

Appendix C

Traffic Study

Associated Transportation Engineers

**AGNEW OIL LEASE DEVELOPMENT MODIFIED CUP
VENTURA COUNTY, CALIFORNIA**

TRAFFIC STUDY



October 2, 2019

ATE Project 18070

Prepared for:

**Carbon California
270 Quail Court, Suite "B"
Santa Paula, California 93060**

Prepared by:

**Darryl F. Nelson
Under the direction of
Richard L. Pool, P.E.**



ASSOCIATED TRANSPORTATION ENGINEERS

100 N. Hope Avenue, Suite 4, Santa Barbara, CA 93110-1686 • (805) 687-4418 • FAX (805) 682-8509



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100 N. Hope Avenue, Suite 4, Santa Barbara, CA 93110 • (805) 687-4418 • FAX (805) 682-8509

Since 1978

Richard L. Pool, P.E.
Scott A. Schell, AICP, PTP

October 2, 2019

Ms. Jane Farkas
Carbon California
270 Quail Court, Suite "B"
Santa Paula, CA 93060

TRAFFIC STUDY FOR THE AGNEW OIL LEASE MODIFIED CUP, VENTURA COUNTY, CALIFORNIA

The following report presents the findings of the traffic study prepared by Associated Transportation Engineers (ATE) for the Agnew Oil Lease Modified Conditional Use Permit (CUP) application. It is our understanding that the traffic analysis will be used by Ventura County to assess the traffic impacts associated with the project, and to process the CUP modification application.

We appreciate the opportunity to assist Carbon California with this project.

Associated Transportation Engineers

Richard L. Pool, P.E.
President



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INTRODUCTION

The following traffic and circulation study contains an analysis of the potential traffic and circulation impacts associated with the continued operation of the Agnew Oil Lease site located north of Ste Route 150 and west of Koenigstein Road in the Upper Ojai Valley. The traffic and circulation study provides information relative to Existing, Existing + Project and Cumulative traffic conditions in the vicinity of the project site. The project site access via the State Route 150/Koenigstein Road intersection was also evaluated.

PROJECT DESCRIPTION

The Project is requesting a modified Conditional Use Permit (CUP) authorizing the continued operation of an existing oil and gas facility for an additional 25 years, the installation and operation of three new oil wells and the re-drilling of one existing well and use of Koenigstein Road for access to the project site. The existing CUP-3543 permits 12 tanker truck loads per week (24 truck trips per week). The modification would reduce the number of tanker truck loads to 8 per week (16 truck trips per week). The current CUP does not limit the number of vehicle trips associated with the maintenance and operation of the production facilities, the applicant proposes to limit the traffic to 14 maintenance visits per week (28 maintenance vehicle trips per week). The current CUP authorizes access to the facility during drilling and production operations from private road connected to State Route 150 at a point southwest of the Project site. This private roadway was destroyed during flooding in 1995. Since that time Koenigstein Road has been used to serve the oil production facility as there is no other access road. The modification would authorize the use of Koenigstein Road for access to State Route 150 during drilling and production. A private road connected to Koenigstein Road would provide direct access to the Project site. The Project site location is illustrated on Figure 1.

EXISTING CONDITIONS

Street Network

The Project site is served by a circulation system comprised of highway and local roads which are illustrated on Figure 1 and discussed in the following text.

State Route 150, located south of the Project site is a 2-lane conventional highway that connects U.S. Highway 101 in Santa Barbara County to State Route 126 in Ventura County, linking the cities of Carpinteria, Ojai and Santa Paula. State Route 150 (Ojai Avenue) is a principal east-west arterial through the City of Ojai. The unsignalized State Route 150/Koenigstein Road intersection will provide access to the Project site.


Koenigstein Road, is a 2-lane north-south roadway that extends north from State Route 150. Koenigstein Road provides access to several private residences and existing oil and gas leases in the Ojai Oil Field. A private road connection to Koenigstein Road will continue to provide direct access to the Project site.



FIGURE 1

EXISTING STREET NETWORK/PROJECT SITE LOCATION

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Roadway Operations

Existing average daily traffic (ADT) volumes for the study-area roadway segments are illustrated on Figure 2. The roadway segment volume was collected by ATE in May of 2018. In determining the operational characteristics of these roadway segments, "Levels of Service (LOS) "A" through "F" are applied, with LOS "A" indicating very good operations and LOS "F" indicating poor operations (more complete definitions of levels of service are contained in the Technical Appendix).

Levels of Service for the study-area roadway segments were determined based on Ventura County roadway engineering design capacities, which are summarized in the Technical Appendix. The results are presented in Table 1.

Table 1
Existing Roadway Segment Levels of Service

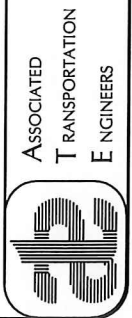
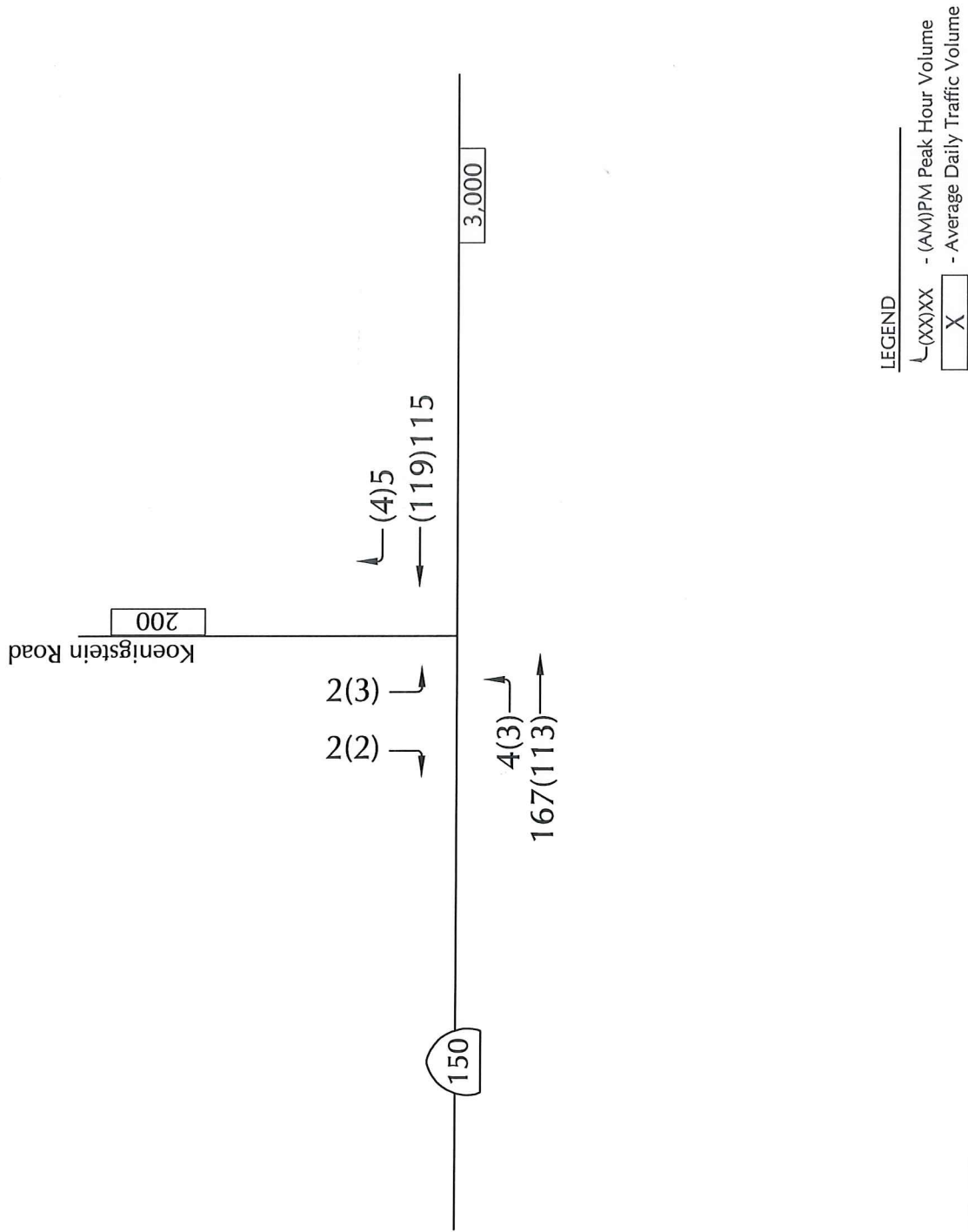
Roadway	Classification	Geometry	ADT	LOS E Capacity	LOS
State Route 150	Class II	2-lane	3,000	21,000	LOS B
Koenigstein Road	Class III	2-lane	200	16,000	LOS A

The data presented in Table 1 indicates that the study-area roadway segments currently operate in the LOS "A" - "B" range based on the County's level of service criteria. Note that the 2015 Baseline conditions presented in the August 2015 Subsequent Environmental Impact Report for the Mirada Petroleum Oil and Gas Project - Agnew Lease utilized 2015 ADT traffic volumes of 2,900 on State Route 150 and 250 on Koenigstein Road. The 2018 traffic counts utilized by ATE indicate that the Baseline conditions have not changed relative to roadway levels of service.

Intersection Levels of Service

Because traffic flow on urban arterials is most restricted at intersections, a detailed analysis of traffic flow must examine the operating conditions of critical intersections during peak flow periods. As with roadway segments "Levels of Service" (LOS) "A" through "F" are used to rate intersection operations.

Existing A.M. and P.M. peak hour turning volumes for the study-area intersection is shown on Figure 2. The peak hour turning volumes were collected by ATE in May of 2018 in conjunction with this study. Figure 3 illustrates the study-area intersection existing traffic control and the intersection geometry.

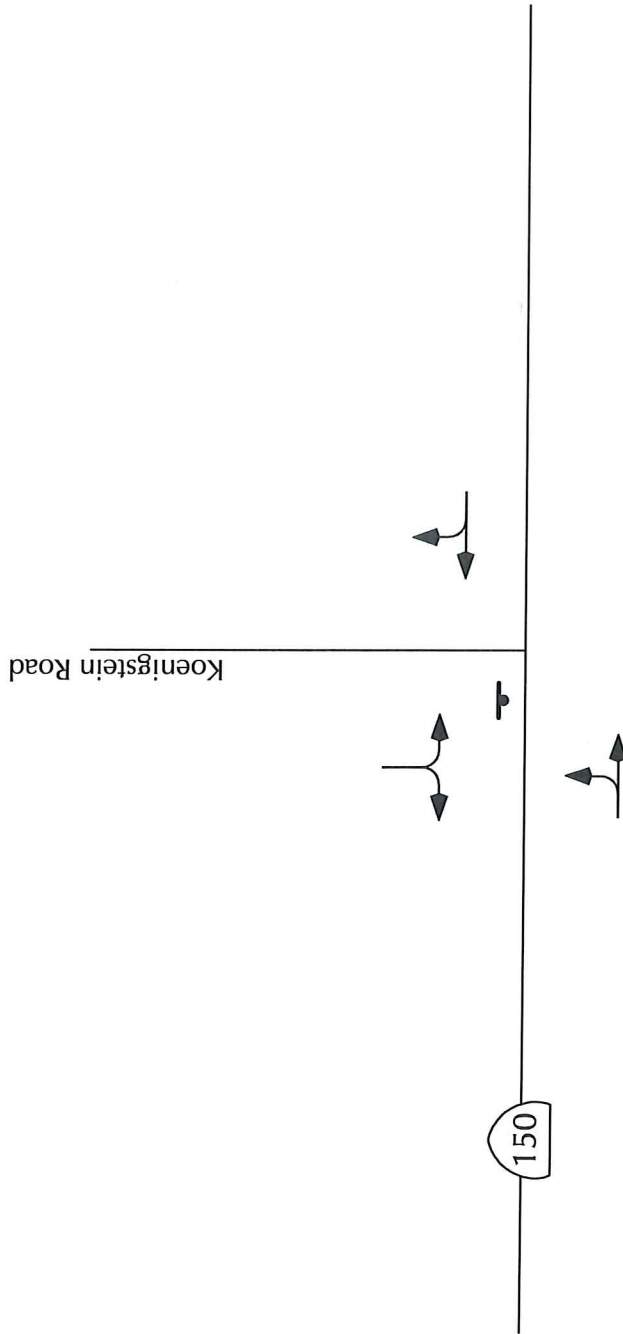


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EXISTING TRAFFIC VOLUMES

FIGURE 2

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LEGEND

— - Stopped Approach

— - Lane Geometry



NOT TO SCALE



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EXISTING LANE GEOMETRY AND TRAFFIC CONTROLS

FIGURE 3

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Level of service for the study-area intersection was calculated using the Highway Capacity Manual unsignalized intersection methodology. The Technical Appendix contains the level of service calculation worksheets for the study-area intersection. Table 2 lists the type of traffic control and the existing A.M. and P.M. peak hour levels of service for the study-area intersection.

**Table 2
Existing Intersection Levels of Service**

Intersection	Control Type	A.M. Peak Hour		P.M. Peak Hour	
		Delay	LOS	Delay	LOS
State Route 150/Koenigstein Road eastbound left-turn: southbound approach:	STOP-Sign	7.5 sec.	LOS A	7.5 sec.	LOS A
		9.6 sec.	LOS A	9.7 sec.	LOS A

The data presented in Table 2 indicates that the study-area intersection delayed movements currently operate at LOS "A" or better during the A.M. peak hour and P.M. peak hour periods, which meets the County's LOS "C" standard.

VENTURA GENERAL PLAN POLICIES

Roadways: The thresholds established by Ventura County¹ that are outlined in Table 3 were used to assess the significance of roadway and intersection impacts associated with project generated traffic.

Table 3
Minimum Acceptable Level of Service For Roadway Segments and Intersections

Minimum LOS	County of Ventura - Description
C	All County maintained local roads.
D	All County thoroughfares and state highways within the unincorporated area of the County, except as provided below
E	<ol style="list-style-type: none"> 1. State Route 33 between the end of the Ojai freeway and the City of Ojai. 2. State Route 118 between Santa Clara Avenue and the City of Moorpark. 3. State Route 34 (Somis Road) north of the City of Camarillo. 4. Santa Rosa Road between Camarillo city limit line and Thousand Oaks city limit line. 5. Moorpark Road north of Santa Rosa Road to Moorpark city limit line.
Varies	The LOS prescribed by the applicable city for all state highways, city thoroughfares, and city maintained local roads located within that city, if the city has formerly adopted General Plan policies, ordinances or a reciprocal agreement with the County, pertaining to development in the city that would individually or cumulatively affect the LOS of state highways, county thoroughfares and county-maintained local roads in the unincorporated area of the County.
	County LOS standards are applicable for any city that has not adopted its own standards or has not executed a reciprocal agreement with the County pertaining to impacts to County roads.
At any intersection between two roads, each of which has a prescribed minimum acceptable LOS, the less stringent LOS of the two shall be the minimum acceptable LOS of that intersection.	

Project-Specific Impacts - A significant adverse project specific traffic impact is assumed to occur on any road segment if any one of the following results from the project:

- a. If the project would cause the existing LOS on a roadway segment to fall to an unacceptable level as defined in Table 3.
- b. If the project will add one or more PHT to a roadway segment that is currently operating at an unacceptable LOS as defined in Table 3.

Cumulative Impacts – A potentially significant adverse cumulative traffic impact is assumed to occur on any road segment if any one of the following results from the project:

- a. If the project will add one or more PHT to a roadway segment that is part of the regional road network and the roadway segment is currently operating at an unacceptable LOS as defined in Table 3.

¹ Ventura County Initial Study Assessment Guidelines, County of Ventura, April 26, 2011.

- b. If the project will add 10 or more PHT to a roadway segment which is part of the regional road network and is projected to reach an unacceptable LOS as defined in Table 3 by the Year 2020.

All projects that generate traffic contribute to cumulative traffic impacts. The analysis of cumulative traffic impacts, as contained in the Final Subsequent EIR prepared for the County General Plan Update (2005) and subsequent addendum (2007), would normally be considered sufficient analysis of traffic impacts. In such cases, payment of County's Traffic Impact Mitigation Fees (TIMF) is intended to mitigate the project's contribution to the cumulative traffic impacts for road segments outside of the Ojai Valley.

The County of Ventura's traffic impact thresholds for the Ojai area also focus on the segment of State Route 33 in the Casitas Springs community, located south of the City of Ojai. The threshold states that a project would contribute to significant cumulative impacts if it adds one or more southbound trips during the A.M. peak period or adds one or more northbound trips during the P.M. peak period to State Route 33 in Casitas Springs.

Intersections: A potentially significant adverse project-specific traffic impact is assumed to occur at any intersection on the Regional Road Network if the project will exceed the thresholds established in Table 4.

**Table 4
Threshold of Significance For Changes in Level of Service at Intersections**

Significant Changes in LOS	
Intersection Level of Service (Existing)	Increase in V/C or Trips Greater Than
LOS A	0.20
LOS B	0.15
LOS C	0.10
LOS D	10 Trips*
LOS E	5 Trips*
LOS F	1 Trip*
*To critical movements. These are the highest combination of left and opposing through/right-turn PHTM.	

If the project involves County General Plan land use designation changes, zone changes or intensification of use, such that the projects impacts could not have been anticipated and were not included in either analysis for the current General plan or TIMF Program, or the project is located within the boundaries of the Ojai Area Plan, additional cumulative impact analysis and mitigation measures may be required at the discretion of the Director, County PWA - Transportation Department.

Project Trip Distribution and Assignment

The project trip distribution is based on truck route presented in August 2015 Subsequent Environmental Impact Report for the Mirada Petroleum Oil and Gas Project - Agnew Lease. Trucks are route to and from east towards the City of Santa Paula. Figure 4 illustrates the distribution pattern used to assign the truck trips associated with the operation of the Agnew Oil Lease.

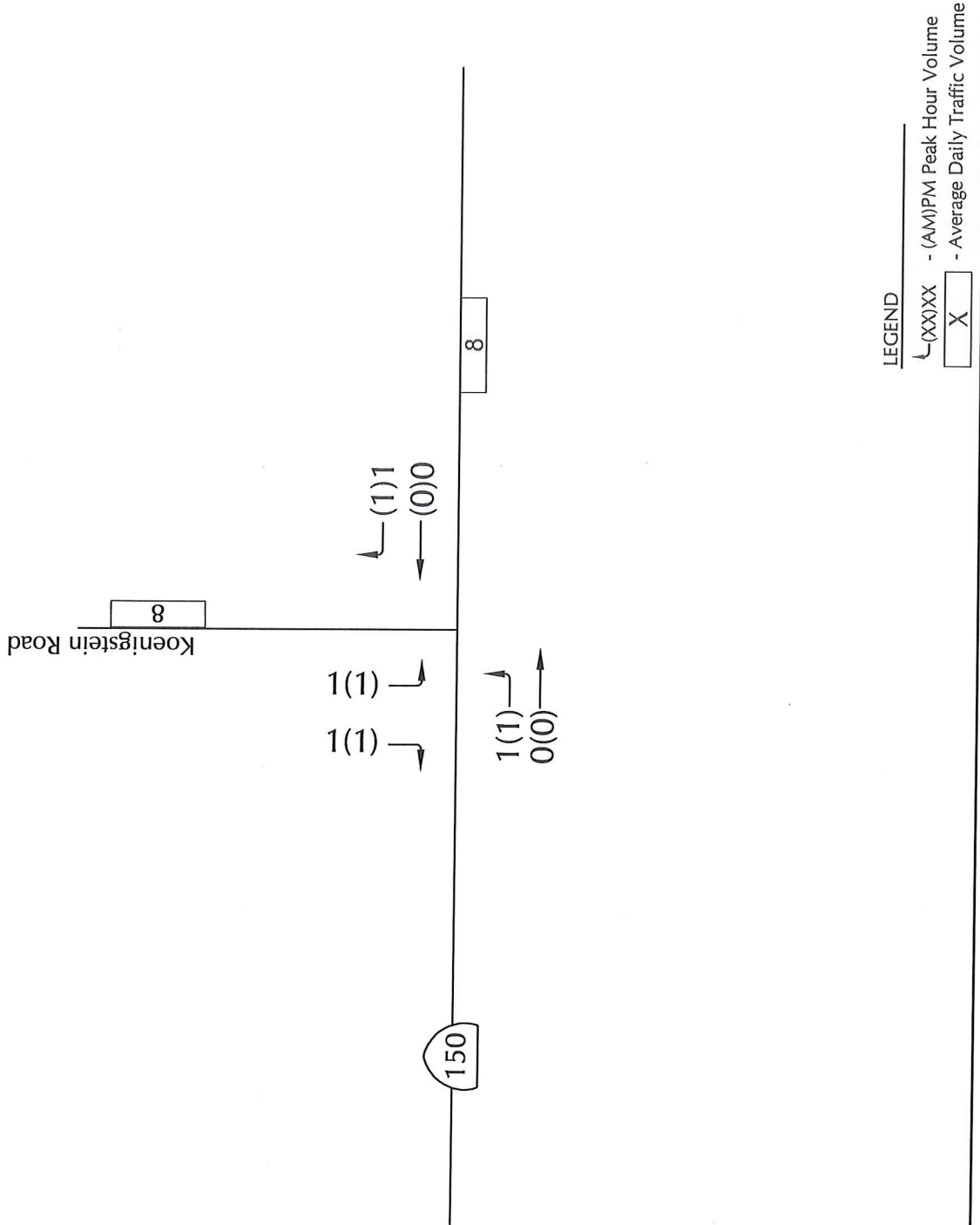
Existing + Project Roadway Operations

Existing + Project average daily traffic (ADT) volume for the study-area roadway segment is illustrated on Figure 5. Levels of Service for the study-area roadway segment was determined based on Ventura County roadway engineering design capacities, the results are presented in Table 6.

Table 6
Existing + Project Roadway Levels of Service

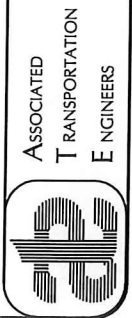
Roadway Segment	Existing Geometry	Roadway Classification	Existing + Project ADT	LOS D Capacity	LOS
State Route 150	2-lanes	Class II	3,006	21,000	LOS B
Koenigstein Road.	2-lanes	Class III	206	16,000	LOS A

The data presented in Table 6 indicates that the study-area roadway segments would continue to operate in the LOS "A" - "B" range with project-generated traffic based on the County's level of service criteria.



LEGEND
 ↓(XX)XX - (AM) PM Peak Hour Volume
 X - Average Daily Traffic Volume

N
 NOT TO SCALE

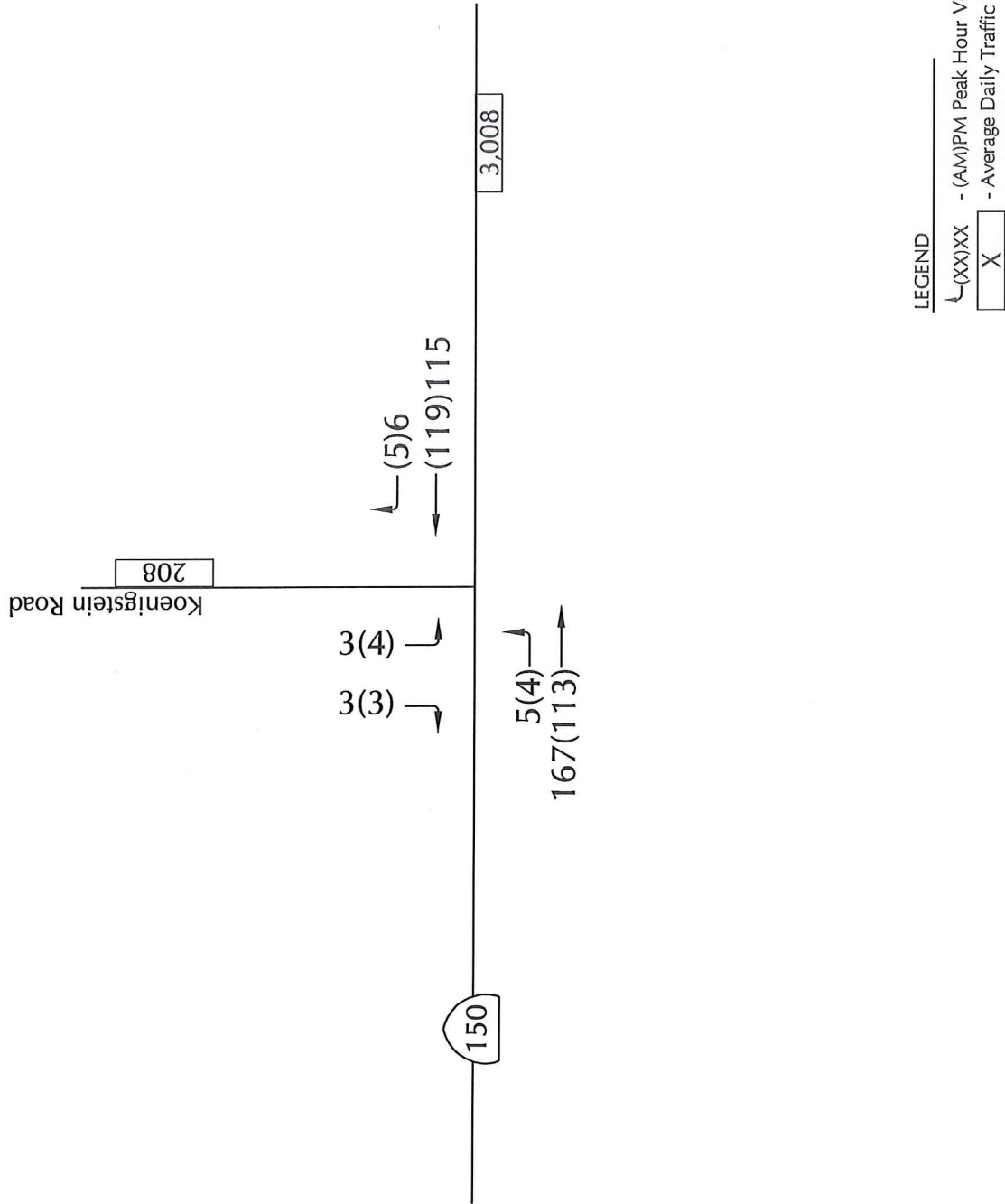


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PROJECT TRIP DISTRIBUTION AND ASSIGNMENT

FIGURE 4

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LEGEND

- ↓(XX)XX - (AM)PM Peak Hour Volume
- ↓ X - Average Daily Traffic Volume



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EXISTING + PROJECT TRAFFIC VOLUMES

FIGURE 5

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Existing + Project Intersection Levels of Service

Intersection levels of service for the study-area intersections were calculated assuming the Existing + Project traffic volumes shown on Figure 5. Worksheets illustrating the calculations are provided in the Technical Appendix. Table 7 list the results of the calculations and Existing + Project level of service ratings.

Table 7
Existing + Project Intersection Levels of Service

Intersection	Control Type	A.M. Peak Hour		P.M. Peak Hour	
		Delay	LOS	Delay	LOS
State Route 150/Koenigstein Road eastbound left-turn: southbound approach:	STOP-Sign	7.5 sec. 9.6 sec.	LOS A LOS A	7.5 sec. 9.7 sec.	LOS A LOS A

The data presented in Table 7 indicate that the project would not generate significant impacts at the study-area intersection during weekday peak hour periods. The study-area unsignalized intersection delayed movements would continue to operate in the LOS "A" range with the addition of project-generated traffic volumes.

State Route 150/Koenigstein Road Project Site Access

The requested modified CUP would authorize the use of Koenigstein Road. In 1995 the permitted access road was destroyed by flooding. The August 2015 Subsequent Environmental Impact Report for the Mirada Petroleum Oil and Gas Project - Agnew Lease concluded that the reconstruction of the destroyed access road across Sisar Creek was not feasible. The site of the former crossing is now an active stream channel that supports sensitive wildlife habitat. Construction of a new at-grade crossing or bridge spanning the creek would result in potentially significant impacts on the biological resources, It is unlikely the required State permits to alter the streambed could be obtained given the availability of Koenigstein Road to serve the Project.

Ventura County Safety and Design of Public Road Threshold of Significance Criteria

Project-Specific Impacts

1. A project that impacts Public Road or intersections will have a less-than significant impact on the design of the Public Road system or intersections only if the existing Public Road or intersection complies with current County Road standards and the proposed Public Road or intersection improvement or encroachment associated with the project or required by the CEQA lead agency also complies with County Road Standards.

2. A project that either individually impacts a Public Road intersection so that the intersection exceeds any one of the traffic signal warrants established by the Manual for Uniform Traffic Control Devices as supplemented and adopted by the State of California (MUTCD/CA) has the potential to cause a significant impact.

3. A project that impacts Public Roads or intersections will have a less-than-significant impact on the safety and design of the Public Road System only if the existing Public Road or intersection complies with current County Road Standards and if the affected Public Road or intersection has a collision or incident rates at or below state wide averages for similar faculties.

4. A project has a potentially significant adverse project-specific traffic impact on any road segment of the roadway segment has been identified by SWITRS as experiencing a high incident rate.

5. A project has a potentially significant adverse project-specific traffic impact on the affected road segment if that roadway segment is identified as being a part of an existing road system that is non-compliant with current County road standards.

6. A proposed project located in the unincorporated area where the existing road systems were developed prior to any safety engineering standards will have a significant adverse impact on the road safety.

7. A project will have a potentially significant adverse project-specific traffic impact at any un-signalized intersection on the Public Road system if the project-specific impacts results in any of the warrants established by the MUTCD/CA being met.

8. A project with project-specific impacts to any intersection that has been identified in the Substandard Impact Area Vicinity, Upper Ojai Substandard Impact Area, Santa Susana Area Substandard Impact Area, Ventu Park Area Substandard Impact Area, Yerba Buena Area Substandard Impact Area, or the Sant Susana Knolls Area Substandard Impact Area Maps shall be considered significantly unless mitigated.

Cumulative Impacts

1. A project will have a potentially significant adverse cumulative traffic impact on any road segment if the affected road segment has been identified as experiencing a high incident rate.

2. A project that individually impacts a Public Road intersection so that the intersection exceeds any one of the traffic signal warrants established by the Manual for Uniform Traffic Control Devices as supplemented and adopted by the State of California (MUTCD/CA) has the potential to cause a significant cumulative impact.

3. A proposed project along with past, present or probable future projects that uses existing substandard public road in the areas shown on the Substandard Impact Areas Vicinity, Upper Ojai Substandard Impact Area, Santa Susana Area Substandard Impact Area, Ventu Park Area Substandard Impact Area, Yerba Buena Substandard Impact Area, or Santa Susana Knoll Are Substandard Impact Area Maps (see attachments) is considered to have cumulative impacts on the operational safety if he public road system in these areas.

4. A project will have a potentially significant adverse cumulative traffic impact to any un-signalized intersection on the Public Road System if the project-specific impacts along with the other past, present or probably future projects results in any of the warrants established by the MUTCD/CA being met

5. Any proposed project, along with other past, present or probably future project, that causes impacts at any intersection that has been identified in the Substandard Impact Areas Vicinity, Upper Ojai Substandard Impact Area, Santa Susana Area Substandard Impact Area, Ventu Park Area Substandard Impact Area, Yerba Buena Substandard Impact Area, or Santa Susana Knoll Are Substandard Impact Area Maps will also be considered cumulatively significant.

The State Route 150/Koenigstein Road intersection is outside of the Upper Ojai Substandard Impact area. With an existing pavement width of 22 feet, Koenigstein Road does not comply with current Ventura County Road standards of 32 feet. The following is an evaluation for the State Route 150/Koenigstein Road intersection as it relates to the use of tanker trucks. ATE has conducted a field review of the intersection to determine the sight distance, evaluated collision data on State Route 150. ATE evaluated the intersection based on the use by oil tanker trucks which will not exceed the legal limits as defined in Section 35401 of the State of California Vehicle Code. Oversized trucks would be required to have a valid Transportation Permit issued by the State.

Sight Distances. ATE conducted a field review to determine if sufficient sight distance exists for tanker trucks at the State Route 150/Koenigstein Road intersection. The Caltrans Highway Design Manual² sight distance standards were used for the sight distance analysis. The segment of State Route 150 is rolling and posted 35 MPH. Based on Caltrans criteria, the minimum required sight distance standard for a 35 MPH design speed is 250 feet.

The sight distance looking east along State Route 150 was measured at 350 feet, in excess of the 250-foot minimum. The sight distance looking west along State Route 150 was measured at 500 which also exceeds the 250-foot minimum. The measured sight distance at the State Route 150/Koenigstein Road intersection exceeds the minimum site distance standard.

² Highway Design Manual, Caltrans, 6th Edition.

Collision Data. ATE requested and reviewed collision data on file with Caltrans for the State Route 150/Koenigstein Road intersection. The collision data records covered a period from 2016 to 2019. The collision record provided by Caltrans is provided in the Technical Appendix. There were no collisions reported at the intersection. The August 2015 Subsequent Environmental Report for the Mirada Oil and Gas Project - Agnew Lease found that from 2002 to 2013 only two accidents occurred at the intersection and neither involved oil tanker trucks.

The Koenigstein Road bridge over Sisar Creek is approximately 22 feet wide which makes it inadequate for passing trucks. This condition would be an inconvenience but would not create a safety hazard due to low traffic volumes that utilize the bridge.

A supplemental analysis letter prepared for the State Route 150/Koenigstein Road intersection by ATE in July of 2016 is included in the Technical Appendix.

Signal Warrants. A signal warrant analysis was conducted for the State Route 150/Koenigstein Road intersection. The traffic signal warrant analysis was completed based on the Manual on Uniform Traffic Control Devices (MUTCD), California Supplement, 8-Hour, 4-Hour, Crash and Average Daily Traffic vehicular volume warrant criteria. The Rural Warrants were used. Table 8 summarizes the results of the signal warrant analysis.

Table 8
Signal Warrant Results - State Route 150/Koenigstein Road

Warrant	Type	Warrant Satisfied ?		
		Existing	Existing + Project	Cumulative + Project
#1	8-Hour Condition "A" - Minimum Vehicle Volume Condition "B" - Interruption of Continuous Traffic	No No	No No	No No
#2	4-Hour	No	No	No
#3	Peak Hour	Does Not Apply		
#4	Pedestrian Volume	Does Not Apply		
#5	School Crossing	Does Not Apply		
#6	Coordinated Signal System	Does Not Apply		
#7	Crash	No	N/A	N/A
#8	Roadway Network	Does Not Apply		
#9	Intersection Near a Grade Crossing	Does Not Apply		
ADT	ADT Condition "A" - Minimum Vehicle Volume Condition "B" - Interruption of Continuous Traffic	No No	No No	No No

The approach volumes on the minor street at the State Route 150/Koenigstein Road intersection do not satisfy the 8-Hour and the 4-Hour vehicular volume warrants under the Existing, Existing + Project and Cumulative + Project scenarios. In order to satisfy the 8-Hour warrant, a minimum of 53 vehicles per hour are necessary on the minor street approach with one lane. In order to satisfy the 4-Hour warrant, a minimum of 60 vehicles per hour are necessary on the minor street approach with one lane. The Cumulative + Project traffic volumes are below 53 vehicles per hour during both the 8 hour and the 4 hour periods. Neither Condition "A" or "B" of the 8-Hour volumes warrant is 80 percent satisfied.

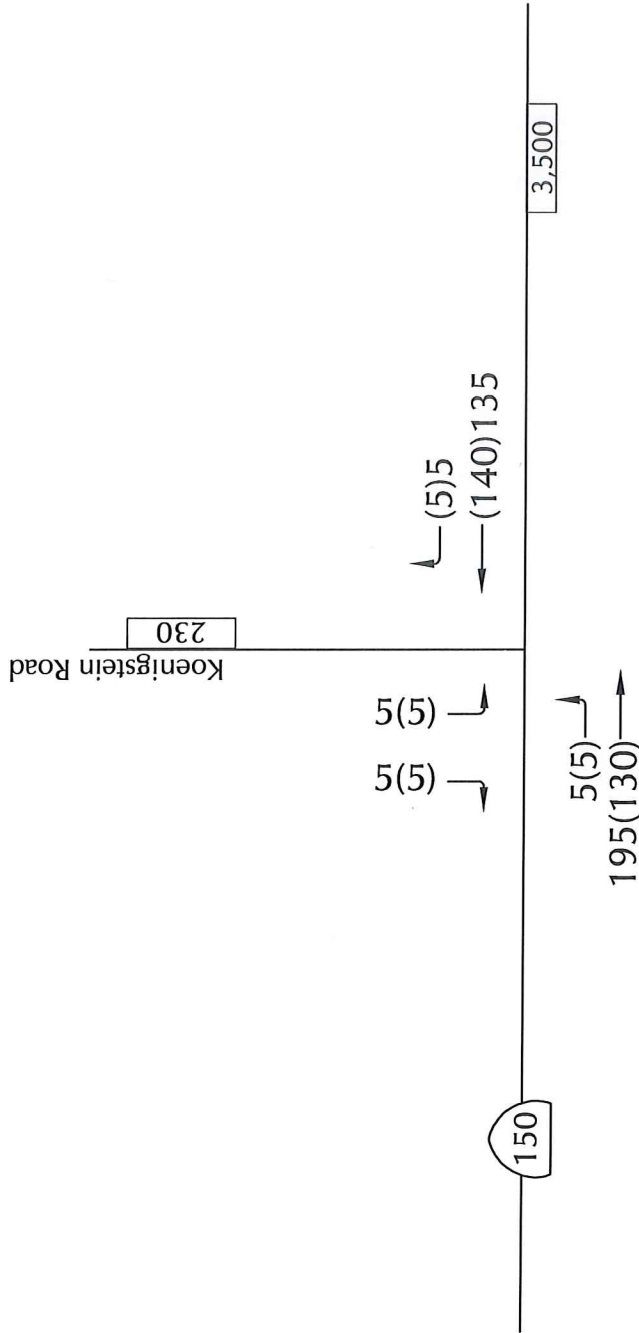
The approach volumes on the minor street at the State Route 150/Koenigstein Road intersection do not satisfy the ADT vehicular volume warrants under the Existing, Existing + Project and Cumulative + Project scenarios. In order to satisfy the ADT warrant, a minimum of 850 vehicles per day in one direction are necessary on the minor street approach with one lane. The estimated Cumulative + Project exiting traffic volumes is 119 (238 ADT/2) vehicles per day.

CUMULATIVE (YEAR 2030) CONDITIONS

Cumulative traffic volumes were forecast for the study-area intersections assuming development of other projects proposed within the study-area. There is little proposed development in the study-area, given the constraint on development due to the County's General Plan policy regarding State Route 33. Based on historical (2011 to 2017) Caltrans traffic count data a 15 percent growth factor was applied to the existing traffic volumes to account for ambient traffic growth. The following section discusses the cumulative (Year 2030) scenario which includes the traffic generated by the Project.

Cumulative Roadway Operations

Cumulative daily traffic (ADT) volume for the study-area roadway segment is illustrated on Figure 6. Levels of Service for the study-area roadway segments was determined based on Ventura County roadway engineering design capacities, the results are presented in Table 9.

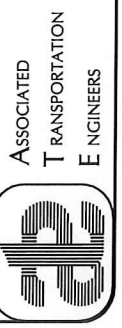


LEGEND
 (XX)XX - (AM)PM Peak Hour Volume
 X - Average Daily Traffic Volume

6

FIGURE

CUMULATIVE TRAFFIC VOLUMES



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**Table 9
Cumulative Roadway Levels of Service**

Roadway Segment	Existing Geometry	Roadway Classification	Cumulative ADT	LOS D Capacity	LOS
State Route 150	2-lanes	Class I	3,500	21,000	LOS B
Koenigstein Road	2-lanes	Class II	230	16,000	LOS A

The data presented in Table 9 indicates that the study-area roadway segment would operate in the LOS "A" - "B" range under Cumulative conditions based on the County's level of service criteria.

Cumulative + Project daily traffic (ADT) volume for the study-area roadway segment is illustrated on Figure 7. Levels of Service for the study-area roadway segment was determined based on Ventura County roadway engineering design capacities, the results are presented in Table 10.

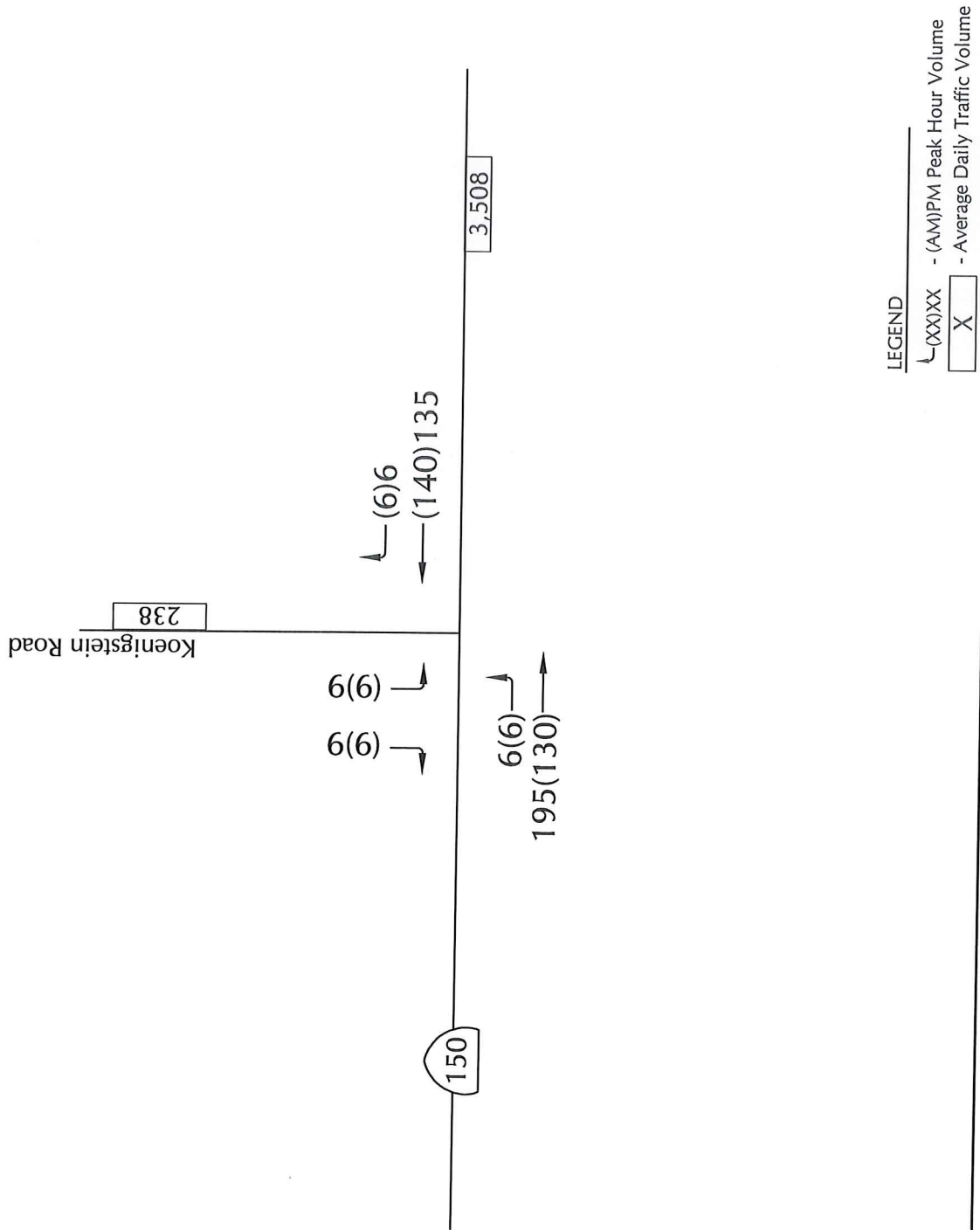
**Table 10
Cumulative + Project Roadway Levels of Service**

Roadway Segment	Existing Geometry	Roadway Classification	Cumulative + Project ADT	LOS D Capacity	LOS
State Route 150	2-lanes	Class II	3,506	21,000	LOS B
Koenigstein Road	2-lanes	Class III	236	16,000	LOS A

The data presented in Table 10 indicates that the study-area roadway segments would continue to operate in the LOS "A" - "B" range under Cumulative + Project conditions traffic based on the County's level of service criteria.

Cumulative Intersection Levels of Service

Figures 6 and 7 illustrate the Cumulative and Cumulative + Project traffic volumes respectively. Tables 11 and 12 show the A.M. and P.M. peak hour intersection levels of service for the Cumulative scenarios with and without project-generated traffic volumes. Level of service worksheets are contained in the Technical Appendix.



CUMULATIVE + PROJECT TRAFFIC VOLUMES

FIGURE 7

Table 11
Cumulative Intersection Levels of Service – A.M. Peak Hour

Intersection	Delay - Level of Service			
	Cumulative		Cumulative + Project	
	Delay	LOS	Delay	LOS
State Route 150/Koenigstein Road eastbound left-turn:	7.6 sec.	LOS A	7.6 sec.	LOS A
southbound approach:	9.7 sec.	LOS A	9.8 sec.	LOS A

Table 12
Cumulative Intersection Levels of Service – P.M. Peak Hour

Intersection	Delay - Level of Service			
	Cumulative		Cumulative + Project	
	Delay	LOS	Delay	LOS
State Route 150/Koenigstein Road eastbound left-turn	7.5 sec.	LOS A	7.6 sec.	LOS A
southbound approach	10.0 sec.	LOS A	10.0 sec.	LOS A

Tables 11 and 12 show that the study-area intersections are forecast to operate at LOS "A" range during the peak hour periods with General Plan Buildout volumes. The proposed project is subject to the Ventura County traffic mitigation fee programs, with collected fees used for transportation improvements required to accommodate future traffic volumes.

SHORT-TERM DRILLING IMPACTS

The CUP modification includes the drilling of three new wells and the re-drilling of one existing well. The drilling period is short-term (1 well drilled per year over approximately 10 days per year). The drilling will include 20 workers and 16 trucks. Over a two day period 16 trucks (8 trucks per day) will bring drilling equipment to the site. Then over a two day period 16 trucks (8 trucks per day) will remove drilling equipment from the site.

Drilling is planned to occur 24 hours, truck trips will occur during daylight hours generally between the hours of 7:00 A.M. and 6:00 P.M. The traffic generated during the drilling period would include truck traffic hauling drilling equipment to site and employee trips to/from the site. Access to the Project site will be via Koenigstein Road. During the 10 day drilling period the following represents the maximum daily operations that potentially could occur:

Drill Equipment Daily Trucks Trips:	16 per day over 2 days (8 in and 8 out each day)
Light Duty Truck Daily Trips:	40 per day over 10 days (20 in and 20 out each day)

Traffic generated by the drilling of wells is short-term in nature. No substantial increase in traffic would result from the drilling of wells over the long-term because the proposed infrastructure would require only occasional maintenance and no new employees would be hired for on-going operations. Therefore, the drilling of wells would not contribute to cumulative traffic impacts.



REFERENCES AND PERSONS CONTACTED

Associated Transportation Engineers

Richard L. Pool, P.E., Principal Engineer
Darryl F. Nelson, Senior Transportation Planner
Erica K. Monson, Transportation Planner

Persons Contacted

Ben Emami, Engineering Manager, County of Ventura

Written Material

Highway Capacity Manual, Transportation Research Board, 2010.

Mirada Petroleum Oil and Gas Project - Agnew Lease, Subsequent Environmental Impact Report, August 2015.

TECHNICAL APPENDIX

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SIGNAL WARRANT CRITERIA

TRAFFIC COUNT DATA

VOLUME

Koenigstein Rd N/O SR 150

Day: Wednesday
Date: 8/22/2018

City: Ojai
Project #: CA18_5529_001

DAILY TOTALS					NB	SB	EB	WB	Total
					102	99	0	0	201

AM Period	NB	SB	EB	WB	TOTAL	PM Period	NB	SB	EB	WB	TOTAL
00:00	0	0			0	12:00	4	2			6
00:15	0	0			0	12:15	1	4			5
00:30	0	0			0	12:30	1	3			4
00:45	0	0			0	12:45	1	7	0	9	16
01:00	0	0			0	13:00	1	2			3
01:15	0	0			0	13:15	2	0			2
01:30	0	0			0	13:30	1	1			2
01:45	0	0			0	13:45	1	5	2	5	10
02:00	0	0			0	14:00	0	1			1
02:15	0	0			0	14:15	2	2			4
02:30	0	0			0	14:30	0	1			1
02:45	0	0			0	14:45	1	3	0	4	7
03:00	0	0			0	15:00	2	0			2
03:15	0	0			0	15:15	5	3			8
03:30	0	0			0	15:30	0	0			0
03:45	0	0			0	15:45	1	8	1	4	12
04:00	0	0			0	16:00	2	1			3
04:15	0	0			0	16:15	2	0			2
04:30	0	0			0	16:30	2	1			3
04:45	0	0			0	16:45	3	9	2	4	13
05:00	0	0			0	17:00	2	1			3
05:15	0	0			0	17:15	2	3			5
05:30	0	0			0	17:30	3	1			4
05:45	0	0			0	17:45	3	10	1	6	16
06:00	2	3			5	18:00	0	3			3
06:15	0	2			2	18:15	2	0			2
06:30	2	2			4	18:30	3	2			5
06:45	1	5	1	8	2	18:45	1	6	2	7	13
07:00	1	4			5	19:00	0	1			1
07:15	1	2			3	19:15	2	2			4
07:30	0	1			1	19:30	3	2			5
07:45	1	3	0	7	1	19:45	1	6	0	5	11
08:00	5	2			7	20:00	0	1			1
08:15	5	1			6	20:15	0	1			1
08:30	2	3			5	20:30	1	0			1
08:45	0	12	1	7	1	20:45	0	1	0	2	3
09:00	2	1			3	21:00	4	0			4
09:15	1	1			2	21:15	1	0			1
09:30	1	3			4	21:30	1	0			1
09:45	2	6	2	7	4	21:45	1	7	0		7
10:00	0	3			3	22:00	1	0			1
10:15	1	3			4	22:15	2	0			2
10:30	0	2			2	22:30	1	0			1
10:45	3	4	1	9	4	22:45	0	4	2	2	6
11:00	2	2			4	23:00	0	0			0
11:15	1	2			3	23:15	0	1			1
11:30	1	7			8	23:30	0	0			0
11:45	2	6	1	12	3	23:45	0	0	1		1
TOTALS	36	50			86	TOTALS	66	49			115
SPLIT %	41.9%	58.1%			42.8%	SPLIT %	57.4%	42.6%			57.2%

DAILY TOTALS					NB	SB	EB	WB	Total
					102	99	0	0	201

AM Peak Hour	07:45	11:30			11:30	PM Peak Hour	16:45	12:00			16:45
AM Pk Volume	13	14			22	PM Pk Volume	10	9			17
Pk Hr Factor	0.650	0.500			0.688	Pk Hr Factor	0.833	0.563			0.850
7 - 9 Volume	15	14	0	0	29	4 - 6 Volume	19	10	0	0	29
7 - 9 Peak Hour	07:45	07:00			07:45	4 - 6 Peak Hour	16:45	16:30			16:45
7 - 9 Pk Volume	13	7	0	0	19	4 - 6 Pk Volume	10	7	0	0	17
Pk Hr Factor	0.650	0.438	0.000	0.000	0.679	Pk Hr Factor	0.833	0.583	0.000	0.000	0.850

LEVEL OF SERVICE DEFINITIONS

LEVEL OF SERVICE DEFINITIONS

"Levels of Service" (LOS) A through F are used to rate roadway and intersection operating conditions, with LOS A indicating very good operations and LOS F indicating poor operations. More complete level of service definitions are:

LOS	Definition
A	Low volumes; primarily free flow operations. Density is low and vehicles can freely maneuver within traffic stream. Drivers can maintain their desired speeds with little or no delay.
B	Stable flow with potential for some restriction of operating speeds due to traffic conditions. Maneuvering is only slightly restricted. Stopped delays are not bothersome and drivers are not subject to appreciable tension.
C	Stable operations, however the ability to maneuver is more restricted by the increase in traffic volumes. Relatively satisfactory operating speeds prevail but adverse signal coordination or longer queues cause delays.
D	Approaching unstable traffic flow where small increases in volume could cause substantial delays. Most drivers are restricted in their ability to maneuver and their selection of travel speeds. Comfort and convenience are low but tolerable.
E	Operations characterized by significant approach delays and average travel speeds of one-half to one-third of free flow speed. Flow is unstable and potential for stoppages of brief duration. High signal density, extensive queuing, or signal progression/timing are the typical causes of delays.
F	Forced flow operations with high approach delays at critical signalized intersections. Speeds are reduced substantially and stoppages may occur for short or long periods of time because of downstream congestion.

Signalized Intersection Level of Service Definitions

LOS	Delay ^a	V/C Ratio	Definition
A	< 10.0	< 0.60	Progression is extremely favorable. Most vehicles arrive during the green phase. Many vehicles do not stop at all.
B	10.1 - 20.0	0.61 - 0.70	Good progression, short cycle lengths, or both. More vehicles stop than with LOS A, causing higher levels of delay.
C	20.1 - 35.0	0.71 - 0.80	Only fair progression, longer cycle lengths, or both, result in higher cycle lengths. Cycle lengths may fail to serve queued vehicles, and overflow occurs. Number of vehicles stopped is significant, though many still pass through intersection without stopping.
D	35.1 - 55.0	0.81 - 0.90	Congestion becomes more noticeable. Unfavorable progression, long cycle lengths and high v/c ratios result in longer delays. Many vehicles stop, and the proportion of vehicles not stopping declines. Individual cycle failures are noticeable.
E	55.1 - 80.0	0.91 - 1.00	High delay values indicate poor progression, long cycle lengths and high v/c ratios. Individual cycle failures are frequent
F	> 80.0	> 1.00	Considered unacceptable for most drivers, this level occurs when arrival flow rates exceed the capacity of lane groups, resulting in many individual cycle failures. Poor progression and long cycle lengths may also contribute to high delay levels.

^a Average control delay per vehicle in seconds.

Unsignalized Intersection Level of Service Definitions

The HCM¹ uses *control delay* to determine the level of service at unsignalized intersections. Control delay is the difference between the travel time actually experienced at the control device and the travel time that would occur in the absence of the traffic control device. Control delay includes deceleration from free flow speed, queue move-up time, stopped delay and acceleration back to free flow speed.

LOS	Control Delay Seconds per Vehicle
A	< 10.0
B	10.1 - 15.0
C	15.1 - 25.0
D	25.1 - 35.0
E	35.1 - 50.0
F	> 50.0

¹ Highway Capacity Manual, National Research Board, 2000



FIGURE 4.2.2

AVERAGE DAILY TRAFFIC (ADT) LEVEL OF SERVICE (LOS) THRESHOLDS COUNTY ROADS AND CONVENTIONAL STATE HIGHWAYS					
LOS	CLASS I			CLASS II	CLASS III
	2 LANES	4 LANES	6 LANES	2 LANES	2 LANES
A	2,400	19,000	29,000	1,500	350
B	5,600	28,000	42,000	3,900	2,000
C	10,000	38,000	57,000	7,000	3,300
D	16,000	47,000	70,000	11,000	5,900
E	27,000	58,000	87,000	21,000	16,000

ADT/LOS THRESHOLDS FREEWAYS				
LOS	4 LANES	6 LANES	8 LANES	10 LANES
A	31,000	46,000	62,000	77,000
B	48,000	71,000	95,000	119,000
C	68,000	102,000	136,000	169,000
D	82,000	123,000	164,000	205,000
E	88,000	132,000	176,000	220,000

SOURCE: VENTURA COUNTY PUBLIC WORKS AGENCY 9/94

R. 12/20/94

LEVEL OF SERVICE CALCULATION WORKSHEETS

Reference 1 - State Route 150/Koenigstein Road

HCS 2010 Two-Way Stop Control Summary Report

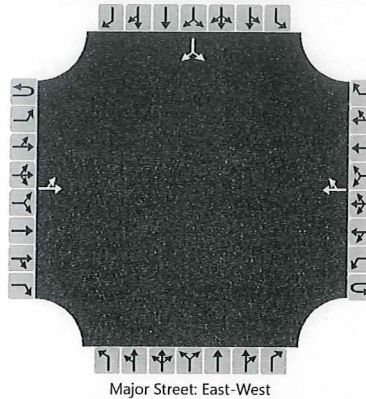
General Information

Analyst	Darryl Nelson
Agency/Co.	ATE
Date Performed	9/27/2018
Analysis Year	2018
Time Analyzed	A.M. Peak Hour
Intersection Orientation	East-West
Project Description	Agnew Oil Lease

Site Information

Intersection	S.R. 150/Koengstein
Jurisdiction	Ventura County
East/West Street	State Route 150
North/South Street	Koengstein Road
Peak Hour Factor	0.92
Analysis Time Period (hrs)	0.25

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6	7	8	9		10	11	12	
Number of Lanes	0	0	1	0	0	0	1	0	0	0	0		0	0	0	
Configuration		LT						TR							LR	
Volume (veh/h)		3	113				119	4						3		2
Percent Heavy Vehicles		3												3		3
Proportion Time Blocked																
Right Turn Channelized	No				No				No				No			
Median Type	Undivided															
Median Storage																

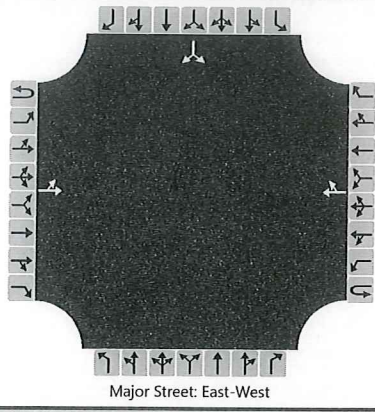
Delay, Queue Length, and Level of Service

Flow Rate (veh/h)		126														5
Capacity		1444														791
v/c Ratio		0.09														0.01
95% Queue Length		0.0														0.0
Control Delay (s/veh)		7.5														9.6
Level of Service (LOS)		A														A
Approach Delay (s/veh)	0.2												9.6			
Approach LOS													A			

HCS 2010 Two-Way Stop Control Summary Report

General Information		Site Information	
Analyst	Darryl Nelson	Intersection	S.R. 150/Koengstein
Agency/Co.	ATE	Jurisdiction	Ventura County
Date Performed	9/27/2018	East/West Street	State Route 150
Analysis Year	2018	North/South Street	Koengstein Road
Time Analyzed	P.M. Peak Hour	Peak Hour Factor	0.92
Intersection Orientation	East-West	Analysis Time Period (hrs)	0.25
Project Description	Agnew Oil Lease		

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Movement	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Priority																
Number of Lanes	0	0	1	0	0	0	1	0		0	0	0		0	0	0
Configuration		LT						TR							LR	
Volume (veh/h)		4	167				115	5						2		2
Percent Heavy Vehicles		3												3		3
Proportion Time Blocked																
Right Turn Channelized	No				No				No				No			
Median Type	Undivided															
Median Storage																

Delay, Queue Length, and Level of Service

Flow Rate (veh/h)		186														4
Capacity		1448														775
v/c Ratio		0.13														0.01
95% Queue Length		0.0														0.0
Control Delay (s/veh)		7.5														9.7
Level of Service (LOS)		A														A
Approach Delay (s/veh)	0.2												9.7			
Approach LOS													A			

HCS 2010 Two-Way Stop Control Summary Report

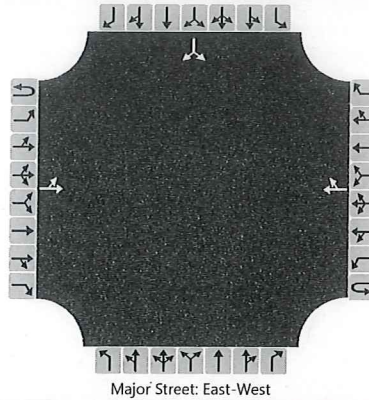
General Information

Analyst	Darryl Nelson
Agency/Co.	ATE
Date Performed	9/27/2018
Analysis Year	2018 <i>+ Project</i>
Time Analyzed	A.M. Peak Hour
Intersection Orientation	East-West
Project Description	Agnew Oil Lease

Site Information

Intersection	S.R. 150/Koengstein
Jurisdiction	Ventura County
East/West Street	State Route 150
North/South Street	Koengstein Road
Peak Hour Factor	0.92
Analysis Time Period (hrs)	0.25

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	1	0	0	0	1	0		0	0	0		0	0	0
Configuration		LT						TR								LR
Volume (veh/h)		4	113				119	5						4		3
Percent Heavy Vehicles		3												3		3
Proportion Time Blocked																
Right Turn Channelized	No				No				No				No			
Median Type	Undivided															
Median Storage																

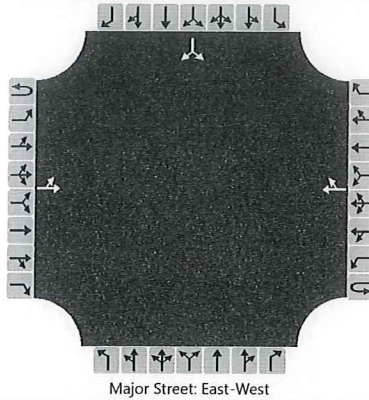
Delay, Queue Length, and Level of Service

Flow Rate (veh/h)		127														7
Capacity		1443														794
v/c Ratio		0.09														0.01
95% Queue Length		0.0														0.0
Control Delay (s/veh)		7.5														9.6
Level of Service (LOS)		A														A
Approach Delay (s/veh)	0.3												9.6			
Approach LOS													A			

HCS 2010 Two-Way Stop Control Summary Report

General Information		Site Information	
Analyst	Darryl Nelson	Intersection	S.R. 150/Koengstein
Agency/Co.	ATE	Jurisdiction	Ventura County
Date Performed	9/27/2018	East/West Street	State Route 150
Analysis Year	2018 <i>+ Project</i>	North/South Street	Koengstein Road
Time Analyzed	P.M. Peak Hour	Peak Hour Factor	0.92
Intersection Orientation	East-West	Analysis Time Period (hrs)	0.25
Project Description	Agnew Oil Lease		

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Movement	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Priority																
Number of Lanes	0	0	1	0	0	0	1	0		0	0	0		0	0	0
Configuration		LT						TR							LR	
Volume (veh/h)		5	167				115	6						3		3
Percent Heavy Vehicles		3												3		3
Proportion Time Blocked																
Right Turn Channelized	No				No				No				No			
Median Type	Undivided															
Median Storage																

Delay, Queue Length, and Level of Service

Flow Rate (veh/h)		187														6
Capacity		1445														774
v/c Ratio		0.13														0.01
95% Queue Length		0.0														0.0
Control Delay (s/veh)		7.5														9.7
Level of Service (LOS)		A														A
Approach Delay (s/veh)	0.2												9.7			
Approach LOS													A			

HCS 2010 Two-Way Stop Control Summary Report

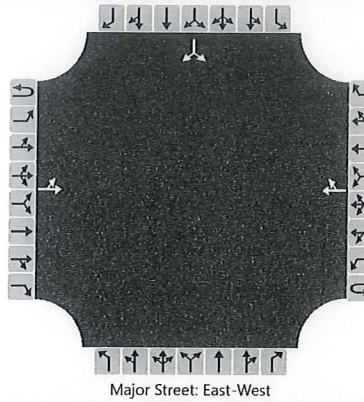
General Information

Analyst	Darryl Nelson
Agency/Co.	ATE
Date Performed	9/27/2018
Analysis Year	2030
Time Analyzed	A.M. Peak Hour
Intersection Orientation	East-West
Project Description	Agnew Oil Lease

Site Information

Intersection	S.R. 150/Koengstein
Jurisdiction	Ventura County
East/West Street	State Route 150
North/South Street	Koengstein Road
Peak Hour Factor	0.92
Analysis Time Period (hrs)	0.25

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	1	0	0	0	1	0		0	0	0		0	0	0
Configuration		LT						TR								LR
Volume (veh/h)		5	130				140	5						5		5
Percent Heavy Vehicles		3												3		3
Proportion Time Blocked																
Right Turn Channelized	No				No				No				No			
Median Type	Undivided															
Median Storage																

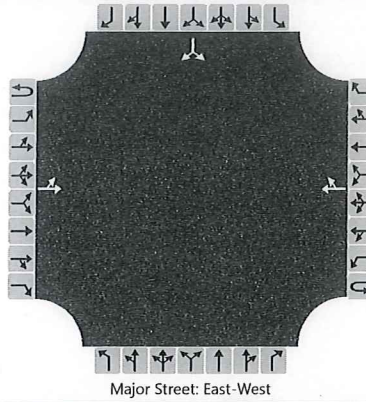
Delay, Queue Length, and Level of Service

Flow Rate (veh/h)		146														10
Capacity		1415														771
v/c Ratio		0.10														0.01
95% Queue Length		0.0														0.0
Control Delay (s/veh)		7.6														9.7
Level of Service (LOS)		A														A
Approach Delay (s/veh)	0.3												9.7			
Approach LOS													A			

HCS 2010 Two-Way Stop Control Summary Report

General Information		Site Information	
Analyst	Darryl Nelson	Intersection	S.R. 150/Koengstein
Agency/Co.	ATE	Jurisdiction	Ventura County
Date Performed	9/27/2018	East/West Street	State Route 150
Analysis Year	2030	North/South Street	Koengstein Road
Time Analyzed	P.M. Peak Hour	Peak Hour Factor	0.92
Intersection Orientation	East-West	Analysis Time Period (hrs)	0.25
Project Description	Agnew Oil Lease		

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	1	0	0	0	1	0		0	0	0		0	0	0
Configuration		LT						TR								LR
Volume (veh/h)		5	195				135	5						5		5
Percent Heavy Vehicles		3												3		3
Proportion Time Blocked																
Right Turn Channelized	No				No				No				No			
Median Type	Undivided															
Median Storage																

Delay, Queue Length, and Level of Service

Flow Rate (veh/h)		217														10
Capacity		1421														735
v/c Ratio		0.15														0.01
95% Queue Length		0.0														0.0
Control Delay (s/veh)		7.5														10.0
Level of Service (LOS)		A														A
Approach Delay (s/veh)	0.2												10.0			
Approach LOS													A			

HCS 2010 Two-Way Stop Control Summary Report

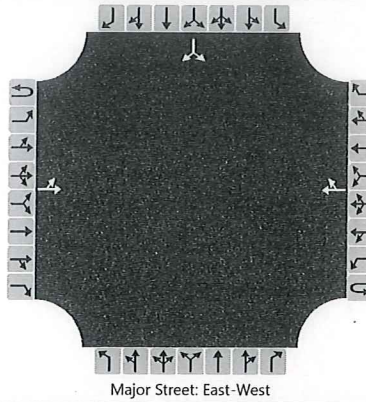
General Information

Analyst	Darryl Nelson
Agency/Co.	ATE
Date Performed	9/27/2018
Analysis Year	2030 + <i>Project</i>
Time Analyzed	A.M. Peak Hour
Intersection Orientation	East-West
Project Description	Agnew Oil Lease

Site Information

Intersection	S.R. 150/Koengstein
Jurisdiction	Ventura County
East/West Street	State Route 150
North/South Street	Koengstein Road
Peak Hour Factor	0.92
Analysis Time Period (hrs)	0.25

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Movement	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Priority																
Number of Lanes	0	0	1	0	0	0	1	0		0	0	0		0	0	0
Configuration		LT						TR								LR
Volume (veh/h)		6	130				140	6						6		6
Percent Heavy Vehicles		3												3		3
Proportion Time Blocked																
Right Turn Channelized	No				No				No				No			
Median Type	Undivided															
Median Storage																

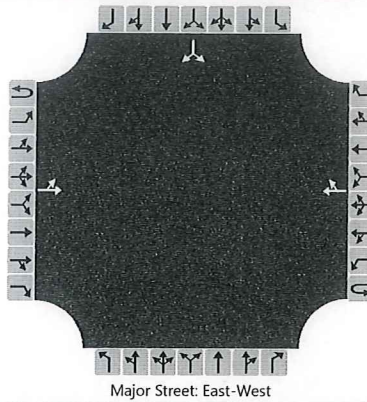
Delay, Queue Length, and Level of Service

Flow Rate (veh/h)		148														14
Capacity		1413														767
v/c Ratio		0.10														0.02
95% Queue Length		0.0														0.1
Control Delay (s/veh)		7.6														9.8
Level of Service (LOS)		A														A
Approach Delay (s/veh)	0.4												9.8			
Approach LOS													A			

HCS 2010 Two-Way Stop Control Summary Report

General Information		Site Information	
Analyst	Darryl Nelson	Intersection	S.R. 150/Koengstein
Agency/Co.	ATE	Jurisdiction	Ventura County
Date Performed	9/27/2018	East/West Street	State Route 150
Analysis Year	2030 + <i>Project</i>	North/South Street	Koengstein Road
Time Analyzed	P.M. Peak Hour	Peak Hour Factor	0.92
Intersection Orientation	East-West	Analysis Time Period (hrs)	0.25
Project Description	Agnew Oil Lease		

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Movement	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Priority																
Number of Lanes	0	0	1	0	0	0	1	0		0	0	0		0	0	0
Configuration		LT						TR								LR
Volume (veh/h)		6	195				135	6						6		6
Percent Heavy Vehicles		3												3		3
Proportion Time Blocked																
Right Turn Channelized	No				No				No				No			
Median Type	Undivided															
Median Storage																

Delay, Queue Length, and Level of Service

Flow Rate (veh/h)		219														14
Capacity		1419														732
v/c Ratio		0.15														0.02
95% Queue Length		0.0														0.1
Control Delay (s/veh)		7.6														10.0
Level of Service (LOS)		A														B
Approach Delay (s/veh)	0.3												10.0			
Approach LOS													B			

COLLISION DATA

California Department of Transportation

OTM22215

TSAR - ACCIDENT SUMMARY

Policy controlling the use of Traffic Accident Surveillance and Analysis System (TASAS) - Transportation Systems Network (TSN) Reports

1. TASAS - TSN has officially replaced the TASAS - "Legacy" database.
2. Reports from TSN are to be used and interpreted by the California Department of Transportation (Caltrans) officials or authorized representative.
3. Electronic versions of these reports may be emailed between Caltrans' employees only using the State computer system.
4. The contents of these reports shall be considered confidential and may be privileged pursuant to 23 U.S.C. Section 409, and are for the sole use of the intended recipient(s). Any unauthorized review, use, disclosure or distribution is prohibited. If you are not the intended recipient, please contact the sender by reply e-mail and destroy all copies of the original message. Do not print, copy or forward.

California Department of Transportation

OTM22215

TSAR - ACCIDENT SUMMARY

REPORT PARAMETERS:

REPORT DATE : 06/18/2019
REFERENCE DATE : 06/18/2019
SUBMITTOR : T7JFONSE
REPORT TITLE : ' Public Information Nelson, D.
EVENT ID : All Accidents Koenigstein Rd (Current) '

4127485

LOCATION CRITERIA:

FROM: 07-VEN-150 026.141 TO: 07-VEN-150 026.142

SELECTION CRITERIA:

Accidents Date Range:

From -- 04/01/2016 To -- 03/31/2019

No Data Selected With This Request

ATE SUPPLEMENTAL TRAFFIC ANALYSIS



ASSOCIATED TRANSPORTATION ENGINEERS

100 N. Hope Avenue, Suite 4, Santa Barbara, CA 93110 • (805) 687-4418 • FAX (805) 682-8509

Since 1978

Richard L. Pool, P.E.
Scott A. Schell, AICP, PTP

July 26, 2016

16060L05.WPD

Mr. Scott Price
Mirada Petroleum
15500 West Telegraph Road, Suite D#32
Santa Paula, California 93060

STATE ROUTE 150 AND KOENIGSTEIN ROAD ANALYSIS, VENTURA COUNTY, CALIFORNIA

Pursuant to your request, Associated Transportation Engineers (ATE) is providing the following evaluation for the State Route 150/Koenigstein Road intersection as it relates to the use of tanker trucks. ATE has conducted a field review of the intersection to determine the sight distance, evaluated collision data and existing traffic volumes on State Route 150. ATE evaluated the intersection based on the use by oil tanker trucks which will not exceed the legal limits. Oversized trucks would be required to have a valid Transportation Permit.

Sight Distances. ATE conducted a field review to determine if sufficient sight distance exists for tanker trucks at the State Route 150/Koenigstein Road intersection. The Caltrans Highway Design Manual¹ sight distance standards were used for the sight distance analysis. The segment of State Route 150 is rolling and posted 35 MPH. Based on Caltrans criteria, the minimum required sight distance standard for a 35 MPH design speed is 250 feet.

The sight distance looking east along State Route 150 was measured at 350 feet, in excess of the 250-foot minimum. The sight distance looking west along State Route 150 was measured at 500 which also exceeds the 250-foot minimum. The measured sight distance at the State Route 150/Koenigstein Road intersection exceeds the minimum sight distance standard.

Collision Data. ATE reviewed the Caltrans collision data for the State Route 150/Koenigstein Road intersection contained in Appendix F of the December 2015 Subsequent Environmental Report for the Mirada Oil and Gas Project - Nesbitt Lease. The collision data covers a 12-year period from 2002 to 2013. The collision data is attached. There were 2 collisions with no reported fatalities and none involved large trucks.

¹ Highway Design Manual, Caltrans, 6th Edition.

Roadway Operation. Current traffic counts show that State Route 150 carries 2,800 vehicles per day in the vicinity of the project site. Existing traffic volumes and levels of service are summarized in Table 1. Levels of service are based on Ventura County engineering design capacities, which show that 2-lane highway such as State Route 150 has the capacity to carry approximately 11,000 vehicles per day.

**Table 1
Traffic Volumes and Levels of Service**

Roadway Segment	Roadway Classification	Roadway Capacity	Existing	
			ADT	LOS
State Route 150	Class II	11,000 ADT	2,800	LOS B
Note: LOS based on Ventura County Standard Engineering Design Capacities.				

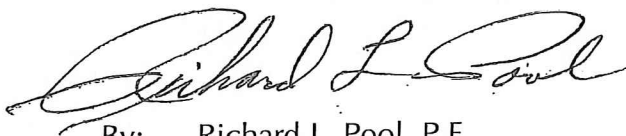
State Route 150 in the study-area roadways currently operates at LOS B. With the addition of less than 3 tanker trucks per day from the Agnew and Nesbitt CUP Modifications, State Route 150 would continue to operate at LOS B. LOS B represents relatively free flow operations with no congestion.

CONCLUSION

The operation of the Koenigstein Road/Highway 150 intersection has not exhibited any safety issues over the past 20 years. This observation is based upon data we collected and/or obtained this year.

It is ATE’s staff conclusion that the intersection will continue to operate satisfactorily based upon the accident record data, where there were two accidents noted (neither involved tanker trucks), over a 12-year period. Koenigstein Road has a low traffic volume, the sight distance at the intersection in both directions, as measured, meets or exceeds the Caltrans value for the prevailing speed. ATE also reviewed the intersection geometry. The proposed addition of less than 3 one-way tanker trips per day through this intersection will not alter this condition. The expected tanker trucks utilized by the project will not exceed the legal limits. Oversized trucks would be required to have a valid Transportation Permit.

Associated Transportation Engineers



By: Richard L. Pool, P.E.
President



SIGNAL WARRANT CRITERIA

Figure 4C-101 (CA). Traffic Signal Warrants Worksheet (Sheet 1 of 5)

COUNT DATE _____
 CALC _____ DATE _____
 CHK _____ DATE _____

DIST _____ CO _____ RTE _____ PM _____

Major St: _____ Critical Approach Speed _____ mph
 Minor St: _____ Critical Approach Speed _____ mph

Speed limit or critical speed on major street traffic > 40 mph..... }
 In built up area of isolated community of < 10,000 population..... } } **RURAL (R)**
 } } **URBAN (U)**

WARRANT 1 - Eight Hour Vehicular Volume SATISFIED YES NO
 (Condition A or Condition B or combination of A and B must be satisfied)

Condition A - Minimum Vehicle Volume 100% SATISFIED YES NO
 80% SATISFIED YES NO

APPROACH LANES	MINIMUM REQUIREMENTS (80% SHOWN IN BRACKETS)																
	U		R		U		R										
	1		2 or More														
Both Approaches Major Street	500 (400)	350 (280)	600 (480)	420 (336)													
Highest Approach Minor Street	150 (120)	105 (84)	200 (160)	140 (112)													

Condition B - Interruption of Continuous Traffic 100% SATISFIED YES NO
 80% SATISFIED YES NO

APPROACH LANES	MINIMUM REQUIREMENTS (80% SHOWN IN BRACKETS)															
	U		R		U		R									
	1		2 or More													
Both Approaches Major Street	750 (600)	525 (420)	900 (720)	630 (504)												
Highest Approach Minor Street	75 (60)	53 (42)	100 (80)	70 (56)												

Combination of Conditions A & B SATISFIED YES NO

REQUIREMENT	CONDITION	✓	FULFILLED
TWO CONDITIONS SATISFIED 80%	A. MINIMUM VEHICULAR VOLUME		Yes <input type="checkbox"/> No <input type="checkbox"/>
	AND, B. INTERRUPTION OF CONTINUOUS TRAFFIC		
AND, AN ADEQUATE TRIAL OF OTHER ALTERNATIVES THAT COULD CAUSE LESS DELAY AND INCONVENIENCE TO TRAFFIC HAS FAILED TO SOLVE THE TRAFFIC PROBLEMS			Yes <input type="checkbox"/> No <input type="checkbox"/>

The satisfaction of a traffic signal warrant or warrants shall not in itself require the installation of a traffic control signal.

Figure 4C-101 (CA). Traffic Signal Warrants Worksheet (Sheet 2 of 5)

WARRANT 2 - Four Hour Vehicular Volume

SATISFIED* YES NO

Record hourly vehicular volumes for any four hours of an average day.

APPROACH LANES	One		2 or More		Hour
Both Approaches - Major Street					
Higher Approach - Minor Street					

*All plotted points fall above the applicable curve in Figure 4C-1. (URBAN AREAS)	Yes <input type="checkbox"/>	No <input type="checkbox"/>
<u>OR</u> , All plotted points fall above the applicable curve in Figure 4C-2. (RURAL AREAS)	Yes <input type="checkbox"/>	No <input type="checkbox"/>

**WARRANT 3 - Peak Hour
 (Part A or Part B must be satisfied)**

SATISFIED YES NO

PART A

SATISFIED YES NO

(All parts 1, 2, and 3 below must be satisfied for the same one hour, for any four consecutive 15-minute periods)

1. The total delay experienced by traffic on one minor street approach (one direction only) controlled by a STOP sign equals or exceeds four vehicle-hours for a one-lane approach, or five vehicle-hours for a two-lane approach; AND	Yes <input type="checkbox"/>	No <input type="checkbox"/>
2. The volume on the same minor street approach (one direction only) equals or exceeds 100 vph for one moving lane of traffic or 150 vph for two moving lanes; AND	Yes <input type="checkbox"/>	No <input type="checkbox"/>
3. The total entering volume serviced during the hour equals or exceeds 800 vph for intersections with four or more approaches or 650 vph for intersections with three approaches.	Yes <input type="checkbox"/>	No <input type="checkbox"/>

PART B

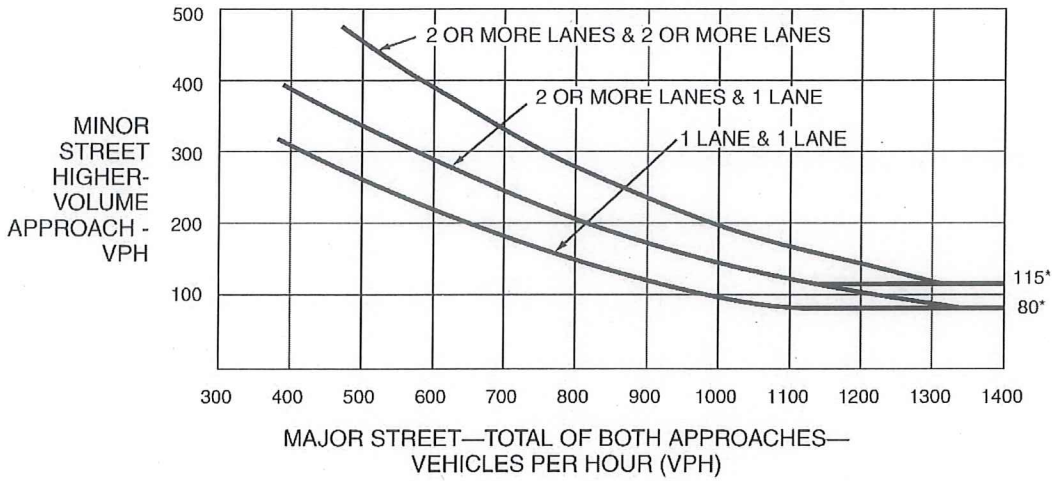
SATISFIED YES NO

APPROACH LANES	One		2 or More		Hour
Both Approaches - Major Street					
Higher Approach - Minor Street					

The plotted point falls above the applicable curve in Figure 4C-3. (URBAN AREAS)	Yes <input type="checkbox"/>	No <input type="checkbox"/>
<u>OR</u> , The plotted point falls above the applicable curve in Figure 4C-4. (RURAL AREAS)	Yes <input type="checkbox"/>	No <input type="checkbox"/>

The satisfaction of a traffic signal warrant or warrants shall not in itself require the installation of a traffic control signal.

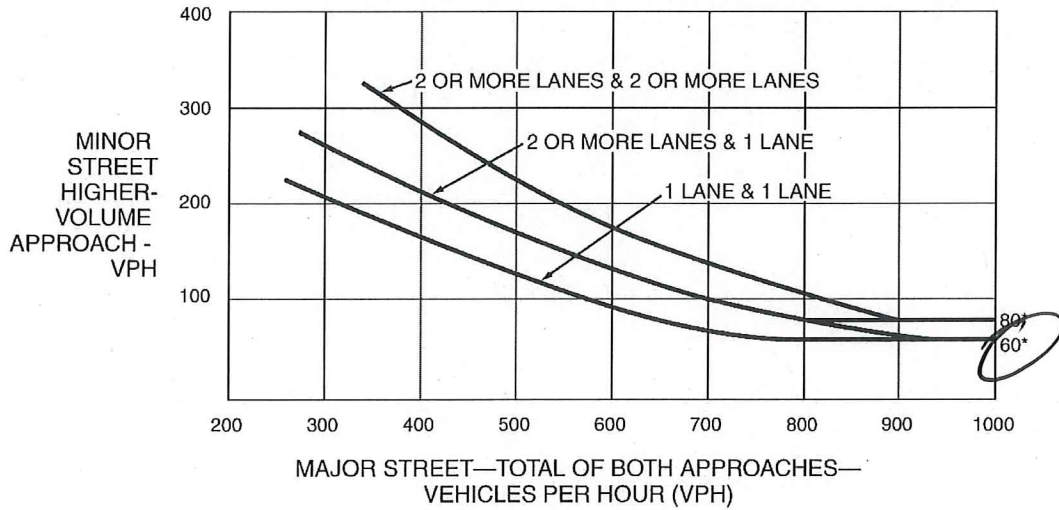
Figure 4C-1. Warrant 2, Four-Hour Vehicular Volume



*Note: 115 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 80 vph applies as the lower threshold volume for a minor-street approach with one lane.

Figure 4C-2. Warrant 2, Four-Hour Vehicular Volume (70% Factor)

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 40 MPH ON MAJOR STREET)



*Note: 80 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 60 vph applies as the lower threshold volume for a minor-street approach with one lane.

Figure 4C-101 (CA). Traffic Signal Warrants Worksheet (Sheet 4 of 5)

WARRANT 6 - Coordinated Signal System
 (All Parts Must Be Satisfied)

SATISFIED YES NO

MINIMUM REQUIREMENTS	DISTANCE TO NEAREST SIGNAL	
≥ 1000 ft	N _____ ft, S _____ ft, E _____ ft, W _____ ft	Yes <input type="checkbox"/> No <input type="checkbox"/>
On a one-way street or a street that has traffic predominantly in one direction, the adjacent traffic control signals are so far apart that they do not provide the necessary degree of vehicular platooning.		Yes <input type="checkbox"/> No <input type="checkbox"/>
OR, On a two-way street, adjacent traffic control signals do not provide the necessary degree of platooning and the proposed and adjacent traffic control signals will collectively provide a progressive operation.		

WARRANT 7 - Crash Experience Warrant
 (All Parts Must Be Satisfied)

SATISFIED YES NO

Adequate trial of alternatives with satisfactory observance and enforcement has failed to reduce the crash frequency.		Yes <input type="checkbox"/> No <input type="checkbox"/>	
REQUIREMENTS	Number of crashes reported within a 12 month period susceptible to correction by a traffic signal, and involving injury or damage exceeding the requirements for a reportable crash.	Yes <input type="checkbox"/> No <input type="checkbox"/>	
5 OR MORE			
REQUIREMENTS	CONDITIONS	Yes <input type="checkbox"/> No <input type="checkbox"/>	
ONE CONDITION SATISFIED 80%	Warrant 1, Condition A - Minimum Vehicular Volume		✓
	OR, Warrant 1, Condition B - Interruption of Continuous Traffic		
	OR, Warrant 4, Pedestrian Volume Condition Ped Vol ≥ 80% of Figure 4C-5 through Figure 4C-8		

WARRANT 8 - Roadway Network
 (All Parts Must Be Satisfied)

SATISFIED YES NO

MINIMUM VOLUME REQUIREMENTS	ENTERING VOLUMES - ALL APPROACHES	✓	FULFILLED
1000 Veh/Hr	During Typical Weekday Peak Hour _____ Veh/Hr and has 5-year projected traffic volumes that meet one or more of Warrants 1, 2, and 3 during an average weekday.		Yes <input type="checkbox"/> No <input type="checkbox"/>
	OR During Each of Any 5 Hrs. of a Sat. or Sun _____ Veh/Hr		
CHARACTERISTICS OF MAJOR ROUTES		MAJOR ROUTE A	MAJOR ROUTE B
Hwy. System Serving as Principal Network for Through Traffic			
Rural or Suburban Highway Outside Of, Entering, or Traversing a City			
Appears as Major Route on an Official Plan			
Any Major Route Characteristics Met, Both Streets			Yes <input type="checkbox"/> No <input type="checkbox"/>

The satisfaction of a traffic signal warrant or warrants shall not in itself require the installation of a traffic control signal.

**Figure 4C-103 (CA). Traffic Signal Warrants Worksheet
 (Average Traffic Estimate Form)**

COUNT DATE _____
 CALC _____ DATE _____
 CHK _____ DATE _____

DIST _____ CO _____ RTE _____ PM _____

Major St: _____ Critical Approach Speed _____ mph
 Minor St: _____ Critical Approach Speed _____ mph

Speed limit or critical speed on major street traffic > 40 mph..... or } **RURAL (R)**
 In built up area of isolated community of < 10,000 population..... }
 URBAN (U)

(Based on Estimated Average Daily Traffic - See Note)

URBAN.....		RURAL.....		Minimum Requirements EADT			
CONDITION A - Minimum Vehicular Volume				Vehicles Per Day on Major Street (Total of Both Approaches)		Vehicles Per Day on Higher-Volume Minor Street Approach (One Direction Only)	
Satisfied _____ Not Satisfied _____							
Number of lanes for moving traffic on each approach				Urban	Rural	Urban	Rural
Major Street	Minor Street	Major Street	Minor Street				
1.....	1.....	1.....	1.....	8,000	5,600	2,400	1,680
2 or More.....	1.....	2 or More.....	1.....	9,600	6,720	2,400	1,680
2 or More.....	2 or More.....	2 or More.....	2 or More.....	9,600	6,720	3,200	2,240
1.....	2 or More.....	1.....	2 or More.....	8,000	5,600	3,200	2,240
CONDITION B - Interruption of Continuous Traffic				Vehicles Per Day on Major Street (Total of Both Approaches)		Vehicles Per Day on Higher-Volume Minor Street Approach (One Direction Only)	
Satisfied _____ Not Satisfied _____							
Number of lanes for moving traffic on each approach				Urban	Rural	Urban	Rural
Major Street	Minor Street	Major Street	Minor Street				
1.....	1.....	1.....	1.....	12,000	8,400	1,200	850
2 or More.....	1.....	2 or More.....	1.....	14,400	10,080	1,200	850
2 or More.....	2 or More.....	2 or More.....	2 or More.....	14,400	10,080	1,600	1,120
1.....	2 or More.....	1.....	2 or More.....	12,000	8,400	1,600	1,120
Combination of CONDITIONS A + B				2 CONDITIONS 80%		2 CONDITIONS 80%	
Satisfied _____ Not Satisfied _____							
<u>No one condition satisfied</u> , but following conditions fulfilled 80% or more..... <u> </u> A <u> </u> B							

Note: To be used only for NEW INTERSECTIONS or other locations where it is not reasonable to count actual traffic volumes.

The satisfaction of a traffic signal warrant or warrants shall not in itself require the installation of a traffic control signal.