

Lilac Hills Ranch

Traffic Impact Study



Prepared for

ACCRETIVE INVESTMENT, INC.
12275 El Camino Real, Ste. 110
San Diego, CA 92130

FEIR
July 1, 2015

Prepared by

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Executive Summary

The proposed Lilac Hills Ranch project is located in the Valley Center and Bonsall Community Planning Areas of the unincorporated County of San Diego with State Route 76 to the north, Valley Center proper to the east, the City of Escondido to the south, and Interstate 15 and Old Highway 395 to the west.

The project consists of a mix of residential, commercial and institutional uses, along with parks and open space. Specifically, the project proposes commercial uses comprised of 61,500 square feet of local serving small scale specialty retail, 28,500 square feet of office uses and a 50-room country inn; 903 traditional single-family detached homes; 375 multi-family homes (for-rent and for-sale at 20 or more dwelling units per acre); 468 age-restricted single family homes (senior community); necessary facilities and amenities to serve the senior population (including a senior community center, an assisted living and group residential facility); and civic facilities include a Community Purpose Facility (CPF) area that would be comprised of a fire station and recreational facility not to exceed a total of 40,000 square feet for the combined CPF area, a K-8 school site, 23.6 acres of public and private neighborhood parks, a private recreational center, and other recreational amenities. An interim fire station with up to 3-staff could be located anywhere within the project site. However, this fire station would be built in place of two equivalent dwelling units and would not result in additional traffic to the overall project. Also planned within the project site are an on-site Recycling and Green Waste Drop-off Facility (RF), a potential Water Reclamation Facility (WRF) and other supporting infrastructure. Open space is proposed to retain some of the existing citrus and avocado groves, along with 104.1 acres of sensitive biological/wetland habitat.

The proposed Lilac Hills Ranch project would generate a total of 15,141 external daily trips by buildout of the project, including 1,171 AM peak hour trips and 1,432 PM peak hour trips.

Based on the County of San Diego significance criteria and the SANTEC/ITE Guidelines, the proposed project would result in direct traffic impacts at the following four (4) roadway segments:

- Gopher Canyon Road, between E. Vista Way and I-15 SB Ramps – 238th EDU triggers the need for the construction of a dedicated westbound (Gopher Canyon Road approach) right-turn lane at the intersection of E. Vista Way / Gopher Canyon Road;
- E. Vista Way, between SR-76 and Gopher Canyon Road – 238th EDU triggers the need for the construction of a dedicated westbound (Gopher Canyon Road approach) right-turn lane and 476th EDU triggers the need for the construction of a dedicated northbound (E. Vista Way approach) right-turn lane at the intersection of E. Vista Way / Gopher Canyon Road;
- E. Vista Way, between Gopher Canyon Road and Osborne Street – 238th EDU triggers the need for the construction of a dedicated westbound (Gopher Canyon Road approach) right-turn lane and 476th EDU triggers the need for the construction of a dedicated

northbound (E. Vista Way approach) right-turn lane at the intersection of E. Vista Way / Gopher Canyon Road; and

- W. Lilac Road, between Old Highway 395 and Main Street – need to be improved to 2.2C as designated in the County’s adopted Mobility Element by 929th EDU.

The proposed project would also result in direct traffic impacts at the following five (5) intersections:

- E. Vista Way / Gopher Canyon Road – 238th EDU triggers the need for the construction of a dedicated westbound (Gopher Canyon Road approach) right-turn lane at the intersection of E. Vista Way / Gopher Canyon Road. The additional mitigation measure (a dedicated northbound right-turn lane) required for the segment of E. Vista Way, between Gopher Canyon Road and Osborne Street would further improve the operations at this intersection to LOS D during peak hours;
- Old Highway 395 / W. Lilac Road – 585th EDU triggers the need for signalization and the construction of the left-turn lane at the westbound W. Lilac Road approach;
- Old Highway 395 / Circle R Drive – 210th EDU from combined Phases 4 and 5 or 1,220th total EDU triggers the need for signalization;
- I-15 SB Ramps / Gopher Canyon Road – 1st EDU of Phase 4 or 363rd total EDU triggers the need for signalization. However, this intersection is a Caltrans facility over which the County does not have jurisdiction. In addition, Caltrans does not have a plan or program in place; therefore, the impacts would remain significant and unavoidable; and,
- I-15 NB Ramps / Gopher Canyon Road – 1st EDU of Phase 4 or 363rd total EDU triggers the need for signalization. However, this intersection is a Caltrans facility over which the County does not have jurisdiction. In addition, Caltrans does not have a plan or program in place; therefore, the impacts would remain significant and unavoidable.

In addition to the direct impacts identified above, traffic generated by the proposed project would result in cumulative impacts at nine (9) study area roadway segments and 11 intersections; including:

Roadway Segments

- Camino Del Rey, between Old River Road and W. Lilac Road;
- Gopher Canyon Road, between Little Gopher Canyon Road and I-15 SB Ramps;
- E. Vista Way, between SR-76 and Gopher Canyon Road;
- E. Vista Way, between Gopher Canyon Road and Osborne Street;
- Cole Grade Road, between Fruitvale Road and Valley Center Road;
- W. Lilac Road, between Old Highway 395 and Main Street;
- Gopher Canyon Road, between E. Vista Way and Little Gopher Canyon Road;
- Pankey Road, between Pala Mesa Drive and SR-76; and

-
- Lilac Road, between Old Castle Road and Anthony Road.

Intersections

- E. Vista Way / Gopher Canyon Road (County);
- Old Highway 395 / W. Lilac Road (County);
- I-15 SB Ramps / Old Highway 395 (Caltrans);
- I-15 NB Ramps / Old Highway 395 (Caltrans);
- I-15 SB Ramps / Gopher Canyon Road (Caltrans);
- I-15 NB Ramps / Gopher Canyon Road (Caltrans);
- SR-76 / Old Highway 395 (Caltrans);
- SR-76 / Pankey Road (Caltrans);
- Old Highway 395 / E. Dulin Road (County);
- Old Highway 395 / Circle R Drive (County); and
- Miller Road / Valley Center Road (County).

Generally, cumulative impacts to facilities listed in the County's TIF would be mitigated through payment of TIF fees. Although the improvement is slated for implementation based upon the currently approved TIF Program; it is anticipated that the currently approved TIF Program will be updated by the County to accommodate the land use changes that would result from the project's approval. This update would revise fee rates associated with adding the project's land uses to the program. For facilities not included in the County's TIF program, specific mitigation measures are proposed.

The proposed project would also have cumulative impacts to I-15 between SR-78 and the Riverside County boundary, and these impacts would remain significant and unmitigable.

Proposed Mobility Element Classification Changes

The project proposes to downgrade *W. Lilac Road, between Main Street and the planned Road 3 from 2.2C (as classified in the currently adopted General Plan) to 2.2F.*

This proposal is supported by the low (less than 6,100 ADT) forecast daily traffic volumes when Road 3 is deleted from the Mobility Element system. In October, 2011, after adoption of the County General Plan Update, the San Diego Association of Governments (SANDAG) acquired the 902-acre Rancho Lilac property through its Environmental Mitigation Program (EMP). SANDAG recorded a conservation easement over the entire 902 acres and designated this land as part of a 1,600 acre open space preserve in the State Route 76 corridor in North San Diego County. This acquisition may prevent implementation of the County's planned Road 3, and make the deletion of Road 3 from the currently adopted Mobility Element a potential roadway network scenario.

Summary of Major Changes to the Traffic Impact Study (TIS)

The following four (4) changes to the public review version of the TIS (dated 6/28/2013) resulted in additional deficient facilities, traffic impacts, and/or General Plan inconsistencies:

- *Change 1* – Change to project access. Only the southern portion of the Phase 5 (SFS-5, SFS-6, P-11 and the church as shown in Figure 1-3) can access Mountain Ridge Road. The public review version of the TIS assumed that both Phases 4 and 5 have access to Mountain Ridge Road. Change 1 affects “Existing + Phase D”, “Existing + Phase E”, “Existing + Cumulative Projects + Project”, and “Horizon 2030 + Project” scenarios.
- *Change 2* – Change to horizon year traffic volumes. The Lilac Hills Ranch Development occupies portions of three Traffic Analysis Zones (TAZs 157, 183, and 4694) in the currently adopted GP transportation forecast model, and these TAZs generate a total of 4,957 daily trips. The public review version of the TIS assumed that the Lilac Hills Ranch Development would replace approximately 75% (an acreage percentage) of the 4,957 trips which wasn’t conservative enough. The TIS is now updated so that the project would only replace 110 rural residential units (1,320 ADT) of the GP approved land uses. The Horizon Year 2030 Base traffic volumes were revised to reflect the adopted GP forecast; while the Horizon Year 2030 Base Plus Project traffic volumes were derived by adding the proposed Lilac Hills Ranch project traffic (subtracting traffic generated by the 110 units) to the Base Year GP modeled volumes. Change 2 affects both Horizon Year 2030 “Base” and “Base + Project” scenarios.
- *Change 3* – Change to existing roadway capacities reflecting field conditions. A 10% capacity reduction is now applied to these roadways that are not built to County public road standards. Since each of these roads provides one lane in each direction (the most important indication of capacity), shoulder width and minimum curve radius do not have significant effects on roadway capacity especially when the substandard sections/curves only represent a small portion of the studied roadway, a 10% reduction was deemed reasonable and adequate. Change 3 affects “Existing”, all five “Existing + Project”, and “Existing + Cumulative Projects + Project” scenarios.
- *Change 4* – Change to the cumulative project list. The Sierra (former Merriam Mountains) Development project (#106 in Table 6.1) located west of I-15, between Gopher Canyon Road and Deer Springs Road is expected to request the construction of approximately 2,100 residential units and a small amount of commercial development. The public review version of the TIS (dated 6/28/2013) only included 1,162 DU based on the County GPA Property Specific Workplan list of 56 projects (dated June 28, 2012). Therefore additional traffic was added. In addition, a number of projects from the Valley Center County GPA Property Specific Workplan (VC7, 11, 20A, 20B, 54, 61, 66) list of 56 projects was also added, such as #110 in Table 6.1. These small PSRs represent a total of 261 units of single family rural residential located east of I-15, between W. Lilac Road and Mountain Ridge Road. Change 4 affects the “Existing + Cumulative Projects + Project” scenario.

Changes 1 and 2 above contribute to additional GP inconsistencies under the Horizon Year, including:

-
- Old Highway 395, between W. Lilac Road and I-15 SB Ramps under Horizon Year with Road 3 scenario; and
 - W. Lilac Road, between Old Highway 395 and Main Street under Horizon Year without Road 3 scenario.

Change 3 results in an additional project direct impact at the following location under the “Existing + Project (Phase A)” and “Existing + Project (Phase B)” conditions:

- Gopher Canyon Road, between E. Vista Way and I-15 SB Ramps.

Change 4 results in an additional cumulative impact at the following location under the “Existing + Cumulative Projects + Project” scenario:

- W. Lilac Road, between Old Highway 395 and Main Street.

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1.0 Introduction

1.1 Purpose of the Report

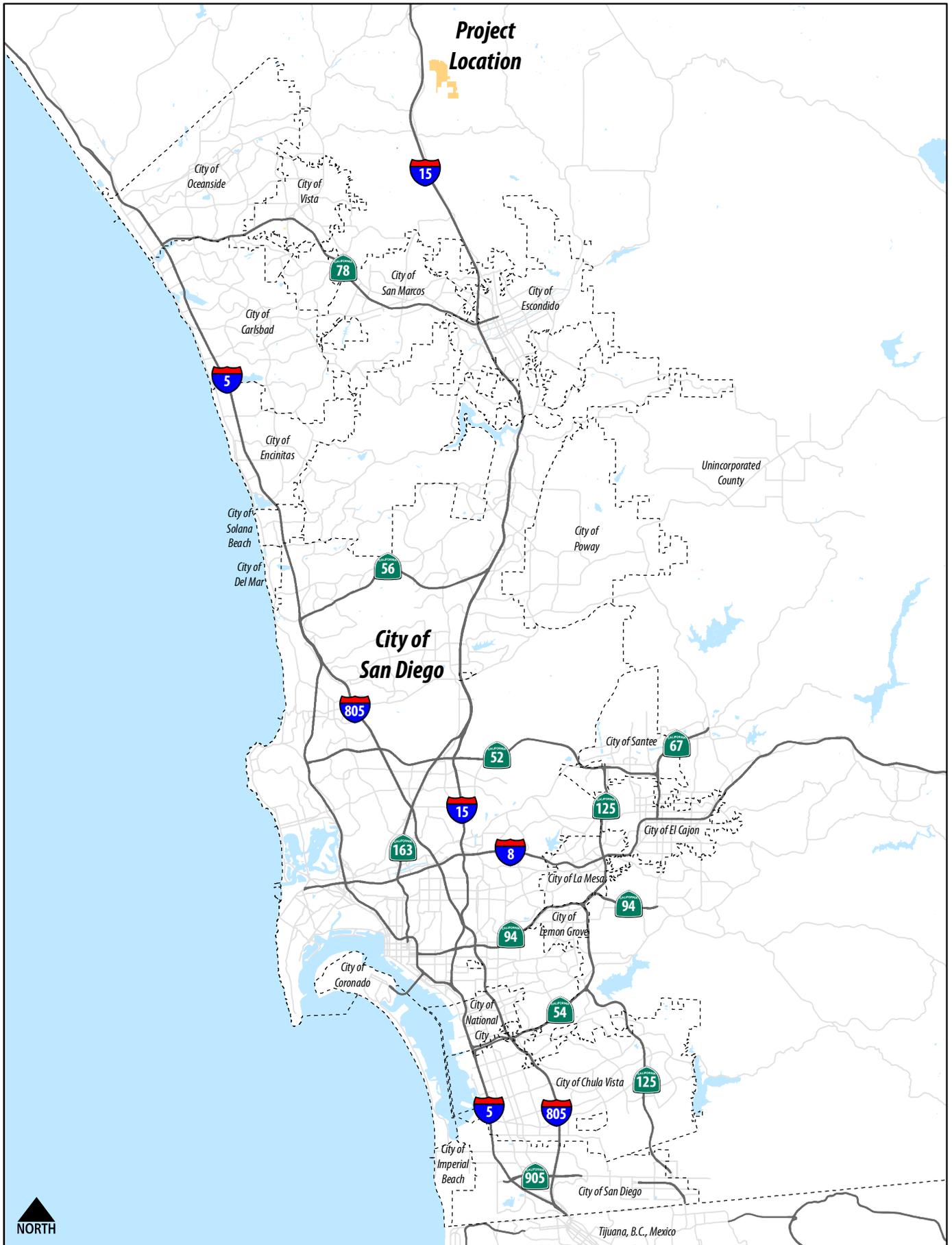
The purpose of this Traffic Impact Study (TIS) is to identify and document potential traffic impacts related to the development of the Lilac Hill Ranch project. This report also recommends mitigation measures for any identified intersection, roadway or freeway/highway deficiencies associated with the project.

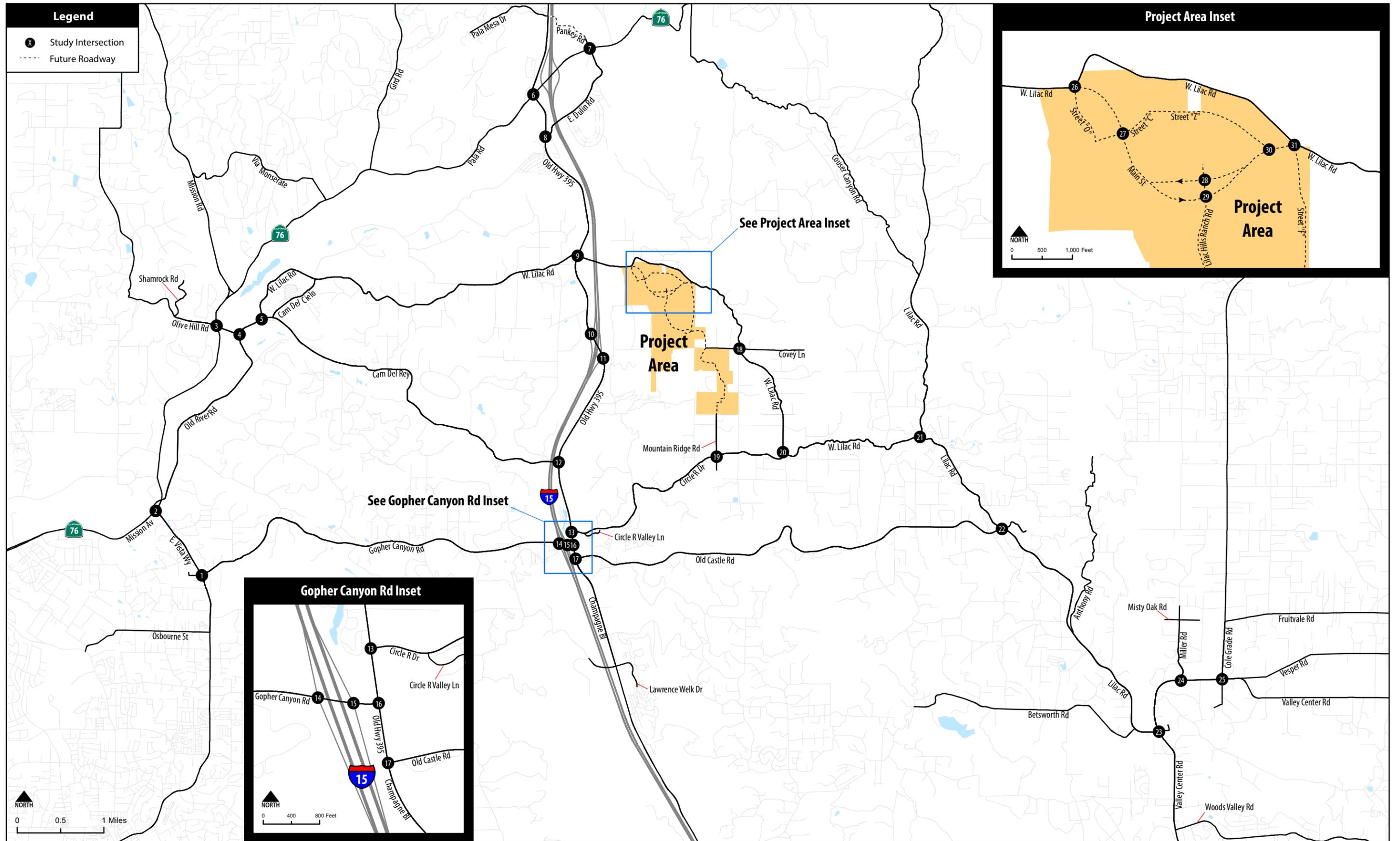
1.2 Project Location and Description

The proposed Lilac Hills Ranch project is located in the Valley Center and Bonsall Community Planning Areas of the unincorporated County of San Diego with State Route 76 to the north, Valley Center proper to the east, the City of Escondido to the south, and Interstate 15 and Old Highway 395 to the west. Project access is provided at W. Lilac Road via Main Street, Circle R Drive via Mountain Ridge Road (restricted access to only southern half of the Phase 5 (SFS-5 and SFS-6) of the senior community and unrestricted access to the church site), as well as Covey Lane. **Figure 1-1** displays the project's location within the region, while **Figure 1-2** illustrates the project study area.

The project consists of a mix of residential, commercial and institutional uses, along with parks and open space. Specifically, the project proposes commercial uses comprised of 61,500 square feet of local serving small scale specialty retail, 28,500 square feet of office uses and a 50-room country inn; 903 traditional single-family detached homes; 375 multi-family homes (for-rent and for-sale at 20 or more dwelling units per acre); 468 age-restricted single family homes (senior community); necessary facilities and amenities to serve the senior population (including a senior community center, and an assisted living facility); and civic facilities include a Community Purpose Facility (CPF) area that would be comprised of a fire station and recreational facility not to exceed a total of 40,000 square feet for the combined CPF area, a K-8 school site, 23.6 acres of public and private neighborhood parks, a private recreational center, and other recreational amenities. An interim fire station with up to 3-staff could be located anywhere within the project site. However, this fire station would be built in place of two equivalent dwelling units and would not result in additional traffic to the overall project. Also planned within the project site are an on-site Recycling and Green Waste Drop-off Facility (RF), a potential Water Reclamation Facility (WRF) and other supporting infrastructure. Open space is proposed to retain some of the existing citrus and avocado groves, along with 104.1 acres of sensitive biological/wetland habitat. The project is proposed to be developed in five (5) phases.

The project application includes a General Plan Amendment (GPA 12-001), a Specific Plan (SP12-001), a Master Tentative Map (TM 5571 RPL 4), an Implementing Tentative Map for Phase 1 (TM 5572 RPL 4); and a Major Use Permit (MUP 12-005) for the Water Reclamation Facility. The project would be implemented in five phases. Additional discretionary permits will be needed to implement later phases, as identified in the Specific Plan.





Lilac Hills Ranch Traffic Impact Study

Figure 1-2
Project Study Area

Figure 1-3 displays the proposed site plan. Detailed land use and trip generation information are described in Chapter 4.

Proposed Project Design Exceptions

Ten (10) design exceptions are proposed (final recommendations of the requests are pending) as part of this project and displayed in **Figures 1-4A** and **1-4B**. For purpose of explanation and ease of reading, the following summaries describe the design exception requests and the resulting effects on roadway capacity:

1. West Lilac Road, from Old Highway 395 to the I-15 bridge

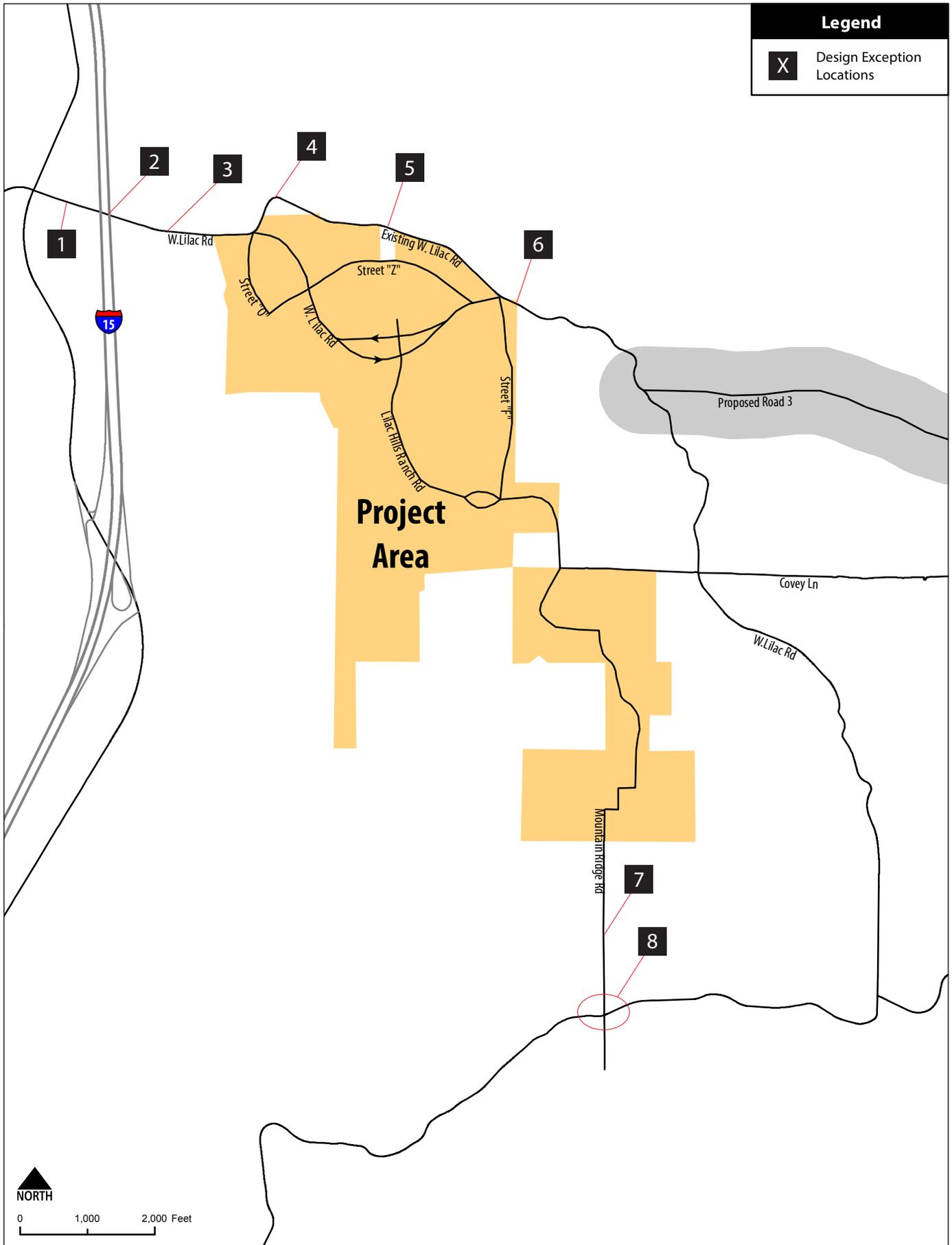
- a. Request to reduce the parkway width (the walkable portion of the right-of-way) from 12 feet to 2 feet on the north side, and from 12 feet to 6 feet on the south side.
 - i. A “Parkway” is defined as “the distance measured from the curb face to the property line of a road right-of-way.” The actual drivable portion of the road is called the “Pavement Width,” which is further defined as “the specified width of pavement of the roadbed and is measured from curb face to curb face. In the absence of curbs, the pavement width is measured from the edges of the roadbed.” (County of San Diego Department of Public Works “Public Road Standards,” March 12, 2012)
- b. Reduce the north side shoulder from 8 feet to 6 feet.

The reduction in parkway width will not affect vehicular travel speed because the travel lanes will be built to the full 12-foot standard. The reduced shoulder width from 8 feet to 6 feet will still allow full size vehicles to pull off to the side of the road on those rare occasions when that is necessary. **Therefore, the proposed design exception will not affect roadway capacity and a capacity reduction was not applied.**

2. West Lilac Road, over the I-15 bridge

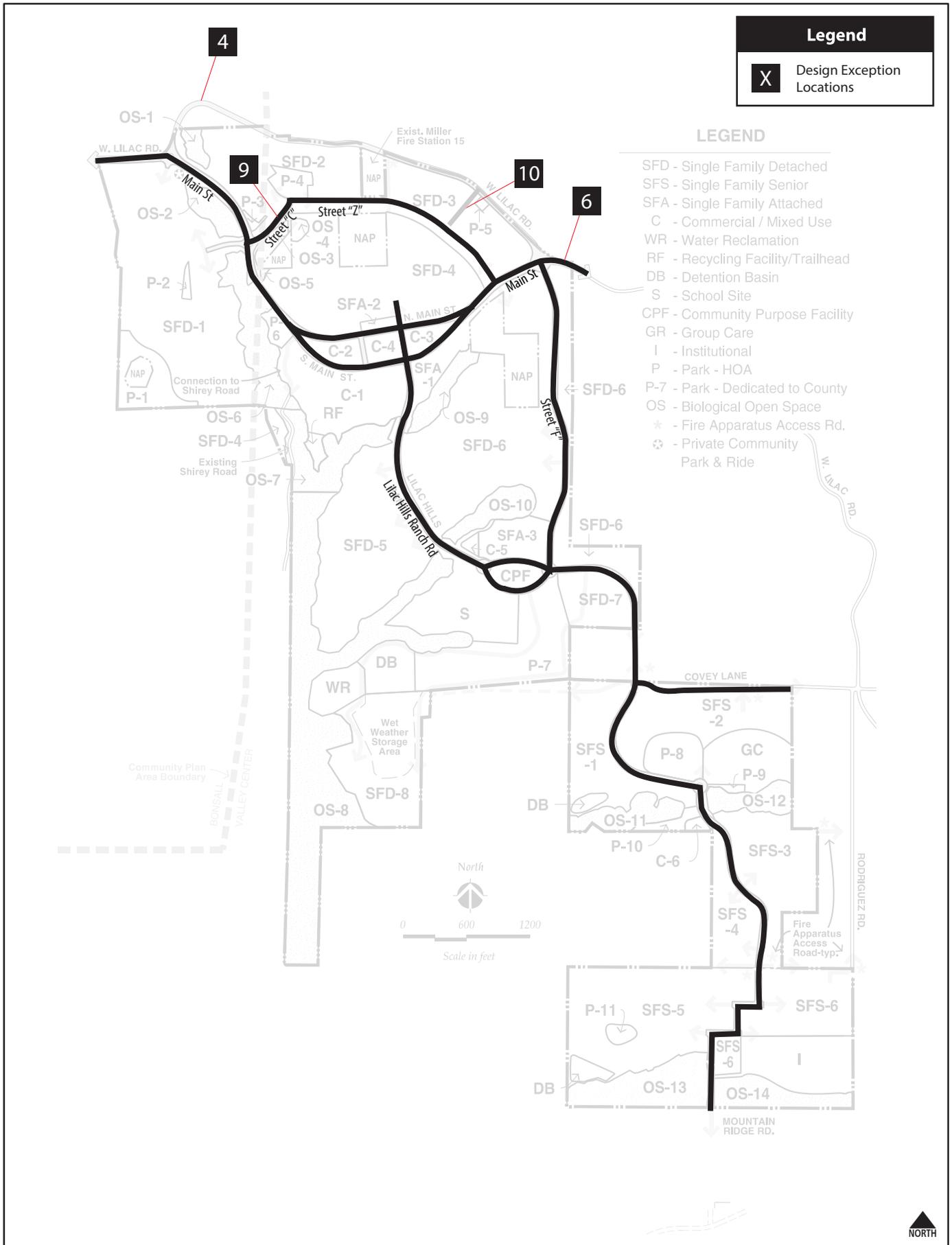
- a. Reduce the shoulder from 8 feet to 6 feet along the north and from 8 feet to 4 feet along the south.
- b. Reduce the parkway from 12 feet to 0 feet along the north and from 12 feet to 6 feet along the south.

The reduced shoulder widths from 8 feet to 6 feet and 4 feet with full 12-foot travel lanes will still allow vehicles to pull off to the side of the road on those rare occasions when that is necessary. Parkway width is not used by drivers and therefore no negative impact to capacity would occur by reducing the width. **Therefore, the proposed design exception will not affect roadway capacity and a capacity reduction was not applied.**



Lilac Hills Ranch Traffic Impact Study

Figure 1-4A
Design Exceptions (1-8)



Lilac Hills Ranch Traffic Impact Study

Figure 1-4B
Design Exceptions (9 and 10)

3. West Lilac Road, from the I-15 bridge to project boundary

- a. Reduce the shoulder width from 8 feet to 6 feet.
- b. Reduce parkway width from 12 feet to 2 feet on the north side and from 12 feet to 6 feet on the south side.

The reduction in parkway width would not affect vehicular travel and the shoulder width reduction from 8 feet to 6 feet occurs outside of the standard 12-foot vehicle travel lanes; only affecting the shoulders. Therefore it will not change the speed and capacity of this road as it would still provide two full 12-foot travel lanes and two 6-foot shoulders that are still wide enough for vehicles to pull off the road on those rare occasions when that is necessary. **Therefore, the proposed design exception will not affect roadway capacity and a capacity reduction was not applied.**

4. West Lilac Road, from the westerly roundabout to the northern project boundary

- c. Reduce the design speed along West Lilac Road for 225 feet from 40 mph to 25 mph as the road enters into the proposed roundabout.

- i. The Transportation Research Board (TRB) in cooperation with US department of Transportation and Federal Highway Administration (FHWA) published the National Cooperative Highway Research Program (NCHRP) Report 672 - *Roundabouts: An Informational Guide (2nd Edition)*. The guide states that the operating speed of a roundabout is widely recognized as one of its most important attributes in terms of safety, and speed management is often a combination of managing speeds at the roundabout itself and managing speeds on the approaching roadways. It recommends that the maximum entering design speeds based on a theoretical fastest path should be 20 to 25 mph (32 to 40 km/h) at single-lane roundabouts. Hence, the reduction in design speed would improve safety in and around the westerly roundabout (Street "O"/W. Lilac Road/Main Street). In addition, it has been well documented by the La Jolla Bird Rock roundabouts and other national-level research that 2 lanes of travel (one in each direction) with roundabouts can carry up to 25,000 cars per day, which well exceeds the capacity threshold for a 2.2C facility. Finally, roundabout experts, Reid Middleton, provided a peer review (included as **Appendix A**) on the design and analysis of the proposed roundabouts. Based on their analysis, both roundabouts along W. Lilac Road would operate at LOS A with low volume-to-capacity ratios. **Therefore, the proposed design exception will not affect roadway capacity and a capacity reduction was not applied.**

5. West Lilac Road, along the northerly project boundary

- d. Allow the construction of a half-width road improvement.

-
- e. Allow the northerly half to remain in its existing condition, which deviates from the current standards:
 - i. The shoulder width can remain at 0 feet (from the required 2 feet).
 - ii. The parkway width can remain at 0 feet (from the required 12 feet).

The southerly half of the roadway will be built to a full 2.2F standard, combined with two standard 12-foot travel lanes. The 2-foot shoulder on the north side and the 12-foot parkway on the north side would require offsite acquisition. However, this exception would not affect capacity due to the short 2,600-foot distance. **Therefore, the proposed design exception will not affect roadway capacity and a capacity reduction was not applied.**

- f. Reduce the horizontal design from a minimum 400-foot tangent length (between curves) to an 80-foot tangent length.
 - i. A tangent length is the straight segment of road that is found in between two curved pieces of road. The current minimum straight segment of road of existing West Lilac Road is 80 feet rather than 400 feet. This section is controlled by two roundabouts and therefore, the shorter tangent length does not negatively impact capacity. In addition, it has been well documented by the La Jolla Bird Rock roundabouts and other national-level research that 2 lanes of travel with roundabouts can carry up to 25,000 cars per day, which well exceeds the capacity threshold for a 2.2F or 2.2C facility. In addition, roundabout experts, Reid Middleton, provided a peer review (included as Appendix A) on the design and analysis of the proposed roundabouts. Based on their analysis, both roundabouts along W. Lilac Road would operate at LOS A with low volume-to-capacity ratios. **Therefore, the proposed design exception will not affect roadway capacity and a capacity reduction was not applied.**

6. West Lilac Road, east of easterly roundabout

- g. Add a 4-foot raised median, to allow for a transition from existing West Lilac Road into the proposed roundabout.
- h. Increase the shoulder from 2 feet to 5 feet on the south side to allow for a 5-foot bike lane.
- i. Reduced parkway from 12 feet to 2 feet on the north side.
- j. Reduce the shoulder from 2 feet to 0 feet on the north side.

-
- i. The modification only occurs for 240 feet at the project's easterly entrance at West Lilac Road where a roundabout is proposed. **Since the modification only occurs for a short distance of 240 feet at the roundabout, no material effect to the carrying capacity of West Lilac Road would occur and a capacity reduction was not applied.**

7. Mountain Ridge Road

- k. Design speed reduction from 30 mph to 15 mph.

Mountain Ridge Road is a narrow 20 feet wide road which currently serves a small amount of homes and is proposed to provide access to a small portion of the project site (only the senior residential units in SFS-5 and SFS-6, the park and the church). Since the project will add traffic to Mountain Ridge Road, this road was assessed using two methodologies outlined in the County of San Diego Guidelines for Determining Significance, Traffic and Transportation, June 30, 2009 and modified August 24, 2011 (County Guidelines). The first was from a capacity standpoint as outlined at the end of Section 4.1 (Non Circulation Element Residential Streets). The second was from a hazards standpoint as outlined in Section 4.6 of the County Guidelines.

- i. CARRYING CAPACITY

Mountain Ridge Road is an unclassified roadway. Per Section 4.1 of the County Guidelines, Level of Service is not applied to residential streets such as Mountain Ridge Road. Therefore, per County requirements, the post-project volumes on Mountain Ridge Road were compared to the design capacities that are outlined in the County's Private Road Standards.

The current volume on Mountain Ridge Road is 160 ADT. The project will add approximately 840 ADT to Mountain Ridge Road for a total of 1,190 ADT (2030 plus Project, see Table 7.2 from the traffic study). As recommended in Section 4.1 of the County Guidelines, the County private road standard table (Page 8) was used to determine whether adequate capacity exists on Mountain Ridge Road to serve 1,190 ADT. Table on the following page shows a comparison between the County private road parameters that would serve 751-2500 ADT and the proposed Mountain Ridge Road parameters. As can be seen, Mountain Ridge Road will meet all criteria other than vertical design speed once the proposed improvements are implemented. Since the forecasted ADT is only over the 751 minimum threshold by 440 daily trips and Mountain Ridge Road will meet 7 of the 8 criteria, it is concluded that Mountain Ridge Road can accommodate 1,190 ADT. It should also be noted that since 1,190 ADT correlates to about 119 peak hour trips, Mountain Ridge Road will only need to accommodate about 2 cars per minute during peak periods, which is a very small amount.

ADT	100 or less	101-750	751-2500	Existing	Proposed
Graded Width	28ft	28ft	28ft	28ft	28ft
Improvement Width	24ft	24ft	24ft	20ft	24ft
Horizontal Radius	100ft	100ft	100ft	N/A	N/A
Vertical Design Speed	20MPH	25MPH	30MPH	~5MPH(min)	15MPH
Maximum Grade	20%	20%	20%	21.00%	16.60%
Minimum Length-Vertical Curve	40'	40'	40'	80'	100'
Maximum Angle of Departure	7%	7%	7%	negligible	negligible
Minimum Vertical Clearance	14.5ft	14.5ft	14.5ft	No limit	No limit

Source: San Diego County Standards for Private Roads, Landmark Consulting

ii. HAZARDS DUE TO AN EXISTING TRANSPORTATION DESIGN FEATURE

Mountain Ridge Road is a residential serving road with several vertical curves and design speed as low as approximately 5 mph along certain sections. Since the road is not currently built to County private road standards, an assessment according to Section 4.6 of the County Guidelines was completed considering the following factors:

- 1) Design features/physical configurations of access roads may adversely affect the safe movement of all users along the roadway.
- 2) The percentage or magnitude of increased traffic on the road due to the proposed project may affect the safety of the roadway.
- 3) The physical conditions of the project site and surrounding area, such as curves, slopes, walls, landscaping or other barriers, may result in conflicts with other users or stationary object.
- 4) Conformance of existing and proposed roads to the requirements of the private or public road standards, as applicable.

The following is a discussion of each of these four individual factors:

- 1) There are several vertical curves along Mountain Ridge Road, some of which have grades exceeding 20%. The design speed along certain sections is only about 5 mph as constructed. Therefore, due to the presence of these curves and the design

speed below County Standards, it is concluded that the current road may adversely affect the movement of users.

- 2) The project is forecasted to increase the ADT on Mountain Ridge Road from the current 160 ADT to 1,190 ADT. While this is a high percentage increase, an ADT of 1,190 ADT is only about 2 cars per minute during peak periods, and this amount would not significantly contribute to any safety issues along the roadway.
- 3) The presence of several vertical curves was described in Item 1) above. There are no horizontal curves on the roadway, nor are there any slopes, walls, or barriers that could cause conflicts. Therefore, no issues are expected due to this item.
- 4) Table on the previous page shows County private road standards for various roadway types depending on the level of ADT served by the roadway. Two columns were added to the Table. The first is an indication of each of the measurable criteria for Mountain Ridge Road. As can be seen, Mountain Ridge Road meets the standards of a 751-2,500 ADT road in all cases except for the vertical design speed.

Since Mountain Ridge Road currently has design features, namely several vertical curves, that may affect the movement of users (#1) and does not fully conform to County private road standards (#4), it is concluded that a potentially significant impact could occur in terms of roadway hazards. The improvements being made to the existing Mountain Ridge Road are to widen the paved width from 20 feet to 24 feet, as well as lengthening one of the vertical curves to increase the minimum design speed from 5mph to 15 mph.

8. Mountain Ridge Road and Circle R Drive intersection

- a. Reduce the standard intersection angle from 90 degrees to the pre-existing 72 degrees by eliminating the required taper on the east side and allowing right hand turning movements from westbound Circle R Drive to northbound Mountain Ridge Road across the southbound travel lanes (See **Appendix B**).
 - iii. The County Public Road Standards state that the angle between centerlines and intersections is to be at nearly a right angle and in no case less than 70 degrees or greater than 110 degrees. [Angles between 70-80 (or 100-110) degrees will require a taper on the acute angle for right turn movement]. This modification only deletes the need for a taper at the acute intersection angle on Circle R Drive at Mountain Ridge Road for the westbound right turn movement. **Not providing this taper would not**

have a material effect on the carrying capacity of Circle R Drive and a capacity reduction was not applied.

9. Street “C”

- a. Design speed reduction from 30 mph to 20 mph for 500 feet
 - i. Modification 9 involves an internal street which was not analyzed in the traffic study.

10. Street “E”

- a. Design speed reduction from 25 mph to 20 mph for 300 feet
 - i. Modification 10 involves an internal street which was not analyzed in the traffic study.

1.3 Study Scenarios

A total of nine (9) scenarios are analyzed in this study, including:

1. Existing Conditions – establishes the existing baseline of traffic operations within the study area.
2. Existing Plus Project (Phase A) Conditions – represents the existing transportation network with the addition of traffic from Phase 1 of the proposed project.
3. Existing Plus Project (Phase B) Conditions – represents the existing transportation network with the addition of traffic from Phases 1 and 4 of the proposed project.
4. Existing Plus Project (Phase C) Conditions – represents the existing transportation network with the addition of traffic from Phases 1, 4 and 2 of the proposed project.
5. Existing Plus Project (Phase D) Conditions – represents the existing transportation network with the addition of traffic from Phases 1, 4, 2 and 5 of the proposed project.
6. Existing Plus Project (Phase E, project buildout) Conditions – represents the existing transportation network with the addition of traffic from buildout of the proposed project.
7. Cumulative Traffic Conditions – represents cumulative traffic conditions, including existing baseline traffic, traffic from anticipated land development projects, and traffic from buildout of the proposed project.
8. Horizon Year Plan-to-Plan (Proposed vs. Adopted) Analysis – provides a plan-to-plan analysis assessing potential impacts to the adopted County’s General Plan Mobility Element roadways within the project study area, resulting from proposed changes in development land use, density, and/or intensity associated with the proposed project.

-
9. Horizon Year Plan-to-Plan (Proposed vs. “Without Road 3”) Analysis – In October 2011, after adoption of the County General Plan Update, the San Diego Association of Governments (SANDAG) acquired the 902-acre Rancho Lilac property through its Environmental Mitigation Program (EMP). SANDAG recorded a conservation easement over the entire 902 acres and designated this land as part of a 1,600 acre open space preserve in the State Route 76 corridor in North San Diego County. This acquisition may prevent implementation of the County’s planned Road 3. For this reason, an additional plan-to-plan analysis was performed as part of this TIS in order to assess the potential project traffic impacts to the County’s mobility network without Road 3.

1.4 Report Organization

Following the Introduction chapter, this report is organized into the following sections:

- 2.0 Analysis Methodology – This chapter describes the methodologies and standards utilized to analyze roadway, intersection, and state highway/freeway traffic conditions. This chapter also documents the traffic forecast modeling process and assumptions for this project.
- 3.0 Existing Conditions – This chapter describes the existing traffic network within the study area and provides analysis results for existing traffic conditions.
- 4.0 Project Description – This chapter describes the proposed project including project traffic generation, trip distribution patterns, and roadway assignments. The project trip distribution was developed via a computer generated “Select Zone” analysis utilizing the Series 12 SANDAG transportation model.
- 5.0 Existing Plus Project Conditions – This chapter describes the existing traffic network with additional traffic generated by the various traffic analysis phases of the proposed project. Mitigation measures, if necessary, for project-related impacts are also identified.
- 6.0 Cumulative Traffic Conditions – This chapter describes cumulative land development projects anticipated to generate additional traffic within the study area. Analysis results are provided for the existing plus cumulative projects plus proposed project condition, along with recommended mitigation measures (if necessary).
- 7.0 Site Access and On-Site Circulation – This chapter presents an assessment of transportation facilities providing access to the proposed project. It also recommends functional classifications for all roadways internal to the project.
- 8.0 Hazards to Pedestrians and Bicyclists – This chapter describes existing and proposed pedestrian and bicycle facilities in the vicinity of the project site, as well as potential impacts to cyclists and pedestrians.

-
- 9.0 General Plan Consistency Analyses – This chapter provides two plan-to-plan analyses assessing potential traffic impacts to the County’s General Plan Mobility Element roadways due to changes in the proposed project’s land use, density, and/or intensity. The two plan-to-plan analyses include comparisons of, first, the proposed project and the currently adopted GP (with Road 3); and second, the proposed project and the “Without Road 3” network. The purpose of these analyses is to determine whether the land use changes proposed by this project can be supported by the County’s Mobility Element. If deficiencies are identified, appropriated mitigation measures are recommended.
 - 10.0 Findings and Recommendations – This chapter summarizes overall study findings and identifies recommended project-related mitigation measures.
 - 11.0 Construction Traffic – This chapter identifies potential traffic impacts associated with the Lilac Hills Ranch project construction traffic.
 - 12.0 No-School Alternative – This chapter discusses the “No School” on-site alternative and how this alternative would affect the study area network and operations.
 - 13.0 Weekend Church Traffic – This chapter documents potential traffic impacts associated with weekend church traffic, particularly on Sundays.
 - 14.0 North County Specific Residential Trip Generation and Effects – This chapter summarizes the North County specific residential trip generation rates survey and discusses how these rates would affect traffic impact identifications.
 - 15.0 Transportation Demand Management – This chapter discusses the potential Transportation Demand Management (TDM) program developed in an effort to reduce vehicle trips in favor of alternative modes of transportation.

2.0 Analysis Methodology

The traffic analyses prepared for this study were performed in accordance with County of San Diego traffic impact guidelines, the enhanced California Environmental Quality Act (CEQA) project review process, and SANTEC/ITE Guidelines for TIS in the San Diego region.

The SANTEC/ITE guidelines require delineation of a project study area based on the following criteria:

- All local roadway segments (including all State surface routes), intersections, and mainline freeway locations where the proposed project will add 50 or more peak-hour trips in either direction to the existing roadway traffic.
- All freeway entrance and exit ramps where the proposed project will add a significant number of peak-hour trips to cause any traffic queues to exceed ramp storage capacities.

In addition to the SANTEC/ITE requirements, the project study area also includes all County Mobility Element roadways and intersections where 25 or more peak hour project trips are projected to travel as per County's requirements.

2.1 Level of Service Definition

Level of service (LOS) is a quantitative stratification of performance measures (speed, travel time, comfort, etc.) that represent quality of service. Quality of service describes how well a transportation facility or service operates from a traveler's perspective. A vehicle level of service definition generally describes these conditions in terms of such factors as speed, travel time, freedom to maneuver, comfort, convenience, and safety. LOS A represents the best operating conditions from a driver's perspective, while LOS F represents the worst.

Table 2.1 describes generalized definitions of roadway systems operating at LOS A through F.

2.2 Roadway Segment Level of Service Standards and Thresholds

Roadway segment level of service standards and thresholds provide the basis for analysis of arterial roadway segment performance. The analysis of roadway segment level of service is based on the functional classification of the roadway, the maximum capacity, roadway geometrics, and existing or forecast Average Daily Traffic (ADT) volumes. **Table 2.2** presents the roadway segment capacity and level of service standards utilized to analyze roadway segments within the unincorporated County of San Diego.

**TABLE 2.1
LEVEL OF SERVICE DEFINITIONS**

LOS	Characteristics
A	Primarily free-flow operation. Vehicles are completely unimpeded in their ability to maneuver within the traffic stream. Controlled delay at the boundary intersections is minimal. The travel speed exceeds 85% of the base free-flow speed.
B	Reasonably unimpeded operation. The ability to maneuver within the traffic stream is only slightly restricted and control delay at the boundary intersections is not significant. The travel speed is between 67% and 85% of the base free-flow speed.
C	Stable operation. The ability to maneuver and change lanes at mid-segment locations may be more restricted than at LOS B. Longer queues at the boundary intersections may contribute to lower travel speeds. The travel speed is between 50% and 67% of the base free-flow speed.
D	Less stable condition in which small increases in flow may cause substantial increases in delay and decreases in travel speed. This operation may be due to adverse signal progression, high volume, or inappropriate signal timing at the boundary intersections. The travel speed is between 40% and 50% of the base free-flow speed.
E	Unstable operation and significant delay. Such operations may be due to some combination of adverse signal progression, high volume, and inappropriate signal timing at the boundary intersections. The travel speed is between 30% and 40% of the base free-flow speed.
F	Flow at extremely low speed. Congestion is likely occurring at the boundary intersections, as indicated by high delay and extensive queuing. The travel speed is 30% or less of the base free-flow speed. Also, LOS F is assigned to the subject direction of travel if the through movement at one or more boundary intersections have a volume-to-capacity ratio greater than 1.0.

Source: Highway Capacity Manual 2010, Chapter 16.

**TABLE 2.2
COUNTY OF SAN DIEGO
ROADWAY SEGMENT DAILY CAPACITY AND LEVEL OF SERVICE STANDARDS**

No.	Travel Lanes	Design Speed	Road Classification	Level of Service (in ADT)				
				A	B	C	D	E
6.1	6	65 mph	Expressway	36,000	54,000	70,000	86,000	108,000
6.2	6	65 mph	Prime Arterial	22,200	37,000	44,600	50,000	57,000
4.1A	4	55 mph	Major Road with Raised Median	14,800	24,700	29,600	33,400	37,000
4.1B			Major Road with Intermittent Turn Lanes	13,700	22,800	27,400	30,800	34,200
4.2A	4	40 mph	Boulevard with Raised Median	18,000	21,000	24,000	27,000	30,000
4.2B			Boulevard with Intermittent Turn Lane	16,800	19,600	22,500	25,000	28,000
2.1A	2	45 mph	Community Collector with Raised Median	10,000	11,700	13,400	15,000	19,000
2.1B			Community Collector w/ Continuous Turn Lane	3,000	6,000	9,500	13,500	19,000

**TABLE 2.2
COUNTY OF SAN DIEGO
ROADWAY SEGMENT DAILY CAPACITY AND LEVEL OF SERVICE STANDARDS**

No.	Travel Lanes	Design Speed	Road Classification	Level of Service (in ADT)				
				A	B	C	D	E
2.1C	2	45 mph	Community Collector w/ Intermittent Turn Lane	3,000	6,000	9,500	13,500	19,000
2.1D			Community Collector with Improvement Options	3,000	6,000	9,500	13,500	19,000
2.1E			Community Collector	1,900	4,100	7,100	10,900	16,200
2.2A	2	40 mph	Light Collector with Raised Median	3,000	6,000	9,500	13,500	19,000
2.2B			Light Collector with Continuous Turn Lane	3,000	6,000	9,500	13,500	19,000
2.2C			Light Collector with Intermittent Turn Lanes	3,000	6,000	9,500	13,500	19,000
2.2D			Light Collector with Improvement Options	3,000	6,000	9,500	13,500	19,000
2.2E			Light Collector	1,900	4,100	7,100	10,900	16,200
2.2F			Light Collector with Reduced Shoulder	5,800	6,800	7,800	8,700	9,700
2.3A	2	35 mph	Minor Collector with Raised Median	3,000	6,000	7,000	8,000	9,000
2.3B			Minor Collector with Intermittent Turn Lane	3,000	6,000	7,000	8,000	9,000
2.3C			Minor Collector	1,900	4,100	6,000	7,000	8,000

Source: County of San Diego Public Road Standards; March 2012

These standards are generally used as long-range planning guidelines to determine the functional classification of roadways. The actual capacity of a roadway facility varies according to its physical attributes. Typically, the performance and level of service of a roadway segment is heavily influenced by the ability of the arterial intersections to accommodate peak hour volumes.

For the purposes of this traffic analysis, LOS D is considered acceptable for Mobility Element roadway segments within the unincorporated County of San Diego.

2.3 Peak Hour Intersection Level of Service Standards and Thresholds

This section presents the methodologies used to perform peak hour intersection capacity analysis, including both signalized and unsignalized intersections.

2.3.1 Signalized Intersection Analysis

The signalized intersection analysis utilized in this study conforms to the operational analysis methodology outlined in Chapter 18 of the *HCM 2010*. The *HCM 2010* methodology defines

intersection level of service as a function of intersection control delay in terms of seconds per vehicle (sec/veh).

The *HCM 2010* methodology sets 1,900 passenger-cars per hour per lane (pcphpl) as the ideal saturation flow rate at signalized intersections based upon the minimum headway that can be sustained between departing vehicles at a signalized intersection. The service saturation flow rate, which reflects the saturation flow rate specific to the study facility, is determined by adjusting the ideal saturation flow rate for lane width, on-street parking, bus stops, pedestrian volume, traffic composition (or percentage of heavy vehicles), and shared lane movements (e.g. through and right-turn movements sharing the same lane). The level of service criteria used for this technique are described in **Table 2.3**. The computerized analysis of intersection operations was performed utilizing the *Synchro 8.0 Build 802* traffic analysis software (by Trafficware).

TABLE 2.3
SIGNALIZED INTERSECTION LEVEL OF SERVICE
HIGHWAY CAPACITY MANUAL OPERATIONAL ANALYSIS METHOD

Average Stopped Delay Per Vehicle (seconds)	Level of Service (LOS) Characteristics
≤10.0	<i>LOS A</i> occurs when the volume-to-capacity ratio is low and either progression is exceptionally favorable or the cycle length is very short. If it is due to favorable progression, most vehicles arrive during the green indication and travel through the intersection without stopping.
10.1 – 20.0	<i>LOS B</i> occurs when the volume-to-capacity ratio is low and either progression is highly favorable or the cycle length is short. More vehicles stop than with <i>LOS A</i> .
20.1 – 35.0	<i>LOS C</i> occurs when progression is favorable or the cycle length is moderate. The number of vehicles stopping is significant, although many vehicles still pass through the intersection without stopping.
35.1 – 55.0	<i>LOS D</i> occurs when the volume-to-capacity ratio is high and either progression is ineffective or the cycle length is long. Many vehicles stop and individual cycle failures are noticeable.
55.1 – 80.0	<i>LOS E</i> occurs when the volume-to-capacity ratio is high, progression is unfavorable, and the cycle length is long. Individual cycle failures are frequent.
>80.0	<i>LOS F</i> occurs when the volume-to-capacity ratio is very high, progression is very poor, and the cycle length is long. Most cycles fail to clear the queue.

Source: 2010 Highway Capacity Manual, Chapter 18.

2.3.2 Unsignalized Intersection Analysis

Unsignalized intersections, including two-way and all-way stop controlled intersections, were analyzed using the Chapters 19 and 20 methodology of the *HCM 2010*. The level of service for a two-way stop controlled (TWSC) intersection is determined by the computed or measured control delay at each minor-street movement. *LOS F* would occur when the volume-to-capacity ratio exceeds 1.0, regardless of the control delay. **Table 2.4** summarizes the level of service criteria for unsignalized intersections.

**TABLE 2.4
LEVEL OF SERVICE CRITERIA FOR
STOP CONTROLLED UNSIGNALIZED INTERSECTIONS**

Average Control Delay (sec/veh)	Level of Service (LOS)
≤10.0	A
10.1 – 15.0	B
15.1 – 25.0	C
25.1 – 35.0	D
35.1 – 50.0	E
>50.0	F

Source: 2010 Highway Capacity Manual, Chapters 19 & 20.

County of San Diego considers LOS D during the AM and PM peak hours to be the minimum standard for intersection level of service.

2.4 Two-Lane Highway Level of Service Standards and Thresholds

The existing Old Highway 395 is considered a Mobility Element roadway, but operates as a two-lane highway. As directed in Section 4.3 of the County of San Diego Guidelines for Determining Significance, Old Highway 395 is analyzed as a two-lane highway under Existing, Existing Plus Project, and Existing Plus Cumulative Projects Plus Project conditions in this report.

Under “Horizon Year” analyses, Old Highway 395 is treated as a Mobility Element road since the majority of this facility, with exception of the segment between SR-76 and W. Lilac Road, is classified as either a 4-lane Major or 4-lane Boulevard in the County’s General Plan.

Table 2.5 displays the two-lane highway ADT thresholds for LOS E and LOS F, when signalized intersection spacing is greater than one mile.

**TABLE 2.5
COUNTY OF SAN DIEGO
TWO-LANE HIGHWAY LEVEL OF SERVICE THRESHOLDS
WITH SIGNALIZED INTERSECTION SPACING OVER ONE MILE**

LOS	LOS Criteria
LOS E	> 16,200 ADT
LOS F	> 22,900 ADT

Source: County of San Diego

Note:

Where detailed data are available, the Director of Public Works may also accept a detailed level of service analysis based upon the two-lane highway analysis procedures provided in the Chapter 20 Highway Capacity Manual.

For two-lane highways where signalized intersection spacing is less than one mile, the level of service is determined by the intersections along the subject highway.

2.5 Freeway/State Highway Level of Service Standards and Thresholds

Freeway level of service and performance analysis is based upon procedures developed by Caltrans District 11. The procedure for calculating freeway level of service involves estimating a peak hour volume to capacity (V/C) ratio. Peak hour volumes are estimated from the application of design hour (“K”), directional (“D”) and truck (“T”) factors to Average Daily Traffic (ADT) volumes. The base capacity is assumed to be 2,350 pc/h/ln.

The resulting V/C is then compared to acceptable ranges of V/C values corresponding to the various levels of service for each facility classification, as shown in **Table 2.6**. The corresponding level of service represents an approximation of existing or anticipated future freeway operating conditions in the peak direction of travel during the peak hour.

TABLE 2.6
FREEWAY AND STATE HIGHWAY SEGMENT LEVEL OF SERVICE DEFINITIONS

LOS	V/C	Congestion/Delay	Traffic Description
"A"	<0.41	None	Free flow.
"B"	0.42-0.62	None	Free to stable flow, light to moderate volumes.
"C"	0.63-0.79	None to minimal	Stable flow, moderate volumes, freedom to maneuver noticeably restricted.
"D"	0.80-0.92	Minimal to substantial	Approaches unstable flow, heavy volumes, very limited freedom to maneuver.
"E"	0.93-1.00	Significant	Extremely unstable flow, maneuverability and psychological comfort extremely poor.
"F"	>1.00	Considerable	Forced or breakdown flow. Delay measured in average travel speed (MPH). Signalized segments experience delays >60.0 seconds/vehicle.

Source: SANTEC/ITE Guidelines for TIS in the San Diego Region

LOS D or better is used in this study as the threshold for acceptable freeway operations based upon Caltrans and the SANDAG Regional Growth Management Strategy (RGMS) requirements.

2.6 Ramp Intersection Capacity Analysis

Consistent with Caltrans’ requirements, all signalized intersections at freeway ramps were analyzed using Intersecting Lane Volume (ILV) procedures as described in Topic 406 of the Caltrans *Highway Design Manual* (HDM). This methodology is based upon an assessment of individual intersections as isolated units, without consideration of the effects of adjacent intersections. For this reason, the ILV analysis is utilized as an additional validation of signalized ramp intersection operations derived from the *HCM 2010* methodology. **Table 2.7** provides values of ILV/hr associated with various traffic flow thresholds.

TABLE 2.7
TRAFFIC FLOW CONDITIONS AT RAMP INTERSECTIONS
AT VARIOUS LEVELS OF OPERATION

<i>ILV/hr</i>	Description
<i><1200: (Under Capacity)</i>	Stable flow with slight, but acceptable delay. Occasional signal loading may develop. Free midblock operations.
<i>1200-1500: (At Capacity)</i>	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.
<i>>1500: (Over Capacity)</i>	Stop-and-go operation with severe delay and heavy congestion ⁽¹⁾ . 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.

Source: Caltrans Highway Design Manual, Topic 406

Note:

(1) The amount of congestion depends on how much the ILV/hr value exceeds 1500. Observed flow rates will normally not exceed 1500ILV/hr, and the excess will be delayed in a queue.

2.7 Ramp Metering Analysis

Ramp metering analysis should be conducted, based upon SANDAG's CMP guidelines, to calculate delays and queues at the study area freeway on-ramps. However, since no ramp meters exist within the project study area, ramp metering analysis is not required and therefore not included in this study.

2.8 Determination of Significant Impacts

This section outlines the thresholds for determination of significant project-related impacts to roadways and intersections in the County of San Diego.

County of San Diego Traffic Impact Criteria

Mobility Element Roads

Traffic volume increases from public or private projects that result in one or more of the following criteria will have a significant traffic volume or level of service traffic impact on a road segment, unless specific facts show that there are other circumstances that mitigate or avoid such impacts:

- The additional or redistributed ADT generated by the proposed project will significantly increase congestion on a Mobility Element Road or State Highway currently operating at LOS E or LOS F as identified in **Table 2.8**, or will cause a Mobility Element Road or State Highway to operate at LOS E or LOS F as a result of the proposed project, or
- The additional or redistributed ADT generated by the proposed project will cause a residential street to exceed its design capacity.

**TABLE 2.8
MEASURES OF SIGNIFICANT PROJECT IMPACTS TO CONGESTION ON ROAD SEGMENTS:
ALLOWABLE INCREASES ON CONGESTED ROAD SEGMENTS**

Level of Service	Two-Lane Road	Four-Lane Road	Six-Lane Road
LOS E	200 ADT	400 ADT	600 ADT
LOS F	100 ADT	200 ADT	300 ADT

Source: County of San Diego

Notes:

1. By adding proposed project trips to all other trips from a list of projects, this same table must be used to determine if total cumulative impacts are significant. If cumulative impacts are found to be significant, each project that contributes any trips must mitigate a share of the cumulative impacts.
2. The County may also determine impacts have occurred on roads even when a project's traffic or cumulative impacts do not trigger an unacceptable level of service, when such traffic uses a significant amount of remaining road capacity.

Signalized Intersections

Traffic volume increases from public or private projects that result in one or more of the following criteria will have a significant traffic volume or level of service traffic impact on a roadway segment:

- The additional or redistributed ADT generated by the proposed project will significantly increase congestion at a signalized intersection currently operating at LOS E or LOS F as identified in **Table 2.9**, or will cause a signalized intersection to operate at LOS E or LOS F.
- Based upon an evaluation of existing accident rates, the signal priority list, intersection geometrics, proximity of adjacent driveways, sight distance or other factors, the project would significantly impact the operations of the intersection.

**TABLE 2.9
MEASURES OF SIGNIFICANT PROJECT IMPACTS TO CONGESTION ON INTERSECTIONS:
ALLOWABLE INCREASES ON CONGESTED INTERSECTIONS**

Level of Service	Signalized	Unsignalized
LOS E	Delay of 2 seconds	20 peak hour trips on a critical movement
LOS F	Delay of 1 second, or 5 peak hour trips on a critical movement	5 peak hour trips on a critical movement

Source: County of San Diego

Notes:

1. A critical movement is one that is experiencing excessive queues.
2. By adding proposed project trips to all other trips from a list of projects, this same table is used to determine if total cumulative impacts are significant. If cumulative impacts are found to be significant, each project that contributes any trips must mitigate a share of the cumulative impacts.
3. The County may also determine impacts have occurred on roads even when a project's traffic or cumulative impacts do not trigger an unacceptable level of service, when such traffic uses a significant amount of remaining road capacity.

Unsignalized Intersections

Traffic volume increases from public or private projects that result in one or more of the following criteria will have a significant traffic volume or level of service traffic impact on a road segment:

- The additional or redistributed ADT generated by the proposed project will add 20 or more peak hour trips to a critical movement of an unsignalized intersection, and cause an unsignalized intersection to operate below LOS D, or
- The additional or redistributed ADT generated by the proposed project will add 20 or more peak hour trips to a critical movement of an unsignalized intersection currently operating at LOS E, or
- The additional or redistributed ADT generated by the proposed project will add 5 or more peak hour trips to a critical movement of an unsignalized intersection, and cause the unsignalized intersection to operate at LOS F, or
- The additional or redistributed ADT generated by the proposed project will add 5 or more peak hour trips to a critical movement of an unsignalized intersection currently operating at LOS F, or
- Based upon an evaluation of existing accident rates, the signal priority list, intersection geometrics, proximity of adjacent driveways, sight distance or other factors, the project would significantly impact the operations of the intersection.

Two-Lane Highways when Signalized Intersection Spacing Over One Mile

Traffic volume increases from public or private projects that result in one or more of the following criteria will have a significant traffic volume or level of service traffic impact on a two-lane highway facility with signalized intersection spacing greater than one mile:

- The additional or redistributed ADT generated by the proposed project will significantly increase congestion on a two-lane highway segment currently operating at LOS E or LOS F, as identified in **Table 2.10**, or will cause a two-lane highway segment to operate at LOS E or LOS F as a result of the proposed project.

TABLE 2.10
MEASURES OF SIGNIFICANT PROJECT IMPACTS TO CONGESTION:
ALLOWABLE INCREASES ON TWO-LANE HIGHWAYS
WITH SIGNALIZED INTERSECTION SPACING OVER ONE MILE

LOS	LOS Criteria	Impact Significance Level
LOS E	> 16,200 ADT	> 325 ADT
LOS F	> 22,900 ADT	> 225 ADT

Source: County of San Diego

Note:

Where detailed data are available, the Director of Public Works may also accept a detailed level of service analysis based upon the two-lane highway analysis procedures provided in the Chapter 20 Highway Capacity Manual.

Two-Lane Highways when Signalized Intersection Spacing Under One Mile

Traffic volume increases from public or private projects that result in one or more of the following criteria will have a significant traffic volume or level of service traffic impact on a two-lane highway facility with signalized intersection spacing less than one mile:

- The additional or redistributed ADT generated by the proposed project will significantly increase congestion on a two-lane highway segment currently operating at LOS E or LOS F, as identified in **Table 2.11**, or will cause a two-lane highway segment to operate at LOS E or LOS F as a result of the proposed project.

TABLE 2.11
MEASURES OF SIGNIFICANT PROJECT IMPACTS TO CONGESTION:
ALLOWABLE INCREASES ON TWO-LANE HIGHWAYS
WITH SIGNALIZED INTERSECTION SPACING UNDER ONE MILE

LOS	LOS Criteria
LOS E	Intersection delay of 2 seconds
LOS F	Intersection delay of 1 second, or 5 peak hour trips on a critical movement

Source: County of San Diego

Notes:

1. A critical movement is one that is experiencing excessive queues.
2. By adding proposed project trips to all other trips from a list of projects, this same table is used to determine if total cumulative impacts are significant. If cumulative impacts are found to be significant, each project that contributes any trips must mitigate a share of the cumulative impacts.
3. The County may also determine impacts have occurred on roads even when a project's traffic or cumulative impacts do not trigger an unacceptable level of service, when such traffic uses a significant amount of remaining road capacity.

SANTEC/ITE Guidelines

Facilities that belong to other jurisdictions or Caltrans, should comply with the traffic study requirements identified in the SANTEC/ITE Guidelines, as summarized in **Table 2.12**.

**TABLE 2.12
SANTEC/ITE MEASURE OF SIGNIFICANT PROJECT TRAFFIC IMPACTS**

Level of Service (LOS) with Project	Allowable Change Due to Impact					
	Freeways		Roadway Segments		Intersections	Ramp Metering
E & F (or ramp meter delays above 15 min.)	V/C	Speed (mph)	V/C	Speed (mph)	Delay (sec)	Delay (min.)
		0.01	1	0.02	1	2

Source: SANTEC/ITE Guidelines for TIS in the San Diego Region

The project study area included two (2) Caltrans facilities: Interstate 15 and State Route 76. However, based upon the SANTEC/ITE study criteria discussed at the beginning of this chapter as well as a review of the SANDAG “Select Zone” assignments, the proposed project would not add 50 or more peak hour trips in either direction of SR-76. Therefore, SR-76 was not analyzed in this study.

3.0 Existing Conditions

This section describes key roadway, two-lane highway, and freeway segments, intersections, as well as existing daily roadway/highway/freeway and peak hour intersection traffic volumes. Level of service analysis results for all study area facilities under Existing conditions are presented.

3.1 Existing Transportation Network

Several regionally and locally significant roadways and freeways traverse the study area. Each of the key transportation facilities, as well as associated study intersections within the study area, is discussed below.

Freeway and State Highway Facilities

Two (2) Caltrans freeway/state highway facilities traverse the study area, as follows:

I-15 – I-15 is a grade separated freeway and ranges from 8 to 10 general purpose lanes within the study area. The travel lanes are generally 12 feet wide and the shoulders are generally 10 to 12 feet wide. The 20-mile I-15 Express Lanes Project, funded in part by the TransNet, was completed in January 2012. The Project constructed four (4) managed lanes, between SR-163 and SR-78, with a moveable barrier for maximum flexibility; multiple access points to the general purpose highway lanes; and direct access ramps for high-frequency Bus Rapid Transit (BRT) service. I-15, between SR-78 and Riverside County is planned to be widened with 4 toll lanes as per the 2050 RTP. However, this improvement is not assumed in the Horizon Year analysis since no secured funding sources were identified. Two interchanges (at Old Highway 395 and at Gopher Canyon Road) are located within the study area providing regional access for the proposed project. The posted speed limit is 70 mph along I-15 in the vicinity of the project.

SR-76 – Within the study area, SR-76 is a four-lane divided highway between E. Vista Way and Olive Hill Road; a six-lane divided highway between Olive Hill Road and S. Mission Road; transitioned to a 2-lane undivided highway between S. Mission Road and Old Highway 395; and widened to 6 lanes between Old Highway 395 and just east of I-15. It is important to note that SR-76, between S. Mission Road and Old Highway 395 is planned to be widened to four lanes by 2015. Class II bike lanes are planned along SR-76 within the study area.

East-West Roadway Facilities

Dulin Road – Dulin Road, east of Old Highway 395, is currently a two-lane undivided roadway with a posted speed limit of 25 mph. On-street parking is provided along both sides of the street in the residential area. The facility is classified as a 2.1E Community Collector in the County General Plan Mobility Element.

W. Lilac Road – W. Lilac Road, between Camino Del Rey and Old Highway 395, is generally a two-lane undivided roadway and is classified as a 2.2E Light Collector with Class II bike lanes in the

County General Plan Mobility Element. Between Old Highway 395 to Lilac Road, W. Lilac Road is also a two-lane undivided roadway. W. Lilac Road, between Old Highway 395 and the planned Road 3, is classified as a 2.2C Light Collector with intermittent turn lanes in the County General Plan Mobility Element, while the segment between Road 3 and Lilac Road is classified as a 2.2F Light Collector with reduced shoulder. *The project proposes to downgrade W. Lilac Road between Main Street and the planned Road 3 from the classified 2.2C to 2.2F.* A posted speed limit is not provided along this facility. However, a recent travel time survey (as shown in **Appendix C**) conducted by Chen Ryan Associates indicates that the average travel speed along W. Lilac Road, between the I-15 overpass and Lilac Walk, is approximately 40 mph.

Camino Del Cielo – Camino Del Cielo is a two-lane roadway with a wide median or a two-way left-turn lane between Camino Del Rey and Via Casitas and a two-lane undivided roadway between Via Casitas and W. Lilac Road. This facility has a posted speed limit of 40 mph and is classified as a 2.2E Light Collector in the County General Plan Mobility Element.

Camino Del Rey – Camino Del Rey is generally a two-lane undivided roadway between SR-76 and Old Highway 395, with the exception of the segment (approximately 2,400 feet) east of W. Lilac Road which has either a striped median or a two-way left-turn lane. The posted speed limit along with facility ranges from 45 to 50 mph. Camino Del Rey is classified in the County General Plan Mobility Element as a 4.2B Boulevard with intermittent turn lanes between SR-76 and Camino Del Cielo, and a 2.2C Light Collector between Camino Del Cielo and Old Highway 395. Class II bikes lanes are planned along this facility, between Old River Road and Old Highway 395.

Gopher Canyon Road – Gopher Canyon Road is a two-lane undivided roadway between E. Vista Way and I-15 SB Ramps and a four-lane roadway with a striped median between the I-15 SB Ramps and Old Highway 395. This facility has a posted speed limit of 50 mph and is classified as a 4.1B Major Road with intermittent turn lanes and a Class III bike route in the County General Plan Mobility Element.

Circle R Drive – Circle R Drive is currently a two-lane undivided roadway between Old Highway 395 and W. Lilac Road and is classified as a 2.2E Light Collector. A speed limit was not post along this facility. However, a recent travel speed survey (as shown in **Appendix D**) conducted by NDS indicates that the average and 85th percentile travel speeds along Circle R Drive, east of Mountain Ridge Road, is approximately 35 mph and 40-45 mph, respectively. Circle R Drive provides a restricted access to the senior community (southern access) via Mountain Ridge Road.

Old Castle Road – Old Castle Road, between Old Highway 395 and Lilac Road, is a two-lane undivided roadway with a posted speed limit that varies from 45 mph to 55 mph. This facility is classified as a 2.2D Light Collector with improvement options in the County General Plan Mobility Element, and includes a Class III bike route.

Covey Lane – Covey Lane is currently a two-lane undivided private road for its entirety. A speed limit was not post along this facility. However, a recent travel speed survey (as shown in Appendix D) conducted by NDS indicates that the 85th percentile travel speeds along Covey Lane are approximately 30-35 mph. It is proposed that this facility, approximately 600 feet west of W.

Lilac Road to the Lilac Hills Ranch project boundary, be designated as a public road due to the existing IOD for road improvements in this area. Covey Lane provides an unrestricted access to both the entire community north of Covey Lane and a restricted access to the senior community.

Main Street - The project proposes the construction of a 2-lane private road, “Main Street”, including a one-way couplet between east of Standel Lane and Lilac Walk (see Figure 1-3 for alignment). This road creates two alternative routes to W. Lilac Road and provides primary access to and from the project site as it traverses the town center of the Lilac Hills Ranch project. The design speed along Main Street is proposed to be 30 mph.

North-South Roadway Facilities

E. Vista Way – E. Vista Way, between SR-76 and Osborne Street, is generally a two-lane roadway with a two-way left-turn lane and a posted speed limit of 50 mph. This facility is classified as a 4.1A Major Road with a raised median and Class II bike lanes in the County General Plan Mobility Element.

Old River Road – Old River Road, between SR-76 and Camino Del Rey is generally a two-lane undivided roadway with the exception of the segment southwest of Golf Club Drive (approximately 1,800 feet), which has a wide raised median and on-street parking along both sides. The post speed limit in this area is 25 mph. Old River Road is classified as a 2.2C Light Collector with intermittent turn lanes in the County General Plan Mobility Element.

Old Highway 395 – Old Highway 395, between Pala Mesa Drive and Old Castle Road, is generally a two-lane roadway that operates as a two-lane highway with passing option and turn pocket/striped median at Pala Mesa Drive, Dulin Road (W), W. Lilac Road, I-15 SB & NB Ramps, Palos Verdes Drive, Camino Del Rey, the RV camp grounds entrance/exit, Circle R Drive, Gopher Canyon Road, and Old Castle Road. Class II bike lanes are marked on both sides of this facility within the study area. A posted speed limit was not observed along this segment. Old Highway 395 is classified as a 4.2B Boulevard with intermittent turn lanes between Pala Mesa Drive and SR-76, a 2.1D Community Collector with improvement options between SR-76 and W. Lilac Road, a 4.2B Boulevard with intermittent turn lanes between W. Lilac Road and I-15 NB Ramps, and a 4.1B Major Road with intermittent turn lanes between I-15 NB Ramps and Old Castle Road in the County General Plan Mobility Element.

Champagne Boulevard – Champagne Boulevard, between Old Castle Road and Lawrence Welk Drive is a two-lane roadway with passing options and turn lanes. The posted speed limit is 55 mph. Class II bike lanes are marked on both sides of this facility. Champagne Boulevard is classified as a 4.1B Major Road with intermittent turn lanes within the study area in the County General Plan Mobility Element.

Mountain Ridge Road – Mountain Ridge Road, north of Circle R Drive, is a two-lane undivided private road. A speed limit was not post along this facility. However, a recent travel speed survey (as shown in Appendix D) was conducted by NDS and indicates that the average and 85th percentile travel speeds along Mountain Ridge Road are approximately 30 mph and 40 mph,

respectively. This road connects to Lilac Hills Ranch Road and serves as a restricted access on the southern edge of the project.

Lilac Road – Lilac Road is generally a two-lane roadway with turn lanes at Lilac School driveway, Old Castle Road, Anthony Road, Betsworth Road, and Valley Center Road. The posted speed limit is 55 mph just west of Valley Center Road. Lilac Road is classified as a 2.2E Light Collector between Couser Canyon Road and Old Castle Road, a 2.1C Community Collector with intermittent turn lanes between Old Castle Road and Anthony Road, and a 4.2B Boulevard with intermittent turn lanes between Anthony Road and Valley Center Road in the County General Plan Mobility Element. A Class III bike route is also planned between Old Castle Road and Valley Center Road.

Valley Center Road – Valley Center Road, between Woods Valley Road and Cole Grade Road, is a four-lane roadway with a raised median or a two-way left-turn lane, Class II bike lanes and a posted speed of 45 mph. East of Cole Grade Road, Valley Center Road is a two-lane undivided roadway. Valley Center Road is classified as a 4.2A Boulevard with raised median between Woods Valley Road and Lilac Road, and between Miller Road and Vesper Road, and a 4.1A Major Road with raised median between Lilac Road and Miller Road in the County General Plan Mobility Element.

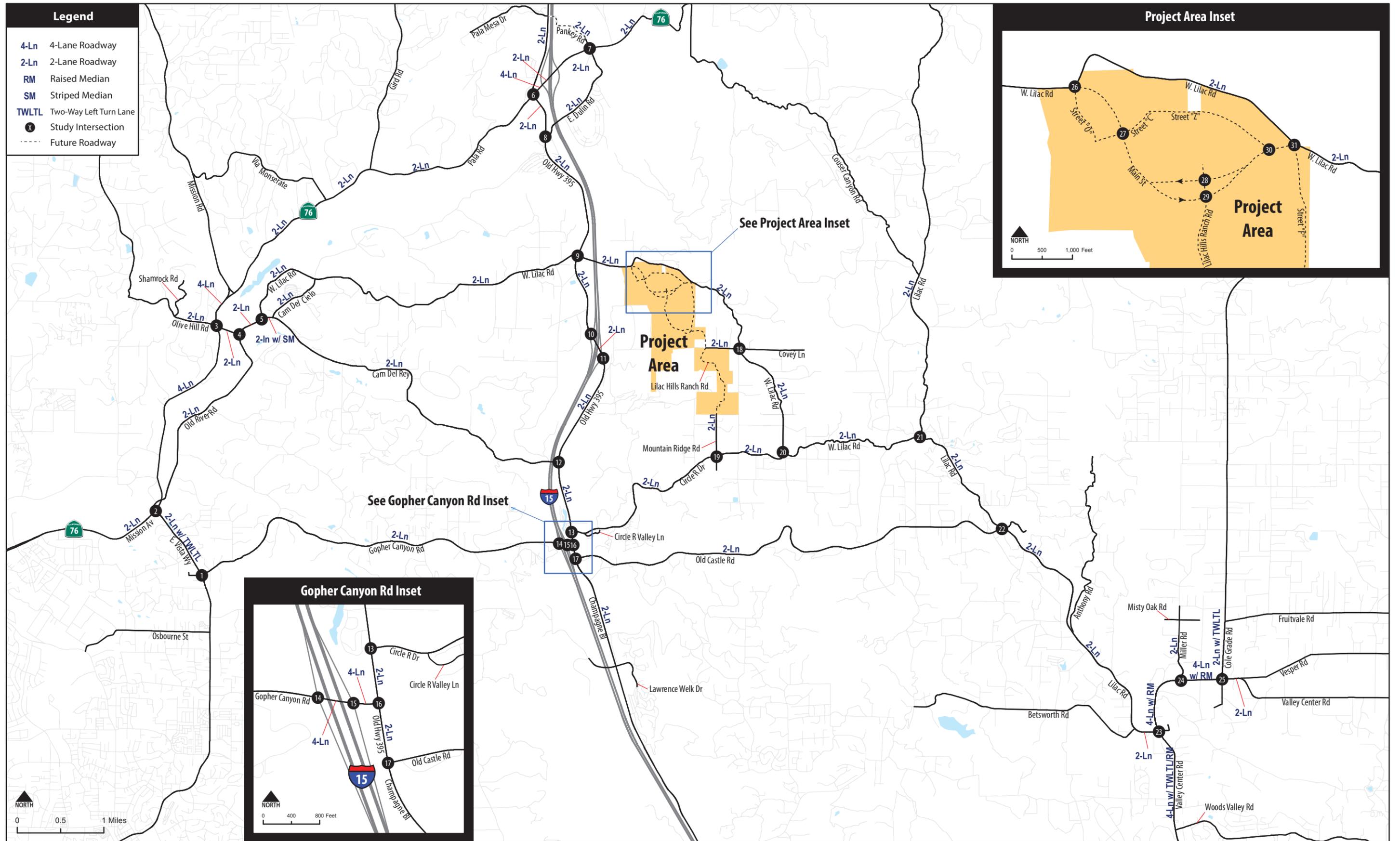
Miller Road – Miller Road, north of Valley Center Road, is a two-lane undivided roadway and is classified as a 2.3B Minor Collector with intermittent turn lanes and a Class III bike route in the County General Plan Mobility Update. A posted speed limit was not observed along this segment.

Cole Grade Road – Cole Grade Road, between Fruitvale Road and Valley Center Road, is generally a two-lane roadway with a two-way left-turn lane, Class II bike lanes and a posted speed limit of 45 mph. A 25 mph school zone is located just north of Valley Center Road. This facility is classified as a 4.2A Boulevard with raised median in the County General Plan Mobility Element.

Figure 3-1A displays existing roadway geometrics for roadway facilities within the project study area.

Study Intersections

The SANDAG Series 12 Transportation Model was utilized to perform three (3) “Select Zone” assignments which identified the number of project-related peak hour trips distributed across the transportation network. The three “Select Zone” assignments included base year, Horizon Year with Road 3, and Horizon Year without Road 3. All intersections and County Mobility Element roadways where the proposed project added 25 or more peak hour trips to the existing traffic were included for analysis, as well as all freeway and state highway segments where the proposed project added 50 or more peak hour trips in either direction.



Lilac Hills Ranch Traffic Impact Study

Figure 3-1A
Roadway Geometrics - Existing Conditions

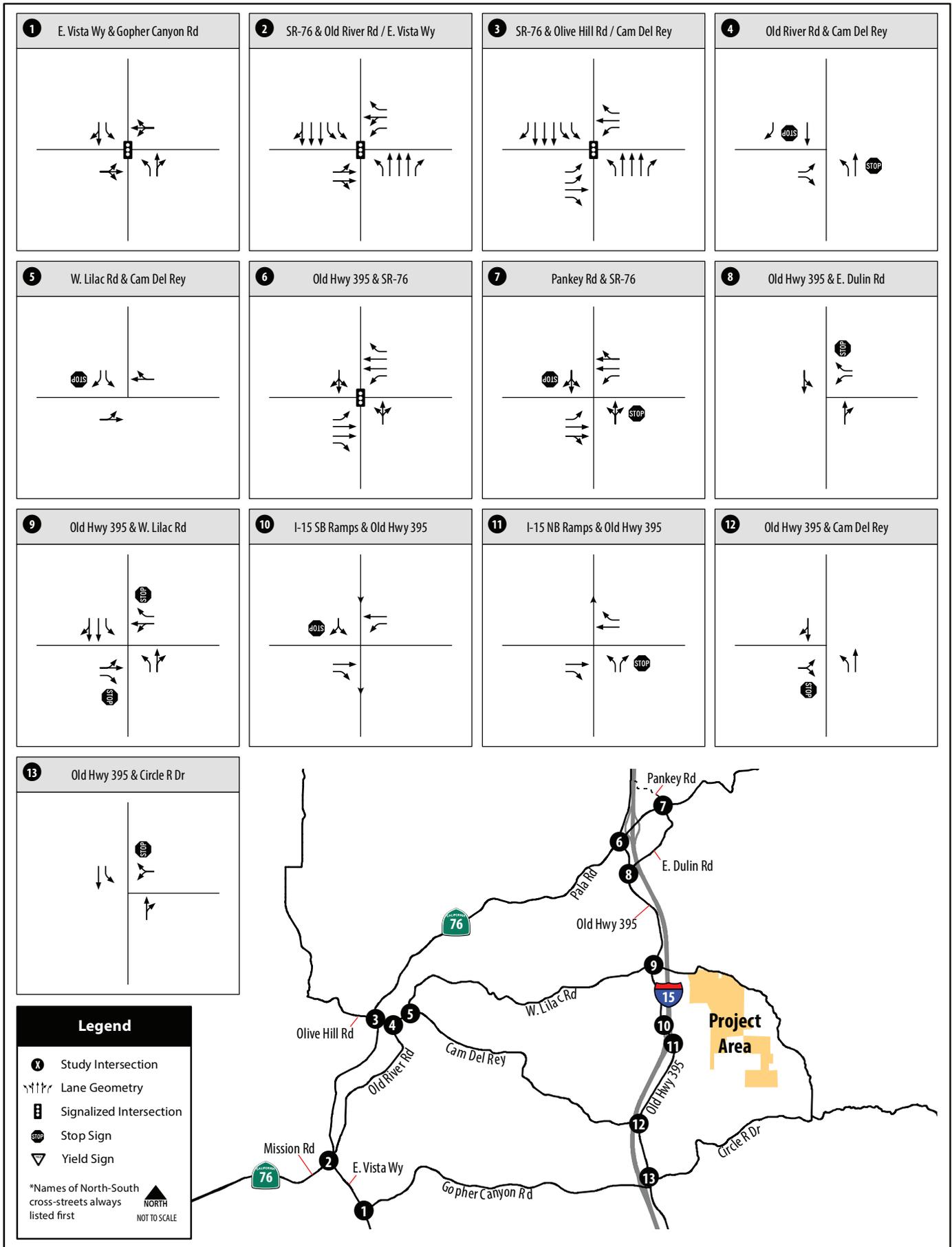
A total of thirty-one (31) key study area intersections, including 23 operated by the County of San Diego and 8 operated by Caltrans, were analyzed in this study, as shown below. Caltrans intersections are shown in italicized text.

- 1) E. Vista Way / Gopher Canyon Road
- 2) *SR-76 / Old River Road/E. Vista Way (Caltrans)*
- 3) *SR-76 / Olive Hill Road/Camino Del Rey (Caltrans)*
- 4) Old River Road / Camino Del Rey
- 5) W. Lilac Road / Camino Del Rey
- 6) *Old Highway 395 / SR-76 (Caltrans)*
- 7) *Pankey Road / SR-76 (Caltrans)*
- 8) Old Highway 395 / E. Dulin Road
- 9) Old Highway 395 / W. Lilac Road
- 10) *I-15 SB Ramps / Old Highway 395 (Caltrans)*
- 11) *I-15 NB Ramps / Old Highway 395 (Caltrans)*
- 12) Old Highway 395 / Camino Del Rey
- 13) Old Highway 395 / Circle R Drive
- 14) *I-15 SB Ramps / Gopher Canyon Road (Caltrans)*
- 15) *I-15 NB Ramps / Gopher Canyon Road (Caltrans)*
- 16) Old Highway 395 / Gopher Canyon Road
- 17) Old Highway 395 / Old Castle Road
- 18) W. Lilac Road / Covey Lane
- 19) Mountain Ridge Road / Circle R Drive
- 20) W. Lilac Road / Circle R Drive
- 21) Lilac Road / W. Lilac Road
- 22) Lilac Road / Old Castle Road
- 23) Valley Center Rd / Lilac Road
- 24) Miller Road / Valley Center Road
- 25) Cole Grade Road / Valley Center Road

Project Driveways

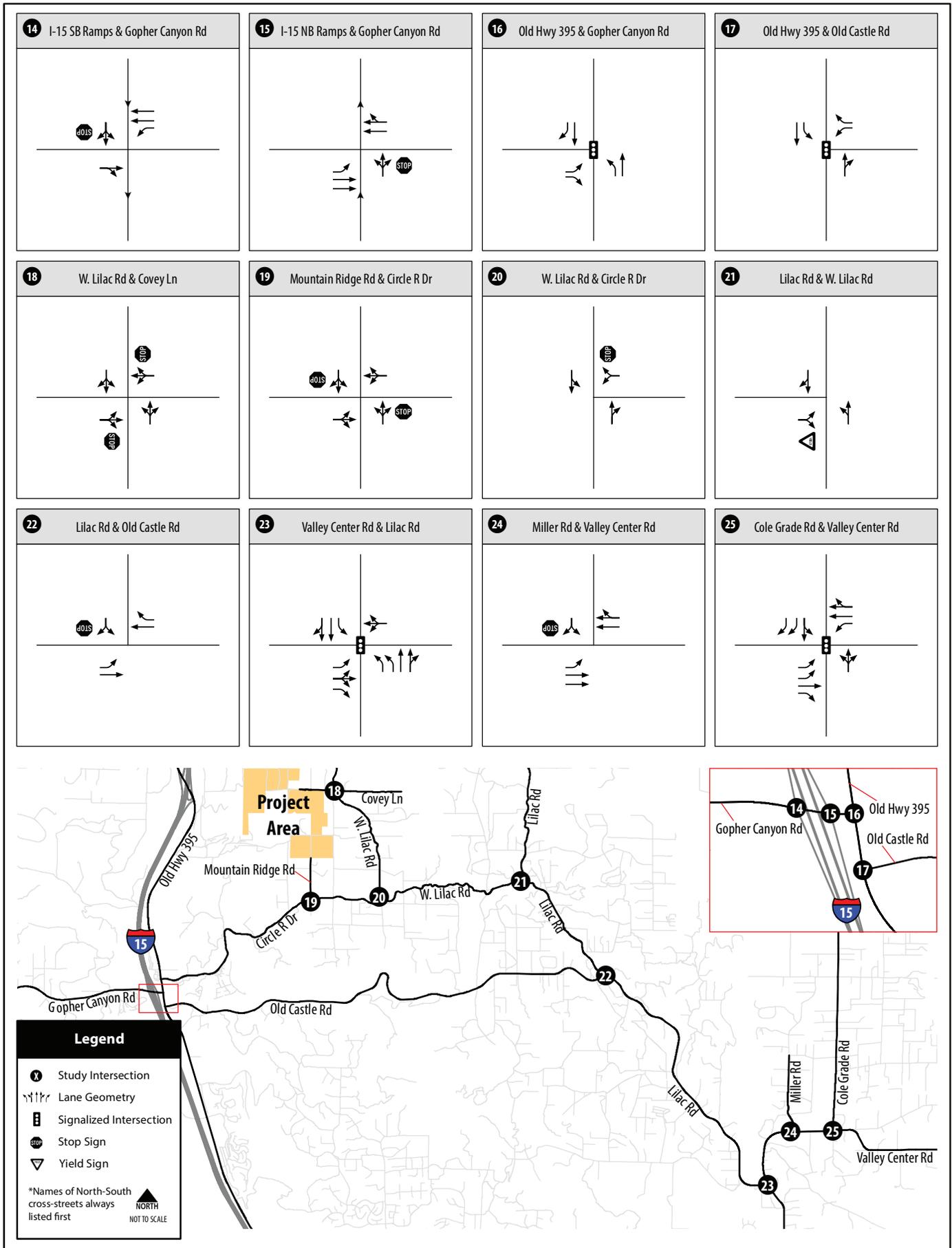
- 26) Street "O" / W. Lilac Road/Main Street
- 27) Main Street / Street "C"
- 28) Lilac Hills Ranch Road / Main Street North
- 29) Lilac Hills Ranch Road / Main Street South
- 30) Street "Z" / Main Street
- 31) W. Lilac Road/Street "F" / Main Street

Intersections 26 through 31 are project driveways, and are included in the "Plus Project" assessments only. **Figure 3-1B** displays study area intersection lane geometrics under Existing conditions within the study area.



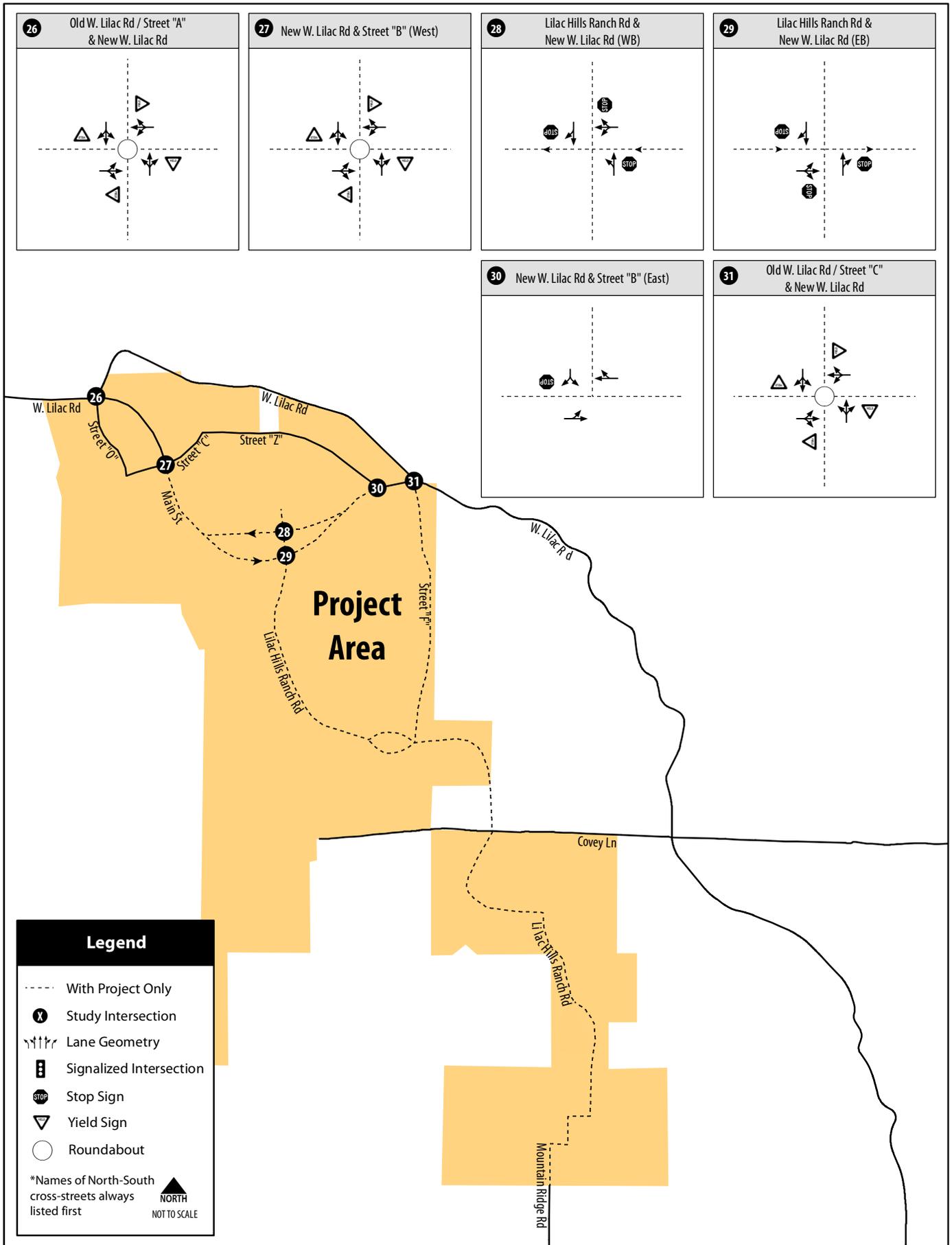
Lilac Hills Ranch Traffic Impact Study

Figure 3-1B (Intersections 1-13)
Intersection Geometrics - Existing Conditions



Lilac Hills Ranch Traffic Impact Study

Figure 3-1B (Intersections 14-25)
Intersection Geometries - Existing Conditions



Lilac Hills Ranch Traffic Impact Study

Figure 3-1B (Intersections 24-31)
Intersection Geometries - Existing Conditions

3.2 Existing Intersection and Roadway Volumes

Figure 3-2A displays Average Daily Traffic (ADT) volumes for study area roadway and freeway segments. Figure 3-2B shows existing AM/PM peak hour traffic volumes for the key study area intersections. Roadway segment and study area intersection traffic count dates are referenced in the analysis tables in the following sections. The freeway segment counts were obtained from Caltrans. The traffic count data summary sheets are provided in **Appendix E**.

3.3 Existing Level of Service Analysis

Level of service analyses under Existing conditions were conducted using the methodologies described in Chapter 2.0. Roadway segment, intersection, two-lane highway, freeway segment, and ramp intersection level of service results are discussed separately below.

Roadway Segment Analysis

Roadway segment analysis is based on the comparison of average daily traffic (ADTs) to the County of San Diego's Roadway Segment Daily Capacity and Level of Service Standards. However, a number of the roadways within the study area are not fully built to County public road standards. Although not required by the County of San Diego's Guidelines for Determining Significance and Report Format for Transportation and Traffic, a conservative approach was taken to reduce road capacities for purposes of this analysis.

In order to determine the amount of capacity reduction to use in the analysis, several factors were considered. Most important, all of the roads considered for capacity reductions provide one lane in each direction and the number of lanes is the best indication of capacity. In terms of reduced shoulder width, since the shoulder is outside the traveled way, is rarely utilized by drivers, and the fact that the reduced shoulder width is present on only a small portion of the studied roadway, a large capacity reduction would not occur. In terms of minimum curve radii, since the curves are only present on a small portion of the studied roadway, a large capacity reduction would be inappropriate.