

TRANSPORTATION STUDY
GREENHILLS RANCH – PHASE 2
Lakeside, California
November 18, 2022

LLG Ref. 3-15-2552

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TABLE OF CONTENTS

SECTION	PAGE
1.0 Purpose of the Study	1
2.0 Project Location and Description	2
2.1 General Plan (GP) Conformance	2
2.1.1 Project Conformance	2
California Environmental Quality Act Vehicle Miles Travelled (CEQA VMT)	6
3.0 CEQA VMT Screening Process	6
3.1 VMT Background	6
3.2 Local / Regional Agency Transition to SB743	6
3.3 Technical Methodology	6
3.4 VMT Assessment	9
Local Mobility Analysis	11
4.0 Methodology & Thresholds	11
4.1 Study Area	11
4.2 Study Scenarios	11
4.3 Methodology	11
4.4 Thresholds	12
4.4.1 County of San Diego thresholds	12
5.0 Existing Conditions	14
5.1 Existing Roadway Network	14
5.2 Existing Traffic Volumes	14
6.0 Analysis of Existing Conditions	17
6.1 Peak Hour Intersection Analysis	17
7.0 Project Trip Generation, Distribution and Assignment	18
7.1 Trip Distribution and Assignment	18
8.0 Opening Year Conditions	22
9.0 Analysis of Opening Year Scenarios	28
10.0 Site Access	29
10.1 Greenhills Way Access	29
10.2 Signal Warrant Analysis	29
10.3 Adlai Road Access	30

10.4 Cut-Through Traffic.....	30
10.5 Sight Distance	30
11.0 Improvements and Recommendations.....	31

APPENDICES

APPENDIX

- A. HCM 6th Edition Intersection Methodology
- B. Intersection Count Sheets
- C. Existing Peak Hour Intersection Analysis Worksheets
- D. Existing + Project Peak Hour Intersection Analysis Worksheets
- E. Opening Year Peak Hour Intersection Analysis Worksheets
- F. Opening Year + Project Peak Hour Intersection Analysis Worksheets
- G. Signal Warrant Worksheets
- H. Sight Distance Certification

LIST OF FIGURES

SECTION—FIGURE #	PAGE
Figure 2–1 Vicinity Map	3
Figure 2–2 Project Area Map	4
Figure 2–3 Site Plan	5
Figure 3–1 Project Infill Screening Map	10
Figure 5–1 Existing Conditions Diagram	15
Figure 5–2 Existing Traffic Volumes	16
Figure 7–1 Traffic Distribution	20
Figure 7–2 Project Traffic Volumes	21
Figure 8–1 Cumulative Projects Traffic Volumes	25
Figure 8–2 Opening Year Traffic Volumes	26
Figure 8–3 Opening Year + Project Traffic Volumes	27

LIST OF TABLES

SECTION—TABLE #	PAGE
Table 1–1 Project Site Acreage	1
Table 6–1 Existing Intersection Operations	17
Table 7–1 Project Trip Generation	19
Table 8–1 Cumulative Projects	23
Table 9–1 Opening Year Intersection Operations	28

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1.0 PURPOSE OF THE STUDY

The following traffic study has been prepared to document the VMT screening process and conduct a Local Mobility Analysis for the proposed Greenhills Ranch – Phase 2 project (“Project”) in the County of San Diego.

The Greenhills Ranch Specific Plan (GRSP) was originally adopted on June 24, 2004. Phase 1 of the specific plan is in the northern half of the GRSP and consists of 31 single-family residential units which were built and sold in 2015. Lakeview Drive to Sohail Street provides the only access to Phase 1. As proposed, Phase 2 will be developed similar to Phase 1 as a single-family neighborhood of 63 residential lots.

Table 1–1 demonstrates project acreage.

**TABLE 1–1
PROJECT SITE ACREAGE**

Project	Acreage
Greenhills Ranch Specific Plan (GRSP)	92.23 acre
Greenhills Ranch - Phase 2	36.33 acre

2.0 PROJECT LOCATION AND DESCRIPTION

The *Greenhills Ranch – Phase 2* project is located between the termini of Adlai Road and Greenhills Way (future road) in the Lakeside area of San Diego County. The project proposes to construct 63 single family homes. Access to the project will be provided to Lake Jennings Park Road via the future Greenhills Way and Adlai Road. Phase 1 of the project, which included 31 single-family residential units were built and sold in 2015. Access to Phase I was provided via Lakeview Drive to Sohail Street.

Figure 2–1 shows the general vicinity of the Project and **Figure 2–2** illustrates, in more detail, the site location. **Figure 2–3** shows the Project’s conceptual site plan.

2.1 General Plan (GP) Conformance

The Lakeside Community Plan designates this property as 21-SPA (1.6 du/acre) and the Lakeside Community Plan provides specific performance standards for assessing General Plan conformance as follows:

The GRSP consists of approximately 92.23 acres located west of Lake Jennings Park Road and east of Lakeview Road. The project shall be developed according to the following criteria.

- Overall density shall not exceed 1.6 dwelling unit per acre.
- At least 60 percent of the site shall be preserved in open space.
- The developed portions of the site shall not exceed an overall gross density of 4.3 dwelling units per acre.

2.1.1 Project Conformance

The text shown below highlights the conformance with the General Plan.

- Overall density is 1.02 du/acre:
 - Phase 1 = 31 units
 - Phase 1 + 2 = 31 units + 63 units = 94 units
 - Density = 94 units / 92.23 acres = 1.02 du/acre (< 1.6 du/acre)
- Overall Open Space is 63%:
 - Phase 1 = 44.04 acres
 - Phase 1 + 2 = 44.04 + 14.5 = 58.54 acres
 - Total Open Space = 58.54 / 92.23 = 63% (> 60%)
- Density of developed portions of the site:
 - Phase 1 = 2.59 du/acre (31du/11.96 acres)
 - Phase 2 = 2.89 du/acre (63 du/21.76 acres)
 - Average = 2.74 du/acre (<4.3 du/acre)

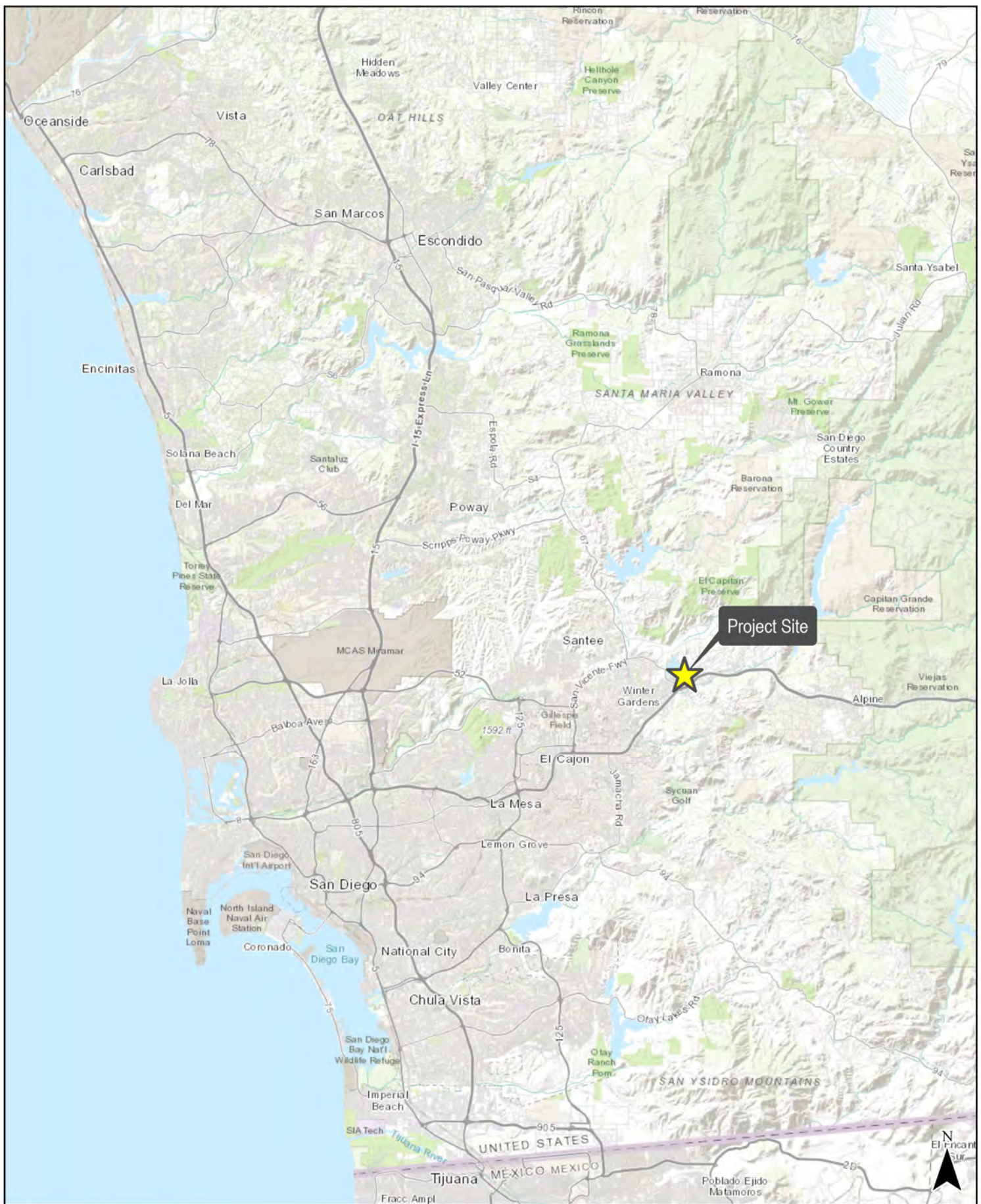


Figure 2-1
Vicinity Map

LINSCOTT
LAW &
GREENSPAN

engineers

N:\2552\Figure
Date: 8/26/2020
Time: 11:44 AM

Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community

GREENHILLS RANCH

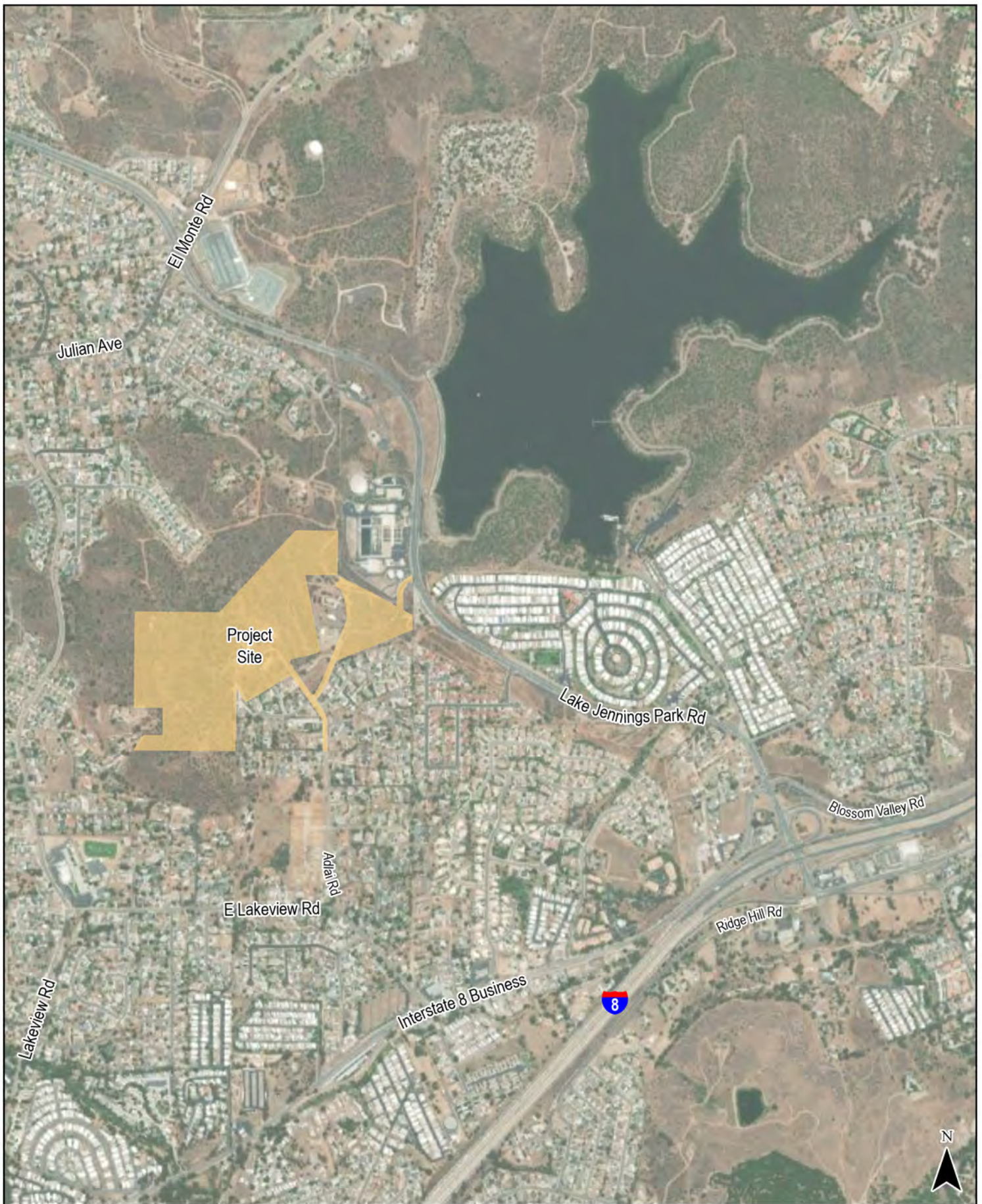


Figure 2-2
Project Area Map



CALIFORNIA ENVIRONMENTAL QUALITY ACT VEHICLE MILES TRAVELLED (CEQA VMT)

3.0 CEQA VMT SCREENING PROCESS

3.1 VMT Background

Vehicle miles traveled (VMT) is a measurement of miles traveled by vehicles within a specified region and for a specified period. VMT measures the efficiency of the transportation network. VMTs are calculated based on individual vehicle trips generated and their associated trip lengths. VMT accounts for two-way (round-trip) travel and is often estimated for a typical weekday to measure transportation impacts.

3.2 Local / Regional Agency Transition to SB743

Local and regional agencies, as well as transportation professionals, have already begun transitioning to SB 743. The County of San Diego has published draft *Transportation Study Guidelines (TSG)*¹ in August 2022 and was adopted in September 2022 by the County of San Diego Board of Supervisors. Given that the County of San Diego has developed methodologies and thresholds, the *TSG* was utilized.

3.3 Technical Methodology

According to the *TSG*, a detailed transportation VMT analysis is required for all land development projects, except those that meet one of the screening criteria. A project that meets at least one of the screening criteria below would have less than significant VMT impact due to the project characteristics and/or location.

1. **Projects Located in a VMT Efficient Area:** A VMT efficient area is any area with an average VMT per Resident, VMT per Employee, or VMT per Service Population 15% below the baseline average for the entire San Diego County region, including the incorporated cities. Land use projects may qualify for the use of VMT efficient area screening if the project can be reasonably expected to generate VMT per Resident, per employee, or per Service Population, respectively, that is similar to the existing land uses in the VMT efficient area.

Residential projects located within a VMT efficient area may be presumed to have a less than significant impact absent substantial evidence to the contrary. A VMT efficient area for residential projects is an area with an average VMT per Resident 15% below the baseline average for the entire San Diego County region, including the incorporated cities.

Employment projects located within a VMT efficient area may be presumed to have a less than significant impact absent substantial evidence to the contrary. A VMT efficient area for employment projects is any area with an average VMT per Employee 15% below the baseline average for the entire San Diego County region, including the incorporated cities.

¹ <https://www.sandiegocounty.gov/content/sdc/pds/ceqa/SB743TransportationStudyGuide2022.html>

Mixed-Use projects located within a VMT efficient area may be presumed to have a less than significant impact absent substantial evidence to the contrary. A VMT efficient area for mixed-use projects is any area with an average VMT per Resident and VMT per Employee that is 15% below the baseline average for the entire San Diego County region, including the incorporated cities.

Retail/Service projects located within a VMT efficient area may be presumed to have a less than significant impact absent substantial evidence to the contrary. A VMT efficient area for retail/service is an area with an average VMT per Service Population 15% below the baseline average for the entire San Diego County region, including the incorporated cities.

2. **Projects Located in Infill Village Area in TOAs**

An Infill development is defined by OPR as “...building within unused and underutilized lands within existing development patterns, typically but not exclusively within urban areas.” Multiple land use and transportation network variables were identified to create a quantitative definition for “infill development” in the County, including household density, intersection density, and job accessibility.

The County’s General Plan identifies villages as areas where a higher intensity and a wide range of land uses are established or have been planned. Typically, Village areas function as the center of community planning areas and contain the highest population and development densities. Village areas typically served by both water and wastewater systems. Ideally, a Village would reflect a development pattern that is characterized by compact, higher density development that is located within walking distance of commercial services, employment centers, civic uses, and transit (when feasible).

Transit Opportunity Areas (TOAs) are identified areas which the regional transit network has the best opportunity to expand within the unincorporated county and are near or adjacent to SANDAG-identified “Mobility Hubs.”

Development in more dense areas with high job accessibility leads to more diversity in land use, demand for transit and multimodal infrastructure, and shorter vehicle trips which reduce greenhouse gas emissions and VMT. Thus, projects located within the established infill area may be presumed to have a less than significant impact absent substantial evidence to the contrary.

3. **Small Residential and Employment Projects:** Projects generating less than 110 daily vehicle trips (trips are based on the number of vehicle trips calculated using national ITE trip generation rates with any alternative modes/location-based adjustments are applied) may be presumed to have a less than significant impact absent substantial evidence to the contrary.
4. **Projects Located in a Transit Accessible Area:** Projects located within a half-mile of an existing *major transit stop** or an existing stop along a *high-quality transit corridor** may be presumed to have a less than significant impact absent substantial evidence to the contrary. Note

that Sprinter stations are considered major transit stops. This presumption may not apply if the project:

- Has a Floor Area Ratio of less than 0.75.
- Includes more parking for use by residents, customers, or employees of the project than required by the County.
- Is inconsistent with SANDAG's most recent Sustainable Communities Strategy (SCS).
- Replaces affordable residential units with a smaller number of moderate- or high-income residential units

**A major transit stop* is a site containing an existing rail transit station, a ferry terminal serviced by either a bus or rail transit service, or the intersection of two or more major bus routes with a frequency of service interval of 15 minutes or less during the morning and afternoon peak commute periods. *A high-quality transit corridor* contains a fixed route bus service with service intervals no longer than 15 minutes during peak commute periods.

5. **Locally Serving Retail/Service Projects:** Local serving retail/service projects less than 50,000 square feet may be presumed to have a less than significant impact absent substantial evidence to the contrary. Local serving retail/service generally improves the convenience of shopping close to home and has the effect of reducing vehicle travel
6. **Locally Serving Public Facilities and Other Uses:** Public facilities that serve the surrounding community or public facilities that are passive use may be presumed to have a less than significant impact absent substantial evidence to the contrary. These do not include facilities or uses that would attract users from outside the vicinity of the use. The following are examples of locally serving facilities and uses:
 - Transit Centers
 - Libraries
 - Post Offices
 - Park-and-Ride Lots
 - Local Health/Medical Clinics
 - Law Enforcement & Fire Facilities
 - Schools
 - Local Parks & Trailheads
 - Government Offices
 - Communication & Utility Buildings
 - Water Sanitation Buildings
 - Waste Management Buildings
7. **Redevelopment Projects with Greater VMT Efficiency:** Where a project replaces existing VMT-generating land uses, the project may be presumed to have a less than significant impact if the total project VMT is less than the existing land use's total VMT, absent substantial evidence to the contrary.
8. **Affordable Housing:** An affordable housing project may be presumed to have a less than significant impact absent substantial evidence to the contrary if 100% of units are affordable.

3.4 VMT Assessment

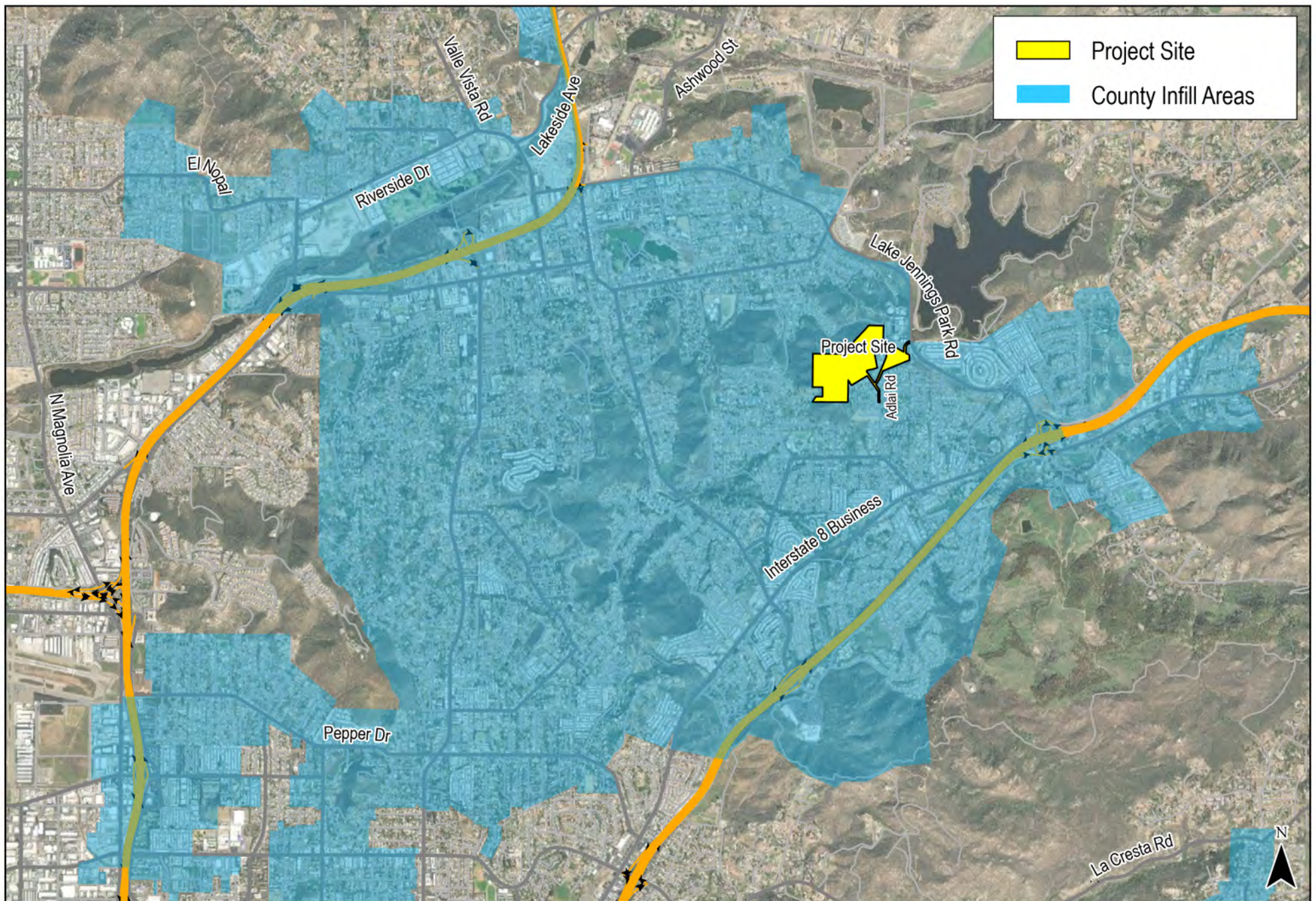
Based on the screening criteria described in *Section 3.3*, Criteria 2 – Projects Located in Infill Village Areas in TOAs is applicable and is detailed below.

Criteria 2 – Projects Located in Infill Village Areas in TOAs: The proposed Project is located in the Lakeside Community Plan area, within the Village area boundary. The County’s SB 743 Interactive Mapping Tool² was used to confirm that the Project site is located within a defined Infill area.

Figure 3–1 illustrates the Project site within the defined Infill Village area. As shown in *Figure 3–1*, the Project site is fully within the Lakeside Infill Village area. Therefore, the Project site meets Criteria 2 for *Projects Located in Infill Village Areas in TOAs*.

Based on the above screening criteria evaluation, the Project is presumed to have less than significant VMT impact due to the Project’s characteristics and location. Therefore, the Project is screened out and a detailed transportation VMT analysis is not required.

² <https://gis-portal.sandiegocounty.gov/arcgis/apps/webappviewer/index.html?id=c8baf13775b844cd8e3e1fd820d9a881>



LOCAL MOBILITY ANALYSIS

4.0 METHODOLOGY & THRESHOLDS

4.1 Study Area

The study area was based on the criteria identified in Table 6 of the County of San Diego's *Transportation Study Guidelines*, August 2022. The applicable criterion is described below:

500 or greater daily trips - Site access driveways and intersections where at least 50 project peak hour trips are added or have known operational concerns (if the project does not contribute 50 peak hour trips total to any intersection, then the study intersections will be intersections that receive 50% or more of the total peak hour project generated trips).

Based on these criteria, the intersections included in the study area are listed below. It should be noted that intersection #3 does not meet the criteria; however, given that it is a primary access to the project site, it is reviewed in this report.

Intersections

1. Lake Jennings Park Road / Greenhills Way (Project driveway) (One-Way Stop Control)
2. Lake Jennings Park Road / Highway 8 Business (Signal)
3. E. Lakeview Road / Adlai Road (One-Way Stop Control)

4.2 Study Scenarios

Consistent with the County of San Diego *Transportation Study Guidelines*, the following scenarios are evaluated for the LMA:

Existing conditions – Establishes the existing baseline of traffic conditions within the study area.

Opening Year Conditions – Represents near-term cumulative traffic conditions for the project's anticipated Opening Year, including existing baseline traffic and traffic from anticipated land development projects.

Opening Year + Project Conditions – The project's generated traffic is added to the Opening Year Conditions to evaluate the *plus project* conditions.

4.3 Methodology

Level of service (LOS) is the term used to denote the different operating conditions which occur on a given intersection under various traffic volume loads. It is a qualitative measure used to describe a quantitative analysis considering factors such as roadway geometries, signal phasing, speed, travel delay, freedom to maneuver, and safety. Level of service provides an index to the operational qualities of an intersection. Level of service designations ranges from A to F, with LOS A representing the best-operating conditions and LOS F representing the worst operating conditions.

Level of service designation is reported differently for signalized intersections and unsignalized intersections.

Signalized intersections were analyzed under AM and PM peak hour conditions. Average vehicle delay was determined to utilize the methodology found in Chapter 19 of the *Highway Capacity Manual 6th Edition (HCM 6)*, with the assistance of the *Synchro* (version 10) computer software. The delay values (represented in seconds) were qualified with a corresponding intersection Level of Service (LOS). A more detailed explanation of the methodology is attached in *Appendix A*.

Unsignalized intersections were analyzed under AM and PM peak hour conditions. Average vehicle delay and LOS was determined based upon the procedures found in Chapter 19 and Chapter 20 of the *HCM 6*, with the assistance of *Synchro* (version 10) computer software. A more detailed explanation of the methodology is attached in *Appendix A*.

4.4 Thresholds

The Project study area includes intersections that lie within the County of San Diego. The following is a summary of the thresholds for the County of San Diego that was utilized in this study.

4.4.1 County of San Diego thresholds

The following were utilized based on the County of San Diego's August 2022 *Transportation Study Guidelines*.

Signalized Intersections

An improvement is required at signalized intersections if any of the following are triggered.

- Any intersection that is operating at an acceptable LOS or better without project traffic in which the addition of project traffic causes the intersection to degrade to a LOS E or F should identify improvements to improve operations to LOS D or better.
- Any signalized intersection that is operating at LOS E or F without project traffic where the project increased delay by 5.0 or more seconds should identify improvements to offset the increase in delay.
- If the left-turn volume exceeds 100 vehicles per hour, an exclusive left-turn lane is recommended.
- If the left-turn volume exceeds 150 vehicles per hour and posted speed 45 mph or greater, a protected left-turn phasing is recommended.
- If the left-turn volume exceeds 300 vehicles per hour, a second left-turn lane is recommended.
- If the right-turn volume exceeds 150 vehicles per hour, a dedicated right-turn lane is recommended.
- The project causes the 95th percentile queue at a turn lane to exceed the existing turn lane length/storage.

Unsignalized Intersections

An improvement is required at unsignalized intersections if any of the following are triggered.

Side-Street Stop Intersection

- The project causes the average intersection delay to be LOS E or F during the peak hour
- If the worst-case movement is currently operating at LOS E or F
 - The project adds five (5) or more seconds to the overall intersection, AND
 - The project adds ten (10) or more trips to the worst-case movements or 50 or more trips to the overall intersection.
- The intersection meets the peak hour traffic signal warrants after the addition of project traffic per the *California Manual on Uniform Traffic Control Devices (CA MUTCD*–latest edition). An investigation of the need for a traffic control signal may also include an analysis of factors related to the existing operations and safety at a study intersection and the potential to improve these conditions. A warrant analysis is not required for right-turn in/right-turn out only intersections or driveways that are physically restricted by a raised center median.

All-Way Stop and Roundabout Intersection

- The project causes the average intersection delay to be LOS E or F during the peak hour.
- The project adds five (5) or more seconds of delay to an intersection that is currently operating at LOS E or F during the peak hour.
- The intersection meets the peak hour traffic signal warrants after the addition of project traffic per the *California Manual on Uniform Traffic Control Devices (CA MUTCD*–latest edition). An investigation of the need for a traffic control signal may also include an analysis of factors related to the existing operations and safety at a study intersection and the potential to improve these conditions. A warrant analysis is not required for a right turn in/right turn out only intersections or driveways that are physically restricted by a raised center median.

5.0 EXISTING CONDITIONS

5.1 Existing Roadway Network

The following is a description of the existing off-site roadway network in the study area. **Figure 3–1** shows an existing conditions diagram.

Lake Jennings Park Road is classified as a *Major Road* on the County’s Lakeside Mobility Element. Currently, Lake Jennings Park Road is a three-lane undivided roadway (1 northbound and 2 southbound) between Julian Avenue/El Monte Road and Greenhills Way and a two-lane undivided roadway between Greenhills Way and Highway 8 Business. The posted speed limit in the project area is 55 MPH. Curbside parking is prohibited, and bike lanes are provided. No bus stops are provided along Lake Jennings Park Road in the project vicinity.

Highway 8 Business is classified as a *Boulevard* on the County’s Lakeside Mobility Element. Currently, Highway 8 Business is a two-lane undivided roadway. It is not built to its functional classification. The posted speed limit is 50 MPH. Bike lanes are provided, and curbside parking is permitted. Bus service is provided along Highway 8 Business.

E. Lakeview Road is not classified in the County’s Lakeside Mobility Element but operates as a *Residential Collector*. Currently, E. Lakeview Road is a two-lane undivided roadway in the project vicinity. The posted speed limit is 25 MPH. Curbside parking is provided, and no bike lanes or bus stops are provided.

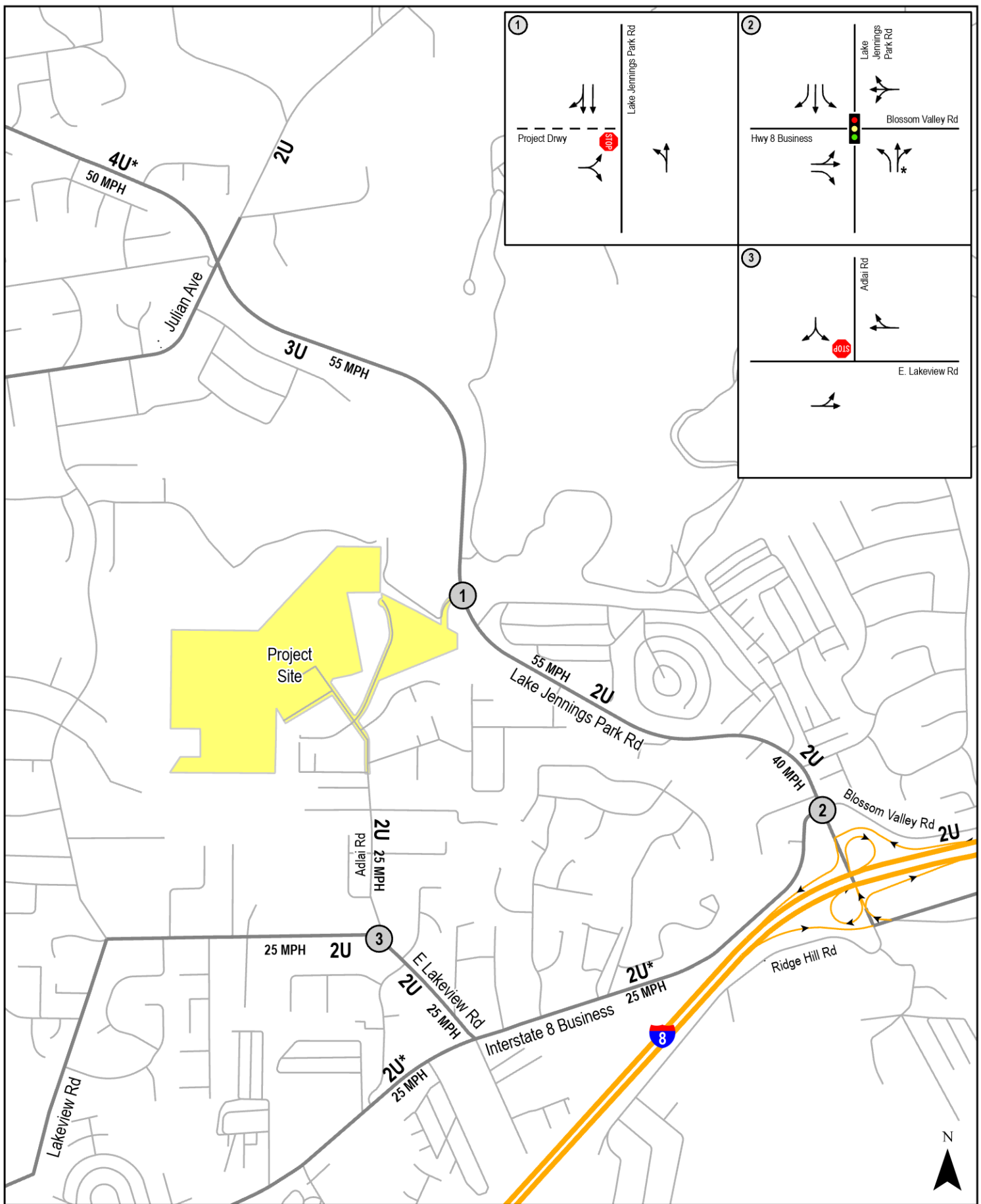
Adlai Road is not classified in the County’s Lakeside Mobility Element but operates as a *Residential Road*. Currently, Adlai Road is a two-lane undivided roadway in the project vicinity. There is no posted speed limit. Curbside parking is prohibited, and no bike lanes or bus stops are provided.

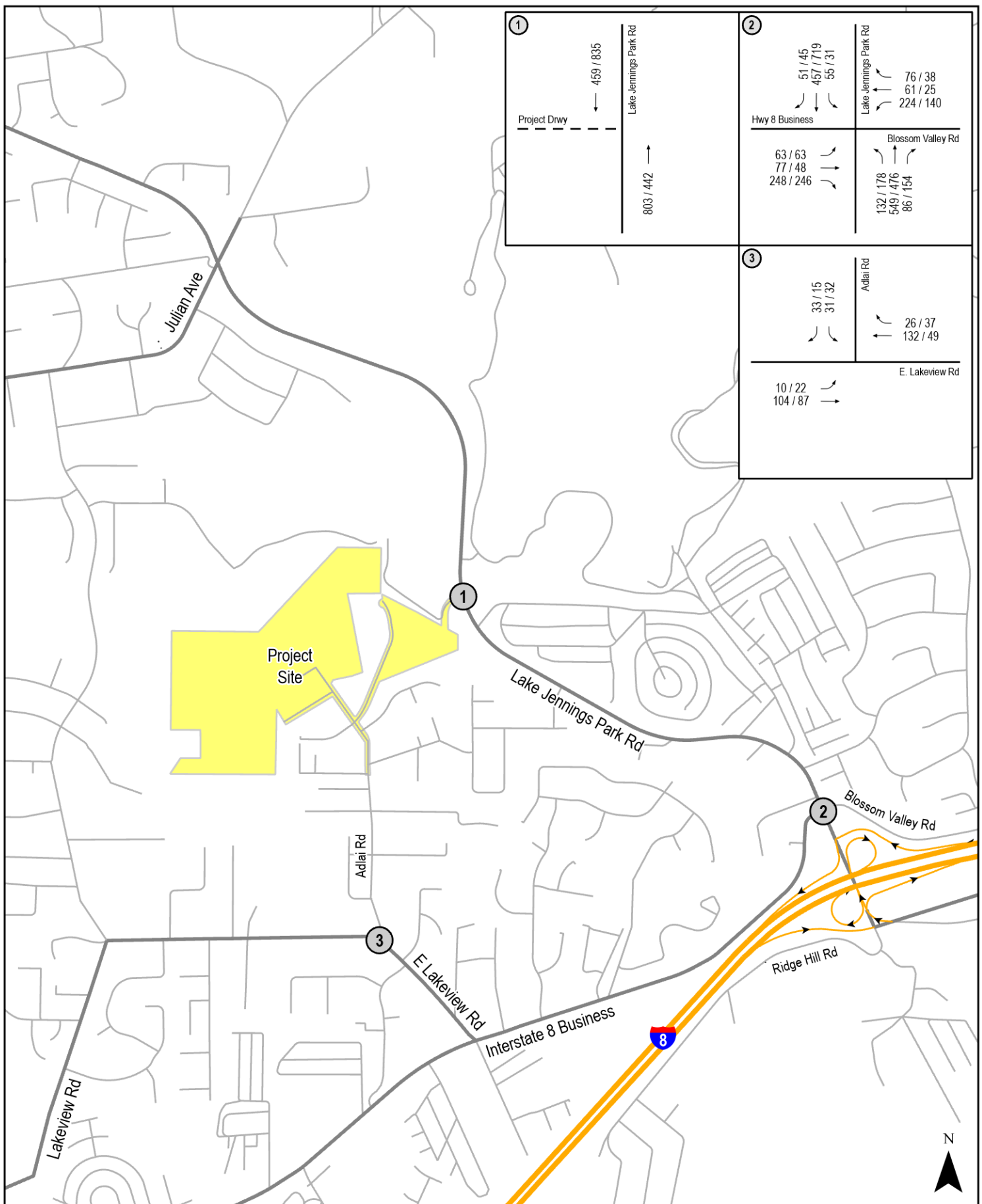
5.2 Existing Traffic Volumes

Weekday AM/PM peak hour intersection turning movement traffic counts were conducted at the study area intersections on Wednesday, December 2, 2015, when schools were in session. The peak hour counts were conducted during the commuter peak hours of 7:00-9:00 AM and 4:00-6:00 PM.

Validation counts were conducted on multiple segments near the study area on October 1, 2019. The results indicated growth in background traffic; therefore, the 2019 counts were used for the analysis. All turning movement volumes were increased according to the growth factor calculated from 2019 Average Daily Traffic (ADT) volumes and 2015 ADT volumes, where applicable.

Figure 5–2 shows the Existing Intersection Turning Movement Volumes. **Appendix B** contains the manual count sheets.





6.0 ANALYSIS OF EXISTING CONDITIONS

6.1 Peak Hour Intersection Analysis

Table 6–1 summarizes the peak hour intersection operations under Existing conditions in the study area. As shown, the study area intersections are calculated to currently operate acceptably at LOS D or better during the AM and PM peak hours, except for the following:

- Lake Jennings Park Road / Highway 8 Business (LOS E during the AM and PM peak hour)

Appendix C contains the Existing intersection analysis worksheets.

**TABLE 6–1
EXISTING INTERSECTION OPERATIONS**

Intersection	Control Type	Peak Hour	Existing	
			Delay ^a	LOS ^b
1. Lake Jennings Park Rd / Greenhills Way (Project Driveway)	OWSC ^c	AM	DNE	DNE
		PM	DNE	DNE
2. Lake Jennings Park Rd / Highway 8 Business	Signal	AM	78.5	E
		PM	75.0	E
3. E. Lakeview Rd. / Adlai Rd.	OWSC	AM	9.8	A
		PM	9.4	A

Footnotes:

- a. Average delay expressed in seconds per vehicle.
- b. Level of Service.
- c. OWSC – One-Way Stop Controlled Intersection, minor street left turn delay reported.

General Notes:

- DNE – Does Not Exist

SIGNALIZED		UNSIGNALIZED	
Delay	LOS	Delay	LOS
0.0 ≤ 10.0	A	0.0 ≤ 10.0	A
10.1 to 20.0	B	10.1 to 15.0	B
20.1 to 35.0	C	15.1 to 25.0	C
35.1 to 55.0	D	25.1 to 35.0	D
55.1 to 80.0	E	35.1 to 50.0	E
≥ 80.1	F	≥ 50.1	F

7.0 PROJECT TRIP GENERATION, DISTRIBUTION AND ASSIGNMENT

As described in *Section 2* of this study, the Project proposes to develop a total of 63-units of Single-family housing. The trip generation rate for the Project was obtained from the *(Not So) Brief Guide of Traffic Generators for the San Diego Region* published by the San Diego Association of Governments (SANDAG) in April 2002.

Table 7–1 summarizes the trip generation for the Project. As shown in *Table 7–1*, the Project is calculated to generate 640 ADT with a total of 51 trips during the AM peak hour (15 inbound/36 outbound trips) and 64 total trips during PM peak hour (45 inbound/ 19 outbound trips).

To be conservative, the trip generation, analysis and impact determination for this project was based on an earlier project description that includes 64 dwelling units even though the current project proposes 63 units.

7.1 Trip Distribution and Assignment

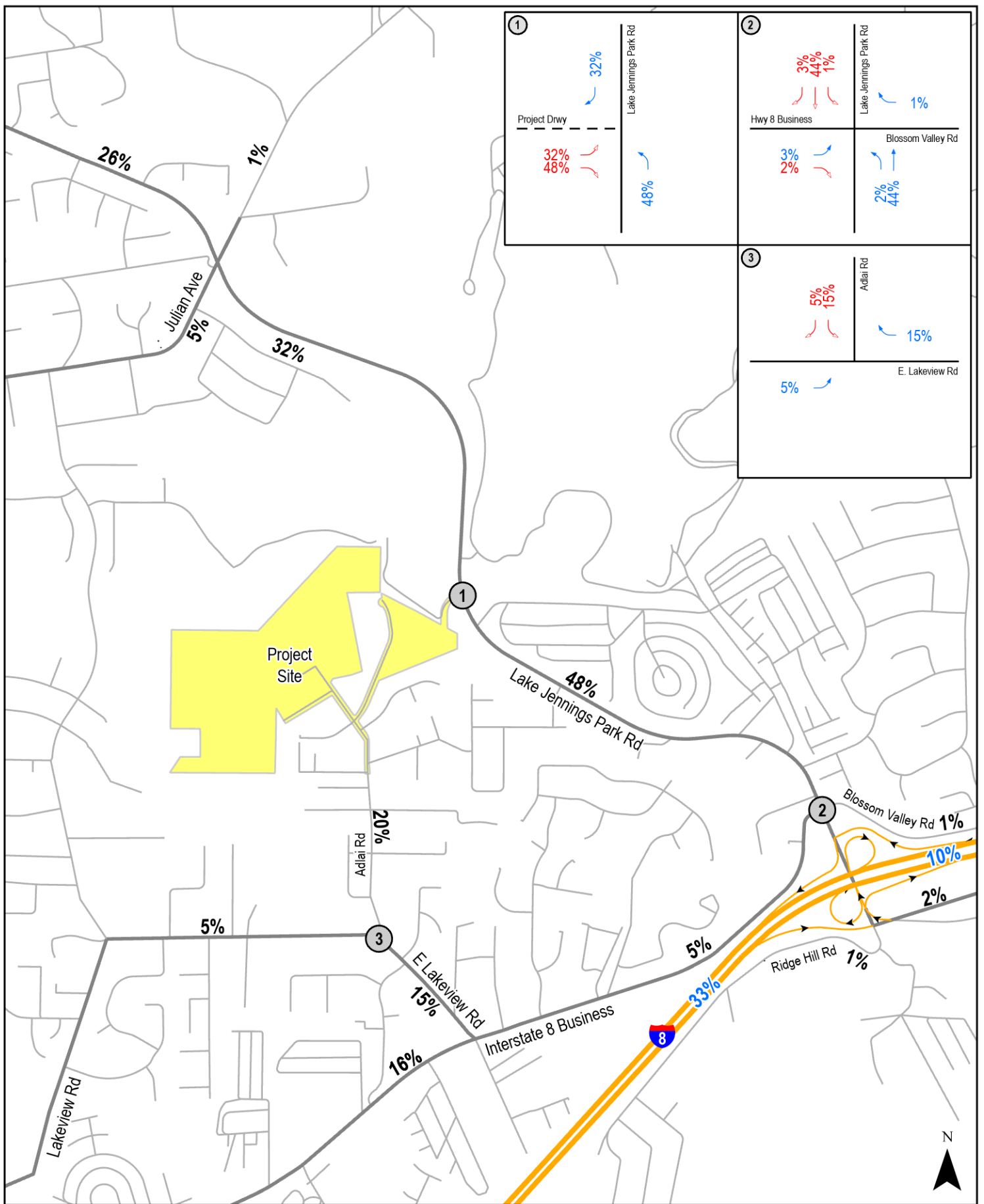
The project traffic was distributed and assigned to the street system based on the existing traffic counts, the project's access points and the proximity of the project to the I-8 and potential employment, retail, and educational opportunities. **Figure 7–1** depicts the Project trip distribution percentages. **Figure 7–2** depicts the Project traffic volumes.

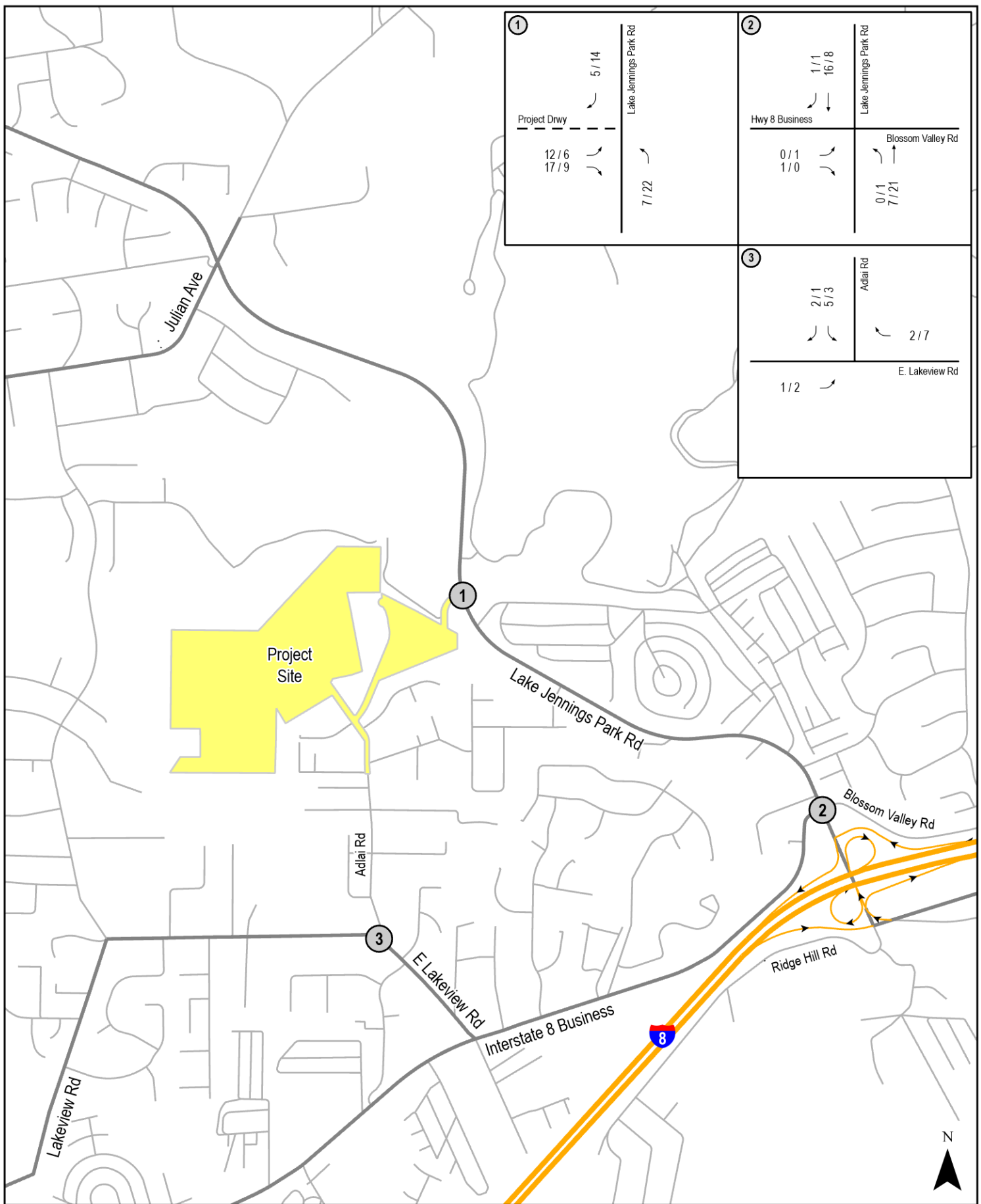
**TABLE 7-1
PROJECT TRIP GENERATION**

Land Use	Size	Daily Trip Ends (ADTs) ^b		AM Peak Hour				PM Peak Hour			
		Rate ^a	Volume	% of ADT	In:Out Split	Volume		% of ADT	In:Out Split	Volume	
						In	Out			In	Out
Single-Family Residential	63 ^c DU	10 / DU	640	8%	30:70	15	36	10%	70:30	45	19

Footnotes:

- a. Trip rates based on SANDAG's *(Not So) Brief guide of Vehicular Traffic Generation Rates for the San Diego Region*, April 2002.
- b. Average Daily Traffic.
- c. The project is planned to construct 63 dwelling units. However, at the time this report was prepared, the project was planned to construct 64 dwelling units. Since the original study's assumption is more conservative than the planned 63 units, no change was made to analysis.





8.0 OPENING YEAR CONDITIONS

There are other planned projects in the vicinity, which could potentially add traffic to the roadways and intersections in the study area. LLG coordinated with County of San Diego staff to identify other development projects in the study area that may contribute cumulative traffic to local intersections and segments. Upon review, LLG identified thirty-five (35) cumulative development projects for inclusion in this traffic study. **Table 8–1** provides a summary of the cumulative projects.

Figure 8–1 shows the Cumulative Projects traffic volumes. **Figure 8–2** shows the Opening Year traffic volumes. **Figure 8–3** shows the Opening Year + Projects traffic volumes.

**TABLE 8-1
CUMULATIVE PROJECTS**

Project Name	Type of Development	Project Size	ADT
1. Lake Jennings Marketplace (TM 5590)	Shopping Center Gasoline w/ Food Mart and Car Wash	76,100 SF 12 pumps	4,683
2. Foothills Christian School (MUP72-650)	Elementary	3,000 SF	40
3. Ashwood II Condo conversion (TM 5356)	Condominium	9 DU	72
4. Riker Ranch (TM 5592)	Residential	23 DU	230
5. Adlai Ranch Estates (TM 5186)	Single Family Detached	21 DU	210
6. Rios Canyon Ranch (TM 5218)	Estate Residential	107 DU	1,284
7. Crest/Dehesa - Lakeside Ranch (TM 5317)	Estate Residential	123 DU	1,476
8. Ashwood I Condo conversion (TM 5376)	Condominium	67 DU	536
9. Settler's Point (TM 5423)	Multi-Family Residential	266 DU	2,128
10. Carroll (TMP 20530)	Multi-Family Residential	35 DU	207
11. 7-11 Inc. (SP00-003)	Convenience Market (w/ gasoline pumps)	1 space	400
12. Currier (SP03-031)	Office Warehouse	3,000 SF 3,000 SF	66
13. Payton Hardware (SP98-011)	Hardware Store	10 TSF	600
14. Lakeside Tractor Supply Co. (MUP 14-015)	Specialty Store Storage/Display	19,169 SF 17,958 SF	857
15. P&P Saksa (TPM 20128)	Single Family Detached	4 DU	36
16. Crestlake (TM 5082)	Single Family Detached	84 DU	840
17. Lakeside Burger King (SP 97-041)	Fast food (w/ drive-thru)	3,000 SF	2,080
18. Ortega Construction (SP 98-031)	Office	1,000 SF	28
19. Glenview Glass and Screen (SP 98-019)	Office	3,000 SF	50

**TABLE 8-1
CUMULATIVE PROJECTS**

Project Name	Type of Development	Project Size	ADT
20. Rieken (SP 99-035)	Office	7,000 SF	136
21. Magnolia Courts (TM 5541)	Single Family Detached	21 DU	210
22. High Meadow Ranch (TM 3702)	Single Family Detached	145 DU	1,450
23. TM 5286	Single Family Detached	13 DU	130
24. TM 5191	Single Family Detached	32 DU	320
25. Blossom Valley Ranch (TM 5197)	Single Family Detached	25 DU	250
26. TM 5539	Single Family Detached	8 DU	80
27. Oakmont II (TM 5421)	Single Family Detached	20 DU	200
28. Flinn Springs Estates (TM 5470)	Single Family Detached	15 DU	150
29. Oak Creek RV (MUP 85-079)	Campground/RV Park	84 spaces	336
30. Sunny Ridge Estates (TM 5436)	Single Family Detached	13 DU	130
31. Eniss Sand Mine	Trucks Staff Vehicles	52 trucks 11 person	251
32. Turner Sand Mine	Trucks Staff Vehicles	61 trucks 8 person	276
33. Fanita Ranch	Residential	3,000 DU	30,000
34. Braverman Drive Residential	Single Family Detached	83 DU	830
35. El Monte Mining	Trucks Staff Vehicles	157 trucks 14 staff	813

General Notes:

- LLG coordinated with the County of San Diego regarding the above cumulative project information.
- DU – dwelling unit.
- SF – square feet.
- ADT – average daily traffic

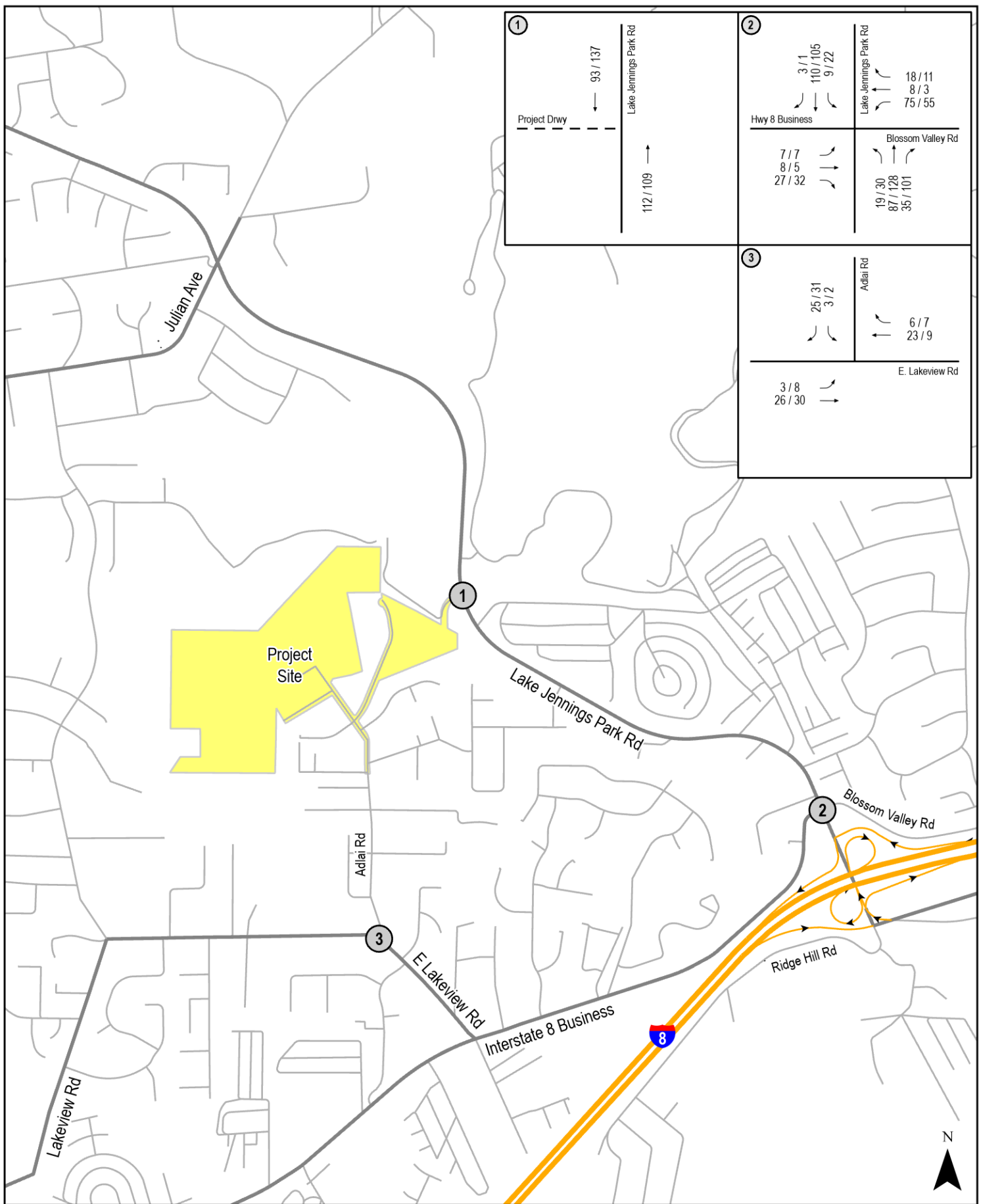
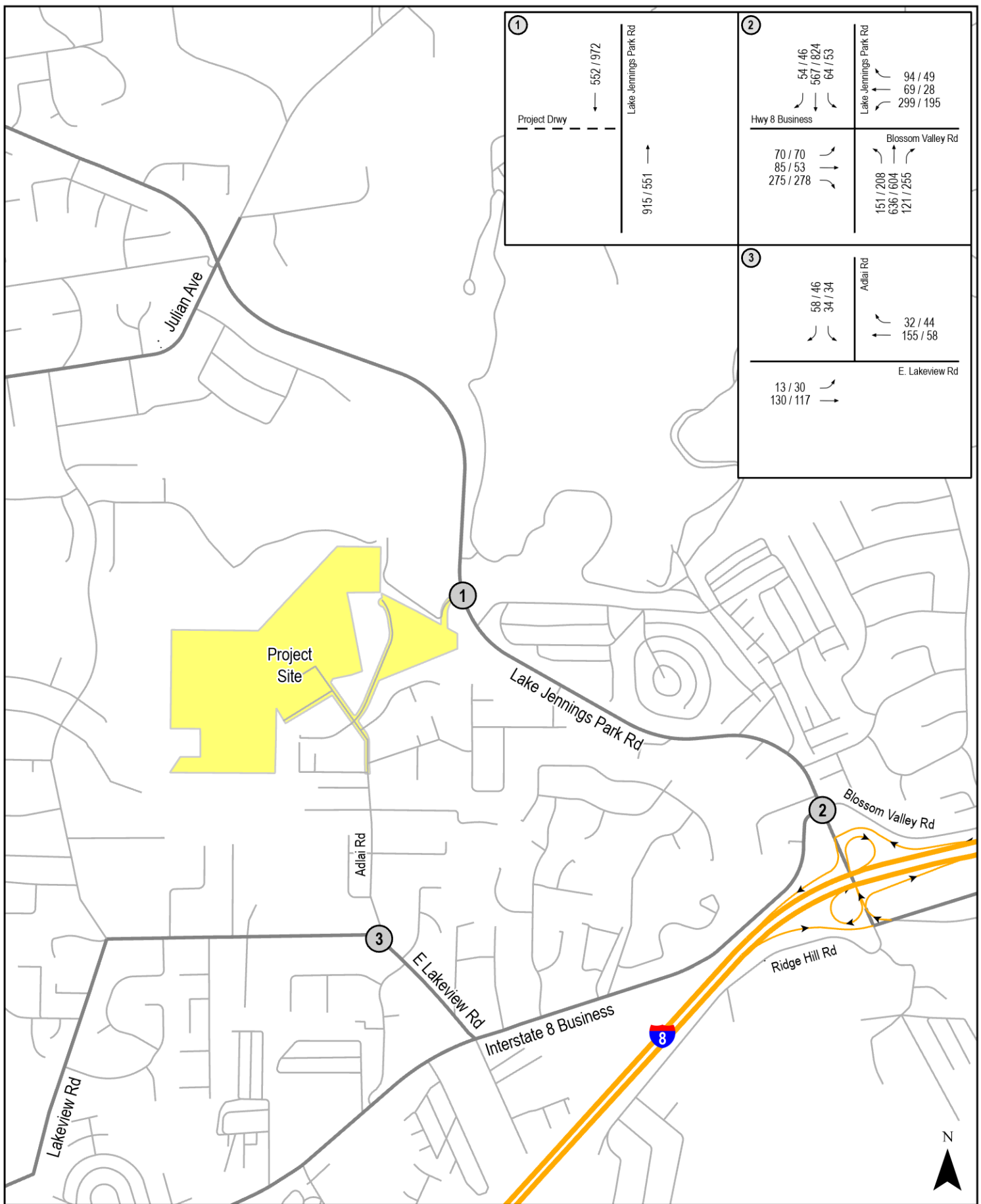
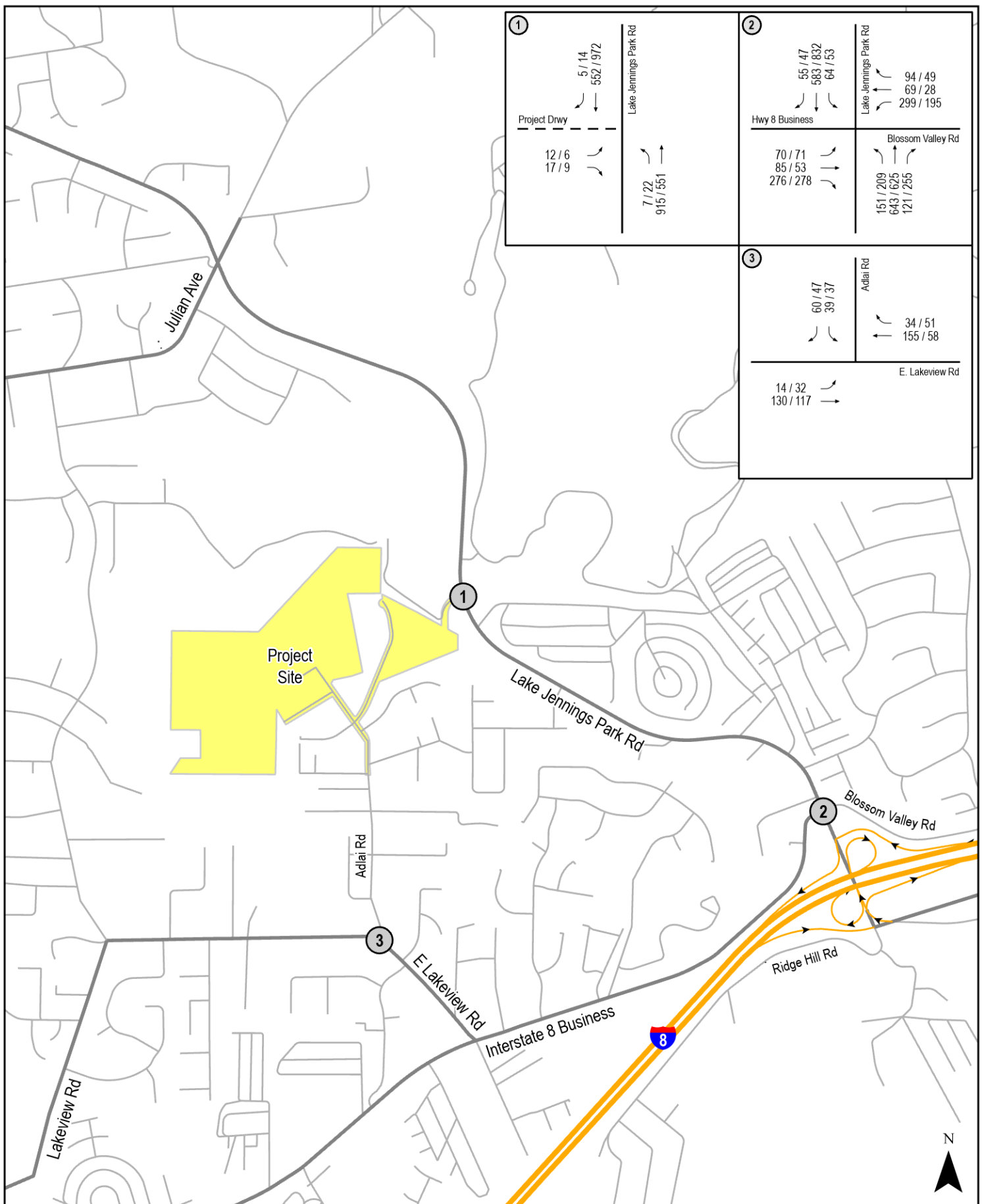


Figure 8-1
Cumulative Project Traffic Volumes





9.0 ANALYSIS OF OPENING YEAR SCENARIOS

The following section discusses the intersection and street segment operations for the Opening Year and Opening Year + Project scenarios. The analysis also compares opening year scenarios to Existing + Project scenario.

Table 9–1 summarizes the peak hour intersection operations. As seen in *Table 9–1*, with the addition of the Project traffic, the study intersections are calculated to operate acceptably at LOS D or better during the AM and PM peak hour except for the following:

- Lake Jennings Park Road / Highway 8 Business (LOS E during the AM and PM peak hours)

Under opening year scenarios with the addition of cumulative projects, the study intersections are calculated to operate acceptably at LOS D or better during the AM and PM peak hours, except for the following:

- Lake Jennings Park Road / Highway 8 Business (LOS F during the AM and PM peak hours)

Appendix D contains the Existing + Project intersection analysis worksheets. **Appendix E** contains the Opening Year intersection analysis worksheets. **Appendix F** contains the Opening Year + Project intersection analysis worksheets.

**TABLE 9–1
OPENING YEAR INTERSECTION OPERATIONS**

Intersection	Control Type	Peak Hour	Existing		Existing + Project		Threshold Met?	Opening Year		Opening Year + Project		Threshold Met?
			Delay ^a	LOS ^b	Delay ^a	LOS ^b		Delay	LOS	Delay	LOS	
1. Lake Jennings Park Rd / Greenhills Way (Project Driveway)	OWSC ^c	AM	DNE	DNE	19.6	C	No	DNE	DNE	25.2	D	No
		PM	DNE	DNE	20.0	C		DNE	DNE	26.2	D	
2. Lake Jennings Park Rd / Highway 8 Business	Signal	AM	78.5	E	79.6	E	No	144.4	F	145.8	F	No
		PM	75.0	E	76.4	E		122.0	F	124.7	F	
3. E. Lakeview Rd. / Adlai Rd.	OWSC	AM	9.8	A	9.9	A	No	10.8	B	11.0	B	No
		PM	9.4	A	9.6	A		10.2	B	10.3	B	

Footnotes:

- Average delay expressed in seconds per vehicle.
- Level of Service.
- OWSC – One-Way Stop Controlled Intersection, minor street left turn delay reported.

General Notes:

- DNE – Does Not Exist

SIGNALIZED		UNSIGNALIZED	
DELAY/LOS THRESHOLDS		DELAY/LOS THRESHOLDS	
Delay	LOS	Delay	LOS
0.0 ≤ 10.0	A	0.0 ≤ 10.0	A
10.1 to 20.0	B	10.1 to 15.0	B
20.1 to 35.0	C	15.1 to 25.0	C
35.1 to 55.0	D	25.1 to 35.0	D
55.1 to 80.0	E	35.1 to 50.0	E
≥ 80.1	F	≥ 50.1	F

10.0 SITE ACCESS

Access to the Project site is proposed via two access points: a private road connecting to Lake Jennings Park Road (to be named “Greenhills Way”) and another private road connecting to Adlai Road.

10.1 Greenhills Way Access

The project proposes to develop Greenhills Way as the project access of Lake Jennings Park Road. Currently, the access to Helix Water District is via two driveways of Lake Jennings Road. The primary access is of the northerly driveway, approximately 550' north of the proposed Greenhills Way (proposed project driveway). The project proposes Greenhills Way to connect to the secondary access point (southerly driveway) to the Helix Water District. Given that the southerly driveway acts as secondary entrance to the Helix Water District, based on existing traffic counts, no vehicles were observed to use the secondary entrance during the peak hours. With the addition of the project traffic, Lake Jennings Park Road/Greenhills Way is calculated to operate at acceptable levels of service.

Greenhills Way is proposed to be designed as a 2-lane Residential Collector to closely match the curb-to-curb width of Audubon Road. At the Audubon Road/Adlai Road intersection, a traffic control is not proposed given that two legs (north and west) are cul-de-sacs and the major traffic movements (westbound left-turn and northbound right-turn) do not conflict with each other. The traffic volumes at this intersection are expected to be minimal and does not warrant stop signs based on County of San Diego Guidelines.

Based on the analysis presented in *Table 9-1*, the Project’s Lake Jennings Park Road access (intersection #2) is expected to operate acceptably without the provision of dedicated turn lanes from Lake Jennings Park Road. However, given the roadways horizontal and vertical curves at the driveway location and the 55-mph speed limit, northbound left turn and southbound right turn deceleration lanes are recommended. In addition, the provision of adequate sight distance to meet County standards will be required at this driveway.

10.2 Signal Warrant Analysis

As outlined in Chapter 4C, “Traffic Control Signal Needs Studies,” of the *2012 California Manual on Uniform Traffic Control Devices* (California MUTCD), the peak hour warrant (Warrant 3) was analyzed for the intersection of Lake Jennings Road and Greenhills Way to determine if a traffic signal would be warranted under the Existing with Project conditions. The results indicates that no signal is warranted at this location.

Furthermore, as stated in the report, Lake Jennings Park Road is classified as a 4-lane Major Arterial per the County’s Circulation Element. In this regard, signal warrant was also checked for this condition. Similar to existing conditions, no signal is warranted at this location.

Appendix G includes the signal warrant analysis worksheet.

10.3 Adlai Road Access

The Project's Adlai Road access is expected to operate acceptably given the low volumes on Adlai Road, shown in *Table 9-2*, and that the adjacent intersection of E. Lakeview Road / Adlai Road is calculated to operate at LOS A under Existing + Project + Cumulative Projects conditions, as shown in *Table 9-1*.

10.4 Cut-Through Traffic

The project proposes connection of Greenhills Way to Audubon Road, which may cause traffic between Lake Jennings Park Road and Highway 8 Business to cut-through the neighborhood. LLG conducted a preliminary travel time analysis to determine the time savings for the various routes between Lake Jennings Park Road and Highway 8 Business. More specifically, this review was conducted to determine if the project will induce any cut-through traffic with the new connection of Greenhills Way.

The three routes included:

- *Route A:* Lake Jennings Park Road to Highway 8 Business without diverting through the neighborhood (*existing route*)
- *Route B:* Lake Jennings Park Road to Highway 8 Business via Greenhills Way, Audubon Road and Adlai Road (*new route*)
- *Route C:* Lake Jennings Park Road to Highway 8 Business via Jack Oak Road, Cueta Del Sol and Adlai Road (*existing route*)

Based on our analyses, while Route A was measured to be longer (1.6 miles) compared to Route B (1.3 miles) and Route C (1 mile), Route A was observed to be faster (4 minutes) given the additional capacity due to multiple lanes and speed on Lake Jennings Park Road. Diverting through the neighborhood via Routes B (5 minutes) and C (5 minutes) would incur lower speeds, grade issues, and stop signs increasing overall travel time. Therefore, it is concluded, there was no measurable savings in travel time that would cause traffic to divert through the neighborhood due to the proposed Greenhills Way connection.

10.5 Sight Distance

A preliminary sight distance evaluation was conducted at the Lake Jennings Park Road / Greenhills Way (project driveway) intersection. The team Civil Engineer's findings concluded that based on County of San Diego Public Road Standards, there is 550' of unobstructed sight distance looking northbound and 550' of unobstructed sight distance looking southbound from Greenhills Way onto Lake Jennings Park Road. The certification from the Civil Engineer is included in ***Appendix H***.

11.0 IMPROVEMENTS AND RECOMMENDATIONS

Per the County of San Diego's thresholds and the analysis methodologies presented in this report, Project-related and cumulative traffic are calculated not to exceed the acceptable threshold within the study area. Therefore, no improvements are recommended.

TECHNICAL APPENDICES
GREENHILLS RANCH – PHASE 2
County of San Diego, California
November 18, 2022

LLG Ref. 3-15-2552

APPENDIX A

HCM 6TH EDITION INTERSECTION METHODOLOGY

HIGHWAY CAPACITY 6th EDITION MANUAL

LEVEL OF SERVICE CRITERIA FOR SIGNALIZED INTERSECTIONS

In the Highway Capacity Manual 6th Edition (HCM 6), Level of Service for signalized intersections is defined in terms of delay. Delay is a measure of driver discomfort, frustration, fuel consumption, and lost travel time. Specifically, Level of Service criteria are stated in terms of the average control delay per vehicle for a 15-minute analysis period. Control delay includes initial deceleration delay, queue move-up time, stopped delay, and final acceleration delay.

Delay is a complex measure, and is dependent on a number of variables, including the quality of progression, the cycle length, the green ratio, and the v/c ratio for the lane group or approach in question.

LEVEL OF SERVICE	CONTROLLED DELAY PER VEHICLE (SEC)		
A		≤	10.0
B	10.1	to	20.0
C	20.1	to	35.0
D	35.1	to	55.0
E	55.1	to	80.0
F		>	80.0

Level of Service A describes operations with very low delay, (i.e. less than 10.0 seconds per vehicle). This occurs when progression is extremely favorable, and most vehicles arrive during the green phase. Most vehicles do not stop at all. Short cycle lengths may also contribute to low delay.

Level of Service B describes operations with delay in the range of 10.1 to 20.0 seconds per vehicle. This generally occurs with good progression and/or short cycle lengths. More vehicles stop than for LOS A, causing higher levels of average delay.

Level of Service C describes operations with delay in the range of 20.1 to 35.0 seconds per vehicle. These higher delays may result from fair progression and/or longer cycle lengths. Individual cycle failures may begin to appear in the level. The number of vehicles stopping is significant at this level, although many still pass through the intersections without stopping.

Level of Service D describes operations with delay in the range of 35.1 to 55.0 seconds per vehicle. At Level D, the influence of congestion becomes more noticeable. Longer delays may result from some combination of unfavorable progression, long cycle lengths, or high v/c ratios. Many vehicles stop, and the proportion of vehicles not stopping declines. Individual cycle failures are noticeable.

Level of Service E describes operations with delay in the range of 55.1 to 80.0 seconds per vehicle. This is considered to be the limit of acceptable delay. These high delay values generally indicate poor progression, long cycle lengths, and high v/c ratios. Individual cycle failures are frequent occurrences.

Level of Service F describes operations with delay in excess of 80.0 seconds per vehicle. This is considered to be unacceptable to most drivers. This condition often occurs with over-saturation (i.e. when arrival flow rates exceed the capacity of the intersection). It may also occur at high v/c ratios below 1.00 with many individual cycle failures. Poor progression and long cycle lengths may also be major contributing causes to such delay levels.

APPENDIX B

INTERSECTION AND SEGMENTS COUNT SHEETS

Turn Count Summary

Accurate Video Counts Inc
info@accuratevideocounts.com
(619) 987-5136



Location: Highway 8 Business @ Lake Jennings Park Road

Date of Count: Wednesday, December 02, 2015

Analysts: LV/CD

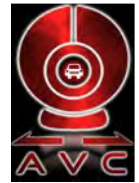
Weather: Sunny

AVC Proj No: 15-0454



Vehicular Count

Accurate Video Counts Inc
info@accuratevideocounts.com
(619) 987-5136



Location: Highway 8 Business @ Lake Jennings Park Road

AM Period (7:00 AM - 9:00 AM)													
	Southbound			Westbound			Northbound			Eastbound			TOTAL
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	
7:00 AM	5	92	10	6	6	41	18	103	26	56	9	6	378
7:15 AM	13	102	13	6	10	37	16	122	31	51	10	8	419
7:30 AM	9	83	12	15	7	58	17	106	22	76	27	16	448
7:45 AM	16	108	13	24	15	50	28	126	26	44	27	18	495
8:00 AM	13	98	10	21	21	50	14	123	36	50	5	14	455
8:15 AM	19	117	4	8	4	48	14	99	25	49	3	20	410
8:30 AM	16	116	2	11	9	45	13	95	35	56	6	9	413
8:45 AM	14	86	1	9	2	34	14	69	35	41	2	5	312
Total	105	802	65	100	74	363	134	843	236	423	89	96	3,330

AM Intersection Peak Hour : **7:15 AM - 8:15 AM**

Intersection PHF : **0.92**

	Southbound			Westbound			Northbound			Eastbound			TOTAL
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	
Volume	51	391	48	66	53	195	75	477	115	221	69	56	1,817
PHF	0.80	0.91	0.92	0.69	0.63	0.84	0.67	0.95	0.80	0.73	0.64	0.78	0.92
Movement PHF		0.89			0.85			0.93			0.73		0.92

PM Period (4:00 PM - 6:00 PM)													
	Southbound			Westbound			Northbound			Eastbound			TOTAL
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	
4:00 PM	12	127	13	9	7	20	28	99	36	60	7	12	430
4:15 PM	19	138	11	9	9	29	29	97	51	49	11	13	465
4:30 PM	12	143	9	4	6	27	41	104	48	48	12	8	462
4:45 PM	8	153	5	18	9	32	34	116	38	52	10	16	491
5:00 PM	9	153	0	2	4	33	18	108	37	53	11	19	447
5:15 PM	19	167	13	9	3	30	41	86	32	67	10	13	490
5:30 PM	5	139	3	9	7	24	29	109	35	57	10	14	441
5:45 PM	9	126	12	16	6	24	33	71	29	53	9	8	396
Total	93	1146	66	76	51	219	253	790	306	439	80	103	3,622

PM Intersection Peak Hour : **4:30 PM - 5:30 PM**

Intersection PHF : **0.96**

	Southbound			Westbound			Northbound			Eastbound			TOTAL
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	
Volume	48	616	27	33	22	122	134	414	155	220	43	56	1890
PHF	0.63	0.922	0.519	0.458	0.611	0.924	0.817	0.892	0.807	0.821	0.896	0.737	0.96
Movement PHF		0.87			0.75			0.91			0.89		0.96

Turn Count Summary

Accurate Video Counts Inc
info@accuratevideocounts.com
(619) 987-5136



Location: E. Lakeview Road @ Adlai Road

Date of Count: Wednesday, December 02, 2015

Analysts: LV/CD

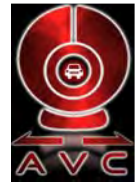
Weather: Sunny

AVC Proj No: 15-0454



Vehicular Count

Accurate Video Counts Inc
info@accuratevideocounts.com
(619) 987-5136



Location: E. Lakeview Road @ Adlai Road

AM Period (7:00 AM - 9:00 AM)													
	Southbound			Westbound			Northbound			Eastbound			TOTAL
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	
7:00 AM	6	0	11	0	20	0	0	0	0	0	13	2	52
7:15 AM	3	0	6	1	17	0	0	0	0	0	11	3	41
7:30 AM	4	0	8	2	12	0	0	0	0	0	14	0	40
7:45 AM	4	0	8	4	11	0	0	0	0	0	9	1	37
8:00 AM	6	0	12	6	20	0	0	0	0	0	10	2	56
8:15 AM	6	0	6	5	44	0	0	0	0	0	16	3	80
8:30 AM	5	0	5	3	37	0	0	0	0	0	21	0	71
8:45 AM	2	0	5	6	8	0	0	0	0	0	34	3	58
Total	36	0	61	27	169	0	0	0	0	0	128	14	435

AM Intersection Peak Hour : **8:00 AM - 9:00 AM**

Intersection PHF : **0.83**

	Southbound			Westbound			Northbound			Eastbound			TOTAL
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	
Volume	19	0	28	20	109	0	0	0	0	0	81	8	265
PHF	0.79	#####	0.58	0.83	0.62	#####	#####	#####	#####	#####	0.60	0.67	0.83
Movement PHF		0.65			0.66		#DIV/0!				0.60		0.83

PM Period (4:00 PM - 6:00 PM)													
	Southbound			Westbound			Northbound			Eastbound			TOTAL
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	
4:00 PM	1	0	3	9	15	0	0	0	0	0	14	1	43
4:15 PM	2	0	9	7	13	0	0	0	0	0	24	4	59
4:30 PM	1	0	7	7	6	0	0	0	0	0	12	2	35
4:45 PM	1	0	8	4	12	0	0	0	0	0	16	4	45
5:00 PM	0	0	6	12	9	0	0	0	0	0	16	7	50
5:15 PM	3	0	6	10	11	0	0	0	0	0	13	5	48
5:30 PM	4	0	7	7	13	0	0	0	0	0	8	5	44
5:45 PM	2	0	3	8	13	0	0	0	0	0	18	2	46
Total	14	0	49	64	92	0	0	0	0	0	121	30	370

PM Intersection Peak Hour : **4:15 PM - 5:15 PM**

Intersection PHF : **0.80**

	Southbound			Westbound			Northbound			Eastbound			TOTAL
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	
Volume	4	0	30	30	40	0	0	0	0	0	68	17	189
PHF	0.50	#####	0.833	0.625	0.769	#####	#####	#####	#####	#####	0.708	0.607	0.80
Movement PHF		0.77			0.83		#DIV/0!				0.76		0.80

Linscott, Law & Greenspan, Engineers

4542 Ruffner Street, Suite 100, San Diego, CA 92111

Average Daily Traffic

Location: **Lake Jennings Road, between Julian Avenue-El Monte Road and American Way**

Date: Tuesday, October 1, 2019					Total Daily Volume: 14595										Description: Total Volume								
0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00
68	44	44	75	166	458	1090	1194	1048	644	620	664	706	803	1010	1149	1158	1132	868	655	453	261	165	120
24	14	14	10	28	88	180	275	364	171	136	167	159	193	204	289	305	294	241	191	122	87	46	31
15	16	9	23	32	97	212	304	257	171	162	164	171	200	257	283	278	343	235	180	126	75	61	24
15	9	12	28	40	116	280	280	226	146	154	173	176	202	276	282	274	264	203	158	105	52	37	35
14	5	9	14	66	157	418	335	201	156	168	160	200	208	273	295	301	231	189	126	100	47	21	30

Date: Tuesday, October 1, 2019					Total Daily Volume: 7125										Description: Northbound Volume								
0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00
25	19	16	44	115	274	829	807	623	354	315	312	314	379	442	447	443	444	326	224	161	102	60	50
8	5	5	7	22	54	101	187	246	106	67	83	68	91	87	107	121	118	94	68	43	35	23	12
8	8	4	10	20	53	141	187	140	92	81	77	79	87	124	118	113	140	94	61	42	28	23	10
5	4	4	21	34	70	206	188	116	78	74	89	73	91	134	108	94	109	65	54	47	25	8	15
4	2	3	6	39	97	381	245	121	78	93	63	94	110	97	114	115	77	73	41	29	14	6	13

Date: Tuesday, October 1, 2019					Total Daily Volume: 7470										Description: Southbound Volume								
0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00
43	25	28	31	51	184	261	387	425	290	305	352	392	424	568	702	715	688	542	431	292	159	105	70
16	9	9	3	6	34	79	88	118	65	69	84	91	102	117	182	184	176	147	123	79	52	23	19
7	8	5	13	12	44	71	117	117	79	81	87	92	113	133	165	165	203	141	119	84	47	38	14
10	5	8	7	6	46	74	92	110	68	80	84	103	111	142	174	180	155	138	104	58	27	29	20
10	3	6	8	27	60	37	90	80	78	75	97	106	98	176	181	186	154	116	85	71	33	15	17

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Linscott, Law & Greenspan, Engineers

4542 Ruffner Street, Suite 100, San Diego, CA 92111

Average Daily Traffic

Location: **Lake Jennings Road, between American Way and Highway 8 Business**

Date: Tuesday, October 1, 2019					Total Daily Volume: 14587										Description: Total Volume								
0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00
71	48	43	74	165	461	984	1177	1010	653	624	695	743	813	1003	1174	1205	1118	872	651	447	263	171	122
25	14	9	11	27	92	185	256	310	173	141	177	171	185	204	293	325	287	249	195	124	89	52	31
14	18	13	22	34	93	222	308	267	179	155	174	185	196	241	283	277	340	217	169	127	81	55	24
14	10	12	27	43	135	269	280	231	142	153	174	177	218	287	309	286	268	210	161	103	51	43	38
18	6	9	14	61	141	308	333	202	159	175	170	210	214	271	289	317	223	196	126	93	42	21	29

Date: Tuesday, October 1, 2019					Total Daily Volume: 6753										Description: Northbound Volume								
0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00
28	22	15	44	116	268	628	750	535	343	317	320	321	371	437	440	458	423	314	228	157	104	63	51
10	5	5	9	21	55	105	165	164	101	72	84	65	82	83	101	126	105	89	72	38	36	26	13
6	9	4	9	21	50	140	184	131	93	79	83	84	85	122	110	111	135	85	54	47	28	21	10
7	4	3	19	36	77	188	182	117	76	70	79	73	97	130	121	102	106	64	55	46	28	10	15
5	4	3	7	38	86	195	219	123	73	96	74	99	107	102	108	119	77	76	47	26	12	6	13

Date: Tuesday, October 1, 2019					Total Daily Volume: 7834										Description: Southbound Volume								
0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00
43	26	28	30	49	193	356	427	475	310	307	375	422	442	566	734	747	695	558	423	290	159	108	71
15	9	4	2	6	37	80	91	146	72	69	93	106	103	121	192	199	182	160	123	86	53	26	18
8	9	9	13	13	43	82	124	136	86	76	91	101	111	119	173	166	205	132	115	80	53	34	14
7	6	9	8	7	58	81	98	114	66	83	95	104	121	157	188	184	162	146	106	57	23	33	23
13	2	6	7	23	55	113	114	79	86	79	96	111	107	169	181	198	146	120	79	67	30	15	16

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4542 Ruffner Street, Suite 100, San Diego, CA 92111

Average Daily Traffic

Location: **Highway Business 8, West of E. Lakeview Rd-El Dorado Parkway**

Date: Tuesday, October 1, 2019					Total Daily Volume: 7576												Description: Total Volume							
0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	
32	32	21	26	62	179	332	526	473	343	330	395	434	453	532	605	616	584	498	366	305	247	120	65	
8	8	6	3	11	37	57	87	133	102	71	92	107	115	118	160	162	155	110	91	65	80	41	27	
9	14	4	7	9	43	78	116	134	78	83	106	122	99	131	157	167	162	126	97	51	70	27	16	
6	7	10	7	18	55	86	174	101	87	84	116	115	130	151	160	140	138	124	105	81	55	27	12	
9	3	1	9	24	44	111	149	105	76	92	81	90	109	132	128	147	129	138	73	108	42	25	10	

Date: Tuesday, October 1, 2019					Total Daily Volume: 4217												Description: Eastbound Volume							
0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	
21	16	12	11	26	73	133	230	205	146	166	211	229	266	294	347	392	362	335	216	228	170	84	44	
5	6	4	2	4	13	23	37	59	38	34	46	54	73	60	82	107	102	75	51	48	47	26	21	
8	4	3	2	3	19	29	55	64	37	42	55	64	53	71	94	114	98	81	56	39	51	20	11	
4	4	4	2	8	21	43	77	36	32	38	62	60	76	76	93	78	85	81	69	53	41	19	7	
4	2	1	5	11	20	38	61	46	39	52	48	51	64	87	78	93	77	98	40	88	31	19	5	

Date: Tuesday, October 1, 2019					Total Daily Volume: 3359										Description: Westbound Volume									
0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	
11	16	9	15	36	106	199	296	268	197	164	184	205	187	238	258	224	222	163	150	77	77	36	21	
3	2	2	1	7	24	34	50	74	64	37	46	53	42	58	78	55	53	35	40	17	33	15	6	
1	10	1	5	6	24	49	61	70	41	41	51	58	46	60	63	53	64	45	41	12	19	7	5	
2	3	6	5	10	34	43	97	65	55	46	54	55	54	75	67	62	53	43	36	28	14	8	5	
5	1	0	4	13	24	73	88	59	37	40	33	39	45	45	50	54	52	40	33	20	11	6	5	

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4542 Ruffner Street, Suite 100, San Diego, CA 92111

Average Daily Traffic

Location: **Highway Business 8, between E. Lakeview Rd-El Dorado Parkway and Lake Jennings Park Road**

Date: Tuesday, October 1, 2019					Total Daily Volume: 6455										Description: Total Volume								
0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00
35	28	23	23	66	181	372	569	470	275	258	330	324	389	419	494	443	454	387	267	267	217	102	62
15	8	3	5	8	26	71	109	139	85	53	78	71	84	93	122	107	127	90	88	45	88	32	25
7	10	8	3	11	42	73	124	112	54	66	80	82	87	126	125	117	125	101	62	47	51	22	13
6	9	7	3	23	60	108	198	111	75	70	87	82	126	108	131	117	104	108	59	79	49	22	15
7	1	5	12	24	53	120	138	108	61	69	85	89	92	92	116	102	98	88	58	96	29	26	9

Date: Tuesday, October 1, 2019					Total Daily Volume: 3416										Description: Eastbound Volume								
0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00
9	12	9	14	43	107	197	289	228	134	133	183	177	220	214	270	246	263	196	117	153	123	51	28
4	4	1	2	4	13	41	59	52	36	24	43	38	51	49	70	51	73	57	32	23	51	16	16
3	3	4	1	6	23	39	70	53	23	37	47	43	42	62	75	71	70	49	30	24	29	12	6
1	5	2	2	15	40	61	98	69	41	36	52	43	70	50	75	61	61	47	30	46	28	10	3
1	0	2	9	18	31	56	62	54	34	36	41	53	57	53	50	63	59	43	25	60	15	13	3

Date: Tuesday, October 1, 2019					Total Daily Volume: 3039												Description: Westbound Volume							
0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	
26	16	14	9	23	74	175	280	242	141	125	147	147	169	205	224	197	191	191	150	114	94	51	34	
11	4	2	3	4	13	30	50	87	49	29	35	33	33	44	52	56	54	33	56	22	37	16	9	
4	7	4	2	5	19	34	54	59	31	29	33	39	45	64	50	46	55	52	32	23	22	10	7	
5	4	5	1	8	20	47	100	42	34	34	35	39	56	58	56	56	43	61	29	33	21	12	12	
6	1	3	3	6	22	64	76	54	27	33	44	36	35	39	66	39	39	45	33	36	14	13	6	

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4542 Ruffner Street, Suite 100, San Diego, CA 92111

Average Daily Traffic

Location: **Lakeview Road, West of Adlai Road**

Date: **Tuesday, October 1, 2019**

Total Daily Volume: **2160**

Description: **Total Volume**

0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00
3	4	3	5	9	29	130	196	223	88	80	55	94	115	204	247	178	182	123	69	63	35	15	10
2	0	3	0	0	8	12	56	65	23	18	13	23	20	51	92	40	59	26	17	20	13	5	5
0	2	0	0	0	4	26	49	81	19	19	12	19	27	44	64	50	58	23	26	15	7	7	1
1	1	0	3	3	7	42	31	46	21	27	13	32	36	48	38	47	30	38	14	13	10	1	2
0	1	0	2	6	10	50	60	31	25	16	17	20	32	61	53	41	35	36	12	15	5	2	2

Date: **Tuesday, October 1, 2019**

Total Daily Volume: **1261**

Description: **Eastbound Volume**

0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00
2	2	2	3	4	17	70	99	126	52	41	33	55	59	104	170	112	105	84	42	41	22	11	5
1	0	2	0	0	6	5	28	29	13	12	7	14	13	25	62	28	34	18	11	13	8	3	4
0	1	0	0	0	2	16	31	41	9	7	8	12	16	21	48	33	30	17	15	10	5	6	0
1	1	0	2	2	5	21	13	39	15	14	9	17	20	33	29	28	21	25	9	9	6	0	0
0	0	0	1	2	4	28	27	17	15	8	9	12	10	25	31	23	20	24	7	9	3	2	1

Date: **Tuesday, October 1, 2019**

Total Daily Volume: **899**

Description: **Westbound Volume**

0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00
1	2	1	2	5	12	60	97	97	36	39	22	39	56	100	77	66	77	39	27	22	13	4	5
1	0	1	0	0	2	7	28	36	10	6	6	9	7	26	30	12	25	8	6	7	5	2	1
0	1	0	0	0	2	10	18	40	10	12	4	7	11	23	16	17	28	6	11	5	2	1	1
0	0	0	1	1	2	21	18	7	6	13	4	15	16	15	9	19	9	13	5	4	4	1	2
0	1	0	1	4	6	22	33	14	10	8	8	8	22	36	22	18	15	12	5	6	2	0	1

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4542 Ruffner Street, Suite 100, San Diego, CA 92111

Average Daily Traffic

Location: **E. Lakeview Road, between Adlai Road and Highway 8 Business**

Date: Tuesday, October 1, 2019					Total Daily Volume: 2471										Description: Total Volume								
0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00
6	2	4	6	13	66	112	167	172	98	84	95	129	161	201	257	204	221	172	119	77	56	33	16
2	0	3	1	2	9	13	55	42	27	16	23	27	35	42	87	51	70	43	25	15	18	13	10
0	0	0	0	4	17	21	40	47	19	22	23	25	33	45	60	60	53	45	42	14	15	11	1
1	1	1	3	3	25	29	24	48	27	18	25	43	49	52	56	48	46	48	33	24	12	2	3
3	1	0	2	4	15	49	48	35	25	28	24	34	44	62	54	45	52	36	19	24	11	7	2

Date: Tuesday, October 1, 2019					Total Daily Volume: 1199										Description: Northbound Volume								
0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00
4	1	1	2	3	10	44	83	49	41	38	45	67	93	108	114	94	126	95	71	43	38	20	9
1	0	1	1	1	0	7	29	22	12	6	10	14	19	22	33	26	41	22	18	11	10	8	4
0	0	0	0	1	2	6	14	9	9	9	9	14	20	23	24	25	32	29	19	8	13	5	1
1	0	0	1	0	2	13	12	7	10	6	13	23	24	22	26	22	26	29	21	9	9	2	3
2	1	0	0	1	6	18	28	11	10	17	13	16	30	41	31	21	27	15	13	15	6	5	1

Date: Tuesday, October 1, 2019					Total Daily Volume: 1272										Description: Southbound Volume								
0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00
2	1	3	4	10	56	68	84	123	57	46	50	62	68	93	143	110	95	77	48	34	18	13	7
1	0	2	0	1	9	6	26	20	15	10	13	13	16	20	54	25	29	21	7	4	8	5	6
0	0	0	0	3	15	15	26	38	10	13	14	11	13	22	36	35	21	16	23	6	2	6	0
0	1	1	2	3	23	16	12	41	17	12	12	20	25	30	30	26	20	19	12	15	3	0	0
1	0	0	2	3	9	31	20	24	15	11	11	18	14	21	23	24	25	21	6	9	5	2	1

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4542 Ruffner Street, Suite 100, San Diego, CA 92111

Average Daily Traffic

Location: **Adlai Road, North of E. Lakeview Road**

Date: Tuesday, October 1, 2019					Total Daily Volume: 1244										Description: Total Volume								
0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00
2	0	2	3	8	34	77	83	82	57	66	56	66	75	78	108	107	99	97	47	55	21	15	6
0	0	1	0	2	9	10	22	15	14	10	13	12	13	18	22	22	29	18	10	13	4	2	3
0	0	0	1	2	6	19	21	30	16	16	13	14	11	25	36	31	31	24	7	9	6	7	0
1	0	1	0	2	10	21	15	16	14	18	20	23	23	15	29	25	21	38	19	23	7	1	1
1	0	0	2	2	9	27	25	21	13	22	10	17	28	20	21	29	18	17	11	10	4	5	2

Date: Tuesday, October 1, 2019					Total Daily Volume: 638										Description: Northbound Volume								
0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00
2	0	0	1	3	7	32	30	30	25	23	26	29	43	33	65	65	64	67	31	27	17	13	5
0	0	0	0	2	3	5	12	3	2	6	4	8	9	9	11	16	16	10	9	8	3	2	3
0	0	0	1	1	0	8	8	9	6	3	6	5	8	7	24	19	23	20	1	5	6	6	0
1	0	0	0	0	0	10	3	10	8	4	13	12	11	5	16	13	17	28	15	8	6	1	1
1	0	0	0	0	4	9	7	8	9	10	3	4	15	12	14	17	8	9	6	6	2	4	1

Date: Tuesday, October 1, 2019					Total Daily Volume: 606										Description: Southbound Volume								
0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00
0	0	2	2	5	27	45	53	52	32	43	30	37	32	45	43	42	35	30	16	28	4	2	1
0	0	1	0	0	6	5	10	12	12	4	9	4	4	9	11	6	13	8	1	5	1	0	0
0	0	0	0	1	6	11	13	21	10	13	7	9	3	18	12	12	8	4	6	4	0	1	0
0	0	1	0	2	10	11	12	6	6	14	7	11	12	10	13	12	4	10	4	15	1	0	0
0	0	0	2	2	5	18	18	13	4	12	7	13	13	8	7	12	10	8	5	4	2	1	1

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APPENDIX C

**EXISTING PEAK HOUR INTERSECTION ANALYSIS
WORKSHEETS**

HCM 6th Signalized Intersection Summary

2: Lake Jennings Park Road & Highway 8 Business/Blossom Valley Road

10/23/2019

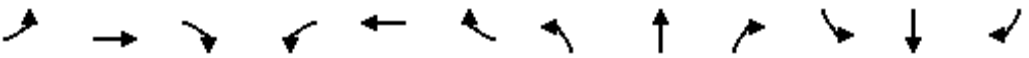
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↩	↩		↩		↩	↩	↩	↩	↩	↩
Traffic Volume (veh/h)	63	77	248	224	61	76	132	549	86	55	457	51
Future Volume (veh/h)	63	77	248	224	61	76	132	549	86	55	457	51
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.98	1.00		1.00	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	68	84	270	243	66	83	143	597	93	60	497	55
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	167	206	316	175	47	60	124	662	561	77	612	508
Arrive On Green	0.20	0.20	0.20	0.16	0.16	0.16	0.07	0.35	0.35	0.04	0.33	0.33
Sat Flow, veh/h	818	1011	1550	1079	293	368	1781	1870	1585	1781	1870	1552
Grp Volume(v), veh/h	152	0	270	392	0	0	143	597	93	60	497	55
Grp Sat Flow(s),veh/h/ln	1829	0	1550	1740	0	0	1781	1870	1585	1781	1870	1552
Q Serve(g_s), s	6.1	0.0	14.2	13.7	0.0	0.0	5.9	25.6	3.4	2.8	20.6	2.1
Cycle Q Clear(g_c), s	6.1	0.0	14.2	13.7	0.0	0.0	5.9	25.6	3.4	2.8	20.6	2.1
Prop In Lane	0.45		1.00	0.62		0.21	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	373	0	316	282	0	0	124	662	561	77	612	508
V/C Ratio(X)	0.41	0.00	0.85	1.39	0.00	0.00	1.15	0.90	0.17	0.78	0.81	0.11
Avail Cap(c_a), veh/h	498	0	422	282	0	0	124	757	641	86	717	595
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	29.2	0.0	32.4	35.4	0.0	0.0	39.3	25.9	18.7	40.0	26.0	19.8
Incr Delay (d2), s/veh	0.7	0.0	12.2	195.8	0.0	0.0	126.7	12.9	0.1	32.8	6.1	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.7	0.0	6.2	21.0	0.0	0.0	6.9	13.1	1.2	1.9	9.8	0.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	29.9	0.0	44.6	231.2	0.0	0.0	166.0	38.8	18.9	72.9	32.2	19.9
LnGrp LOS	C	A	D	F	A	A	F	D	B	E	C	B
Approach Vol, veh/h	422			392			833			612		
Approach Delay, s/veh	39.3			231.2			58.4			35.0		
Approach LOS	D			F			E			D		
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	7.7	35.2		22.5	10.0	33.0		19.0				
Change Period (Y+Rc), s	4.1	5.3		5.3	4.1	5.3		5.3				
Max Green Setting (Gmax), s	4.1	34.2		23.0	5.9	32.4		13.7				
Max Q Clear Time (g_c+I1), s	4.8	27.6		16.2	7.9	22.6		15.7				
Green Ext Time (p_c), s	0.0	2.3		1.1	0.0	2.4		0.0				
Intersection Summary												
HCM 6th Ctrl Delay	78.5											
HCM 6th LOS	E											

Intersection						
Int Delay, s/veh	3					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	10	0	132	26	31	33
Future Vol, veh/h	10	0	132	26	31	33
Conflicting Peds, #/hr	1	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	83	83	83	83	83	83
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	12	0	159	31	37	40
Major/Minor	Major1	Major2		Minor2		
Conflicting Flow All	191	0	-	0	200	176
Stage 1	-	-	-	-	176	-
Stage 2	-	-	-	-	24	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1383	-	-	-	789	867
Stage 1	-	-	-	-	855	-
Stage 2	-	-	-	-	999	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1382	-	-	-	780	866
Mov Cap-2 Maneuver	-	-	-	-	780	-
Stage 1	-	-	-	-	846	-
Stage 2	-	-	-	-	998	-
Approach	EB	WB		SB		
HCM Control Delay, s	7.6	0		9.8		
HCM LOS				A		
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	
Capacity (veh/h)	1382	-	-	-	822	
HCM Lane V/C Ratio	0.009	-	-	-	0.094	
HCM Control Delay (s)	7.6	0	-	-	9.8	
HCM Lane LOS	A	A	-	-	A	
HCM 95th %tile Q(veh)	0	-	-	-	0.3	

HCM 6th Signalized Intersection Summary

2: Lake Jennings Park Road & Highway 8 Business/Blossom Valley Road

10/23/2019

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↩	↩		↩		↩	↩	↩	↩	↩	↩
Traffic Volume (veh/h)	63	48	246	140	25	38	178	476	154	31	719	45
Future Volume (veh/h)	63	48	246	140	25	38	178	476	154	31	719	45
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		1.00	1.00		0.98	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	66	50	256	146	26	40	185	496	160	32	749	47
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	200	151	299	171	30	47	120	771	640	44	692	570
Arrive On Green	0.19	0.19	0.19	0.14	0.14	0.14	0.07	0.41	0.41	0.02	0.37	0.37
Sat Flow, veh/h	1035	784	1550	1206	215	330	1781	1870	1552	1781	1870	1542
Grp Volume(v), veh/h	116	0	256	212	0	0	185	496	160	32	749	47
Grp Sat Flow(s),veh/h/ln	1819	0	1550	1751	0	0	1781	1870	1552	1781	1870	1542
Q Serve(g_s), s	4.8	0.0	14.0	10.4	0.0	0.0	5.9	18.6	5.9	1.6	32.4	1.7
Cycle Q Clear(g_c), s	4.8	0.0	14.0	10.4	0.0	0.0	5.9	18.6	5.9	1.6	32.4	1.7
Prop In Lane	0.57		1.00	0.69		0.19	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	351	0	299	248	0	0	120	771	640	44	692	570
V/C Ratio(X)	0.33	0.00	0.86	0.85	0.00	0.00	1.54	0.64	0.25	0.73	1.08	0.08
Avail Cap(c_a), veh/h	477	0	407	274	0	0	120	771	640	83	692	570
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	30.5	0.0	34.2	36.7	0.0	0.0	40.9	20.6	16.9	42.4	27.6	18.0
Incr Delay (d2), s/veh	0.5	0.0	12.6	20.7	0.0	0.0	281.2	1.8	0.2	20.2	58.9	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.1	0.0	6.2	5.8	0.0	0.0	11.9	8.1	2.1	0.9	25.0	0.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	31.0	0.0	46.8	57.4	0.0	0.0	322.1	22.4	17.1	62.7	86.6	18.0
LnGrp LOS	C	A	D	E	A	A	F	C	B	E	F	B
Approach Vol, veh/h	372			212			841			828		
Approach Delay, s/veh	41.9			57.4			87.3			81.7		
Approach LOS	D			E			F			F		
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	6.3	41.4		22.2	10.0	37.7		17.7				
Change Period (Y+Rc), s	4.1	5.3		5.3	4.1	5.3		5.3				
Max Green Setting (Gmax), s	4.1	34.2		23.0	5.9	32.4		13.7				
Max Q Clear Time (g_c+I1), s	3.6	20.6		16.0	7.9	34.4		12.4				
Green Ext Time (p_c), s	0.0	3.2		0.9	0.0	0.0		0.1				
Intersection Summary												
HCM 6th Ctrl Delay	75.0											
HCM 6th LOS	E											

Intersection						
Int Delay, s/veh	3.9					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	22	0	49	37	32	15
Future Vol, veh/h	22	0	49	37	32	15
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	80	80	80	80	80	80
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	28	0	61	46	40	19
Major/Minor	Major1	Major2		Minor2		
Conflicting Flow All	107	0	-	0	140	84
Stage 1	-	-	-	-	84	-
Stage 2	-	-	-	-	56	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1484	-	-	-	853	975
Stage 1	-	-	-	-	939	-
Stage 2	-	-	-	-	967	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1484	-	-	-	837	975
Mov Cap-2 Maneuver	-	-	-	-	837	-
Stage 1	-	-	-	-	921	-
Stage 2	-	-	-	-	967	-
Approach	EB	WB		SB		
HCM Control Delay, s	7.5	0		9.4		
HCM LOS				A		
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	
Capacity (veh/h)	1484	-	-	-	877	
HCM Lane V/C Ratio	0.019	-	-	-	0.067	
HCM Control Delay (s)	7.5	0	-	-	9.4	
HCM Lane LOS	A	A	-	-	A	
HCM 95th %tile Q(veh)	0.1	-	-	-	0.2	

APPENDIX D

EXISTING +PROJECT PEAK HOUR INTERSECTION ANALYSIS WORKSHEETS

Intersection

Int Delay, s/veh 0.5

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	12	17	7	803	459	5
Future Vol, veh/h	12	17	7	803	459	5
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	13	18	8	863	494	5

Major/Minor	Minor2	Major1	Major2
Conflicting Flow All	1376	250	499
Stage 1	497	-	-
Stage 2	879	-	-
Critical Hdwy	6.63	6.93	4.13
Critical Hdwy Stg 1	5.83	-	-
Critical Hdwy Stg 2	5.43	-	-
Follow-up Hdwy	3.519	3.319	2.219
Pot Cap-1 Maneuver	148	751	1063
Stage 1	578	-	-
Stage 2	405	-	-
Platoon blocked, %			
Mov Cap-1 Maneuver	146	751	1063
Mov Cap-2 Maneuver	146	-	-
Stage 1	570	-	-
Stage 2	405	-	-

Approach	EB	NB	SB
HCM Control Delay, s	19.6	0.1	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1063	-	277	-	-
HCM Lane V/C Ratio	0.007	-	0.113	-	-
HCM Control Delay (s)	8.4	0	19.6	-	-
HCM Lane LOS	A	A	C	-	-
HCM 95th %tile Q(veh)	0	-	0.4	-	-

HCM 6th Signalized Intersection Summary

2: Lake Jennings Park Road & Highway 8 Business/Blossom Valley Road

10/23/2019

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↩	↩		↩		↩	↩	↩	↩	↩	↩
Traffic Volume (veh/h)	63	77	249	224	61	76	132	556	86	55	473	52
Future Volume (veh/h)	63	77	249	224	61	76	132	556	86	55	473	52
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.98	1.00		1.00	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	68	84	271	243	66	83	143	604	93	60	514	57
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	167	207	317	174	47	59	123	667	565	77	618	513
Arrive On Green	0.20	0.20	0.20	0.16	0.16	0.16	0.07	0.36	0.36	0.04	0.33	0.33
Sat Flow, veh/h	818	1011	1550	1079	293	368	1781	1870	1585	1781	1870	1552
Grp Volume(v), veh/h	152	0	271	392	0	0	143	604	93	60	514	57
Grp Sat Flow(s),veh/h/ln	1829	0	1550	1740	0	0	1781	1870	1585	1781	1870	1552
Q Serve(g_s), s	6.1	0.0	14.3	13.7	0.0	0.0	5.9	26.1	3.4	2.8	21.6	2.2
Cycle Q Clear(g_c), s	6.1	0.0	14.3	13.7	0.0	0.0	5.9	26.1	3.4	2.8	21.6	2.2
Prop In Lane	0.45		1.00	0.62		0.21	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	374	0	317	280	0	0	123	667	565	77	618	513
V/C Ratio(X)	0.41	0.00	0.86	1.40	0.00	0.00	1.16	0.91	0.16	0.78	0.83	0.11
Avail Cap(c_a), veh/h	494	0	419	280	0	0	123	752	637	86	712	591
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	29.4	0.0	32.6	35.7	0.0	0.0	39.6	26.0	18.7	40.3	26.3	19.8
Incr Delay (d2), s/veh	0.7	0.0	12.6	200.0	0.0	0.0	129.7	13.6	0.1	33.2	7.4	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.7	0.0	6.3	21.2	0.0	0.0	7.0	13.5	1.2	1.9	10.4	0.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	30.1	0.0	45.2	235.7	0.0	0.0	169.3	39.6	18.8	73.5	33.7	19.9
LnGrp LOS	C	A	D	F	A	A	F	D	B	E	C	B
Approach Vol, veh/h		423			392			840			631	
Approach Delay, s/veh		39.8			235.7			59.4			36.2	
Approach LOS		D			F			E			D	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	7.8	35.7		22.7	10.0	33.4		19.0				
Change Period (Y+Rc), s	4.1	5.3		5.3	4.1	5.3		5.3				
Max Green Setting (Gmax), s	4.1	34.2		23.0	5.9	32.4		13.7				
Max Q Clear Time (g_c+I1), s	4.8	28.1		16.3	7.9	23.6		15.7				
Green Ext Time (p_c), s	0.0	2.2		1.0	0.0	2.3		0.0				
Intersection Summary												
HCM 6th Ctrl Delay			79.6									
HCM 6th LOS			E									

Intersection						
Int Delay, s/veh	3.3					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	11	0	132	28	36	35
Future Vol, veh/h	11	0	132	28	36	35
Conflicting Peds, #/hr	1	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	83	83	83	83	83	83
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	13	0	159	34	43	42
Major/Minor	Major1	Major2		Minor2		
Conflicting Flow All	194	0	-	0	203	177
Stage 1	-	-	-	-	177	-
Stage 2	-	-	-	-	26	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1379	-	-	-	786	866
Stage 1	-	-	-	-	854	-
Stage 2	-	-	-	-	997	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1378	-	-	-	777	865
Mov Cap-2 Maneuver	-	-	-	-	777	-
Stage 1	-	-	-	-	845	-
Stage 2	-	-	-	-	996	-
Approach	EB	WB		SB		
HCM Control Delay, s	7.6	0		9.9		
HCM LOS				A		
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	
Capacity (veh/h)	1378	-	-	-	818	
HCM Lane V/C Ratio	0.01	-	-	-	0.105	
HCM Control Delay (s)	7.6	0	-	-	9.9	
HCM Lane LOS	A	A	-	-	A	
HCM 95th %tile Q(veh)	0	-	-	-	0.3	

HCM 6th TWSC

1: Lake Jennings Park Road & Greenhills Way

10/23/2019

Intersection

Int Delay, s/veh 0.4

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	6	9	22	442	835	14
Future Vol, veh/h	6	9	22	442	835	14
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	96	96	96	96	96	96
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	6	9	23	460	870	15

Major/Minor	Minor2	Major1	Major2
Conflicting Flow All	1384	443	885
Stage 1	878	-	-
Stage 2	506	-	-
Critical Hdwy	6.63	6.93	4.13
Critical Hdwy Stg 1	5.83	-	-
Critical Hdwy Stg 2	5.43	-	-
Follow-up Hdwy	3.519	3.319	2.219
Pot Cap-1 Maneuver	146	563	763
Stage 1	368	-	-
Stage 2	605	-	-
Platoon blocked, %			
Mov Cap-1 Maneuver	140	563	763
Mov Cap-2 Maneuver	140	-	-
Stage 1	353	-	-
Stage 2	605	-	-

Approach	EB	NB	SB
HCM Control Delay, s	20	0.5	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	763	-	255	-	-
HCM Lane V/C Ratio	0.03	-	0.061	-	-
HCM Control Delay (s)	9.9	0	20	-	-
HCM Lane LOS	A	A	C	-	-
HCM 95th %tile Q(veh)	0.1	-	0.2	-	-

HCM 6th Signalized Intersection Summary

2: Lake Jennings Park Road & Highway 8 Business/Blossom Valley Road

10/23/2019

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	64	48	246	140	25	38	179	497	154	31	727	46
Future Volume (veh/h)	64	48	246	140	25	38	179	497	154	31	727	46
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		1.00	1.00		0.98	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	67	50	256	146	26	40	186	518	160	32	757	48
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	201	150	299	171	30	47	120	771	640	44	691	570
Arrive On Green	0.19	0.19	0.19	0.14	0.14	0.14	0.07	0.41	0.41	0.02	0.37	0.37
Sat Flow, veh/h	1041	777	1550	1206	215	330	1781	1870	1552	1781	1870	1542
Grp Volume(v), veh/h	117	0	256	212	0	0	186	518	160	32	757	48
Grp Sat Flow(s),veh/h/ln	1818	0	1550	1751	0	0	1781	1870	1552	1781	1870	1542
Q Serve(g_s), s	4.9	0.0	14.0	10.4	0.0	0.0	5.9	19.7	5.9	1.6	32.4	1.8
Cycle Q Clear(g_c), s	4.9	0.0	14.0	10.4	0.0	0.0	5.9	19.7	5.9	1.6	32.4	1.8
Prop In Lane	0.57		1.00	0.69		0.19	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	351	0	299	248	0	0	120	771	640	44	691	570
V/C Ratio(X)	0.33	0.00	0.86	0.85	0.00	0.00	1.55	0.67	0.25	0.73	1.09	0.08
Avail Cap(c_a), veh/h	477	0	407	274	0	0	120	771	640	83	691	570
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	30.5	0.0	34.2	36.7	0.0	0.0	40.9	20.9	16.9	42.4	27.6	18.0
Incr Delay (d2), s/veh	0.6	0.0	12.6	20.7	0.0	0.0	284.8	2.3	0.2	20.2	63.0	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.2	0.0	6.2	5.8	0.0	0.0	12.0	8.7	2.1	0.9	25.8	0.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	31.1	0.0	46.8	57.4	0.0	0.0	325.6	23.2	17.1	62.7	90.6	18.0
LnGrp LOS	C	A	D	E	A	A	F	C	B	E	F	B
Approach Vol, veh/h	373			212			864			837		
Approach Delay, s/veh	41.8			57.4			87.2			85.4		
Approach LOS	D			E			F			F		
Timer - Assigned Phs	1	2	4		5	6	8					
Phs Duration (G+Y+Rc), s	6.3	41.4	22.2		10.0	37.7	17.7					
Change Period (Y+Rc), s	4.1	5.3	5.3		4.1	5.3	5.3					
Max Green Setting (Gmax), s	4.1	34.2	23.0		5.9	32.4	13.7					
Max Q Clear Time (g_c+I1), s	3.6	21.7	16.0		7.9	34.4	12.4					
Green Ext Time (p_c), s	0.0	3.2	0.9		0.0	0.0	0.1					
Intersection Summary												
HCM 6th Ctrl Delay	76.4											
HCM 6th LOS	E											

Intersection						
Int Delay, s/veh	4.3					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	24	0	49	44	44	16
Future Vol, veh/h	24	0	49	44	44	16
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	80	80	80	80	80	80
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	30	0	61	55	55	20
Major/Minor	Major1	Major2		Minor2		
Conflicting Flow All	116	0	-	0	149	89
Stage 1	-	-	-	-	89	-
Stage 2	-	-	-	-	60	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1473	-	-	-	843	969
Stage 1	-	-	-	-	934	-
Stage 2	-	-	-	-	963	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1473	-	-	-	826	969
Mov Cap-2 Maneuver	-	-	-	-	826	-
Stage 1	-	-	-	-	915	-
Stage 2	-	-	-	-	963	-
Approach	EB	WB		SB		
HCM Control Delay, s	7.5	0		9.6		
HCM LOS				A		
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	
Capacity (veh/h)	1473	-	-	-	860	
HCM Lane V/C Ratio	0.02	-	-	-	0.087	
HCM Control Delay (s)	7.5	0	-	-	9.6	
HCM Lane LOS	A	A	-	-	A	
HCM 95th %tile Q(veh)	0.1	-	-	-	0.3	

APPENDIX E
OPENING YEAR PEAK HOUR INTERSECTION ANALYSIS
WORKSHEETS

HCM 6th Signalized Intersection Summary

2: Lake Jennings Park Road & Highway 8 Business/Blossom Valley Road

07/31/2020

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	70	85	275	299	69	94	151	636	121	64	567	54
Future Volume (veh/h)	70	85	275	299	69	94	151	636	121	64	567	54
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.98	1.00		1.00	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	76	92	299	325	75	102	164	691	132	70	616	59
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	180	218	337	168	39	53	114	695	589	79	659	547
Arrive On Green	0.22	0.22	0.22	0.15	0.15	0.15	0.06	0.37	0.37	0.04	0.35	0.35
Sat Flow, veh/h	827	1002	1551	1127	260	354	1781	1870	1585	1781	1870	1552
Grp Volume(v), veh/h	168	0	299	502	0	0	164	691	132	70	616	59
Grp Sat Flow(s),veh/h/ln	1829	0	1551	1741	0	0	1781	1870	1585	1781	1870	1552
Q Serve(g_s), s	7.3	0.0	17.2	13.7	0.0	0.0	5.9	33.9	5.2	3.6	29.3	2.4
Cycle Q Clear(g_c), s	7.3	0.0	17.2	13.7	0.0	0.0	5.9	33.9	5.2	3.6	29.3	2.4
Prop In Lane	0.45		1.00	0.65		0.20	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	397	0	337	259	0	0	114	695	589	79	659	547
V/C Ratio(X)	0.42	0.00	0.89	1.94	0.00	0.00	1.44	0.99	0.22	0.88	0.94	0.11
Avail Cap(c_a), veh/h	457	0	388	259	0	0	114	695	589	79	659	547
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	31.0	0.0	34.9	39.1	0.0	0.0	43.0	28.8	19.8	43.7	28.8	20.1
Incr Delay (d2), s/veh	0.7	0.0	19.5	435.2	0.0	0.0	238.6	32.4	0.2	63.0	20.7	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.2	0.0	8.2	37.1	0.0	0.0	10.1	20.7	1.9	3.0	16.3	0.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	31.7	0.0	54.4	474.3	0.0	0.0	281.6	61.2	20.0	106.7	49.5	20.1
LnGrp LOS	C	A	D	F	A	A	F	E	B	F	D	C
Approach Vol, veh/h		467			502			987			745	
Approach Delay, s/veh		46.3			474.3			92.3			52.5	
Approach LOS		D			F			F			D	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	8.2	39.5		25.3	10.0	37.7		19.0				
Change Period (Y+Rc), s	4.1	5.3		5.3	4.1	5.3		5.3				
Max Green Setting (Gmax), s	4.1	34.2		23.0	5.9	32.4		13.7				
Max Q Clear Time (g_c+I1), s	5.6	35.9		19.2	7.9	31.3		15.7				
Green Ext Time (p_c), s	0.0	0.0		0.8	0.0	0.5		0.0				
Intersection Summary												
HCM 6th Ctrl Delay			144.4									
HCM 6th LOS			F									

Intersection

Int Delay, s/veh 2.6

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	13	130	155	32	34	58
Future Vol, veh/h	13	130	155	32	34	58
Conflicting Peds, #/hr	1	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	83	83	83	83	83	83
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	16	157	187	39	41	70

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	227	0	0 397 208
Stage 1	-	-	- 208 -
Stage 2	-	-	- 189 -
Critical Hdwy	4.12	-	- 6.42 6.22
Critical Hdwy Stg 1	-	-	- 5.42 -
Critical Hdwy Stg 2	-	-	- 5.42 -
Follow-up Hdwy	2.218	-	- 3.518 3.318
Pot Cap-1 Maneuver	1341	-	- 608 832
Stage 1	-	-	- 827 -
Stage 2	-	-	- 843 -
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	1340	-	- 599 831
Mov Cap-2 Maneuver	-	-	- 599 -
Stage 1	-	-	- 815 -
Stage 2	-	-	- 842 -

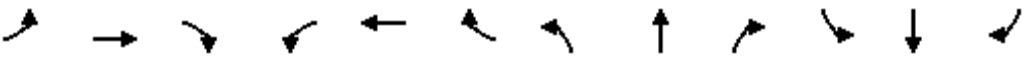
Approach	EB	WB	SB
HCM Control Delay, s	0.7	0	10.8
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1340	-	-	-	727
HCM Lane V/C Ratio	0.012	-	-	-	0.152
HCM Control Delay (s)	7.7	0	-	-	10.8
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	0.5

HCM 6th Signalized Intersection Summary

2: Lake Jennings Park Road & Highway 8 Business/Blossom Valley Road

07/31/2020

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↰	↱		↰	↱	↰	↱	↰	↱	↰	↱
Traffic Volume (veh/h)	70	53	278	195	28	49	208	604	255	53	824	46
Future Volume (veh/h)	70	53	278	195	28	49	208	604	255	53	824	46
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		1.00	1.00		0.98	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	73	55	290	203	29	51	217	629	266	55	858	48
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	219	165	328	188	27	47	115	711	590	70	664	547
Arrive On Green	0.21	0.21	0.21	0.15	0.15	0.15	0.06	0.38	0.38	0.04	0.35	0.35
Sat Flow, veh/h	1037	781	1551	1256	179	316	1781	1870	1552	1781	1870	1542
Grp Volume(v), veh/h	128	0	290	283	0	0	217	629	266	55	858	48
Grp Sat Flow(s),veh/h/ln	1819	0	1551	1751	0	0	1781	1870	1552	1781	1870	1542
Q Serve(g_s), s	5.5	0.0	16.6	13.7	0.0	0.0	5.9	28.7	11.7	2.8	32.4	1.9
Cycle Q Clear(g_c), s	5.5	0.0	16.6	13.7	0.0	0.0	5.9	28.7	11.7	2.8	32.4	1.9
Prop In Lane	0.57		1.00	0.72		0.18	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	385	0	328	263	0	0	115	711	590	70	664	547
V/C Ratio(X)	0.33	0.00	0.88	1.08	0.00	0.00	1.89	0.89	0.45	0.78	1.29	0.09
Avail Cap(c_a), veh/h	458	0	391	263	0	0	115	711	590	80	664	547
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	30.5	0.0	34.9	38.8	0.0	0.0	42.7	26.5	21.2	43.5	29.5	19.6
Incr Delay (d2), s/veh	0.5	0.0	18.4	77.6	0.0	0.0	429.4	12.8	0.5	34.6	142.9	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.4	0.0	7.8	11.4	0.0	0.0	16.3	14.7	4.2	1.9	40.2	0.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	31.0	0.0	53.4	116.5	0.0	0.0	472.1	39.3	21.7	78.1	172.3	19.7
LnGrp LOS	C	A	D	F	A	A	F	D	C	E	F	B
Approach Vol, veh/h	418			283			1112			961		
Approach Delay, s/veh	46.5			116.5			119.5			159.3		
Approach LOS	D			F			F			F		
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	7.7	40.0		24.6	10.0	37.7		19.0				
Change Period (Y+Rc), s	4.1	5.3		5.3	4.1	5.3		5.3				
Max Green Setting (Gmax), s	4.1	34.2		23.0	5.9	32.4		13.7				
Max Q Clear Time (g_c+I1), s	4.8	30.7		18.6	7.9	34.4		15.7				
Green Ext Time (p_c), s	0.0	1.7		0.8	0.0	0.0		0.0				
Intersection Summary												
HCM 6th Ctrl Delay	122.0											
HCM 6th LOS	F											

Intersection

Int Delay, s/veh 3.2

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	30	117	58	44	34	46
Future Vol, veh/h	30	117	58	44	34	46
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	80	80	80	80	80	80
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	38	146	73	55	43	58

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	128	0	0
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	4.12	-	-
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	2.218	-	-
Pot Cap-1 Maneuver	1458	-	-
Stage 1	-	-	-
Stage 2	-	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	1458	-	-
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	EB	WB	SB
HCM Control Delay, s	1.5	0	10.2
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1458	-	-	-	797
HCM Lane V/C Ratio	0.026	-	-	-	0.125
HCM Control Delay (s)	7.5	0	-	-	10.2
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0.1	-	-	-	0.4

APPENDIX F

OPENING YEAR + PROJECT PEAK HOUR INTERSECTION ANALYSIS WORKSHEETS

HCM 6th TWSC

1: Lake Jennings Park Road & Greenhills Way

10/25/2019

Intersection

Int Delay, s/veh 0.5

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	12	17	7	915	552	5
Future Vol, veh/h	12	17	7	915	552	5
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	13	18	8	984	594	5

Major/Minor	Minor2	Major1	Major2
Conflicting Flow All	1597	300	599
Stage 1	597	-	-
Stage 2	1000	-	-
Critical Hdwy	6.63	6.93	4.13
Critical Hdwy Stg 1	5.83	-	-
Critical Hdwy Stg 2	5.43	-	-
Follow-up Hdwy	3.519	3.319	2.219
Pot Cap-1 Maneuver	107	697	976
Stage 1	514	-	-
Stage 2	355	-	-
Platoon blocked, %			
Mov Cap-1 Maneuver	105	697	976
Mov Cap-2 Maneuver	105	-	-
Stage 1	505	-	-
Stage 2	355	-	-

Approach	EB	NB	SB
HCM Control Delay, s	25.2	0.1	0
HCM LOS	D		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	976	-	209	-	-
HCM Lane V/C Ratio	0.008	-	0.149	-	-
HCM Control Delay (s)	8.7	0	25.2	-	-
HCM Lane LOS	A	A	D	-	-
HCM 95th %tile Q(veh)	0	-	0.5	-	-

HCM 6th Signalized Intersection Summary

2: Lake Jennings Park Road & Highway 8 Business/Blossom Valley Road

10/25/2019

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	70	85	276	299	69	94	151	643	121	64	583	55
Future Volume (veh/h)	70	85	276	299	69	94	151	643	121	64	583	55
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.98	1.00		1.00	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	76	92	300	325	75	102	164	699	132	70	634	60
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	180	218	338	168	39	53	114	695	589	79	658	546
Arrive On Green	0.22	0.22	0.22	0.15	0.15	0.15	0.06	0.37	0.37	0.04	0.35	0.35
Sat Flow, veh/h	827	1002	1551	1127	260	354	1781	1870	1585	1781	1870	1552
Grp Volume(v), veh/h	168	0	300	502	0	0	164	699	132	70	634	60
Grp Sat Flow(s),veh/h/ln	1829	0	1551	1741	0	0	1781	1870	1585	1781	1870	1552
Q Serve(g_s), s	7.3	0.0	17.3	13.7	0.0	0.0	5.9	34.2	5.3	3.6	30.6	2.4
Cycle Q Clear(g_c), s	7.3	0.0	17.3	13.7	0.0	0.0	5.9	34.2	5.3	3.6	30.6	2.4
Prop In Lane	0.45		1.00	0.65		0.20	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	398	0	338	259	0	0	114	695	589	79	658	546
V/C Ratio(X)	0.42	0.00	0.89	1.94	0.00	0.00	1.44	1.01	0.22	0.88	0.96	0.11
Avail Cap(c_a), veh/h	457	0	387	259	0	0	114	695	589	79	658	546
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	31.0	0.0	34.9	39.2	0.0	0.0	43.1	28.9	19.8	43.7	29.2	20.1
Incr Delay (d2), s/veh	0.7	0.0	19.7	435.8	0.0	0.0	239.0	35.6	0.2	63.2	26.1	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.2	0.0	8.2	37.1	0.0	0.0	10.1	21.4	1.9	3.0	17.9	0.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	31.7	0.0	54.6	474.9	0.0	0.0	282.0	64.5	20.0	106.9	55.3	20.2
LnGrp LOS	C	A	D	F	A	A	F	F	C	F	E	C
Approach Vol, veh/h		468			502			995			764	
Approach Delay, s/veh		46.4			474.9			94.5			57.3	
Approach LOS		D			F			F			E	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	8.2	39.5		25.3	10.0	37.7		19.0				
Change Period (Y+Rc), s	4.1	5.3		5.3	4.1	5.3		5.3				
Max Green Setting (Gmax), s	4.1	34.2		23.0	5.9	32.4		13.7				
Max Q Clear Time (g_c+I1), s	5.6	36.2		19.3	7.9	32.6		15.7				
Green Ext Time (p_c), s	0.0	0.0		0.8	0.0	0.0		0.0				
Intersection Summary												
HCM 6th Ctrl Delay			145.8									
HCM 6th LOS			F									

Intersection						
Int Delay, s/veh	2.8					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	14	130	155	34	39	60
Future Vol, veh/h	14	130	155	34	39	60
Conflicting Peds, #/hr	1	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	83	83	83	83	83	83
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	17	157	187	41	47	72
Major/Minor	Major1	Major2		Minor2		
Conflicting Flow All	229	0	-	0	400	209
Stage 1	-	-	-	-	209	-
Stage 2	-	-	-	-	191	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1339	-	-	-	606	831
Stage 1	-	-	-	-	826	-
Stage 2	-	-	-	-	841	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1338	-	-	-	596	830
Mov Cap-2 Maneuver	-	-	-	-	596	-
Stage 1	-	-	-	-	814	-
Stage 2	-	-	-	-	840	-
Approach	EB	WB		SB		
HCM Control Delay, s	0.8	0		11		
HCM LOS				B		
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	
Capacity (veh/h)	1338	-	-	-	719	
HCM Lane V/C Ratio	0.013	-	-	-	0.166	
HCM Control Delay (s)	7.7	0	-	-	11	
HCM Lane LOS	A	A	-	-	B	
HCM 95th %tile Q(veh)	0	-	-	-	0.6	

HCM 6th TWSC

1: Lake Jennings Park Road & Greenhills Way

10/25/2019

Intersection						
Int Delay, s/veh	0.4					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	6	9	22	551	972	14
Future Vol, veh/h	6	9	22	551	972	14
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	96	96	96	96	96	96
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	6	9	23	574	1013	15
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	1641	514	1028	0	-	0
Stage 1	1021	-	-	-	-	-
Stage 2	620	-	-	-	-	-
Critical Hdwy	6.63	6.93	4.13	-	-	-
Critical Hdwy Stg 1	5.83	-	-	-	-	-
Critical Hdwy Stg 2	5.43	-	-	-	-	-
Follow-up Hdwy	3.519	3.319	2.219	-	-	-
Pot Cap-1 Maneuver	100	506	673	-	-	-
Stage 1	309	-	-	-	-	-
Stage 2	535	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	95	506	673	-	-	-
Mov Cap-2 Maneuver	95	-	-	-	-	-
Stage 1	294	-	-	-	-	-
Stage 2	535	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	26.2	0.4		0		
HCM LOS	D					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	673	-	185	-	-	
HCM Lane V/C Ratio	0.034	-	0.084	-	-	
HCM Control Delay (s)	10.5	0	26.2	-	-	
HCM Lane LOS	B	A	D	-	-	
HCM 95th %tile Q(veh)	0.1	-	0.3	-	-	

HCM 6th Signalized Intersection Summary

2: Lake Jennings Park Road & Highway 8 Business/Blossom Valley Road

10/25/2019

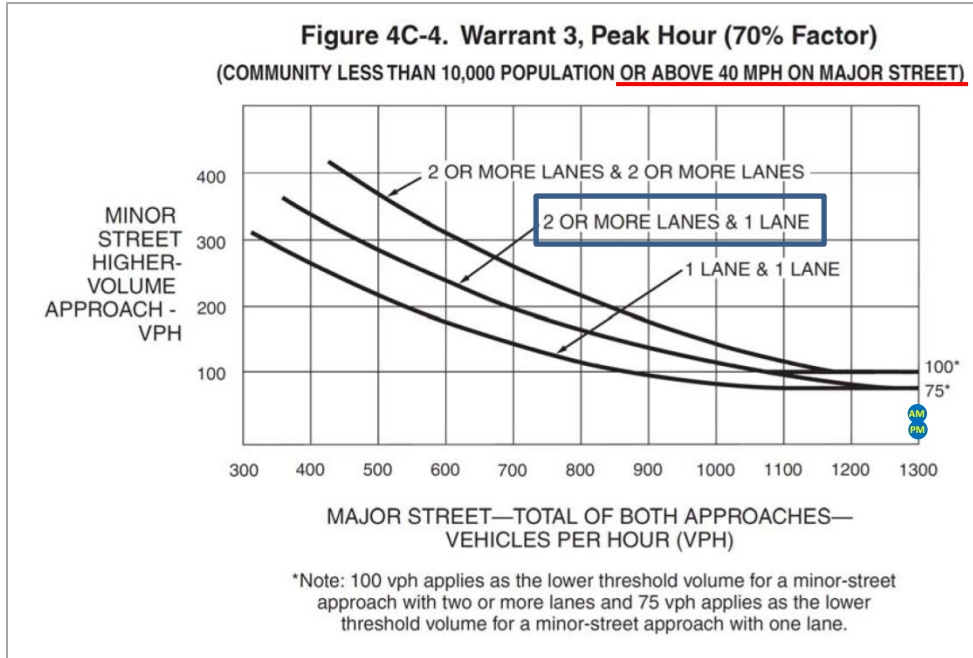
												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	71	53	278	195	28	49	209	625	255	53	832	47
Future Volume (veh/h)	71	53	278	195	28	49	209	625	255	53	832	47
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		1.00	1.00		0.98	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	74	55	290	203	29	51	218	651	266	55	867	49
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	221	164	328	188	27	47	115	711	590	70	664	547
Arrive On Green	0.21	0.21	0.21	0.15	0.15	0.15	0.06	0.38	0.38	0.04	0.35	0.35
Sat Flow, veh/h	1043	775	1551	1256	179	316	1781	1870	1552	1781	1870	1542
Grp Volume(v), veh/h	129	0	290	283	0	0	218	651	266	55	867	49
Grp Sat Flow(s),veh/h/ln	1818	0	1551	1751	0	0	1781	1870	1552	1781	1870	1542
Q Serve(g_s), s	5.5	0.0	16.6	13.7	0.0	0.0	5.9	30.2	11.7	2.8	32.4	1.9
Cycle Q Clear(g_c), s	5.5	0.0	16.6	13.7	0.0	0.0	5.9	30.2	11.7	2.8	32.4	1.9
Prop In Lane	0.57		1.00	0.72		0.18	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	385	0	328	263	0	0	115	711	590	70	664	547
V/C Ratio(X)	0.34	0.00	0.88	1.08	0.00	0.00	1.89	0.92	0.45	0.78	1.31	0.09
Avail Cap(c_a), veh/h	458	0	391	263	0	0	115	711	590	80	664	547
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	30.6	0.0	34.9	38.8	0.0	0.0	42.7	26.9	21.2	43.5	29.5	19.6
Incr Delay (d2), s/veh	0.5	0.0	18.4	77.7	0.0	0.0	433.2	16.7	0.5	34.6	148.7	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.4	0.0	7.8	11.4	0.0	0.0	16.4	16.1	4.2	1.9	41.3	0.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	31.1	0.0	53.3	116.5	0.0	0.0	475.9	43.6	21.7	78.1	178.1	19.7
LnGrp LOS	C	A	D	F	A	A	F	D	C	E	F	B
Approach Vol, veh/h	419			283			1135			971		
Approach Delay, s/veh	46.5			116.5			121.5			164.5		
Approach LOS	D			F			F			F		
Timer - Assigned Phs	1	2	4		5	6	8					
Phs Duration (G+Y+Rc), s	7.7	40.0	24.6		10.0	37.7	19.0					
Change Period (Y+Rc), s	4.1	5.3	5.3		4.1	5.3	5.3					
Max Green Setting (Gmax), s	4.1	34.2	23.0		5.9	32.4	13.7					
Max Q Clear Time (g_c+I1), s	4.8	32.2	18.6		7.9	34.4	15.7					
Green Ext Time (p_c), s	0.0	1.1	0.8		0.0	0.0	0.0					
Intersection Summary												
HCM 6th Ctrl Delay	124.7											
HCM 6th LOS	F											

Intersection						
Int Delay, s/veh	3.2					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	32	117	58	51	37	47
Future Vol, veh/h	32	117	58	51	37	47
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	80	80	80	80	80	80
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	40	146	73	64	46	59
Major/Minor	Major1	Major2		Minor2		
Conflicting Flow All	137	0	-	0	331	105
Stage 1	-	-	-	-	105	-
Stage 2	-	-	-	-	226	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1447	-	-	-	664	949
Stage 1	-	-	-	-	919	-
Stage 2	-	-	-	-	812	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1447	-	-	-	644	949
Mov Cap-2 Maneuver	-	-	-	-	644	-
Stage 1	-	-	-	-	891	-
Stage 2	-	-	-	-	812	-
Approach	EB	WB		SB		
HCM Control Delay, s	1.6	0		10.3		
HCM LOS				B		
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	
Capacity (veh/h)	1447	-	-	-	785	
HCM Lane V/C Ratio	0.028	-	-	-	0.134	
HCM Control Delay (s)	7.6	0	-	-	10.3	
HCM Lane LOS	A	A	-	-	B	
HCM 95th %tile Q(veh)	0.1	-	-	-	0.5	

APPENDIX G

SIGNAL WARRANT WORKSHEETS

Intersection #1
Lake Jennings Road / Greenhills Way
Warrant 3, Peak Hour: 70% Factor Table^a
 Opening Year + Project



Existing+ Project Volumes



Footnotes:

- a. The posted speed limit on the Major Street (Lake Jennings Road) is 55 MPH. Therefore the 70% Table (Table 4C-4) may be used to determine if a signal at the intersection is warranted.

RESULT: SIGNAL NOT WARRANTED

APPENDIX H

SIGH DISTANCE CERTIFICATION



Civil Engineering
Environmental
Land Surveying

2442 Second Avenue
San Diego, California 92101
Phone: 619.232.9200
Fax: 619.232.9210

January 10, 2019

County of San Diego
Dept. of Planning and Land Use
5510 Overland Ave
San Diego, CA 92123

RE: Greenhills Ranch

Dear County,

I, Jonathan R. Rydeen, a registered civil engineer, certify that there is 550' of unobstructed sight distance looking northbound and 550' of unobstructed sight distance looking southbound from the intersection of the existing Greenhills Way onto existing Lake Jennings Park measured in accordance with County Public Road Standards 6.1.E. This sight distance is based on a speed of 55 MPH design speed.

I also certify that there is 450' of unobstructed sight distance looking westbound and 450' of unobstructed sight distance looking southeastbound onto East Lakeview Road at the intersection of Adlai road measured in accordance with County Public Road Standards 6.1.E. This sight distance is based on a speed of 45 MPH design speed.

The posted speed limit on East Lakeview Road is 25 MPH. The ultimate right of way for East Lakeview Road is 84'. Per the County of San Diego Public Road Standards a "Community Collector" road with an 84' right of way has a design speed of 45 MPH.

I have exercised responsible charge for the certification as defined in Section 6703 of the Professional Engineering Act of the California Business and Professional Code.

Sincerely,

Jonathan R. Rydeen, R.C.E.
Registered Engineer
RCE 64811, exp 6-30-19

