0.99	650	0.99	0.99	0.99			
$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	Percent Heavy Veh, %	~	2	61	2	~	3			
$\begin{array}{c c c c c c c c c c c c c c c c c c c $	Cap, vehih	19	1517	1158	866	222	5			
$\begin{array}{c c c c c c c c c c c c c c c c c c c $	Arrive On Green	0.16	0.81	0.63	0.63	0.13	0.13			
$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$	Sat Flow, vehilt	1774	1863	1863	1583	1774	1583			
$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$	Gro Volume(v), vehih	305	1151	1017	2	14	282			
$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	Grp Sat Flow(s), veh/h/h	1774	1863	1863	1583	1774	1583			
$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	Q Servelg_s), s	24.0	45.3	66.7	0.5	5.7	19.0			
1100 1100 <th< td=""><td>Cycle Q Clear(g_c). s</td><td>24.0</td><td>45.3</td><td>66.7</td><td>0.5</td><td>5.7</td><td>19.0</td><td></td><td></td><td></td></th<>	Cycle Q Clear(g_c). s	24.0	45.3	66.7	0.5	5.7	19.0			
$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$	Prop In Lane	1.00			1.00	1.00	1.00			
118 0.76 0.35 0.01 0.33 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.01 1.01 1.00 1.00 1.00 1.00 1.00 1.57 1.3 4.7 0.01 0.01 0.01 0.01 1.55 1.3 4.7 0.0 0.0 3.5 0.1 0.0 3.6 1.15 7 1.3 4.7 0.0 3.6 0.1 0.0 3.6 1 2 4 0.3 3.6 0.1 0.0	Lane Grp Cap(c), vehilt	221	1517	1156	866	222	445			
284 1708 1356 1161 225 eh 1.00 1.00 1.00 1.00 1.00 eh 7.08 7.2 24.6 1.04 1.00 eh 7.08 7.2 24.6 0.0 0.0 eh 7.08 7.2 24.6 0.0 3.6 eh 25.5 4.8.9 0.4 3.9 eh 28.0 25.9 4.8.9 0.4 3.9 eh 25.5 4.8.9 0.4 3.9 eh 26.0 4.3.5 68.1 3.6 eh 26.0 4.3.5 0.4 3.9 eh 26.0 4.3.5 0.4 3.6 eh 2 2 4 5 5 eh 2 2 4 5 5 5 eh 2 2 3.6 4.3 3.6 5 5 a 2 2 3	WC Ratio(X)	1,19	0.76	0.85	0.01	0.33	0.63			
$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	Avail Cap(c_a), vehih	284	1708	1366	1161	225	454			
1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 0.00 0.01 <th< td=""><td>HCM Platoon Ratio</td><td>1.00</td><td>1.00</td><td>1.0</td><td>1.00</td><td>1.00</td><td>1.00</td><td></td><td></td><td></td></th<>	HCM Platoon Ratio	1.00	1.00	1.0	1.00	1.00	1.00			
m 70.8 7.2 24.6 10.4 61.4 m 85.6 0.3 4.7 0.0 0.9 m 85.6 0.3 4.8 0.0 3.9 m 25.1 8 4.7 0.0 0.9 m 25.6 4.8.9 0.4 3.9 275.1 3 4.5.9 0.4 3.9 1 25.6 4.3.5 0.14 65.1 1 2 3 4 5 6 1 2 3 4 5 5 6 1 2 3 4 5 5 6 5 5 6 5 5 6 5 5 6 5 5 6 5 5 6 5 5 6 5 5 5 6 5 5 5 5 5 5 5 5 5 5 5 5 5 <td>Upstream Filter(I)</td> <td>1.00</td> <td>1.00</td> <td>8</td> <td>1.00</td> <td>1,00</td> <td>1.00</td> <td></td> <td></td> <td></td>	Upstream Filter(I)	1.00	1.00	8	1.00	1,00	1.00			
115.7 1.8 4.7 0.0 0.9 eth 28.6 0.3 14.6 0.0 0.3 eth 275.1 9.3 44.6 0.0 0.3 F A D D B E F A D D B E 66.0 43.5 10.4 65.7 34.6 1 2 3 43.3 10.4 65.7 1 2 3 4 5 58.1 58.1 1 2 3 4 5 4 5 1.3 3.6 1.3 3.6 4 5 1.3 3 4 3 4 5 1.4 2 3 4 5 3 1.4 2 3 4 5 3 1.3 3.7 3.1 3.0 3.0 3 1.3 3.7 3.1 3.1	Uniform Delay (d), s/veh	70.8	12	24.6	10.4	61.4	49.6			
min 88.6 0.3 14.6 0.0 35 ethin 25.6 4.8.3 0.4 39 275.1 25.9 4.8.3 0.4 39 7 7 1 4.5 0.0 35 7 7 1 4.5 0.1 316 7 1 2 3 4 5 55 1 2 3 4 5 55 15 55	Incr Delay (d2), sheh	115.7	2	4	0.0	6'0	28			
mth 28.0 25.9 48.9 0.4 3.9 275.1 9.3 43.9 0.4 3.9 7 7 7 0.9 10.4 6.7 8 6.0 43.5 0.91 9.6 3.9 1 6.0 43.5 0.91 9.6 3.6 1 1 2 3 4 5 1.1 2 3 4 5 3.5 0.1.5 128.0 22.0 27.5 3.6 3.5 0.1.5 13.6 22.0 27.5 3.6 3.5 0.1.5 13.7 21.0 24.0 3.6 3.5 mail.s 13.7 21.0 24.0 3.6 mail.s 13.7 21.0 24.0 3.6 statistics 13.3 0.0 0.0 0.0 statistics 13.3 56.4 56.4 56.4	Initial Q Delay(d3), sheh	9.88	63	14.6	0.0	35	4.9			
275.1 9.3 4.39 10.4 65.7 F A 4.35 10.4 65.7 G6.0 4.3.5 59.1 356 G1.4 E D E 59.1 G1.2 1 2 3 4 5 G1.4 1 2 3 4 5 5 G1.5 13.8 2.3 4 5	%ile BackOfQ(50%), vehile	28.0	25.9	48.9	9.4	55	23.8			
F A U B E 1456 435 435 356 65.0 43.5 53.1 356 65.0 43.5 53.1 356 1 2 3 4 5 1.5 3 4 5 53.1 1.5 1 2 3 4 5 1.5 1.2 3 4 5 53.5 1.5 1.2 3 4 5 54.0 mmx]L 1.37.5 120.0 20.0 20.0 20.0 1.5 3.7.3 21.0 24.0 24.0 24.0 1.5 3.7.3 21.0 20.0 20.0 20.0 56.4	Linder Delay(d), shen	2/9/1	2.5	524	10.4	1.65	57.3			
1455 1031 335 1 2 13 3 1 2 3 4 5 1 2 3 4 5 1 2 3 4 5 1 2 3 4 5 1 2 3 4 5 1 2 3 4 5 1 3 130 20 35 md(s 137.5 130 20 35 md(s 137.5 13.0 240 26 5 37.3 21.0 26.0 0.0 5 37.3 0.0 0.0 0.0	Lindip LUS	-	<	2			w			
Box Box <td>Approach Vol, vehith</td> <td></td> <td>1456</td> <td>1921</td> <td></td> <td>-</td> <td></td> <td></td> <td></td> <td></td>	Approach Vol, vehith		1456	1921		-				
1 2 3 4 5 0, s 1280 220 275 0, 1280 220 275 0, 1375 19.0 240 e) 17, 1375 19.0 240 s 37, 21,0 240 s 37,3 21,0 240 s 56,4 E	reproact Delay, sven Annmach LOS		R. U	2		1.80				
1 2 3 4 5 0, s 1 2 3 4 5 0, s 128.0 2.0 27.5 37.5 0, s 137.5 19.0 24.0 c+1), s 47.3 21.0 26.0 s 137.5 19.0 26.0 s 317.3 0.0 0.0 s 317.3 51.0 26.0 s 317.3 0.0 0.0 E E 56.4 56.4	uppression and		1	à		i.				
c) = 2 = 4 5 c) = 128.0 2.0 27.5 c) = 138.0 3.0 3.5 max), = 137.5 19.0 24.6 e+11), = 47.3 21.0 26.0 s 37.3 0.0 0.0 56.4 E	Timer	-	2	(1)	4	io	9	1	8	
c) s 128.0 220 275) s 128.0 220 275) s 137.5 19.0 24.0 c+1), s 137.3 21.0 24.0 s 37.3 0.0 0.0 56.4 E	Assigned Phs		2		4	47	9			
),s 6.0 3.0 3.5 mm/s 137.5 19.0 24.0 1 mm/s 137.5 19.0 24.0 1 s 37.3 21.0 26.0 1 s 37.3 0.0 0.0 1 56.4 E	Phs Duration (G+Y+Ro), s		128.0		22.0	27.5	100.5			
maxi,s 137.5 19.0 24.0 c+11),s 47.3 21.0 26.0 .s 37.3 0.0 0.0 56.4 E	Change Period (Y+Rc), s		6.0		3.0	3.5	8.0			
e41),s 47.3 21.0 26.0 s 37.3 0.0 0.0 56.4 E	Max Green Setting (Gmax), s		137.5		19.0	24.0	110.0			
s 37.3 0.0 0.0 56.4 E	Max Q Clear Time (g_c+11), s		47.3		21.0	26.0	68.7			
	Green Ext Time (p_c), s		37.3		0.0	00	25.7			
	Intersection Summery									
	HCM 2010 Ctrl Delay			56.4						
	HCM 2010 LOS			w						

HCM 2010 Signalized Intersection Summary 2: SR 12-121 & Old Sonoma Rd

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	٩	t	ŧ	1	د	7		
Movement.	EBL	EBT	WBT	WBR	SBL	SBR		
Lane Configurations	*	+	*	R	P	ĸ		
Traffic Volume (vehh)	12	1021	1109	8	33	508		
Futura Volume (vehuh)	172	1021	1109	2	8	208		
Number	60	7	6	92	-	4		
Initial Q (Ob), veh	••	8	ຊ	•	N	4		
Ped-Bike Adj(A_pbT)	1.00			100	1.00	1.00		
Parking Bus, Adj	1.00	1.00	1.00	100	1.00	1.0		
Adj Sat How, vehillin	1863	1863	1863	1983	1863	1863		
Adj Flow Kate, vehit	181	1075	1167	B	8	141		
Adj No. of Lanes	-	P		5	-	-		
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95		
Percent Heavy Veh, %	2	2	2	2	2	2		
Cap, vehih	228	1991	1238	1091	168	122		
Arrive On Green	0.12	0.84	0.70	070	0.09	60.0		
Sat Flow, vehili	1774	1863	1863	1583	1774	1583		
Grp Volume(v), veh/h	181	1075	1167	8	58	14		
Grp Sat Flow(s), wehihilin	1774	1863	1863	1583	1774	1583		
C Serve(g_s), s	9	1.02	70.3	2	43	10.8		
Cycle Q Clearig_cl, s	9	30.1	70.3	-	43	10.8		
Prop In Lane	8			100	1.00	1.00		
Lane Gip Cap(c), vehils	222	1567	1235	1091	122	195		
VIC REDO(A)	8'18	8970	18:0	000	0.35	0.42		
Avail Capic_aj, vente	ş.	DEST.		1245	192	BP (
	83	1.00	8	001	1.00	8		
Upsubarn ruusiti) Helform Dates (4) a teath		n .			1.00			
Incr Datav (d2), sheh	10.01			5 6	1	d a		
Initial O Delav(d3) s/veh	43.1	80	202	00	4 4			
%ee BackOfO[50%],veh/In	123	19.7	111	0.5	36	11.4		
LinGrp Delay(d),s/veh	118.2	6.5	114	11	63.0	513		
LinGip LOS	щ	4	ш	4	ш	0		
Approach Vol. vehilh		1256	1206		199			
Approach Delay, sheh		22.6	693		54.7			
Approach LOS		o	w		0			
Timer	÷	2	-	4	4	8	2	
Assigned Phs		2		4	5	6		
Phs Duration (G+Y+Rc), s		123.9		16.1	19.8	104.1		
Change Period (Y+Rc), s		6.0		3.0	3.5	6.0		
Max Green Setting (Gmax), s		137.5		19.0	24.0	110.0		
Max Q Clear Time (g_c+11), s		21		12.8	16.0	72.3		
Green Eut Time (p_c), s		13.7		0.3	63	22.8		
Intersection Summary	5							
HCM 2010 CM Delay			46.2					
HCM 2010 LOS			0					

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ntersection								
nt Delay, s/veh 5.7								
Movement	Ш	EBT	EBR	NBL	WBT	NBL	NBR	
Lane Configurations		4		*	4	>		
raffic Vol, vehih	1	1096	99	£.	1300	4	107	
Future Vol, vehith	8	1085	88	2	1300	4	107	
Conflicting Peds, #fir				0		•	0	
Sign Control	æ	æ	Free	Free		Stop	Stop	
Al Charmenzed		7	None		Note	• •	None	
storage Length				612	10	•	5	
Ven in Median Storage, #		6	2	9.)	•	•	3	
Grade, 2					•	•	1	
Heat mour hactor		g •	s •	8 '	8 4	8,	8 '	
Munt Flow	11	1154	7 88	2 23	1368	7 Q	113	
Majoritimor	Major1	T		Major2		Minor1		
Conflicting Flow All		ö	0	1222	0	2723	1188	
Stage 1		ÿ			4	1168	ę	
Stage 2		ï		•		1535	te,	
Critical Hdwy		î.	-	4.12	24	6.42	622	
Crocal Howy Stg 1		ŝ.	ġ		R	5.42	2	
Critical Howy Sug 2		ŝ.	÷		4	5.42	•2	
Follow-up Howy		1		2218	S.	3.518	3.318	
rol uap-1 Maneuver		K)	•	0/0	•	-27	572	
Stand 7		i		•	1	687	1	
Platnon historical %		i j	2	1	. 3	190	•	
Mov Cap-1 Maneuver		,		009		- 3M	044	
Mov Cap-2 Maneuver		1	1	9	4	thr.	-	
State 1		14	9	0		080		
Stage 2		ï	ł	1.	1	167		
Approach	-	8		WB		NB		
HCM Control Delay, s		0		0.7		9.79		
HCM LOS						u.		
Minor Lane/Major Mintt	NBLn1 E	EBI	EBR WBL	WBT				
Capacity (veh(h)	173		- 570					
HCM Lane VIC Ratio	0.901	ä	- 0.146)) ()				
HCM Control Delay (s)	67.6	ì	- 124					
HCM Lane LOS	u.,	ä						
HCM 95th %Be O(weh)	6.6	9	- 0.5	*				
Notes							a lease of	and and a
-: Volume exceeds capacity	5: Delay exceeds 300s	6009		+ Com	+: Computation Not Defined		" All maior volume in nistoon	ucon

Intersection								
veh	8.9							
Movement		EBT	EBR	WBIL	TBM 1	IBN	NBR	
Lane Configurations		.2			*	2		
Fraffic Vol, vehilt	12	1268	ŧ	8		21	178	
Future Vol, vehith	12	1268	Ŧ	8	5 1373	21	178	
Conflicting Peds, #hr		•	0	0		•	0	
Sign Control	Ϋ́	Free	Free	Free	a Free	Stop	Step	
RT Channelized		7	None		- None	•	None	
Storage Langth		Ŷ	u ∙ c	215		•	3	
Veh in Median Storage, #		•	ž		•	0	*	
Grade, %		0				0	4	
Peak Hour Factor		86	66	8	8	66	8	
Heavy Vehicles, %		~	2		2 2	2	~	
Mumt Flow	12	1281	-	8	1381	21	18	
Major/Minor	Main	ort		Major2	~	Minor 1		
Conflicting Flow All		-	0	1292	0	2725	1286	
Stage 1		i,	10000		•	1286		
Stage 2		ì	1		1	1439	3	
Critical Hdwy		2	0	4.12	-	6.42	6.22	
Critical Hdwy Stg 1		ž	25+00		•	5.42	ł.	
ritical Hdmy Stg 2		ä.	ł		a a	5.42	•	
Follow-up Hdwy		ï	20 50	2.218		3.518	3.318	
Pot Cap-1 Maneuver		3	616	537		23	201	
Stage 1		ñ	120.02		*	259	8	
Stage 2		ų,	5 - 27		4 74	218	2	
Platoon blocked, %		i.	2002		8			
Mov Cap-1 Maneuver		ï	ŝ	537	-	53	201	
Mov Cap-2 Maneuver		¥.	0		-	115	5	
Stage 1		ř,	1 1 1 1		* *	269	8	
Stage 2		5	×		4 4	207	2	
Anomach		8		dia.		QN.		
		1				av		
HCM LOS		5		7		1417		
firm mailtaire hhmt	NBI 11		CBD WDI	DI WET				
Canacity (united)			12					
HCML ane VIC Ratio	1 081	8	- 0.049					
HCM Control Delaw (s)	141.2	i	1000					
HCMLaneLOS		Ŷ.	•		1.8			
NOTE OF MEL ON - IN	11		100000					

Curaison Winery Traffic Study Weekiday PM Existing pus Approved plus Project

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+ † ~	1	,	~			2	t	ŧ	1	,	1	
EBL EBT WBT	WBR	SBL S	SBR		Movement	B	EBT	WBT V	WBR	影	SBR	
+			*		Lane Configurations		+	+	R.			
			357		Traffic Volume (veh/h)	175	1040	1130	4	16	212	
1163			357		Future Volume (veh/h)	175	1040	1130	17	57	212	
5 2 6	16		14		Number	5	**	9	9		1	
			7		Initial Q (Cb), veh	8	æ	20	•	2	4	
			8		Ped-Bike Adi(A pbT)	1.00			100	1.00	18	
0 1.00 1.00			80		Parking Bus. Adi	1.00	1.00	1.00	100	100	8	
1863			590		Adi Sat Flow, vehilinin	1863	1863	1863	198	863	1981	
1175			285		Adi Flow Rate, vehih	181	1095	1189	14	80	144	
-			1		Ad No. of Lanes	1		-	**			
0.99			661		Peak Hour Factor	0.95	960	0.85	50	56.0	0.45	
2			2		Percent Heavy Veh. %	0	•			•	2	
1522			2		Can wehilt	230	1550	1738	COUL	120	240	
0.82			112		Active On Gener	0.12	0.84			0.00	DDB	
1774 1863 1863		5	583		Sat Flow, wehlin	1774		1		7221	1583	
1175			285		Gra Volume(v). vehh	184	1095		41	90	144	
1863		85	683		Gra Sat Flow(s) whitein	TLL5				TTA	100	
47.8			06		O Servelo sh s	14.5	702			99	11.2	
47.8			9.0		Cycle O Clearlo et s	143	104	76.3	:	46	114	
			00		Prop in Lane	100	1		100	1	100	
1522			439		Lane Gro Capici, vehilin	230	1569	1238	660	170	240	
0.77			165		WC Ratio(X)	0.80				0.35	140	
1682 1345	1143	221 4	447		Avail Capic al. vehilt	100	1767			233	304	
1.00			00		HCM Platoon Ratio	1.00	1.00		1.00	100	100	
1.00			00.		Upstream Filter(I)	1.00	1.00	1.00		100	100	
73			0.8		Uniform Delay (d), sheh	66.4	5.1	27.7		62.2	50.2	
2.1			32		Incr Delay (d2), sheh	115	11	146		12	0.8	
0.3			5.2		Initial O Delavid31 s/veh	137	0.8	40.3	00	1 1	1	
27.6			4.4		%de BackOfO(50%), veh/lin	127	112	24.9	50	38	118	
9.6			9.2		LnGrp Delavid),s/veh	121.6	6.9	826		650	208	
A			Ш		InGrp LOS	u	<	í.		w	0	
		361			Approach Vol, vehilt	1	1279	1230		204		
		60.9			Approach Delay, s/veh		23.4	80.1		56.3		
		ш			Approach LOS		0	н		цш		
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130.3		100	102.8		Dhe Durafan (CAVADo) -		2 004		4 1		0 100	
6.0	3.0	3.5	6.0		Change Pariod (Y+Rr) a		80			25	80	
137.5			0.0		Max Green Setting (Gmax) &		117.5		0.05		10.0	
49.8			71.2		Max O Clear Time (n c+11) =		144				2.01	
39.1			15.B		Green Ext Time (p_c), s		46.0				YE	
					Intersection Summary							
57.1					HCM 2010 Chi Delav			51.6				
w					HCM 2010 LOS			-				

Curason Winery Traffic Study Weekday PM Existing plus Approved plus Project

Timer Assigned Phs Pres Duration (D=Y+Rc), s Change Peniod (T+Rc), s Max Green Setting (Grmx), s Max O Cleer Time (g_ c+1), s Green Ext Time (g_ c), s

Intersection Summary HCM 2010 Ctrl Delar HCM 2010 LOS

Synchro 8 Report W-Trans

Synchro B Report W-Trans

HCM 2010 Signalized Intersection Sur 2: SR 12-121 & Old Sonoma Rd

Movement Lane Configurations Traffic Volume (vehih) Future Volume (vehih)

Number Initial O (DD), weh Per-Stile Adj/A, pb/1 Per-Stile Adj/A, pb/1 Per-Stile Bas, Adj Ad Faw Raths, sethh Ad No of Lanes Per-Stil Takany, Veh, Sc Cap, withh Ad No of Lanes Per-Stil Takany, withh Ad No of Lanes Cap, with Ad No of Lanes Cap, With Ad No Cap, Sci Fand, Sci Lanes Cap, With Ad No Cap, Sci Lanes Cap, With Ad No Cap, Sci Lanes Cap, With Ad No Cap, Sci Lanes Cap, Sci Lanes Cap, With Ad No Cap, Sci Lanes Cap, Sci Lanes Cap, With Ad No Cap, Sci Lanes Cap, Sci Lanes Cap, With Ad No Cap, Sci Lanes Cap, Sci Lanes Cap, With Ad No Cap, Sci Lanes Cap, Sci Lanes

Ouvaison Winery Traffic Study Weekend Midday Existing plus Approved plus Project

	12-121
I0 TWSC	Rd & SR
HCM 201	1: Duhig

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138	R WBL WBT			
4 606	- 000 -			
n	- 0.052 -			
lay (s) \$ 398.3 - 13	- 13.9 -			
HCM 95th %die Q(veh) 17.1 - 0.3	- 0.3 -			

Notes →: Volume exceeds capacity 3: Defary exceeds 300s +: Computation Not Defined *: All major volume in platoon

Ouwaison Winery Traffic Study Weekday PM Future plus Project

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the second succession.		Н						
Int Delay, sheh 11.4	+							
Movement	ľ	E	EBR		WBL	TBW	NBL	NBR
Lane Configurations		**			F	*	2	
Traffic Vol, vehith		1244	88		<u>1</u>	1405	25	120
Future Vol, vehih		1244	82		1 <u>0</u>	1405	25	120
Conflicting Peds, #hr		•	•		•	0	0	0
Sign Control		Free	Free		Free	Free	Stop	gats
RT Channelized		١	None		•	None	3	None
Slorage Length		×.	1		215	3	0	122
Veh in Median Storage, #		•	•		٠	0	0	, li
Grade, %		•	1		0	•	0	15
Peak Hour Factor		100	100		100	100	100	100
Heary Vehicles, %		CN	2		2	2	2	2
Momt Flow		1244	85		106	1405	52	120
Majot/Mnor	1	aiort		28	land2		Mnort	
Conflicting Flow All		-	¢	2	1320	¢	MPC	1301
State 1		1	•		3		1280	10.41
Stage 2		X	•		•	i	1617	
Critical Hdwy		•	•		4.12	•	6.42	6.22
Critical Howy Sta 1		3	•		•	3	542	
Critical Hdwy Sig 2		k			•	ä	5.42	
Follow-up Hidary		ļ)	111	3	2.218	đ.	3.518	3.318
Pot Cap-1 Maneuver		×	•		519	2	-11	201
Stage 1		٠	4		2	5	259	82).
Stage 2		•			2	÷	178	•
Platoon blocked, %		X	•			3		
Mov Cap-1 Maneuver		i)	•11		28	i.	11	201
Mov Lep-2 Maneuver		•	•			3	8	0
1 adapt		9	•		٤.	÷	662	5
7 agesc		8	÷		*	¥ .	142	ii.
terment		8			-		5	
Insurant		8			8		R	1
HCM LOS		•			-		F F	
Vinor LaneMajor Mont	NBLat	EB	EBR WBL	1.0	TBN			
apacity (vehh)	148	1	•		1			
HCM Lane V/C Ratio	1.178	3	4	0.204				
HCM Control Delay (s)	190.9	X		13.7	*			
HCM Lane LOS	u.	8	14	œ	1			
HCM 95th %tile Q(veh)	9,8	9)	•	8.0	3			

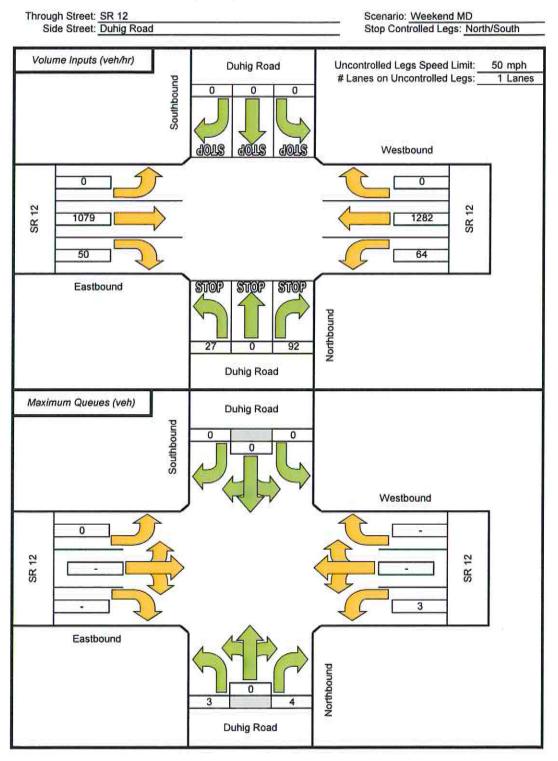
Cuvaison Winery Traffic Study Weekend Midday Future plus Project

Synchro 8 Report W-Trans

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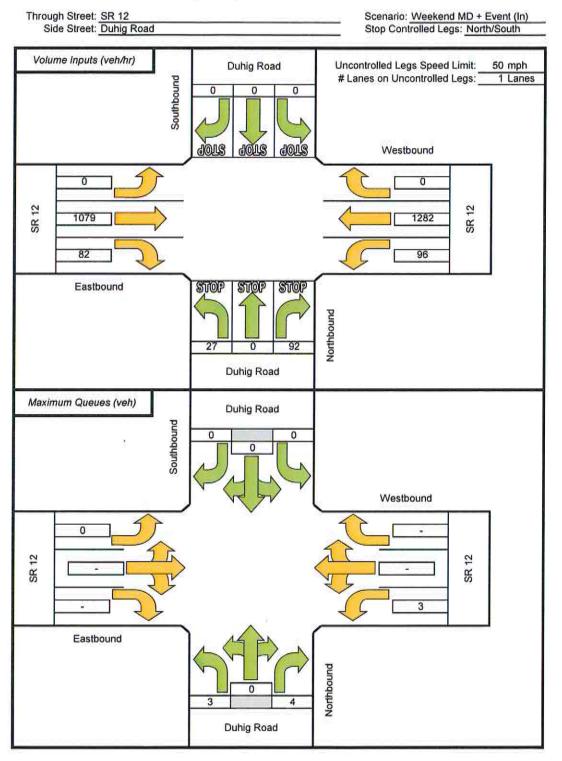
me in platoon

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100 100 <td>0000 0000 000 000 000<!--</td--><td>1.00</td><td></td><td>1.00</td><td></td><td>Ped-Bite Adj(A_pbT)</td><td></td><td></td><td></td><td></td><td></td><td></td></td>	0000 0000 000 000 000 </td <td>1.00</td> <td></td> <td>1.00</td> <td></td> <td>Ped-Bite Adj(A_pbT)</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td>	1.00		1.00		Ped-Bite Adj(A_pbT)						
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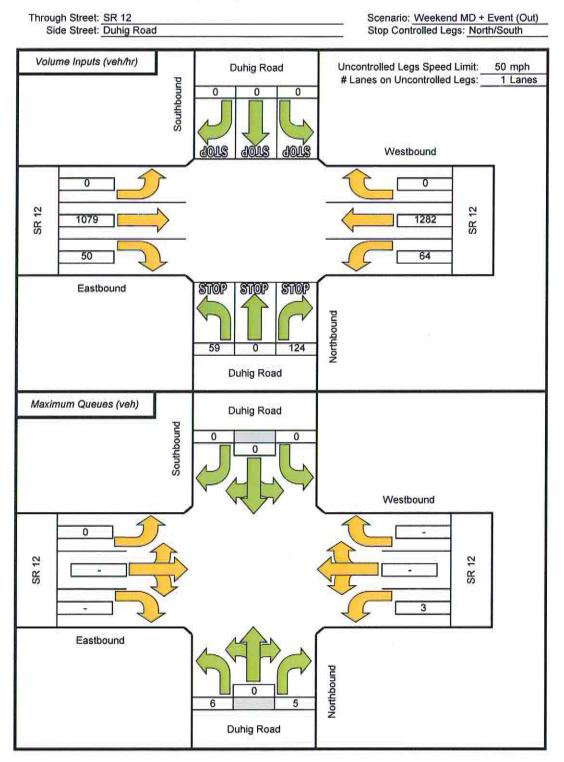
Maximum Queue Length Two-Way Stop-Controlled Intersections

Source: John T. Gard, ITE Journal, November 2001, "Estimating Maximum Queue Length at Unsignalized Intersections"



Maximum Queue Length Two-Way Stop-Controlled Intersections

Source: John T. Gard, ITE Journal, November 2001, "Estimating Maximum Queue Length at Unsignalized Intersections"



Maximum Queue Length Two-Way Stop-Controlled Intersections

Source: John T. Gard, ITE Journal, November 2001, "Estimating Maximum Queue Length at Unsignalized Intersections"



Appendix D

Winery Trip Generation Worksheet





	- manne	: Information / Trip Genera		Sheet	
Project Name: Cuvaison Wine	ery	Project Scenario):	Permitted	
Traffic during a Typical Week	day				
Number of FT employees: 10	× 3.05 c	one-way trips per employee	=	31	daily trip:
Number of PT employees: 0	x 1.90 d	one-way trips per employee		0	daily trips
Average number of weekday visitors: 75	;	/ 2.6 visitors per vehicle x 2 one-way trips	=	58	daily trip:
Sallons of production: 340000 /	1,000 × .00	9 truck trips daily ⁸ x 2 one-way trips	-	6	daily trips
		Total		94	daily trips
		Number of total weekday trips x .38	=	36	PM peak trips
Fraffic during a Typical Sature	day				
Number of FT employees (on Saturdays):	10	x 3.05 one-way trips per employee	=	31	daily trips
lumber of PT employees (on Saturdays):	0	× 1.90 one-way trips per employee	=	0	daily trips
werage number of weekend visitors:	75	2.8 visitors per vehicle x 2 one-way trips	=	54	daily trips
		Total	=	84	daily trips
		Number of total Saturday trips x .57	=	48	PM peak trips
Fraffic during a Crush Saturda	ny				
lumber of FT employees (during crush):	12	x 3.05 one-way trips per employee	=	37	daily trips
lumber of PT employees (during crush):	0	x 1.90 one-way trips per employee	=	0	daily trips
verage number of weekend visitors:	/	2.8 visitors per vehicle x 2 one-way trips	=	54	daily trips
allons of production:340000 /	1,000 × .00	9 truck trips daily x 2 one-way trips	=	6	daily trips
vg. annual tons of grape on-haul: 2304	<u>4</u> ,	x .11 truck trips daily ⁴ x 2 one-way trips	=	32	daily trips
		Total		128	daily trips.
		Number of total Saturday trips x .57	=	73	PM peak trips.
argest Marketing Event- Add.	itional '	Traffic			
lumber of event staff (iargest event):	0	x 2 one-way trips per staff person		0	trips.
lumber of visitors (largest event):0	/ 2.8	l visitors per vehicle x 2 one-way trips	=	0	trips.
lumber of special event truck trips (largest even	t):	0 x 2 one-way trips	=	0	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).

Winer	y Traffic Information / Trip Genera	tion	Sheet	
Project Name: Cuvaison Wine	ery Project Scenario	:	Proposed	
raffic during a Typical Week	day			
umber of FT employees: 28	x 3.05 one-way trips per employee	=	85	daily trips
umber of PT employees:0	× 1.90 one-way trips per employee	=	0	daily trips
verage number of weekday visitors:18	0 / 2.6 visitors per vehicle x 2 one-way trips	-	138	daily trips
allons of production: 340000	/ 1,000 × .009 truck trips daily ³ × 2 one-way trips	=	6	daily trips
	Total	=	230	daily trips
	Number of total weekday trips x .38	=	87	PM peak trips.
raffic during a Typical Satur	day			
umber of FT employees (on Saturdays):	28x 3.05 one-way trips per employee	÷.	85	daily trips
umber of PT employees (on Saturdays):	0 × 1.90 one-way trips per employee	=	0	daily trips
verage number of weekend visitors:	180 / 2.8 visitors per vehicle x 2 one-way trips	=	129	daily trips
	Total	Ē	214	daily trips.
	Number of total Saturday trips x .57	*	122	PM peak trips.
raffic during a Crush Saturd	ау			
umber of FT employees (during crush):	34 × 3.05 one-way trips per employee	5	104	daily trips
umber of PT employees (during crush):	0 x 1.90 one-way trips per employee	Ŧ	0	daily trips
verage number of weekend visitors:	200 / 2.8 visitors per vehicle x 2 one-way trips	Ē	143	daily trips
allons of production: 340000	/ 1,000 x .009 truck trips daily x 2 one-way trips	=	6	daily trips.
/g. annual tons of grape on-haul:230	4 x .11 truck trips daily ⁴ x 2 one-way trips		32	daily trips.
	Total	=	285	daily trips.
	Number of total Saturday trips x .57	=	162	PM peak trips.
argest Marketing Event- Add	litional Traffic			
	10 x 2 one-way trips per staff person	=	20	trips.
umber of event staff (largest event):	x 2 one-way trips per staff person	-		
umber of event staff (largest event): umber of visitors (largest event):200	A 2 one nay tips per stan person		143	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).

Cuvaison Winery Driveway Counts

	- PM Peak Hou	r					
	Day	Date	Peak Hour	Peak Hour Vol		Daily Vol	Peak Hour % of Daily
Week 1	Monday	9/19/2016	4:30 PM		17	237	7.17%
	Tuesday	9/20/2016	4:00 PM		20	279	7.17%
	Wednesday	9/21/2016	4:00 PM		11	289	3.81%
	Thursday	9/22/2016	4:00 PM		21	247	8.50%
Week 2	Monday	9/26/2016	5:00 PM		17	208	8.17%
	Tuesday	9/27/2016	5:00 PM		18	211	8.53%
	Wednesday	9/28/2016	5:00 PM		19	215	8.84%
	Thursday	9/29/2016	4:45 PM		15	211	7.11%
Average							7.41%
	- PM Peak Hou	ř 🛛					
	- PM Peak Hou Day	r Date	Peak Hour	Outbound		Inbound	Percent Outbound
Weekday		(14)	Peak Hour 4:30 PM	Outbound	15	Inbound 2	Percent Outbound 88.24%
Weekday	Day	Date		Outbound	15 17		
Weekday	Day Monday	Date 9/19/2016	4:30 PM	Outbound		2 3 4	88.24%
Weekday	Day Monday Tuesday	Date 9/19/2016 9/20/2016	4:30 PM 4:00 PM	Outbound	17	2 3	88.24% 85.00%
Weekday Week 1	Day Monday Tuesday Wednesday	Date 9/19/2016 9/20/2016 9/21/2016	4:30 PM 4:00 PM 4:00 PM	Outbound	17 7	2 3 4	88.24% 85.00% 63.64%
Weekday Week 1	Day Monday Tuesday Wednesday Thursday	Date 9/19/2016 9/20/2016 9/21/2016 9/22/2016	4:30 PM 4:00 PM 4:00 PM 4:00 PM	Outbound	17 7 13	2 3 4 8	88.24% 85.00% 63.64% 61.90%
Weekday Week 1	Day Monday Tuesday Wednesday Thursday Monday	Date 9/19/2016 9/20/2016 9/21/2016 9/22/2016 9/26/2016	4:30 PM 4:00 PM 4:00 PM 4:00 PM 5:00 PM	Outbound	17 7 13 15	2 3 4 8 2	88.24% 85.00% 63.64% 61.90% 88.24%
	Day Monday Tuesday Wednesday Thursday Monday Tuesday	Date 9/19/2016 9/20/2016 9/21/2016 9/22/2016 9/26/2016 9/27/2016	4:30 PM 4:00 PM 4:00 PM 4:00 PM 5:00 PM 5:00 PM	Outbound	17 7 13 15 15	2 3 4 8 2 3	88.24% 85.00% 63.64% 61.90% 88.24% 83.33%

Saturday - Midday Peak Hour

	Day	Date	Peak Hour	Peak Hour Vol		Daily Vol	Peak Hour % of Daily
	Saturday	9/17/2016	3:30 PM		43	345	12.46%
	Saturday	9/24/2016	2:00 PM		47	350	13.43%
	Saturday	10/1/2016	4:00 PM		42	307	13.68%
Average	93						13.19%

Prepared by NDS/ATD VOLUME

The Cuvaison Winery Dwy S/O Dughig Rd

Day: Monday Date: 9/19/2016

	DAI	Y TO	TALS		NB	SB		EB	Actor	WB		Ten Port	4	EWIT		Total
الراوع وطيو واليار	- High Andrews	03. (7.0=	AND	البولادة	123	114	1	0.4		0	and the state				0.24	237
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01:45			0			0	3	13:45	1	8	1 8	3			2	16
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	DAIL	YTO	TALS		NB	SB	PT-NI	EB		WB						Total
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AM Pk Volume		3	16				24	PM Pk Volume		15	1					21
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7 - 9 Peak Hour 7 - 9 Pk Volume		4	7				11	4 - 6 Pk Volume		15:50	10.					18:50
Pk Hr Factor		500	0.583				0.688	Pk Hr Factor		0.536	0.7					0.531

Prepared by NDS/ATD VOLUME The Cuvaison Winery Dwy S/O Dughig Rd

Day: Tuesday Date: 9/20/2016

0.000	5/20/2010							riu	Jeer In CAL	6_7643_003		
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11:30	3	0		3	23:30	1	0				1	
11:45	2 5	1 2		3 7	23:45		2 0	2010/01/2			1	2
TOTALS	51	51		102	TOTALS	7	75	102				177
SPLIT %	50.0%	50.0%		36.6%	SPLIT %	42	.4%	57.6%				63.4%
	DAILY TO	OTALS	NB	SB	EB	V	VB	N. SVII 201		051 D 81	То	tal
Trit Scours	DAILY I	DIALS	126	153	0		0	Sec. 2			27	
M Peak Hour	05:15	06:30		05:00	PM Peak Hour	19	3:45	20:30			1	20:30
M Pk Volume	16	12		22	PM Pk Volume		21	38				38
Pk Hr Factor	0.800	0.429		0.786	Pk Hr Factor							
		the second s			And in case of the local division of the loc		750	0.594			-	0.594
7 - 9 Volume	7	13		20	4 - 6 Volume		3	4				27
- 9 Peak Hour	07:45	08:00		07:45	4 - 6 Peak Hour	16	5:00	16:00				16:00
- 9 Pk Volume Pk Hr Factor	5 0.625	8 0.667		11	4 - 6 Pk Volume Pk Hr Factor	3	17	3				20 0.625

Prepared by NDS/ATD VOLUME The Cuvaison Winery Dwy S/O Dughig Rd

Day: Wednesday Date: 9/21/2016

	5. 5			-	- 1000		-	_						
	DAIL	Y TOT	ALS		NB	SB	EB		WB					Total
ALCO AND ADDRESS			a pleasant a	- U. A. U	1.62	127	0	A NUMBER	0	17.5		State State		289
AM Period	NB	St	3	EB	WB	TOTAL	PM Period	NB		SB	EB	WB	t i i	TOTAL
00:00	0	0				0	12:00	3		3				6
00:15	0	0				0	12:15	3		1				4
00:30	0	0				0	12:30	6	1000	2	2			8
00:45	0	0	_			0	12:45	4	16	3 9)			7 25
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02:15	ō	ō				0	14:15	3		1				4
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02:45	0	0	1	_		0 1	14:45	1	8	3 7				4 15
03:00	0	3				3	15:00	0		1				1
03:15	1	2				3	15:15	3		3				6
03:30	2	1	-			3	15:30	8		0				8
03:45	10 1		6			10 19	15:45	8	19	2 6		_		10 25
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06:45	2 7		10				18:45	0		0				0
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10:00	0	1				1	22:00	0		0				0
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TOTALS	9	2	78			174	TOTALS		66	49)		1.000	115
SPLIT %	55.		44.8%		-	60.2%	SPLIT %		57.4%	42.	animum.	-	-	39.8%
JFLIT /6	33.	s./0	44.078							72.	G 7 9	_		
	DAIL	ү тот	ALS		NB	SB	EB		WB					Total
Nite River	Court Halan	and at here	and the second s		162	127	0	ING:	0					289
AM Peak Hour	04:	30	08:15			04:45	PM Peak Hour		15:15	20:	30	-		15:15
AM Pk Volume	23		19			31	PM Pk Volume		23	1				30
Pk Hr Factor	0.5		0.679			0.596	Pk Hr Factor		0.719	0,5				0.750
7 - 9 Volume	11		19			34	4 - 6 Volume	-	13	4				17
7 - 9 Peak Hour	08:		08:00			08:00	4 - 6 Peak Hour		16:00	16:				16:00
7 - 9 Pk Volume	1		14			24	4 - 6 Pk Volume		7	4				11
Pk Hr Factor	0.6		0.500			0.545	Pk Hr Factor		0,438	0,5				0.458
PARTIFICTOR	0.0	2.3	0,500			0,945			0,430	0,5				0,438

Prepared by NDS/ATD **VOLUME** The Cuvaison Winery Dwy S/O Dughig Rd

Day: Thursday Date: 9/22/2016

												a state of the second state of the	a su e a n e ac	43_005		
	-	1707		-	NB	SB		EB		WB			e ul su		To	otal
a la	DAIL	101	ALS		125	122		0		0					2	47
AM Period	NB	SB		EB	WB	TOT	AL I	PM Period	NB	11	SB	EB	0 - 1 4	NB	ТО	TAL
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04:00	0 2	ŏ	6			Ö	"	16:00	5	12	4 12				9	24
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05:00	0	0				0		17:00	4	- 3004	1				5	
05:15	0	0				0		17:15	4		0				4	
05:30	1	4	-			5	10	17:30	4	17	1 2				5	
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TOTALS	41		51	-			92	TOTALS		84	71		-	-		155
SPLIT %	44.6	%	55.4%			3	7.2%	SPLIT %	5	54.2%	45.8%					62.8%
	DAILY	TOT	ALS	13124	NB	SB		EB		WB	The state of the state	12 2.4	18 194		Tot	A COLORED OF THE OWNER OF THE OWN
	The state of the	HARN CO	A DESCRIPTION OF		125	122	anus Is	0	باعتها	0	يواريد الكتبيا				24	7
AM Peak Hour	05:4	5	06:45		-		Sec. 136	M Peak Hour		17:00	12:45					14:15
AM Pk Volume	15		11				ACC4. ACC4.	M Pk Volume		17	18					27
Pk Hr Factor	0.53	ś	0.458		and the second second			Pk Hr Factor	à	0.850	0.750					0.614
and the second se	5		10				15 4	- 6 Volume		30	10					40
7 - 9 Volume																
7 - 9 Peak Hour	08:00)	07:00			C	5.03	6 Peak Hour		17:00	16:00					16:00
7 - 9 Volume 7 - 9 Peak Hour 7 - 9 Pk Volume Pk Hr Factor							9 4-	- 6 Peak Hour - 6 Pk Volume Pk Hr Factor		17:00 17 0.850	16:00 8 0.500					16:00 21 0.583

Prepared by NDS/ATD VOLUME

The Cuvaison Winery dwy S/O Dughig Rd

Day: Monday Date: 9/26/2016

			_	1770						ä	10 10 000	
	DAILY	TOTALS		NB	SB	EB		WB				Total
	Brint	TO THES	N 10 193	114	94		Core 15	0	a di Charles	d Personal		208
AM Period	NB	SB	EB	WB	TOTAL	PM Period	NB		SB	EB	WB	TOTAL
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00:15	0	0			0	12:15	1		5			6
00:30 00:45	0 1 1	0			0 1 1	12:30 12:45	2 5	10	0 5 12			2 10 22
01:00	0	3			3	13:00	1	10	0 12			10 22
01:15	ŏ	ŏ			ŏ	13:15	3		1			4
01:30	0	1			1	13:30	O		5			5
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02:15 02:30	o	ö			ő	14:30	3 2		0 2			3 4
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03:15	0	1			1	15:15	1		0			1
03:30	6 0 6	0			6	15:30	5 1	10	4			9 4 19
03:45	0 6	1 2	_		1 8	15:45 16:00	6	10	3 9	_		7 7
04:15	2	ô			2	16:15	2		2			4
04:30	4	0			4	16:30	0		0		2	0
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06:00	3	0			3	18:00	1	10	0			1
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TOTALS	<u>4 11</u> 53	49			102	TOTALS	0	61	45			106
SPLIT %	52.0%		6	-	49.0%	SPLIT %	6	57.5%	42.5%			51.0
S. 21. 70	52.070	40.07	2.0	-		240000411/2	-		-14.10/0		-	
	DAILY	TOTALS		NB	SB	EB		WB				Total
			and the set	114	94	0		0				208
M Peak Hour	11:00	06:45			06:45	PM Peak Hour		17:00	12:00			15:3
M Pk Volume	11	18			20	PM Pk Volume		15	12			24
Pk Hr Factor	0.688	0.563		and the second second	0.625	Pk Hr Factor		0.536	0.600	-	- 1	0.66
7 - 9 Volume	9 07:30	15 07:00	-		24 07:00	4 - 6 Volume 4 - 6 Peak Hour		25 17:00	6 16:00			31 17:0
	07:30	07:00			u/:00	H - O FEAK HOUL						
- 9 Peak Hour - 9 Pk Volume	6	10			14	4 - 6 Pk Volume		15	4			17

Prepared by ND5/ATD VOLUME The Cuvaison Winery dwy S/O Dughig Rd

Day: Tuesday Date: 9/27/2016

City: Napa Project #: CA16_7643_003

pate.	5/2//2010								Pr	oject #: CA	16_7643_003		
	DAILY	TOTALS	المتاركين المحكار	NB	SB	EB	Territoria de la	WB	and particular			То	otal
	DAILY	TOTALS	161 3 100	96	115	0	<u>دىر مالكى</u>	0	4.153.11	NETIS	annes annes		11
AM Period	NB	SB	EB	WB	TOTAL	PM Period	NB	III III	SB	EB	WB	TO	TAL
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00:15	0	0			0	12:15	2		2			4	
00:30	0	0			0	12:30	1		2			3	
00:45	_0	0			0	12:45	2	9	3 7			5	16
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02:00	1	0			1	14:00	1		2			3	
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03:00	0	1			1	15:00	2		2			4	
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03:30	0	1			1	15:30	1	128	1			2	
03:45	1 3	1 4			2 7	15:45	2	7	1 7			3	14
04:00	0	1			1	16:00	0		2			2	
04:15	1	1			2	16:15	4		2			6	
04:30	1 2	0			1	16:30	0		0			05	
04:45	0 2	1 3			1 5	16:45	4	8	1 5				13
05:00	1	0			1	17:00	2		1			3	
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07:45	3 5	1 7			4 12	19:45	0		0			0	
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TOTALS	39	61			100	TOTALS		57	54			-	111
SPLIT %	39.0%	61.0%	£		47.4%	SPLIT %	51	1.4%	48.6%	-		1	52.6%
	DAILY	TOTALS		NB	SB	EB		WB	24 71 8 5		Selection 1	Tot	
				96	115	0		0	ولب جراله			21	1
AM Peak Hour	10:15	06:15			10:30	PM Peak Hour	1	7:00	20:30				17:00
AM Pk Volume	11	15			22	PM Pk Volume		15	16				18
Pk Hr Factor	0.688	0.469			0.688	Pk Hr Factor		.625	0.500				0.750
7 - 9 Volume	9	14		· · · · · · · · · · · · · · · · · · ·	23	4 - 6 Volume		23	8	the state of	1		31
- 9 Peak Hour	07:45	07:00			07:00	4 - 6 Peak Hour		7:00	16:00				
- 9 Pk Volume	7	7			12	4 - 6 Pk Volume							17:00
	/	1											
Pk Hr Factor	0.583	0.438			0.750	Pk Hr Factor		15 .625	5 0.625				18 0.750

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Prepared by NDS/ATD VOLUME The Cuvaison Winery dwy S/O Dughig Rd

Day: Wednesday Date: 9/28/2016

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A States	DAII	Y TO	TALS		110	105	ŧ.	0		0						and the second s	215
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00:30	0		0			0		12:30	3	122	3	6523				6	-24
00:45	0		0			0	-	12:45	3	12	5	12		_		8	24
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01:30	õ		ŏ			ŏ		13:30	3		1					4	
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					110	105				0				an a		2	15
AM Peak Hour	11:		06:15				06:15	PM Peak Hour		17:15		20:15					12:15
AM Pk Volume	1!		18				30	PM Pk Volume		18		16					25
Pk Hr Factor	0.6		0.409			-	0.577	Pk Hr Factor		0.450		0.800	_			100	0.781
7 - 9 Volume	10		11				21	4 - 6 Volume		20		8	0				28
7 - 9 Peak Hour	07:		08:00				07:00	4 - 6 Peak Hour		17:00		16:00					17:00
7 - 9 Pk Volume	7		6				11	4 - 6 Pk Volume		17		6					19
Pk Hr Factor	0.4	38	0.750	- 10	a second		0.688	Pk Hr Factor	-	0.425		0.500	2.75	11.55	1.200		0.475

Prepared by ND5/ATD VOLUME

The Cuvaison Winery dwy S/O Dughig Rd

Day: Thursday Date: 9/29/2016

City: Napa Project #: CA16_7643_003

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Transfer for the	BAN	V TO	HATE	5.173	NB	SB	EB		WB				Tota	I.
	DAI	LY TO	IALS		110	101	0		0				211	
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in and	DAIL	Y TOT	ALS		110	3B 101	0		0				Total 211	
					Controlog									
AM Peak Hour AM Pk Volume	08	30	06:15 18			08:30 27	PM Peak Hour PM Pk Volume		17:00		45			:15
Pk Hr Factor	0.5		0.409			0.614	Pk Hr Factor		14 0.438		4 138			22 611
7 - 9 Volume	10.1		14			24	4 - 6 Volume		22	0.2				9
7 - 9 Peak Hour	07		08:00			08:00	4 - 6 Peak Hour		17:00		:00			:45
7 - 9 Pk Volume			11			16	4 - 6 Pk Volume		14		ŝ			15
Pk Hr Factor	0.6		0.688			0.571	Pk Hr Factor		0.438		00			469
				_				-			and the second se		0,4	142

	Weekday	(Wednesday)		r	We	ekend (Satur	dav)	
		sitors		1	0.224.07	Visitors		
Date	# of Visitors during 4-5 PM	Total Daily Visitors	% of Daily	Date	Weekend Peak Hour	# of Visitors During Peak Hour	Total Daily Visitors	% of Daily
	¥) 333		122/2014	8.1.2015	11:00-12:00		71	42.3%
8.5.2015	2	22	9.1%	8.8.2015	2:00-3:00	25	79	31.6%
8.12.2015	0	14	0.0%	8.15.2015	3:00-4:00	26	48	54.2%
8.19.2015	0	17	0.0%	8.22.2015	1:00-2:00	29	74	39.2%
8.26.2015	0	9	0.0%	8.29.2015	3:00-4:00	19	72	26.4%
1.6.16	0	13	0.0%	1.2.2016	2:00-3:00	12	60	20.0%
1.13.2016	0	8	0.0%	1.9.2016	2:00-3:00	16	55	29.1%
1.20.2016	0	27	0.0%	1.16.2016	11:00-12:00	16	72	22.2%
1.27.2016	0	2	0.0%	1.23.2016	3:00-4:00	17	92	18.5%
5.4.2016	0	9	0.0%	1.30.2016	3:00-4:00	23	78	29.5%
5.11.2016	1	19	5.3%	5.7.2016	3:00-4:00	18	96	18.8%
5,18,2016	0	22	0.0%	5.14.2016	3:00-4:00	17	96	17.7%
5.25.2016	0	6	0.0%	5.21.2016	1:00-2:00	17	75	22.7%
				5.28.2016	3:00-4:00	19	80	23.8%
Weekday		Avg	1.2%	Weekend (S	aturday)		Avg	28.3%
	# of	ployees				Employees # of		
Date	Employees during 4-5 PM	Total Daily Employees	% of Daily	Date	Weekend Peak Hour	Employees During Peak Hour	Total Daily Visitors	% of Daily
8.3.2016	4	10	40.0%	8.6.2016	11:00-12:00	7	7	100.0%
8.10.2016	3	9	33.3%	8.13.2016	2:00-3:00	7	7	100.0%
8.17.2016	5	17	29.4%	8.20.2016	3:00-4:00	7	7	100.0%
8.24.2016	3	3	100.0%	8.27.2016	1:00-2:00	7	7	100.0%
1.6.16	1	8	12.5%	1.2.2016	2:00-3:00	5	5	100.0%
1.13.2016	1	9	11.1%	1.9.2016	2:00-3:00	4	4	100.0%
1.20.2016	1	4	25.0%	1.16.2016	11:00-12:00	5	5	100.0%
1.27.2016	1	5	20.0%	1.23.2016	3:00-4:00	3	3	100.0%
5.4.2016	1	8	12.5%	1.30.2016	3:00-4:00	9	9	100.0%
5.11.2016	5	7	71.4%	5.7.2016	3:00-4:00	5	5	100.0%
5.18.2016	1		173 ST 1825			5	5	
		7 8	14.3%	5.14.2016	3:00-4:00			100.0%
5.25.2016	2	8	25.0%	5.21.2016	1:00-2:00	5	5	100.0%
Maaladay		A/2	33.0%	5.28.2016	3:00-4:00	5	5	100.0%
Weekday		Avg	32.9%	Weekend (S	aturday)		Avg	100.0%
	Visitors an Avg # of	d Employees			Visito	ors and Emplo Avg # of	yees	
	Emp+ Visitors during PM Peak Hour	Average Daily Emp+ Visitors	% of Daily			Emp+ Visitors during PM Peak Hour	Average Daily Emp+ Visitors	% of Daily
Average	1	11	9.1%	-	Average	13	42	31.0%

Trip Generation Data - Cuvaison Winery

Tunical Weekday		Permitted		Propo	sed	Net New	In	Out
Typical Weekday	Rate	Value	Trips	Value	Trips			
FT Employees	3.05	10	31	28	85			
PT Employees	1.9	0	0	0	0			
Avg # of wkday visitors	2.6	75	58	180	138			
Gallons of production	0.02	340000	6	340000	6			
Daily			95		229	134		
PM Peak Trips - Napa County rate (38% of daily)	38%		36		87			
PM Peak Trips - Assume 9% of daily	9%		9		21			
PM Peak Trips - Site Specific (Assume 1 trip per employee + 7% of visitor trips)	7%		14		38	24	5	19

Typical Saturday		Perm	itted	Propo	osed	Net New	In	Out
Typical Saturday	Rate	Value	Trips	Value	Trips			
FT Employees	3.05	10	31	28	85			
PT Employees	1.9	0	0	0	0			
Avg # weekend visitors	2.8	75	54	180	129			
Daily			85		214	129		
MD Peak Trips - Napa County rate (57% of daily)	57%		48		122			
MD Peak Trips - Assume 31% of daily	31%		26		66			
MD Peak Trips - Site Specific (Assume 1 trip per employee + 28% of visitor trips)	28%		25		64	39	20	19

Guuch Saturday		Perm	itted	Propo	sed	Net New	In	Out
Crush Saturday	Rate	Value	Trips	Value	Trips	-		
FT Employees	3.05	12	37	34	104			
PT Employees	1.9	0	0	0	0			
Avg # weekend visitors	2.8	75	54	200	143			
Gallons of production	0.02	340000	6	340000	6			
Daily			97		253	156		
MD Peak Trips - Napa County rate (57% of daily)	57%		55		144	89		
MD Peak Trips - Assume 31% of daily	31%		30		78	48		
MD Peak Trips - Site Specific (Assume 1 trip per employee + 28% of visitor trips)	28%		27		74	47	24	23

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Appendix E

Left-Turn Warrant Calculations



