

TRAFFIC IMPACT STUDY

LILAC DEL CIELO RESIDENTIAL PROJECT
BONSALL, SAN DIEGO COUNTY, CALIFORNIA

This traffic study has been prepared under the supervision of
Leslie E. Card, P.E.

Signed _____

Leslie E. Card



LSA

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BONSALL, SAN DIEGO COUNTY, CALIFORNIA

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LILAC DEL CIELO RESIDENTIAL PROJECT TRAFFIC IMPACT STUDY

LSA Associates, Inc. (LSA) has prepared the following analysis to identify the potential traffic impacts resulting from the development of the Lilac del Cielo project (Tentative Map 5427) in the Bonsall Community of San Diego County (County). LSA has prepared this analysis consistent with the County of San Diego's *Guidelines for Determining Significance* dated September 26, 2006, and applicable provisions of the California Environmental Quality Act (CEQA).

EXECUTIVE SUMMARY

The project proposes to construct 76 condominium dwelling units (DU) on 55.9 acres. Based on the General Plan, the project is designated as Variable Family Residential Use (RV-8) and Rural Residential (RR-.5). The project proposes a rezone that would change a portion of the project site from the RV-8 designation to the RV-10 designation. The project site is bounded by West Lilac Road to the north and west, Camino Del Rey to the south, and Camino Del Cielo to the east. Access to the project site will be provided via a full-access driveway along Camino Del Cielo.

Issues addressed in this analysis include off-site intersection impacts, site access, interface with the arterial street system, and parking supply. The traffic impact study for the proposed project examines four development scenarios:

- Existing (2005) conditions
- Existing plus project conditions
- Cumulative conditions
- Build out (2030) conditions

Based on the results of this traffic impact study, the proposed project can be implemented without significantly impacting the surrounding roadway system in the existing horizon. The project will not create a direct project impact at any County study area intersections. In addition, the project will contribute to the County's Traffic Impact Fee (TIF) Program to address cumulative impacts adjacent to the project site.

With the implementation of the proposed project, a new northbound left-turn pocket along northbound Camino Del Cielo into the project site shall be constructed at a minimum of 100 feet (ft), with a 75 ft transition. The proposed improvements can be implemented within the existing 24 ft median along Camino Del Cielo.

A sight distance analysis was conducted at the project site driveway along Camino Del Cielo. Based on this analysis, the available sight distance north and south of the driveway along Camino Del Cielo is 440 ft or greater, and therefore, adequate corner sight distance is provided.

Based on the minimum parking requirement for the 76 condominium dwelling units, a total of 117 resident parking spaces and 16 guest parking spaces are required, for a total of 133 parking spaces. The proposed condominium uses will provide 76 two-car garage spaces per dwelling unit and approximately 21 on-street parking spaces for guests, for a total of 177 parking spaces on site. The proposed condominium uses meet and exceed the County's minimum parking requirement.

INTRODUCTION

The purpose of this "focused" traffic impact study is to identify potential traffic and circulation impacts associated with the development of the residential project. The project site is bounded by West Lilac Road to the north and west, Camino Del Rey to the south, and Camino Del Cielo to the east. Figure 1 illustrates the location of the proposed project.

Issues addressed in this analysis include off-site intersection impacts, site access, interface with the arterial street system, and parking supply. The traffic impact study for the proposed project examines four development scenarios:

1. Existing (2005) conditions
2. Existing plus project conditions
3. Cumulative conditions
4. Build-out (2030) conditions

Prior to the preparation of this analysis, LSA discussed the scope of work with the County's Department of Public Works and Department of Planning and Land Use (DPLU). The traffic analysis provides an assessment of traffic impacts and a determination of traffic mitigation as required for CEQA compliance.

Project Description

The project proposes to construct 76 condominium dwelling units on 55.9 acres. Based on the General Plan, the project is designated as Variable Family Residential Use (RV-8) and Rural Residential (RR-.5). The project proposes a rezone that would change a portion of the project site from the RV-8 designation to the RV-10 designation. Access to the project site will be provided via a private road from Camino del Cielo. Figure 2 illustrates the site plan for the proposed residential development.

METHODOLOGY

This traffic impact study is prepared consistent with the objectives and requirements of the County's *Guidelines for Determining Significance* dated September 26, 2006, the California Department of Transportation (Caltrans) *Guide for the Preparation of Traffic Impact Studies*, and applicable provisions of CEQA.

The study area analyzed in this report includes the following intersections and roadway segments. Figure 3 provides the study area intersections and roadway segments, as well as the existing geometrics and traffic control devices at each study area intersection. It should be noted that the study area has been reviewed and approved by County staff.

Study Area Intersections

1. West Lilac Road/Camino Del Rey (unsignalized)
2. Camino Del Cielo/Camino Del Rey (unsignalized)
3. Old River Road/Camino Del Rey (unsignalized)
4. State Route 76 (SR-76)/Olive Hill Road-Camino Del Rey (signalized)¹
5. State Route 76 (SR-76)-Pala Road/Mission Road (signalized)¹
6. State Route 76 (SR-76)/East Vista Way (signalized)¹

Study Area Roadway Segments

1. Camino Del Rey between Mission Road and Camino Del Cielo
2. Camino Del Cielo north of Camino Del Rey
3. West Lilac Road north of Camino Del Rey
4. State Route 76 (SR-76)-Mission Road south of Olive Hill Road-Camino Del Rey¹
5. State Route 76 (SR-76)-Mission Road between Olive Hill Road-Camino Del Rey and Mission Road¹
6. State Route 76 (SR-76)-Pala Road north of Mission Road¹

Intersection Level of Service Methodology. The Synchro 5 (Version 6) computer software was used to determine the level of service (LOS) at County intersections based on the Highway Capacity Manual (HCM) methodology. The HCM methodology was used to determine the LOS for the study area intersections consistent with County requirements. For the unsignalized HCM methodology, the LOS is presented in terms of average approach delay of the minor street (in seconds per vehicle).

The resulting intersection capacity utilization (ICU) is expressed in terms of LOS, where LOS A represents free-flow activity and LOS F represents overcapacity operation. LOS is a qualitative assessment of the quantitative effects of such factors as traffic volume, roadway geometrics, speed, delay, and maneuverability on roadway and intersection operations. LOS criteria for signalized intersections using the ICU methodology are presented below.

¹ State Facilities (Caltrans)

LOS	Description
A	No approach phase is fully utilized by traffic, and no vehicle waits longer than one red indication. Typically, the approach appears quite open, turns are made easily, and nearly all drivers find freedom of operation.
B	This service level represents stable operation, where an occasional approach phase is fully utilized, and a substantial number are nearing full use. Many drivers begin to feel restricted within platoons of vehicles.
C	This level still represents stable operating conditions. Occasionally, drivers may have to wait through more than one red signal indication, and backups may develop behind turning vehicles. Most drivers feel somewhat restricted, but not objectionably so.
D	This level encompasses a zone of increasing restriction approaching instability at the intersection. Delays to approaching vehicles may be substantial during short peaks within the peak period; however, enough cycles with lower demand occur to permit periodic clearance of developing queues, thus preventing excessive backups.
E	Capacity occurs at the upper end of this service level. It represents the most vehicles that any particular intersection approach can accommodate. Full utilization of every signal cycle is attained no matter how great the demand.
F	This level describes forced flow operations at low speeds, where volumes exceed capacity. These conditions usually result from queues of vehicles backing up from a restriction downstream. Speeds are reduced substantially, and stoppages may occur for short or long periods of time due to the congestion. In the extreme case, speed can drop to zero.

The relationship between LOS and delay (i.e., seconds per vehicle) is as follows:

	Highway Capacity Manual (HCM) Unsignalized Intersections
A	#10.0 seconds
B	> 10.0 and #15.0 seconds
C	> 15.0 and #25.0 seconds
D	> 25.0 and #35.0 seconds
E	> 35.0 and #50.0 seconds
F	> 50.0 seconds

The Highway Design Manual (HDM) Chapter 400, Topic 406 (Ramp Intersection Capacity Analysis), was referenced to determine the LOS at State (Caltrans) intersections. The HDM utilizes the Intersecting Lane Vehicles (ILV) methodology, which estimates the capacity of any signalized intersection where the phasing is relatively simple. The maximum capacity at an intersection is 1,500 vehicles per hour. This is expressed as intersecting lane vehicles per hour (ILV/hr). The following provides the values of ILV/hr for various traffic flow conditions.

ILV/hr	Description
< 1,200	Stable flow with slight, but acceptable delay. Occasional signal loading may develop. Free midblock operations.
1,200–1,500	Unstable flow with considerable delays possible. Some vehicles occasionally wait two or more cycles to pass through the intersection. Continuous backup occurs on some approaches.
1,500 (Capacity)	Stop-and-go operation with severe delay and heavy congestion. Traffic volume is limited by maximum discharge rates of each phase. Continuous backup in varying degrees occurs on all approaches. Where downstream capacity is restrictive, mainline congestion can impede orderly discharge through the intersection.

Roadway Segment Level of Service Methodology. Roadway segment LOS were determined using the HCM 2000 methodology for Two-Lane Highways along State facilities and volume-to-capacity (v/c) ratios for County arterials.

Two-Lane Highways. This methodology estimates traffic operations based on terrain, geometric design, and traffic conditions. The HCM two-lane highways methodology is categorized into two classes for analysis.

- **Class I:** These are two-lane highways on which motorists expect to travel at relatively high speeds. These include major intercity routes connecting major traffic generators, daily commuters, and/or primarily links in the State or national highway network. They serve long-distance trips or serve as connecting links between facilities that serve long trips.
- **Class II:** These are two-lane highways on which motorists do not necessarily expect to travel at high speeds. They function as access routes to Class I facilities, serve as scenic/recreation routes, and/or pass through rugged terrain. They often serve short trips, the beginning or ending portion of a longer trip, or trips for which sightseeing/recreation plays a significant role.

The primary LOS measures for Class I two-lane highways are percent time following and average travel speed. For Class II two-lane highways, LOS is based only upon time spent following. LOS criteria of two-lane highways are defined based upon the peak period (15-minute flow periods) and are intended for application to segments of significant length.

County Arterials. Daily roadway link v/c ratios were determined using the theoretical daily capacities contained in the County of San Diego Standards for Public Roads (Table 2). For purposes of this analysis, the capacity for LOS D (i.e., 10,900 vehicles per day [vpd]) was utilized to determine whether the roadway segment operates at a satisfactory LOS. A roadway v/c ratio in excess of 1.00 reflects a volume greater than the LOS D capacity of 10,900 vpd.

Significance Criteria

Signalized Intersections. The County considers signalized intersections with a v/c ratio of 0.90 (LOS D) as the upper limit of satisfactory operations. Mitigation is required for any intersection where project traffic causes the intersection to increase 2 seconds in vehicle delay at LOS E or F, or causes an intersection to deteriorate from LOS D to LOS E or F.

Unsignalized Intersections. The operating parameters and conditions for unsignalized intersections differ dramatically from those of signalized intersections. Very small volume increases on one leg or turn/through movement of an unsignalized intersection can substantially affect the calculated delay for the entire intersection. The County considers the following significance guidelines for unsignalized intersections.

- The proposed project will generate 20 or more peak-hour trips to a critical movement of an unsignalized intersection and cause the unsignalized intersection to operate below LOS D
- The proposed project will generate 20 or more peak-hour trips to a critical movement of an unsignalized intersection and the unsignalized intersection currently operates at LOS E
- The proposed project will generate 5 or more peak-hour trips to a critical movement of an unsignalized intersection and cause the unsignalized intersection to operate below LOS E
- The proposed project will generate 5 or more peak-hour trips to a critical movement of an unsignalized intersection and the unsignalized intersection currently operates at LOS F

Roadway Segments. The County considers the following significance guidelines for roadway segments.

- The additional or redistributed average daily traffic (ADT) generated by the proposed project will cause an adjacent or nearby County Circulation Element Road to operate below LOS D and will significantly increase congestion as identified in the table below

	2-Lane Road	4-Lane Road	6-Lane Road
LOS E	200 ADT	400 ADT	600 ADT
LOS F	100 ADT	200 ADT	300 ADT

- The additional or redistributed ADT generated by the proposed project will cause a residential street to exceed its design capacity
- The additional or redistributed ADT generated by the proposed project will significantly increase congestion on a Circulation Element Road, State Highway, or intersection currently operating at LOS E or LOS F as identified in the table above

EXISTING CONDITIONS

Existing Circulation System

Key roadways in the vicinity of the proposed project are as follows:

- **State Route 76 (SR-76 or Mission Road).** SR-76 (Mission Road) is located west of the project site. This roadway is a north-south State highway that extends from Interstate 5 (I-5) to Interstate 15 (I-15). Direct access to the project site from SR-76 is provided at Olive Hill Road-Camino Del Cielo. This roadway becomes Pala Road north of the intersection of SR-76 and Mission Road.
- **Olive Hill Road-Camino Del Rey.** Olive Hill Road-Camino Del Rey is located south of the project site. Direct access to the project site from this arterial is provided via Camino Del Cielo and West Lilac Road. The posted speed limit along this arterial is 50 miles per hour (mph).
- **West Lilac Road.** West Lilac Road is located northwest of the project site. This roadway is not designated as a Circulation Element roadway between Camino Del Rey and Camino Del Cielo. The posted speed limit along this arterial varies between 30 mph and 35 mph.
- **Camino Del Cielo.** Camino Del Cielo is located east of the project site. This roadway provides direct access to the proposed project via one access driveway. Camino Del Cielo terminates just north of the project site and becomes an unpaved roadway to West Lilac Road. The posted speed limit along this arterial is 40 mph.
- **Old River Road.** Old River Road is located south of the project site. This roadway provides access to the proposed project via Camino del Rey. This roadway extends from Camino del Rey south to the City of Vista.
- **East Vista Way.** East Vista Way is located south of the project site. This roadway is designated as a Major Road east of the SR-76. The posted speed limit along this arterial is 50 mph. This roadway provides access to the proposed project via SR-76.

Existing Intersection Level of Service Analysis

Peak-hour turn volumes for the study area intersections and roadway segments were collected by Southland Car Counters in June 2005. Figure 4 presents the existing daily, a.m., and p.m. peak-hour turn movement volumes for the study area intersections and roadway segments. It should be noted that the existing traffic counts for the intersection of SR-76/East Vista Way were based on the Olive Hill Residential Traffic Impact Analysis dated August 5, 2005. The existing traffic counts are provided in Appendix A.

Table A summarizes the results of the existing a.m. and p.m. peak-hour LOS analysis for the study area intersections utilizing the HCM methodology. The existing LOS calculation worksheets are contained in Appendix B. As this table indicates, the study area intersections are currently operating at satisfactory LOS. It should be noted that the eastbound approach at the intersection of Camino Del Rey/West Lilac Road operates at satisfactory LOS.

Table A: Existing Intersection Level of Service Summary (HCM Methodology)

Intersection	AM Peak Hour		PM Peak Hour	
	Delay (sec)	LOS	Delay (sec)	LOS
HCM Methodology				
1. Camino del Cielo/Camino del Rey	16.3	C	20.4	C
2. West Lilac Road/Camino del Rey	12.4	B	10.5	B
3. Old River Road/Camino del Rey	10.3	B	10.1	B
4. SR-76-Mission Rd/Olive Hill Rd	24.7	C	23.3	C
5. SR-76-Pala Rd/Mission Rd	19.1	B	20.4	C
6. SR-76/East Vista Way	47.8	D	51.3	D

Table B summarizes the results of the existing a.m. and p.m. peak-hour LOS analysis for the signalized State study area intersections utilizing the ILV methodology.

Table B: Existing Intersection Level of Service Summary (ILV Methodology)

ILV Methodology	AM Peak Hour		PM Peak Hour	
	ILV/hr	Exceeds Capacity?	ILV/hr	Exceeds Capacity?
4. SR-76-Mission Rd/Olive Hill Rd	997	No	1,083	No
5. SR-76-Pala Rd/Mission Rd	1,060	No	1,318	No
6. SR-76/East Vista Way	1,488	No	1,281	No

As this table indicates, all intersections currently operate at acceptable ILV during the peak hours. It should be noted that capital improvements along this intersection have been designed and constructed. The improvements along this roadway include the widening of SR-76 from a two-lane facility to a four-lane facility.

Existing Roadway Segment Level of Service Analysis

Table C summarizes the two-lane roadway segment LOS for the three State facilities in the existing condition. The HCM methodology for two-way, two-lane highways was utilized to determine the LOS at these locations. As shown in this table, all roadway segments are currently operating at unsatisfactory LOS (LOS E) during the a.m. and p.m. peak hours, with the exception of SR-76 north of Mission Road in the a.m. peak hour. It should be noted that capital improvements along this roadway segment are currently in design and construction. The improvements along this roadway include the widening of SR-76 from a two-lane facility to a four-lane facility.

Table C: Existing Roadway Segment Level of Service Analysis (HCM Methodology)

Roadway Segment	AM Peak Hour		PM Peak Hour	
	Percent Time Following	LOS	Percent Time Following	LOS
HCM Methodology				
SR-76-Mission Rd (south of Olive Hill Rd)	90.1	E	91.1	E
SR-76-Mission Rd (Olive Hill Road to Pala Rd)	91.3	E	93.8	E
SR-76-Pala Rd (north of Mission Rd)	78.0	D	84.5	E

Table D summarizes the daily traffic volumes and v/c ratios for the three County roadway segments and the three State facilities in the existing condition. As shown in this table, the roadway segments are forecast to operate at acceptable LOS (LOS D or better) with the exception of all three State facilities.

Table D: Existing Daily Traffic Volumes and Volume-to-Capacity Ratios

Volume to Capacity Methodology	Capacity (LOS D)	Volume	Volume/Capacity	LOS
Camino Del Rey (between Old River Rd and W. Lilac Rd)	10,900	8,168	0.75	C
West Lilac Rd (north of Camino Del Rey)	4,500	2,297	0.51	A
Camino Del Cielo (north of Camino Del Rey)	4,500	2,488	0.55	A
SR-76-Mission Rd (south of Olive Hill Rd)	13,500	31,200	2.31	F
SR-76-Mission Rd (Olive Hill Road to Pala Rd)	13,500	37,000	2.74	F
SR-76-Pala Rd (north of Mission Rd)	13,500	16,900	1.25	F

Note: Roadway segments with a v/c ratio greater than 1.00 (LOS D) operate at an unsatisfactory LOS.

PROJECT IMPACTS

Trip Generation

Currently, the project site is undeveloped. The proposed project considers the construction of 76 condominium dwelling units. Daily and peak-hour trip rates for condominiums and rural estates were generated using trip rates from the *San Diego Traffic Generators* manual (April 2002). The project trip generation is presented in Table E. As the table indicates, the proposed project is forecast to generate approximately 608 ADT, including 49 trips in the a.m. peak hour and 61 trips in the p.m. peak hour.

Table E: Project Trip Generation Summary

Land Use	Size	Unit	ADT	AM Peak Hour			PM Peak Hour		
				In	Out	Total	In	Out	Total
<i>Condominium</i>									
Trip Rate		DU	8.00	0.13	0.51	0.64	0.56	0.24	0.80
Trip Generation	76	DU	608	10	39	49	43	18	61

Trip Distribution and Assignment

Project trip distribution for the proposed project was based on logical travel corridors and minimum time paths. Project traffic volumes for vehicles both entering and exiting the project site will be distributed to the adjacent street system based on proximity to major arterials (i.e., SR-76, Camino del Rey, and Mission Road). Prior to the preparation of this analysis, LSA received concurrence of the trip distribution by County staff.

Figure 5 shows the regional trip distribution for the proposed project, as well as the resulting project trip assignment for the study area intersections. As illustrated in Figure 5, approximately 35 percent of the trips are destined north via SR-76-Pala Road; 10 percent northwest via Mission Road; 35 percent south via SR-76-Mission Road; 5 percent south via Old River Road; 5 percent west via Olive Hill Road; and 10 percent east via Camino del Rey.

Project traffic entering and exiting the project site will travel along Camino del Cielo and continue east or west along Camino del Rey to SR-76 or toward I-15. Trips destined to I-15 are forecast to travel along Camino del Rey and north along SR-76 (Mission Road) to access the freeway on- and off-ramps. Project traffic is not forecast to access West Lilac Road since no connection is provided via Camino del Cielo, and this is an inconvenient route to I-15 from the project site. Furthermore, no freeway on/off-ramps are provided at West Lilac Road and I-15.

EXISTING PLUS PROJECT CONDITIONS

Traffic generated by the proposed project was added to the existing traffic volumes at the study area intersections and roadway segments. Figure 6 shows the resulting existing plus project daily, a.m., and p.m. peak-hour traffic volumes.

Existing Plus Project Intersection Level of Service Analysis

Table F summarizes the results of the existing plus project a.m. and p.m. peak-hour LOS analysis for the study area intersections. The LOS worksheets are provided in Appendix C. As this table indicates, all study area intersections will continue to operate at an acceptable LOS (LOS D or better) in the a.m. and p.m. peak hour with implementation of the proposed project. The project will not create significant impacts at any of the study area intersections in the existing plus project condition. It should be noted that the eastbound approach at the intersection of Camino Del Rey/West Lilac Road is forecast to operate at satisfactory LOS.

Table F: Existing Plus Project Intersection Level of Service Summary (HCM Methodology)

Intersection HCM Methodology	Existing				Existing Plus Project				Project Impact?
	AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour		
	Delay (sec)	LOS	Delay (sec)	LOS	Delay (sec)	LOS	Delay (sec)	LOS	
1. Camino del Cielo/Camino del Rey	10.3	C	10.1	C	17.4	C	10.3	C	No
2. W. Lilac Rd/Camino del Rey	12.4	B	10.5	B	13.0	B	10.9	B	No
3. Old River Rd/Camino del Rey	16.3	B	20.4	B	10.5	B	23.2	B	No
4. SR-76-Mission Rd/Olive Hill Rd	24.7	C	23.3	C	24.5	C	25.5	C	No
5. SR-76-Pala Rd/Mission Rd	19.1	B	20.4	C	19.8	B	20.4	C	No
6. SR-76/East Vista Way	47.8	D	51.3	D	48.7	D	51.6	D	No

Table G summarizes the results of the existing a.m. and p.m. peak-hour LOS analysis for the signalized State study area intersections utilizing the ILV methodology. As this table indicates, all State study area intersections are forecast to operate below capacity in the a.m. and p.m. peak hour, with the exception of SR-76/East Vista Way in the a.m. peak hour. Caltrans is designing, has funded, and will be constructing improvements to SR-76 in this vicinity. The improvements will take SR-76 from a two-lane to a four-lane roadway in the immediate vicinity of the intersection of Olive Hill Road. Improvements to the SR-76/Olive Hill Road intersection have been completed. Based on discussions with County staff and Caltrans, construction along the SR-76 is scheduled to begin in 2011.

Table G: Existing Plus Project Intersection Level of Service Summary (ILV Methodology)

ILV Methodology	Existing		Existing Plus Project		Exceeds Capacity?
	AM Peak Hour	PM Peak Hour	AM Peak Hour	PM Peak Hour	
	ILV/hr	ILV/hr	ILV/hr	ILV/hr	
4. SR-76-Mission Rd/Olive Hill Rd	997	1,083	1,020	1,172	No
5. SR-76-Pala Rd/Mission Rd	1,060	1,318	1,075	1,327	No
6. SR-76/East Vista Way	1,488	1,281	1,506	1,274	Yes

It should be noted that there are differences in predicted operations between the HCM and ILV methodologies, as shown in Tables F and G. This can happen since the ILV methodology is very general and does not account for numerous factors such as signal cycle length, curbside parking, grade, and truck traffic. The HCM methodology is considered a more accurate procedure and is accepted by Caltrans in its publication *Guide for the Preparation of Traffic Impact Studies*, December 2005, page 5.

Existing Plus Project Roadway Segment Level of Service Analysis

Table H summarizes the two-lane roadway segment LOS for the three State facilities in the existing plus project condition. The HCM methodology for two-lane highways was utilized to determine the LOS at these locations. As shown in this table, SR-76 will continue to operate at an unsatisfactory LOS (LOS E) with implementation of the proposed project during the a.m. and p.m. peak hours, with the exception of SR-76 north of Mission Road in the a.m. peak hour (LOS D). As previously mentioned, Caltrans is designing, has funded, and will be constructing improvements to SR-76 from Melrose Avenue to I-15. Based on discussions with County staff and Caltrans, construction along the SR-76 is scheduled to begin in 2011.

Table H: Existing Plus Project Roadway Segment Level of Service Analysis (HCM Methodology)

Roadway Segment	Existing				Existing Plus Project			
	AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour	
	Percent Time Following	LOS						
HCM Methodology								
SR-76-Mission Rd (south of Olive Hill Rd)	90.1	E	91.1	E	90.2	E	91.2	E
SR-76-Mission Rd (Olive Hill Rd to Pala Rd)	91.3	E	93.8	E	91.4	E	93.9	E
SR-76-Pala Rd (north of Mission Rd)	78.0	D	84.5	E	78.3	D	84.8	E

Table I summarizes the daily traffic volumes and v/c ratios for the three County study area roadway segments and the SR-76 in the existing plus project condition. Based on this analysis, the roadway segments are forecast to continue operating at an acceptable LOS (LOS D or better) with the exception of all three State facilities. The implementation of the proposed project will not create a significant impact at the County study area roadway segments. However, the proposed project will create a significant impact along the SR-76. Discussion regarding the project impacts along the SR-76 is further provided in the Recommended Improvements/Mitigation Measure section.

Table I: Existing Plus Project Daily Traffic Volumes and Volume-to-Capacity Ratios

Volume to Capacity Methodology	Capacity (LOS D)	Existing			Existing Plus Project			Project Trips	Impact?
		Volume	Volume to Capacity	LOS	Volume	Volume to Capacity	LOS		
Camino Del Rey (between Old River Rd and W. Lilac Rd)	10,900	8,168	0.75	C	8,715	0.80	C	547	No
West Lilac Rd (north of Camino Del Rey)	4,500	2,297	0.51	A	2,297	0.51	A	0	No
Camino Del Cielo (north of Camino Del Rey)	4,500	2,488	0.55	A	3,096	0.69	B	608	No
SR-76-Mission Rd (south of Olive Hill Rd)	13,500	31,200	2.31	F	31,413	2.33	F	213	Yes
SR-76-Mission Rd (Olive Hill Road to Pala Rd)	13,500	37,000	2.74	F	37,274	2.76	F	274	Yes
SR-76-Pala Rd (north of Mission Rd)	13,500	16,900	1.25	F	17,113	1.27	F	213	Yes

Note: Roadway segments with a v/c ratio greater than 1.00 (LOS D) operate at an unsatisfactory LOS.

HORIZON YEAR (2030) CONDITIONS

Based on the approval of County staff on March 29, 2007, the Horizon Year (2030) analysis was used to address the near-term cumulative horizon. As described below, the 2030 condition is based on the County's General Plan. Therefore, using the 2030 analysis in place of the near-term future condition serves as a conservative approach. It should be noted that the project will contribute to the County's TIF Program to address cumulative impacts adjacent to the project site.

The 2030 or 20-year future conditions were provided from the San Diego Association of Governments (SANDAG) traffic model forecast for the project site (traffic analysis zone [TAZ] 163). Based on the General Plan, the project site is zoned for approximately 94 units for Variable Family Residential Use (RV-8) and 17 units for Rural Residential (RR-.5). The proposed project considers the development of 76 condominium dwelling units. Compared to the General Plan zoning for the project site, the proposed project will be less intense than the General Plan.

The project proposes a rezone that would change a portion of the project site from the RV-8 designation to the RV-10 designation. The proposed rezone in residential density would not significantly change the trip generation for the project. Furthermore, it was confirmed from the traffic modeler that the rezone would not change the trip distribution patterns for the TAZ. As this project is less intense than the current General Plan allocations, traffic volumes in the area attributable to the project will be no greater than those considered in the SANDAG 2030 forecasts. A comparison of the project and General Plan trip generation is provided in Table J.

Table J: Proposed Project and General Plan Trip Generation Comparison

Land Use	Size	Unit	ADT	AM Peak Hour			PM Peak Hour		
				In	Out	Total	In	Out	Total
Proposed Project									
<i>Condominium</i>									
Trip Rate		DU	8.00	0.13	0.51	0.64	0.56	0.24	0.80
Trip Generation	76	DU	624	10	39	49	43	18	61
General Plan Zoning Potential									
<i>Condominium</i>									
Trip Rate		DU	8.00	0.13	0.51	0.64	0.56	0.24	0.80
Trip Generation	94	DU	752	12	48	60	53	23	76
<i>Rural Estate</i>									
Trip Rate		DU	12.00	0.29	0.67	0.96	0.84	0.36	1.20
Trip Generation	17	DU	204	5	11	16	14	6	20
Total General Plan Trip Generation			956	17	59	76	67	29	96
Difference (Proposed Project-General Plan)			-332	-7	-20	-27	-24	-11	-35

LSA received a 2030 daily, a.m., and p.m. select zone assignment from SANDAG for TAZ 163. LSA interpolated the daily, a.m., and p.m. peak-hour model plots at the study area intersections and roadway segments. LSA used the National Cooperative Highway Research Program (NCHRP) 255 to determine the 2030 intersection turn movements at the study area intersections. The NCHRP interpolates the existing turn movement volumes to the future approach and departure volumes along the roadway segments to determine the 2030 traffic volumes at each study area intersection. The 2030 traffic model plots and NCHRP worksheets are provided in Appendix D. The 2030 traffic volumes are illustrated in Figure 7.

It should be noted that the SANDAG 2030 Regional Transportation Plan has identified improvements along SR-76 between Mission Road and I-15. The improvements include the widening of SR-76 from two to four lanes. These improvements have been assumed in this 2030 analysis.

2030 Intersection Level of Service Analysis

Table K summarizes the results of the 2030 a.m. and p.m. peak-hour LOS analysis for the unsignalized County study area intersections utilizing the HCM methodology. The 2030 LOS calculation worksheets are contained in Appendix E. As this table indicates, the unsignalized study area intersections are forecast to operate at satisfactory LOS, with the exception of Old River Road and Camino Del Rey. The approach delay of the northbound left-turn movement at this intersection is forecast to operate at LOS F in the p.m. peak hour. In addition, the signalized intersections at SR-76–Mission Road/Olive Hill Road, SR-76/East Vista Way, and SR-76–Pala Road/Mission Avenue are forecast to operate at unsatisfactory LOS. It should be noted that the eastbound approach at the intersection of Camino Del Rey/West Lilac Road is forecast to operate at satisfactory LOS.

Table K: 2030 Intersection Level of Service Summary (HCM Methodology)

Intersection	AM Peak Hour		PM Peak Hour	
	Delay (sec)	LOS	Delay (sec)	LOS
HCM Methodology				
1. Camino del Cielo/Camino del Rey	10.7	B	16.2	C
2. West Lilac Rd/Camino del Rey	27.2	D	15.7	C
3. Old River Rd/Camino del Rey	27.9	D	> 50.0	F
4. SR-76–Mission Rd/Olive Hill Rd	> 80.0	F	> 80.0	F
5. SR-76–Pala Rd/Mission Rd	17.8	B	>80.0	F
6. SR-76/East Vista Way	> 80.0	F	> 80.0	F

Table L summarizes the results of the 2030 a.m. and p.m. peak-hour LOS analysis for the signalized State study area intersections utilizing the ILV methodology. As this table indicates, all State study area intersections are forecast to exceed the intersection capacity (1,500 ILV/hr) in the a.m. and p.m. peak hour.

Table L: 2030 Intersection Level of Service Summary (ILV Methodology)

ILV Methodology	ILV/hr	Exceeds Capacity?	ILV/hr	Exceeds Capacity?
4. SR-76-Mission Rd/Olive Hill Rd	1,950	Yes	2,462	Yes
5. SR-76-Pala Rd/Mission Rd	1,778	Yes	2,213	Yes
6. SR-76/East Vista Way	2,397	Yes	2,605	Yes

2030 Roadway Segment Level of Service Analysis

Table M summarizes the roadway segment LOS for the three State facilities in the 2030 condition. The HCM methodology for multilane facilities was utilized due to the interim improvements along SR-76 from Melrose Avenue to I-15 (i.e., two-lane to a four-lane facility). The measure of effectiveness has changed as well, from “Percent Time Following” to “Density.” As shown in this table, the roadway segments along SR-76 are forecast to operate at an acceptable LOS (LOS D or better), with the exception of the southbound SR-76 between Olive Hill Road and Pala Road in the p.m. peak hour.

Table M: 2030 Roadway Segment Level of Service Summary (HCM Methodology)

Roadway Segment	AM Peak Hour		PM Peak Hour	
	Density = pc/mi/ln	LOS	Density = pc/mi/ln	LOS
HCM Methodology				
SR-76-Mission Road (south of Olive Hill Road)				
<i>Northbound</i>	31.9	D	11.7	B
<i>Southbound</i>	11.9	B	27.9	D
SR-76-Mission Road (Olive Hill Road to Pala Road)				
<i>Northbound</i>	33.3	D	14.5	B
<i>Southbound</i>	13.0	B	36.3	E
SR-76-Pala Road (north of Mission Road)				
<i>Northbound</i>	21.9	C	10.1	A
<i>Southbound</i>	9.0	A	23.4	C

Table N summarizes the daily traffic volumes and v/c ratios for the three County roadway segments and the SR-76 in the 2030 condition. For purposes of this General Plan analysis, Camino Del Rey was designated as a Collector arterial, SR-76 (south of Mission Road) was designated as a Prime arterial, and SR-76 (north of Mission Road) was designated as a Major arterial. Based on this analysis, the roadway segments are forecast to operate at an acceptable LOS (LOS D or better) with the exception of all three State facilities.

Table N: 2030 Daily Traffic Volumes and Volume-to-Capacity Ratios

Volume-to-Capacity Methodology	Capacity (LOS D)	Volume	Volume/ Capacity	LOS
Camino Del Rey (between Old River Rd and W. Lilac Rd)	30,800	14,800	0.48	A
West Lilac Rd (north of Camino Del Rey)	4,500	4,100	0.91	E
Camino Del Cielo (north of Camino Del Rey)	4,500	3,900	0.87	D
SR-76-Mission Rd (south of Olive Hill Rd)	50,000	60,100	1.20	F
SR-76-Mission Rd (Olive Hill Road to Pala Rd)	50,000	73,450	1.47	F
SR-76-Pala Rd (north of Mission Rd)	33,400	49,700	1.49	F

Note: Roadway segments with a v/c ratio greater than 1.00 (LOS D) operate at an unsatisfactory LOS.

SPECIAL ISSUES

Project Access

LSA has evaluated the operation of the ingress and egress locations of the project site along Camino Del Cielo. As illustrated in the site plan (Figure 2), the proposed project will access the arterial street system from one proposed driveway along Camino Del Cielo approximately 300 ft north of Fairgreen Way. As stated in the County's Public Road Standards, Non-Circulation Element roads entering into

a Circulation Element road shall have centerlines approximately 300 ft apart. Therefore, the proposed driveway meets the County's roadway separation standards. The request for exception was approved by the County on June 26, 2007. A copy of the approved letter is provided in Appendix F.

Camino Del Cielo is a two-lane divided arterial adjacent to the project site, with an existing median located from Fairgreen Way to the terminus of Camino Del Cielo. The existing median is approximately 24 ft wide. Currently, the existing median is located directly across the proposed access driveway. With implementation of the proposed project, a section of the existing median would need to be removed to accommodate a 12 ft wide northbound left-turn pocket into the project site. The turn lane should be constructed at a minimum of 100 ft, with a 75 ft transition.

The driveway traffic volumes illustrate that approximately 10 a.m. peak-hour and 43 p.m. peak-hour northbound left-turn vehicles will access the project site via the primary access driveway to the condominium uses. LSA conducted a Synchro analysis to determine the queue/stacking length along the northbound left-turn lane at the proposed project driveway. Based on the Synchro worksheets, a maximum queue length of 4 ft is forecast during the p.m. peak hour. Based on the maximum peak-hour vehicles and the Synchro analyses, the new northbound left-turn pocket along northbound Camino Del Cielo into the project site should be constructed at a minimum of 100 ft, with a 75 ft transition. The Synchro analyses for the project driveway are provided in Appendix G. Figure 8 provides a conceptual striping plan for the proposed improvement. Figure 9 provides the cross-section of Camino Del Cielo. The proposed improvements can be implemented within the existing median along Camino Del Cielo. It should be noted that off-site grading improvements are not required since the project will add a 12 ft wide left-turn lane within the existing 24 ft median.

Sight Distance Analysis

As stated in the HDM (HDM Section 405.1) for 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 all lanes of through traffic or cross the near lanes and turn left or right without requiring through traffic to radically alter speed. Corner sight distance is measured from the driver's eyes, which is assumed to be 3.5 ft above the ground to a 4.25 ft object height in the center of the approaching lane of the major road. The driver on the crossroad requires 7.5 seconds to complete the necessary maneuver, while the approaching vehicle travels at the assumed design speed of the main highway.

A sight distance analysis was conducted at the project site driveway along Camino Del Cielo. The posted speed limit along Camino Del Cielo is 40 mph. Based on the County's standards for corner sight distance (Section 6, Table 5), the corner sight distance requirement for a roadway with a prevailing speed of 40 mph is 400 ft. LSA conducted field observations along Camino Del Cielo and the proposed project driveway. As shown in Figure 10, the available sight distance north and south of the driveway is 400 ft or greater; therefore, adequate corner sight distance is provided.

Project Parking Supply

The County's minimum parking requirement for multifamily DU is 1.5 parking spaces per dwelling unit. For units with 3 or more bedrooms, an additional 0.50 parking space per DU is to be provided. In addition, it is required that one parking space for every 5 DU be provided for guest parking and

one parking space for every 10 units be provided for recreation center parking. Based on the minimum parking requirement for the 76 condominium DU, a total of 114 parking resident parking spaces and 16 guest parking spaces are required, for a total of 130 parking spaces. The proposed condominium uses will provide 76 two-car garage spaces per DU and approximately 31 on-street parking spaces for guests, for a total of 183 parking spaces on site. The proposed condominium use meets and exceeds the County's minimum parking requirement.

Capital Improvement Plan (CIP)

Based on the County's 5-year plan, <http://www.sdcounty.ca.gov/dpw/engineer/pdf/5yrplan.pdf>, the Camino Del Cielo Extension Project will be funded by the TIF (i.e., TransNet) and is scheduled to be completed by June 2011. It should be noted that no vehicles are forecast to utilize the Camino Del Cielo Extension. The Camino Del Rey/Old River Road Intersection Improvement Project will be funded by the Hazard Elimination Safety Gas Tax and is scheduled to be completed by June 2011. It should be noted that the intersection is forecast to operate at satisfactory LOS in the existing plus project condition. However, the intersection is forecast to operate at LOS F in the 2030 p.m. peak hour. Additional information for these improvement projects are provided in Appendix H.

RECOMMENDED IMPROVEMENTS/MITIGATION MEASURES

Based on the results of this traffic impact study, the proposed project can be implemented without significantly impacting the surrounding roadway system in the existing horizon, with the exception of the SR-76 roadway segments, based on County guidelines. The project will not create a direct project impact at any County study area intersections. In addition, the project will contribute to the County's TIF Program to address cumulative impacts adjacent to the project site. The following is an estimated summary of the proposed project's contribution to the County's TIF Program.

Land Use	Regional Fee	Local Fee	Total Fee
Condominium	\$3,541/unit	\$3,732/unit	\$7,273/unit
76 dwelling units	\$269,116	\$283,632	\$552,748

In addition, the proposed project will include frontage improvements and/or dedications along Camino del Cielo. The proposed project will construct a northbound left-turn pocket at Camino del Cielo and the proposed project driveway into the site. The left-turn pocket will be designed at a minimum of 100 ft in length, with a 75 ft transition. The County would require construction and encroachment permits for any worked performed within the County's right-of-way.

The study identifies that the entire segment of SR-76 is forecast to exceed the County's criteria during all three development scenarios. The proposed project directly impacts SR-76 south of Olive Hill Road, from Olive Hill Road to Pala Road, and north of Mission Road, as show in Table I. It should be noted that the LOS along a roadway segment is directly affected by the performance of the adjacent intersections. Although the study identifies no significant project impacts to intersections in the existing horizon, the project could improve an adjacent intersection to offset impacts along SR-76. One location at which the project could make partial improvements is the intersection of SR-76/East Vista Way. These improvements could include the addition of a second eastbound through lane for a distance of 500 ft before and after the intersection. The addition of a second eastbound through lane at

the intersection would add some capacity to help alleviate the project impact along SR-76 in the segment that has an identified impact. Caltrans staff, however, has indicated that these potential intersection improvements would be temporary and possibly disruptive to the overall planned capital projects to the SR-76 corridor. Prior to the final map approval, the developer will pay a fee for the Transnet SR-76 Widening project. The amount of the fee shall be the value of the identified intersection improvement at SR-76/East Vista Way or as otherwise determined acceptable by Caltrans as adequate mitigation for the project's impacts to SR-76. Table O summarizes the impacts along SR-76 and presents the alternative geometrics at the intersection of SR-76/East Vista Way. The Synchro worksheets and a conceptual drawing of the intersection are provided in Appendix I. It should be noted that future improvements to the State facility include the widening from a two-lane facility to a four-lane facility and that additional improvements to the intersections will be constructed. Based on discussions with Caltrans, construction along the SR-76 is scheduled to begin in 2011.

Table O: Impact Summary

Volume to Capacity Methodology	Existing			Existing Plus Project			Intersection of SR-76/East Vista Way Alternative Geometrics			
	Volume	Volume to Capacity	LOS	Volume	Volume to Capacity	LOS	AM Peak Hour		PM Peak Hour	
							Delay (sec) ¹	LOS	Delay (sec) ¹	LOS
SR-76-Mission Rd (south of Olive Hill Rd)	31,200	2.31	F	31,413	2.33	F ²	37.9	D	46.4	D
SR-76-Mission Rd (Olive Hill Road to Pala Rd)	37,000	2.74	F	37,274	2.76	F ²				
SR-76-Pala Rd (north of Mission Rd)	16,900	1.25	F	17,113	1.27	F ²				

¹ The alternative improvement to mitigate the SR-76 roadway segment includes the addition of a second eastbound through lane at the intersection of SR-76/East Vista Way.

² Direct project impact.