Appendix K

Draft Local Transportation Assessment (2023)

Guajome Lake 83 Lot Subdivision (T22-00004)
2839 Guajome Lake Road
City of Oceanside
April 19, 2023

Draft Local Transportation Assessment

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Table of Contents

List of Figures

List of Tables

Appendices

Executive Summary
Guajome Lake Subdivision (83 lots)

This Local Transportation Assessment (LTA) determines if there are measurable transportation impacts based on the City of Oceanside local impact thresholds. This report provides a non-CEQA analysis as required by the City of Oceanside. Pedestrian, Bicycle, Transit, and Traffic study elements were analyzed based on the City of Oceanside *Traffic Impact Analysis Guidelines for Vehicle Miles Traveled (VMT) and Level of Service Assessment*, August 2020 ("Traffic Guidelines").

The proposed residential single family home subdivision of 83 lots is located at 2839 Guajome Lake Road in Oceanside, California. The project site of approximately 16.79 acres has one existing single family home.

The alternative transportation modes analysis includes pedestrian, bicycle, and transit elements.

1) There are missing sidewalk segments along the project frontage. The project applicant will be constructing a sidewalk on Guajome Lake Rd along the project frontage on the project side of the roadway.

2) There are no bike lanes along Guajome Lake Rd; therefore, no bike lane/path improvements are proposed.

3) No transit stop improvements are proposed as part of this project. The closest bus stop is approximately 1.3 miles walking distance from the project site and is located on N. Santa Fe Ave.

The traffic analysis includes the analysis of AM & PM peak hours, and daily traffic volumes. the project is calculated to generate 830 ADT, 66 AM peak hour trips and 83 PM peak hour trips based on SANDAG rates as shown in **Table E-1**.

TABLE E-1: PROJECT TRAFFIC GENERATION

Proposed							AM				PM	
Land Use	Rate	Size & Units	ADT	%	Split		IN	OUT	%	Split	IN	OUT
Residential - Single Family	10 /DU	83 DU	**830**	8%	0.3	0.7	**20**	**46**	10%	0.7 0.3	**58**	**25**
					Peak Hour Totals:		*66*				*83*	

Source: SANDAG *Brief Guide of Vehicular Traffic Generation Rates for the San Diego Region,* April 2002.

DU-Dwelling Unit; ADT-Average Daily Traffic; Split-percent inbound and outbound.

Four scenarios were analyzed, which included Existing, Existing plus Project, Near Term, and Near Term plus Project. The project will not result in traffic impacts as defined in the Traffic Guidelines; therefore, no off-site improvements are recommended. However, the applicant will be paving Guajome Lake Road along the project frontage.

1.0 Introduction

As the project will generate less than 1,000 ADT, and is consistent with the General Plan, the City requires that the Project applicant prepare this Local Transportation Assessment (LTA) to determine if there are measurable transportation impacts based on the City of Oceanside local impact thresholds. This LTA provides a non-CEQA analysis based on the City of Oceanside Traffic Guidelines, which states as on page 6 (**Appendix A**).

> "A Local Transportation Assessment helps the City monitor development impacts on the transportation network and is similar to a Local Transportation Study (LTS). The main difference between the two studies is a Local Transportation Assessment (LTA) analyzes fewer scenarios than a Local Transportation Study (LTS). A Local Transportation Assessment (LTA) will be required if a project is less than 1,000 ADT but is anticipated to influence the surrounding environment. A project may be required to complete either a Local Transportation Study or Local Transportation Assessment based on the City's discretion but not both."

A Vehicle Miles Traveled (VMT) screening analysis was prepared to satisfy the California Environmental Quality Act (CEQA) requirements and included as part of a Project Information Form (PIF) that is included in **Appendix B**.

The proposed residential single family home subdivision of 83 lots is located at 2839 Guajome Lake Road in Oceanside, California. The project site of approximately 16.79 acres has one existing single family home. The regional location of the project is shown in **Figure 1** with a site plan shown in **Figure 2**.

As the Traffic Guidelines require, this report describes the existing roadway network in the vicinity of the project and includes a review of existing and proposed activities for weekday peak and daily traffic conditions when the project is completed. This study includes the following chapters:

1.0 Introduction
2.0 Alternative Transportation Modes Analysis
3.0 Vehicular Analysis

Figure 1: Project Location

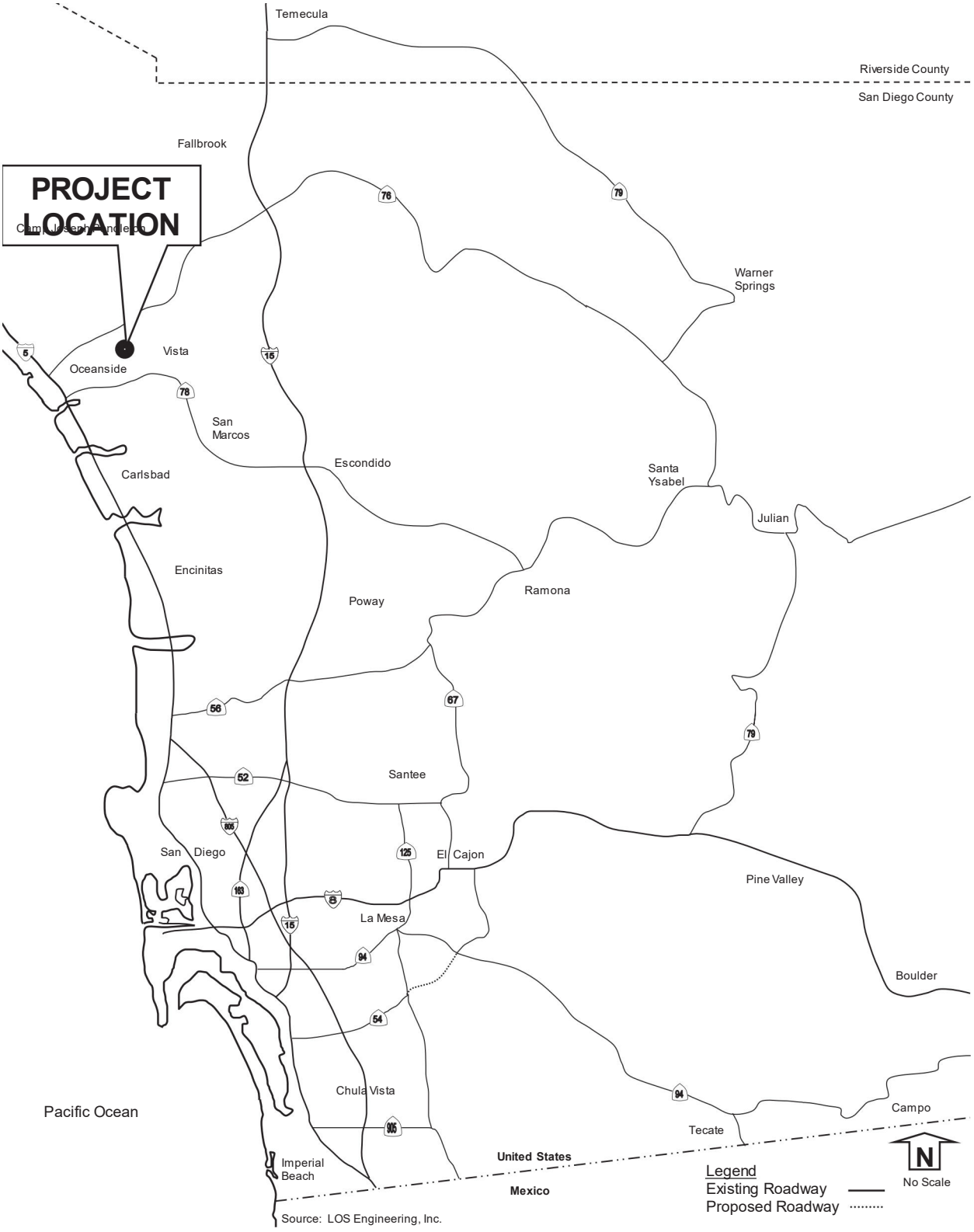
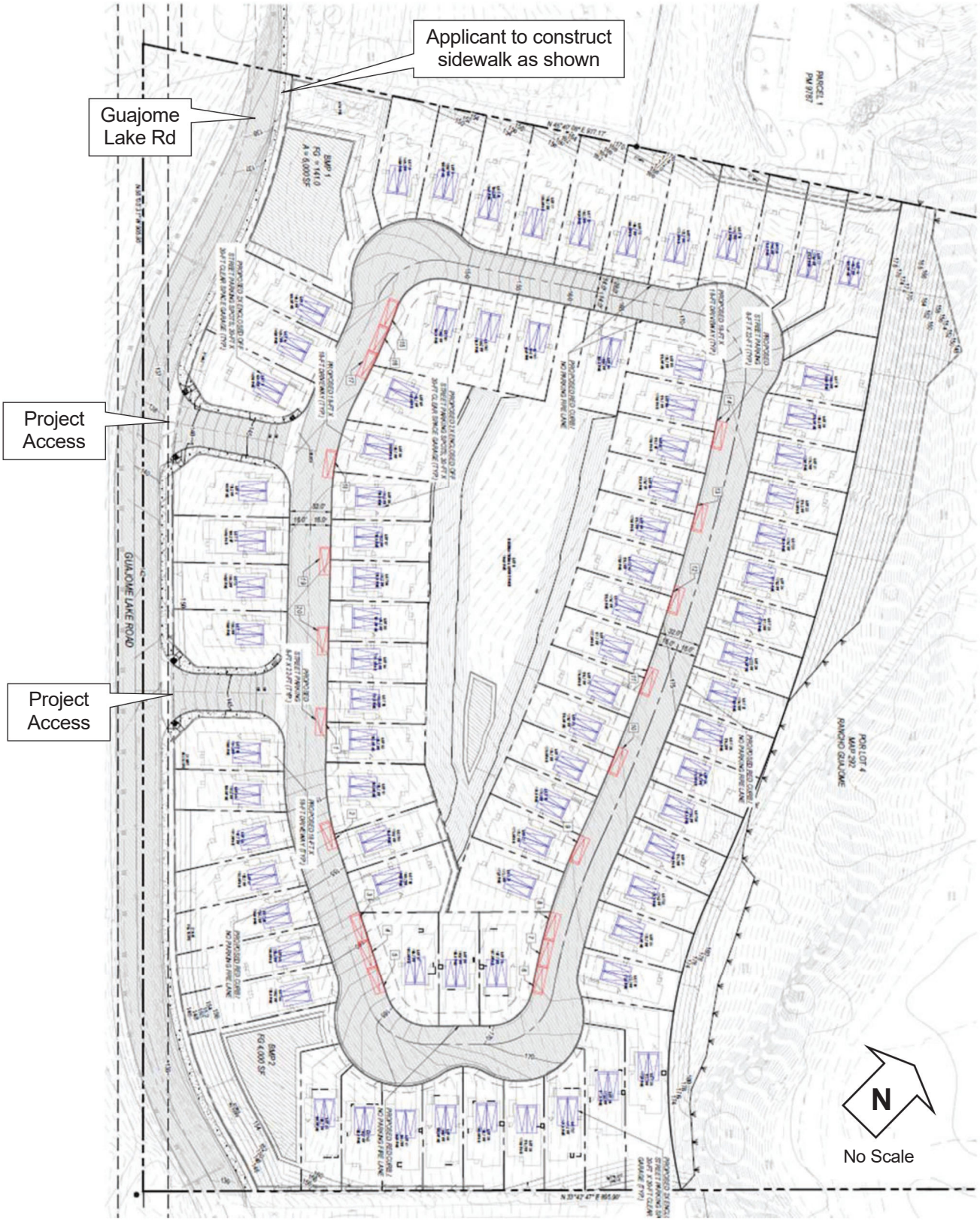


Figure 2: Site Plan



Source: PLSA

2.0 Alternative Transportation Modes Analysis

The following alternative transportation modes were analyzed based on criteria outlined in the City of Oceanside Traffic Guidelines, which states on page 22:

1) Pedestrian:
    a. The LTS/LTA shall include pedestrian infrastructure available including any opportunities or deficiencies such as path obstructions or missing sidewalk for ½ mile walking distance from project pedestrian access points.
    b. All pedestrian facilities directly connected to project access points or adjacent to the project development, extending in each direction to the nearest intersection with a classified roadway or connection with a Class I path.
    c. Facilities connecting to transit stops within two blocks of the project.
    d. Only facilities on the side of the project or along the walking route to transit stop.

2) Bicycle:
    a. The LTS/LTA shall include a discussion of bicycle infrastructure available including any opportunities or deficiencies such as bike lanes, bike buffers, or bike boxes. This section must also include discussion of what is planned based on City and regional documentation. The extents are as follows:
        i. All roadways adjacent to the project, extending in each direction to the nearest intersection with a classified roadway or with a Class I path.
        ii. Both directions of travel should be evaluated.

3) Transit:
    a. The LTS/LTA shall identify any transit stops or routes existing and planned near the project site.
    b. This section shall also include a discussion and evaluation of transit stop amenities within ½ mile of each pedestrian access point.

2.1 Pedestrian

The pedestrian analysis consists of documenting pedestrian infrastructure available including any opportunities or deficiencies such as path obstructions or missing sidewalk from the project access points extending to a classified roadway, to the nearest intersection with a classified roadway, to a connection with a Class I path, and to transit stops within two blocks of the project. Only facilities on the street side of the project were analyzed as follows:

> Guajome Lake Road generally does not have sidewalks from SR-76 to Ramona Dr. There are a few sections of sidewalks along parcels that have been developed that front this roadway.

The pedestrian elements are shown in **Figure 3**.

Figure 3: Pedestrian Elements

Source: Google Maps

The project applicant will be constructing a sidewalk on Guajome Lake Road along the project frontage on the project side of the roadway.

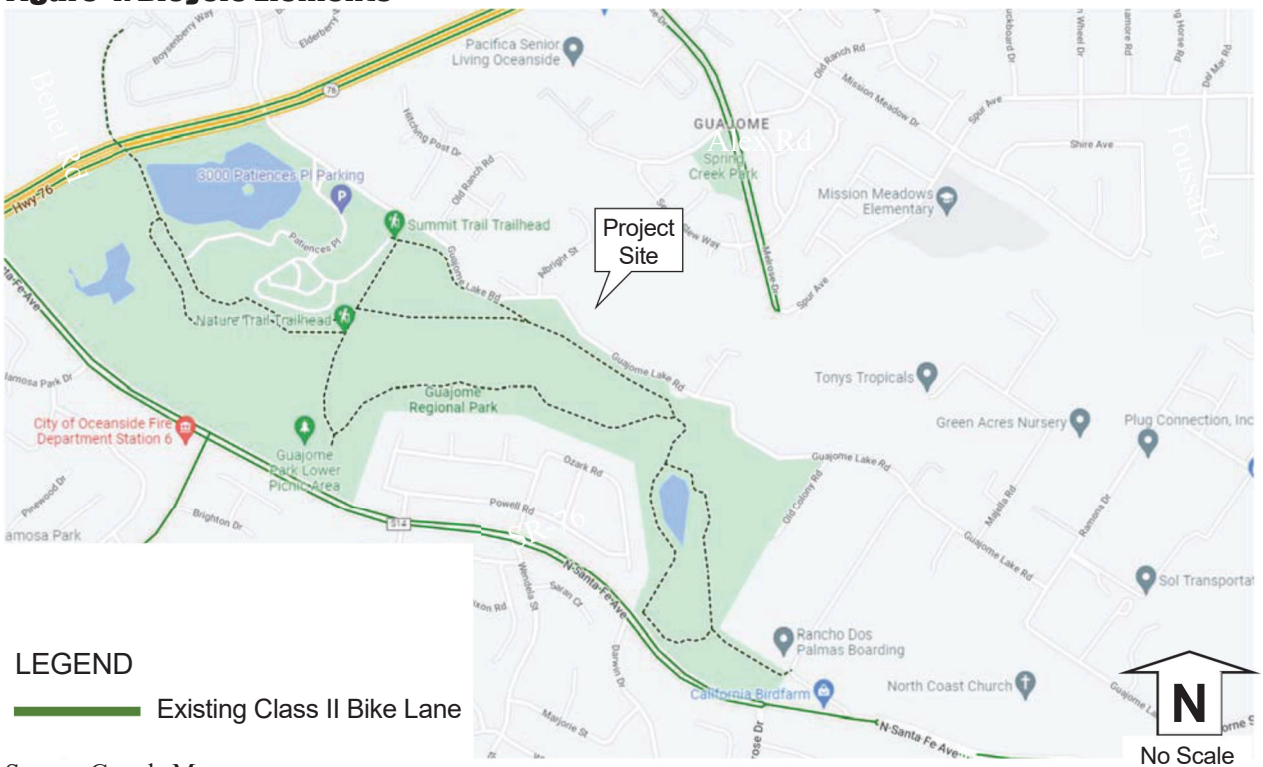
2.2 Bicycle

The bicycle analysis consists of documenting bicycle infrastructure available including any opportunities or deficiencies such as bike lanes, bike buffers, or bike boxes from the project access points extending in each direction on both sides of the roadway to the nearest intersection with a classified roadway or connection with a Class I path.

> Guajome Lake Rd does not have an existing nor proposed bike lane identified in the *City of Oceanside Bicycle Master Plan 2017 Update* report (**Appendix C**).

No bicycle improvements are proposed. Existing bicycle elements are shown in **Figure 4**.

Figure 4: Bicycle Elements



Source: Google Maps

2.3 Transit

The transit analysis includes identifying the transit routes and stops within ½ mile of each project pedestrian access point. There are no bus stops within ½ mile walking distance of the project site. The closest transit route is Bus Route 303 along N. Santa Fe Rd, which is approximately1.3 miles walking distance from the project site.

3.0 Vehicular Analysis

This vehicular analysis was based on criteria outlined in the City of Oceanside Traffic Guidelines, which states on page 6:

> A Local Transportation Assessment (LTA) will be required to analyze the following scenarios based on the thresholds identified for the project's ADT.
>
> - A project that generates between 200-500 ADT will be required to analyze existing conditions and existing conditions plus project.
> - A project that generates between 500-1,000 ADT will be required to analyze existing conditions, existing conditions plus project, existing conditions plus near-term cumulative projects, and existing conditions plus near-term cumulative projects plus project

The City of Oceanside Traffic Guidelines also define the study area on page 22 as follows:

> All signalized intersections and signalized project driveways shall be analyzed if:
> The project will add 50 or more peak hour (final cumulative) trips in either direction
>
> All unsignalized intersections and unsignalized project driveways shall be analyzed if:
> The project will add 50 or more peak hour (final cumulative) trips in either direction
>
> All freeway ramp intersections and signalized project driveways shall be analyzed if:
> The project will add 20 or more peak hour (final cumulative) trips in either direction

The study requirements can also be identified by City staff.

3.1 Study Scenarios and Study Area

Based on the Traffic Guidelines, the following scenarios were analyzed based on the project generating between 500-1,000 ADT:

1) Existing Conditions
2) Existing plus Project Conditions
3) Near Term (Existing + Cumulative) Conditions
4) Near Term (Existing + Cumulative) plus Project Conditions

Based on the Traffic Guidelines, the following intersections were analyzed:

1) Guajome Lake Road/N. Project Driveway (project adds > 50 peak hour directional trips)
2) Guajome Lake Road/S. Project Driveway (project adds > 50 peak hour directional trips)

Based on the PIF, the following street segment was analyzed:

1) Guajome Lake Road along the project frontage

3.2 Analysis Criteria

The analyses prepared for this study were based on the *Highway Capacity Manual* (HCM) operations analysis using Level of Service (LOS) evaluation criteria. The operating conditions of the study intersections, street segments, and freeway segments were measured using the HCM LOS designations, which ranges from A through F. LOS A represents the best operating condition and LOS F denotes the worst operating condition. The LOS criteria for each roadway component are described below.

3.2.1 Intersections

The study intersections were analyzed based on the **operational analysis** outlined in the 6th Ed HCM using existing signal timing data. This process defines LOS in terms of **average control delay** per vehicle measured in seconds. LOS at the intersections were calculated using the computer software program Synchro 10 (Trafficware Corporation). The 6th Ed HCM LOS for the range of delay by seconds for un-signalized and signalized intersections is described in **Table 3**.

TABLE 3: INTERSECTION LEVEL OF SERVICE DEFINITIONS (6TH EDITION HCM)

Level of Service	Un-Signalized (TWSC and AWSC) Control Delay (sec/veh where v/c ≤ 1)	Signalized Control Delay (sec/veh where v/c ≤ 1)
A	0-10	≤ 10
B	> 10-15	> 10-20
C	> 15-25	> 20-35
D	> 25-35	> 35-55
E	> 35-50	> 55-80
F	> 50	> 80

TWSC: Two Way Stop Control. AWSC: All Way Stop Control. Source: 6th Edition HCM (exhibit 20-2 for two way stop control, exhibit 21-8 for all way stop control, and exhibit 19-8 for signalized intersections).

3.2.2 Street Segments

The street segments were analyzed based on the functional classification of the roadway using the City of Oceanside *Average Daily Vehicle Trips* capacity lookup table. The roadway segment capacity and LOS standards used to analyze street segments are summarized in **Table 4**.

TABLE 4: STREET SEGMENT DAILY CAPACITY AND LOS (CITY OF OCEANSIDE)

Circulation Element Road Classification	Lanes	LOS A	LOS B	LOS C	LOS D	LOS E
Expressway	6	<30,000	<42,000	<60,000	<70,000	<80,000
Expressway	4	<25,000	<35,000	<50,000	<55,000	<60,000
Prime Arterial	6	<25,000	<35,000	<50,000	<55,000	<60,000
6-Lane Major Arterial	6	<20,000	<28,000	<40,000	<45,000	<50,000
5-Lane Major Arterial	5	<17,500	<24,500	<35,000	<40,000	<45,000
4-Lane Major Arterial	4	<15,000	<21,000	<30,000	<35,000	<40,000
Secondary Collector with TWLTL	4	<10,000	<14,000	<20,000	<25,000	<30,000
Secondary Collector no TWLTL	4	<9,000	<13,000	<18,000	<22,000	<25,000
Collector – Commercial Fronting	2	<5,000	<7,000	<10,000	<13,000	<15,000
Collector – Residential Fronting	2	<4,000	<5,500	<7,500	<9,000	<10,000
Local Street	2	na	na	<2,200*	na	na

Source: City of Oceanside *Traffic Impact Analysis Guidelines for Vehicle Miles Traveled (VMT) and Level of Service Assessment*, August 2020. * City of Oceanside General Plan *Circulation Element*, September 2012 applied.

3.2.3 Transportation Impact Thresholds and Need for Roadway Improvements

A project Owner/Permittee may be required to provide an off-site improvement if the project traffic exceeds the City of Oceanside Traffic Guidelines defined thresholds as shown in **Table 5**.

TABLE 5: DETERMINATION OF THE NEED FOR ROADWAY IMPROVEMENTS

Level of Service with Project	Allowable Increase Due to Project Effect				
	Freeways	Roadway Segments		Intersections	Ramp Metering
	V/C	V/C	Speed (mph)	Delay (sec.)	Delay (min.)
E & F	0.01	0.02	1	2	2

Source: City of Oceanside *Traffic Impact Analysis Guidelines for Vehicle Miles Traveled (VMT) and Level of Service Assessment* (August 2020), page 25.

A project effect is considered a non-CEQA transportation impact based on the City's Traffic Guidelines and State law. The Traffic Guidelines define how a project's non-CEQA traffic effect/transportation impact on the roadway system is considered to justify the need for roadway improvements. If a project causes the values identified in Table 5 above to be exceeded, the City will consider roadway improvements as follows on a case by case basis:

1) Improvements should be consistent with the General Plan.

2) Improvements for transit, bike and pedestrian facilities should be given priority in Transit Priority Areas or Smart Growth Opportunity Areas as identified by SANDAG.

3) Projects in Transit Priority Areas or Smart Growth Opportunity Areas as identified by SANDAG, that are consistent with the General Plan at the time of project application, should not be denied due to the inability to provide roadway improvements (i.e., existing right of way is constrained, etc.).

3.3 Existing Conditions

This section describes the study area street system, existing daily roadway and peak hour intersection traffic volumes and existing LOS results.

3.3.1 Existing Street System

In the vicinity of the project, the following roadways were analyzed as part of this study, which are described below. The roadway classification was obtained from the City of Oceanside General Plan *Circulation Element*, September 2012 (excerpts included in **Appendix D**).

Guajome Lake Rd south of SR-76 is classified as a *Collector* in the *Circulation Element*. This roadway is constructed as a paved two-lane roadway (one travel lane in each direction) from SR-76 to Albright St. The posted speed limit is 25 MPH. South of Albright St, Guajome Lake Rd is an un-paved roadway for a distance of approximately 2,000 feet after which Guajome Lake Road resumes as a 2 lane paved roadway. The lowest city segment classification of Local Street with a 2,200 ADT LOS C threshold was applied for the unpaved section along the project frontage. After the applicant paves the roadway along the project frontage, a Collector capacity of 7,500 ADT LOS C threshold can be applied.

3.3.2 Existing Traffic Volumes and LOS Analyses

Existing 7-9 AM and 4-6 PM peak hour volumes and daily traffic volumes were collected on Guajome Lake Rd along the project frontage on Thursday April 14, 2022.

Existing traffic volumes are included in **Appendix E**. The existing roadway conditions are shown in **Figure 7**. Existing AM, PM, and daily volumes are shown in **Figure 8.** The project site is mostly vacant land except for one house; therefore, no delay nor LOS can be reported for the two proposed project driveways because they do not exist.

Figure 7: Existing Roadway Conditions

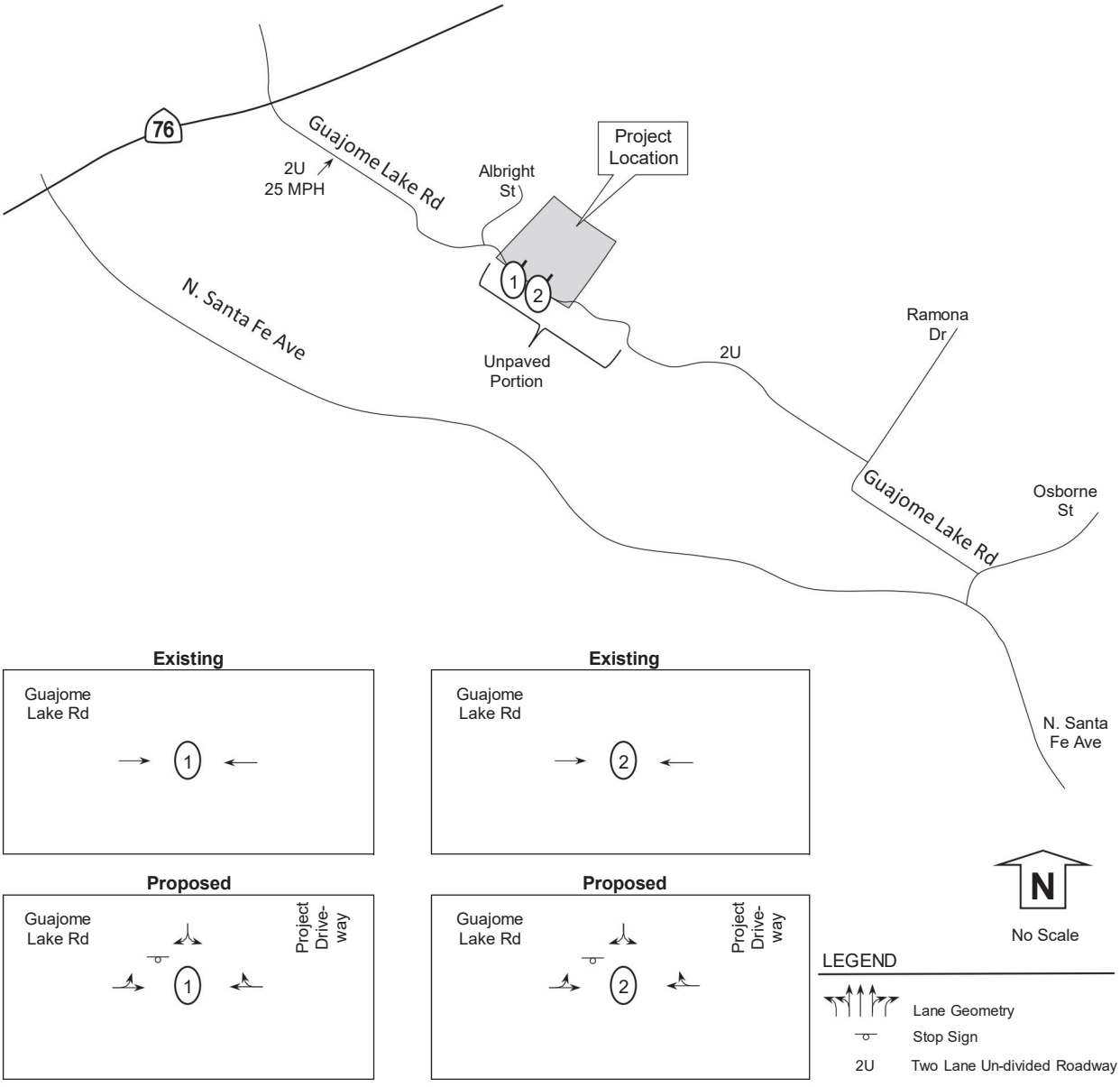
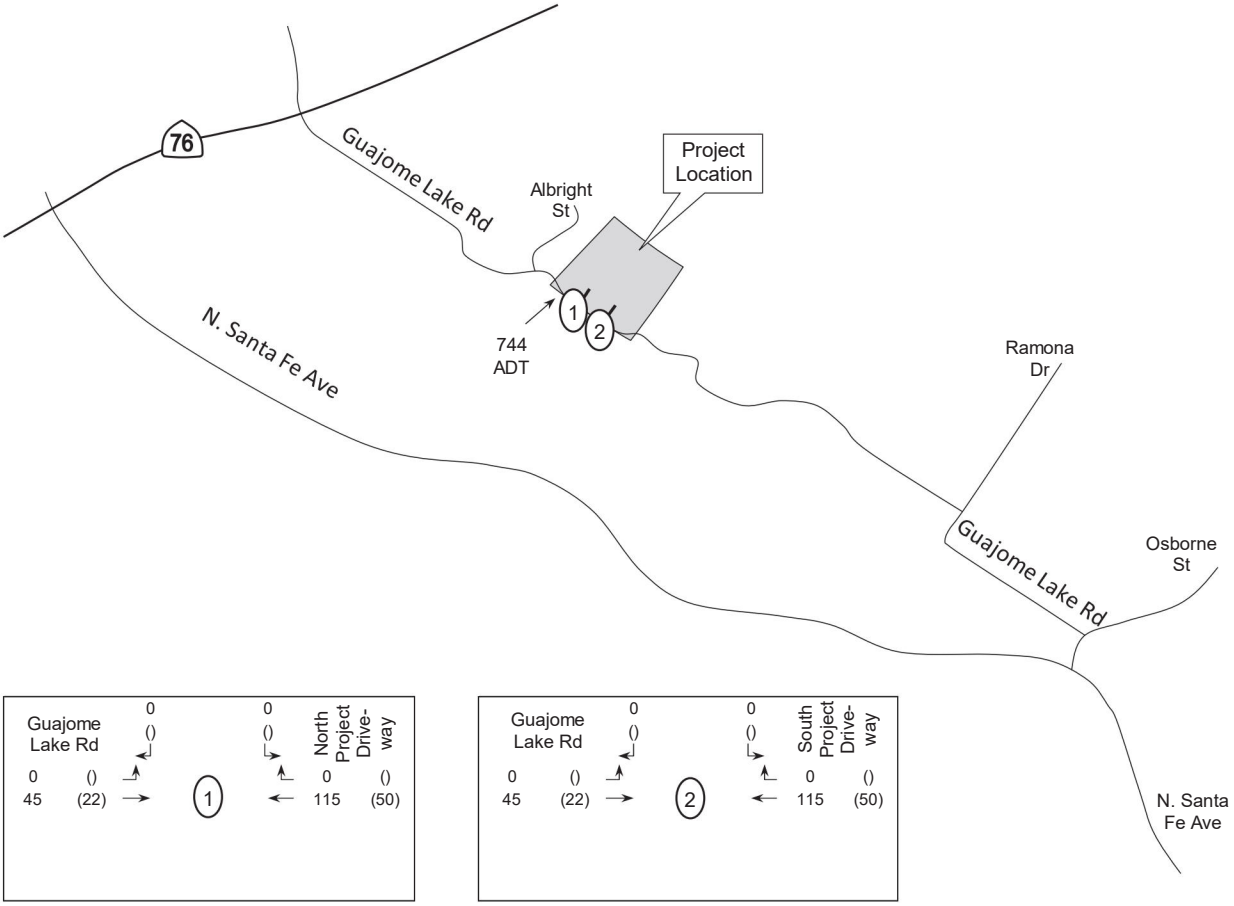


Figure 8: Existing Volumes



LEGEND

XX	AM peak hour volumes at intersections
(YY)	PM peak hour volumes at intersections
Z,ZZZ	ADT volumes shown along segments
(#)	Intersection Reference Number to LOS Tables
——	Existing Roadways

N

No Scale

The study intersections do not exist without the project; therefore, no intersection LOS is reported under this scenario as shown in **Table 6.** The segment LOS for the existing conditions of a dirt roadway is shown in **Table 7**.

TABLE 6: EXISTING INTERSECTION LEVEL OF SERVICE

Intersection and (Analysis)[1]	Movement	Study Period	Existing	
			Delay[2]	LOS[3]
1) Guajome Lake Rd at	SB	AM	DNE	NA
Project N. Driveway (U)	SB	PM	DNE	NA
2) Guajome Lake Rd at	SB	AM	DNE	NA
Project S. Driveway (U)	SB	PM	DNE	NA

Notes: 1) Intersection Analysis (U) Unsignalized. 2) Delay - HCM Average Control Delay in seconds. 3) LOS: Level of Service. DNE: Does Not Exist. NA: Not Applicable.

TABLE 7: EXISTING SEGMENT LEVEL OF SERVICE

Segment	Functional Classification	LOS C Capacity	Existing		
			Daily Volume	V/C	LOS
Guajome Lake Rd					
Southeast of Albright St	Dirt Roadway	2,200	744	0.338	C

Notes: Daily volume is a 24 hour volume. LOS: Level of Service. V/C: Volume to Capacity ratio.

Under Existing conditions, the study elements were calculated to operate at LOS C or better.

3.4 Project Traffic Generation

The proposed residential single family home subdivision with 83 lots is located at 2839 Guajome Lake Road in Oceanside, California. The project site of approximately 16.79 acres has one existing single family home.

The project traffic generation was calculated using SANDAG trip rates from the *Brief Guide of Vehicular Traffic Generation Rates for the San Diego Region*, April 2002. Copies of SANDAG rates are included in **Appendix F**. Using SANDAG traffic generation rates, the project is calculated to generate 830 ADT, 66 AM peak hour trips (20 inbound and 46 outbound), and 83 PM peak hour trips (58 inbound and 25 outbound) as shown in **Table 8**.

TABLE 8: PROJECT TRAFFIC GENERATION

Proposed							AM				PM	
Land Use	Rate	Size & Units	ADT	%	Split		IN	OUT	%	Split	IN	OUT
Residential - Single Family	10 /DU	83 DU	**830**	8%	0.3	0.7	**20**	**46**	10%	0.7 0.3	**58**	**25**
					Peak Hour Totals:		*66*				*83*	

Source: SANDAG *Brief Guide of Vehicular Traffic Generation Rates for the San Diego Region,* April 2002.

DU-Dwelling Unit; ADT-Average Daily Traffic; Split-percent inbound and outbound.

3.4.1 Project Access

The project will have two driveways that will connect with Guajome Lake Rd.

3.4.2 Project Distribution and Assignment

Project trips were distributed to the adjacent roadway network using traffic engineering judgement and factors such as proximity to SR-76, local productions, and attractions. The project distribution is shown in **Figure 9** while the project assignment is shown in **Figure 10.**

Figure 9: Project Distribution

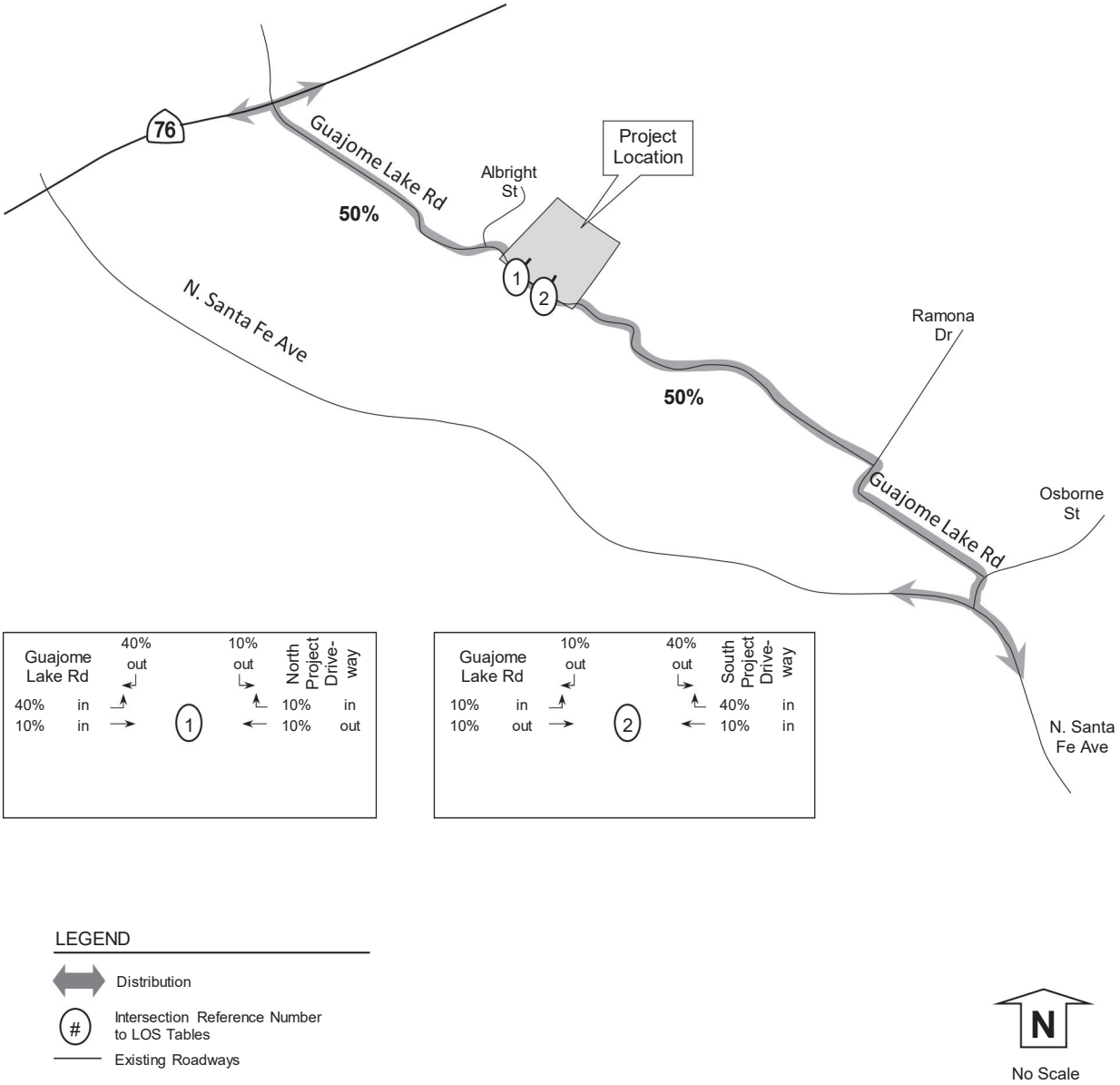
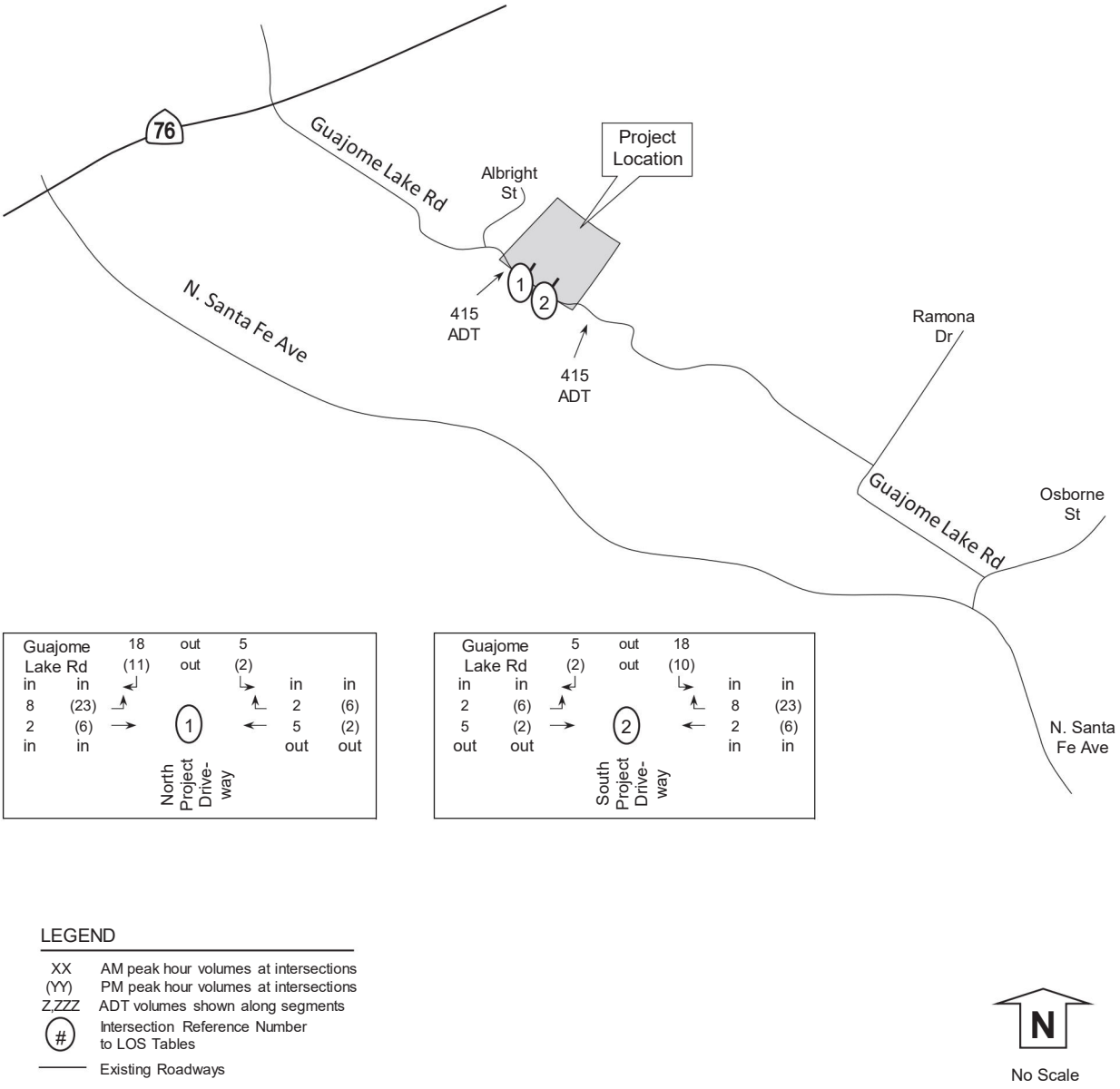


Figure 10: Project Volumes



3.5 Existing plus Project Conditions

This scenario analyzes the addition of project traffic onto the existing background traffic for AM, PM, and daily traffic conditions. The peak hour intersection volumes and daily traffic volumes for this scenario of existing with project is shown in **Figure 11**. The intersection LOS calculated with the addition of project traffic is shown in **Table 9**. The segment LOS is calculated under existing conditions as a dirt roadway without the project and as a paved roadway with the project as shown in **Table 10.** Intersection LOS worksheets are included in **Appendix G**.

TABLE 9: EXISTING PLUS PROJECT INTERSECTION LEVEL OF SERVICE

Intersection and	Movement	Study	Existing		Existing + Project			
(Analysis)[1]		Period	Delay[2]	LOS[3]	Delay[2]	LOS[3]	Delta[4]	Impact?[5]
1) Guajome Lake Rd at	SB	AM	DNE	NA	9.2	A	NA	No
Project N. Driveway (U)	SB	PM	DNE	NA	8.8	A	NA	No
2) Guajome Lake Rd at	SB	AM	DNE	NA	9.5	A	NA	No
Project S. Driveway (U)	SB	PM	DNE	NA	9.1	A	NA	No

Notes: 1) Intersection Analysis - (S) Signalized, (U) Unsignalized. 2) Delay - HCM Average Control Delay in seconds. 3) LOS: Level of Service. 4) Delta is the increase in delay from project. 5) Direct Impact if project traffic exceeds threshold. DNE: Does not exist. NA: Not Applicable.

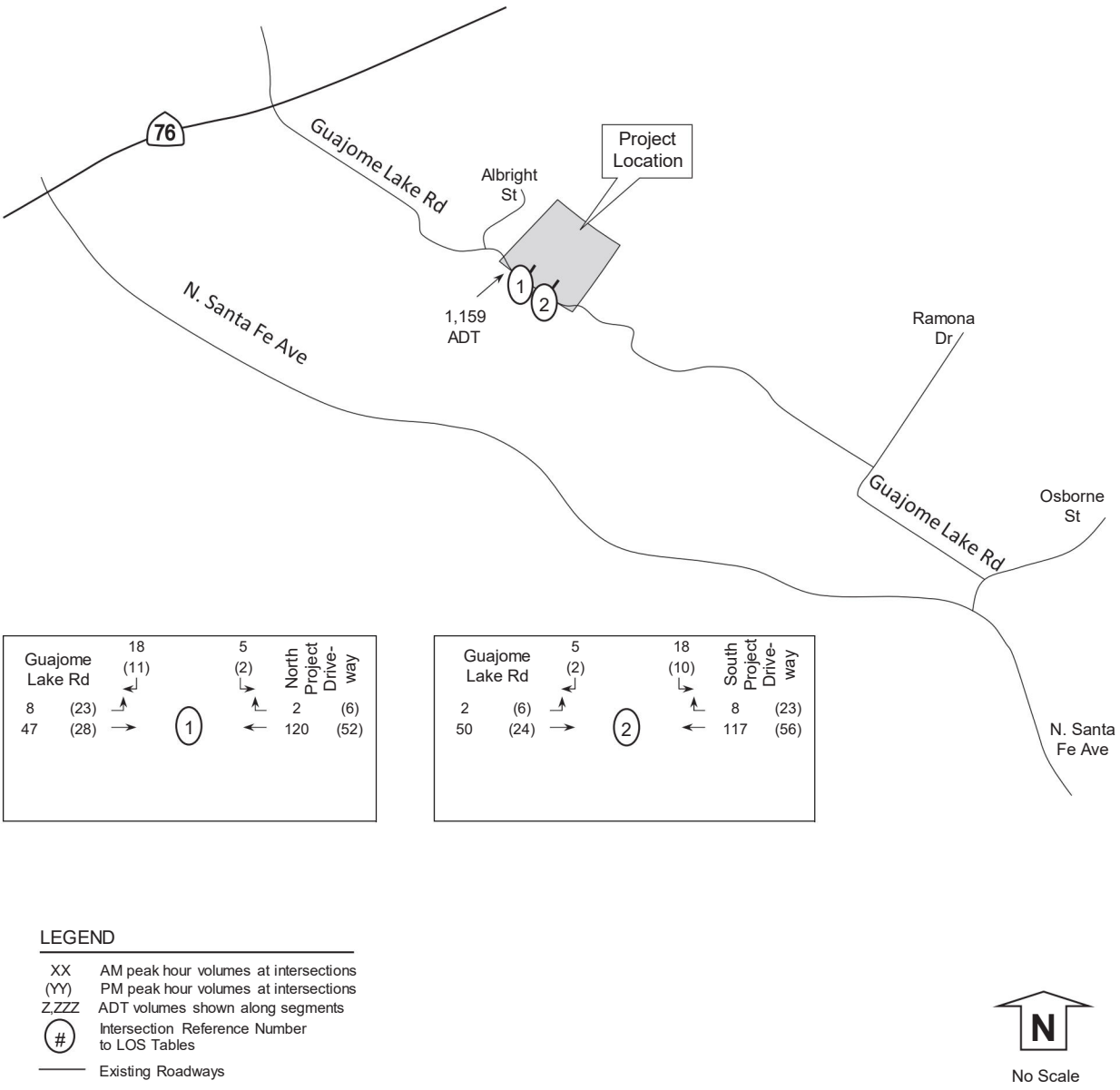
TABLE 10: EXISTING PLUS PROJECT SEGMENT LEVEL OF SERVICE

	Functional		Existing			Project	Existing + Project				
Segment	Classification	LOS C Capacity	Daily Volume	V/C	LOS	Daily Volume	Daily Volume	V/C	LOS	Change in V/C	Project Impact?
Guajome Lake Rd											
Southeast of Albright St	Dirt Roadway	2,200	744	0.338	C						
Southeast of Albright St	Collector	7,500				415	1,159	0.155	A	0.155	No

Notes: Daily volume is a 24 hour volume. LOS: Level of Service. V/C: Volume to Capacity ratio.

Under Existing plus Project conditions, the study elements were calculated to operate at LOS A or better. The project will not result in traffic impacts as defined in the Traffic Guidelines; therefore, no off-site improvements are recommended.

Figure 11: Existing plus Project Volumes

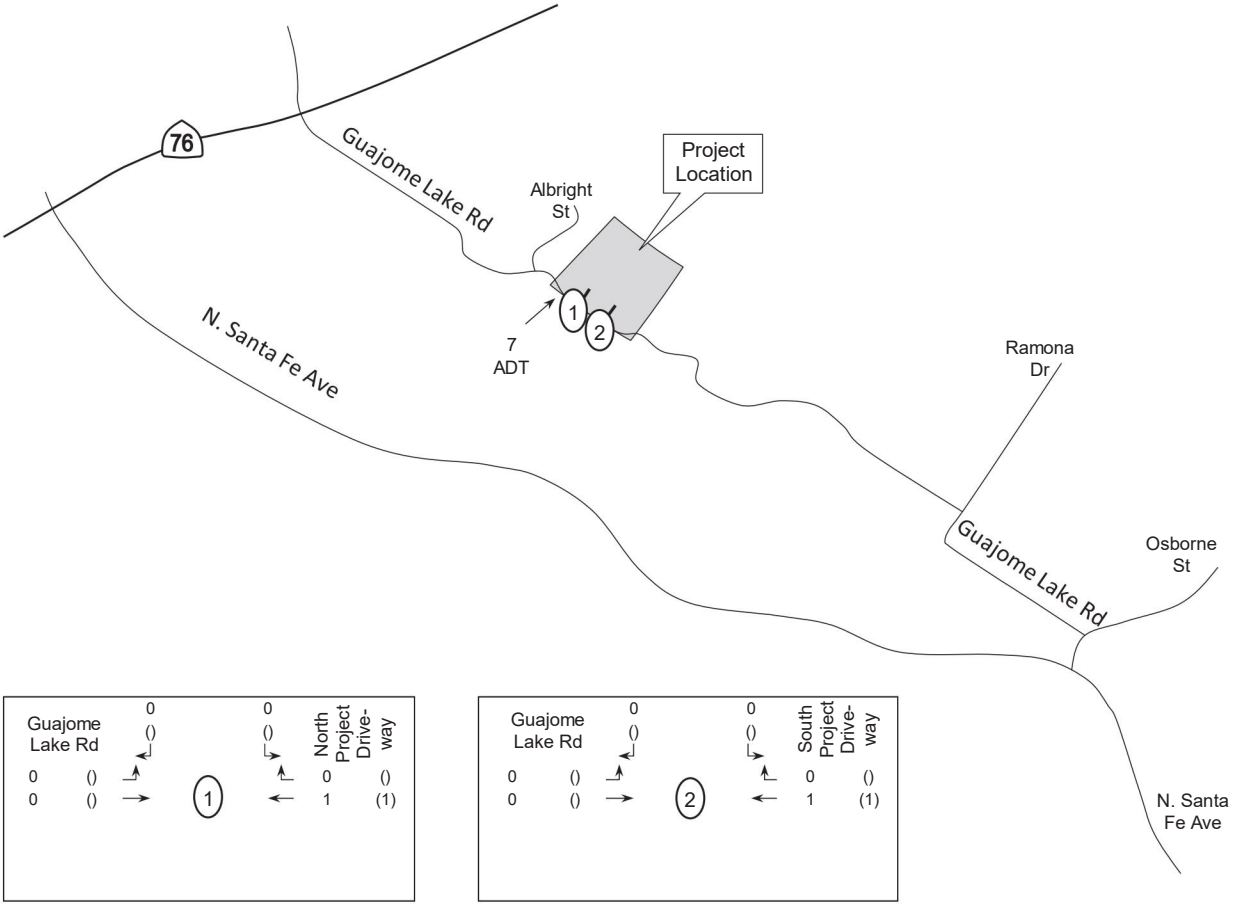


3.6 Cumulative Projects

Cumulative projects are other proposed projects that once completed may add traffic to the study roadways. Upon review of the nearby cumulative projects, none on the cumulative project are forecasted nor anticipated to add traffic to Guajome Lake Rd southeast of Albright St. Therefore, a 1% growth factor was added to existing volumes to represent cumulative volumes. The 1% growth factor is based on engineering judgement.

The cumulative project traffic volumes are shown on **Figure 12**.

Figure 12: Cumulative Project Volumes



LEGEND

XX	AM peak hour volumes at intersections
(YY)	PM peak hour volumes at intersections
Z,ZZZ	ADT volumes shown along segments
(#)	Intersection Reference Number to LOS Tables
——	Existing Roadways

N

No Scale

3.7 Near Term (Existing + Cumulative) Conditions

This scenario analyzes the addition of cumulative project traffic onto the existing traffic for AM, PM, and daily traffic conditions. The peak hour intersection volumes and daily traffic volumes for this scenario is shown in **Figure 13**. The study intersections do not exist without the project; thus no intersection LOS is reported under this scenario as shown in **Table 11.** The segment LOS is calculated under near term conditions as a dirt roadway without the project as shown in **Table 12.**

TABLE 11: NEAR TERM (EXISTING + CUMULATIVE) INTERSECTION LEVEL OF SERVICE

Intersection and (Analysis)[1]	Movement	Peak Hour	Near Term (Existing + Cumulative) Delay[2]	LOS[3]
1) Guajome Lake Rd at	SB	AM	DNE	NA
Project N. Driveway (U)	SB	PM	DNE	NA
2) Guajome Lake Rd at	SB	AM	DNE	NA
Project S. Driveway (U)	SB	PM	DNE	NA

Notes: 1) Intersection Analysis - (S) Signalized, (U) Unsignalized. 2) Delay - HCM Average Control Delay in seconds. 3) LOS: Level of Service. DNE: Does Not Exist. NA: Not Applicable.

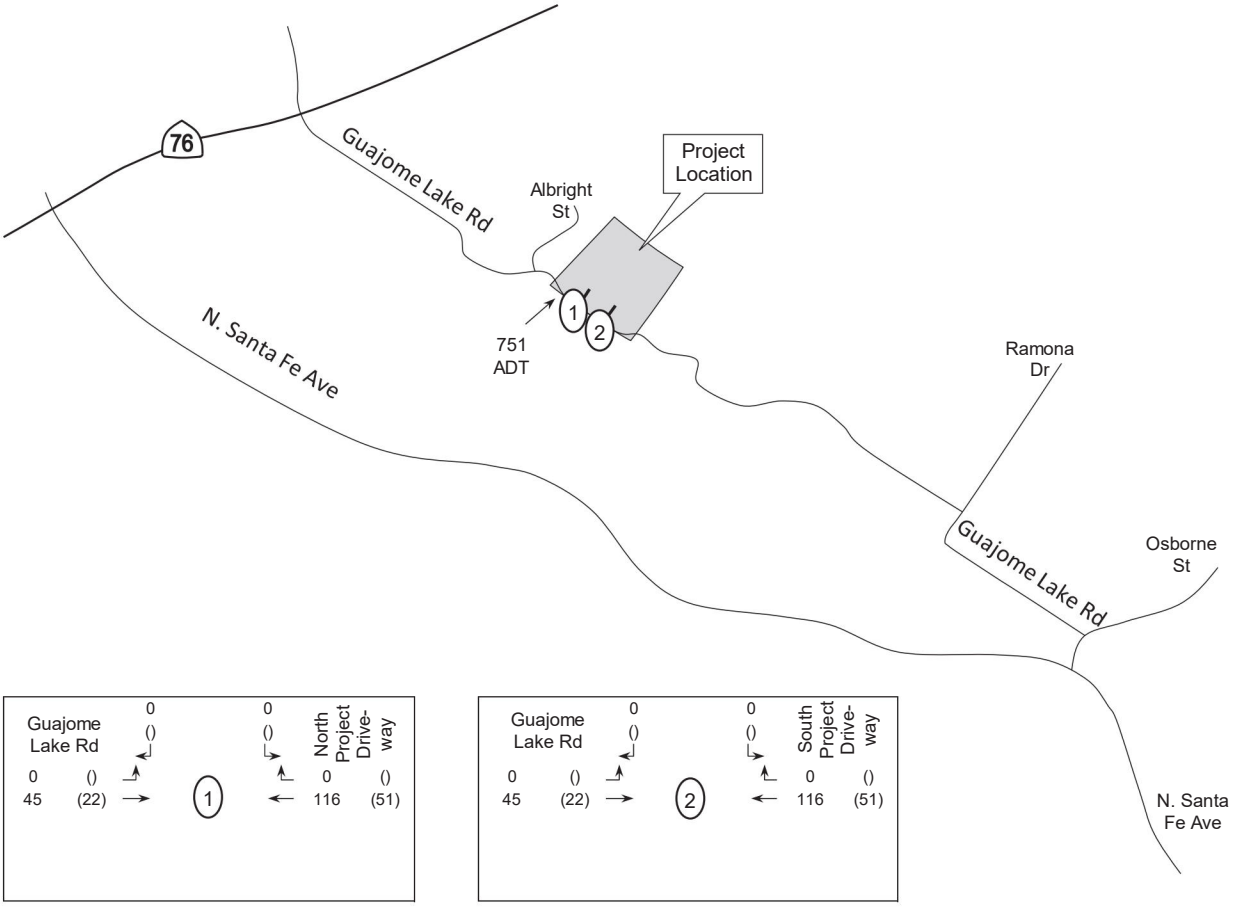
TABLE 12: NEAR TERM (EXISTING + CUMULATIVE) SEGMENT LEVEL OF SERVICE

Daily	Functional Classification	LOS C Capacity	Near-Term (E+C) Daily Volume	V/C	LOS
Guajome Lake Rd					
Southeast of Albright St	Dirt Roadway	2,200	751	0.341	C

Notes: Daily volume is a 24 hour volume. LOS: Level of Service. V/C: Volume to Capacity ratio.

Under Near Term (Existing + Cumulative) conditions, the study elements were calculated to operate at LOS C or better.

Figure 13: Near Term (Existing + Cumulative) Volumes



LEGEND

XX	AM peak hour volumes at intersections
(YY)	PM peak hour volumes at intersections
Z,ZZZ	ADT volumes shown along segments
(#)	Intersection Reference Number to LOS Tables
——	Existing Roadways

N

No Scale

3.8 Near Term (Existing + Cumulative) plus Project Conditions

This scenario analyzes the addition of Project traffic onto Near Term (Existing + Cumulative) conditions for AM, PM, and daily traffic conditions. The peak hour intersection volumes and daily traffic volumes for this scenario is shown in **Figure 14**. The intersection LOS is shown in **Table 13.** The segment LOS is calculated under near term conditions as a dirt roadway without the project and as a paved roadway with the project as shown in **Table 14.** Intersection LOS worksheets are included in **Appendix H**.

TABLE 13: NEAR TERM (EXISTING + CUMULATIVE) PLUS PROJECT INTERSECTION LEVEL OF SERVICE

Intersection and	Movement	Peak	Existing + Cumulative		Existing + Cumulative + Project			
(Analysis)[1]		Hour	Delay[2]	LOS[3]	Delay[2]	LOS[3]	Delta[4]	Impact?[5]
1) Guajome Lake Rd at	SB	AM	DNE	NA	9.2	A	NA	No
Project N. Driveway (U)	SB	PM	DNE	NA	8.8	A	NA	No
2) Guajome Lake Rd at	SB	AM	DNE	NA	9.5	A	NA	No
Project S. Driveway (U)	SB	PM	DNE	NA	9.1	A	NA	No

Notes: 1) Intersection Analysis - (S) Signalized, (U) Unsignalized. 2) Delay - HCM Average Control Delay in seconds. 3) LOS: Level of Service. 4) Delta is the increase in delay from project. 5) Impact if project traffic exceeds threshold. DNE: Does Not Exist. NA: Not Applicable.

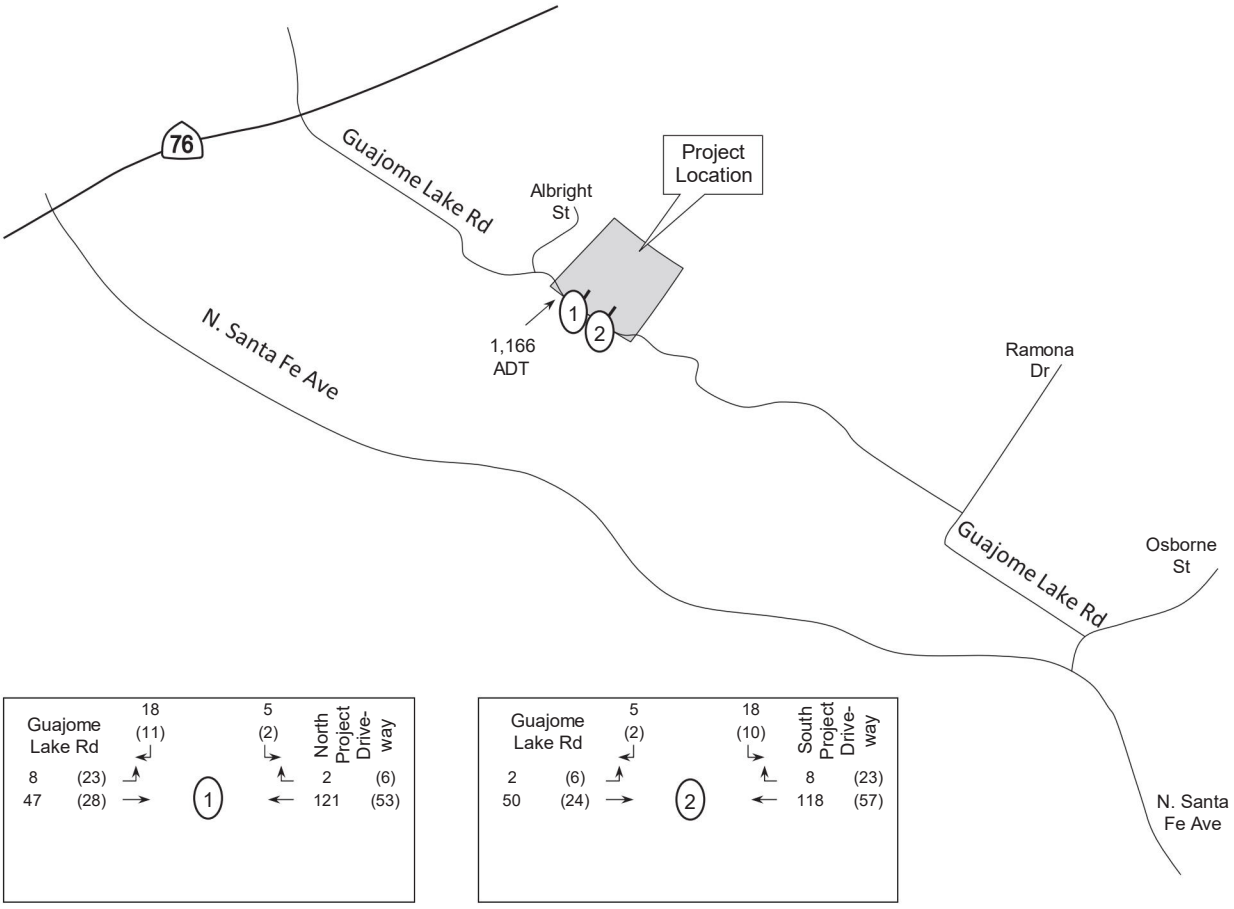
TABLE 14: NEAR TERM (EXISTING + CUMULATIVE) PLUS PROJECT SEGMENT LEVEL OF SERVICE

	Functional		Near-Term (E+C)			Project	Near-Term with Project (E+C+P)				
Segment	Classification	LOS C Capacity	Daily Volume	V/C	LOS	Daily Volume	Daily Volume	V/C	LOS	Change in V/C	Project Impact?
Guajome Lake Rd											
Southeast of Albright St	Dirt Roadway	2,200	751	0.341	C						
Southeast of Albright St	Collector	7,500				415	1,166	0.155	A	0.155	No

Notes: Daily volume is a 24 hour volume. LOS: Level of Service. V/C: Volume to Capacity ratio.

Under Near Term (Existing + Cumulative) plus Project conditions, the study elements were calculated to operate at LOS A. The project will not result in traffic impacts as defined in the Traffic Guidelines; therefore, no off-site improvements are recommended.

Figure 14: Near Term (Existing + Cumulative) plus Project Volumes



LEGEND

XX	AM peak hour volumes at intersections
(YY)	PM peak hour volumes at intersections
Z,ZZZ	ADT volumes shown along segments
(#)	Intersection Reference Number to LOS Tables
———	Existing Roadways

N

No Scale

END OF REPORT

Appendix A

Excerpts from City of Oceanside VMT and LOS Guidelines

City of Oceanside

Traffic Impact Analysis Guidelines for

Vehicle Miles Traveled (VMT) and Level of Service Assessment

August 2020
Final Version

11.0 LOCAL TRANSPORTATION STUDY AND LOCAL TRANSPORTATION ASSESSMENT GUIDELINES

The City of Oceanside utilizes the Institute of Transportation Engineers (ITE) San Diego Regional Guidelines (May 2019) to establish thresholds and methodology for a Local Transportation Study (LTS). A Local Transportation Study is different from VMT analysis for CEQA purposes and may be required in addition to the VMT analysis or individually. A Local Transportation Study will analyze the projects influence on the surrounding intersections and roadway network utilizing level of service (LOS) for all project scenarios. The purpose of the LTS is to help quantify the local impact of the development and expected changes in transportation conditions. The LTS should include roadway, bicycle, pedestrian, and transit evaluations. The following sections identify the project requirements for a Local Transportation Study. The Local Transportation Study helps the City ensure the goals, objectives, and policies adopted by the City are supported and implemented while monitoring the capacity for the roadway networks.

Data should be collected during typical operation hours. Data should be recent and no more than 2 years old for an LTS. **The acceptable level of service for the City of Oceanside that is consistent with the adopted Circulation Element is LOS D.**

Minimum Threshold for Local Transportation Study

Based on the recommendations of the Institute of Transportation Engineers (ITE) for the San Diego section, **Table 8** indicates when a Local Transportation Study is required for the City. This is based on keeping consistent with the thresholds previously used and *SANDAG's Not So Brief Guide (2002) Trip Generation*.

Projects Consistent with the Adopted General Plan

The City's adopted General Plan represents the vision and goals the City has for the community. Projects that support these goals will adhere to the following LTS thresholds identified in Table 8.

Table 8 – Threshold for LTS for Projects Consistent with the Adopted General Plan

	LTS Analysis Not Needed	LTS Analysis Needed (1)
Average Daily Traffic Volume (ADT)	Less than 1,000 ADT	Greater than 1,000 ADT

(1) If ADT is equal to 1,000 ADT, an LTS is required.

A Local Transportation Study (LTS) will be required if a project exceeds 1,000 ADT and is consistent with the adopted General Plan.

Projects Inconsistent with the Adopted General Plan

The City's adopted General Plan represents the vision and goals the City has for the community. Projects that are not in support of the General Plan have a lower LTS threshold and will require a General Plan Amendment. The following LTS analysis thresholds for projects that are inconsistent are identified in **Table 9**.

Table 9 – Threshold for LTS for Projects Inconsistent with the Adopted General Plan

	LTS Analysis Not Needed	LTS Analysis Needed [1]
Average Daily Traffic Volume (ADT)	Less than 500 ADT	Greater than 500 ADT

(1) If ADT is equal to 500 ADT, an LTS is required.

A Local Transportation Study (LTS) will be required if a project exceeds 500 ADT and is inconsistent with the adopted General Plan.

The thresholds identified in Table 7 and Table 8 stem from the professional expertise and judgement of the ITE San Diego section. These thresholds keep consistent with regional practice and will help ensure developments will not overburden the transportation network.

If a project would add peak hour trips to any existing on- or off-ramp it is recommended to consult with the City and Caltrans to determine if an LTS would be required.

Study Scenarios

The following scenarios are included in an LTS and may be modified in agreement with the City Traffic Engineer.

- Existing Conditions
- Existing Conditions Plus Project
- Existing Conditions Plus Near-Term Cumulative Projects
- Existing Conditions Plus Near-Term Cumulative Projects Plus Project
- Buildout Conditions (2030)
- Buildout Conditions Plus Project

Local Transportation Assessment (LTA)

A Local Transportation Assessment (LTA) may be required instead of a Local Transportation Study depending on the size of the project. A helps the City monitor development impacts on the transportation network and is similar to a Local Transportation Study(LTS). The main difference between the two studies is a Local Transportation Assessment (LTA) analyzes fewer scenarios than a Local Transportation Study (LTS). A Local Transportation Assessment (LTA) will be required if a project is less than 1,000 ADT but is anticipated to influence the surrounding environment.

A Local Transportation Assessment (LTA) will be required to analyze the following scenarios based on the thresholds for identified for the project's ADT.

- **A project that generates between 200-500 ADT will be required to analyze existing conditions and existing conditions plus project.**

- **A project that generates between 500-1,000 ADT will be required to analyze existing conditions, existing conditions plus project, existing conditions plus near-term cumulative projects, and existing conditions plus near-term cumulative projects plus project.**

Transportation Modes to be Included for Discussion in the LTS/LTA

Pedestrian:

- The LTS/LTA shall include pedestrian infrastructure available including any opportunities or deficiencies such as path obstructions or missing sidewalk for ½ mile walking distance from project pedestrian access points.
- All pedestrian facilities directly connected to project access points or adjacent to the project development, extending in each direction to the nearest intersection with a classified roadway or connection with a Class I path
- Facilities connecting to transit stops within two blocks of the project
- Only facilities on the side of the project or along the walking route to transit stop
- Additional geographic areas may be included in certain cases to address special cases such as schools or retail centers

Bicycle:

- The LTS/LTA shall include a discussion of bicycle infrastructure available including any opportunities or deficiencies such as bike lanes, bike buffers, or bike boxes. This section must also include discussion of what is planned based on City and regional documentation. The extents are as follows:
    - All roadways adjacent to the project, extending in each direction to the nearest intersection with a classified roadway or with a Class I path
    - Both directions of travel should be evaluated

Transit:

- The LTS/LTA shall identify any transit stops or routes existing and planned near the project site. This section shall also include a discussion and evaluation of transit stop amenities within ½ mile of each pedestrian access point.

Vehicle:

All signalized intersections and signalized project driveways shall be analyzed if:

- The project will add 50 or more peak hour (final cumulative) trips in either direction

All unsignalized intersections and unsignalized project driveways shall be analyzed if:

- The project will add 50 or more peak hour (final cumulative) trips in either direction

All freeway ramp intersections and signalized project driveways shall be analyzed if:

- The project will add 20 or more peak hour (final cumulative) trips in either direction

Intersection Level of Service analysis should be conducted using the Highway Capacity Manual (HCM) Methodology. For signalized intersections, the methodology described in the HCM for signalized intersections is used. With this methodology, the average control delay per vehicle is estimated for each lane group and aggregated for each approach and for the intersection as a whole. The relationship between control delay per vehicle and LOS for signalized intersections is summarized in **Table 10**.

Table 10 – HCM Level of Service Description for Signalized Intersections

Level of Service	Description of Traffic Conditions	Control Delay (sec/veh)
A	Insignificant delays: no approach phase is fully utilized and no vehicle waits longer than one red indication	≤ 10
B	Minimal delays: an occasional approach phase is fully utilized. Drivers begin to feel restricted.	> 10 – 20
C	Acceptable delays: major approach phase may become fully utilized. Most drivers feel somewhat restricted.	> 25 – 35
D	Tolerable delays: Drivers may wait through more than one red indication. Queues may develop but dissipate rapidly without excessive delays.	> 35 – 55
E	Significant delays: Volumes approaching capacity. Vehicles may wait through several cycles and long vehicle queues form upstream.	> 55 – 80
F	Excessive delays: Represents conditions at capacity, with extremely long delays. Queues may block upstream intersections.	> 80

Source: Highway Capacity Manual, Transportation Research Board, 2010.

For unsignalized intersections, the methodology described in the HCM for unsignalized intersections is used. With this methodology, LOS is related to the control delay for each stop-controlled movement. The relationship between control delay per vehicle and LOS for unsignalized intersections is summarized in **Table 11**.

Table 11 – HCM Level of Service Description for Unsignalized Intersections

Level of Service	Description of Traffic Conditions	Control Delay (sec/veh)
A	No delay for stop-controlled approaches.	≤ 10
B	Operations with minor delay.	> 10 – 15
C	Operations with moderate delays.	> 15 – 25
D	Operations with some delays.	> 25 – 35
E	Operations with high delays and long queues.	> 35 – 50
F	Operation with extreme congestion, with very high delays and long queues unacceptable to most drivers.	> 50

Source: Highway Capacity Manual, Transportation Research Board, 2010.

Table 12 provides guidance on the levels of ADT that can be accommodated on various types of roadways, based on level of service.

Table 12 – Circulation Element Roadway Classification LOS & Capacity

Class	Lanes	Cross Section [1]	Level of Service (LOS)				
			A	B	C	D	E
Expressway	6	102/160 122/200	30,000	42,000	60,000	70,000	80,000
Expressway	4	102/160 122/200	25,000	35,000	50,000	55,000	60,000
Prime Arterial	6	104/124	25,000	35,000	50,000	55,000	60,000
6-Lane Major Arterial	6	104/124	20,000	28,000	40,000	45,000	50,000
5-Lane Major Arterial [2]	5	102/122	17,500	24,500	35,000	40,000	45,000
4-Lane Major Arterial	4	80/100	15,000	21,000	30,000	35,000	40,000
Secondary Collector (4 lanes with 2-way left turn lane)	4	64/84	10,000	14,000	20,000	25,000	30,000
Secondary Collector (4 lanes without 2-way left-turn lane, with left turn pockets	4	54/74, 60/80	9,000	13,000	18,000	22,000	25,000
Collector (commercial fronting, 2-lanes with 2-way left turn lane) [3]	2	50/70	5,000	7,000	10,000	13,000	15,000
Collector (residential streets in the Circulation Element or industrial fronting)	2	40/60, 50/70	4,000	5,500	7,500	9,000	10,000
Local Street (residential streets NOT in the Circulation Element	1	36/56, 40/60	–	–	2,400	–	–

(1) Cross sections are listed as curd-to-curb width/total right of way width, in feet.
(2) Vandegrift Boulevard is the only Circulation Element roadway designated as a 5-lane Major Arterial. It is not intended that other roadways be build to 5-lane Major Arterial standards.
(3) This capacity will also be assumed for a two-lane one-way collector.

Table 13 indicates when a project's effect on the roadway system is considered to justify the need for roadway improvements. That is, if a project's traffic effect causes the values in this table to be exceeded, roadway improvements should be considered as follows on a case by case basis:

- Improvements should be consistent with the General Plan
- Improvements for transit, bike and pedestrian facilities should be given priority in Transit Priority Areas or Smart Growth Opportunity Areas as identified by SANDAG.
- Projects in Transit Priority Areas or Smart Growth Opportunity Areas as identified by SANDAG, that are consistent with the General Plan at the time of project application, should not be denied due to the inability to provide roadway improvements (i.e. existing right of way is constrained, etc.)

Table 13 – Determination of the Need for Roadway Improvements

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

12.0 TRANSPORTATION DEMAND MANAGEMENT (TDM) STRATEGIES

In general, the goal of City Staff is to help Oceanside increase connectivity and level of comfort for pedestrians, bicyclists, and transit users. Project improvements may come from the City's adopted General Plan or other City policies that help improve the overall quality of life for the community. **Table 14** identifies some TDM improvement measures that may be considered for a project.

Table 14 – Potential TDM Improvement Measures

Potential TDM Measures	
Transit Facilities	Telecommuting
Bike Facilities	Rideshare Programs
Walkability	Flex-time
Carpool Incentives	Parking Cash-Out
Subsidized Transit Passes	Shuttle Service

A measure that is not listed may be considered if the mitigation is appropriately applied and reasonable. Additional improvement measures may be identified as future technologies and policies evolve or with consultation by City Staff.

13.0 RESOURCES

The following resources were used in the development of these guidelines. It is recommended the consultant develop a plan of action that aligns with the City Traffic Engineer's expectation prior to conducting any analyses.

City of San Diego. "Transportation Study Manual (TSM) Draft." September 2019.

Institute of Transportation Engineers (San Diego Section). " Guidelines for Transportation Impact Studies (TIS) in the San Diego Region." May 2019. Accessed April 1, 2020.

Governor's Office of Planning and Research (OPR). "Technical Advisory on Evaluating Transportation Impacts in CEQA." December 2018. Accessed April 1, 2020.

Governor's Office of Planning and Research (OPR). "Key Resources on SB 743: Studies, Reports, Briefs, and Tools." April 2018. Accessed April 1, 2020.

California Air Resources Board (CARB). "2017 Scoping Plan-Identified VMT Reductions and Relationship to State Climate Goals." January 2019. Accessed April 1, 2020.

California Air Pollution Control Officers Association (CAPCOA). "Quantifying Greenhouse Gas Mitigation Measures." August 2010. Accessed April 1, 2020.

San Diego Association of Governments (SANDAG). "TDM Planning Resources." 2019. Accessed April 1, 2020.

Appendix B

Approved Project Information Form

PROJECT INFORMATION FORM (PIF)

THE FOLLOWING IS TO BE COMPLETED BY THE PROJECT APPLICANT:

PROJECT INFORMATION FORM			
1.	**PROJECT DESCRIPTION:** Residential development of 83 single family detached homes		
2.	**PROJECT LOCATION:** 2839 Guajome Lake Rd (on the east side of Guajome Lake Rd south of Albright St)		
3.	**LAND USE:** Single Family Detached Residential (SFD-R) **SIZE/DENSITY:** 83 dwelling units on 16.6 acres (5 du/acre)		
4.	**ZONING AND LAND USE CONSISTENT WITH ADOPTED GENERAL PLAN?**	☑ Yes	☐ No
5.	**PROJECT LOCATED IN TRANSIT PRIORITY AREA[1], SMART GROWTH AREA[2], OR LOW VMT AREA[3]?**	☐ Yes	☑ No
6.	**PROJECT TRIP GENERATION:** 830 **ADT**	☐ < 200 ADT ☑ ≥ 200 ADT ☐ ≥ 1,000 ADT ☐ ≥ 2,400 ADT	
	ATTACHMENTS		
A.	**PROJECT LOCATION MAP**	☑ Attached	
B.	**PROJECT TRIP DISTRIBUTION**	☑ Attached	
C.	**PROJECT TRIP ASSIGNMENT**	☑ Attached	

1) Projects located in a TPA must be able to access the transit station within a ½ mile walking distance or 6 minute walk continuously without discontinuity of sidewalk or obstructions to the route. Qualifying transit stops means a site containing an existing rail transit station served 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 (OPR, 2017). A high-quality transit corridor may also be considered if a corridor with fixed route bus service has service intervals no longer than 15 minutes during peak commute hours (OPR, 2017).
(2) See Appendix B.
(3) Based on the most recent SANDAG SB 743 Screening Map. Example shown in Appendix C.

TO BE COMPLETED BY CITY STAFF AND RETURNED TO PROJECT APPLICANT

PROJECT STUDY REQUIREMENTS				
1)	**Does the project require a CEQA VMT analysis?**	☐ Yes	☑ No	☐ Incomplete[1]
	A. If yes, does the project require a SANDAG Model Run?	☐ Yes	☐ No	
2a)	**Does the project require a Local Transportation Study?**	☐ Yes	☑ No	☐ Incomplete[1]
	OR			
2b)	**Does the project require a Local Transportation Assessment?**	☑ Yes	☐ No	☐ Incomplete[1]

[1] Incomplete application or additional information is needed to determine study requirements.

3-5-22

Planning Division Date

Tam Tran Digitally signed by Tam Tran DN: cn=Tam Tran, ou=Engineering, email=TTran@oceansideca.org Date: 2022.04.05 14:29:16 -07'00'

Transportation Engineering Section Date

Guajome Lake Road PIF Support Materials

Project Trip Generation

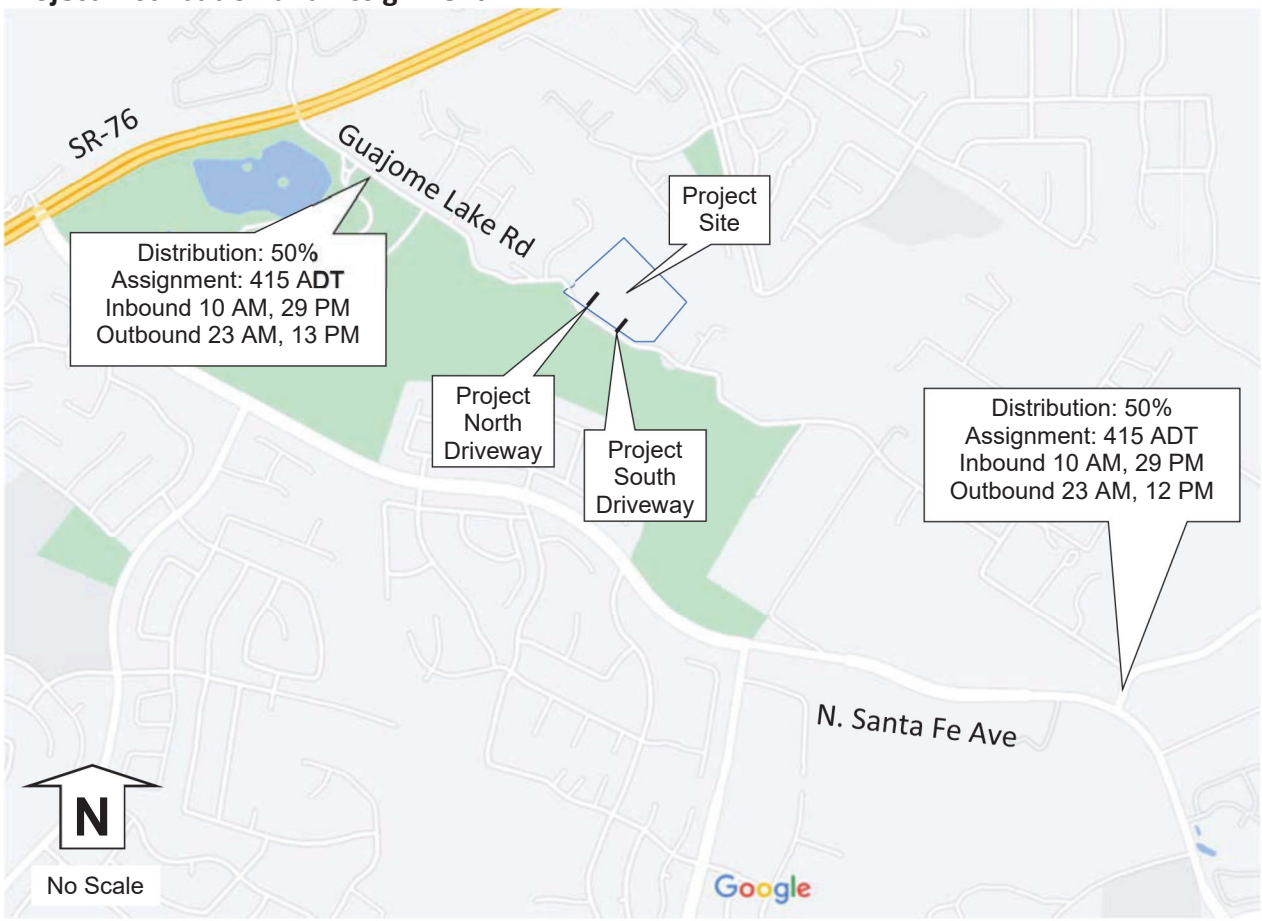
Proposed Land Use	Rate	Size & Units	ADT	%	Split	AM IN	AM OUT	%	Split	PM IN	PM OUT
Residential - Single Family	10 /DU	83 DU	**830**	8%	0.3 0.7	**20**	**46**	10%	0.7 0.3	**58**	**25**

Source: SANDAG *Brief Guide of Vehicular Traffic Generation Rates for the San Diego Region,* April 2002.

DU-Dwelling Unit; ADT-Average Daily Traffic; Split-percent inbound and outbound.

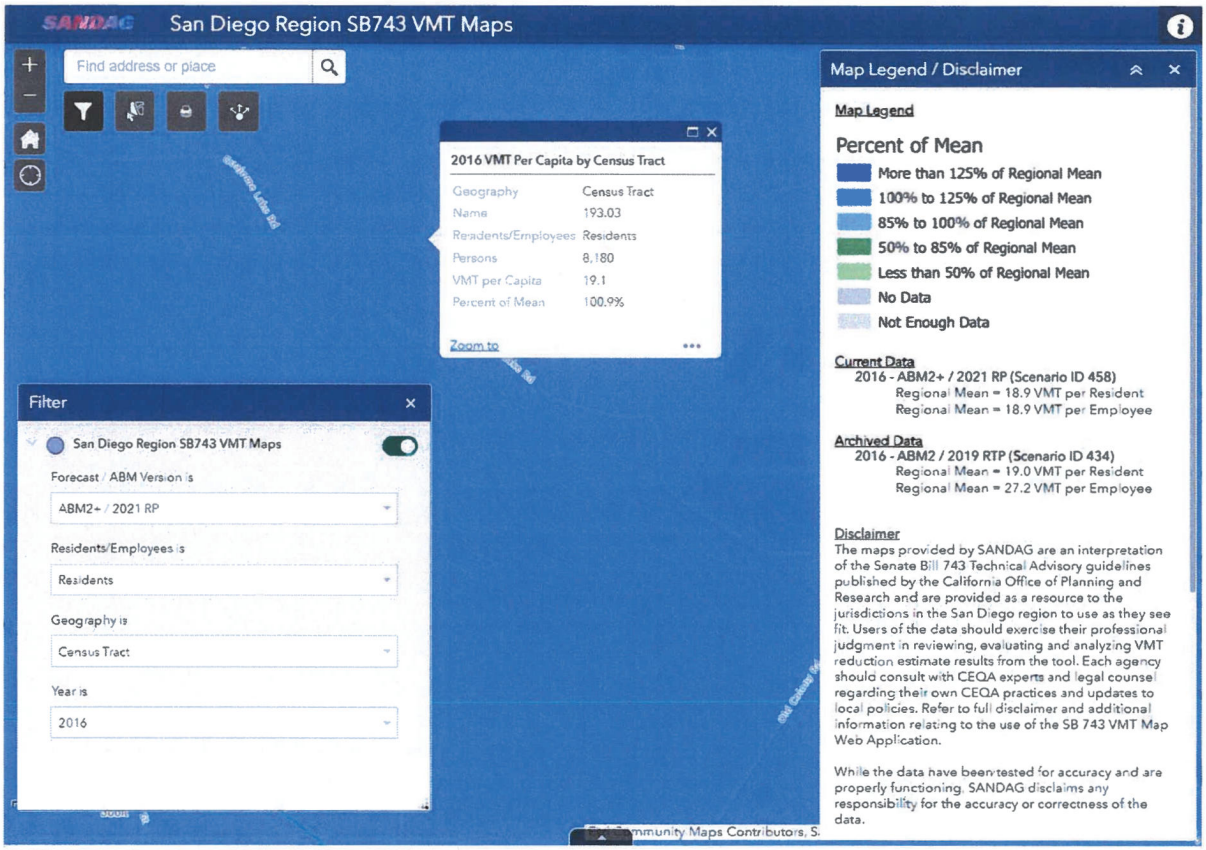
The project distribution of 50% to/from SR-76 and 50% to/from N. Santa Fe Ave is based on traffic engineering judgement and factors such as proximity to SR-76 and local productions and attractions.

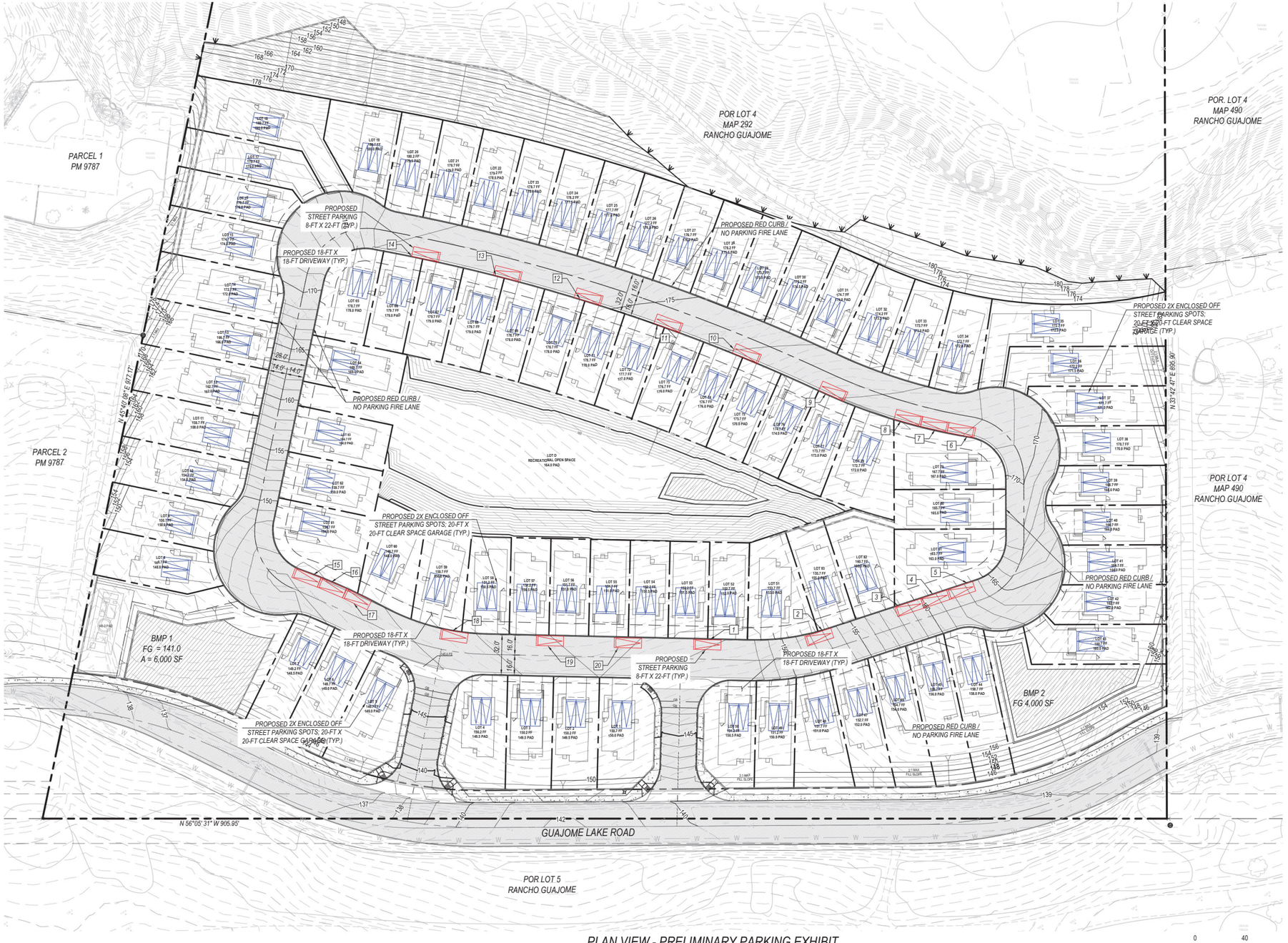
Project Distribution and Assignment



As the project will generate less than 1,000 ADT and is consistent with the General Plan, a Local Transportation Assessment (LTA) would be required. The study area would include the project driveway at Guajome Lake Rd as this is the only location where more than 50 peak hour trips are added to the surrounding roadway network.

Guajome Lake Road (ADM21-00079) SANDAG VMT Map





LEGEND

- PROPERTY LINE
- RIGHT-OF-WAY
- CENTERLINE OF ROAD
- PROPOSED LOT LINES
- ADJACENT LOT LINES
- PROPOSED EASEMENTS
- PROPOSED SETBACKS
- PROPOSED LIMIT OF GRADING
- PROPOSED CONTOUR
- EXISTING CONTOUR
- PROPOSED 6" CURB & GUTTER
- PROPOSED 6" CURB
- PROPOSED HARDSCAPE
- PROPOSED MASONRY RETAINING WALL
- PROPOSED BMP
- EXISTING WATER MAIN (SIZE PER PLAN)
- EXISTING SEWER MAIN (SIZE PER PLAN)
- EXISTING STORM DRAIN (SIZE PER PLAN)
- EXISTING GAS MAIN
- PROPOSED PARALLEL ON STREET PARKING (8-FT WIDE X 22-FT DEEP PER CITY OF OCEANSIDE ZONING ORDINANCE 3109)
- PROPOSED ENCLOSED OFF STREET PARKING (20-FT WIDE X 19-FT DEEP 2-CAR GARAGE MIN IN SFR ZONING PER CITY OF OCEANSIDE ZONING ORDINANCE 3109)

PROPOSED PARKING

PROPOSED PARALLEL ON STREET PARKING:	20.0
PROPOSED ENCLOSED OFF STREET PARKING:	2.0 / UNIT (2-CAR GARAGE)
PROPOSED UNENCLOSED OFF STREET PARKING:	2.0 / UNIT (18-FT WIDE X 18-FT DEEP DWY)

PLAN VIEW - PRELIMINARY PARKING EXHIBIT

SCALE: 1" = 40'

0 40 80 120

GRAPHIC SCALE: 1" = 40'

REGISTERED PROFESSIONAL ENGINEER
TYLER G LARSON
No. 80356
Exp. 12/31/22
CIVIL
STATE OF CALIFORNIA

PASCO LARET SUITER & ASSOCIATES
San Diego | Solana Beach | Orange County
Phone 858.259.8212 | www.plsaengineering.com

Appendix C

Excerpts from City of Oceanside Bicycle Master Plan 2017 Update

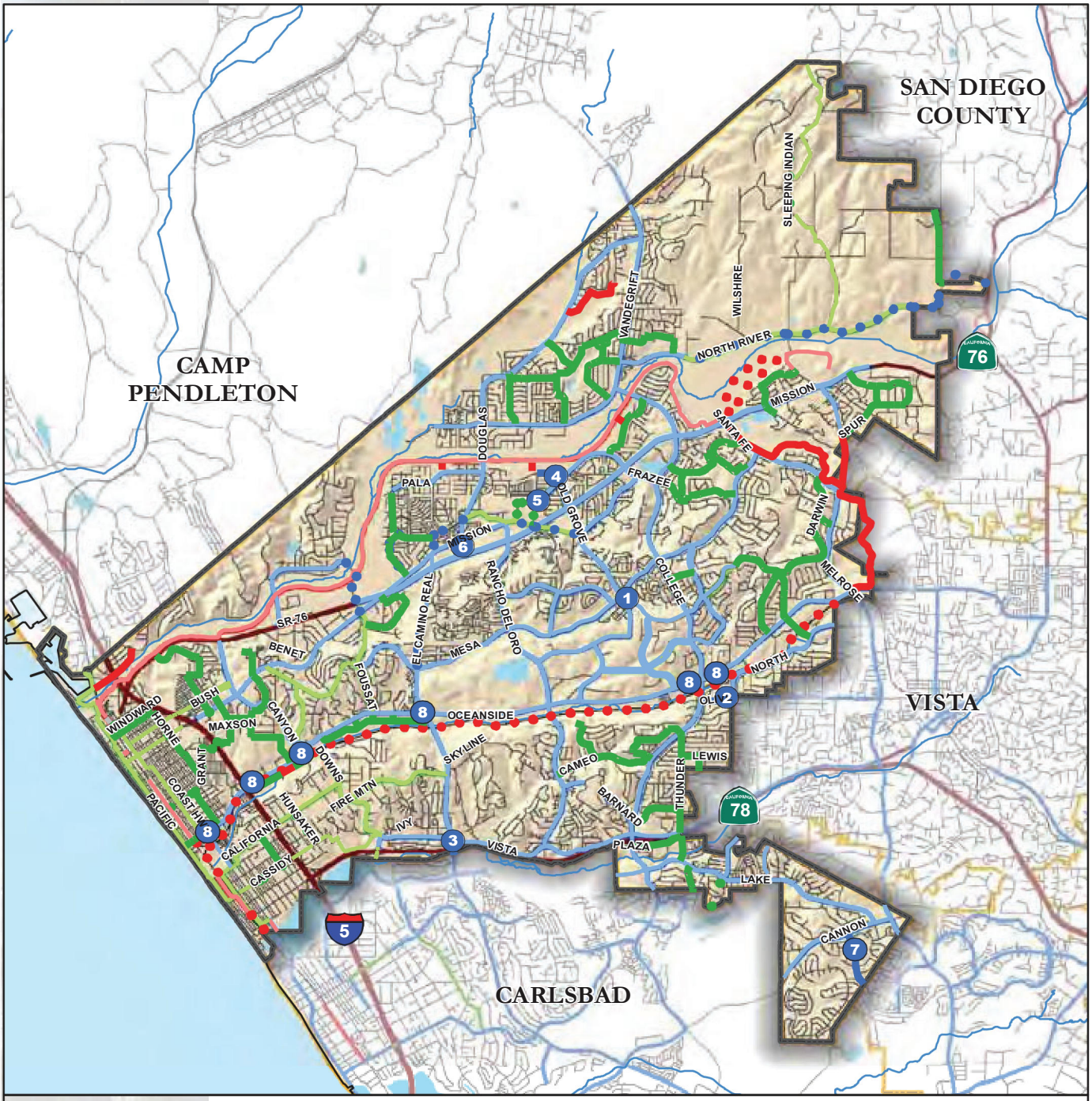
City of Oceanside
Bicycle Master Plan

2017 Bicycle Master Plan Update Prepared by
STC Traffic, Inc.

2008 Bicycle Master Plan Prepared by
KTU+A Planning + Landscape Architecture

In association with
IBI Group Transportation Planning

for the
City of Oceanside, California



Existing Bicycle Facilities
- Class 1: Bike Path
- Class 2: Bike Lane
- Class 3: Bike Route

Planned Bicycle Facilities
- Class 1: Bike Path
- Class 2: Bike Lane
- Class 3: Bike Route

Recommended Facilities
- Class 1: Bike Path
- Class 2: Bike Lane
- Class 3: Bike Route

Data Source: City of Oceanside

Class 2: Bike lane

Recommended Facilities/

Lane Recommended

Figure 4.2-A: Class 2 Bike Projects

(2017 Update)

0 0.5 1
Miles

Appendix D

Excerpts from the *Oceanside General Plan Circulation Element*, Sept 2012

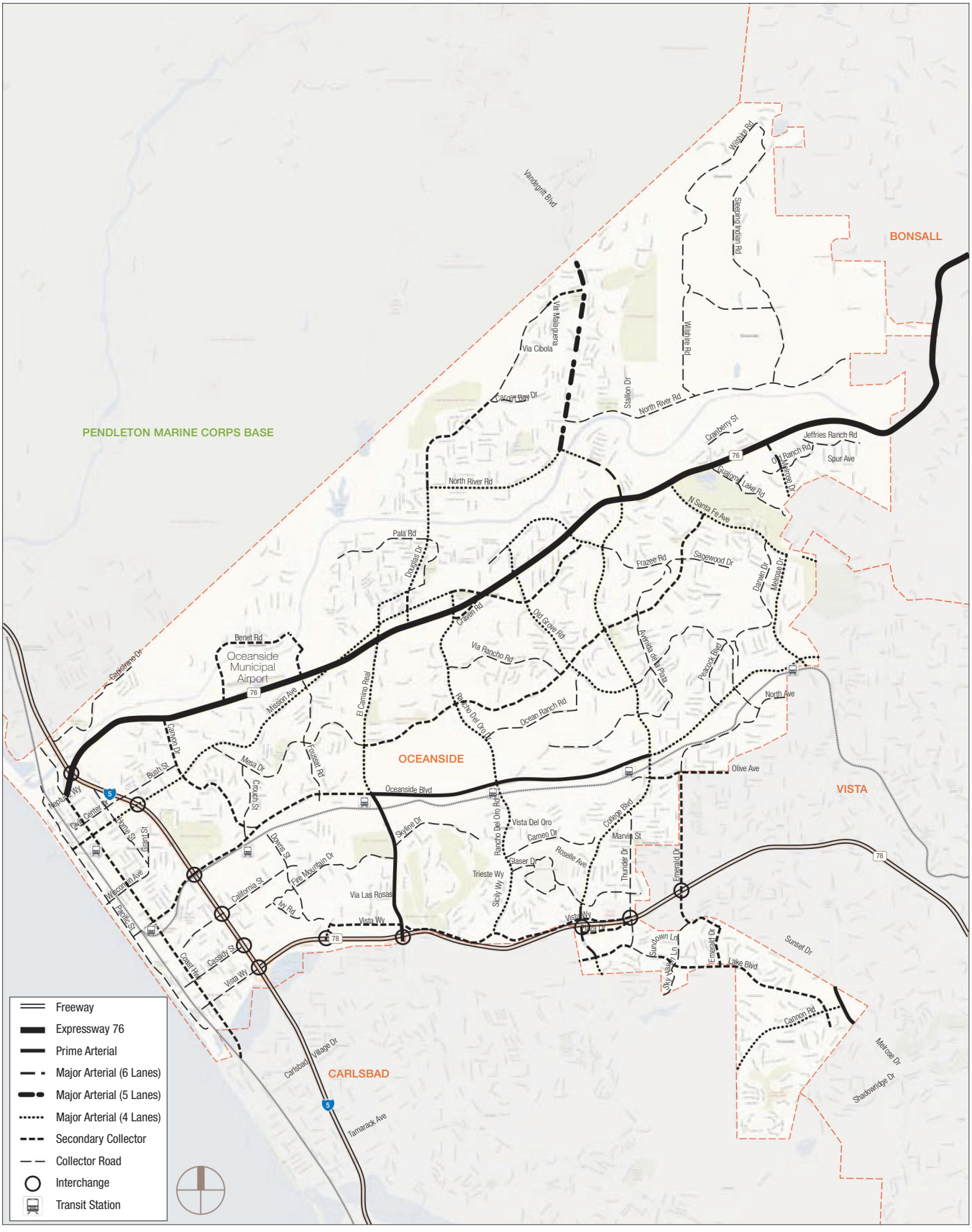
OCEANSIDE GENERAL PLAN
CIRCULATION ELEMENT UPDATE
City of Oceanside, California

Prepared for
City of Oceanside
Transportation Engineering Division
300 North Coast Highway
Oceanside, CA 92054

Prepared by

701 B Street, Suite 1810
San Diego, CA 92101

September 2012



Not to Scale

Existing Roadway Classifications

Figure 3.1

Appendix E

Count Data

Counts Unlimited, Inc.
PO Box 1178
Corona, CA 92878

City of Oceanside
Guajome Lake Road
E/ Albright Street

File Name 001
Site Code: 143-22343
24 Hour Directional Volume Count

Date:	Eastbound				Westbound					
4/14/2022	15 Minute Totals		Hourly Totals		15 Minute Totals		Hourly Totals		Combined Totals	
Time	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon
12:00	1	6			0	4				
12:15	0	4			0	2				
12:30	0	3			0	2				
12:45	0	4	1	17	0	2	0	10	1	27
1:00	0	4			0	3				
1:15	0	7			0	1				
1:30	0	5			0	4				
1:45	1	2	1	18	1	9	1	17	2	35
2:00	0	2			0	8				
2:15	0	12			0	10				
2:30	0	13			1	10				
2:45	0	19	0	46	0	12	1	40	1	86
3:00	0	18			1	8				
3:15	0	7			0	16				
3:30	0	6			1	8				
3:45	0	6	0	37	0	9	2	41	2	78
4:00	0	7			0	11				
4:15	0	4			0	14				
4:30	0	3			0	7				
4:45	2	8	2	22	1	18	1	50	3	72
5:00	2	4			0	7				
5:15	0	6			2	10				
5:30	2	8			1	8				
5:45	3	2	7	20	1	9	4	34	11	54
6:00	2	3			0	5				
6:15	3	6			2	6				
6:30	0	3			5	6				
6:45	2	4	7	16	2	6	9	23	16	39
7:00	3	7			10	4				
7:15	5	5			37	1				
7:30	13	2			44	2				
7:45	13	1	34	15	26	4	117	11	151	26
8:00	14	2			8	3				
8:15	6	0			3	1				
8:30	4	1			5	2				
8:45	4	1	28	4	4	2	20	8	48	12
9:00	2	3			2	2				
9:15	2	0			4	1				
9:30	2	1			3	0				
9:45	1	3	7	7	2	0	11	3	18	10
10:00	3	1			2	0				
10:15	3	0			1	0				
10:30	3	0			4	0				
10:45	0	0	9	1	5	0	12	0	21	1
11:00	1	0			0	0				
11:15	7	3			3	1				
11:30	2	1			2	1				
11:45	0	0	10	4	9	0	14	2	24	6
Totals	106	207			192	239				
Combined Totals		313				431				
ADT										744
AM Peak Hour	730	AM			700	AM				
Volume	46				117					
P.H.F.	0.821				0.665					
PM Peak Hour		215	PM			400	PM			
Volume		62				50				
P.H.F.		0.816				0.694				
Percentage	33.9%	66.1%			44.5%	55.5%				

Phone: 951-268-6268 counts@countsunlimited.com Fax: 951-268-6267

Counts Unlimited, Inc.
PO Box 1178
Corona, CA 92878

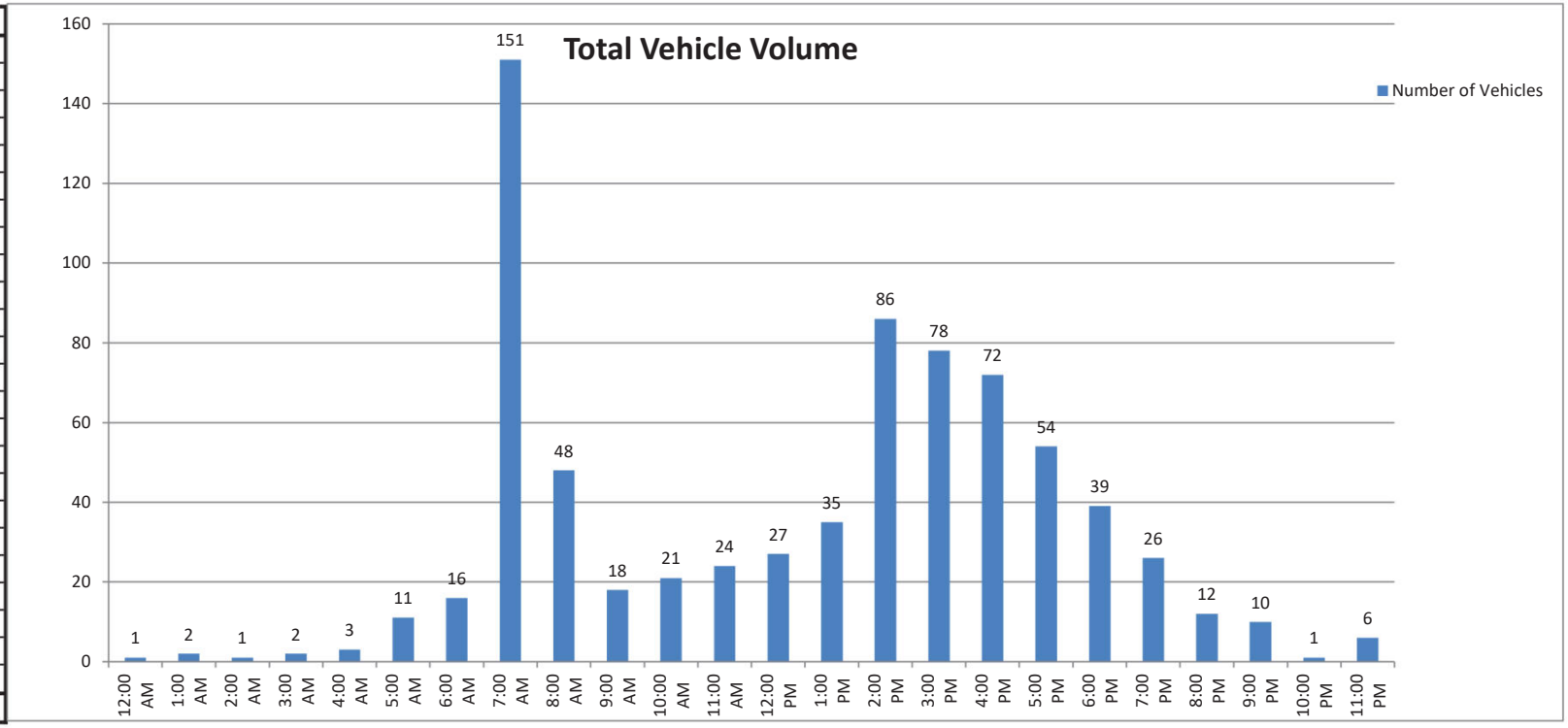
24 Hour Volume Plot

Guajome Lake Road

E/ Albright Street

4/14/2022

Start Time	4/14/2022
12:00 AM	1
1:00 AM	2
2:00 AM	1
3:00 AM	2
4:00 AM	3
5:00 AM	11
6:00 AM	16
7:00 AM	151
8:00 AM	48
9:00 AM	18
10:00 AM	21
11:00 AM	24
12:00 PM	27
1:00 PM	35
2:00 PM	86
3:00 PM	78
4:00 PM	72
5:00 PM	54
6:00 PM	39
7:00 PM	26
8:00 PM	12
9:00 PM	10
10:00 PM	1
11:00 PM	6
Total	744



Volumes represent the combined totals for both directions

Phone: 951-268-6268
counts@countsunlimited.com
Fax: 951-268-6267

Guajome Lake Rd
AM & PM Pk Hr Volumes along project frontage

	Vehicles Eastbound	Vehicles Westbound	Total	One Hour Running Summary	
7:00-7:15 AM	3	10	13		
7:15-7:30 AM	5	37	42		
7:30-7:45 AM	13	44	57		
7:45-8:00 AM	13	26	39	151	
8:00-8:15 AM	14	8	22	**160**	**AM Peak Hour (7:15-8:15)**
8:15-8:30 AM	6	3	9	127	
8:30-8:45 AM	4	5	9	79	
8:45-9:00 AM	4	4	8	48	
AM Pk Hour	***45***	***115***			

	Vehicles Eastbound	Vehicles Westbound	Total	One Hour Running Summary	
4:00-4:15 PM	7	11	18		
4:15-4:30 PM	4	14	18		
4:30-4:45 PM	3	7	10		
4:45-5:00 PM	8	18	26	**72**	**PM Peak Hour (4:00-5:00)**
5:00-5:15 PM	4	7	11	65	
5:15-5:30 PM	6	10	16	63	
5:30-5:45 PM	8	8	16	69	
5:45-5:00 PM	2	9	11	54	
PM Pk Hour	***22***	***50***			

Appendix F

SANDAG Trip Generation

(NOT SO)

BRIEF GUIDE OF VEHICULAR TRAFFIC GENERATION RATES FOR THE SAN DIEGO REGION

APRIL 2002

SANDAG

401 B Street, Suite 800
San Diego, California 92101
(619) 699-1900 • Fax (619) 699-1950

NOTE: This listing only represents a *guide* of average, or estimated, traffic generation "driveway" rates and some very general trip data for land uses (emphasis on acreage and building square footage) in the San Diego region. These rates (both local and national) are subject to change as future documentation becomes available, or as regional sources are updated. For more specific information regarding traffic data and trip rates, please refer to the San Diego Traffic Generators manual. *Always check with local jurisdictions for their preferred or applicable rates.*

LAND USE	TRIP CATEGORIES [PRIMARY:DIVERTED:PASS-BY][P]	ESTIMATED WEEKDAY VEHICLE TRIP GENERATION RATE (DRIVEWAY)	HIGHEST PEAK HOUR % (plus IN:OUT ratio) Between 6:00-9:30 A.M.		Between 3:00-6:30 P.M.		TRIP LENGTH (Miles)[L]
AGRICULTURE (Open Space)	[80:18:2]	2/acre**					10.8
AIRPORT	[78:20:2]						12.5
Commercial		60/acre, 100/flight, 70/1000 sq. ft.* **	5%	(6:4)	6%	(5:5)	
General Aviation		6/acre, 2/flight, 6/based aircraft* **	9%	(7:3)	15%	(5:5)	
Heliports		100/acre**					
AUTOMOBILE[S]							
Car Wash							
Automatic		900/site, 600/acre**	4%	(5:5)	9%	(5:5)	
Self-serve		100/wash stall**	4%	(5:5)	8%	(5:5)	
Gasoline	[21:51:28]						2.8
with/Food Mart		160/vehicle fueling space**	7%	(5:5)	8%	(5:5)	
with/Food Mart & Car Wash		155/vehicle fueling space**	8%	(5:5)	9%	(5:5)	
Older Service Station Design		150/vehicle fueling space, 900/station**	7%	(5:5)	9%	(5:5)	
Sales (Dealer & Repair)		50/1000 sq. ft., 300/acre, 60/service stall* **	5%	(7:3)	8%	(4:6)	
Auto Repair Center		20/1000 sq. ft., 400/acre, 20/service stall*	8%	(7:3)	11%	(4:6)	
Auto Parts Sales		60/1000 sq. ft. **	4%		10%		
Quick Lube		40/service stall**	7%	(6:4)	10%	(5:5)	
Tire Store		25/1000 sq. ft., 30/service stall**	7%	(6:4)	11%	(5:5)	
CEMETERY		5/acre*					
CHURCH (or Synagogue)	[64:25:11]	9/1000 sq. ft., 30/acre** (quadruple rates for Sunday, or days of assembly)	5%	(6:4)	8%	(5:5)	5.1
COMMERCIAL/RETAIL[S]							
Super Regional Shopping Center (More than 80 acres, more than 800,000 sq. ft., w/usually 3+ major stores)		35/1000 sq. ft.,[C] 400/acre*	4%	(7:3)	10%	(5:5)	
Regional Shopping Center (40-80acres, 400,000-800,000 sq. ft., w/usually 2+ major stores)	[54:35:11]	50/1000 sq. ft.,[C] 500/acre*	4%	(7:3)	9%	(5:5)	5.2
Community Shopping Center (15-40 acres, 125,000-400,000 sq. ft., w/usually 1 major store, detached restaurant(s), grocery and drugstore)	[47:31:22]	80/1000 sq. ft., 700/acre* **	4%	(6:4)	10%	(5:5)	3.6
Neighborhood Shopping Center (Less than 15 acres, less than 125,000 sq. ft., w/usually grocery & drugstore, cleaners, beauty & barber shop, & fast food services)		120/1000 sq. ft., 1200/acre* **	4%	(6:4)	10%	(5:5)	
Commercial Shops	[45:40:15]						
Specialty Retail/Strip Commercial		40/1000 sq. ft., 400/acre*	3%	(6:4)	9%	(5:5)	4.3
Electronics Superstore		50/1000 sq. ft**			10%	(5:5)	
Factory Outlet		40/1000 sq. ft.**	3%	(7:3)	9%	(5:5)	
Supermarket		150/1000 sq. ft., 2000/acre* **	4%	(7:3)	10%	(5:5)	
Drugstore		90/1000 sq. ft.**	4%	(6:4)	10%	(5:5)	
Convenience Market (15-16 hours)		500/1000 sq. ft.**	8%	(5:5)	8%	(5:5)	
Convenience Market (24 hours)		700/1000 sq. ft.**	9%	(5:5)	7%	(5:5)	
Convenience Market (w/gasoline pumps)		850/1000 sq. ft., 550/vehicle fueling space**	6%	(5:5)	7%	(5:5)	
Discount Club		60/1000 sq. ft., 600/acre* **	1%	(7:3)	9%	(5.5)	
Discount Store		60/1000 sq. ft., 600/acre**	3%	(6:4)	8%	(5:5)	
Furniture Store		6/1000 sq. ft., 100/acre**	4%	(7:3)	9%	(5:5)	
Lumber Store		30/1000 sq. ft., 150/acre**	7%	(6:4)	9%	(5:5)	
Home Improvement Superstore		40/1000 sq. ft.**	5%	(6:4)	8%	(5:5)	
Hardware/Paint Store		60/1000 sq. ft., 600/acre**	2%	(6:4)	9%	(5:5)	
Garden Nursery		40/1000 sq. ft., 90/acre**	3%	(6:4)	10%	(5:5)	
Mixed Use: Commercial (w/supermarket)/Residential		{110/1000 sq. ft., 2000/acre* (commercial only) 5/dwelling unit, 200/acre* (residential only)	3% 9%	(6:4) (3:7)	9% 13%	(5:5) (6:4)	
EDUCATION							
University (4 years)	[91:9:0]	2.4/student, 100 acre*	10%	(8:2)	9%	(3:7)	8.9
Junior College (2 years)	[92:7:1]	1.2/student, 24/1000 sq. ft., 120/acre* **	12%	(8:2)	9%	(6:4)	9.0
High School	[75:19:6]	1.3/student, 15/1000 sq. ft., 60/acre* **	20%	(7:3)	10%	(4:6)	4.8
Middle/Junior High	[63:25:12]	1.4/student, 12/1000 sq. ft. 50/acre**	30%	(6:4)	9%	(4:6)	5.0
Elementary	[57:25:10]	1.6/student, 14/1000 sq. ft., 90/acre* **	32%	(6:4)	9%	(4:6)	3.4
Day Care	[28:58:14]	5/child, 80/1000 sq. ft.**	17%	(5:5)	18%	(5:5)	3.7
FINANCIAL[S]	[35:42:23]						3.4
Bank (Walk-In only)		150/1000 sq. ft., 1000/acre* **	4%	(7:3)	8%	(4:6)	
with Drive-Through		200/1000 sq. ft., 1500/acre*	5%	(6:4)	10%	(5:5)	
Drive-Through only		250 (125 one-way)/lane*	3%	(5:5)	13%	(5:5)	
Savings & Loan		60/1000 sq. ft., 600/acre**	2%		9%		
Drive-Through only		100 (50 one-way)/lane**	4%		15%		
HOSPITAL	[73:25:2]						8.3
General		20/bed, 25/1000 sq. ft., 250/acre*	8%	(7:3)	10%	(4:6)	
Convalescent/Nursing		3/bed**	7%	(6:4)	7%	(4:6)	
INDUSTRIAL							
Industrial/Business Park (commercial included)	[79:19:2]	16/1000 sq. ft., 200/acre* **	12%	(8:2)	12%	(2:8)	9.0
Industrial Park (no commercial)		8/1000 sq. ft., 90/acre**	11%	(9:1)	12%	(2:8)	
Industrial Plant (multiple shifts)	[92:5:3]	10/1000 sq. ft., 120/acre*	14%	(8:2)	15%	(3:7)	11.7
Manufacturing/Assembly		4/1000 sq. ft., 50/acre**	19%	(9:1)	20%	(2:8)	
Warehousing		5/1000 sq. ft., 60/acre**	13%	(7:3)	15%	(4:6)	
Storage		2/1000 sq. ft., 0.2/vault, 30/acre*	6%	(5:5)	9%	(5:5)	
Science Research & Development		8/1000 sq. ft., 80/acre*	16%	(9:1)	14%	(1:9)	
Landfill & Recycling Center		6/acre	11%	(5:5)	10%	(4:6)	

(OVER)

MEMBER AGENCIES: Cities of Carlsbad, Chula Vista, Coronado, Del Mar, El Cajon, Encinitas, Escondido, Imperial Beach, La Mesa, Lemon Grove, National City, Oceanside, Poway, San Diego, San Marcos, Santee, Solana Beach, Vista and County of San Diego.
ADVISORY/LIAISON MEMBERS: California Department of Transportation, County Water Authority, U.S. Department of Defense, S.D. Unified Port District and Tijuana/Baja California.

LAND USE	TRIP CATEGORIES [PRIMARY:DIVERTED:PASS-BY][P]	ESTIMATED WEEKDAY VEHICLE TRIP GENERATION RATE (DRIVEWAY)	HIGHEST PEAK HOUR % (plus IN:OUT ratio) Between 6:00-9:30 A.M.		Between 3:00-6:30 P.M.		TRIP LENGTH (Miles)[L]
LIBRARY	[44:44:12]	50/1000 sq. ft., 400/acre**	2%	(7:3)	10%	(5:5)	3.9
LODGING	[58:38:4]						7.6
Hotel (w/convention facilities/restaurant)		10/occupied room, 300/acre	6%	(6:4)	8%	(6:4)	
Motel		9/occupied room, 200/acre*	8%	(4:6)	9%	(6:4)	
Resort Hotel		8/occupied room, 100/acre*	5%	(6:4)	7%	(4:6)	
Business Hotel		7/occupied room**	8%	(4:6)	9%	(6:4)	
MILITARY	[82:16:2]	2.5/military & civilian personnel*	9%	(9:1)	10%	(2:8)	11.2
OFFICE							
Standard Commercial Office (less than 100,000 sq. ft.)	[77:19:4]	20/1000 sq. ft.,[O] 300/acre*	14%	(9:1)	13%	(2:8)	8.8
Large (High-Rise) Commercial Office (more than 100,000 sq. ft., 6 + stories)	[82:15:3]	17/1000 sq. ft.,[O] 600/acre*	13%	(9:1)	14%	(2:8)	10.0
Office Park (400,000 + sq. ft.)		12/1000 sq.ft., 200/acre* **	13%	(9:1)	13%	(2:8)	
Single Tenant Office		14/1000 sq. ft., 180/acre*	15%	(9:1)	15%	(2:8)	8.8
Corporate Headquarters		7/1000 sq. ft., 110/acre*	17%	(9:1)	16%	(1:9)	
Government (Civic Center)	[50:34:16]	30/1000 sq. ft.**	9%	(9:1)	12%	(3:7)	6.0
Post Office							
Central/Walk-In Only		90/1000 sq. ft.**	5%		7%		
Community (not including mail drop lane)		200/1000 sq. ft., 1300/acre*	6%	(6:4)	9%	(5:5)	
Community (w/mail drop lane)		300/1000 sq. ft., 2000/acre*	7%	(5:5)	10%	(5:5)	
Mail Drop Lane only		1500 (750 one-way)/lane*	7%	(5:5)	12%	(5:5)	
Department of Motor Vehicles		180/1000 sq. ft., 900/acre**	6%	(6:4)	10%	(4:6)	
Medical-Dental	[60:30:10]	50/1000 sq. ft., 500/acre*	6%	(8:2)	11%	(3:7)	6.4
PARKS	[66:28:6]		4%		8%		5.4
City (developed w/meeting rooms and sports facilities)		50/acre*	13%	(5:5)	9%	(5:5)	
Regional (developed)		20/acre*					
Neighborhood/County (undeveloped)		5/acre (add for specific sport uses), 6/picnic site* **					
State (average 1000 acres)		1/acre, 10/picnic site**					
Amusement (Theme)		80/acre, 130/acre (summer only)**			6%	(6:4)	
San Diego Zoo		115/acre*					
Sea World		80/acre*					
RECREATION							
Beach, Ocean or Bay	[52:39:9]	600/1000 ft. shoreline, 60/acre*					6.3
Beach, Lake (fresh water)		50/1000 ft. shoreline, 5/acre*					
Bowling Center		30/1000 sq. ft., 300/acre, 30/lane **	7%	(7:3)	11%	(4:6)	
Campground		4/campsite**	4%		8%		
Golf Course		7/acre, 40/hole, 700/course* **	7%	(8:2)	9%	(3:7)	
Driving Range only		70/acre, 14/tee box*	3%	(7:3)	9%	(5:5)	
Marinas		4/berth, 20/acre* **	3%	(3:7)	7%	(6:4)	
Multi-purpose (miniature golf, video arcade, batting cage, etc.)		90/acre	2%		6%		
Racquetball/Health Club		30/1000 sq. ft., 300/acre, 40/court*	4%	(6:4)	9%	(6:4)	
Tennis Courts		16/acre, 30/court**	5%		11%	(5:5)	
Sports Facilities							
Outdoor Stadium		50/acre, 0.2/seat*					
Indoor Arena		30/acre, 0.1/seat*					
Racetrack		40/acre, 0.6 seat*					
Theaters (multiplex w/matinee)	[66:17:17]	80/1000 sq. ft., 1.8/seat, 360/screen*	1/3%		8%	(6:4)	6.1
RESIDENTIAL	[86:11:3]						7.9
Estate, Urban or Rural (average 1-2 DU/acre)		12/dwelling unit *[R]	8%	(3:7)	10%	(7:3)	
Single Family Detached (average 3-6 DU/acre)		10/dwelling unit *[R]	8%	(3:7)	10%	(7:3)	
Condominium (or any multi-family 6-20 DU/acre)		8/dwelling unit *[R]	8%	(2:8)	10%	(7:3)	
Apartment (or any multi-family units more than 20 DU/acre)		6/dwelling unit *[R]	8%	(2:8)	9%	(7:3)	
Military Housing (off-base, multi-family)							
(less than 6 DU/acre)		8/dwelling unit	7%	(3:7)	9%	(6:4)	
(6-20 DU/acre)		6/dwelling unit	7%	(3:7)	9%	(6:4)	
Mobile Home							
Family		5/dwelling unit, 40/acre*	8%	(3:7)	11%	(6:4)	
Adults Only		3/dwelling unit, 20/acre*	9%	(3:7)	10%	(6:4)	
Retirement Community		4/dwelling unit**	5%	(4:6)	7%	(6:4)	
Congregate Care Facility		2.5/dwelling unit**	4%	(6:4)	8%	(5:5)	
RESTAURANT[S]	[51:37:12]						4.7
Quality		100/1000 sq. ft., 3/seat, 500/acre* **	1%	(6:4)	8%	(7:3)	
Sit-down, high turnover		160/1000 sq. ft., 6/seat, 1000/acre* **	8%	(5:5)	8%	(6:4)	
Fast Food (w/drive-through)		650/1000 sq. ft., 20/seat, 3000/acre* **	7%	(5:5)	7%	(5:5)	
Fast Food (without drive-through)		700/1000 sq. ft.**	5%	(6:4)	7%	(5:5)	
Delicatessen (7am-4pm)		150/1000 sq. ft., 11/seat*	9%	(6:4)	3%	(3:7)	
TRANSPORTATION							
Bus Depot		25/1000 sq. ft.**					
Truck Terminal		10/1000 sq. ft., 7/bay, 80/acre**	9%	(4:6)	8%	(5:5)	
Waterport/Marine Terminal		170/berth, 12/acre**					
Transit Station (Light Rail w/parking)		300/acre, 2 1/2/parking space (4/occupied)**	14%	(7:3)	15%	(3:7)	
Park & Ride Lots		400/acre (600/paved acre), 5/parking space (8/occupied)* **	14%	(7:3)	15%	(3:7)	

* Primary source: *San Diego Traffic Generators.*

* Other sources: *ITE Trip Generation Report [6th Edition]*, Trip Generation Rates (other agencies and publications), various SANDAG & CALTRANS studies, reports and estimates.

[P] Trip category percentage ratios are daily from local household surveys, often cannot be applied to very specific land uses, and do not include non-resident drivers (draft SANDAG *Analysis of Trip Diversion*, revised November, 1990):
PRIMARY - one trip directly between origin and primary destination.
DIVERTED - linked trip (having one or more stops along the way to a primary destination) whose distance compared to direct distance ≥ 1 mile.
PASS-BY - undiverted or diverted < 1 mile.

[L] Trip lengths are average weighted for all trips to and from general land use site. (All trips system-wide average length = 6.9 miles)

[C] Fitted curve equation: Ln(T) = 0.502 Ln(x) + 6.945

[O] Fitted curve equation: Ln(T) = 0.756 Ln(x) + 3.950

T = total trips, x = 1,000 sq. ft.

[R] Fitted curve equation: t = -2.169 Ln(d) + 12.85 t = trips/DU, d = density (DU/acre), DU = dwelling unit

[S] Suggested PASS-BY [undiverted or diverted < 1 mile] percentages for trip rate reductions only during P.M. peak period (based on combination of local data/review and Other sources**):

COMMERCIAL/RETAIL	
Regional Shopping Center	20%
Community " "	30%
Neighborhood " "	40%
Specialty Retail/Strip Commercial (other)	10%
Supermarket	40%
Convenience Market	50%
Discount Club/Store	30%
FINANCIAL	
Bank	25%
AUTOMOBILE	
Gasoline Station	50%
RESTAURANT	
Quality	10%
Sit-down high turnover	20%
Fast Food	40%

[T] Trip Reductions - In order to help promote regional "smart growth" policies, and acknowledge San Diego's expanding mass transit system, consider vehicle trip rate reductions (with proper documentation and necessary adjustments for peak periods). The following are some examples:

[1] A 5% daily trip reduction for land uses with transit access or near transit stations accessible within 1/4 mile.

[2] Up to 10% daily trip reduction for mixed-use developments where residential and commercial retail are combined (demonstrate mode split of walking trips to replace vehicular trips).

Appendix G

Existing + Project Intersection LOS Worksheets

Intersection	
Int Delay, s/veh	1.4

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	8	47	120	2	5	18
Future Vol, veh/h	8	47	120	2	5	18
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	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	9	51	130	2	5	20

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	132	0	-	0	200	131
Stage 1	-	-	-	-	131	-
Stage 2	-	-	-	-	69	-
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	1453	-	-	-	789	919
Stage 1	-	-	-	-	895	-
Stage 2	-	-	-	-	954	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1453	-	-	-	784	919
Mov Cap-2 Maneuver	-	-	-	-	784	-
Stage 1	-	-	-	-	890	-
Stage 2	-	-	-	-	954	-

Approach	EB	WB	SB
HCM Control Delay, s	1.1	0	9.2
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1453	-	-	-	886
HCM Lane V/C Ratio	0.006	-	-	-	0.028
HCM Control Delay (s)	7.5	0	-	-	9.2
HCM Lane LOS	A	A	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	0.1

LOS Engineering, Inc.

Intersection	
Int Delay, s/veh	1.2

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	2	50	117	8	18	5
Future Vol, veh/h	2	50	117	8	18	5
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	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	2	54	127	9	20	5

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	136	0	-	0	190	132
Stage 1	-	-	-	-	132	-
Stage 2	-	-	-	-	58	-
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	1448	-	-	-	799	917
Stage 1	-	-	-	-	894	-
Stage 2	-	-	-	-	965	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1448	-	-	-	798	917
Mov Cap-2 Maneuver	-	-	-	-	798	-
Stage 1	-	-	-	-	893	-
Stage 2	-	-	-	-	965	-

Approach	EB	WB	SB
HCM Control Delay, s	0.3	0	9.5
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1448	-	-	-	821
HCM Lane V/C Ratio	0.002	-	-	-	0.03
HCM Control Delay (s)	7.5	0	-	-	9.5
HCM Lane LOS	A	A	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	0.1

LOS Engineering, Inc.

Intersection	
Int Delay, s/veh	2.3

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	23	28	52	6	2	11
Future Vol, veh/h	23	28	52	6	2	11
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	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	25	30	57	7	2	12

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	64	0	-	0	141	61
Stage 1	-	-	-	-	61	-
Stage 2	-	-	-	-	80	-
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	1538	-	-	-	852	1004
Stage 1	-	-	-	-	962	-
Stage 2	-	-	-	-	943	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1538	-	-	-	838	1004
Mov Cap-2 Maneuver	-	-	-	-	838	-
Stage 1	-	-	-	-	946	-
Stage 2	-	-	-	-	943	-

Approach	EB	WB	SB
HCM Control Delay, s	3.3	0	8.8
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1538	-	-	-	974
HCM Lane V/C Ratio	0.016	-	-	-	0.015
HCM Control Delay (s)	7.4	0	-	-	8.8
HCM Lane LOS	A	A	-	-	A
HCM 95th %tile Q(veh)	0.1	-	-	-	0

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Intersection	
Int Delay, s/veh	1.3

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	6	24	56	23	10	2
Future Vol, veh/h	6	24	56	23	10	2
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	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	7	26	61	25	11	2

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	86	0	-	0	114	74
Stage 1	-	-	-	-	74	-
Stage 2	-	-	-	-	40	-
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	1510	-	-	-	882	988
Stage 1	-	-	-	-	949	-
Stage 2	-	-	-	-	982	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1510	-	-	-	878	988
Mov Cap-2 Maneuver	-	-	-	-	878	-
Stage 1	-	-	-	-	944	-
Stage 2	-	-	-	-	982	-

Approach	EB	WB	SB
HCM Control Delay, s	1.5	0	9.1
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1510	-	-	-	895
HCM Lane V/C Ratio	0.004	-	-	-	0.015
HCM Control Delay (s)	7.4	0	-	-	9.1
HCM Lane LOS	A	A	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	0

LOS Engineering, Inc.

Appendix H

Existing + Cumulative + Project Intersection LOS Worksheets

Intersection	
Int Delay, s/veh	1.4

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	8	47	121	2	5	18
Future Vol, veh/h	8	47	121	2	5	18
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	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	9	51	132	2	5	20

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	134	0	-	0	202	133
Stage 1	-	-	-	-	133	-
Stage 2	-	-	-	-	69	-
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	1451	-	-	-	787	916
Stage 1	-	-	-	-	893	-
Stage 2	-	-	-	-	954	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1451	-	-	-	782	916
Mov Cap-2 Maneuver	-	-	-	-	782	-
Stage 1	-	-	-	-	888	-
Stage 2	-	-	-	-	954	-

Approach	EB	WB	SB
HCM Control Delay, s	1.1	0	9.2
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1451	-	-	-	883
HCM Lane V/C Ratio	0.006	-	-	-	0.028
HCM Control Delay (s)	7.5	0	-	-	9.2
HCM Lane LOS	A	A	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	0.1

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Intersection	
Int Delay, s/veh	1.2

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	2	50	118	8	18	5
Future Vol, veh/h	2	50	118	8	18	5
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	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	2	54	128	9	20	5

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	137	0	-	0	191	133
Stage 1	-	-	-	-	133	-
Stage 2	-	-	-	-	58	-
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	-	-	-	798	916
Stage 1	-	-	-	-	893	-
Stage 2	-	-	-	-	965	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1447	-	-	-	797	916
Mov Cap-2 Maneuver	-	-	-	-	797	-
Stage 1	-	-	-	-	892	-
Stage 2	-	-	-	-	965	-

Approach	EB	WB	SB
HCM Control Delay, s	0.3	0	9.5
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1447	-	-	-	820
HCM Lane V/C Ratio	0.002	-	-	-	0.03
HCM Control Delay (s)	7.5	0	-	-	9.5
HCM Lane LOS	A	A	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	0.1

LOS Engineering, Inc.

Intersection	
Int Delay, s/veh	2.3

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	23	28	53	6	2	11
Future Vol, veh/h	23	28	53	6	2	11
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	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	25	30	58	7	2	12

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	65	0	-	0	142	62
Stage 1	-	-	-	-	62	-
Stage 2	-	-	-	-	80	-
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	1537	-	-	-	851	1003
Stage 1	-	-	-	-	961	-
Stage 2	-	-	-	-	943	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1537	-	-	-	837	1003
Mov Cap-2 Maneuver	-	-	-	-	837	-
Stage 1	-	-	-	-	945	-
Stage 2	-	-	-	-	943	-

Approach	EB	WB	SB
HCM Control Delay, s	3.3	0	8.8
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1537	-	-	-	973
HCM Lane V/C Ratio	0.016	-	-	-	0.015
HCM Control Delay (s)	7.4	0	-	-	8.8
HCM Lane LOS	A	A	-	-	A
HCM 95th %tile Q(veh)	0.1	-	-	-	0

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Intersection	
Int Delay, s/veh	1.3

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	6	24	57	23	10	2
Future Vol, veh/h	6	24	57	23	10	2
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	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	7	26	62	25	11	2

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	87	0	-	0	115	75
Stage 1	-	-	-	-	75	-
Stage 2	-	-	-	-	40	-
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	1509	-	-	-	881	986
Stage 1	-	-	-	-	948	-
Stage 2	-	-	-	-	982	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1509	-	-	-	877	986
Mov Cap-2 Maneuver	-	-	-	-	877	-
Stage 1	-	-	-	-	943	-
Stage 2	-	-	-	-	982	-

Approach	EB	WB	SB
HCM Control Delay, s	1.5	0	9.1
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1509	-	-	-	893
HCM Lane V/C Ratio	0.004	-	-	-	0.015
HCM Control Delay (s)	7.4	0	-	-	9.1
HCM Lane LOS	A	A	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	0

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